

UNIFACE DLM

Installation Guide

Release: 9.2.04



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Preface

The *DLM Installation Guide* describes how to install the license environment for Uniface products.

Who Should Read this Guide

This guide is primarily intended for license administrators who need to install and configure the Uniface license environment. For the complete Uniface DLM documentation, see the *DLM Online Help*.

Related Publications

The documentation for DLM includes an *Installation Guide* and *Users Guide* in PDF format, and online help in the product.

The documentation is available from the product installation medium and, after installation, from **C:\Program Files (x86)\Common Files\Compuware.**

To access the online help from within a licensing component, you can:

- Click **F1** to open the **Help** menu.
- From the **Help** menu, choose **Index** to browse for help for the licensing component being used.

Customer Support Information

You can access customer support and a wealth of Uniface product and technical information on uniface.info. Features include online product documentation, user forums, technical tips and articles, up-to-date platform availability and product fixes.

Uniface Customer Support is available for maintenance-paying customers and can assist you with all your technical problems, from installation to troubleshooting. Prior to contacting customer support, please gather the following information:

- Name, version, and patch level of Uniface or related product. For example, Uniface 9.7.04 X401 or Uniface DLM 9.2.0.1.
- The location of the problem in the product and the actions taken before the problem occurred.
- Exact error message, if any, and any other information pertaining to the error.
- The operating system on which your product is installed.

You can contact Uniface technical support using any of the following methods:

Telephone

For urgent, high priority issues, we advise to contact us via telephone.

- Europe (Toll Free): +800 787 767 88.
- From elsewhere: +31 20 3118850

When you call for technical support, your representative will ask you to describe the problem in detail and may request the above information.

Email

Uniface Customer support can be contacted at uniface.technical.support@uniface.com.

Corporate Web Site

For information about Uniface customer support offerings, see the Uniface corporate web site at uniface.info.

Mail

Uniface B.V.
Hoogoorddreef 60
1080 BE Amsterdam
The Netherlands

DLM: What's New

DLM is Uniface's license management software.

DLM 9.2.0.4

Feature: Uniface DLM is now supported on Red Hat 8 and CentOS 8.

Issue 31121: Starting License Service on Red Hat and Centos

For some recent versions of Linux, such as Red Hat 7 and higher and CentOS 7 and higher, use the `systemctl` to start applications at boot. For more information, see [Start the Uniface License Server DLM Using systemctl](#).

DLM 9.2.0.3

Issue: Fixes crash of `libd1m32.dll` in batch mode.

Issue: Fixes stability issues.

DLM 9.2.0.1

Feature: Uniface DLM now supports TCP/IPv6.

You can now configure the License Service to use your preferred communication protocol—IPv6 or IPv4 (the default). A new configuration parameter, `ipversion` determines which protocol to use and whether to try the alternative if the preferred version is not available. You can set this parameter using the DLM Application, DLMCV, or the `-ipver` command line option. Or you can edit the DLM server's `config.xml` file. For more information, see [Server Configuration File](#), [DLMCV Command Line Options](#), and [ipversion](#).

Issue: Fixes `ROOT_CONFIG` being written if it already contains a value.

Issue: Fixes Wrong time in emails sent by the DLM server.

Issue: Fixes stability issues.

DLM 9.1.0

Feature: Security updates

Issue 31843: It is now possible to configure the frequency with which a Uniface application notifies the DLM license server that a license is still in use.

A new configuration parameter is supported in the DLM client's `config.xml` file. Setting `heartbeat_interval` to a shorter interval enables an application to be restarted more

quickly if it crashes, but increases the network and server load. For more information, see [Client Configuration File](#) and [heartbeat_interval](#).

Issue: Fixed problem with allowing Grace time.

DLM 9.0.4

Issue 30840: Problem with the display of buttons on Japanese Windows systems has been fixed.

DLM 9.0.3

Feature: Uniface DLM is now supported on Windows 10.

Issues: Fixes some problems on Unix and Linux platforms.

DLM 9.0.2

Feature: The DLMInfo utility has been enhanced to provide additional system information about the machine for which a license is requested, such as the number and type of processors.

The file that is generated by the DLMInfo utility is required when requesting new licenses, and may also be requested by Uniface to ensure that you have the correct licenses for your needs.

DLM 9.0.1

The name has been changed to Uniface DLM and the version is changed to 9.0. It replaces Compuware's Distributed License Manager 4.6.

DLM is based on Compuware's DLM and provides the same functionality.

Note: *This version of Uniface DLM is completely compatible with the Compuware DLM, so a Uniface DLM Client can run against a Compuware License Service, and vice versa.*

Customers who are currently using the Compuware DLM do not have to install Uniface DLM. You can continue to use your existing licenses, managed by the Compuware DLM License Service.

If you are a new customer, you will need to install the Uniface DLM in order to use Uniface.

The documentation delivered with Uniface DLM has been updated and consolidated to ensure that the information provided in PDF guides and online help is consistent and accurate.

Chapter 1: Uniface DLM

The Uniface Distributed License Management system (DLM) protects Uniface software products from unauthorized usage and enables you to administer licenses for your Uniface products.

Licenses are provided as XML files that, depending on the license, may be installed on the same workstation as the Uniface product or feature, or on a central server that will check out and serve licenses to client workstations. When a central license server is used, client machines or servers running Uniface products must connect to a license service to obtain their license.

DLM must be installed on any machine that acts as a license source, whether an individual workstation or a central server, and on every workstation that will act as a client of a license server. The DLM components that are installed depend on the platform and the type of license.

DLM Components

The core components of the DLM system are the license file, various administration tools, and the License Service.

Uniface DLM Core Components

DLM software consists of the following key components:

License file

An XML file that contains information about the license for one or more of your Uniface applications or features. It is generated by Uniface for a specific customer and specific machine.

Uniface DLM Application

A Windows-based administration tool that can be used by both administrators and users to view and manage Uniface licenses. It can also be used to obtain host information before requesting a license, administering the license server, and monitoring license usage and generating usage reports.

Uniface DLM Command Line Version (DLMCV)

The command line version of DLM provides most of the functionality provided by the DLM Windows application. It is available on all supported platforms. A simple menu interface enables you to use it interactively, but it can also be used for script-based configurations.

License Service

A process that manages requests from clients for a concurrent license. On Windows, it is automatically installed. On Unix, it must be manually installed.

Additional Tools and Utilities

Depending on the platform, Uniface Distributed License Management includes the following utilities:

DLMInfo

A command line utility that generates a file containing information about the host ID, operating system, and processors of the machine where it is run. This file is used when requesting a new license, and may also be requested by Uniface to ensure that you have the correct license for your needs.

UMFilter

A command line utility used to generate license usage reports. It can be run in interactive mode or used with parameters in script files.

Usage reports can also be generated from the DLM application.

License Proxy Service

A proxy service that provides licensing support for platforms that support Uniface but which are not yet supported by DLM.

License Models

Uniface offers two license models—node-locked for single users, and concurrent for multiple users.

Node-Locked Licenses

A *node-locked license* allows the product to run on a single workstation, and does not require a License Service to manage license checkout.

Uniface issues node-locked licenses only for the trial version of Uniface.

A node-locked license is characterized by the absence of a `count` tag for the licensed feature. It is bound to the workstation by its NIC MAC Address or a hard disk signature.

Concurrent License Model

A *concurrent* license allows the product to run on more than one workstation so that multiple users can access the product at the same time. It is server-based and requires the use of the License Service to manage license requests.

Instead, licenses are checked out by users on a first-come, first-served basis when they access the product. When all available licenses are issued, no additional users can run the product until another user exits and a license is checked in. This request-and-issue process is managed by the License Service.

Concurrent licensing allows you to purchase a specific number of licenses without assigning these licenses to particular clients or having to obtain their unique node identifiers. Instead, the License Service

running on a server handles requests for licenses from client workstations. When all available licenses are checked out, no additional users can run the product until a license is checked back in.

A concurrent license is defined by the `count` tag for the licensed feature in the license file. Other tags in the license file determine the type of concurrent license model.

There are several types of concurrent license model.

- Borrow-Enabled License Model—allows a user to borrow a feature or product for a specified amount of time, up to a maximum of 365 days.
- User-Managed License Model—allows the license administrator to control user access to specific options or features.
- First-Come, First-Served (FCFS)—limits the number of physical users to a defined set.
- User Duplication License Model—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.
- Redundant Server License Model—provides limited protection against license server failure. It disperses the responsibility for managing the license files over a predetermined number of servers.

License Files

Uniface generates a license file based on your contract and on the machines where the license will be located.

A license file is an XML file that contains a single license object that includes one or more license keys, each of which corresponds to a specific feature or application. The license file is keyed to a specific host machine, and can only be provided by Uniface when you know where it will be installed.

License Keys

Each license key specifies the limits or behavior of a product based on the purchase agreement.

If an end user modifies license keys, the purchase agreement is invalidated and the associated application or feature will not work.

License File Format

1The license is defined by the `license` object that contains at least one `key` object that licenses a specific application or feature.

2If the license supports redundant servers, it will have one or more `redundant` objects, and each license key that supports redundancy will have a `Redundant` parameter that references a specific `redundant` object.

3The key specifies the security key in its protected attribute. The key element contains parameters that define the application or feature it applies to, and specify the details of the usage extent.

Figure: License File Format

```

1 <license>
    <customer_id>CustomerID</customer_id>

    <!-- A redundant concurrent license contains a <redundant> object -->
2 <redundantprotected='SecurityKey'>
    <!-- Omitted parameters ... -->
</redundant>

3 <keyprotected='SecurityKey'>
    <Description> ProductDescription </Description>
    <App> ApplicationName or undefined </App>
    <Vers> VersionNumber or undefined </Vers>
    <Start> StartDate or undefined </Start>
    <End> EndDate or undefined </End>
    <Count> NumberOfCurrentUsers | unlimited | undefined | infinite </Count>
    <hostid>
        <Eth> Ethernet address of licensed system </Eth>
        <Softkey> Softkey ID of licensed system </Softkey>
        <Serial> Disk serial number of licensed system </Serial>
        <Ip> IP address of licensed system </Ip>
    </hostid>

    <!-- A key can have only a <hostid> (lowercase) or a <HostId> (mixed case)
    <Hostid> Host Id </Hostid>
    -->

    <!-- A concurrent license may specify the license model using the following parameters
    <Fcfs/>
    <Borrowing/>
    <Umanage/>
    <Dup_usr/>
    <Redundant> Policy Id </Redundant>
    -->

```

```
<Parameters> Application-specific parameters </Parameters>  
</key>  
</license>
```

Chapter 2: Getting Started

DLM must be installed on any client workstation that will run a Uniface product. For a concurrent license, it must be installed on a host server that is accessible to the client machines. DLM is automatically installed with Uniface if no other version of DLM is detected.

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

On each platform, the basic steps are the same:

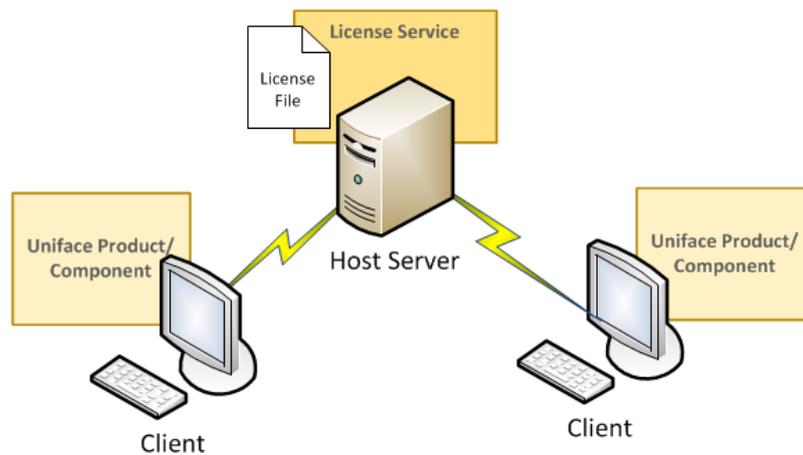
1. Install the DLM on the server where the License Service will run, and on each Uniface client. For more information, see [Installing and Configuring DLM](#).
2. Obtain a license file from Uniface and copy it to the DLM installation for which it was requested. For more information, see [Request a License File from Uniface](#).
3. Start the License Service.
4. On both the license server and each Uniface client, use the appropriate license administration utility (the DLM Windows application or DLMSV) to add the license or specify the License Service that is serving the license. For more information, see [DLM License Administration](#).

License Service

The License Service is a long running process that manages and services requests for the licenses for multiple client machines. It is required for concurrent licenses.

The License Service can serve all Uniface features. It 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: Typical Configuration for a Concurrent License



The License Service must be running on a computer or server that is always available to all clients needing access to the product. In many cases, it is recommended that you co-locate the License Service with the server-based components of one of the Uniface products you are installing.

If a large number of licenses are governed by a single license server, you should set up redundant servers so that if one server goes down, the License Service can still function. In this case the license file must support server redundancy.

On Windows, the DLM application will automatically start the License Service when a concurrent license is to the license environment.

On non-Windows platforms, the License Service must be explicitly started after a concurrent license is added to the license environment.

License Environment

Every DLM installation has a client license environment that defines the available license sources. If one of the license sources is a locally-available license file that includes a concurrent license, there is also a server license environment for the License Service.

A license environment can include multiple sources, including locally-installed license files and license servers. When a request is made to check out a license for a Uniface feature, all sources in the client license environment are scanned until a valid key is found.

Tip:

If there are old or obsolete license sources in the environment setting, you should delete them to improve product response time. Only currently operating servers should be specified in the license environment setting.

Information about the license environment is managed using the DLM administration tools (the Uniface DLM Windows application or DLMCV), and stored in a configuration file, which is created the first time a

license source is added. The configuration files are XML-based, so they provide a similar heterogeneous methodology for component configuration. The location of these files on clients and servers is similar for all supported platforms.

- For a concurrent license, the license environment is maintained in the **config** directory of the Uniface DLM installation.
- For a node-locked license, the license environment can be defined globally for all users of a machine, or locally for individual users. If end users have a local configuration, it overrides a global configuration. The location of a configuration file determines whether it is global or a local.

Global and Local Client License Environments

The client license environment is maintained in a **.compuware** directory. The location of this directory determines whether it is shared by all users or processes on the system (global environment), or whether it is applicable on to specific users (local environment).

By default, the client license environment is global, but this can be changed when configuring the client license environment.

- Depending on the Windows platform, the global **.compuware** folder may be in **\Documents and Settings\All Users** or in **\Users\Public**. For example, **C:\Users\Public\.compuware**.
- On Unix, the global **.compuware** directory is located in the root directory of the system
- On iSeries, the global **.compuware** directory is located under the directory defined by the **DLM_ROOT** data area.

On Unix and Windows, a local **.compuware** directory is located in a user's login directory.

Configuring Uniface DLM

Once DLM is installed, you need to add one or more valid license sources. A license source can be a local file or the address of the License Service. The procedure for adding a license source is the same on both the server that hosts the License Service, and for client machines.

License Server

For a concurrent license, the license file must first be added to the licensed server. This is any system that has been authorized by a valid license file to provide remote start-up authorization for Uniface applications.

When a valid concurrent license file is added on the licensed server machine, the License Service must be started. This is done automatically on Windows, but must be done explicitly on other platforms. The address of this License Service can then be added as a license source to the Uniface DLM clients.

Depending on the licensed functionality (such as license borrowing and user manage licensed) the organization's requirements, it may be necessary for the license administrator to configure license borrowing, define authorized users, configure redundant servers, create license pools, and define usage log files.

License Client

A license client is any system that runs a Uniface application and connects to a License Service to obtain licenses for Uniface features.

In most cases, adding license sources is all that is required to configure the client license environment. If required, the license administrator may assign a pool ID to a client.

Chapter 3: Install and Configure DLM on Windows

Installing DLM on Windows

Uniface DLM must be installed on any client workstation that will run a Uniface product. For a concurrent license, it must be installed on a host server that is accessible to the client machines.

For best results, close all programs before installing your Uniface product and the DLM components.

1. From installation media, select **Install License Server** to start the installer.

The installer guides you through the installation process, requesting information and copying files to the specified location.

*Note: If the Installer reports the error the **msi** file is not a valid installation package, use Microsoft's Fixit program, which can be run from support2.microsoft.com/mats/program_install_and_uninstall.*

2. After the files are copied, click **Finish** to complete the installation. Reboot the machine, if required.
3. Start Uniface DLM.

From the Windows **Start** menu, choose **Programs > Uniface > Distributed License Management**.

The Uniface DLM Windows application is opened to the Local Environment tab.

4. If you don't yet have a license and need to gather the machine information to request one, click the **Show System** link in the lower left corner of the application window.
5. If you have a license file, or have been given the address of the license server, click **Add** to specify the location of the license, then click **OK**.

Configuring the License Environment on Windows

Configuring the license environment requires you to copy the license to the DLM installation on the host server, and configure the configure each client to access the License Service on the server.

Obtain a license file from Uniface. The license file is based on your contract and on the machine where the license will be located.

1. **Before you begin**

Copy the license file to **C:\Program Files\Common Files\Compuware\License**.

Note: You can add the license file directly to the `License\` folder, then start up the License Service to install a license.

2. Configure the License Environment

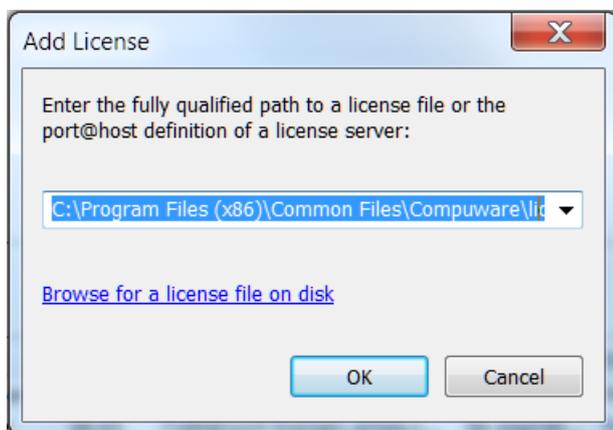
Define a local license environment by adding one or more license sources. When adding licenses, you must run Uniface DLM as administrator.

1. Start the Uniface DLM application from the Windows Programs menu. (Right-click and choose **Run as administrator.**)

If this is the first license being installed, use the **Local Environment** tab.

If you have previously installed a concurrent license, the License Service should already be installed and running, and a **Server Environment** tab will be present in the DLM application. You can use it to add another license source.

2. Click **Add** to open the Add License dialog box.



3. Specify the location of a license.

On a license server, the source must be a file, not another license server. If a license file is available locally, it is usually located in the `License\` folder of the Uniface DLM installation.

If the license is available on a server, enter the of the host server, in the format **port@host**. The port number is typically 7188. For example `7188@license1.mycomp.corp`.

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

If the license file is located on this machine and it is a concurrent license, the License Service is automatically started and installed. A **Server Environment** is added to the Uniface DLM application, which can be used to administer the License Service.

What to do next:

[Configure the License Service on Windows](#)

In some circumstances, additional configuration may be required for the client. In most cases, you should only change these options if instructed to do so by a license administrator or a Uniface representative.

1. Go to the Advanced Configuration tab.
2. In the **Client Configuration** section, modify settings as required.

Chapter 4: Install and Configure DLM on Unix

Install DLM on Unix

DLM must be installed on any client workstation that will run a Uniface product. For a concurrent license, it should be installed on a network server that is accessible to the client machines.

Before you begin:

Ensure that you have root access permission so that you can load the installation media and create the DLM installation directory.

1. Load the installation media on your system, then change to the mount directory.

For example, if `/cdrom` is the mount directory, type the following:

```
cd /cdrom
```

2. Navigate to the directory on the installation media that contains the Uniface DLM installation files.

- Run the `install.sh` script to install the DLM components on your system.

For example: `install.sh install_bundle {target}`

If you do not specify a target, the installation will be placed in `/opt/compuware/dlm`. If you specify a directory, the License Service files will be installed directly into the target directory. Root access may be required to create the directory.

You are notified when the installation is completed.

Note: *If the installation has a problem creating the directory, you are notified of the error and are forced to exit.*

```
DLM Installer (install.sh) - Copyright (c) Uniface B.V.  
  
All Rights Reserved  
  
Installing build 9.0.03  
  
sensing platform and IS version ...
```

```
using HP-UX

extracting supporting binaries from dlm-2015-15-Sep.....
  extracting setup script
  extracting 32 bit support...
  extracting 64 bit support...

verifying installation.....
OK

creating initial server configuration file.....

creating launch script.....

cleaning up.....

To complete the install you will need to append the following
environment variable(s):

SHLIB_PATH with /home/abcweb0/dist/dlm.HP-UX/HP-UX/32 for 32-bit applications
LD_LIBRARY_PATH with /home/abcwec0/4001/dist/dlm.HP-UX/HP-UX/64 for 64-bit applications

done

<abcwec0@svblhpl-HP-UX> ?
```

3. Add the installation path to the appropriate environment variable for your system:
 - 32 bit: SHLIB_PATH
 - 64-bit: LD_LIBRARY
4. If you have received the license file from Uniface, copy it to ***/target/license***.

Configure the License Environment on Unix

To configure the license environment, you need to copy the license to the DLM installation on the host server, start the License Service, and configure the License Service and configure each client to access the

license.

1. Before you begin

- a. Obtain a license file from Uniface. The license file is based on your contract and on the machine where the license will be located.
- b. Copy the license file you received from Uniface to the `/license` directory in the DLM installation on Unix

2. Start the License Service

You can configure the License Service to start automatically (each time the server boots) or to be started manually.

You cannot run more than one License Service at a time. If one is already running, you must shut it down before starting a new one.

- a. To start the License Service manually (required each time the server reboots), type `cpwr.sh -start`.
- b. To start the License Service automatically each time the server reboots, follow the suggested procedure below for the appropriate platform.

Platform	Action
AIX	In <code>etc/rc.local</code> , type the following command on one line: <pre>/DLMInstallDir/cpwr.sh -start</pre>
HP-UX	In <code>/sbin/rc3.d</code> , create a file named <code>s95cwlms.server</code> and add the following command to the file: <pre>/DLMInstallDir/cpwr.sh -start</pre>
Linux	In <code>/etc/rc.d/rc2.d</code> , create a file named <code>s95cwlms.server</code> and add the following command to the file: <pre>/DLMInstallDir/cpwr.sh -start</pre>
Red Hat and Centos	Some newer versions of Linux, such as Red Hat and CentOS, use the <code>systemctl</code> to start applications at boot. For more information, see Configure the License Environment on Unix .
Sun Solaris	In <code>/etc/rc2.d</code> , create a file named <code>s95cwlms.server</code> and add the following command to the file: <pre>/DLMInstallDir/cpwr.sh -start</pre>

- c. To stop the License Service, type `cpwr.sh stop`

3. Add a license source

Use the DLMLCV License Administration Utility to configure a license for use by Uniface.

1. To start DLMLCV on Unix, enter the following command:

```
/DLMLInstallDir/dlmcv.sh
```

The **Main** menu is displayed. It contains two submenus: **Client** and **License Service**.

2. Follow the instructions for adding and verifying a license. See [Configuring the License Environment with DLMLCV](#).

Start the Uniface License Server DLM Using `systemctl`

For some recent versions of Linux, such as Red Hat 7 and higher and CentOS 7 and higher, use the `systemctl` to start applications at boot.

To enable the Uniface License server DLM to start using `systemctl`:

1. Create a new service unit file at `/etc/systemd/system/dlm.service` with following content:

```
[Unit]
Description=Uniface DLM services
After=network.target

[Service]
Type=oneshot
ExecStart=/opt/Compuware/dlm/Linux/amd64/cpwr -start
ExecStop=/opt/Compuware/dlm/Linux/amd64/cpwr -stop
SuccessExitStatus=0 1
TimeoutStartSec=0
RemainAfterExit=yes

[Install]
WantedBy=default.target
```

Change the path to the `cpwr` process if your actual path deviates from the default.

2. Make process executable:

```
# chmod 755 dlm.service
```

3. Reload the `systemd` process to consider newly created `dlm.service`:

```
# systemctl daemon-reload
```

4. Enable the service:

```
# systemctl enable dlm.service
```

5. Test `systemctl start`:

```
# systemctl start dlm
# ps -ef | grep cpwr
```

6. Test `systemctl stop`:

```
# systemctl stop dlm
# ps -ef | grep cpwr
```

7. Reboot system to test,:

```
# reboot
# ps - ef | grep cpwr
```

DLMComponents on Unix Platforms

The installation directory on Unix includes the following files:

Table: Table: Uniface DLM Components on Unix Platforms

Component	Description
Readme	Additional License Service information.
/bin	For Uniface use only.
/config	Directory containing the server configuration file config.xml .
cpwr.sh	License Service.
dlminfo.sh	Generates a file containing system information.
install.log	Contains data from the installation process.
dlm cv.sh	Uniface Distributed License Management - Command Line Version.
libdlm32.so	Runtime library used by clients.
libdlm64.so	Runtime library used by clients.
/license	Directory containing license files.
os	Multi-platform support.
vlog.sh	License Service log file.

Chapter 5: Install and Configure DLM on iSeries

Installing DLM on iSeries

The DLM components for iSeries are delivered in a self-extracting zip file. You need to extract the contents of this file to an IFS (Integrated File System) share on iSeries and restore the installer, before running it.

If you are installing a complete Uniface version from CD or electronic distribution, the Uniface DLM components are included in the self-extracting zip file for the complete Uniface installation. For complete installation instructions, see the *Uniface Installation and Configuration Guide for iSeries*.

If you are installing a service pack on top of an existing Uniface installation, the license components are provided in a separate self-extracting executable.

1. Extract all the files on a Windows PC and transfer the files to an IFS directory on your iSeries.
 1. Use iSeries Navigator (or Client Access) to create a share on the iSeries, or use an existing share.
 2. Map this share as a drive to your Windows PC.
 3. Run the self-extracting zip file on the PC, extracting the Uniface distribution into the iSeries IFS.
 4. Make a note of the exact location in the IFS into which you have extracted the Uniface distribution; you will need it to restore and run the Uniface installer.

Note: In the following instructions, this location is assumed to be `/dlmsetup`, but in a complete Uniface installation it could be `uniface/AS3` (for IBM i 6.1 and 7.1) or `uniface/AS2` (for i5/OS V5)

2. On the iSeries command line, restore and run the installer.

1. Copy the savefile (.SVF) into library QTEMP.

```
CPYFRMSTMF FROMSTMF ('/dlmsetup/AS400INS.SVF')
              TOMBR ('/QSYS.LIB/QTEMP.LIB/INSTALL.FILE')
              MBROPT (*REPLACE)
```

2. Restore the AS400INS program and its display file into library QTEMP:

```
RSTOBJ OBJ(*ALL) SAVLIB(UNIFLIB) DEV(*SAVF)
        OBJTYPE(*ALL) SAVE(QTEMP/INSTALL) RSTLIB(QTEMP)
```

This extracts the installer from the savefile.

3. Start the installer:

```
CALL PGM(QTEMP/AS400INS) PARM('src=/dlmsetup')
```

AS400INS is a wizard-like installer that takes you from screen to screen during the installation process. Press **Enter** to proceed to the next screen, **F12** to go to the previous screen, or **F3** to stop the installer immediately without installing anything.

4. In the Welcome screen, press **Enter** to continue.
5. Specify the library and IFS directory into which the Uniface DLM product and configuration files are to be stored.

For example, **DLM** as the library name and **/ .dlmsetup** for the IFS directory.

6. Select or deselect Uniface DLM components.
Since there is currently only one component to install, press **Enter** to accept the defaults.
7. Review and confirm the information you have provided thus far.

Press **Enter** to proceed with installing DLM.

The DLM programs and service programs are copied into the specified library, and the Uniface DLM configuration files are copied into the specified IFS directory.

What to do next:

If you do not have a valid license file yet, you need to request one, providing Uniface with the host ID (machine serial number) of the iSeries machine.

If you already have a license file, you can configure the license environment.

Configuring the License Environment on iSeries

Configuring the license environment requires you to copy the license to the DLM installation on the host server, start the License Server, and configure the License Server and each client to access the license.

1. **Before you begin**

- a. Obtain a license file from Uniface. The license file is based on your contract and on the machine where the license will be located.
- b. Copy the license file you received from Uniface to the **/ .DLM/license** IFS subdirectory of the Uniface DLM installation. You can do this by using FTP in ASCII mode (the license files are text XML files).

2. **Start the License Server**

Before a client can access a served license, the host server must have the License Server installed and running.

To be able to start it, you need to be authorized to submit the **CPWR** program in the installation library.

- a. Check whether a License Server is running using `WRKACTJOB`.

You cannot run two License Servers simultaneously and must shut one down before starting a new one.

```
SBMJOB  CMD (CALL  PGM (DLM/CPWR)
          JOB (CPWR)
          CURLIB (DLM)
          WRKACTJOB (*YES)
```

A job called CPWR will be shown under subsystem QBATCH.

Note: For more information regarding the syntax and available command line options, perform the following command:

```
CALL  PGM(DLM/CPWR)  PARM('/h')
```

- b. Start the License Service:

```
SBMJOB  CMD (CALL  PGM (DLM/CPWR)
          JOB (CPWR)
          CURLIB (DLM)
          ALWMLTTHD (*YES)
```

Note: To start the License Server in debug mode, use the following command:

```
CALL  PGM(DLM/CPWR)  PARM('/d')
```

3. Add a license source

Use the DLMCV License Administration Utility to configure a license for use by Uniface.

1. To start DLMCV on iSeries, enter the following commands:

```
CHGCURLIB DLM
CALL  DLM/DLMCV
```

The **Main** menu is displayed. It contains two submenus: **Client** and **License Service**.

2. Follow the instructions for adding and verifying a license. See [Configuring the License Environment with DLMCV](#).
3. Verify the license. .

You can now test whether a license checkout would work using the current setting. It is important that you do this, because if you cannot successfully verify a license, then Uniface cannot check out the license.

For a typical iSeries installation, you can verify license feature USRVDB2, or UDB2, and version 09.20. If everything works correctly, you will see a screen similar to this:

```

This feature is working properly

source           : 7180@myiseries.mydomain.com
feature/app      : USRVDB2
requested version : 09.20
actual  version  : 09.20
expires          : 40 days
type             : concurrent

```

Client License Environment on iSeries

On the iSeries, login directories are not required so not every user has a login directory to define a local configuration. 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.

iSeries administrators can set up local client configurations by using the following series of commands:

```

CRTDTAARA DTAARA (DLM/USERNAME) TYPE(*CHAR) LEN(256) VALUE('userdirectory')

CPY OBJ('/.uniface') TODIR('userdirectory') SUBTREE(*ALL)

```

- **DLM**—root directory in the root file system that contains DLM configuration files.
- **USERNAME**—login name of a user.
- The *userdirectory*—parent directory where the **.uniface** folder resides.

Note: *DLM does not provide a user interface to add user data areas because the iSeries already provides APIs and commands to perform this task.*

During application startup, Uniface DLM checks 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 Uniface DLM runtime loads the client environment from **/.uniface/config.xml**.

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

Figure: Figure: DLM.LIB Library Object on the QSYS.LIB File System.

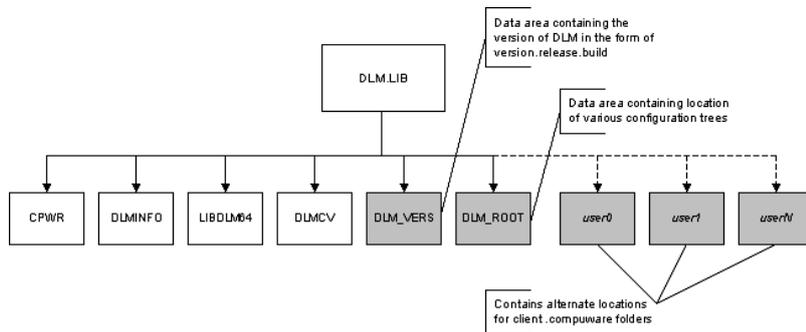
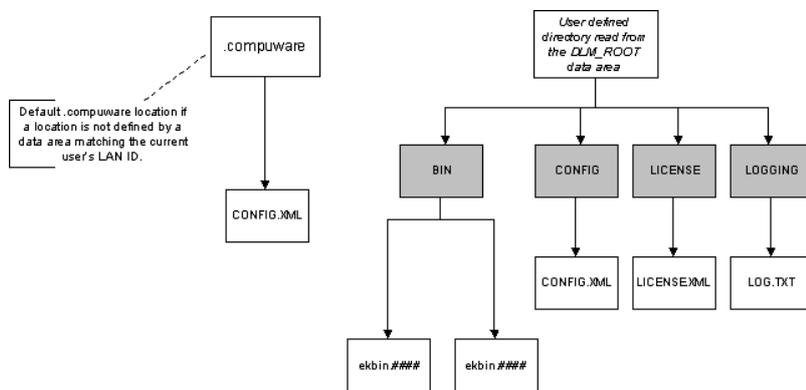


Figure: Figure: DLM Data Files on the ROOT File System



DLM Components on iSeries

The IFS installation directory for the iSeries platform includes the directories and files for DLM.

Table: IFS Installation Directory for iSeries

Directory	Description
/DLM/bin	For Uniface use only.
/DLM/config	Directory containing server configuration file config.xml .
/DLM/license	Directory containing license files.
/DLM/logging	Directory containing log files.
/DLM/audits	Directory containing audit reports.

The IFS directory **/.compuware** includes the file **/.compuware/config.xml**, the global client configuration file. DLM license clients use this if the current user profile does not have a local configuration file.

Table: Uniface DLM Installation Library on iSeries

Object	Description
CPWR *PGM	License Service the serves licenses to clients.
DLMINFO *PGM	Generates a file containing system information.
DLMCV *PGM	License Administration Utility - Command Line Version for configuring the License Service or client license environment.
UMFILTER	Usage Database Filter.
LIBDLM64 *SRVPGM	Runtime library used by clients.
DLM_ROOT *DTAARA	Data area containing the IFS path to all server files required or created by the DLM server.
DLM_VERS *DTAARA	Contains the full DLM version number.

Chapter 6: DLM Tools

DLM Windows Application

The DLM application is used on both Windows servers and clients to interactively set up and manage license sources, and to configure and manage the License Service (if there is one installed).

Note: *A command line interface is also available.*

The DLM application displays the Uniface license information available on both the client and server environments. It is used for license configuration and it provides current information about the system and local environment.

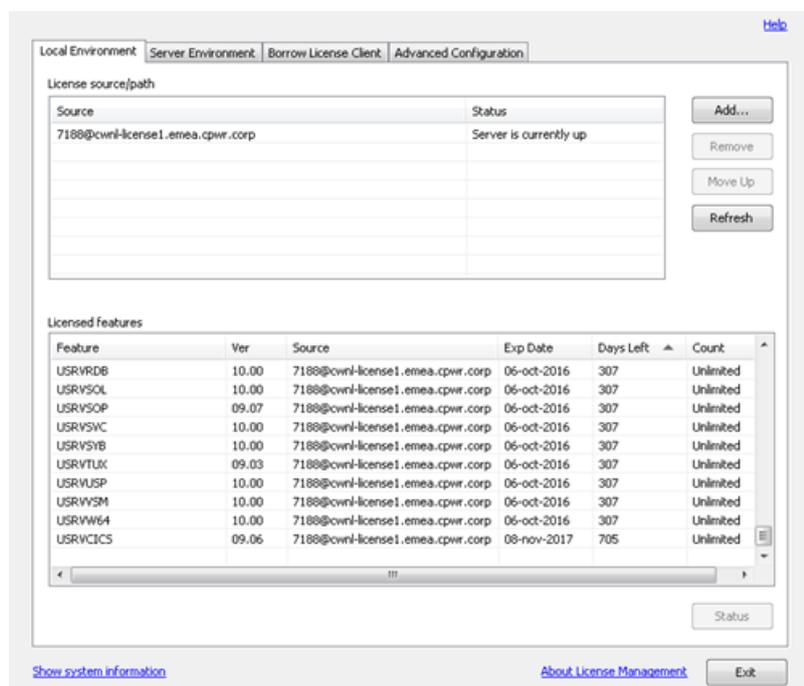
When DLM is started on a configured system, it immediately analyzes the license path and checks license sources. This determines the information displayed and the functionality available in the application.

User Interface

The following tabs are available on both server and client machines:

- Local Environment — displays the license sources and license keys available in the local environment, and enables you to add, remove, and sequence license sources.
- Advanced Configuration — enables you to configure the license environment. The contents vary depending on whether the License Service is installed in the local environment.

Figure: Figure: DLM Application on Windows Server



On a server machine, the following additional tabs are available:

- Server Environment—lists the license sources and licensed features served by the License Service, and enables the license administrator to manage the License Service.
- Borrow License Server—if there are license features that support borrowing)

On a client machine, the following additional tabs may available

- Borrow License Client—if there are license features that support borrowing)

DLM Command Line Version (DLMCV)

The DLMCV is the command-line version of DLM, and is available on all supported platforms. It provides both a text menu interface for interactive use and command-line options for script-based configurations.

DLMCV provides most of the functionality provided by the DLM Windows application. Some functions can only be accessed in menu mode, others only via the command line.

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

The interactive DLMCV consists of a series of text-based menus, called *command lists*. 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 submenu returns you to the next highest menu level.

When the DLMCV is launched, the Main menu is displayed. It contains two submenus: **Client** and **License Service**. The following figure shows the **Main** menu.

To launch DLMCV run it from the platform's command line. For example, on OpenVMS run `d1mcv.exe` or on Unix, run `d1mcv.sh`.

Figure: Figure: DLMCV Main Menu

```
d1mcv - Copyright (C) 2019, Uniface B.V.
      All rights reserved

Last compiled Sep 15 2015 13:31:47

---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>
```

DLMCV Command Line Options

DLMCV can be run with options from the command line. This is especially useful in script-based configurations.

Command Line Options for Adding and Removing License Sources

Add client license source

```
d1mcv -cl -add license_source
```

Remove client license source

```
d1mcv -cl -del license_source
```

Add server license source

```
d1mcv -srv -add license_source
```

Remove server license source

```
dlmclv -srv -del license_source
```

List client license sources

```
dlmclv -cl -plist
```

List server license files

```
dlmclv -srv -plist
```

Import a license file onto a remote server

```
dlmclv -import license_file -host hostname
```

List features supported for local client

```
dlmclv -cl -flist
```

List server supported features

```
dlmclv -srv -flist [-host hostname]
```

Verify a feature

```
dlmclv -verify -feat feature_name -vers feature_version
```

Command Line Options for License Borrowing

Borrow a license

```
dlmclv -brw -feat feature_name -vers feature_version [[-days] | [-hrs] period ]
```

Return a borrowed license

```
dlmclv -rbrw -feat feature_name
```

Show borrow usage

```
dlmclv -brw -usage [-host hostname_of_server ]
```

Command Line Options for License Service Configuration

Probe a system for a License Service

```
dlmclv -probe -host hostname [-prange start:end ]
```

Server status

```
dlmclv -stat [-host hostname ]
```

Show server port number

```
dlmclv -pget
```

Set server port number

```
dlmclv -pset port_number
```

Set TCP/IP version (IPv4 or IPv6)

```
dlmcbv -ipvers 4 | 6 | 4,6 | 6,4
```

Set server timeout

```
dlmcbv -tmset timeout -srv
```

Get server timeout

```
dlmcbv -tmget -srv
```

Command Line Options for Client Configuration**Set client timeout**

```
dlmcbv -tmset timeout -cl
```

Get client timeout

```
dlmcbv -tmget -cl
```

Command Line Options for Monitoring Usage**Get hostid information**

```
dlmcbv -id [-host hostname]
```

Show feature usage

```
dlmcbv -usage -feat feature_name [-host hostname]
```

Get log file

```
dlmcbv -log [-host hostname]
```

Configuring the License Environment with DLMCV

On non-Windows platforms, the DLMCV License Administration Utility to configure a license for use by Uniface. It enables you to add a license file to a License Service and then to configure each client to access the License Service.

The DLMCV provides a simple text interface for configuring both the License Service and Uniface clients. It also provides support for script-based configurations. .

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

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

Adding a License Source

1. Start DLMCV from the platform command line.

- Unix: `/DLMInstallDir/dlmcv.sh`
- iSeries:
`CHGCURLIB DLM`
`CALL DLM/DLMCV`

The **Main** menu is displayed. It contains two submenus: **Client** and **License Service**.

2. Choose the license environment you are configuring.
 - Enter **C** to start the **Client** menu.
 - Enter **L** to start the **License Service** menu.

Both menus include a **License path** command.

3. Enter **L** to start the **License Path** menu.

Figure: Figure: License Path Menu

```
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.

dlmcv>
```

4. Enter **A** to add a license.
5. At the prompt, specify the **port@host** to your license server, or the fully qualified path to a local license file, then press Enter.

If a license file is available locally, it is usually located in the **License** folder of the Uniface DLM installation.

If the license is available on a server, enter the of the host server, in the format **port@host**. The port number is typically 7188. For example, `7188@license1.mycomp.corp`.

Optionally, you can specify the IP version of the license server as **port@host#4** for IPv4 or **port@host#6** for IPv6.

If the IP version is omitted, the client tries to connect with the license server over IPv4 first, and if that fails over IPv6. If the license server listens on IPv6, adding #6 ensures that a connection is made one or two seconds faster because no attempt is made to first try IPv4. The faster connection could be important for Uniface Servers.

If you configure multiple license servers, they do not need to all use the same IP version. It is possible to have one on IPv4 and another on IPv6.

Note: *If you are installing a concurrent license on a License Service, you will need to (re-)start the License Service.*

6. Press **Enter** again to return to the previous menu.
7. Enter **v** to choose **Verify**.

You can now test whether a license checkout would work using the current setting. It is important that you do this, because if you cannot successfully verify a license, then Uniface cannot check out the license.

8. If there are multiple (redundant) license servers available, repeat the previous steps to add each server as a source.
9. To initialize the redundancy policy, launch the product that uses DLM from one client.

Note: *If redundant servers have been set up and one or more of these servers goes down, you can continue to operate licensed Uniface DLM features without interruption for as long as the policy specifies, provided the number of redundant servers does not fall below a failsafe count. No action is necessary after the downed servers are brought up again.*