

FLEX*net* for ARM[®] Tools

v4.3

License Management Guide



FLEXnet for ARM Tools

License Management Guide

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Release Information

The following changes have been made to this book.

Change History			
Date	Issue	Confidentiality	Change
July 2002	A	Non-Confidential	First Release
January 2003	B	Non-Confidential	Second Release
May 2003	C	Non-Confidential	Third Release
January 2004	D	Non-Confidential	Release 3.1 for RealView Developer Suite v2.1
December 2004	E	Non-Confidential	Release 3.2 for RealView Developer Suite v2.2
March 2006	F	Non-Confidential	Release 4.0 for RealView Development Suite v3.0
March 2007	G	Non-Confidential	Release 4.1 for RealView Development Suite v3.1
August 2008	H	Non-Confidential	Release 4.2 for RealView Development Suite v4.0
28 May 2010	I	Non-Confidential	Release 4.3 for ARM software development tools

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Product Status

The information in this document is final, that is for a developed product.

Web Address

<http://www.arm.com>

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Preface

This preface introduces the *FLEXnet for ARM® Tools License Management Guide*. It contains the following sections:

- *About this book* on page xii
- *Feedback* on page xv.

About this book

This book introduces the *FLEXnet*, formerly *FLEXlm*, license management system owned by Flexera Software Inc. This licensing system is used by ARM to control the use of software products and models provided by ARM.

This book does not describe how to use the ARM web licensing portal. Documentation on how to generate and retrieve licenses is provided on the portal. Visit *ARM Self-Service Portal*, <https://silver.arm.com>.

Intended audience

This book is written for anybody who installs *FLEXnet* license managed products from ARM. It describes the types of licenses that are available, and solutions to some of the problems you might encounter.

————— **Note** —————

Parts of this book only apply to a specific operating system only, or only to a specific type of license. Ensure that what you read applies in your case. Refer to your product documentation for details of available license options.

Using this book

If your ARM tools are licensed with node-locked licenses, read:

- Chapter 2 *Requesting Your License* for information on how to request your license
- Chapter 3 *Installing a Node-Locked License* for instructions on how to install your license.

If you are using floating licenses, read:

- Chapter 2 *Requesting Your License* for information on how to request your license
- Chapter 4 *Setting Up a Floating License Server* for instructions on how to set up your license server
- Chapter 5 *Configuring a Client to Use a License Server* for configuring your client to use a floating license.

This book is organized into the following chapters:

Chapter 1 *Introduction*

Read this for an overview of the license management software and possible licensing options.

Chapter 2 *Requesting Your License*

Read this for details on what information is required to request a license, and how to find the ARM web licensing portal.

Chapter 3 *Installing a Node-Locked License*

Read this for instruction on how to install a node-locked license using either the ARM License Wizard or manually. If you do not use node-locked licenses you can ignore this.

Chapter 4 *Setting Up a Floating License Server*

Read this for information on the FLEXnet server software and server configuration. If you do not use floating licenses you can ignore this.

Chapter 5 *Configuring a Client to Use a License Server*

Read this for an explanation of how to set up your client computer to obtain its ARM product license from a server. If you do not use floating licenses you can ignore this.

Chapter 6 *Frequently Asked Questions about Licensing*

Read this for answers to a number of frequently asked questions about licensing.

Chapter 7 *Troubleshooting client configuration*

Read this for answers to a number of problems with client configurations.

Chapter 8 *Troubleshooting server configuration*

Read this for answers to a number of problems with server configurations.

Glossary An alphabetically arranged glossary defines the special terms used.

Conventions

The typographical conventions are:

italic Highlights important notes, introduces special terminology, denotes internal cross-references, and citations.

bold	Highlights interface elements, such as menu names. Denotes signal names. Also used for terms in descriptive lists, where appropriate.
monospace	Denotes text that you can enter at the keyboard, such as commands, file and program names, and source code.
<u>monospace</u>	Denotes a permitted abbreviation for a command or option. You can enter the underlined text instead of the full command or option name.
<i>monospace italic</i>	Denotes arguments to monospace text where the argument is to be replaced by a specific value.
monospace bold	Denotes language keywords when used outside example code.
< and >	Enclose replaceable terms for assembler syntax where they appear in code or code fragments. For example: MRC p15, 0 <Rd>, <CRn>, <CRm>, <Opcode_2>

Additional reading

This section lists publications by ARM and by third parties.

See *ARM Information Center*, <http://infocenter.arm.com>, for access to ARM documentation.

ARM publications

You can find documentation for using the ARM web licensing portal on the portal itself.

See also *ARM Technical Support Knowledge Articles*,
<http://infocenter.arm.com/help/topic/com.arm.doc.faq5/index.html>.

Other publications

You can download the latest version of the Flexera *FLEXnet End User Guide* from the Tools Licensing section under *ARM Technical Support Knowledge Articles*, <http://infocenter.arm.com/help/topic/com.arm.doc.faq5/index.html>. Ensure that you use the version compatible with the license utilities you are using.

The document is also supplied as a PDF with your ARM product. See the *Getting Started* document of your ARM product for more information.

Feedback

ARM welcomes feedback on this product and its documentation.

Feedback on this product

If you have any problems with license management that you cannot solve by using this book, the Tools Licensing FAQs on the ARM website, and the *FLEXnet End User Guide*, contact license.support@arm.com. To help ARM to provide a rapid and useful response, give:

- your name and company
- the serial number of the product
- details of the product release and version number you are using
- details of the platforms you are using, such as the processor, operating system type and version
- the license error messages from your ARM product and/or license server log
- a copy of your license file.

If you have version 4.x of the ARM License Wizard installed on Windows, send the output from the license diagnostics.

If you have the `lmtools.exe` license management GUI installed on Windows, send the output from the **Server Status** tab with `arm1md` entered in the **Individual Daemon** Option text entry box. Also send the output from the **Server Diags** tab for the specific licensed feature, such as compiler or `ModLib_DSM2_CORTEXR4`, that is not working.

Feedback on content

If you have any comments on content, send an e-mail to errata@arm.com. Give:

- the title
- the number, ARM DUI 0209I
- if viewing online, the topic names to which your comments apply
- if viewing a PDF version of a document, the page numbers to which your comments apply
- a concise explanation of your comments.

ARM also welcomes general suggestions for additions and improvements.

See also

- *ARM Information Center*, <http://infocenter.arm.com/help/index.jsp>

- *ARM Technical Support Knowledge Articles*,
<http://infocenter.arm.com/help/topic/com.arm.doc.faq5/index.html>
- *Keil Distributors*, <http://www.keil.com/distis>.

Chapter 1

Introduction

The following topics give an overview of the license management software:

- *Supported platforms* on page 1-2
- *Tool licensing options* on page 1-4
- *Format of a license entry* on page 1-5
- *Node-locked license scheme (Windows only)* on page 1-7
- *Floating license scheme (Windows and Unix/Linux)* on page 1-8
- *ARM License Wizard* on page 1-12
- *ARM web licensing portal* on page 1-13.

1.1 Supported platforms

You must ensure that your ARM product is supported on your chosen platform before installing it. If you are also setting up one or more license servers for your ARM software, you must confirm that the license management utilities are supported on each server.

1.1.1 Client platforms

Caution

Attempting to use an unsupported client platform can result in unexpected behavior.

Your ARM software is licensed to run on a client computer in one or more of the following environments:

- Microsoft Windows

Note

The use of Windows 95, 98, or Me on license server machines is not recommended or supported by ARM.

- Sun Solaris
- Red Hat Enterprise Linux.

Each software tool specifies which exact variant, such as Windows Vista or Red Hat Enterprise Linux WS, of the above environments is supported. Check the product pages on www.arm.com for the latest platform support information.

1.1.2 License server platforms

Caution

Attempting to use an unsupported server platform can result in licensing failures.

Check the product documentation to confirm what specific operating system variants are supported.

License management utilities for all platforms supported by your ARM development tools are supplied with your tools software. If you do not have a copy of the license management utilities, contact ARM License Support, license.support@arm.com.

The license server platform is not required to be the same as the tools platform. For example, you might have your development tools installed on Windows and use a Solaris license server. See your product documentation for further information.

License management of floating licenses for ARM applications requires TCP/IP software to be installed, configured, and running on every relevant computer.

1.2 Tool licensing options

Your ARM tools are license managed using Flexera Software FLEXnet technology. This means that a valid license file must be installed before the tools can be used. The following licensing schemes are available:

- *Node-locked license scheme (Windows only)* on page 1-7
- *Floating license scheme (Windows and Unix/Linux)* on page 1-8.

Note

Not all licensing options are supported by all products. Some products also require an additional hardware dongle to work. See the *Getting Started* document of your product for details of supported licensing options.

1.3 Format of a license entry

A node-locked or floating license has one of the following formats:

INCREMENT *feature* *armlmd* *version* *expiry_date* ...

UPGRADE *feature* *armlmd* *version* *expiry_date* ...

The fields are:

feature The name of the licensed feature.

version The version number of the licensed feature This can have one of the following formats:

a.b

a.byyyymm

where:

a major version number of the licensed feature

b minor version number of the licensed feature

yyyy year

mm month number.

For example, 1.0201011 indicates that support for the license feature in version 1.0 expires in November 2010.

This date together with the *expiry_date* determines the period that the license is valid.

Typically used if you have a *Service and Maintenance* (S&M) agreement that limits the period you are allowed to install and use patches.

expiry_date The date that the license expires for the specified feature, and has one of the following values:

- permanent
- *dd-mm-yyyy*, for example 31-May-2012.

This determines the type of license.

The date embedded into the version controls your entitlement to patches, whereas the *expiry_date* field limits your ability to use the tools.

1.3.1 Types of license

The following types of license are supported:

Permanent A permanent license does not have an expiry date. Using the fromelf utility as an example, the format of a permanent license is:

```
INCREMENT fromelf arm1md 4.1201105 permanent ...
```

If you fulfill your license in May 2010 you can use new patches that are released up to May 2011.

If your license period is limited by a *Service and Maintenance* (S&M) agreement, and the period lapses, your version of the product, together with any patches you received within that period continues to function as normal. However, if you want to use a patch that is later than this date, you must purchase another S&M license. If you purchase a two-year license, the new license includes:

```
UPGRADE fromelf arm1md 4.1201305 permanent ...
```

If you fulfill your license in May 2010, 4.1201305 gives a user three years entitlement to download and use patches.

Term A term license has a specific expiry date. For example:

```
INCREMENT fromelf arm1md 4.1201105 01-May-2011 ...
```

This means you can use a version 4.1 patch to fromelf until the end of May, but you get a license expiry error after the 1st May 2011.

———— **Note** —————

You can update a term license to a permanent license.

1.3.2 See also

- *Node-locked license scheme (Windows only)* on page 1-7
- *Floating license scheme (Windows and Unix/Linux)* on page 1-8.

1.4 Node-locked license scheme (Windows only)

A node-locked license locks the tools to a particular computer, or more accurately to a particular host ID. How to determine the host ID is covered in *Host ID* on page 2-2. A node-locked license is a good choice for an installation that will be used by one user on a single computer.

The tools license is tied to a particular host ID. If the device you used for the host ID fails, you cannot use the licensed product. The host ID used cannot be changed without a replacement license being supplied by ARM.

The example shown in Example 1-1 shows part of a typical node-locked license. This license allows the use of the specified ARM application, fromelf, on the single specific computer that is identified by its hostid value of 001F12FEAB43.

Example 1-1 Typical node-locked license extract

```
INCREMENT fromelf armlmd 4.1 permanent uncounted 6AB6805Z33A6 \
  HOSTID=001F12FEAB43 ISSUER="ARM Limited" \
  NOTICE="For support see http://www.arm.com/support/" \
  SN=ABCDE-12345-ZYXWV SIGN="9280 B58A 6ED0 814C 4D0C C3AD \
  5D85 ABC7 5FDF 5555 7772 F529 52E4 0C52 C836 1812 4492 3263 \
  61F4 5E7B 373F A4F4 0E6C 824B CB71 B8D8 2DB8 3D39 994F 7E1E" \
  SIGN2="ED41 1634 F698 AC5E 6645 E5B4 CEDA 97D1 A5D2 93E1 6E01 \
  937F CDD7 27A9 921B 1C0C F281 4DDE F1A2 6A20 9308 C5E1 4613 \
  8C4F AA7E A3BC 2ACE C483 0F2D B7CB"
...
```

1.4.1 See also

- *Format of a license entry* on page 1-5.

1.5 Floating license scheme (Windows and Unix/Linux)

A floating license scheme is more flexible than a node locked license but it requires more administration. It is typically used if there are more potential users than purchased licenses.

A floating license-managed installation of an ARM product consists of the following computers:

- Clients** These are computers that have your ARM development software installed on them. There can be more clients than purchased licenses. If all of the license seats are used, no additional users can use the product until one of the current users stops using the product.
- Server** This is the computer that has the license and license server utilities installed on it. A license server can also be a client, but this is not the typical mode of operation.

The license server controls the number of copies of the licensed product component in use at any one time, up to the maximum number of licenses purchased.

The license extract shown in Example 1-2 shows part of a typical floating license. In this example the fully qualified SERVER name is `cumulus.mycompany.com`, the host ID is `785f2170` and port `8224` is being used. A three server license has three SERVER lines at the start of the license. This license enables up to ten concurrent users of the specified ARM application, and each user obtains permission to run the application from the license server. Because of the flexible way the individual parts of the tools are license managed, this floating license enables up to ten users to use the `armar` feature, while a different ten users use the `fromelf` feature. Some product licenses might restrict concurrent feature use, so check your tools documentation for details.

Example 1-2 Typical single-server floating license extract

```
SERVER cumulus.mycompany.com 785f2170 8224
VENDOR arm1md
USE_SERVER
INCREMENT fromelf arm1md 4.1 permanent 10 7E338B2771EA DUP_GROUP=NONE \
    ISSUER="ARM Limited" NOTICE="For support see \
    http://www.arm.com/support/" SN=ABCDE-98765-ZYXWV SIGN="8674 \
    FEE3 5830 D004 2F8D 8C07 E75C 84AA 14EB 37A0 9AD7 4D73 D34A F83A \
    EE22 B1F1 3579 54C8 54BA D9D7 5B87 E024 632C B7E0 1DF2 8526 2312 \
    27F2 DD78 C020 ABB9" SIGN2="1E17 F524 7987 9CD4 3BC2 FB34 E2FB \
    04AA 2C79 4B4C 776D 0FC3 9797 7653 2FBA 044B 2854 608B D8B9 \
    6F8A 7B69 3BFA 4AE4 2234 B9A0 0ACA 3E21 1CF8 0F58 54FE"
INCREMENT armar arm1md 4.0 permanent 10 8EE2C29A2DB3 DUP_GROUP=UHD \
    ISSUER="ARM Limited" NOTICE="For support see \
```

```
http://www.arm.com/support/" SN=ABCDE-98765-ZYXWV SIGN="2B77 \
780F 37C5 CAD3 ED05 AECA 0424 0876 6E3D 2EAC 64EB C78E 7015 6E99 \
2119 08ED 4889 AF20 CD05 9E76 EA75 72FE 0154 CC8F CD78 AA01 \
1824 C650 A7B5 0696" SIGN2="20EA 4015 0356 5FF8 2DE5 083A 2C9F \
5645 B14E 220C 00E1 8970 F32E B873 AC7E 182A 20EF 27EA 7BB8 \
B25E 08DB 70D3 AB8B 7847 DB87 B88A 5700 A079 BEB7 E3D2"...
```

Windows and Unix/Linux license servers and clients can be mixed in any installation. Client machines must be able to access the server machines over the *Local Area Network* (LAN).

Note

ARM does not support the use of floating licenses across *Wide Area Networks* (WANs). For performance reasons, you are strongly advised to have your license servers and clients on the same *Local Area Network* (LAN).

ARM software licenses support single-server and three-server floating license installations.

1.5.1 Single server model

The license file is locked to the host ID of a single server that is used to control the licensing process. A single server floating license model requires that the server machine is running at all times and that the client machines can access this server machine over the local area network.

If the network or single server fails, the licensed tools cannot be used until the server is restarted.

Figure 1-1 illustrates the single server model. On the server, a license file with the corresponding server details is loaded by the license server processes. The client must be configured so that it references the license server and the port through which the license is issued. The recommended method for doing this is setting the `ARMLMD_LICENSE_FILE` environment variable on the client to `port@server`. For the example in Figure 1-1, the environment variable must be set to `8224@Server_A`.



Figure 1-1 Single server model

1.5.2 Three server model

The license file is locked to the host ID of three separate license servers. This permits more reliable licensing of the product as failure of one server does not stop users from checking out licenses. A three-server floating license model requires that:

- all three servers must be available when the license server starts. One of the servers can be stopped after the initial start up.
- a minimum of two server machines are running at all times
- all the servers can access each other over the local area network
- the client machines can also access these server machines over the local area network.

The three server model has the following limitations:

- it is more complicated to set up than a single server system
- three servers are required
- two servers must be operational at all times.

Because of the additional complexity of the three server model, it is more suitable for managing ten or more total seats, where many users rely upon the servers being operational.

Figure 1-2 on page 1-11 illustrates the three server model. On each of the servers, an identical license file with details of all three servers is loaded by the license server processes. The client must be configured so that it references all the license servers as well as the ports through which the license is issued. The recommended method for doing this is setting the `ARMLMD_LICENSE_FILE` environment variable.

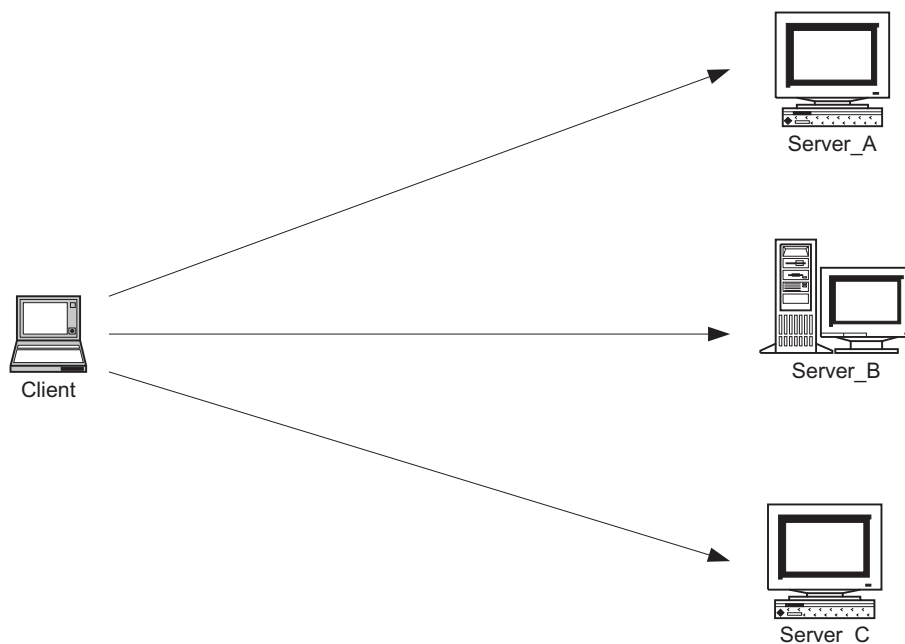


Figure 1-2 Three server model

For the example in Figure 1-2, on Windows, the environment variable must be set to `8224@Server_A;8224@Server_B;8224@Server_C`. The first server in the list, `Server_A`, is the master server, and must be started before the other two servers.

Depending on your operating system, the separators for the values in the environment variable might be different. On Unix/Linux, the separator is a colon “:” rather than a semicolon “;” as on Windows.

1.5.3 See also

- *Format of a license entry on page 1-5*
- *Chapter 5 Configuring a Client to Use a License Server.*

1.6 ARM License Wizard

The ARM License Wizard is a Windows-only utility for requesting or installing licenses. This utility is provided with some ARM products. See the *Getting Started* document of your ARM product for details. You can use the License Wizard to:

- reach the ARM web licensing portal
- install node-locked licenses
- configure a Windows client to use floating licenses.

This document describes how to use version 4.x of the ARM License Wizard. Versions of the License Wizard older than version 4.x might be installed with your ARM development tools. If so, refer to the license management documentation provided with your tools for detailed instructions on how to use the older License Wizard.

1.6.1 See also

- *Accessing the ARM web licensing portal from the License Wizard v4.x* on page 2-6
- *Installing a node-locked license using the ARM License Wizard* on page 3-2
- *Configuring the client licensing on Windows* on page 5-2.

1.7 ARM web licensing portal

ARM provides a web-based system that you can use to generate and view FLEXnet licenses for your ARM tools. This enables you to obtain a license for your tools as soon as you receive a serial number.

Detailed information on how to use the ARM web licensing portal is provided on the main page of the website.

Note

- If you are saving a copy of your license file onto your computer, you must save it in plain text format. Using other file formats, such as rich text format (.rtf), can result in an unreadable license file and subsequent licensing failure.
 - If you are requesting a new license for OptimoDE® technology based tools, you cannot use the ARM web licensing portal.
-

1.7.1 See also

- *Installing the server license* on page 4-4
- *ARM Self-Service Portal*, <https://silver.arm.com>

Chapter 2

Requesting Your License

The following topics explain how to request a license for your ARM software:

- *Information required for a license* on page 2-2
- *Accessing the ARM web licensing portal from the License Wizard v4.x* on page 2-6.

2.1 Information required for a license

To apply for a license from ARM, you must have the following information available:

- Product serial number
- Host ID.

2.1.1 Product serial number

Your product serial number is normally of the form `xxxxx-xxxxx-xxxxx`, where `x` represents an alphanumeric character. The serial number can typically be found on a sticker on the product outer box, on a card inside the product packaging, or in the email containing the links to your product downloads.

———— Note ————

If you have an evaluation serial number, it might be of the form `LMxxx-xxxx-xxxxxx`, where `x` represents an alphanumeric character. The number of characters immediately after `LM` might be different. Serial numbers for some older ARM product are of the form `xxxxx-xxxxx-xxxxxxxxxxx` or `xxxxx-xxxxx-xxxxx-xxxxx`.

2.1.2 Host ID

The host ID is an identifier unique to a particular computer. It is used by *FLEXnet* to lock licenses to a specific client or server machine. If an incorrect host ID is provided at the time the license is generated, then the generated license does not enable the product.

The steps to follow to obtain a host ID differs depending upon the type of license, the hardware platform, and the operating system used. If you are using the ARM License Wizard version 4.x, it identifies valid host IDs for you.

Node-locking to network adapter cards

Node-locked licenses are normally locked to the physical address, also known as *MAC address*, of the computer network card. If you change your network card, you must apply to ARM for a new license.

You can lock your license to a portable network card such as a USB or PCMCIA network card if you require using your license on more than one computer. You can of course only use the software on one computer at a time.

To enable a network card address to be used as the host ID for a node-locked license, your Windows system must have one of the following installed:

- the SNMP service

- the NETBEUI Transport Protocol
- the NW Link (IPX/SPX) Transport Protocol.

If the specified conditions are not met, then the network card ID is either not returned, or might be incorrect.

To obtain the computer network card address, type the command `ipconfig /all` at the command prompt and look for the Physical address line for the network card:

```
Description .....: 3Com 10/100 Mini PCI Ethernet Adapter
```

```
Physical Address .....: 00-00-12-42-41-BC
```

The host ID is the Physical Address with the “-” symbols removed, so in this example it is 0000124241bc. Alternatively if you have installed the FLEXnet software onto your machine you can instead type `lmutil lmhostid` at a command prompt.

Note

- To use the physical address of the network card as the host ID, you must choose the address of the actual network card, not a virtual network address or the address of another device. Using the address of a virtual network card is not suitable because there is no guarantee that the addresses remains the same after a reboot.
- You must ensure that the network device that you lock your license to is not shut down if your computer has a power saving mode.

Node-locking to the hard disk volume number

You can use the hard disk volume number for drive C: as the host ID for a node-locked license. This is, however not the preferred method because if you change or reformat your hard disk, you must apply to ARM for a new license. If however your computer is a laptop that uses different network cards when docked and undocked, then you can either use its hard disk serial number as the host ID, or the host ID of a portable network card, to ensure that you can use your application at all times.

To obtain the hard disk volume number, at the command prompt change to the C: drive and enter the command `vol`. This returns a value similar to:

```
Volume Serial Number is 789A-D123
```

The host ID is the Volume Serial Number with the “-” removed and prefixed with `DISK_SERIAL_NUM=`, so in this example it is `DISK_SERIAL_NUM=789ad123`. Alternatively if you have already installed the FLEXnet software onto your machine you can instead type `lmutil lmhostid -vsn` to obtain this information.

Note

The hard disk checked by FLEXnet software is the first fixed drive on your computer. This is assumed by FLEXnet to be drive C:. You cannot use network drives or alternative fixed drives as the host ID.

Hard disk volume serial numbers cannot be used for evaluation licenses.

Floating license server host ID

The host ID or host IDs required belong to the license server or servers and not to the client machines running the ARM licensed software. If you have already installed the FLEXnet server software onto the server, then you can find the host ID using the command `lmutil lmhostid`. If you have not yet installed the FLEXnet server software, then you can use the standard operating system commands listed in Table 2-1 to obtain the correct host ID.

Table 2-1 Commands for obtaining host IDs

OS	Command	Server host ID type	Comments
Windows	<code>ipconfig /all</code>	ETHERNET	The host ID is returned as the 12 character hexadecimal Physical Address. Remove the hyphens, '-', for the host ID.
Linux	<code>/sbin/ifconfig eth0</code>	ETHERNET	Returns a 12 character hexadecimal 'HWaddr'. Remove the colons, ':', for the host ID.
Solaris	<code>/usr/bin/hostid</code>	LONG	Returns the 8 character hexadecimal host ID.

Note

- Not all ARM software tools permits the use of floating licenses.
- If you are requesting a three server (redundant server) license then you require a valid and different host ID for each of the three servers. These servers are not required to be running the same operating system.
- If you are requesting a three server license, the host ID of master server must be given first when you request your license.
- You cannot use a volume serial number as the host ID for a Windows license server.

- On Linux, the device used as the server host ID must reside on eth0. You can reassign this address to a removable USB network device if you are using a Linux laptop, for example, and wish to transfer the license between standalone computers.
 - ARM no longer supports the HP-UX license server.
-

2.1.3 See also

- *ARM web licensing portal* on page 1-13
- *Accessing the ARM web licensing portal from the License Wizard v4.x* on page 2-6
- *How do I move my license to another computer?* on page 6-6

2.2 Accessing the ARM web licensing portal from the License Wizard v4.x

If the wizard is included with your Windows tools installation, you can access the ARM web licensing portal directly by using the ARM License Wizard version 4.x. This enables you to obtain a license and install it on your Windows client or license server.

1. Start the ARM License Wizard from the Windows Start menu. The option is in the section of the Windows Start menu that corresponds to your ARM product. See the *Getting Started* document of your ARM product for details.
2. Click **Next** to display the Action Selection screen shown in Figure 2-1.

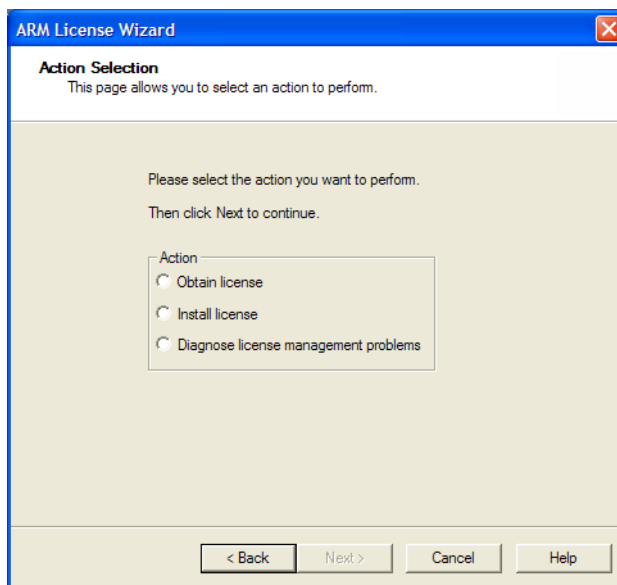


Figure 2-1 Action Selection screen

3. Select **Obtain license**, then click **Next**. This opens a web browser and takes you to the ARM web licensing portal welcome page. See the documentation available on the portal itself for information on how to use it.

———— **Note** ————

The License Wizard might be covered by the web browser window. To return to the License Wizard, click the **ARM License Wizard** button on the Windows Taskbar.

4. The License Wizard displays the valid host IDs for the computer on which it is running. An example is shown in Figure 2-2 on page 2-7.

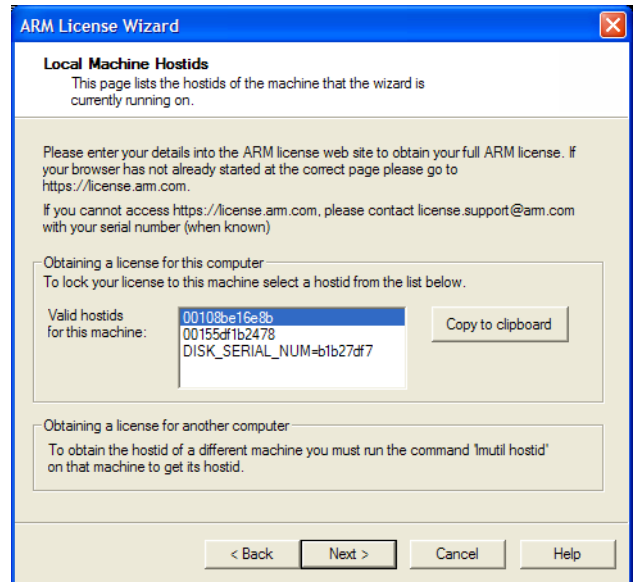


Figure 2-2 Local machine host ID screen

5. Select the host ID to which you want the license to be locked, then click **Copy to clipboard**. This makes it easier to enter your host ID into the web licensing portal.
6. After you have obtained your license from the web licensing portal, save it locally:
 - If you are using a node-locked license, you can install it and configure your licensing environment using the License Wizard.
 - Windows license server administrators must follow a different procedure to install the server license obtained through the License Wizard.

2.2.1 See also

- *ARM web licensing portal* on page 1-13
- *Installing a node-locked license using the ARM License Wizard* on page 3-2
- *Installing the server license* on page 4-4.

Chapter 3

Installing a Node-Locked License

The following topics describe how to install a node-locked license for your ARM software product after you have retrieved the license from the ARM web licensing portal:

- *Installing a node-locked license using the ARM License Wizard* on page 3-2
- *Installing a node-locked license manually* on page 3-4.

————— **Note** —————

Some ARM software products do not include the ARM License Wizard but permit you to configure your licensing environment during installation. You can skip this installation step and manually set up your licensing environment afterwards. See *Installing a node-locked license manually* on page 3-4.

If you do not use node-locked licenses, you can safely ignore this chapter.

3.1 Installing a node-locked license using the ARM License Wizard

The ARM License Wizard is a graphical tool for Windows that helps you to set up your ARM licensing environment. The ARM License Wizard is included with certain ARM products. If you do not have the ARM License Wizard you must install your license manually. See *Installing a node-locked license manually* on page 3-4.

Note

If you are using a version of the ARM License Wizard older than version 4.x, see the corresponding documentation provided with your development tools.

The simplest way to install a node-locked license is as follows:

1. During installation, the ARM License Wizard typically starts automatically.

Note

If the License Wizard does not start, you can start it yourself by looking in the section of the Windows Start menu that corresponds to your ARM product. See the *Getting Started* document of your ARM product for details.

2. Click **Next** to display the Action Selection screen. See *Action Selection screen* on page 2-6.
3. Select **Install license**.
4. Click **Next**.
5. Read the information about installing a node-locked license. After you have completed the tasks required for your license type, click **Next**.
6. Click **Browse** to locate and select the permanent license file you received.
7. Click **Add** to add the license file to the list of license sources for your computer. If it is not already in the licenses subdirectory of your ARM tools installation, you are asked whether you want to copy your license file to that location. ARM recommends you keep all ARM license files in a single directory so that they are easier to administer.
8. Click **Next**.
9. Click **Finish**. This makes the requested changes to your ARM licensing environment.

3.1.1 See also

- *Node-locked license scheme (Windows only)* on page 1-7.

3.2 Installing a node-locked license manually

Instead of using the ARM License Wizard, you can install your node-locked license yourself.

To manually install a node-locked license:

1. Retrieve your license from the ARM web licensing portal, as described in Chapter 2 *Requesting Your License*.
2. Save the license file as `license.dat` and place it in a location where you have installed your ARM product. ARM recommends that you save your license file in the root of your installation directory to make it easy to find later.
3. Create or modify a Windows environment variable called `ARMLMD_LICENSE_FILE` to point to the location where you have installed your ARM development tools. See *Configuring the client licensing on Windows* on page 5-2.

3.2.1 See also

- *Node-locked license scheme (Windows only)* on page 1-7.

Chapter 4

Setting Up a Floating License Server

The following topics describe the installation of FLEX^{net} server software and the configuration of the client machines:

- *Installing the server software* on page 4-2
- *Installing the server license* on page 4-4
- *Starting the license server* on page 4-7
- *Shutting down the license server* on page 4-11.

Note

If you do not use floating licenses, you do not require FLEX^{net} server software and you can safely ignore this chapter.

4.1 Installing the server software

Before any floating license can enable the use of your license-managed ARM product, you must install the FLEXnet server software on your license server or servers and start the server running.

Note

If the computer is acting only as a license management server, installation of the ARM software product on the server is not required.

Each ARM product that supports floating licensing provides the software for all supported license servers.

The FLEXnet files can typically be found in one of the following places:

- On the DVD-ROM or in the downloaded package. See the *Getting Started* document of your ARM product for details.
- In a folder of your product installation. See the *Getting Started* document of your ARM product for details.
- On the website from which you downloaded your product.

If you cannot locate the ARM license server utilities, either:

- download the files from the ARM support site at:
<http://www.arm.com/support/downloads/flexnet.html>
- contact ARM License Support by email at:
license.support@arm.com

The license management utilities include:

armlmd	the ARM vendor daemon
lmgrd	the FLEXnet server daemon
lmutil	the FLEXnet licensing utilities
lmtools.exe	the graphical user interface for FLEXnet licensing utilities.

lmtools is only available on Windows.

All utilities have .exe filename extensions on Windows. These are not, however, visible if you have chosen to hide extensions for known file types in Windows Explorer.

4.1.1 Installing server software on Windows

To install the server software on a Windows license server:

1. Copy the FLEXnet files for your ARM application into a directory, for example C:\FLEXnet, on the server.
2. Add the directory to the PATH.

If you are using a triple server arrangement then you must repeat these FLEXnet server software installation steps for each Windows server.

4.1.2 Installing server software on Unix/Linux

The license server software is normally supported on platforms of the same version as supported by your ARM product. However there are some exceptions. See *What version of the license server daemons must I use?* on page 8-7.

Alternatively the license server utilities are available on the website from where you downloaded your product. If you do not have access to the ARM license server utilities, contact ARM License Support.

On any Unix/Linux server, install the server software as follows:

1. Copy the files from the directory for your platform onto the server license machine. The destination directory must be on your PATH. Installing the license server software on remotely mounted disks is not recommended because of the additional network dependency.
2. On the license server machine, change to your license utilities directory, and type:
`sh ./makeLinks.sh`

If you are using a triple server arrangement, then you must repeat these FLEXnet server software installation steps for each Unix/Linux server.

4.2 Installing the server license

You normally retrieve your license yourself from the ARM web licensing portal. See *Accessing the ARM web licensing portal from the License Wizard v4.x* on page 2-6.

If you are adding this license to a license server that is already used for licensing FLEXnet managed tools, the same utilities must be used for all tools. You must therefore ensure that all of the license server utilities are upgraded to the latest version used by the any of the various tools that you have.

If you are installing a server license for OptimoDE technology based tools, the procedure differs slightly from that for other ARM products.

———— Caution ————

You must not change anything already present in the license file other than the server name and port number, otherwise the license file becomes invalid.

Before you can use your license file, you must modify it as follows:

1. Move the license file to a known location on the server, or each of the three servers if you are using a triple server arrangement. A suitable place for the license file is the same directory as your license server software.

The suggested file name is `license.dat`, and this name is used throughout this document to refer to the license file. If you want to call the file something else, substitute your file name for `license.dat`.
2. Open a text editor to modify your `license.dat` file.
3. Replace `this_host` in the license file with the corresponding server name. If you are using a triple server arrangement, replace `this_host`, `this_host2` and `this_host3` with the server names that match the host IDs. The first server listed is the master. This edit must be made on each of the three servers.

———— Note ————

If the host ID in the license file is incorrect or if the server host ID has changed, you must apply to ARM for a new license file.

4. Add the port number after each host ID. By default, the port number is 8224. If you do not define a port, the operating system chooses one in the range from 27000 to 27009. This number might change if the server is rebooted.
5. Save your edited license file as a plain text file.

Note

If you make a mistake when editing your license file, you can download the original license file again from the ARM web licensing portal.

For example, if the web-generated license file contained the following line:

```
SERVER this_host 001002A34BC5
```

and you wanted to use port number 8224 on your license server called synchrotron, you must change the line to:

```
SERVER synchrotron 001002A34BC5 8224
```

Although you cannot edit your license file except as permitted, you can add certain elements to your license file, such as paths to an options file or vendor daemon. See the *FLEXnet End User Guide* for details.

4.2.1 Installing OptimoDE licenses

You cannot use the ARM web licensing portal to obtain your OptimoDE license file. Instead, you must:

1. Complete the license request worksheet, `OptimoDE_License_Request_Worksheet.txt`, that is provided in your software download.
2. Send the completed worksheet to `License-Request-OptimoDE@arm.com`.
3. Your license file is then generated and returned to you by email. Before you can install your license file for OptimoDE tools on the server, you must first modify the file.
4. Move the license file to a known location on the server, or each of the three servers if you are using a triple server arrangement. A suitable place for the license file is in the same directory as your license server software.
The suggested file name is `license.dat`, and this name is used throughout this document to refer to the license file. If you want to call the file something else, substitute your file name for `license.dat`.
5. Open a text editor to modify your `license.dat` file.
6. On the `SERVER` line in the license file, replace unnamed with the corresponding server name. If you are using a triple server arrangement, replace each instance of unnamed with the server names that match the host IDs. The first server listed is the master.

Note

If the host ID in the license file is incorrect or if the server host ID has changed, you must apply to ARM for a new license file.

7. The license server port number is set to 1727 in the license file, and appears on each SERVER line. If you want to change this value, replace 1727 with your own port number. If you do not want to define a port, delete the 1727 value. The operating system chooses a default port in the range from 27000 to 27009. This number might change if the server is rebooted.
8. On the DAEMON line, replace path_to_armlmd with the absolute path to the armlmd vendor daemon. The path you specify cannot contain environment variables and must be on the local machine. If the path contains blanks, enclose it in double quotes.
9. Save your edited license file as a plain text file.

Note

If you make a mistake when editing your license file, you can retrieve the original license file from the email containing your license.

4.3 Starting the license server

How you start a license server depends on the platform you are using.

Note

- If you are adding a new license to a system with a running license server, you must stop the server, point the server to the new license file, then restart the server. See *Shutting down the license server* on page 4-11. If this is not done, the new license information might not be recognized by the license daemons. ARM does not recommend the use of the `lmreread` command.
 - If you are using a three server arrangement, you must start the master server first before starting the secondary servers. The master server is listed first in your license file.
-

4.3.1 Starting a Windows server from the graphical user interface

To configure and start the license server software on a Windows server using the graphical user interface:

1. Start the `lmtools.exe` program. See *Installing the server software* on page 4-2.
2. On the **Server/License File** tab, select the **Configuration using Services** option, as shown in Figure 4-1.

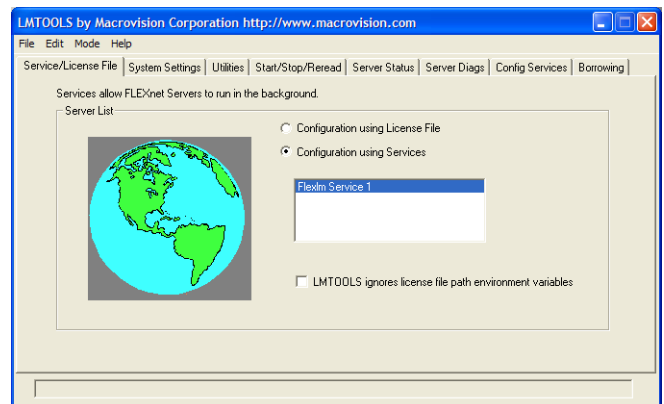


Figure 4-1 Selecting Configuration using Services

3. Click the **Config Services** tab to display the dialog shown in Figure 4-2 on page 4-8. This example shows the dialog with typical paths entered.

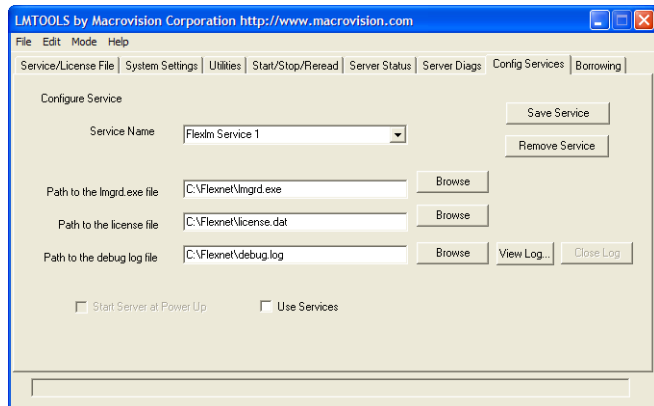


Figure 4-2 Server setup dialog

4. Enter the paths that specify the required files, or click the browse buttons to locate and select the files. You must specify paths for the following:
 - executable file `lmgrd.exe`
 - license file `license.dat`
 - log file, which is `debug.log` in this example.

Note

The server log file can become very large, so it might be necessary for you to control its size. See *How can I manage the size of the server debug log file?* on page 8-12.

5. If you require the server software to start running automatically when the server computer is turned on:
 - a. select the **Use Services** checkbox
 - b. select the **Start Server at Power Up** checkbox.
6. Click **Save Service**.
7. At the prompt, confirm saving the FLEXnet License Manager service.
8. Click the **Start/Stop/Reread** tab, and ensure that the FLEXnet License Manager service is selected.
9. Click **Start Server** to start running the license server software.
10. Check whether the license server started successfully:
 - a. click the **Server Status** tab
 - b. click **Perform Status Enquiry**

- c. the status information shows that the license server and vendor daemon are both UP, followed by a licensed feature usage list. Any license server errors are shown in the status information.
11. After you have started the license server, you can use a text editor, such as Notepad, to inspect the server debug log file.

For further details on the server graphical user interface, see:

- the Flexera Software documentation
- the *FLEXnet End User Guide*.

4.3.2 Starting a Windows server from the command line

To start the license server on Windows using the command line:

1. Go to the directory where the license server software is installed.
2. Type:

```
lmgrd -c license_file_name -l logfile_name
```

where:

license_file_name

specifies the fully qualified path name of the license file

logfile_name specifies the fully qualified path name to a server debug log file.

———— **Note** ————

The server log file can become very large, so it might be necessary for you to control its size. See *How can I manage the size of the server debug log file?* on page 8-12.

3. After you have started the license server, you can use a text editor, such as Notepad, to inspect the server debug log file.

4.3.3 Starting a Unix/Linux server

To start the license server software on a Unix/Linux server, go to the directory containing the license server software and type:

```
nohup lmgrd -c license_file_name -l logfile_name
```

where:

license_file_name

Specifies the fully qualified path name of the license file.

logfile_name Specifies the fully qualified path name to a server debug log file. The debug log file must be on a local storage device to avoid network problems.

———— **Note** —————

The server log file can become very large, so it might be necessary for you to take action to control its size. See *How can I manage the size of the server debug log file?* on page 8-12.

———— **Note** —————

lmgrd does not require root privileges, ARM recommends that you start the server as a non-privileged user, instead of giving it root privileges.

After you have started the license server, you can type, for example:

```
tail -f logfile_name
```

to see the most recent output from the license server.

For more information on how to start and configure a license server on Unix/Linux, see:

- the Flexera Software documentation
- the *FLEXnet End User Guide*.

4.4 Shutting down the license server

It might be necessary for you to shut down a license server to, for example, use a new license or to use a modified options file. How you stop a license server depends on the platform you are using.

Note

Avoid using the Windows Task Manager, or `kill -9` on Unix/Linux, to terminate the license server daemons because the processes might not end gracefully. This might cause problems on server restart. If you must forcibly shut down a server, always stop `lmgrd` before `arm1md`.

4.4.1 Stopping a Windows server

To use the graphical user interface to stop a Windows license server:

1. Start the `lmtools.exe` program. See *Installing server software on Windows* on page 4-3.
2. Click the **Start/Stop/Reread** tab.
3. Click the **Stop Server** button to shut down the license server.
4. The server log, if you are using one, records that the server has been shut down.

To use the command line instead of the graphical user interface, see the instructions in *Stopping a Unix/Linux server*.

4.4.2 Stopping a Unix/Linux server

To stop a Unix/Linux server, go to the directory containing the license server software. At the command prompt, type:

```
lmutil lmdown -q -c license_file_name
```

where:

license_file_name

specifies the fully qualified path name of the license file that you used to start the server.

4.4.3 Stopping triple license servers

If you have a triple license server arrangement and you shut down a server using either the `lmtools.exe` GUI or `lmutil lmdown` on the command line, all servers listed in the license file you specify are shut down after a one minute delay.

To shut down only one of the three servers, you must use, on the server to stop, either the Windows Task Manager or, for Unix/Linux, the `kill -9` command. Shutting down one server for anything other than short periods is not recommended because only two servers remain operational. This increases the risk of complete license failure.

Shutting down only the master server forces the two remaining servers to establish a new master. This affects license performance because clients fail to obtain a license from the original master server and must try one of the other two servers listed in the `ARMLMD_LICENSE_FILE` environment variable.

Chapter 5

Configuring a Client to Use a License Server

The following topics describe how to configure your client computer to obtain the license for its ARM tools from a server:

- *Configuring the client licensing on Windows* on page 5-2
- *Client license on Unix/Linux* on page 5-6.

———— **Note** —————

These topics assume that you have already set up a server, or servers, as described in Chapter 4 *Setting Up a Floating License Server*.

If you do not use floating licenses, you do not require a licence server and you can safely ignore this chapter.

5.1 Configuring the client licensing on Windows

You can use one of the following methods to set the environment variable `ARMLMD_LICENSE_FILE` on Windows clients:

- ARM License Wizard
- the Control Panel.

The client must support the ARM tools you are using. The method you choose to configure client licensing depends on the Windows platform you are using.

Note

Some ARM software products do not include the ARM License Wizard but let you configure your licensing environment during installation.

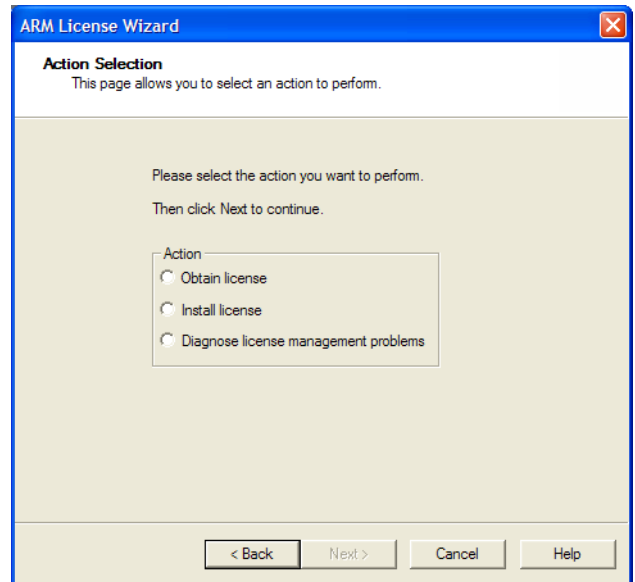
If you prefer, you can skip this installation step and manually set up your licensing environment afterwards using the Control Panel.

5.1.1 ARM License Wizard

The ARM License Wizard can configure a Windows 2000, XP or Vista client to use a floating license.

To configure your Windows client to use a floating license:

1. Start the ARM License Wizard by selecting the option from the Windows Start of your ARM product. See the *Getting Started* document of your ARM product for details.
2. Click **Next** to display the Action Selection screen, shown in Figure 5-1 on page 5-3.

**Figure 5-1 Action Selection screen**

3. Select **Install license**.
4. Click **Next**.
5. Read the information about installing a floating license. When you have completed the tasks required for your license type, click **Next**.
6. The Install License dialog, shown in Figure 5-2 on page 5-4, opens.

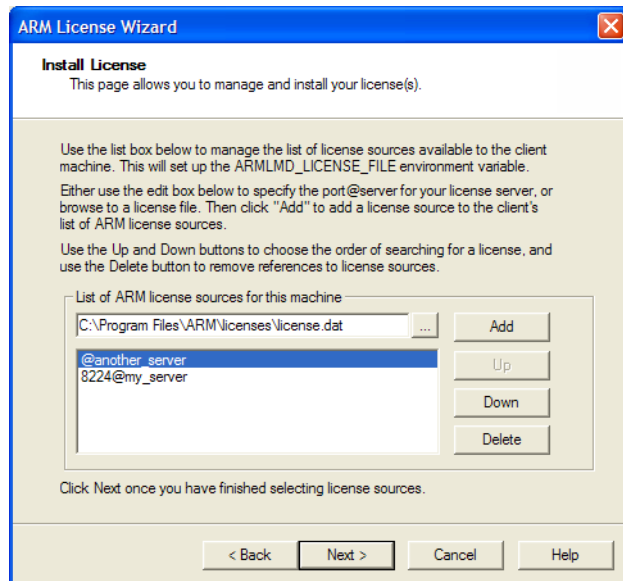


Figure 5-2 The Install License dialog

7. Enter the server port@server name in the Install License dialog text field. If you are using a default server port in the range between 27000 and 27009 inclusive, omit the port number. If you are using a three server arrangement, you must list the three servers here, starting with the master server. Each entry must be separated by a semicolon character, “;”.

Alternatively, click the ... button to the right of the text entry box to browse to a local or remote license file that contains the relevant server details, then click **Add**. The License Wizard prompts you to choose whether to extract the reference to the license server, or to add the file itself to your license environment variable. ARM recommends that the server reference be used. The port@server name or license file is then added to the list of license sources. If you are using more than one license server or license source, repeat the Install License process for each server or source.

In Figure 5-2, 8224@my_server has been already entered as a possible license source so it is visible in the list of available license sources. A second source, @another_server, has been entered without a port number. This means that a default port in the range between 27000 and 27009 is used. The file C:\Program Files\ARM\licenses\license.dat has not yet been added so appears only in the text entry box.

You can remove an entry from the list of license sources by highlighting it and clicking **Delete**.

8. After you add your license sources, click **Next**.
9. Click **Finish**. This makes the requested changes to your ARM licensing environment.

5.1.2 Using the Control Panel

You can use the Control Panel to set environment variables on supported Windows variants.

———— **Note** ————

You must have administrator privileges to set system environment variables.

To use the Control Panel to set the environment variable:

1. Open the Control Panel by clicking on **Start → Control Panel**.
2. Double click on the **System** icon in the Control Panel. An easy way to find this icon is to change the Control Panel view to Classic View.
3. Click the **Advanced** tab in Windows 2000 or XP, or the **Advanced system settings** task in Vista, then click the **Environment Variables** button.
4. Create a new system environment variable, `ARMLMD_LICENSE_FILE`, and set its value. This must include valid `port@server` information. If a default port in the range between 27000 and 27009 is used on the server, then the port number is omitted in the environment variable. For example:
 - If you are using a single server floating license, set the environment variable value to something similar to:
`8224@my_server`
 - If you are using a three server license, or wish to refer to more than one license server, set the environment variable value to something similar to:
`8224@my_serverA;8224@my_serverB;@my_serverC`
The master server appears first, and in this example is `my_serverA`. The entry for `my_serverC` is not preceded by a port number because in this example a default port number is being used.

5.1.3 See also

- *Floating license scheme (Windows and Unix/Linux)* on page 1-8.

5.2 Client license on Unix/Linux

On Unix or Linux clients, you must set the environment variable `ARMLMD_LICENSE_FILE` to include `port@server` information. If a default port in the range between 27000 and 27009 is used on the server, then the port number is omitted.

You can configure your Unix/Linux client to obtain its license from a server using the following methods:

- shell commands
- `.flexlmrc`.

Note

Some ARM software products let you configure your licensing environment during installation. If you prefer, you can skip this installation step and manually set up your licensing environment afterwards using these methods.

5.2.1 Shell commands

If you are using `csh` or `tcsh`, you can set the environment variable for a single server by entering:

```
setenv ARMLMD_LICENSE_FILE 8224@my_server
```

If you are using `bash` or `sh`, enter:

```
ARMLMD_LICENSE_FILE=8224@my_server
```

```
export ARMLMD_LICENSE_FILE
```

If you are using a three server license, or want to refer to more than one license server, you can add these values to your environment variables. For example, in `csh` or `tcsh` enter:

```
setenv ARMLMD_LICENSE_FILE 8224@my_server1:8224@my_server2:@my_server3
```

In this example, the port number is omitted for `my_server3` because a default port is being used. If you are using a three server license, the master server is `my_server1`. In all cases you might want to add the environment variable settings to your startup scripts so that your licensing is set up automatically when you log in.

5.2.2 `.flexlmrc`

You can edit the `.flexlmrc` file in your home directory to set up client licensing by adding the line:

`ARMLD_LICENSE_FILE=value`

where *value* is the value for the environment variable, such as `8224@my_server`.

Chapter 6

Frequently Asked Questions about Licensing

The following topics provide information on licensing issues that are not specific to a particular licensing configuration:

- *How does FLEXnet find a license file?* on page 6-2
- *Can I use FLEXnet with more than one product?* on page 6-3
- *How do I combine licenses?* on page 6-4
- *How do I find my product serial number?* on page 6-5
- *How do I move my license to another computer?* on page 6-6
- *Do the ARM development tools support BORROW?* on page 6-7
- *Do ARM licenses support queuing?* on page 6-8
- *Why can I not find the lmhostid utility?* on page 6-9.

Note

Additional questions and answers on tools licensing issues are available on the ARM website, <http://www.arm.com/support/>.

6.1 How does FLEXnet find a license file?

The locations to be searched by ARM license-managed software are stored in the ARMLMD_LICENSE_FILE environment variable. You can set ARMLMD_LICENSE_FILE so that it contains one or more file names, directory names, or port@server values. If you specify a directory name, you must not include the final slash “/” character. The locations are searched in order until a valid license is found. If a directory name is found then each file within the directory that has a .lic extension is searched. For ARM licensed tools, the contents of ARMLMD_LICENSE_FILE are searched before the contents of the generic FLEXnet environment variable, LM_LICENSE_FILE.

6.1.1 ARM license search algorithm

An overview of the algorithm used by ARM licensed products when searching for a license file is listed in Example 6-1:

Example 6-1 Search algorithm

```

if (ARMLMD_LICENSE_FILE env-var set)
{
    Search ARMLMD_LICENSE_FILE for feature.
    if (feature found)
    {
        Stop searching
    }
}
if (LM_LICENSE_FILE env-var set)
{
    Search LM_LICENSE_FILE for feature.
    if (feature found)
    {
        Stop searching
    }
}
else
{
    Search c:\FLEXlm\license.dat (Windows)
    Search /usr/local/FLEXlm/licenses/license.dat (Unix/Linux)
    if (feature found)
    {
        Stop searching
    }
}
Print error saying that license was not found.

```

6.2 Can I use FLEXnet with more than one product?

FLEXnet, formerly known as FLEXlm, is a widely used product for license management, so it is possible that you have more than one product using FLEXnet. If you are using floating licenses, the latest version of the FLEXnet license server daemon `lmgrd` is backwards compatible with vendor daemons built using previous versions.

Note

If your products are supplied with different versions of FLEXnet, you must use the latest version of the FLEXnet server daemon, `lmgrd`, for all your products.

See the version of the *FLEXnet End User Guide* supplied with your tools for further information on using licenses from multiple vendors together.

You might be able to combine multiple license files. See *How do I combine licenses?* on page 6-4

6.3 How do I combine licenses?

You can combine license files together if you are using more than one licensed application, or are adding a new feature to an existing license.

There are examples of license file merging in the *FLEXnet End User Guide*.

Note

ConnectLM also provides a tool for merging licenses, see the *FAQ How do I merge my license files*, <http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka3935.html>.

6.3.1 Combining node-locked licenses

Node-locked licenses can be combined if they have been generated for the same host ID.

To combine multiple node-locked licenses into a single file, copy and paste all of the INCREMENT lines from your separate license files into a new license file.

6.3.2 Combining floating licenses

Floating licenses can be combined if:

1. The number of SERVER lines in each license file is the same.
2. The host ID field of each SERVER line in one license file exactly matches the host ID field of each SERVER line in the other license file.

To combine floating license files, use a text editor and open one license file, copy the other license file into the text editor and then remove any duplicate SERVER and VENDOR lines.

Always use the newest version of lmgrd and the newest version of each vendor daemon, for example, arm1md, provided with your ARM products.

6.4 How do I find my product serial number?

Your product serial number is normally of the form `xxxxx-xxxxx-xxxxx`, where `x` represents an alphanumeric character. The serial number can typically be found on a sticker on the product outer box, on a card inside the product packaging, or in the email containing the links to your product downloads.

Note

If you have an evaluation serial number, it might be of the form `LMxxx-xxxx-xxxxxx`, where `x` represents an alphanumeric character. The number of characters immediately after `LM` might be different. Serial numbers for some older ARM product are of the form `xxxxx-xxxxx-xxxxxxxxxx` or `xxxxx-xxxxx-xxxxx-xxxxx`.

After you have installed your ARM software, you can find the serial number embedded within the license file you installed. Look for a string containing `SN=xxxxx-xxxxx-xxxxx`. The text following the `SN=` label is your serial number.

OptimoDE® installation serial numbers can be found in the files located at `install_directory/installed_oip/*.isn`.

6.5 How do I move my license to another computer?

To move your ARM tools license from the original computer for which it was generated to another computer within the same company, you must obtain a new license file from ARM with a new host ID.

A host ID is usually generated from an ethernet card MAC address. For node-locked licenses for most products, the hard disk volume number can be used instead of the MAC address but this is not recommended. For more information, see Host ID in *Information required for a license* on page 2-2.

For additional information on license rehosts, visit the ARM website and look in the Technical Support FAQs under Tool Licensing.

6.6 Do the ARM development tools support BORROW?

ARM license-managed tools do not support the use of the *FLEXnet* BORROW attribute.

If you want to use your software tools away from the network on which you have your license server, then you require additional licenses.

If you have a computer on which you must use your ARM tools while away from your company network, you are advised to obtain a node-locked license that is locked to the MAC address of a removable network card. You can transfer the card between users if a different computer is used remotely at some other time.

If your ARM software does not support node-locked licenses, you require a new floating license. Although not normally recommended, you can have the server running on the same computer as the tools.

6.7 Do ARM licenses support queuing?

ARM floating licenses support license queuing when used with the appropriate version of the FLEXnet server software supplied with the product.

If a server receives a request for a license but no seats are currently available, the request is queued. The request is fulfilled when a seat becomes available. The server log reports a DENIED message. See *Why am I getting "DENIED" messages in the server log?* on page 8-11. However there is not a corresponding license failure on the client side, so for the end user, license queuing is transparent.

Note

License queuing fails if the server is hosting a combination of *ARM Developer Suite™* (ADS) licenses and newer ARM tools licenses. If you require the license queuing feature, you must move the ADS licenses to a separate server. See *How do I move my license to another computer?* on page 6-6.

6.8 Why can I not find the lmhostid utility?

If you are using Unix/Linux, you have probably not run the `makeLinks.sh` script. The script creates a series of links to the `lmutil` program, one of which is for `lmhostid`. This script is in the appropriate directory for your platform. See the *Getting Started* for your ARM product for the location of this directory.

If you are using Windows, the `makeLinks.sh` script is not available. Instead:

1. Open a command prompt.
2. Change to the directory where your license utilities are installed,. This is typically `C:\FLEXlm`.
3. Type `lmutil lmhostid` at the command prompt.

Chapter 7

Troubleshooting client configuration

The following topics describe issues relating to the configuration of clients in either node locked or floating license systems:

- *License apparently missing error* on page 7-2
- *My node-locked tools fail with FLEXnet error -8: Invalid license key (inconsistent authentication code)* on page 7-3
- *How can I change the order in which my license sources are accessed?* on page 7-4
- *What does the “Diagnose license management problems” option do in the License Wizard?* on page 7-5
- *How can I optimize floating license checkout times?* on page 7-6
- *Can I use a remote license server?* on page 7-8
- *Why am I getting FLEXnet error -15: Cannot connect to license server system?* on page 7-9.

7.1 License apparently missing error

When you try to run an ARM licensed product, you might see a message that says that a license cannot be obtained.

7.1.1 FLEXnet error -1: Cannot find license file

If you get a FLEXnet licensing error stating that the license file cannot be found, it might be because there is not a valid license file on the license search path shown in the error message.

If your computer is running Windows and you are using a node-locked license, use the ARM License Wizard to install the permanent license file. See *Installing a node-locked license using the ARM License Wizard* on page 3-2.

If you are using a floating license on Windows, you can still use the ARM License Wizard. See *Configuring the client licensing on Windows* on page 5-2. If your computer is running Unix or Linux, you must manually configure the client to use the permanent license file. See *Client license on Unix/Linux* on page 5-6.

7.1.2 FLEXnet error -5: No such feature exists

If you see a license error message stating that no such feature exists, you might be trying to use a component for which there is no corresponding line in the license file. For example, you might have previously used a license for an evaluation version of the ARM tools but have since installed the full version. If you do not reconfigure your client computer to use the full tools license, you are not be able to use the full version, even if the evaluation license has not expired. You must use a license compatible with the type of tools you have installed on your computer. To solve this problem, remove any old or expired licenses and reconfigure your client computer to use your new license. See Chapter 5 *Configuring a Client to Use a License Server*.

7.2 My node-locked tools fail with FLEXnet error -8: Invalid license key (inconsistent authentication code)

This error can be reported if your license file has been corrupted, moved, or modified in a way that is not allowed. If this has happened, reinstall a clean version of your license file. For example, You can use the ARM web licensing portal to retrieve your original license. See *Accessing the ARM web licensing portal from the License Wizard v4.x* on page 2-6.

7.3 How can I change the order in which my license sources are accessed?

If you have more than one license source, you might want to change the order that they are used by the client computer. For example, you might have two separate license servers, each with its own distinct license file, and one of these servers has more available licenses for a given product version than the other and you want to reference the server with more seats first.

7.3.1 Using the License Wizard

If you are using Windows, you can use the License Wizard to configure the client computer:

1. Follow the initial steps described in *ARM License Wizard* on page 5-2.
2. When you reach step 6, you see the Install License dialog as shown in *The Install License dialog* on page 5-4.
3. Select one of the existing entries in the list, and click on the **Up** or **Down** buttons as required to reorder the list.
4. When you have finished, click **Next**,
5. Click **Finish** to change your ARM licensing environment.

If you are unable to use the License Wizard on Windows, or are using Unix/Linux, you must manually edit the value of the ARMLMD_LICENSE_FILE environment variable yourself on the client to change the order in which license sources are searched.

7.3.2 Modifying the environment variable manually

If you are using a supported version of Windows, you can use the Windows Control panel to modify the ARMLMD_LICENSE_FILE environment variable. See *Configuring the client licensing on Windows* on page 5-2 for more details.

If you are using Unix or Linux, it might be necessary to modify the ARMLMD_LICENSE_FILE environment variable from the command line. Alternatively you can have the environment variable set automatically when you start a new shell. See *Client license on Unix/Linux* on page 5-6 for more details.

7.4 What does the “Diagnose license management problems” option do in the License Wizard?

This option in the ARM License Wizard runs a script that analyzes the licensing configuration on your computer. This can help to identify problems with your licensing environment.

7.5 How can I optimize floating license checkout times?

When using a license server or servers, each time a client computer starts one of the ARM development tool executables, a license checkout request is sent across the network to the license server to obtain a license. There are a number of ways of configuring a client machine to check out a floating license from a license server and it is worth ensuring that your system is configured in such a way that the time taken for these checkout requests is minimized. These are:

- Use the ARMLMD_LICENSE_FILE environment variable to point to your license server or servers. This environment variable is used first by the ARM license utilities, so it is preferable to use ARMLMD_LICENSE_FILE rather than LM_LICENSE_FILE, the generic FLEXnet environment variable.
- Set ARMLMD_LICENSE_FILE to port@server rather than pointing it to a local copy of the license file. This removes the delay incurred by the tools having to process the local copy of the license file to find out the name of the license server. Note that this variable can also be used to specify multiple locations, using a list separated by semi-colons on Windows, or colons on Unix/Linux, and each location is checked in turn until a valid license is found.
- Check for network problems. If everything is working normally, a license is granted in about the same time it takes to *ping* the server where the license resides. If the checkout takes a long time, it might be because of domain name resolution issues. If this is the case you can sometimes overcome the problem by substituting the server IP address for the server name where it appears in the license search paths.
- Check for server problems, particularly if you have set up the ARMLMD_LICENSE_FILE environment variable to point to multiple servers. You might find it helpful to look through the server log.

If any of the license search paths point to a server which is no longer running the license management software, there will be a delay while FLEXnet waits for the license request to time out before moving onto the next location in the search path.

Ensure that there are no spurious entries here that might cause such a delay and that all referenced servers are running.

To temporarily work around this problem, you can modify the order in which the servers appear in the ARMLMD_LICENSE_FILE environment variable. See *How can I change the order in which my license sources are accessed?* on page 7-4.

- Set the environment variable TCP_NODELAY to 1. This improves FLEXnet license server system performance when processing license requests.

Caution

Setting this environment variable might cause an increase in network traffic.

7.5.1 See also

- *How can I improve the build time of my application?*,
<http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka4022.html>

7.6 Can I use a remote license server?

Although it is technically possible for a client machine to obtain a license from a remote license server across a *Wide Area Network* (WAN), this is not a supported mode of operation for ARM development tools and you are strongly discouraged from attempting it. When you set up your licensing system, ensure that client machines have access to local license servers across your *Local Area Network* (LAN).

If you do attempt to use a WAN server, the additional network delays connecting to the server can dramatically increase the time taken by the ARM build tools to build your code. In many cases builds can actually fail if the time delays caused are too great. The high license traffic caused can also significantly increase the overall traffic on your WAN, that might lead to more general problems on your network.

7.7 Why am I getting FLEXnet error -15: Cannot connect to license server system?

If you are using ARM software products with a floating license, your workstation must be able to communicate with a server running FLEXnet server software. If such communication cannot be established, a commonly reported FLEXnet error code on the client is -15. Possible reasons for this are:

- the wrong license file is being referenced by the application program
- the license server specified in the license file has not been started
- you are using the wrong port@host information
- the vendor daemon specified in the license file is not running
- the hostname in the license file is not recognized by the system
- the network between the client machine and the server machine is down

To solve these issues, check that you have started your license server or servers. See Chapter 4 *Setting Up a Floating License Server*. You must also check that your client have been correctly configured. See Chapter 5 *Configuring a Client to Use a License Server*. The Tool Licensing FAQs on the ARM Technical Support website might also be helpful.

You can try running tests on your server or client computers to identify possible causes of the failure:

1. Try running the `lmutil lmdiag` utility, which is designed primarily for this purpose.
2. Verify that the application is referencing the correct license file.
3. Verify that the vendor daemon, `arm1md`, is running. You can use `ps` on the server to look for the daemon on Unix/Linux, or the Windows Task Manager.
4. Examine the server log file to see if any problems are reported, particularly messages indicating that the vendor daemon has quit.
5. Run `lmutil lmstat -a` on the server machine to verify that the vendor daemon is alive.
6. Run `lmutil lmstat -a` on the client machine to verify the connection from client to vendor daemon across the network.

If none of the above tests identifies the cause of the licensing failure, check whether your client machine can communicate to the server over TCP/IP using a utility such as `ping`. If this fails, then it is possible that communication is being blocked between the server and client.

7.7.1 Firewalls

Your license server and client might be on opposite sides of a firewall. If so, you must configure the firewall to allow access to fixed ports for both the `lmgrd` and `arm1md` license daemons. Define these ports in the server license file by modifying the top of the license file as shown, substituting your own values:

```
SERVER myserver server_hostid 8224
```

```
VENDOR arm1md port=portnumber
```

7.7.2 Subnets

If your license server and client are on different subnets, then using the fully qualified domain name or IP address of the server might solve the problem. Using the IP address normally circumvents issues arising from domain name resolution.

7.7.3 Server hostname length

There is a character length limit for server hostnames used in the license files. For *FLEXlm* 8.1b and older, this limit is 32 characters. If you are using newer versions of *FLEXnet*, the limit is 64 characters. If your license server name is too long, you must use the IP address of the server instead of the hostname in the license file and client license environment variable.

7.7.4 Intermittent failures

You might encounter intermittent licensing failures if your server is under very heavy load, for example, if you use automated build scripts. These failures can be caused by intermittent networking failures. The current versions of the ARM development tools are more resilient with respect to such temporary network interruptions. If you are using older tools, consider adding retry capability to your build scripts to work around the behavior.

Chapter 8

Troubleshooting server configuration

The following topics cover issues relating to the configuration of floating license systems:

- *Server debug log reports “Invalid license key (inconsistent authentication code)” on page 8-2*
- *Can I define the order in which licenses in a mixed version license file are issued? on page 8-3*
- *How can I tell how many floating licenses are in use? on page 8-5*
- *Server debug log reports “(armlmd) cannot open lock file” or “cannot communicate with lmgrd” on page 8-6*
- *What version of the license server daemons must I use? on page 8-7*
- *How can I limit user access to particular licensed features? on page 8-8*
- *Why am I getting “DENIED” messages in the server log? on page 8-11*
- *How can I manage the size of the server debug log file? on page 8-12.*

8.1 Server debug log reports “Invalid license key (inconsistent authentication code)”

A common cause for an invalid license key error message is that you have changed non-user editable parts of your license file. For example, you might have a three server license and have commented out two of the three server lines. The only parts of the license you are allowed to edit are the host name and the license server daemon port numbers, and the daemon path name if it is set by default to `path_to_armlmd`. You can add certain content, such as a path to an option files or SORT syntax. See the *FLEXnet End User Guide*.

The invalid license key message can also indicate that you are running an older version of the *FLEXnet* license server software that is not compatible with the format of the license file that you have installed. This can happen if you upgrade your development tools to a later version.

Refer to the FAQs in the ARM technical support website, under Tool Licensing, for further information about what versions of license server software are compatible with what versions of the ARM software development tools.

8.2 Can I define the order in which licenses in a mixed version license file are issued?

Whether you can control the order in which licenses are issued by the server is dependent upon the version of the license server software you are using.

8.2.1 FLEXnet v10.8 license server software

If you are using version 10.8 of the FLEXnet license server software, there is a defined default order in which license files are sorted when parsed by the license server at startup. The default basic sorting rules within a single license file, from highest to lowest priority, are:

1. INCREMENT entries are sorted alphabetically.
2. Uncounted INCREMENT entries are issued before counted INCREMENT entries.
3. Lower versions for an INCREMENT are issued before higher versions.

———— **Note** ————

The FLEXnet documentation states that higher versions take precedence over lower versions but Flexera support has confirmed this is incorrect.

4. Licenses with the most recent START= *date*, if specified, are issued before older licenses.

To define the use order of your licenses, add a SORT=*nnn* entry in the required INCREMENT line, where *nnn* is an integer from 000 to 255. The lower the SORT value, the higher the priority. The default sort value is 100. As this value is used when no SORT is defined by the user, lines with values less than 100 appear before unmodified lines, and lines with values greater than 100 appear after unmodified lines.

For example, if you have compiler INCREMENT entries in your license file with versions 3.1 and 4.0, you can ensure that the 3.1 license is made available first if you add a SORT attribute to the 3.1 INCREMENT as follows:

```
INCREMENT compiler arm\md 3.1 permanent 5 271940CDEFA0 \
SORT=010 DUP_GROUP=UHD ISSUER="ARM Ltd" ...
```

8.2.2 FLEX/m v9.2 or earlier license server software

If you are using version 9.2 or earlier of the FLEX/m license server software, there is no fixed order in which licenses for different versions of tools are issued. This might mean that older versions of the development tools check out licenses for a newer

version, even though the older licenses are available. You might find that an options file allows you to limit which users have access to what versions of a tools license. See *How can I limit user access to particular licensed features?* on page 8-8.

8.3 How can I tell how many floating licenses are in use?

You can run the `lmutil lmstat` command, with appropriate arguments, on the server to determine the number of floating license seats that are in use. The license server log is not suitable for the purpose of usage analysis, because at high server loading or with certain types of license file configuration, you might get incomplete or misleading results.

The `lmutil lmstat` command can generate text output that indicates which user is using what version of a license component, and when the license was granted. By selecting the appropriate arguments, such as `-i` for information from the FEATURE or INCREMENT line for the specified feature, or `-a` for all information, you can collect snapshot information of your license usage. You can then run the output through a text parser if you want to analyze the data in more detail. Further information on the `lmutil lmstat` command can be found elsewhere. See the *FLEXnet End User Guide*.

Be aware that there is a trade-off between increased temporal resolution of your usage data and server loading, especially if you have a high turnover licensing environment. The `lmutil lmstat` command can consume a significant fraction of the CPU resource of your server, especially if the `-a` switch is used. At very high loadings, such as greater than 1000 checkouts per minute, the resulting data are known to be inaccurate because not all transactions can be recorded during the data collection period.

8.4 Server debug log reports “(armlmd) cannot open lock file” or “cannot communicate with lmgrd”

The lock file error most commonly occurs on a Unix/Linux system if a previous instance of the armlmd license daemon was not shut down properly. Only one copy of armlmd can run on your license server at any given time. Attempting to start another copy of this daemon causes an error.

When the ARM license daemon, armlmd, is started, it creates a file called /var/tmp/lockarmlmd. If lmgrd terminates abnormally, armlmd does not release the lock file because it might still be running. To solve this problem:

1. Locate any license daemon processes. You can do this using the following command on Unix/Linux:

```
ps -a | grep daemon_name
```


where *daemon_name* is lmgrd or armlmd.
2. Shut down lmgrd first.
3. Next terminate these processes with:

```
kill PID
```


where *PID* is the process ID for the license daemon.
4. Delete the /var/tmp/lockarmlmd if it still exists.
5. You can now restart the license server.

If you are using Windows, use the Windows Task Manager to locate the lmgrd or armlmd processes. Shut down lmgrd first. Select the process, then click **End Process**.

8.5 What version of the license server daemons must I use?

License server software consists of two parts:

- the ARM license server vendor daemon `arm1md`
- the FLEXnet license server daemon `lmgrd`.

You can upgrade to later versions of `lmgrd`, but are advised to use the version of `arm1md` provided with the latest ARM software you have installed. The latest license server utilities, including `lmgrd` and `arm1md`, can be obtained through ARM, from your tools installation media, download site, or from ARM License Support.

Older releases of the ARM license daemon are forwards compatible with later releases of `lmgrd`. For example, you can use `arm1md` version 9.2 together with `lmgrd` version 10.8.5. However it is best practice to use the latest ARM license utilities available.

Note

If your license server is running Solaris 5.6, you cannot use FLEXnet version 9.0 utilities. Instead you must use version 9.2 utilities or higher.

The newer utilities, including the `arm1md` vendor daemon, can be requested from ARM if you do not already have a product DVD-ROM or CD-ROM with this version of FLEXnet.

At time of writing (June 2009), the latest ARM license daemon version was 10.8.5.

8.6 How can I limit user access to particular licensed features?

As a floating license administrator, you can use an options file to:

- set aside specific features for named users
- set aside specific features for named client computers
- prevent certain users or computers from being issued with a license of a particular type.

This is particularly useful if you have a license that enables more than one version of the ARM tools and you want to control what users have access to what versions.

To use an options file, first you must write it, then configure your license server to use it.

8.6.1 Writing your options file

You can create an options file in any text editor. ARM recommends that your options file has an .opt extension. When complete, copy the options file to each of your ARM license servers.

A sample options file is shown in Example 8-1 on page 8-9 to demonstrate some of the key syntax. In this example, it is assumed that:

- the license file contains both RealView Development Suite v4.0 and ADS v1.2 seats
- there are two defined project groups with defined users, and a set of build computers.
- the administrator wants to limit the number of seats of a given feature on a group basis, and also wants to reserve RealView Development Suite v4.0 compiler seats for particular users and clients.
- A specific user is not to be granted a RealView Development Suite v4.0 compiler license.

The following permissions and restrictions are required:

- The build computers in the host_group buildbox must always have two compiler seats available, of no particular version.
- Users in group project_talisker, user1 to user5, must not be given more than three fromelf licenses of any version between them.

- Users in group project_macallan must always have one seat of compiler version 4.0 available.
- User7 cannot ever obtain a compiler license of version 4.0, despite being in group project_macallan.

Example 8-1 contains the corresponding options file that satisfies the restrictions:

Example 8-1 Options file

```
# License Options File example by ARM Limited
# -----
# This example should be modified as required for your own licensing
# environment.
# Turn off case sensitivity for group and hostnames
# (Only valid in FLEXnet 10.x. In FLEXlm 9.x, you need to ensure that
# case of groups and hostnames is consistent, and comment out the following
# line.)
#
GROUPCASEINSENSITIVE ON

# Groups are defined here
# --> use the form: GROUP group_name user_list
#
GROUP project_talisker user1 user 2 user 3 user4 user5
GROUP project_macallan user6 user7 user8

# Host Groups are defined here
# --> use the form: HOST_GROUP group_name host_list
#
HOST_GROUP buildbox buildpc01 buildpc02

# Define usage restrictions below
# --> use the form: OPTION feature[:keyword=value] type {name | group_name}
#
RESERVE 2 compiler                HOST_GROUP buildbox
MAX 3 fromelf                     GROUP project_talisker
RESERVE 1 compiler:version=4.0    GROUP project_macallan
EXCLUDE compiler:version=4.0     USER user7
```

The syntax for the options are as follows:

- Some options, such as RESERVE, require that you specify the number of seats.
- The RESERVE option puts aside a defined number of seats. You can specify an exact version of the feature if required.

- The MAX option puts a limit on the number of seats of a given feature.
- The EXCLUDE option prevents a user or group from being granted a license. This overrides any settings to include the user.

Other options are available and are described elsewhere, as is the exact syntax to use for all options. See Chapter 5 of the *FLEXnet End User Guide*.

8.6.2 Configuring your license server to use the options file

To configure the license server:

1. You must edit your ARM tools license file so that the options file is called on the VENDOR or DAEMON line. For example, if your options file is called arm1md.opt, in your license file you must add VENDOR arm1md option=arm1md.opt.
2. If you have multiple servers, repeat the change for the license files on each of your ARM license servers.
3. Restart your license server or servers.
4. If your configuration is successful, the server log shows messages that the options file is being used and that your restrictions defined in the options file are being implemented.

8.7 Why am I getting “DENIED” messages in the server log?

DENIED is not necessarily an error message. It only indicates a real problem if there is a corresponding license failure reported on the client side. This real failure can occur if a client invokes a tool and it cannot find a valid license file for it, and the failure is reported back to the client.

You might be getting a DENIED message if there are no seats available and the request is queued. See *Do ARM licenses support queuing?* on page 6-8.

However, the message can also occur if you are using a merged license file with multiple versions of the tools. For instance, consider a floating license with both RealView Development Suite v4.1 and RealView Developer Suite v3.1 components. If a user requests a RealView Development Suite v4.1 compiler license and the license server locates the RealView Developer Suite v3.1 compiler license first, there is an immediate version mismatch and the request is denied and recorded in the server debug log. However, the server then continues to look through the available licenses and finds the RealView Development Suite v4.1 license. The server then lets the user check out the license.

In the server debug log, a typical sequence of an initial license failure followed by a successful checkout looks like this:

```
6:35:09 (armlmd) DENIED: "compiler" user@mycomputer (License server does not
support this version of this feature (-25,334))
6:35:09 (armlmd) OUT: "compiler" user@mycomputer
6:35:09 (armlmd) IN: "compiler" user@mycomputer
```

The initial DENIED is followed immediately by a successful checkout.

If you want to suppress such messages in the server log, you can use the command NOLOG DENIED in a server options file. Further information on options files can be found elsewhere. See the *FLEXnet End User Guide*.

8.8 How can I manage the size of the server debug log file?

If you are administering a license server that is heavily used, you might find that the license server debug log becomes unmanageably large after a relatively short time. Very large log files in excess of 1GB in size can cause the license utilities to fail. You can control the size of the server debug log file in the following ways:

- *Suppressing messages*
- *Restarting the license server*
- *Starting a new server debug log.*

8.8.1 Suppressing messages

You can stop the server debug log from recording certain message types by using the NOLOG directive in an options file. You can turn off logging of license checkouts, checkins, and denied and queued messages. If you normally suppress server debug log messages, it might be necessary for you to re-enable them to troubleshoot problems. Options file syntax is fully described in a separate document. See the *FLEXnet End User Guide*.

8.8.2 Restarting the license server

When you restart the license server, you start a new license server debug log file. Restarting the server can be useful if you suspect a memory leak or similar problem that only becomes noticeable after an extended period. The server shutdown and restart process normally takes a few seconds to complete. See Chapter 4 *Setting Up a Floating License Server*.

8.8.3 Starting a new server debug log

You can create a new server debug log without restarting the license server by using the `lmswitch` command. Regularly creating new debug logs, for example on a weekly basis, can help you to maintain organized records of license server activity. You can use this command on the Windows or Unix/Linux command line. Change to the directory where your license server utilities are installed, then type the command:

```
lmutil lmswitch -c license_file_name arm1md new_logfile_name
```

where:

license_file_name

specifies the fully qualified path name of the license file being used

new_logfile_name

specifies the fully qualified path name of the new server debug log file.

Your original log file is closed with a message that the server debug log is being switched to *new_logfile_name*. The top of *new_logfile_name* tells you the name of the previous server debug log file.

Glossary

The items in this glossary are listed in alphabetical order.

Client The computer on which you are running the ARM software tools. Also known as *Host*.

Counterfeit Resistance Option (CRO)

Counterfeit Resistance Option enables the encryption of license keys using Public Key Encryption.

CRO See Counterfeit Resistance Option.

FLEX lm See FLEXnet.

FLEXnet The license management technology from Flexera Software, used to control the use of an ARM application. Previously known as FLEX lm .

Host In this manual, host means the computer on which you are running ARM applications or FLEXnet. In other contexts the term can mean a computer that provides data and other services to another computer. Also referred to as *Client*.

License management software

Software that controls the usage of software applications programs. For example, a program might be licensed for use on one specific computer only, or for simultaneous use by a limited number of users on a network.

See also FLEXnet.

Master server	The server, in a three server redundant arrangement, that issues licenses. The master server must be started before the two secondary servers, and must be listed first in the license file and client license environment variables. If the master server fails, one of the two secondary servers becomes the master.
Options file	A plain text file that allows a floating license administrator to control user access to specific features or versions of licensed software. An options file can also be used to limit the information written to the license server debug log.
Permanent license	A license that enables you to use an ARM application. <i>See also</i> License management software.
Platform	A combination of a particular type of computer hardware meeting a minimum specification with a particular operating system of a specific release or later.
Server	A computer that issues floating licenses to a <i>client</i> computer. ARM licenses can be used with either a single server, or triple (redundant) server arrangement.
Server debug log	A plain text file that is optionally created by a license server process. By default, the server debug log contains diagnostic and license usage information. The server debug log is separate to the FLEXnet server report log.
Server log	<i>See</i> Server debug log.