

QuaRC 2.0

Installation Guide

**Single-User and Network Installations/License Configuration
(Windows, QNX, and Gumstix Verdex)**

Date: October 30th, 2009



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Support for QuaRC
General information

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Thank you for purchasing QuaRC 2.0

You should read this Installation Guide because:

- QuaRC is a high performance real-time process and **very careful configuration is required** to ensure that maximum performance is achieved.
- Many complex programs must work together to achieve this performance and hence **following this guide is critical** to a successful installation.



There are no shortcuts

Do not ignore this Installation Guide

This Installation Guide covers the following:

- Single-user installation and configuration for Windows
- Network installation and configuration for Windows
- Single-user installation and configuration for QNX
- Network installation and configuration for QNX
- Single-user installation and configuration for Gumstix Verdex
- Network installation and configuration for Gumstix Verdex

The Installation should be performed by a **qualified computer engineer or computer technologist**, preferably with experience in the following:

- Windows OS
- MATLAB, Simulink, RTW (Real-Time Workshop), Control System Toolbox
- Real-time operation of PCs

Please follow the instructions provided in this Installation Guide completely and fully

If any questions arise in the course of your installation, please contact Quanser Technical Support by completing the online form at:

www.quanser.com/english/html/support/fs_support.html

Or by sending email to: tech@quanser.com



1. QuaRC Architecture and Installation Overview

QuaRC is Quanser's new, state-of-the-art rapid prototyping and production system for real-time control. QuaRC integrates seamlessly with Simulink to allow Simulink models to be run in real-time on a variety of targets, including Windows, QNX x86, and Linux ARM (gumstix Verdex).

1.1. QuaRC Components

The following is a list of QuaRC's installation components:

- **QuaRC Simulink Development Environment (SDE):** This component is required to generate/build code from MATLAB and Simulink models.
- **QuaRC Targets:** QuaRC supports Windows (XP and Vista), QNX x86, and Linux ARM (gumstix Verdex) targets. The QuaRC Target Manager runs the generated real-time code on the selected target. The target can be local (same machine as where the SDE is) or remote.
- **Quanser License Manager:** Manages licenses for Quanser products.

The above list includes the QuaRC "*installation components*". Another term that will be used extensively in the upcoming sections of this document is "*installation features*" and needs to be clearly distinguished from "*installation components*" in order to avoid confusion. During the QuaRC installation process, you will be asked to select the features you wish to install in one of the installation windows called Feature Selection. Depending on the installation type you are performing, you might have to select specific features to be installed or not installed. You should refer to the appropriate section of this document for specific instructions for each installation type, however in order to familiarize the user with all the installation features a brief description of each is given below.

Figure 1 shows a snapshot of the installation window in which you have to select the features you would like to install. As you can see from the figure, the Quanser hierarchy tree view item is divided into QuaRC and Quanser License Manager. In addition the QuaRC hierarchy tree view item itself is divided into QuaRC Simulink Development Environment, QuaRC Simulink Beta Components, QuaRC .NET Components, QuaRC LabVIEW Components, QuaRC Windows Target and QuaRC INtime Target.

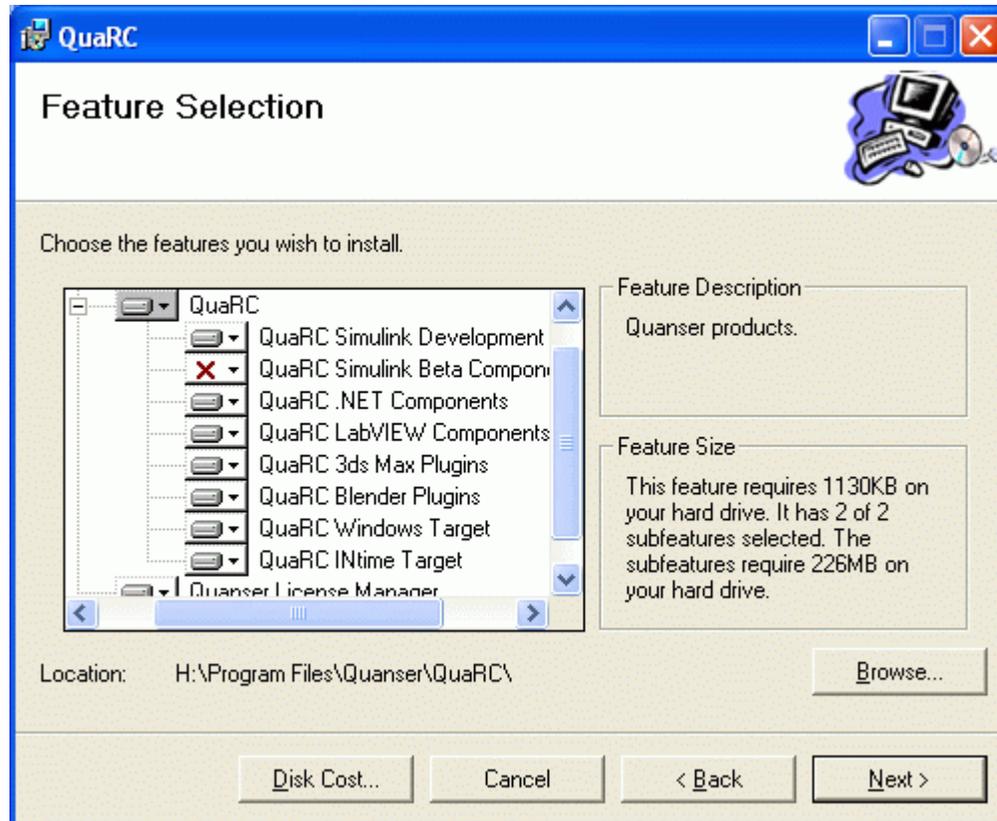


Figure 1: Feature Selection Window

The **QuaRC Simulink Development Environment (SDE)** feature, as explained above is required to generate/build code to be later run on a real-time target from MATLAB/Simulink models. If you do not install this feature, you will not be able to build your models and hence you can not generate real-time code and download it to your models.

The **QuaRC Simulink Beta Components** feature includes additional blocks on top of those provided in the QuaRC SDE. However the blocks included in this library are beta versions. Please note that this feature is chosen not to be installed by default. If you would like to install this feature, you should manually include it in the Feature Selection window during the installation process.

The **QuaRC .NET Components** feature allows .NET languages to be used with QuaRC.

The **QuaRC LabVIEW Components** feature allows NI LabVIEW to be used with QuaRC.

The **QuaRC Windows Target** feature is required to run the generated code from MATLAB/Simulink models on a real-time Windows target (local or remote). As explained above without the QuaRC SDE, you will not be able to generate code from MATLAB/Simulink models. However please note that if the QuaRC Windows Target feature is installed without installing the QuaRC SDE, you can still run previously generated

QuaRC executable files on your Windows target provided that appropriate licensing is present.

The **QuaRC INtime Target** feature is required to run the generated code from MATLAB/Simulink models on a real-time INtime target (local or remote).

The **Quanser License Manager** feature is required to manage the licenses issued with your product. This feature must be present when you configure your license for the first time after the installation as well as each time you use your QuaRC product.

Another important distinction that needs to be made to avoid possible confusion is between the terms host, target, server and client. QuaRC **Host** is the machine on which code is generated from MATLAB/Simulink models. QuaRC **Target** is the machine on which the generated code runs. License **Server** is the machine on which the Quanser License Manager is installed in a network installation. A QuaRC Host and a QuaRC Target may both use the License Server to configure their product licensing. **Client** is a machine that uses the license server to configure its licensing and may either be a host or a target as noted. **Throughout this document, the terms server and client are only used to specify a server/client relationship in the licensing sense and do not indicate the host/target relationship in any means.**

There are two installation modes associated with QuaRC, namely single-user installation and network installation. Depending on the license type you have purchased (i.e., single-user license or network license), you must follow the respective installation instructions found in the upcoming sections of this document. However, in order to familiarize the user with both modes and their overall architecture, a brief description of each is given below.

1.2. Single-User Mode

In the single-user mode, all of the above components are installed on a single machine and both the license manager and the QuaRC product itself will be configured on this machine after the installation. A detailed description of this procedure is given in the Single-User Installation sections of this document and you should follow these instructions if you have purchased a single-user license.

1.3. Network Mode

In this mode the QuaRC SDE and other QuaRC Target components will be installed on every client machine and only the Quanser License Manager component is installed on the license server machine. In addition after the installation has completed, the license configuration tool will be used to configure the QuaRC product on client machines and the License Manager on the server machine. Again, a detailed description of this procedure will be presented in the Network Installation sections of this document and you should follow these instructions if you have purchased a network license. Please note that, it is also possible to only install the QuaRC Target component on your client machines. In this case, since QuaRC SDE is not installed, you will not be able to generate/build code from

your Simulink models. However you can still run previously generated QuaRC executable files on your intended target provided that:

- You have met QuaRC Target's software/hardware requirements. Refer to the Software Requirements and Hardware Requirements sections in this document.
- Your intended target is included in the license you have purchased. (For example if you have only purchased the Windows Target License, you will not be able to run code on a QNX x86 target).

QuaRC allows you to run the real-time code generated from your Simulink models on both local and remote targets. Figure 2 illustrates QuaRC's architecture and its components when the host and target are on the same machine:

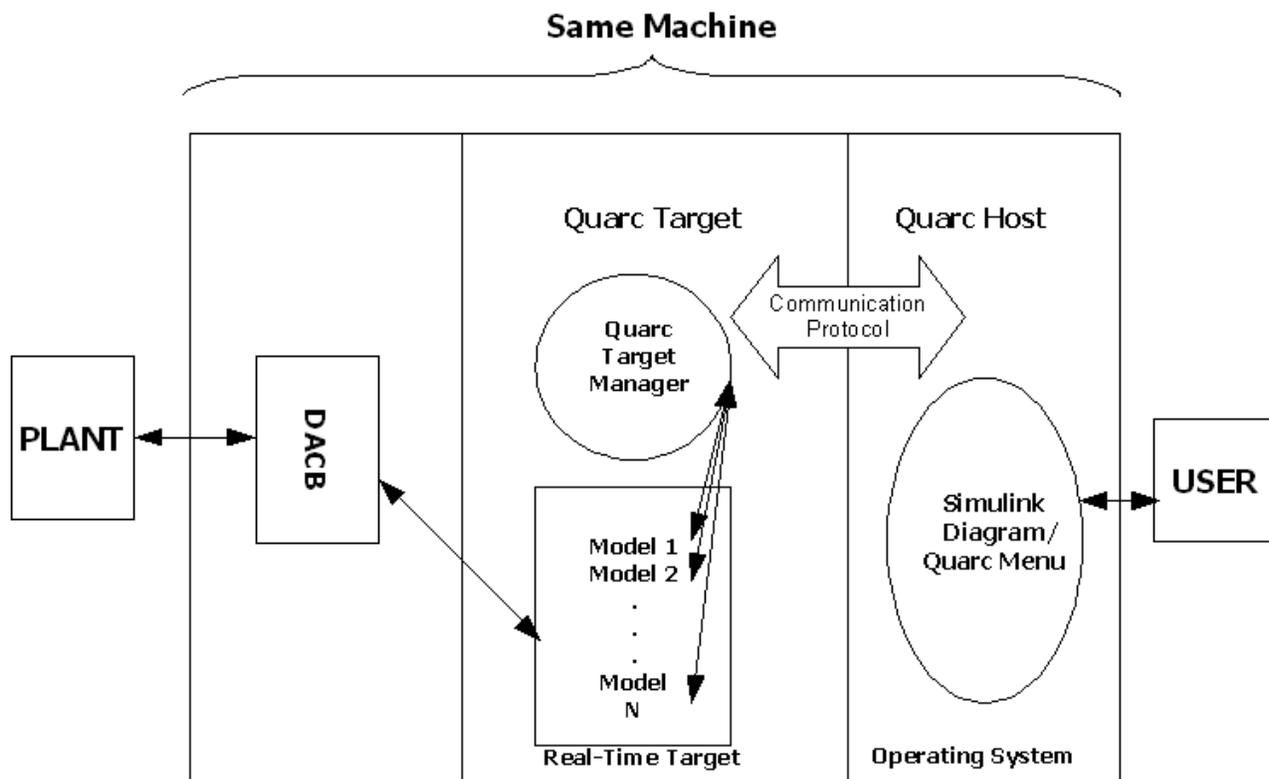


Figure 2: Local Configuration With QuaRC Host And Target On The Same Machine

Figure 3 on the next page illustrates QuaRC's architecture and its components when the code runs on a remote target (or multiple remote targets).

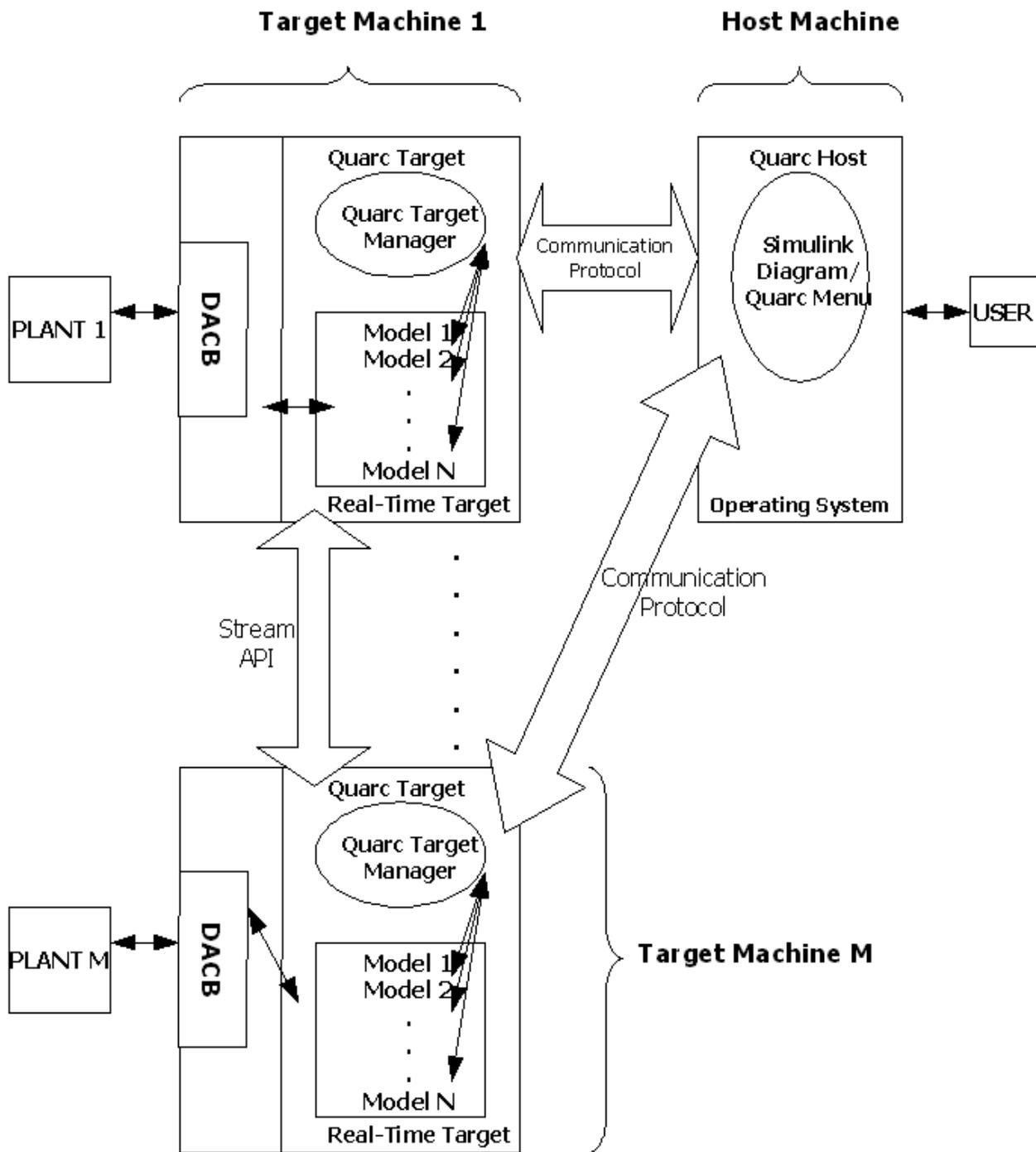


Figure 3: Remote Configuration With QuaRC Host And Target On Different Machines

2. Software Requirements

In this section software requirements for proper operation of each of the QuaRC installation components discussed above are presented.

2.1. QuaRC Simulink Development Environment (SDE)

The software requirements for the QuaRC SDE component running on the 32-bit Windows host PC include:

- MATLAB R2007a, R2007b, R2008a, R2008b, R2009a, or R2009b.
- Simulink accompanying MATLAB R2007a, R2007b, R2008a, R2008b, R2009a, or R2009b.
- RTW (Real-Time Workshop) accompanying MATLAB R2007a, R2007b, R2008a, R2008b, R2009a, or R2009b.
- Optional but highly recommended: Control System Toolbox accompanying MATLAB R2007a, R2007b, R2008a, R2008b, R2009a, or R2009b. QuaRC does not actually require the Control System Toolbox to operate. However, the Control System Toolbox is used by most of Quanser's controls laboratories.

There are also additional requirements for the QuaRC SDE component that depend on the target type for which you need to **build** code, as expressed in the subsequent sections.

2.1.1. QuaRC SDE Compatibility Chart For The 32-bit Windows Target

QuaRC Target for Windows requires Microsoft Visual Studio 2005 Professional SP1 or Microsoft Visual Studio 2008 Professional SP1. Keep in mind that only MATLAB R2008b with corresponding RTW (and later versions, e.g., R2009a or R2009b) fully support Microsoft Visual Studio 2008. If you are using an earlier version of MATLAB, you have to install Microsoft Visual Studio 2005 Professional SP1. Express Editions of Microsoft Visual C++ 2005 and 2008 are also supported. The resulting QuaRC SDE Compatibility Chart for the QuaRC Windows Target is described in Table 1.

32-bit Windows Host PC For Windows Target	Windows OS Service Pack	MS Visual Studio or C++ 2005 (8.0) Prof. or Express Ed. SP1	MS Visual Studio or C++ 2008 (9.0) Prof. or Express Ed. SP1	MATLAB, Simulink, RTW, Control System Toolbox (for labs)
XP Pro Ed.	SP2 or SP3	✓	✗	R2007a, R2007b R2008a
		✓	✓	R2008b, R2009a, R2009b
Vista	No SP or SP1	✓	✗	R2007a, R2007b R2008a
		✓	✓	R2008b, R2009a, R2009b

Table 1 QuaRC SDE Compatibility Chart For The 32-bit Windows Target

2.1.2. QuaRC SDE Compatibility Chart For The QNX x86 Target

QuaRC Target for QNX x86 requires Momentics x86 Cross-Hosted Development Tools for Windows Host Environment 6.3.2. The resulting QuaRC SDE Compatibility Chart for the QuaRC QNX x86 Target in described in Table 2.

32-bit Windows Host PC For QNX x86 Target	Windows OS Service Pack	QNX Momentics x86 Cross-Hosted Development Tools 6.3.2 For Microsoft Windows	MATLAB, Simulink, RTW, Control System Toolbox (for labs)
XP Pro Ed.	SP2 or SP3	✓	R2007a, R2007b R2008a, R2008b R2009a, R2009b
Vista	No SP or SP1	✓	R2007a, R2007b R2008a, R2008b R2009a, R2009b

Table 2 QuaRC SDE Compatibility Chart For The QNX x86 Target

2.1.3. QuaRC SDE Compatibility Chart For The Linux ARM (gumstix) Target

QuaRC Target for Linux ARM (gumstix Verdex) does not require any cross-compiler on the Windows host as the compilation of the generated code is done remotely on the targeted gumstix board itself. The resulting QuaRC SDE Compatibility Chart for the QuaRC Linux ARM (gumstix Verdex) Target in described in Table 3.



<i>32-bit Windows Host PC For Linux ARM (gumstix) Target</i>	<i>Windows OS Service Pack</i>	<i>MATLAB, Simulink, RTW, Control System Toolbox (for labs)</i>
XP Pro Ed.	SP2 or SP3	R2007a, R2007b, R2008a, R2008b, R2009a, R2009b
Vista	No SP or SP1	R2007a, R2007b, R2008a, R2008b, R2009a, R2009b

Table 3 QuaRC SDE Compatibility Chart For The Linux ARM (gumstix) Target

2.2. QuaRC Targets

The software requirements for this installation component depend on the target type on which you need to **run** code:

- **QuaRC Target for Windows** requires Microsoft Windows XP Professional (SP2 and SP3) or Microsoft Windows Vista (no SP or SP1).
- **QuaRC Target for QNX x86** requires QNX Neutrino 6.3.2.
- **QuaRC Target for Linux ARM (gumstix Verdex)** requires a Gumstix Verdex Pro XL6P board equipped with a QuaRC-customized OpenEmbedded (OE) root filesystem running Linux kernel 2.6.21 (or later) and setup with the full GNU compilation suite based on GCC version 4.1.2 (or later), as the code generated from the Windows host is compiled locally on the gumstix Verdex system, where it then also run. Such a QuaRC-optimized gumstixOE root filesystem is provided by Quanser.

2.3. Quanser License Manager

- Microsoft Windows XP Professional (SP2 and SP3) or Microsoft Windows Vista (no SP or SP1).
- QNX Neutrino 6.3.2.
- Gumstix Verdex (Linux ARM).



3. Using Microsoft Visual C++ 2005 or 2008 Express Edition With QuaRC

If you choose to use Microsoft Visual C++ 2005 or 2008 Express Edition as your compiler, you should follow the instructions below after you have installed QuaRC and Microsoft Visual C++ 2005 or 2008 Express Edition. If you have performed a network installation, you only need to perform the tasks below on your license client (i.e., QuaRC host) machines.

Step 1. Download and install the appropriate version of Microsoft Platform Software Development Kit (SDK) compatible with your platform (i.e., operating system and processor) and compiler.

For example, if you are using Microsoft Visual C++ 2005 Express Edition and running Windows XP, see the following page:

<http://www.microsoft.com/downloads/details.aspx?FamilyId=0BAF2B35-C656-4969-ACE8-E4C0C0716ADB&displaylang=en>

to find and download the version of Platform SDK compatible with your processor. Likewise, if you are using Microsoft Visual C++ 2008 Express Edition and running Windows XP or Windows Vista, see the following page:

<http://www.microsoft.com/downloads/details.aspx?familyid=F26B1AA4-741A-433A-9BE5-FA919850BDBF&displaylang=en>

to find and download the version of Platform SDK compatible with your platform and compiler.

Step 2. Once installation of the Microsoft Platform SDK is complete, right-click on My Computer and select Properties.

Step 3. In the System Properties window, click on the Advanced tab.

Step 4. Click on Environment Variables.

Step 5. Click on the New button found under User variables, as depicted in Figure 4.

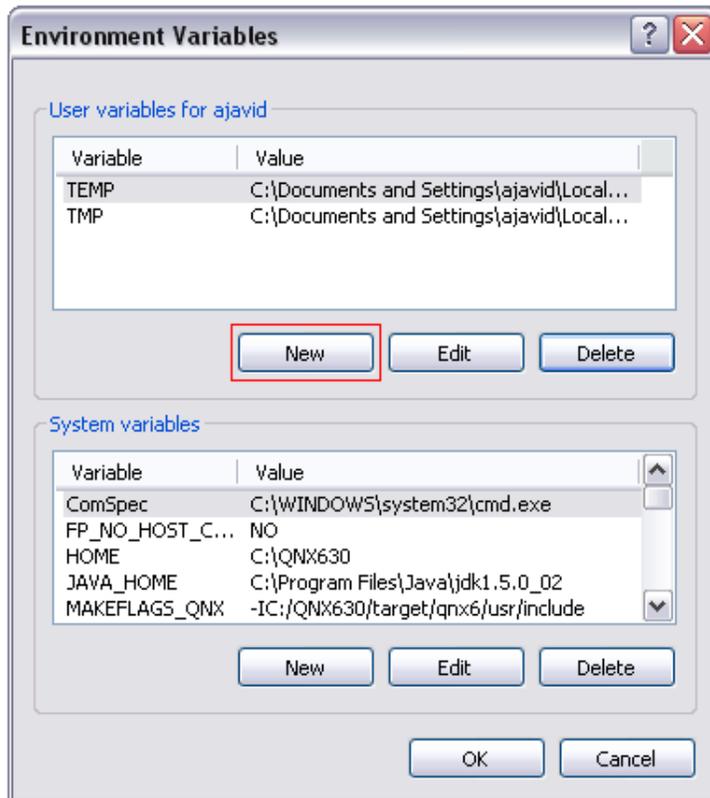


Figure 4: Creating a New User Variable

Step 6. The New User Variable window opens. Enter MSSdk for the Variable name. For the Variable value you should enter the location where you have installed Microsoft Platform SDK corresponding to your platform and compiler.

For example if your installation directory for this SDK software is:

C:\Program Files\Microsoft Platform SDK for Windows Server 2003 R2

You should enter this path as the Variable value as shown in Figure 5 below.

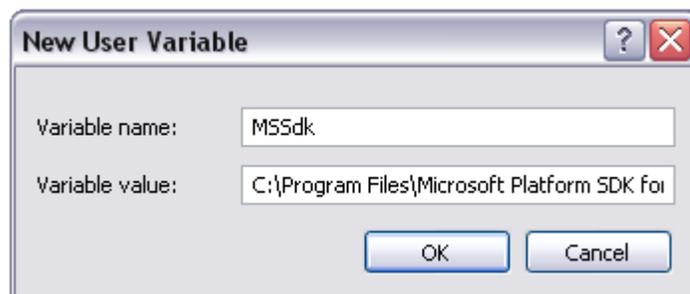


Figure 5: Editing the MSSdk User Variable

Step 7. Click on OK.

Step 8. Now open MATLAB and type mex -setup in the Command Prompt and follow the instructions to select Microsoft Visual C++ 2005 or 2008 Express Edition as

your default MATLAB compiler. Please note that in order for mex -setup to be able to select the compiler, it should already be installed on your system. Therefore after installing Microsoft Platform SDK, you should install Microsoft Visual C++ 2005 or 2008 Express Edition if you have not done so already. If however this compiler is installed you can run mex -setup as instructed above.

Please keep in mind that questions, concerns and any technical issues regarding the use of Microsoft Visual C++ 2005 or 2008 Express should be directed to Microsoft and not Quanser. The above instructions simply outline the steps required to configure QuaRC with this compiler should you choose to use it.



4. Hardware Requirements

In this section hardware requirements for proper operation of the installation components discussed earlier are presented. Note that the disk space requirements listed below are only for the QuaRC component being installed. The disk space requirements for any other third party software such as MATLAB and compilers should be obtained from their appropriate documentation and added separately.

4.1. QuaRC Simulink Development Environment (SDE)

The following indicates the hardware requirements of your intended Windows host (SDE) machine.

- Processor: 2.8 GHz clock speed or higher on Intel Pentium IV or AMD Family.
- RAM: 512 MB (1024 MB recommended).
- Disk Space: 200 MB.

4.2. QuaRC Targets

4.2.1. Windows Target

The following indicates the hardware requirements of your intended Windows target machine. If your target system is the same as your host system, the QuaRC SDE hardware requirements should be used.

- Processor: 300 MHz clock speed or higher on Intel Pentium or AMD Family.
- RAM: 256 MB.
- Disk Space: 20 MB.

4.2.2. QNX x86 Target

The following indicates the hardware requirements of your intended QNX x86 target machine.

- Processor: 300 MHz clock speed or higher on x86 or AMD Family.
- RAM: 128 MB.
- Disk Space: 7 MB.

4.2.3. Linux ARM (Gumstix Verdex) Target

The following indicates the hardware requirements of your intended Linux ARM (i.e., gumstix Verdex XL6P) target machine.

- Processor: 600 MHz clock speed on PXA270 ARM CPU.
- RAM: 128 MB.
- Disk Space: 5 MB.

4.3. Quanser License Manager

The following indicates the hardware requirements of your intended Quanser License Manager machine.

- Processor: 300 MHz clock speed or higher on x86 or AMD Family.
- RAM: 128 MB.
- Disk Space: 8 MB.



5. Single-User Windows Setup: QuaRC Installation And License Configuration

ALL software MUST be installed using the Administrator account or an account with administrator privileges. This ensures that all paths are available to all User Accounts.

Please note that you should follow these instructions if you have purchased a single-user license and would like to install QuaRC on a Windows machine. If you have purchased a network license or would like to install QuaRC on a QNX or Linux ARM machine, please follow the corresponding installation instructions found in other sections of this document.



Caution: Ensure that the person installing QuaRC is logged as **Administrator** or has **Administrator privileges**. This can be checked in Windows XP by right-clicking on *My Computer* and selecting *Manage*. Under *Computer Management*, in the *System Tools* section, expand *Local Users and Groups* and open the *Groups* section. Then double-click on the *Administrators* name and see if the login name that you are using is displayed (with the correct domain name, if applicable) in the *Members* list. If your username is not displayed in the list, then you do not have Administrator privileges. If the Administrators group does not appear, then you do not have Administrator privileges. In Windows Vista, even if you are logged as Administrator, it may still prompt you to elevate your privileges to full Administrator privileges when you run the *Configure Licensing* tool. In this case, choose *Yes*.



Caution: Ensure that the version of QuaRC that you are planning to install is compatible with your QuaRC license file. This can be checked by opening and reading the contents of your QuaRC license file. This is a text file (with a .lic file extension) that can be opened, for example, with Wordpad. The version of QuaRC that you are planning to install should be included within the version range indicated by the *Minimum version:* and *Maximum version:* fields of the QuaRC license file.



Caution: If you already have an earlier version of QuaRC installed on your machine it must be removed prior to installing the newer version. In order to uninstall an earlier installation of QuaRC please follow the steps below:

1. Click on Start/Control Panel.
2. Double click on the Add or Remove Programs utility icon.
3. In the "Currently installed programs" list look for QuaRC and click on it.
4. Click on the "Remove" button.



5. The uninstallation process will resume automatically to remove QuaRC.

If you do not perform the above uninstallation process prior to installing a new version of QuaRC, the installer will remove the old QuaRC version first.

It should be mentioned that the appropriate version of MATLAB should be installed prior to installing QuaRC, since QuaRC automatically adds itself to the MATLAB path. However it is also possible to add QuaRC manually to the MATLAB path if QuaRC is installed prior to installing MATLAB. This can be done by running the `quarc_setup` script found in `<QuaRC>\quarc`, where `<QuaRC>` denotes the installation directory of QuaRC (typically `C:\Program Files\Quanser\QuaRC`).



Caution: If you have already installed the Quanser HIL SDK 1.2.0.10 or earlier, you should remove it before installing QuaRC. QuaRC contains an updated version of the HIL SDK which is incompatible with the earlier versions. Therefore make sure that this software is removed before installing QuaRC.



Caution: WinCon and QuaRC should not be installed on the same version of MATLAB. If you have WinCon installed on your computer installing QuaRC on the same machine will cause conflicts and result in non-proper operation of QuaRC. WinCon is installed on a specific version of MATLAB chosen by the user at installation time. However QuaRC will automatically add itself to the path of all MATLAB versions greater than or equal to R2007a that it finds. To avoid library conflicts, either QuaRC has to be removed from the path of MATLAB versions on which WinCon is installed, or WinCon has to be completely removed before installing QuaRC. To remove QuaRC from the path of a specific MATLAB version simply remove all the QuaRC paths from that MATLAB by using the MATLAB File/Set Path menu option.

You are encouraged to read the “WinCon to QuaRC Migration” section in QuaRC documentation where you can find useful information on transitioning WinCon models to QuaRC models.

Make sure MATLAB and Microsoft Visual Studio are closed before beginning the installation.

The QuaRC installation steps are as follows:

1. Insert the QuaRC installation CD into the CD-ROM drive.
2. In the Windows Explorer window double click on `D:\setup.exe` to launch the QuaRC Installer. If your CD-ROM drive letter is not D, substitute the appropriate drive letter in the above path. **DO NOT run the .msi installer directly as the setup.exe program installs the required prerequisites.**
3. Once you run the setup program, a window will appear as depicted in Figure 6. Click on the Install button to begin installing the Visual C++ Runtime Libraries.



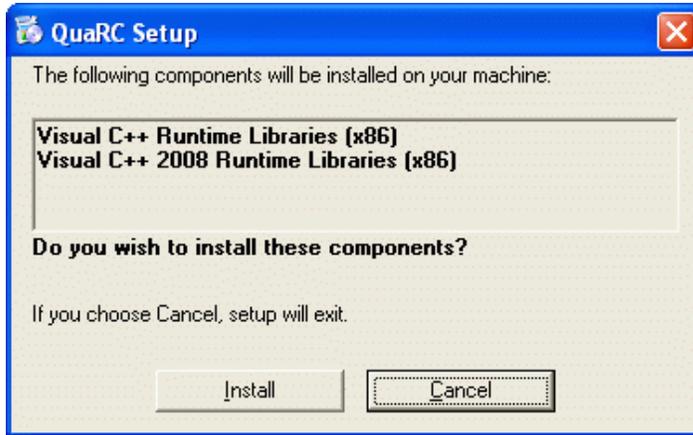


Figure 6: Runtime Libraries Installation

4. After the Runtime Libraries are installed the Welcome screen appears. Click Next on the Welcome to the QuaRC Setup Wizard page to see the License Agreement, as illustrated in Figure 7.



Figure 7: License Agreement Installation Page

5. Click "I Agree" and then Next to see the Feature Selection window, represented in Figure 8.

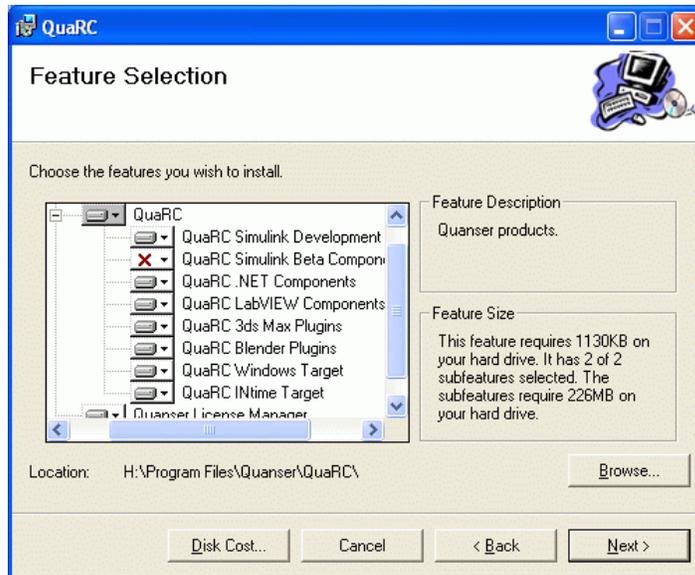


Figure 8: Single-User Feature Selection

6. Since you have purchased a single-user license, you need to install QuaRC and Quanser License Manager on the same computer. In the Feature Selection window, make sure that QuaRC and Quanser License Manager are both selected to be installed, as seen in Figure 8.

Important Note: In the Feature Selection window, if you extend the tree hierarchy under QuaRC you will notice that it consists of QuaRC SDE, QuaRC Simulink Beta Components, QuaRC .NET Components, QuaRC LabVIEW Components, QuaRC Windows Target, and QuaRC INtime target. Depending on the products you have purchased a license for you can select specific features to be installed or not installed in the Feature Selection window. As mentioned earlier in this document, the SDE component is required to generate/build the real-time code to be run on a selected target. It should be noted that if you select to install the QuaRC Target for Windows component, but not to install QuaRC SDE, you will not be able to generate/build code from your Simulink models. However you can still run previously generated QuaRC executable files on your intended target provided that:

- You have met the QuaRC Target's software/hardware requirements discussed earlier.
 - Your intended target is included in the license you have purchased. For example if you have only purchased the Windows Target License, you will not be able to run code on a QNX x86 or Linux ARM target.
7. Click Next to be taken to the Confirm Installation page and finally click Next to begin installation.
 8. Once the installation is complete, the QuaRC Information page will appear in which you can find instructions on using the configure licensing tool. Although step by

step instructions on license configuration are given below you are encouraged to read through this page as well to familiarize your self with the licensing procedure. Once you are done click on Next.

9. In the Configure License page you can select to run the configure licensing tool immediately by checking the box next to "Run the Configure Licensing tool now", or you can leave this box unchecked in which case you have to run this tool manually as instructed below. Click Next to complete the installation.

If you checked the box next to "Run the Configure Licensing tool now" in the last installation page, skip step 1 below. Otherwise:

1. Run the Configure Licensing tool by clicking on:
2. Start/All Programs/Quanser/QuaRC/Configure Licensing.
3. Since you have purchased a Single-User License, both the Quanser License Manager and QuaRC itself are installed on the same machine and hence can be configured at once. On the QuaRC License Registration window that opens, **make sure Configure license manager and Configure QuaRC options are both checked**, as illustrated in Figure 9, and click on OK:

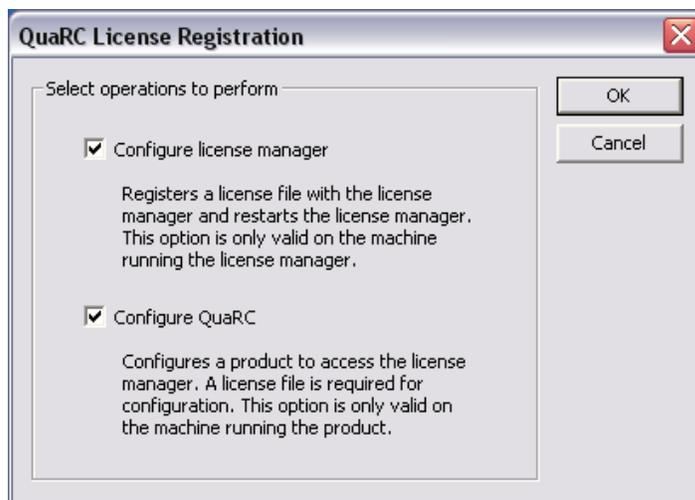


Figure 9: Single-User Windows License Configuration

4. Browse to the location where you have saved the license file provided to you by Quanser, select the file and click on Open.

Note: The Configure Licensing tool browses to the My Documents folder by default. Therefore it would be useful to save the license file provided by Quanser in the My Documents folder of the administrator account from which the software is installed.
5. A message saying "The license has been configured successfully" will be displayed. Click on OK.

Important Note: To resolve any possible broken links in your Simulink diagram that

might be caused by upgrading from an earlier version of QuaRC, please use the “Upgrade blocks” option of the QuaRC menu item. To do this simply click on the QuaRC menu item in any Simulink model and select “Upgrade blocks”. Please refer to the “QuaRC Upgrade” section in QuaRC documentation for more information on this issue.

Important Note: After the installation is complete, in order to be able to build code for QuaRC Target for Windows please perform the following:

Open MATLAB and type `mex -setup` in the command prompt and follow the instructions to select Microsoft Visual Studio 2005 or 2008 or any compiler supported by QuaRC as your default MATLAB compiler. If you would like to use Microsoft Visual C++ 2005 or 2008 Express Edition, follow the instructions found under Section 3 titled “Using Microsoft Visual C++ 2005 or 2008 Express Edition With QuaRC”.



6. Network Windows Setup: QuaRC Installation And License Configuration

ALL software MUST be installed using the Administrator account or an account with administrator privileges. This ensures that all paths are available to all User Accounts.

Please note that you should follow these instructions if you have purchased a network license and would like to install QuaRC on a Windows machine. If you have purchased a single-user license or would like to install QuaRC on a QNX or Linux ARM machine, please follow the corresponding installation instructions found in other sections of this document.



Caution: Ensure that the person installing QuaRC is logged as **Administrator** or has **Administrator privileges**. This can be checked in Windows XP by right-clicking on *My Computer* and selecting *Manage*. Under *Computer Management*, in the *System Tools* section, expand *Local Users and Groups* and open the *Groups* section. Then double-click on the *Administrators* name and see if the login name that you are using is displayed (with the correct domain name, if applicable) in the *Members* list. If your username is not displayed in the list, then you do not have Administrator privileges. If the Administrators group does not appear, then you do not have Administrator privileges. In Windows Vista, even if you are logged as Administrator, it may still prompt you to elevate your privileges to full Administrator privileges when you run the *Configure Licensing* tool. In this case, choose *Yes*.



Caution: Ensure that the version of QuaRC that you are planning to install is compatible with your QuaRC license file. This can be checked by opening and reading the contents of your QuaRC license file. This is a text file (with a .lic file extension) that can be opened, for example, with Wordpad. The version of QuaRC that you are planning to install should be included within the version range indicated by the *Minimum version:* and *Maximum version:* fields of the QuaRC license file.



Caution: If you already have an earlier version of QuaRC installed on your machine it must be removed prior to installing the newer version. In order to uninstall an earlier installation of QuaRC please follow the steps below:

1. Click on Start/Control Panel.
2. Double click on the Add or Remove Programs utility icon.
3. In the "Currently installed programs" list look for QuaRC and click on it.
4. Click on the "Remove" button.
5. The uninstallation process will resume automatically to remove QuaRC.



If you do not perform the above uninstallation process prior to installing a new version of QuaRC, the installer will remove the old QuaRC version first.

It should be mentioned that the appropriate version of MATLAB should be installed prior to installing QuaRC, since QuaRC automatically adds itself to the MATLAB path. However it is also possible to add QuaRC manually to the MATLAB path if QuaRC is installed prior to installing MATLAB. This can be done by running the `quarc_setup` script found in `<QuaRC>\quarc`, where `<QuaRC>` denotes the installation directory of QuaRC (typically `C:\Program Files\Quanser\QuaRC`). In the Network Setup, if QuaRC is being installed before installing MATLAB you should only run the `quarc_setup` script on your client machines.



Caution: If you have already installed the Quanser HIL SDK 1.2.0.10 or earlier, you should remove it before installing QuaRC. QuaRC contains an updated version of the HIL SDK which is incompatible with the earlier versions. Therefore make sure that this software is removed before installing QuaRC.



Caution: WinCon and QuaRC should not be installed on the same version of MATLAB. If you have WinCon installed on your computer installing QuaRC on the same machine will cause conflicts and result in non-proper operation of QuaRC. WinCon is installed on a specific version of MATLAB chosen by the user at installation time. However QuaRC will automatically add itself to the path of all MATLAB versions greater than or equal to R2007a that it finds. To avoid library conflicts, either QuaRC has to be removed from the path of MATLAB versions on which WinCon is installed, or WinCon has to be completely removed before installing QuaRC. To remove QuaRC from the path of a specific MATLAB version simply remove all the QuaRC paths from that MATLAB by using the MATLAB File/Set Path menu option.

You are encouraged to read the “WinCon to QuaRC Migration” section in QuaRC documentation where you can find useful information on transitioning WinCon models to QuaRC models.

The network licensing setup consists of two separate installations. You only need to install the Quanser License Manager on the License server machine on your network and only the QuaRC SDE and/or Windows Target components on every client machine on your network. There are also separate procedures for configuring the license on server and client machines which will be outlined in this section.

6.1. Installing And Configuring The License Server Windows Machine

To install the Quanser License Manager on your license server machine follow the instructions listed below. Also ensure that MATLAB and Microsoft Visual Studio are closed before beginning the installation.



1. Insert the QuaRC installation CD into the CD-ROM drive.
2. In the Windows Explorer window double click on D:\setup.exe to launch the QuaRC Installer. If your CD-ROM drive letter is not D, substitute the appropriate drive letter in the above path. **DO NOT run the .msi installer directly as the setup.exe program installs the required prerequisites.**
3. Once you run the setup program, a window will appear as depicted in Figure 10. Click on the Install button to begin installing the Visual C++ Runtime Libraries.

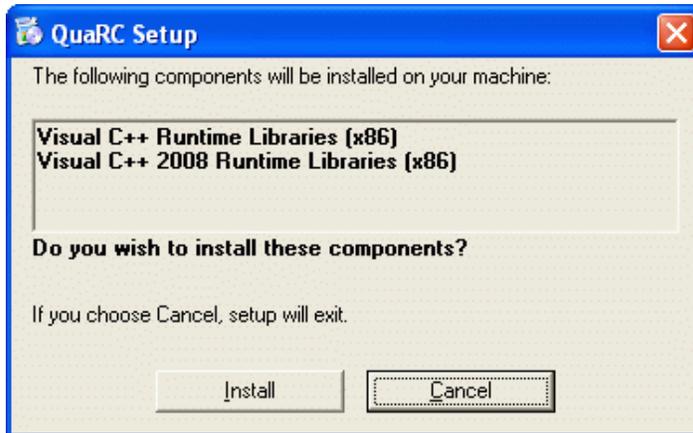


Figure 10: Runtime Libraries Installation

4. After the Runtime Libraries are installed the Welcome screen appears. Click Next on the Welcome to the QuaRC Setup Wizard page to see the License Agreement.
5. Click "I Agree" and then Next to see the Feature Selection window as shown in Figure 11.



Figure 11: License Agreement Installation Page

6. You only need to install the Quanser License Manager on your License Server machine, therefore in the Feature Selection window click on the icon to the left of QuaRC and select "Entire feature will be unavailable" as shown in Figure 12.

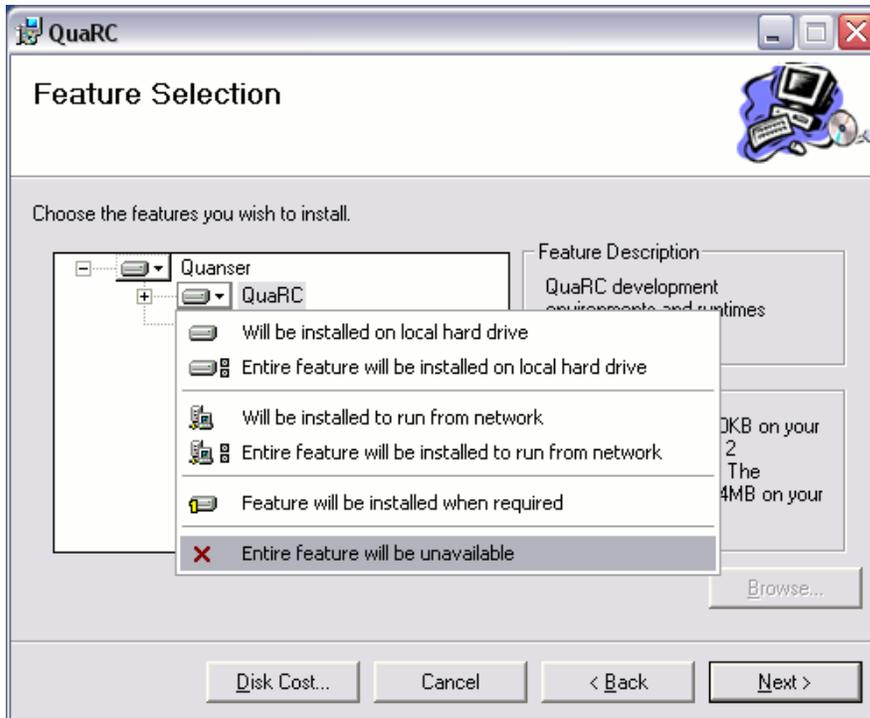


Figure 12: Feature Selection For The License Server

7. Click Next.
8. In the Confirm Installation window, click on Next to begin your installation.
9. Once the installation is complete, the QuaRC Information page will appear in which you can find instructions on using the configure licensing tool. Although step by step instructions on license configuration are given below you are encouraged to read through this page as well to familiarize your self with the licensing procedure. Once you are done click on Next.
10. In the Configure License page you can select to run the configure licensing tool immediately by checking the box next to "Run the Configure Licensing tool now", or you can leave this box unchecked in which case you have to run this tool manually as instructed below. Click Next to complete the installation.

If you checked the box next to "Run the Configure Licensing tool now" in the last installation page, skip step 1 below. Otherwise:

1. Run the Configure Licensing Tool by clicking on:
Start/All Programs/Quanser/QuaRC/Configure Licensing.
2. You only need to configure the License Manager on the License Server machine as it is the only component installed. Therefore in the QuaRC License Registration window, **only select Configure license manager** as shown in Figure 13 and click on OK.

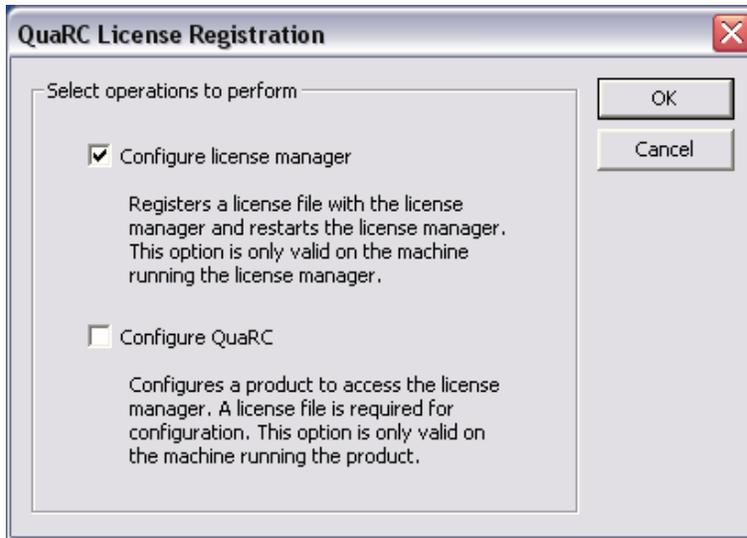


Figure 13: License Configuration for the License Server

3. Browse to the location where you have saved the license file provided to you by Quanser, select the file and click on Open.
Note: The Configure Licensing tool browses to the My Documents folder by default. Therefore it would be useful to save the license file provided by Quanser in the My Documents folder of the administrator account from which the software is installed.
4. Make sure the following parameters are entered in the Network License Parameters window that opens as shown in Figure 14.

Host name or IP address: localhost
 Port : 16999

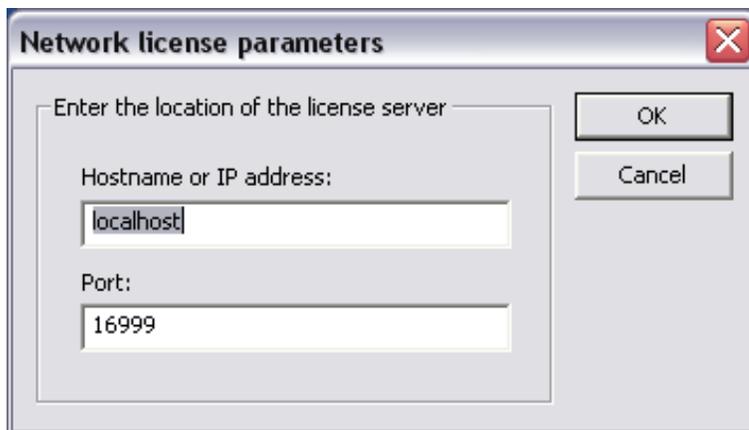


Figure 14: Network License Parameters For The License Server

5. Click OK. A message saying "The license has been configured successfully" will be displayed.

Please note that the above installation/license configuration instructions are only valid for the License Server computer.

Caution: If the License Server computer is equipped with a Firewall, please ensure that the port (by default: 16999) configured to be used by the Quanser License Manager is allowed (i.e., not blocked) by the active Firewall.

6.2. Installing And Configuring The License Client Windows Machine(s)

There are different instructions on how to install QuaRC and configure the license on client machines which follows next. Make sure MATLAB and Microsoft Visual Studio are both closed before beginning the installation.

You should perform the following installation steps for each client machine on your network:

1. Insert the QuaRC installation CD into the CD-ROM drive.
2. In the Windows Explorer window double click on D:\setup.exe to launch the QuaRC Installer. If your CD-ROM drive letter is not D, substitute the appropriate drive letter in the above path. **DO NOT run the .msi installer directly as the setup.exe program installs the required prerequisites.**
3. Once you run the setup program, a window will appear as depicted in Figure 15. Click on the Install button to begin installing the Visual C++ Runtime Libraries.

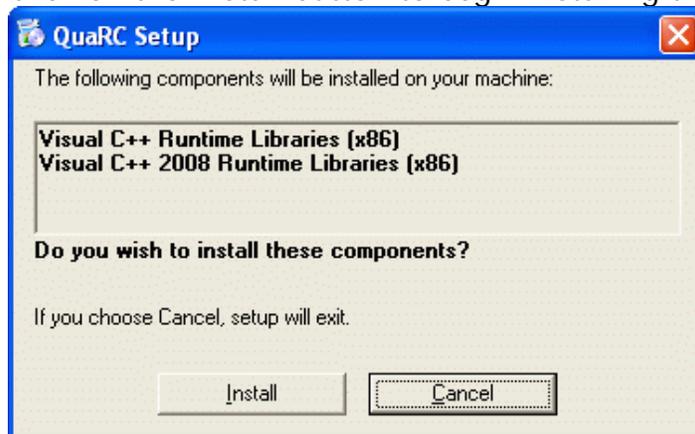


Figure 15: Runtime Libraries Installation

4. After the Runtime Libraries are installed the Welcome screen appears. Click Next on the Welcome to the QuaRC Setup Wizard page to see the License Agreement.
5. As depicted in Figure 16, click "I Agree" and then click Next to be taken to the Feature Selection Window.



Figure 16: License Agreement Installation Page

6. **You don't need to install Quanser License Manager on your client machines.** Therefore in the Feature Selection window click on the icon to the left of Quanser License Manager and select "Entire feature will be unavailable" as shown in.

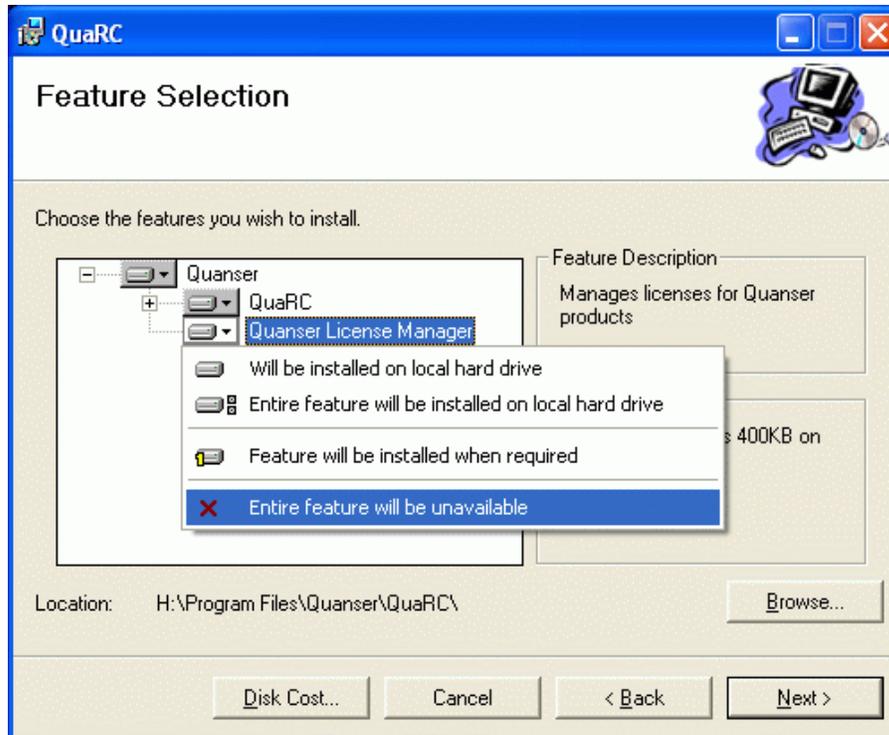


Figure 17: Feature Selection For The License Client(s)

Important Note: In the Feature Selection window, if you extend the tree hierarchy under QuaRC you will notice that it consists of QuaRC SDE, QuaRC Simulink Beta Components, QuaRC .NET Components, QuaRC LabVIEW Components, QuaRC Windows Target, and QuaRC INtime target. Depending on the products you have purchased a license for you can select specific features to be installed or not installed in the Feature Selection window. As mentioned earlier in this document, the SDE component is required to generate/build the real-time code to be run on a selected target. It should be noted that if you select to install the QuaRC Target for Windows component, but not to install QuaRC SDE, you will not be able to generate/build code from your Simulink models. However you can still run previously generated QuaRC executable files on your intended target provided that:

- You have met the QuaRC Target's software/hardware requirements discussed earlier.
 - Your intended target type is included in the license you have purchased. For example if you have only purchased the Windows Target License, you will not be able to run code on a QNX x86 or Linux ARM target.
7. Click Next.
 8. In the Confirm Installation window, click on Next to begin your installation.
 9. Once the installation is complete, the QuaRC Information page will appear in which you can find instructions on using the configure licensing tool. Although step by step instructions on license configuration are given below you are encouraged to read through this page as well to familiarize your self with the licensing procedure.

Once you are done click on Next.

10. In the Configure License page you can select to run the configure licensing tool immediately by checking the box next to "Run the Configure Licensing tool now", or you can leave this box unchecked in which case you have to run this tool manually as instructed below. Click Next to complete the installation.

After the installation is complete, you should configure your product license on each client machine before being able to use QuaRC on them. If you checked the box next to "Run the Configure Licensing tool now" in the last installation page, skip step 1 below. Otherwise:

1. Run the Configure Licensing Tool by clicking on:
2. Start/All Programs/Quanser/QuaRC/Configure Licensing.
3. You only need to configure QuaRC on your client machines, as it is the only component installed. Therefore in the QuaRC License Registration window, **only select Configure QuaRC** and click on OK as shown in Figure 18.

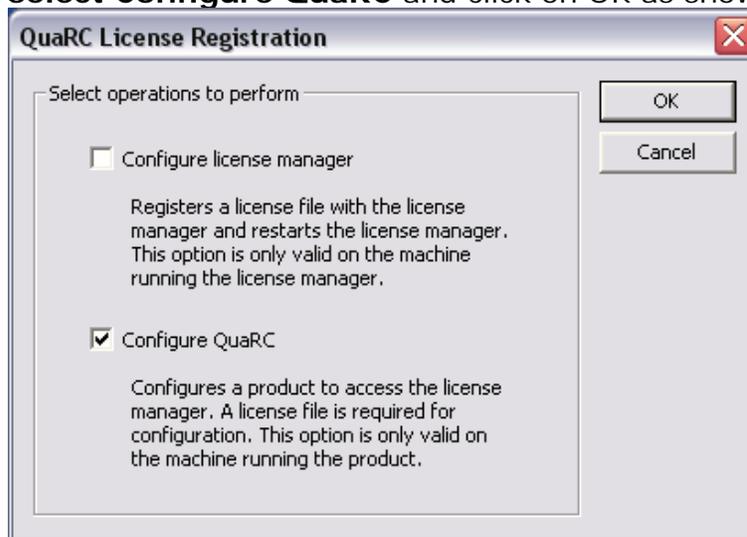


Figure 18: License Configuration for the License Clients

4. Browse to the location where you have saved the license file provided to you by Quanser, select the file and click on Open.
Note: The Configure Licensing tool browses to the My Documents folder by default. Therefore it would be useful to save the license file provided by Quanser in the My Documents folder of the administrator account from which the software is installed.
5. Enter the host name or IP address of the machine on which you have installed and configured the Quanser License Manager in the Network License Parameters window that opens. This IP address can be obtained by typing ipconfig in the Command Prompt window **of the license server machine**. After you have entered the IP address **make sure 16999 is entered as port** and click OK.

6. A message saying "The license has been configured successfully" will be displayed.

Important Note: To resolve any possible broken links in your Simulink model that might be caused by upgrading from an earlier version of QuaRC, please use the "Upgrade blocks" option of the QuaRC menu item. To do this simply click on the QuaRC menu item in any Simulink model and select "Upgrade blocks". Please refer to the "QuaRC Upgrade" section in QuaRC documentation for more information on this issue.

Important Note: After the installation is complete, in order to be able to build code for QuaRC Target for Windows open MATLAB and type `mex -setup` in the command prompt and follow the instructions to select Microsoft Visual Studio 2005 or 2008 or any compiler supported by QuaRC as your default MATLAB compiler. If you would like to use Microsoft Visual C++ 2005 or 2008 Express Edition, follow the instructions found under Section 3 titled "Using Microsoft Visual C++ 2005 or 2008 Express Edition With QuaRC".

7. Single-User QNX Setup: QuaRC Installation And License Configuration

ALL software MUST be installed using the root account or an account with administrator privileges. This ensures that all paths are available to all User Accounts.

Please note that you should follow these instructions if you have purchased a single-user license and would like to install QuaRC on a QNX x86 machine. If you have purchased a network license or would like to install QuaRC on a Windows or Linux ARM machine, please follow the corresponding installation instructions found in other sections of this document.

Please also note that regardless of the license type you have purchased (single-user or network), **your host is always a Windows machine** when building code for a QNX target. The upcoming installation instructions are for installing QuaRC on QNX machine(s), so that code generated from Simulink models on your **Windows host** can be run in real-time on your **QNX target**.



Caution: Ensure that the version of QuaRC that you are planning to install is compatible with your QuaRC license file. This can be checked by opening and reading the contents of your QuaRC license file. This is a text file (with a .lic file extension) that can be opened by any text editor software. The version of QuaRC that you are planning to install should be included within the version range indicated by the Minimum version: and Maximum version: fields of the QuaRC license file.



Caution: If you already have an earlier version of QuaRC installed on your machine it must be removed prior to installing the newer version. In order to uninstall an earlier installation of QuaRC please follow the steps below on your QNX machine:

1. Click on Launch and select Installer.
2. Click on the User Software item found under Installed Software in the Repositories pane.
3. The Quanser Real-Time Control (x86) item should now appear under the Package Name pane.
4. Click on the square box found on the left hand side of the Quanser Real-Time Control (x86) item to add this package to the list of software being uninstalled as shown in Figure 19.

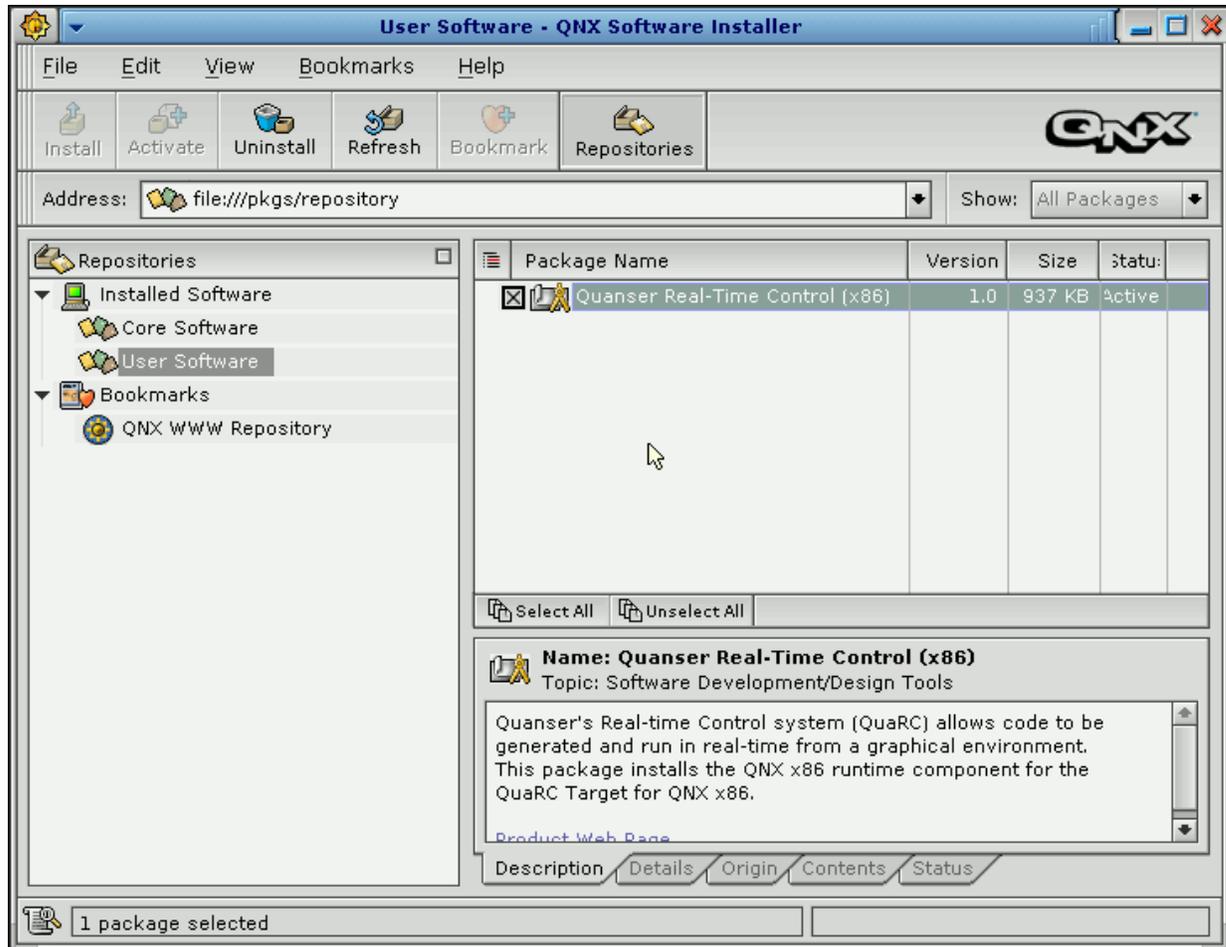


Figure 19: Uninstalling QuaRC Using The QNX Software Installer Utility

5. Click on the Uninstall button found in the QNX Software Installer toolbar.
6. Click on the Continue button in the Preview Actions window that appears.
7. Once the uninstallation process is finished a window appears with the message "Actions Completed Successfully".
8. Click on Done and close the Software Installer utility.
- 9. Restart your computer.**

The QuaRC installation steps are as follows:

1. Insert the QuaRC installation CD into the CD-ROM drive.
2. Click Launch on your desktop and select Installer.
3. In the QNX Software Installer window click on File and select Open Repository. This can alternatively be done by pressing Ctrl+O while the QNX Software Installer is the active window.
4. In the Open Repository window, click on the icon to the right of the Location box as shown in Figure 20.

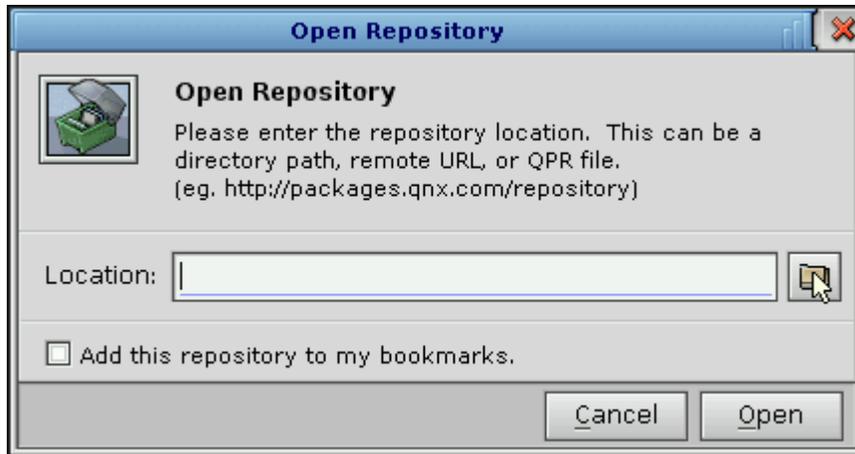


Figure 20: Open Repository Window

5. In the Select Repository Location window, enter the following path in the box provided in front of Location and click on Open:

`/fs/cd0/QuaRC-2.0-x86-Quanser.qpr`

Please note that if you are not installing QuaRC using a CD, you should enter the path to the location where you have saved the installation file instead of the above path.

6. The installation file's path will appear in the Location box of the Open Repository window. Click on Open.
7. The file named QuaRC-2.0-x86-Quanser.qpr will appear under the New Repositories tree view in the QNX Software Installer window.
8. Check the box that appears on the left-hand side of Quanser Real-Time Control (x86) under the Package Name pane as shown in Figure 21.

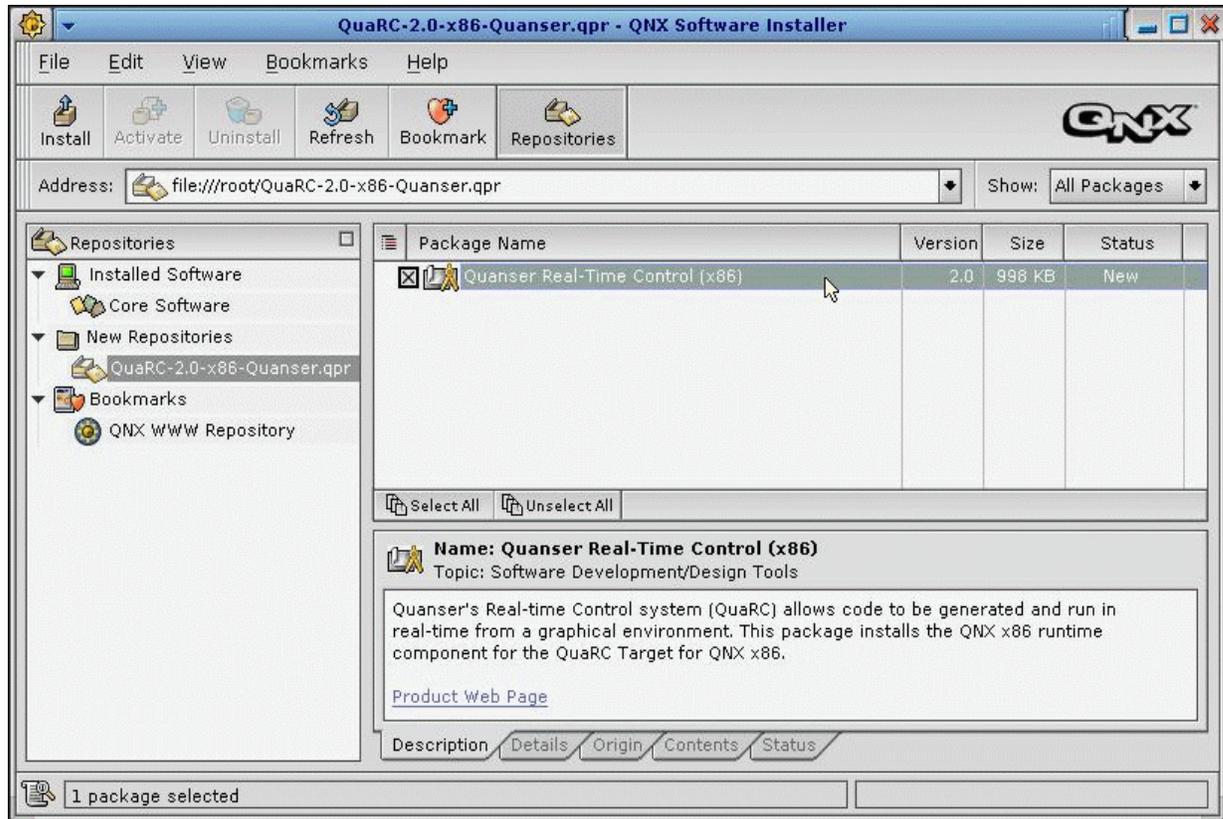


Figure 21: QuaRC 2.0 Installation Using the QNX Software Installer

9. Click on the Install button found on the top left corner of the QNX Software Installer window.
10. The Preview Actions window appears, which shows the package called Quanser Real-Time Control (x86) and indicates its status as "To be installed". Click on Continue.
11. The License Agreement window appears. Click on Agree to begin installation.
12. Once the installation is complete a message saying "Actions Completed Successfully" will be displayed. Click on Done.
- 13. Restart your computer.**
14. Once your system has booted, click on Launch and select Configure Licensing from the QuaRC menu item. Please note that **the Configure Licensing tool must be run as root.**
15. Since you have purchased a single-user license, both the QuaRC product and the Quanser License Manager can be configured at once. **Make sure Configure license manager and Configure QuaRC options are both checked** in the

Quanser License Registration window as shown in Figure 22.

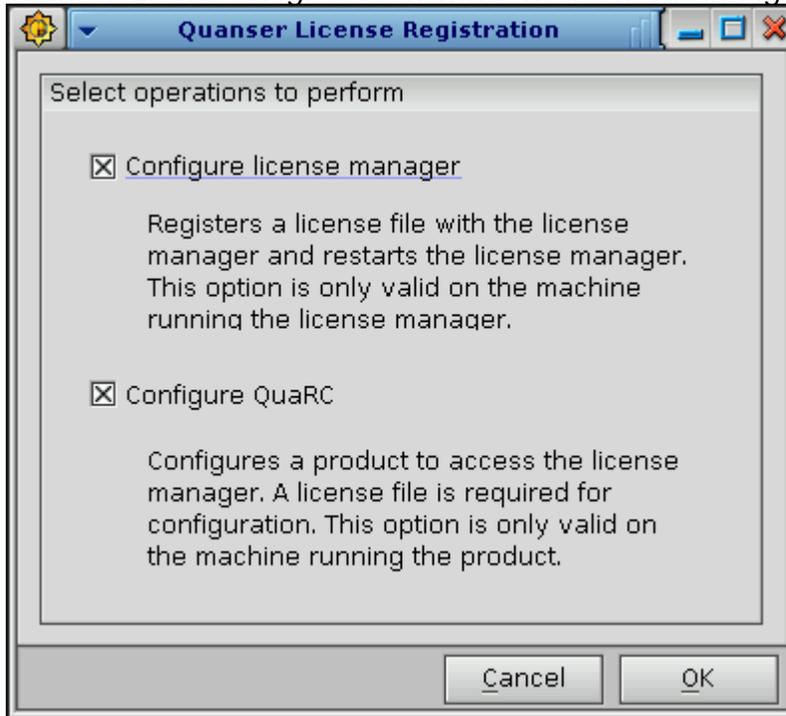


Figure 22: Single-User QNX License Configuration

16. Click on OK. The Select the license file window appears. Browse to the location where you have saved the license file provided to you by Quanser. Select the file and click on Open.

Note: The Configure Licensing tool browses to the root directory by default. Therefore it would be useful to save the license file provided by Quanser in the root directory.

17. A message saying "The license has been configured successfully" will be displayed.

Important Note: As mentioned in the Software Requirements section of this document in order to be able to build code for QuaRC Target for QNX x86, you need to install the QNX Momentics Development Suite 6.3.2 on your host system. In addition to build code for QuaRC Target for Windows you need to install Microsoft Visual Studio 2005 or 2008 Express or Professional Edition. It turns out that a conflict exists with using the MAKEFLAGS environment variable between QNX Momentics's make command and Microsoft Visual Studio's nmake command. If you are only building code for QuaRC Target for QNX x86 this conflict will not affect you. However to be able to build code for both targets please follow the steps outlined below to work around this problem:

1. Right-click on My Computer and select Properties.
2. In the System Properties window, click on the Advanced tab.
3. Click on Environment Variables.



4. Look for the variable called MAKEFLAGS which can be found under System variables in the Environment Variables window. Select this variable and click on Edit as shown in Figure 23.

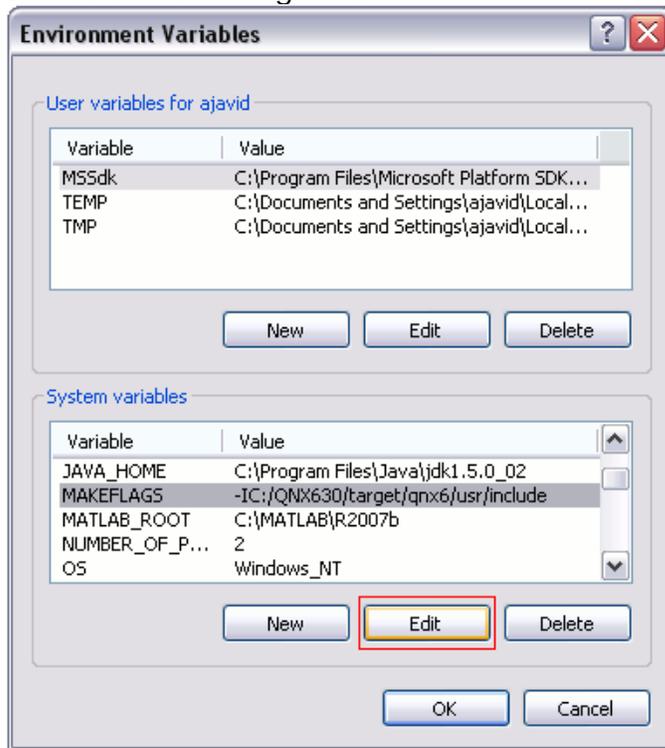


Figure 23: Editing the MAKEFLAGS System Variable

5. The Edit System Variable window opens. Simply rename the Variable name to MAKEFLAGS_QNX as shown in Figure 24 and click on OK.

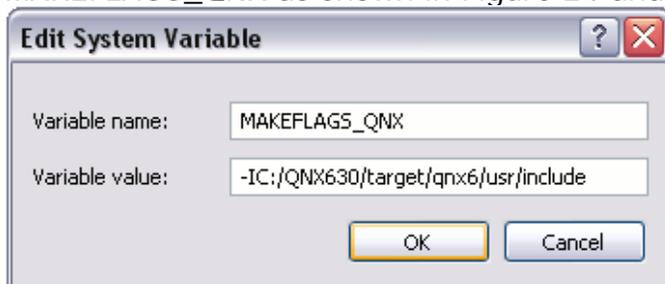


Figure 24: Renaming the MAKEFLAGS System Variable

6. Click OK on the Environment Variables and System Properties windows as well.

8. Network QNX Setup: QuaRC Installation And License Configuration

ALL software MUST be installed using the root account or an account with administrator privileges. This ensures that all paths are available to all User Accounts.

Please note that you should follow these instructions if you have purchased a network license and would like to install QuaRC on a QNX machine. If you have purchased a single-user license or would like to install QuaRC on a Windows machine, please follow the corresponding installation instructions found in other sections of this document.

Please also note that regardless of the license type you have purchased (single-user or network), **your host is always a Windows machine** when building code for a QNX target. The upcoming installation instructions are for installing QuaRC on QNX machines, so that code generated from Simulink models on your **Windows host** can be run in real-time on your **QNX target**.



Caution: Ensure that the version of QuaRC that you are planning to install is compatible with your QuaRC license file. This can be checked by opening and reading the contents of your QuaRC license file. This is a text file (with a .lic file extension) that can be opened by any text editor software. The version of QuaRC that you are planning to install should be included within the version range indicated by the `Minimum version:` and `Maximum version:` fields of the QuaRC license file.



Caution: If you already have an earlier version of QuaRC installed on your machine it must be removed prior to installing the newer version. In order to uninstall an earlier installation of QuaRC please follow the steps below on your QNX machine:

1. Click on Launch and select installer.
2. Click on the User Software item found under Installed Software in the Repositories pane.
3. The Quanser Real-Time Control (x86) item should now appear under the Package Name pane.
4. Click on the square box found on the left hand side of the Quanser Real-Time Control (x86) item to add this package to the list of software being uninstalled as shown in Figure 25.



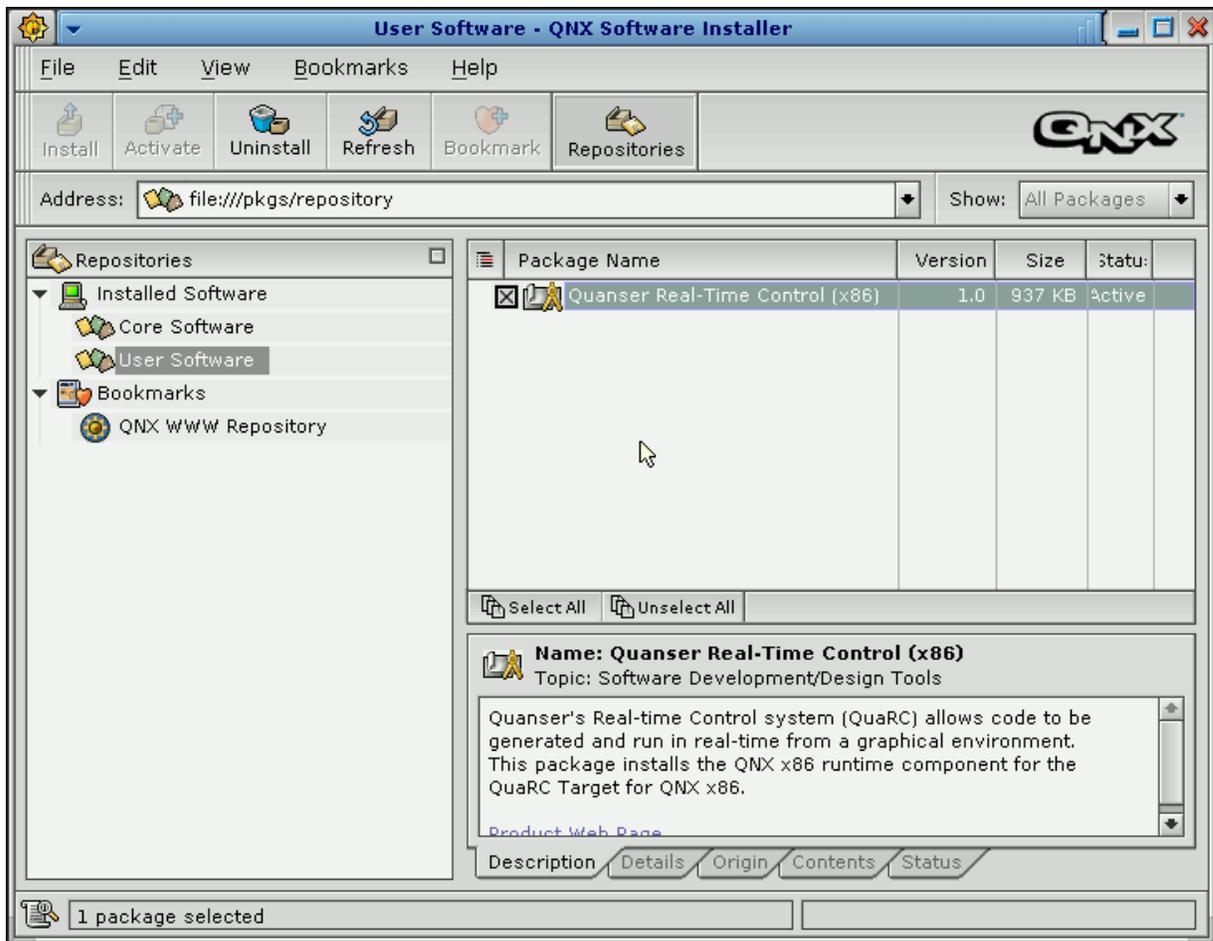


Figure 25: Uninstalling QuaRC Using The QNX Software Installer Utility

5. Click on the Uninstall button found in the QNX Software Installer toolbar.
6. Click on the Continue button in the Preview Actions window that appears.
7. Once the uninstallation process is finished a window appears with the message "Actions Completed Successfully".
8. Click on Done and close the Software Installer utility.

8.1. Installing And Configuring The License Server QNX Machine

As mentioned earlier in this document, in the case of network installation and configuration, the Quanser License Manager component is installed on a license server machine, and the rest of the computer(s), i.e., license client(s) in the network get licensed through the server and do not need to have the license manager component installed. This principle is also valid for QNX network setup, however the license server machine does not necessarily need to be a QNX system in this case. You can also have your license server run on a Windows machine while the license clients are all QNX systems. If you would like your license server to run on a Windows machine, please follow the instructions for installing Quanser License Manager on the license server found



in Section 6.1 titled Installing And Configuring The License Server Windows Machine of this document. Otherwise if you would like your license server to run on a QNX machine please follow the instructions given in this section. Finally, please note that in the QNX Network Setup mode, same installation instructions apply to the license server and license client(s). However different license configuration procedures apply to server and client(s). Therefore a single set of installation instructions to be performed on the license server and each client in the network is given first, followed by separate license configuration instructions for each. Execute the following on your license server QNX machine and each of your QNX client machines:

1. Insert the QuaRC installation CD into the CD-ROM drive.
2. Click on Launch on your desktop and select Installer.
3. In the QNX Software Installer window click on File and select Open Repository. This can alternatively be done by pressing Ctrl+O while the QNX Software Installer is the active window.
4. In the Open Repository window, click on the icon to the right of the Location box as shown in Figure 26.

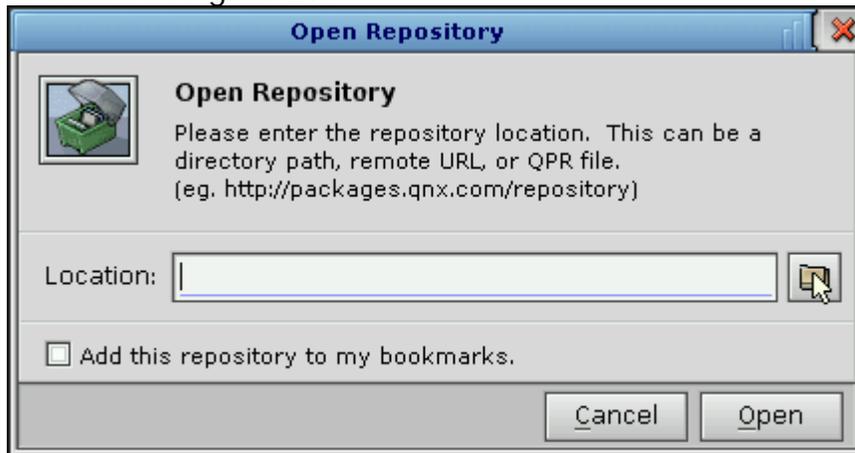


Figure 26: Open Repository Window

5. In the Select Repository Location window, enter the following path in the box provided in front of location and click on Open.

/fs/cd0/QuaRC-2.0-x86-Quanser.qpr

Please note that if you are not installing QuaRC using a CD, you should enter the path to the location where you have saved the installation file instead of the above path.

6. The installation file's path will appear in the Location box of the Open Repository window. Click on Open.
7. The file named QuaRC-2.0-x86-Quanser.qpr will appear under the New Repositories tree view in the QNX Software Installer window.
8. Check the box that appears on the left-hand side of Quanser Real-Time Control (x86) under the Package Name pane as shown in Figure 27.

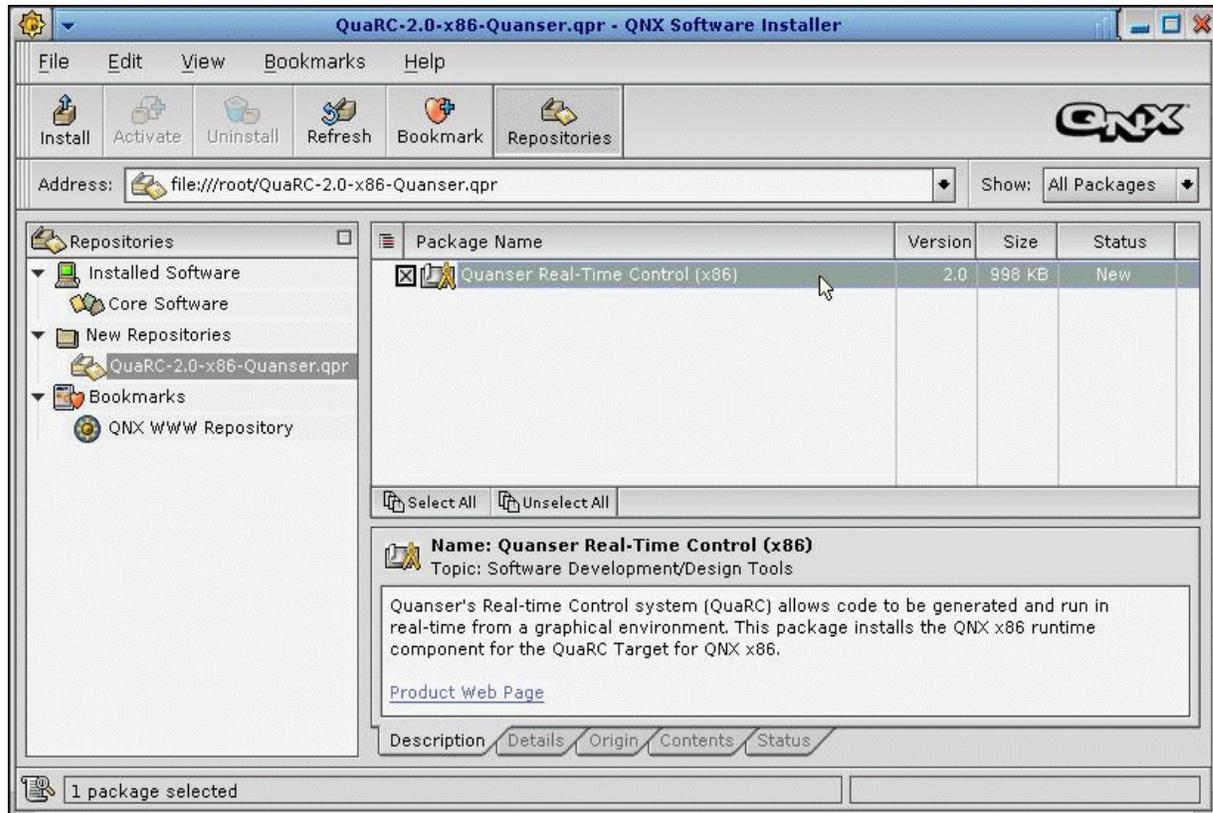


Figure 27: QuaRC 2.0 Installation Using The QNX Software Installer

9. Click on the Install button found on the top left corner of the QNX Software Installer window.
10. The Preview Actions window appears, which shows the package called Quanser Real-Time Control (x86) and indicates its status as "To be installed". Click on Continue.
11. The License Agreement window appears. Click on Agree to begin installation.
12. Once the installation is complete a message saying "Actions Completed Successfully" will be displayed. Click on Done.
- 13. Restart your computer.**

In order to configure the license on your **license server** machine please follow the steps outlined below. **These instructions are to be followed after you have restarted your system as instructed at the end of the QuaRC installation described above.**

1. Click on the Launch button on your desktop and select Configure Licensing from the QuaRC menu item. Please note that **the Configure Licensing tool must be run as root.**
2. You only need to configure the License Manager on the License Server machine. Therefore in the Quanser License Registration window, **only select Configure license manager** as shown in Figure 28.

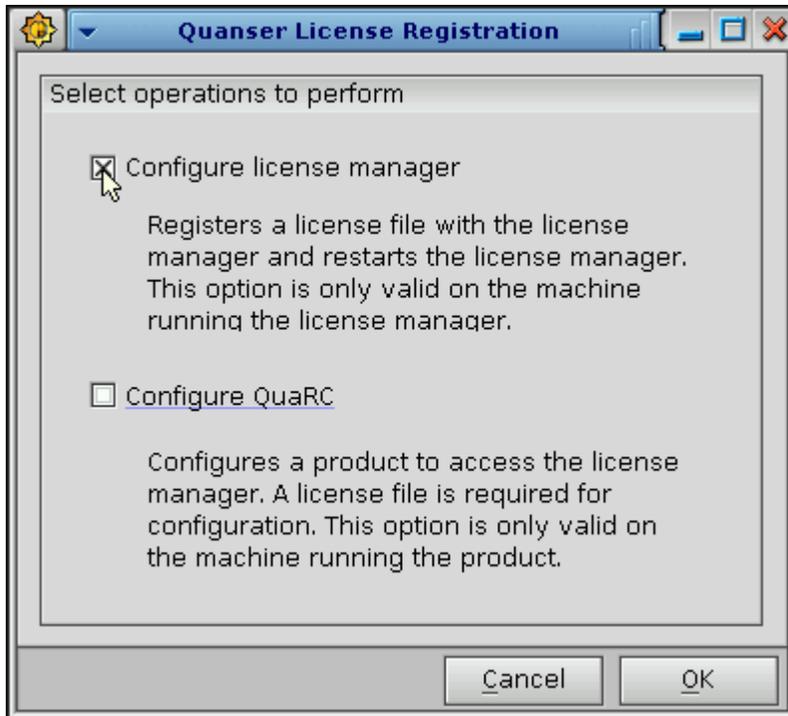


Figure 28: QNX License Configuration For The License Server

3. Click on OK. The Select the license file window appears. Browse to the location where you have saved the license file provided to you by Quanser. Select the file and click on Open.
Note: The Configure Licensing tool browses to the root directory by default. Therefore it would be useful to save the license file provided by Quanser in the root directory.
4. Make sure the following parameters are entered in the Network license parameters window that opens as illustrated in Figure 29:

Host name or IP address: localhost
Port : 16999

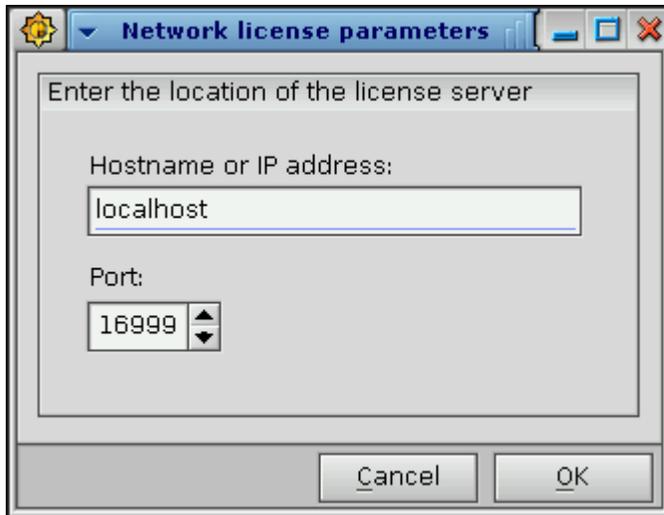


Figure 29: Network License Parameters For The License Server

5. Click on OK. A message saying “The license has been configured successfully” will be displayed.

Please note that the above license configuration instructions are only valid for the license server machine.

8.2. Installing And Configuring The License Client QNX Machine(s)

There is a different set of instructions for configuring the license on client QNX machines which is given next. **These instructions are to be followed after you have restarted your system as instructed at the end of the QuaRC installation.**

1. Click on the Launch button on your desktop and select Configure Licensing from the QuaRC menu item. Please note that **the Configure Licensing tool must be run as root.**
2. You only need to configure QuaRC on your client machine(s). Therefore in the Quanser License Registration window, **only select Configure QuaRC** as shown in Figure 30.

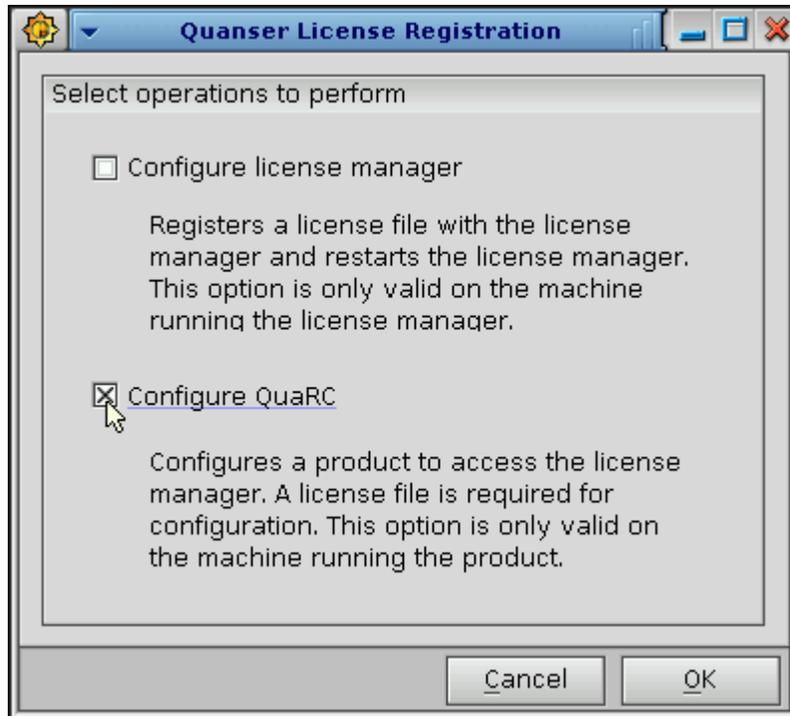


Figure 30: QNX License Configuration For License Client(s)

3. Click on OK. The Select the license file window appears. Browse to the location where you have saved the license file provided to you by Quanser. Select the file and click on Open.
Note: The Configure Licensing tool browses to the root directory by default. Therefore it would be useful to save the license file provided by Quanser in the root directory.
4. Enter the host name or IP address of your license server machine in the Network License Parameters window that opens. This IP address can be obtained by typing `/sbin/ifconfig` in a QNX terminal window **on the license server machine**. After you have entered the IP address, **make sure 16999 is entered as port** and click OK.
5. A message saying "The license has been configured successfully" will be displayed.

Important Note: As mentioned in the Software Requirements section of this document in order to be able to build code for QuaRC Target for QNX x86, you need to install the QNX Momentics Development Suite 6.3.2 on your host system. In addition to build code for QuaRC Target for Windows you need to install Microsoft Visual Studio 2005 or 2008 Express or Professional Editions. It turns out that a conflict exists with using the MAKEFLAGS environment variable between QNX Momentics's make command and Microsoft Visual Studio's nmake command. If you are only building code for QuaRC Target for QNX x86 this conflict will not affect you. However to be able to build code for both targets please follow the steps outlined below to work around this problem:

1. Right-click on My Computer and select Properties.
2. In the System Properties window, click on the Advanced tab.
3. Click on Environment Variables.
4. Look for the variable called MAKEFLAGS which can be found under System variables in the Environment Variables window. Select this variable and click on Edit as shown in Figure 31.

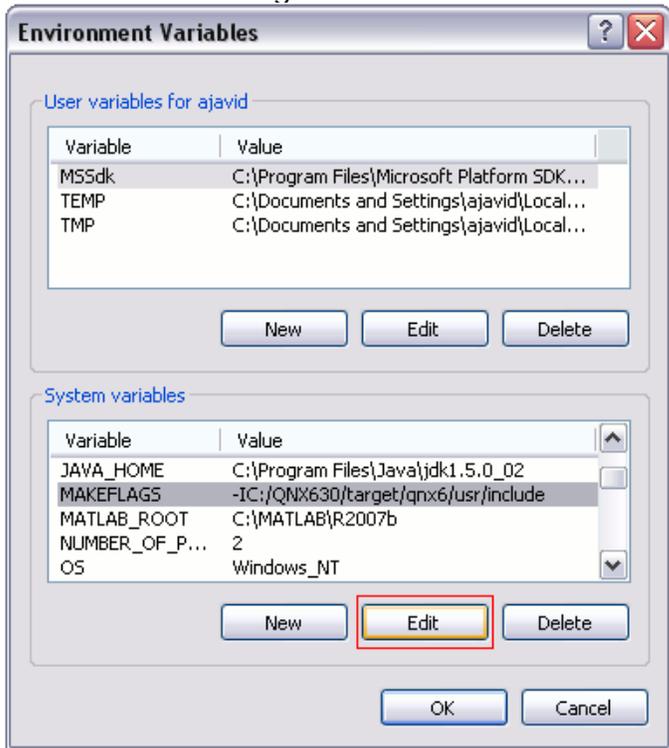


Figure 31: Editing The MAKEFLAGS System Variable

5. The Edit System Variable window opens. Simply rename the Variable name to MAKEFLAGS_QNX, for example, as shown in Figure 32 and click on OK.



Figure 32: Renaming The MAKEFLAGS System Variable

6. Click OK on the Environment Variables and System Properties windows as well.

9. Single-User Gumstix Verdex Setup: QuaRC Installation And License Configuration

ALL software MUST be installed using the root account or an account with administrator privileges. This ensures that all paths are available to all User Accounts.

Please note that you should follow these instructions if you have purchased a single-user license and would like to install QuaRC on a Gumstix Verdex (Linux ARM) system. If you have purchased a network license or would like to install QuaRC on a Windows or QNX x86 machine, please follow the corresponding installation instructions found in other sections of this document.



Technical Support Package Regarding Using The QuaRC Gumstix Target:

Due to the high flexibility and customizability of a gumstix-based system together with the specificity of the gumstix configuration required to optimally use and run QuaRC, only the Quanser products (e.g., ALTAV, Qbot) using a gumstix board are currently directly supported by Quanser. If required, please contact the Quanser Sales department for more details regarding running QuaRC on a gumstix board interfacing with your own application(s).

The QuaRC Linux ARM (gumstix) target currently only supports the OpenEmbedded (OE) Linux operating system running on a gumstix™ Verdex XL6P board. A gumstix board is a full-function miniature computer built and sold by Gumstix, Inc. (<http://www.gumstix.com>). The gumstix Verdex XL6P motherboard is specifically required to run QuaRC as its 32 MB of on-board flash memory provides enough space to accommodate the other pre-requisite Linux packages required to successfully run QuaRC. It is also assumed that the user's gumstix is already configured with a OE root filesystem customized and optimized for QuaRC, as setup in the rootfs OE image provided by Quanser. Some of the QuaRC software pre-requisite to configure the gumstix include the full GNU compilation suite (i.e., based on GCC version 4.1.2), as the code generated from the Windows host is compiled locally on the gumstix Verdex system, where it then also run. Using the default Quanser-supplied gumstix-OE root filesystem, the root password is: "quanser", without the double quotes.

Please also note that regardless of the license type you have purchased (single-user or network), **your host is always a Windows machine** when building code for a Linux ARM target. The upcoming installation instructions are for installing QuaRC on a Verdex machine, so that code generated from Simulink models on your **Windows host** can be run in real-time on your **Linux ARM (gumstix) target**. Ensure that your gumstix is properly setup with networking and can successfully communicate using TCP/IP with your intended Windows host machine.





Caution: Ensure that the version of QuaRC that you are planning to install is compatible with your QuaRC license file. This can be checked by opening and reading the contents of your QuaRC license file. This is a text file (with a .lic file extension) that can be opened by any text editor software. The version of QuaRC that you are planning to install should be included within the version range indicated by the `Minimum version:` and `Maximum version:` fields of the QuaRC license file.



Caution: The QuaRC installer package for the gumstix uses the OpenEmbedded (OE) Linux technology and is designed to integrate with the `ipkg` OE Linux installer utility. If you already have an earlier version of QuaRC installed on your Verdex board, it must be removed prior to installing the newer QuaRC version. You can check which version of QuaRC (if any) is currently installed on your Verdex by running the following command line (in *italic* below) from a Linux login shell (e.g., using `ssh`):

```
root@quarc-gumstix:~$ ipkg list quarc
quarc - 1.1.0-r1 - This package provides the necessary QuaRC runtime files
for the gumstix (i.e., Linux ARM) target.
```

In order to uninstall an earlier installation of QuaRC please follow the steps below on your Verdex machine:

1. Logged as root, execute the following command line (in *italic* below) from a Linux shell:

```
root@quarc-gumstix:~$ ipkg remove quarc -force-depends
Removing package quarc from root...
Stopping the QuaRC Target Manager...
The QuaRC Target Manager is currently running with PID = 689.
The QuaRC Target Manager has been stopped: PID = .
Stopping the Quanser License Manager...
The Quanser License Manager is currently running with PID = 677.
The Quanser License Manager has been stopped: PID = .
Removing any system startup links for quanser_license_manager ...
/etc/rc0.d/K11quanser_license_manager
/etc/rc1.d/K11quanser_license_manager
/etc/rc6.d/K11quanser_license_manager
/etc/rcS.d/S83quanser_license_manager
Removing any system startup links for quarc_target_manager ...
/etc/rc0.d/K13quarc_target_manager
/etc/rc1.d/K13quarc_target_manager
/etc/rc6.d/K13quarc_target_manager
/etc/rcS.d/S85quarc_target_manager
```

2. As this is the default choice mentioned in-between the square brackets below, simply press the Enter key to keep the QuaRC licensing information currently saved on your gumstix.

```
Do you want to remove the QuaRC licensing information {'y'|'yes'|'n'|'no'}
[n]?
```



This way it can directly be used again by another installation of QuaRC without having to run the QuaRC Configure Licensing Tool again. This can also be done by entering *n* or *no* at the Linux command prompt. On the contrary, if you also want to remove the QuaRC licensing information, *y* or *yes* should be entered at the Linux command prompt.

3. As this is the default choice mentioned in-between the square brackets below, simply press the Enter key to keep the QuaRC models already compiled on and downloaded to your gumstix system.

```
Do you want to remove the QuaRC-compiled models {'y'|'yes'|'n'|'no'} [n]?
```

This way the existing QuaRC models could directly be run again by another installation of QuaRC without having to recompile them. This can also be achieved by entering *n* or *no* at the Linux command prompt. On the contrary, if you also want to remove the QuaRC-compiled models, *y* or *yes* should be entered at the Linux command prompt.

The QuaRC installation steps are as follows:

1. Transfer the ipkg QuaRC installation package file, named for instance `quarc_2.0.0-r1_armv5te.ipk`, to your Verdex, for example, under `/home/root`. This can be done using, for example, secure copy (`scp`) over a TCP/IP connection or using a serial communication link.
2. In order to successfully run the Quanser License Registration process during the QuaRC installation, the QuaRC license file provided to you by Quanser (e.g., `license.lic`) should also be transferred to your Verdex, for example, under `/home/root`, which is its expected default location.
3. To start the QuaRC installation, log as root and execute the following command line (in italic below) from a Linux shell:

```
root@quarc-gumstix:~$ ipkg install quarc_2.0.0-r1_armv5te.ipk  
Installing quarc (2.0.0-r1) to root...
```

```
END-USER LICENSE AGREEMENT FOR QUANSER INC. SOFTWARE - QuaRC(TM)
```

```
IMPORTANT-READ CAREFULLY:
```

```
This End-User License Agreement ("EULA") is a legal agreement between you  
(either an individual or a single entity) and Quanser Inc. from whom you  
acquired (either directly
```

```
...
```

```
If you do not have a valid license to use the QUARC, you may not use the  
SOFTWARE. Any other use of the SOFTWARE is prohibited.
```

```
Do you accept these terms and conditions ('yes'/'no')?
```

4. The QuaRC End-User License Agreement (EULA) is first displayed. The user should read and get familiar with it. Press the space key to scroll down to the end, at which point you are asked to either accept or refuse the described terms and



conditions. You have to exactly enter *yes* at the Linux command prompt to accept the QuaRC EULA, otherwise the installation will be canceled. If the EULA is accepted, the QuaRC installation procedure then continues, as shown by the installer output messages reproduced below:

```
Continuing the QuaRC installation...
Configuring quarc
Adding system startup for /etc/init.d/quarc_target_manager ...
/etc/rcS.d/S85quarc_target_manager -> ../init.d/quarc_target_manager
/etc/rc0.d/K13quarc_target_manager -> ../init.d/quarc_target_manager
/etc/rc6.d/K13quarc_target_manager -> ../init.d/quarc_target_manager
/etc/rc1.d/K13quarc_target_manager -> ../init.d/quarc_target_manager
Adding system startup for /etc/init.d/quanser_license_manager ...
/etc/rcS.d/S83quanser_license_manager -> ../init.d/quanser_license_manager
/etc/rc0.d/K11quanser_license_manager -> ../init.d/quanser_license_manager
/etc/rc6.d/K11quanser_license_manager -> ../init.d/quanser_license_manager
/etc/rc1.d/K11quanser_license_manager -> ../init.d/quanser_license_manager
```

5. The QuaRC License Registration message is then shown in the Linux shell, as illustrated by the installer output messages reproduced below:

```
IMPORTANT INFORMATION - QuaRC
IMPORTANT - READ CAREFULLY:
After installing the software, configure licensing using the Configure
License utility if licensing has not been configured already. The
Configure License utility may be run in Linux by executing the following
command as a superuser: "/opt/quanser/bin/quanser_license_registration -i
QUARC". Licensing does not need to be reconfigured for product updates if
the license remains valid.
```

SINGLE-USER LICENSES

For single-user licences, configure both the License Manager and the QuaRC product at the same time because they are installed on the same machine.

NETWORK LICENSES

For network licenses, install only the License Manager on the license server machine and configure it using the Configure License utility. On the client machines, install the QuaRC product without the License Manager and use the Configure License utility to set up the hostname and port of the network license server.

CONFIGURE LICENSING - QuaRC(TM)

If QuaRC has not been installed previously, then the Configure Licensing tool must be run in order to activate the license for QuaRC. For more details, see the preceding QuaRC Information page or the Installation Guide.

```
Do you want to run the QuaRC Configure Licensing tool now
{'y'|'yes'|'n'|'no'} [n]?
```

6. If a previous version of QuaRC was already running before on your Verdex and the licensing information is still present and valid, you do not have to run the QuaRC Configure Licensing Tool again. In this case or also if you prefer running the QuaRC Configure Licensing Tool at a later time, simply press the Enter key to select the default choice mentioned in-between the square brackets above. This can also be

done by entering *n* or *no* at the Linux command prompt. You can finally proceed to the last step of this QuaRC installation procedure.

Otherwise, the QuaRC Configure Licensing tool should be run by entering *y* or *yes* at the Linux command prompt.

7. Running the QuaRC Configure Licensing tool results in the following interactive menu being displayed in the Linux shell:

```
##### QuaRC License Registration #####

*** Select operation to perform ***
1 - Configure license manager
   Registers a license file with the license manager and restarts the
   license manager. This option is only valid on the machine running the
   license manager.
2 - Configure QuaRC
   Configures a product (i.e., QuaRC) to access the license manager.
   A license file is required for configuration. This option is only
   valid on the machine running the product.
3 - Configure both license manager and QuaRC
4 - Cancel
Enter your selection (1-4) [3]:
```

8. To configure the QuaRC licensing for single-user mode, either enter *3* at the Linux command prompt or just press the Enter key as menu option 3 is the default choice mentioned in-between the square brackets shown above.
9. You then need to select the Quanser-supplied QuaRC license file, as detailed by the interactive prompt represented below:

```
*** Select the QuaRC license file ***
Enter the folder containing the license (.lic) file [/home/root]:
```

Simply press Enter if your license file has been saved under `/home/root` (i.e., the default choice), or enter the absolute path of the folder containing your QuaRC license file.

10. Finally the name of your QuaRC license file should be entered, as detailed by the interactive prompt represented below:

```
Enter the name of the license (.lic) file [license.lic]: quarc_license.lic
The license has been configured successfully.
```

Simply press Enter if your license file is named `license.lic` (i.e., the default choice), or enter the exact name of your QuaRC license file.

11. If running the QuaRC Configure Licensing tool fails during the QuaRC installation (maybe because the QuaRC license file was not transferred to the gumstix Verdex before starting the installation), it can be re-run once the QuaRC installation finishes by executing (logged as root) the following command at the Linux prompt:

```
root@quarc-gumstix:~$ quanser_license_registration -i QUARC
```



12. The QuaRC installation then finishes, as seen by the Linux installer output messages reproduced below:

```
Starting the Quanser License Manager...
The Quanser License Manager has been started with PID = 1271.
Starting the QuaRC Target Manager...
The QuaRC Target Manager has been started with PID = 1284.
```

10. Network Gumstix Verdex Setup: QuaRC Installation And License Configuration

ALL software MUST be installed using the root account or an account with administrator privileges. This ensures that all paths are available to all User Accounts.

Please note that you should follow these instructions if you have purchased a network license and would like to install QuaRC on a Gumstix Verdex (Linux ARM) system. If you have purchased a single-user license or would like to install QuaRC on a Windows or QNX x86 machine, please follow the corresponding installation instructions found in other sections of this document.



Technical Support Package Regarding Using The QuaRC Gumstix Target:

Due to the high flexibility and customizability of a gumstix-based system together with the specificity of the gumstix configuration required to optimally use and run QuaRC, only the Quanser products (e.g., ALTAV, Qbot) using a gumstix board are currently directly supported by Quanser. If required, please contact the Quanser Sales department for more details regarding running QuaRC on a gumstix board interfacing with your own application(s).

The QuaRC Linux ARM (gumstix) target currently only supports the OpenEmbedded (OE) Linux operating system running on a gumstix™ Verdex XL6P board. A gumstix board is a full-function miniature computer built and sold by Gumstix, Inc. (<http://www.gumstix.com>). The gumstix Verdex XL6P motherboard is specifically required to run QuaRC as its 32 MB of on-board flash memory provides enough space to accommodate the other pre-requisite Linux packages required to successfully run QuaRC. It is also assumed that the user's gumstix is already configured with a OE root filesystem customized and optimized for QuaRC, as setup in the rootfs OE image provided by Quanser. Some of the QuaRC software pre-requisite to configure the gumstix include the full GNU compilation suite (i.e., based on GCC version 4.1.2), as the code generated from the Windows host is compiled locally on the gumstix Verdex system, where it then also runs. Using the default Quanser-supplied gumstix-OE root filesystem, the root password is: "quanser", without the double quotes.

Please also note that regardless of the license type you have purchased (single-user or

network), **your host is always a Windows machine** when building code for a Linux ARM target. The upcoming installation instructions are for installing QuaRC on a Verdex machine, so that code generated from Simulink models on your **Windows host** can be run in real-time on your **Linux ARM (gumstix) target**. Ensure that your gumstix is properly setup with networking and can successfully communicate using TCP/IP with your intended Windows host machine.



Caution: Ensure that the version of QuaRC that you are planning to install is compatible with your QuaRC license file. This can be checked by opening and reading the contents of your QuaRC license file. This is a text file (with a .lic file extension) that can be opened by any text editor software. The version of QuaRC that you are planning to install should be included within the version range indicated by the Minimum version: and Maximum version: fields of the QuaRC license file.



Caution: The QuaRC installer package for the gumstix uses the OpenEmbedded (OE) Linux technology and is designed to integrate with the ipkg OE Linux installer utility. If you already have an earlier version of QuaRC installed on your Verdex board, it must be removed prior to installing the newer QuaRC version. You can check which version of QuaRC (if any) is currently installed on your Verdex by running the following command line (in *italic* below) from a Linux login shell (e.g., using ssh):

```
root@quarc-gumstix:~$ ipkg list quarc
quarc - 1.1.0-r1 - This package provides the necessary QuaRC runtime
files for the gumstix (i.e., Linux ARM) target.
```

In order to uninstall an earlier installation of QuaRC please follow the steps below on your Verdex machine:

1. Logged as root, execute the following command line (in *italic* below) from a Linux shell:

```
root@quarc-gumstix:~$ ipkg remove quarc -force-depends
Removing package quarc from root...
Stopping the QuaRC Target Manager...
The QuaRC Target Manager is currently running with PID = 689.
The QuaRC Target Manager has been stopped: PID = .
Stopping the Quanser License Manager...
The Quanser License Manager is currently running with PID = 677.
The Quanser License Manager has been stopped: PID = .
Removing any system startup links for quanser_license_manager ...
/etc/rc0.d/K11quanser_license_manager
/etc/rc1.d/K11quanser_license_manager
/etc/rc6.d/K11quanser_license_manager
/etc/rcS.d/S83quanser_license_manager
Removing any system startup links for quarc_target_manager ...
/etc/rc0.d/K13quarc_target_manager
/etc/rc1.d/K13quarc_target_manager
/etc/rc6.d/K13quarc_target_manager
/etc/rcS.d/S85quarc_target_manager
```



2. As this is the default choice mentioned in-between the square brackets below, simply press the Enter key to keep the QuaRC licensing information currently saved on your gumstix.

```
Do you want to remove the QuaRC licensing information {'y'|'yes'|'n'|'no'}  
[n]?
```

This way it can directly be used again by another installation of QuaRC without having to run the QuaRC Configure Licensing Tool again. This can also be done by entering *n* or *no* at the Linux command prompt. On the contrary, if you also want to remove the QuaRC licensing information, *y* or *yes* should be entered at the Linux command prompt.

3. As this is the default choice mentioned in-between the square brackets below, simply press the Enter key to keep the QuaRC models already compiled on and downloaded to your gumstix system.

```
Do you want to remove the QuaRC-compiled models {'y'|'yes'|'n'|'no'} [n]?
```

This way the existing QuaRC models could directly be run again by another installation of QuaRC without having to recompile them. This can also be achieved by entering *n* or *no* at the Linux command prompt. On the contrary, if you also want to remove the QuaRC-compiled models, *y* or *yes* should be entered at the Linux command prompt.

As mentioned earlier in this document, in the case of network installation and configuration, the Quanser License Manager component is installed on a license server machine, and the rest of the computer(s), i.e., license client(s) in the network get licensed through the server and do not need to have the license manager component installed. This principle is also valid for gumstix Verdex network setup, however the license server machine does not necessarily need to be a gumstix Verdex system in this case. You can also have your license server run on a Windows or QNX machine while the license clients are all gumstix Verdex systems. If you would like your license server to run on a Windows machine, please follow the instructions for installing Quanser License Manager on the license server found in Section 6.1 titled Installing And Configuring The License Server Windows Machine of this document. If you would like your license server to run on a QNX machine, please follow the instructions for installing Quanser License Manager on the license server found in Section 8.1 titled Installing And Configuring The License Server QNX Machine of this document. Otherwise if you would like your license server to run on a gumstix Verdex machine please follow the instructions given in Section 10.1 titled Installing And Configuring The License Server Gumstix Verdex Machine of this document. Finally, please note that in the gumstix Verdex Network Setup mode, same installation instructions apply to the license server and license client(s). However different license configuration procedures apply to server and client(s). Therefore a single set of installation instructions to be performed on the license server and each client in the network is given first, followed by separate license configuration instructions for each. Execute the following on your license server gumstix Verdex machine and each of your gumstix Verdex client machines:

1. Transfer the ipkg QuaRC installation package file, named for instance `quarc_2.0.0-r1_armv5te.ipk`, to your Verdex, for example, under `/home/root`. This can be done using, for example, secure copy (`scp`) over a TCP/IP connection or using a serial communication link.
2. In order to successfully run the Quanser License Registration process during the QuaRC installation, the QuaRC license file provided to you by Quanser (e.g., `license.lic`) should also be transferred to your Verdex, for example, under `/home/root`, which is its expected default location.
3. To start the QuaRC installation, log as root and execute the following command line (in italic below) from a Linux shell:

```
root@quarc-gumstix:~$ ipkg install quarc_2.0.0-r1_armv5te.ipk  
Installing quarc (2.0.0-r1) to root...
```

```
END-USER LICENSE AGREEMENT FOR QUANSER INC. SOFTWARE - QuaRC(TM)  
IMPORTANT-READ CAREFULLY:
```

```
This End-User License Agreement ("EULA") is a legal agreement between you  
(either an individual or a single entity) and Quanser Inc. from whom you  
acquired (either directly
```

```
...
```

```
If you do not have a valid license to use the QUARC, you may not use the  
SOFTWARE. Any other use of the SOFTWARE is prohibited.
```

```
Do you accept these terms and conditions ('yes'/'no')?
```

4. The QuaRC End-User License Agreement (EULA) is first displayed. The user should read and get familiar with it. Press the space key to scroll down to the end, at which point you are asked to either accept or refuse the described terms and conditions. You have to exactly enter `yes` at the Linux command prompt to accept the QuaRC EULA, otherwise the installation will be canceled. If the EULA is accepted, the QuaRC installation procedure then continues, as shown by the installer output messages reproduced below:

```
Continuing the QuaRC installation...
```

```
Configuring quarc
```

```
Adding system startup for /etc/init.d/quarc_target_manager ...
```

```
/etc/rcS.d/S85quarc_target_manager -> ../init.d/quarc_target_manager
```

```
/etc/rc0.d/K13quarc_target_manager -> ../init.d/quarc_target_manager
```

```
/etc/rc6.d/K13quarc_target_manager -> ../init.d/quarc_target_manager
```

```
/etc/rc1.d/K13quarc_target_manager -> ../init.d/quarc_target_manager
```

```
Adding system startup for /etc/init.d/quanser_license_manager ...
```

```
/etc/rcS.d/S83quanser_license_manager -> ../init.d/quanser_license_manager
```

```
/etc/rc0.d/K11quanser_license_manager -> ../init.d/quanser_license_manager
```

```
/etc/rc6.d/K11quanser_license_manager -> ../init.d/quanser_license_manager
```

```
/etc/rc1.d/K11quanser_license_manager -> ../init.d/quanser_license_manager
```

5. The QuaRC License Registration message is then shown in the Linux shell, as illustrated by the installer output messages reproduced below:

```
IMPORTANT INFORMATION - QuaRC
```

```
IMPORTANT - READ CAREFULLY:
```



After installing the software, configure licensing using the Configure License utility if licensing has not been configured already. The Configure License utility may be run in Linux by executing the following command as a superuser: `"/opt/quanser/bin/quanser_license_registration -i QUARC"`. Licensing does not need to be reconfigured for product updates if the license remains valid.

SINGLE-USER LICENSES

For single-user licences, configure both the License Manager and the QuaRC product at the same time because they are installed on the same machine.

NETWORK LICENSES

For network licenses, install only the License Manager on the license server machine and configure it using the Configure License utility. On the client machines, install the QuaRC product without the License Manager and use the Configure License utility to set up the hostname and port of the network license server.

CONFIGURE LICENSING - QuaRC(TM)

If QuaRC has not been installed previously, then the Configure Licensing tool must be run in order to activate the license for QuaRC. For more details, see the preceding QuaRC Information page or the Installation Guide.

```
Do you want to run the QuaRC Configure Licensing tool now  
{'y'|'yes'|'n'|'no'} [n]?
```

6. The QuaRC licensing is configured differently for the license server and the license client. Therefore, let us choose to run the QuaRC Configure Licensing tool, as described in the sub-subsequent Sections for both server and client, after completing the present installation. To do so, enter *n* or *no* at the Linux command prompt, or simply press the Enter key to select the negative default choice mentioned in-between the square brackets above.
7. The QuaRC installation procedure then finishes.



10.1. Installing And Configuring The License Server Gumstix Verdex Machine

In order to configure the QuaRC licensing on your **license server** Gumstix Verdex machine please follow the steps outlined below.

1. Logged as root, run the QuaRC Configure Licensing tool by executing the following command at the Linux prompt:

```
root@quarc-gumstix: ~$ quanser_license_registration -i QUARC
```

2. Running the QuaRC Configure Licensing tool results in the following interactive menu being displayed in the Linux shell:

```
##### QuaRC License Registration #####

*** Select operation to perform ***
1 - Configure license manager
   Registers a license file with the license manager and restarts the
   license manager. This option is only valid on the machine running the
   license manager.
2 - Configure QuaRC
   Configures a product (i.e., QuaRC) to access the license manager.
   A license file is required for configuration. This option is only
   valid on the machine running the product.
3 - Configure both license manager and QuaRC
4 - Cancel
Enter your selection (1-4) [3]:
```

3. You only need to configure the License Manager on the License Server machine. Therefore in the presented QuaRC License Registration interactive menu, enter **1** at the Linux command prompt.
4. You then need to select the Quanser-supplied QuaRC license file, as detailed by the subsequent interactive prompt represented below:

```
*** Select the QuaRC license file ***
Enter the folder containing the license (.lic) file [/home/root]:
```

Simply press Enter if your license file has been saved under /home/root (i.e., the default choice), or enter the absolute path of the folder containing your QuaRC license file.

5. The name of your QuaRC license file should also be entered, as detailed by the interactive prompt represented below:

```
Enter the name of the license (.lic) file [license.lic]:
The license has been configured successfully.
```

Simply press Enter if your license file is named license.lic (i.e., the default choice),

or enter the exact name of your QuaRC license file.

- The network license parameters have then to be configured. This includes setting the location on your network of this license server, as detailed by the subsequent interactive prompt represented below:

```
*** Network license parameters ***  
*** Enter the location of the license server ***  
Hostname or IP address [localhost]:
```

Simply press Enter to select the default choice (i.e., localhost), as the license server is currently being configured.

- The TCP/IP port to be used to connect to this license server also has to be set, as detailed by the subsequent interactive prompt represented below:

```
Port (0-65535) [16999]:
```

Simply press Enter to select the default choice (i.e., 16999), or alternatively enter any port number between 0 and 65535 suiting your network setup.

- The registration for the QuaRC license server then finishes, as mentioned by the message shown at the Linux prompt and reproduced below:

```
The license has been configured successfully.
```

Please note that the above license configuration instructions are only valid for the license server gumstix Verdex machine.



10.2. Installing And Configuring The License Client Gumstix Verdex Machine(s)

There is a different set of instructions for configuring the QuaRC license on client gumstix Verdex machines which is given in this Section. In order to configure the QuaRC licensing on your **license client** Gumstix Verdex system please follow the steps outlined below.

1. Logged as root, run the QuaRC Configure Licensing tool by executing the following command at the Linux prompt:

```
root@quarc-gumstix:~$ quanser_license_registration -i QUARC
```

2. Running the QuaRC Configure Licensing tool results in the following interactive menu being displayed in the Linux shell:

```
##### QuaRC License Registration #####

*** Select operation to perform ***
1 - Configure license manager
   Registers a license file with the license manager and restarts the
   license manager. This option is only valid on the machine running the
   license manager.
2 - Configure QuaRC
   Configures a product (i.e., QuaRC) to access the license manager.
   A license file is required for configuration. This option is only
   valid on the machine running the product.
3 - Configure both license manager and QuaRC
4 - Cancel
Enter your selection (1-4) [3]:
```

3. You only need to configure QuaRC on the License Client gumstix machine(s). Therefore in the presented QuaRC License Registration interactive menu, enter 2 at the Linux command prompt.

4. You then need to select the Quanser-supplied QuaRC license file, as detailed by the subsequent interactive prompt represented below:

```
*** Select the QuaRC license file ***
Enter the folder containing the license (.lic) file [/home/root]:
```

Simply press Enter if your license file has been saved under /home/root (i.e., the default choice), or enter the absolute path of the folder containing your QuaRC license file.

5. The name of your QuaRC license file should also be entered, as detailed by the interactive prompt represented below:

```
Enter the name of the license (.lic) file [license.lic]:
The license has been configured successfully.
```

Simply press Enter if your license file is named license.lic (i.e., the default choice), or enter the exact name of your QuaRC license file.

- The network license parameters previously-configured on the server have now to be entered. This includes specifying the location on your network of the QuaRC license server, as detailed by the subsequent interactive prompt represented below:

```
*** Network license parameters ***
*** Enter the location of the license server ***
Hostname or IP address [localhost]:
```

Enter the host name or IP address of your license server machine. The server IP address can be obtained by typing

```
/sbin/ifconfig
```

in a Linux shell window **on the license server machine**.

- Lastly, the TCP/IP port to use for connecting to your license server also has to be specified, as detailed by the subsequent interactive prompt represented below:

```
Port (0-65535) [16999]:
```

Simply press Enter to select the default choice (i.e., 16999), or if it is different from this default value enter the port number (between 0 and 65535) with which your license server machine was setup.

- The registration for the QuaRC license client then finishes, as mentioned by the message shown at the Linux prompt and reproduced below:

```
The license has been configured successfully.
```

Please note that the above license configuration instructions are only valid for the license client gumstix Verdex machine.



11. Testing Your QuaRC Installation

QuaRC comes with sample model examples that can be accessed by typing
`qc_show_demos`
 in the MATLAB command prompt window.

Particularly the QuaRC Sine & Scope Demo is a test that everyone is encouraged to run. It is universal, meaning that it is not dependant on the hardware type you are using (e.g., data acquisition card). However running this test can ensure that correct installation and configuration has been done for QuaRC while familiarizing first time users with basic QuaRC operation principles. To run this test type

`qc_show_demos`

in the MATLAB command prompt and click on "QuaRC Sine & Scope Demo", which can be found under Basic Features and follow the instructions. This is depicted in Figure 33.

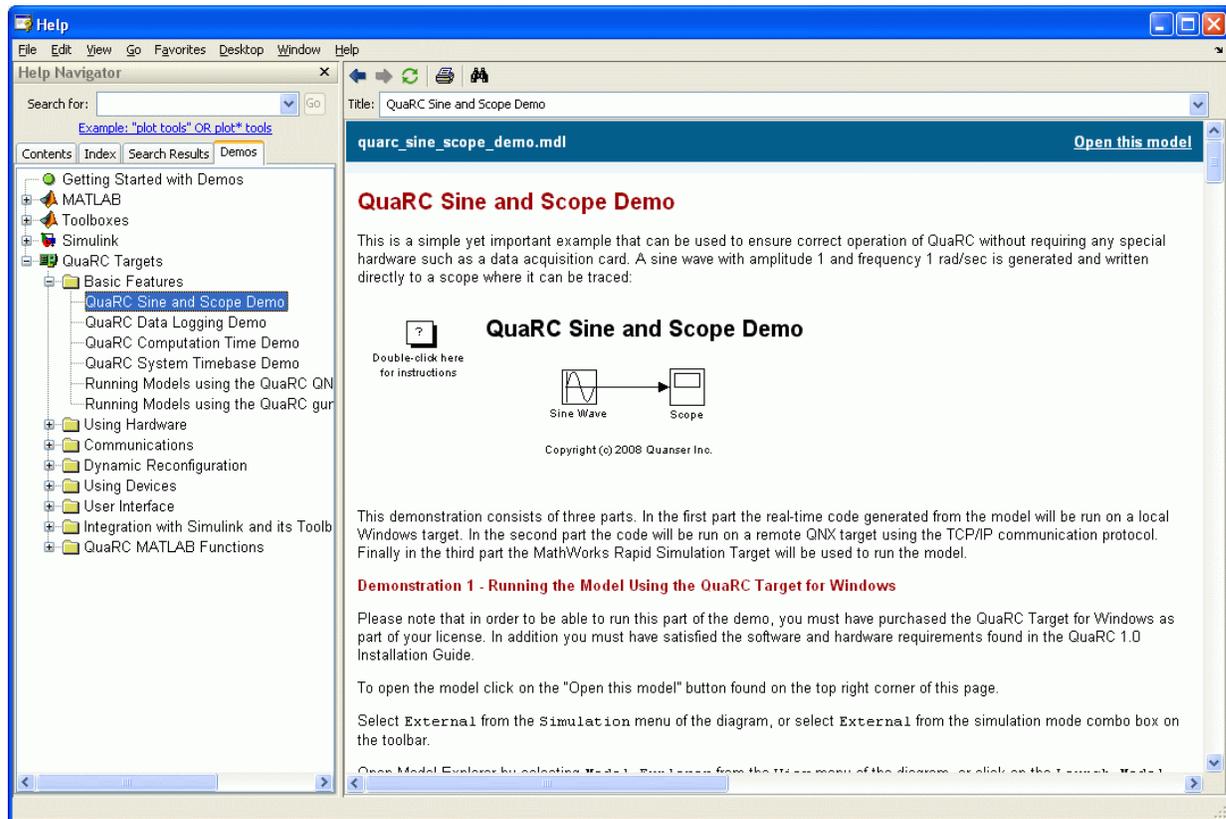


Figure 33: Running the QuaRC Sine and Scope Demo

There are more demos available on this page that might require specific hardware such as the Quanser's Q4 or Q8 HIL boards. You are encouraged to run these demos as well provided that the required hardware for each is present.