Release Notes and Installation Guide

RATIONAL ROSE® REALTIME PROFESSIONAL EDITION

VERSION: 2002.05.00

PART NUMBER: 800-025106-000

WINDOWS/UNIX

Rational®

the software development company

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Chapter 1

Introduction

Thank you for selecting Rational Rose RealTime, the real-time industry's leading environment for designing and building real-time applications.

The Rational Rose RealTime Professional Package you have purchased extends Rational Rose RealTime to provide support for many embedded targets. If you do not have the installation key, please contact License Support for assistance. See "Technical Support" on page 53.

In this guide:

Please read this guide, along with the Release Notes for the base product, before you install or use the Rational Rose RealTime Professional Edition.

Note: *In some cases, you may note discrepancies between the printed documentation and the online documentation. In these cases, the online documentation is the most up-to-date and should be followed.*

Please visit the Rational Web site for the latest Release Notes, patches and information:

http://www.rational.com/support/

If you encounter any problems while installing or running Rational Rose RealTime, please check here first to see if you have encountered a known problem. If you find a problem that is not yet documented, please call Rational Customer Service so we can investigate it, provide you with a workaround, and track the problem for further action.

See "Technical Support" on page 53 for telephone numbers and e-mail addresses of the Rational Customer Service contacts for your region.

PLEASE READ FIRST

You must install Rose RealTime before installing the Rational Rose RealTime Professional Package. Directory structures established during the installation of Rational Rose RealTime are required during the installation of the Rational Rose RealTime Professional Package.

Please review the Rational Rose RealTime Installation Guide and the Rational Rose RealTime Release Notes for information on installing the base product.

What's New

These are the new features included in this release of Rational Rose RealTime.

- Support for Additional hosts
  - ❑ Windows XP
- Online Help Improvements
  - ❑ A larger, more comprehensive index.
  - ❑ Viewlets - animated demonstrations on a variety of How Do I… topics.
  - ❑ Improved tutorials.

- Workflow enhancements
  - ❑ Aggregation Tool - enables you to quickly create, modify, and manage aggregate and composite associations.
  - ❑ Attribute Tool - enables you to quickly create and set options for an attribute.
  - ❑ Operation Tool - enables you to quickly create and set options for an operation.
  - ❑ Ability to add class operations directly from a Sequence diagram.
  - ❑ Ability to use the target build specification when building a model - see rtsetup.pl.
- Debugging
  - ❑ Source debugging integration with Microsoft Embedded Visual Tools (EMVT).
  - ❑ Basic model debugging with Microsoft Windows CE.
- Test Models
  - ❑ Used to validate your target configuration after you make a configuration change.
- Installation Changes
  - ❑ Rational Rose RealTime for UNIX is now included on the Rational Suite DevelopmentStudio (UNIX) CD. This new rs_install process includes many enhancements to quickly get you started with Rational Rose RealTime.

Rational Quality Architect - RealTime Edition (RQA-RT)

With RQA-RT, you can use sequence diagrams to test the integrity of a system. You can also test in isolation by isolating capsules. Use RQA-RT to facilitate unit testing and scenario testing.

Rational Connexis

Support for new ports

Support has been added for the following operating systems:

- Windows CE (sh3)

  Note: *Table 2, "Supported platforms and targets," on page 14, provides detailed information about the new Rational Connexis ports.*

Chapter 2

Overview of the Professional Packages

The Release Notes and Installation Guide for Rational Rose RealTime Professional applies to the Rational Rose RealTime Professional package and the Rose RealTime Professional Porting package.

The Rational Rose RealTime Professional Package

In addition to Rose RealTime, the Rose RealTime Professional package includes the following software:

■ Rational Connexis

■ Rational Quality Architect- RealTime Edition

■ Rational Target Deployment Package

Rational Connexis

Connexis simplifies the construction of reliable, distributed applications using Rational Rose RealTime. You can easily establish communication paths and send messages between capsules in separate processes whether they reside on the same node or on separate nodes. Also, you can monitor connections, trace messages, and collect communication metrics.

With Rational Connexis, you can distribute applications built with Rational Rose RealTime version 2002.05.00. Connexis also provides features to help you build reliable distributed applications.

Connexis extends the asynchronous messaging used between capsules in Rational Rose RealTime so that it can be used between capsules located in different processes or different nodes in a network. Connexis allows you to use unwired ports, based on protocols you define, to establish these connections. Since the same mechanisms are used for local and remote messaging, it is easy to make your application distributed.

Using a publish and subscribe pattern, Connexis can connect capsules whether they are on the same processor, distributed on a backplane, across a network connection, or through some other channel. To implement these connections, Connexis uses the underlying TCP/IP stack of the operating system.

Connexis also includes several features to provide fault-tolerance capabilities to the applications you build with Rose RealTime. The Connexis Locator Service, which can be used to find connection destinations, supports the use of a backup locator to automatically take over should the primary locator fail.

Run-Time connectivity viewing

Determining connectivity in a distributed system can be tedious and time-consuming. To make this easier, Connexis includes a connectivity trace tool, the Connexis Viewer, that lets you examine and monitor connection status in real-time. You can easily determine the services that have been published and who has subscribed to them, wherever the publishers and subscribers may be on your network.

The Connexis Viewer also lets you trace messages between publishers and subscribers. You can apply filters to restrict the trace information being captured and you can also specify the number and size of the memory buffers allocated for tracing. This allows you to carefully control the allocation and use of tracing resources on target.

Together, these features provide easy, convenient, and fault-tolerant connectivity. Instead of building your own distributed communications infrastructure, you can build additional revenue-generating features into your product. The result is that your product ships sooner with more features.

Please refer to the *User Guide - Rational Rose RealTime Connexis* for a complete description of the Connexis product.

Rational Quality Architect - RealTime Edition

Rational Quality Architect automates scenario-based unit testing. You can create sequence diagrams that specify how any set of capsules interact. With a single command, Rational Quality Architect generates and builds test harnesses along with any requested stubs, runs the tests on the specified target, collects the results at run-time, compares those results with the original sequence diagrams, and highlights any differences between them along with any detected race conditions.

Using Rational Quality Architect - RealTime Edition (RQA-RT), you can extend Rational Rose RealTime's design automation capabilities to model, debug and test. By automatically generating complete unit and integration test harnesses directly from sequence diagram specifications, manual coding of stubs and drivers for debugging and testing is eliminated.

RQA-RT automatically verifies designs against sequence diagram specifications both analytically and during execution. Application generation and automatic testing of fully or partially complete designs, plus animated visual and symbolic debuggers, encourages early and continuous design refinement and validation.

For detailed information on RQA-RT, see the *User's Guide - Rational Quality Architect RealTime Edition.*

Allow sub-capsule instances to be drivers

This functionality provides a way to implement "stub" generation for contained capsule instances. By providing this functionality RQA-RT enables more robust testing and more complex interactions.

Verification mode changes to allow more control in manual mode

This functionality enables RQA-RT to operate in manual mode and provides the functionality to run the harness on a custom node.

Allow data qualifier in data field of send message

This functionality enables full composite data types to be passed as the signal data, allowing the same range of data flexibility or inject capability as in the toolset.

Allow drivers to model timing services

When a timing service is invoked from the driver interaction instance, it will be generated into the driver capsule. This provides more robust support for converting trace diagrams into specifications.

Capsule interface generation for instances on sequence diagram without role specified

Required test wrappers are automatically generated based on the user supplied sequence diagrams.

Java language support

Enables RQA-RT functionality on a model based on the Java Language add-in.

Rational Rose RealTime Target Deployment Package

The Target Deployment Package includes the source code for the UML Services Libraries. These libraries provide Rose RealTime generated applications with a platform-independent set of services such as communication, timing, capsule lifecycle management, and state machine execution. The UML Services Libraries also include an adaptation layer that maps the platform-independent services to the specific services provided by the target platform. The Target Deployment Package includes adaptations for many popular targets.

Rational Rose RealTime Target Deployment Package provides you with one or more embedded targets for integration with your Rational Rose RealTime toolset.

After you installed the Rational Rose RealTime Professional Package, with the install key included with the Professional Package shipment, you have support for the base Target Deployment Package embedded targets as identified above.

Rational Rose RealTime Target Porting Package

The Rose RealTime Professional Porting package includes the same software as the Rose RealTime Professional package, except that it includes the Target Porting Package instead of the Target Deployment Package. The Target Porting Package, like the Target Deployment Package, includes the source code for the UML Services Libraries. However, the Target Porting Package does not include any adaptations for any targets other than the host platforms on which the Rose RealTime toolset runs.

The porting package provides you with the tools necessary to develop or deploy for a custom embedded target environment. Included with this package are the porting guides for both the C and C++ languages along with example ports for each of these environments.

After you have installed the Rational Rose RealTime Professional Package, the porting guides will be included in the online help, and PDF versions are located in the directory %ROSERT_HOME%\Help on Windows or $ROSERT_HOME/Help on UNIX:

- cpp_portingguide.pdf
- c_portingguide.pdf

Please refer to the appropriate porting guide for information on where the various components of the example ports can be found.

As you are planning to develop and deploy on a target line-up which is not a formally supported platform, see the supported platforms section of the Installation Guide, Rational Rose RealTime. Please note that product support will be based on the closest reference platform as identified in the supported platforms section.

Chapter 3

Referenced Configurations

Referenced Configurations

Referenced Configuration Requirements for Windows NT

The minimum supported configuration for running Rose RealTime on Windows NT is:

- Windows NT 4.0, with service pack 6a
- Minimum Pentium 150 MHz. We recommend 500 MHz or faster CPU
- Minimum 128 MB of RAM. We recommend 256 MB of RAM
- Minimum 325 MB of disk space for the Rose RealTime installation
- Minimum display 1024 X 768. We recommend 1280 X 1024 or better
- Postscript printer for printing
- Browser requirement - Internet Explorer 5.01 or 5.5 or Netscape Navigator 4.7 or 6.0. We recommend Internet Explorer 5.01 or 5.5

Referenced Configuration Requirements for Windows 2000

The minimum supported configuration for running Rose RealTime on Windows 2000 is:

- Windows 2000 Professional, with service pack 1
- Minimum Pentium 150 MHz. We recommend 500 MHz or faster CPU
- Minimum 128 MB of RAM. We recommend 256 MB of RAM

- Minimum 325 MB of disk space for the Rose RealTime installation
- Minimum display 1024 X 768. We recommend 1280 X 1024 or better
- Postscript printer for printing
- Browser requirement - Internet Explorer 5.01 or 5.5 or Netscape Navigator 4.7 or 6.0. We recommend Internet Explorer 5.01 or 5.5

Referenced Configuration Requirements for Windows XP Pro

The minimum supported configuration for running Rose RealTime on Windows XP Pro is:

- Minimum Pentium 300 MHz. We recommend 500 MHz or faster CPU
- Minimum 128 MB of RAM. We recommend 256 MB of RAM
- Minimum 325 MB of disk space for the Rose RealTime installation
- Minimum display 1024 X 768. We recommend 1280 X 1024 or better
- Postscript printer for printing
- Browser requirement - Internet Explorer 5.01 or 5.5 or Netscape Navigator 4.7 or 6.0. We recommend Internet Explorer 5.01 or 5.5

Referenced Configuration Requirements for UNIX

The minimum supported configuration for running Rose RealTime on UNIX is:

- Solaris 2.6, Solaris 2.7, Solaris 2.8, or HPUX 10.20
  - ❏ For Solaris operation, the minimum workstation is an UltraSparc 10. We recommend an UltraSparc 60 with 512 MB of RAM. We recommend the Solaris 2.8 operating system.
  - ❏ For HPUX operation, we support installation of the HP 700 series architecture
  - ❏ Please see the Rational Rose RealTime web site (http://www.rational.com/support) for a list of the required UNIX patches applicable to your operating system.
- The minimum is 256 MB of RAM. We recommend 512 MB of RAM with approximately three times this amount of swap space.
- Minimum 370 MB of disk space for the Rose RealTime installation

Referenced Host Configurations for Rational Rose RealTime

Table 1 shows the supported host platforms for this release of Rational Rose RealTime.

Note: *Rational Rose RealTime is not supported on Windows 95.*

Table 1   Host Configurations

Toolset Host
Solaris 2.6
Solaris 2.7
Solaris 2.8
Windows NT 4.0 (Service Pack SP6a)
Windows 2000 (Service Packs SP1 and SP2)
Windows XP Pro
HPUX 10.20

Note: *Java generation on HPUX is not supported.*

A pre-defined set of the Rose RealTime UML Services Libraries are delivered as part of the Rational Rose RealTime product. The UML Services Library is what allows standalone executable models to be executed on target operating systems. These ports are fully tested by Rational, and are covered by standard Rational support. A standard port can be used to facilitate a port to your environment of choice.

Note: *For a more detailed description of the Services Library, refer to the programmer's guide or online documentation or see the online documentation.*

A port is based on the following specifics (often called the toolchain line-up or configuration):

- OS version
- Compiler version
- Processor type

If you use a configuration other than the one tested by Rational and listed in this guide, standard support covers problems that are reproducible on referenced configurations in this guide. Table 2 shows the referenced configurations and targets.

Table 2   Supported platforms and targets

Host Configuration(s)	Target RTOS	Compiler/Processor	RTS	DCS
Solaris	Same	Gnu 2.95.1, sparc	C++	C++
		Gnu 2.8.1, sparc	C & C++	C++
		Gnu 2.7.2.3, sparc	C++	-
		Sun C++ 5.0, sparc	C++	C++
		Sun C 5.0, sparc	C	-
HPUX	Same	Gnu 2.8.1, hppa	C & C++	C++
		HP C++ 10.11, hppa	C++	-
Windows	Same	Visual C++ 6.0, x86	C & C++	C++
Solaris, Windows	pSOS 2.5	Diab 4.2b, ppc	C++	C++
Solaris, HPUX	VRTX 4.AB	Microtec 1.3C, ppc	C++	n/a
Windows	VRTX 4.Baa	Microtec 1.4, ppc	C++	-
Solaris, Windows	OSE 4.1.1	Diab 4.3f, ppc	C & C++	C++
		GreenHills 1.8.9, ppc	C	-
		GreenHills 2.0, ppc	C	-
Solaris	OSE 4.1.1 SoftKernel	Gnu 2.95.1, sparc	C & C++	-
Windows	OSE 4.1.1 SoftKernel	Visual C++ 6.0, x86	C	-
Solaris, Windows, HPUX	Tornado 2.0 (VxWorks 5.4)	Cygnus 2.7.2.960126, M68040	C & C++	-
		Cygnus 2.7.2.960126	C & C++	C++
		Cygnus 2.7.2.960126, ppc	C & C++	-
		GreenHills 1.8.9, x86c	C & C++	C++
		GreenHills 2.0, ppc	C & C++	C++
Solaris	Tornado 2.0 Sim	Cygnus 2.7.2.960126, sparc	C++	C++
Windows NT	Tornado 2.0 Sim	egcs 2.90.29, x86	C++	C++
Solaris, Windows	LYNX 3.1.0a	gnupro-2.9-98r2, ppc	C++	C++
Solaris	LYNX 3.0.1	Cygnus 2.7.97r1, x86	C++	C++
		Cygnus 2.7.97r1, ppc	C++	C++

Table 2   Supported platforms and targets

Host Configuration(s)	Target RTOS	Compiler/Processor	RTS	DCS
Solaris	Chorus Classix 4.0	egcs-2.91.66, ppc	C++	-
Windows	Windows CE sh3	eMbedded Visual C++ 3.0, sh3	C++	C++
N/C - native compilation only	AIX 4.2.1	gnu 2.8.1	C++	-
N/C - native compilation only	Nucleus 1.1	Diab 4.2b	C++	-
N/C - native compilation only	Red Hat Linux 6.1	Egcs 2.91.66	C++	C++
N/C - native compilation only	QNX 4.2.2	Watcom C++ 10.6	C++	-
N/C - native compilation only	UnixWare 7.0.1	SDK 3.0	C++	C++
Host Configuration(s)	**Target RTOS**	**Compiler/Processor**	**RTS**	**DCS**
Solaris	Same	Gnu 2.95.1, sparc Gnu 2.8.1, sparc Gnu 2.7.2.3, sparc Sun C++ 5.0, sparc Sun C 5.0, sparc	C++ C & C++ C++ C++ C	C++ C++ - C++ -

PSOS 2.5/PPC/Diab 4.2b DCS Port

The pSOS installation provides a board-support package (BSP) with settings that must be customized for running Connexis applications. Depending on the hardware parameters of your board, you must adjust the settings according to your requirements.

The following excerpt from the file sys_config.h in the BSP directory shows a sample set of configuration parameters. Pay special attention to the comments containing additional notes that are in brackets. For example, the comment: `max number of tasks (25 -> 35)`, for `KC_NTASK`, means that the maximum number of tasks has been increased to 35 for Connexis applications.

The following component configuration parameters work as they are for this application. Modify them to your requirements to customize the application.

```
/**********************************************************************/
/*                                                                    */
/* C O M P O N E N T   C O N F I G U R A T I O N   P A R A M E T E R S */
/*                                                                    */
/*  These parameters should work as is for this application. You */
/*  may want to change some of them if you start customizing this */
/*  application.                                                      */
/*                                                                    */
/**********************************************************************/
/*--------------------------------------------------------------------
*/
/* pSOS+ configuration parameters - change these for Connexis
applications.      */
/*--------------------------------------------------------------------
*/
#define KC_RN0USIZE    0x100    /* region 0 unit size
*/
#define KC_NTASK       35        /* max number of tasks (25 -> 35)
*/
#define KC_NQUEUE      15         /* max number of message queues (10 ->
15) */
#define KC_NSEMA4      60        /* max number of semaphores (30 -> 60)
*/
#define KC_NTIMER      15         /* max number of timers (10 -> 15)
*/
#define KC_NMUTEX      60        /* Max number of mutexes (30 -> 60)
*/
#define KC_NCVAR       10         /* Max number of condition variables (5-
>10)*/
#define KC_NTVAR       10        /* Max number of task variables (5 -> 10)
*/
#define KC_NCOCB       5        /* Max number of callouts
*/
#define KC_NTSD        5        /* Max # of Task Specific Data entries
*/
#define KC_NLOCOBJ     80         /* max number of local objects (50 -> 80)
*/
#define KC_NMSGBUF     384       /* max number of message buffers (256-
>384)*/
#define KC_TICKS2SEC   100      /* clock tick interrupt frequency
*/
```

```
#define KC_TICKS2SLICE 10        /* time slice quantum, in ticks
*/
#define KC_MAXDNTENT   0         /* max number of device names in DNT
*/
#define KC_DNLEN       10        /* max length of a device name in DNT
*/
#define KC_SYSSTK      0xA000    /* pSOS+ system stack size (bytes) (8->
A) */
#define KC_ROOTSSTK    0xA000    /* ROOT supervisor stack size (8 -> A)
*/
#define KC_IDLESTK     0x0500    /* IDLE stack size          (4 -> 5)
*/
#define KC_ROOTUSTK    0xA000    /* ROOT user stack size   (8 -> A)
*/
#define KC_ROOTMODE    (T_SUPV | T_ISR) /* ROOT initial mode
*/
#define KC_ROOTPRI     230       /* ROOT task priority
*/
#define KC_NIO         (SC_DEVMAX+1) /* # of devices in initial iojtab
*/
#define KC_MAXIO       (SC_DEVMAX+3) /* Max # of devices in the system
*/
```

Note: *These settings differ depending on the target board*
characteristics (such as memory)

Multi-node system support

The pSOS OS lets you configure multi-node systems. Each node has a
unique ID number. During start-up, Connexis requires the node
number on which the Connexis binary will run. For this purpose, the
following command-line parameter informs the Connexis library about
the node number:

-CNXpSOS_node = x

where x is an integer, specifying the node ID. If not specified, the
default is 0 (zero) for single-node system.

Known problems

■ At the time of this release, the number of user-created threads has an impact on system performance. Increasing the number of threads decreases system performance in a linear fashion.

■ In this release of Connexis, the pSOS system does not support dynamic resolution of network addresses for a given IP address. Connexis end-points should be specified with explicit IP addresses.

Table 3 provides an example of a syntax that is supported and a syntax that is not supported by the DCS for pSOS.

Table 3

Supported	Not Supported
-CNXlpep=cdm://<IP address>:<port>	-CNXlpep=cdm://<CPU name>:<port>
example: CNXlpep=cdm://193.138.253.54:3100	*example:* -CNXlpep=cdm://sparc11:3100

TORNADO 2.0/SimSo/Cygnus 2.7.2-960126 DCS Port

This section describes the board-support package (BSP) and VxWorks kernel settings applied when testing the Tornado 2.0/SimSo/Cygnus 2.7.2-960126 port.

The Tornado installations provide a standard VxWorks simulator with no networking capabilities. If you are using Connexis under the VxWorks simulator, install the full VxWorks simulator.

To configure the full Solaris simulator with networking:

1. Use the **Create Project facility** to create a bootable VxWorks image. On the VxWorks tab in the **Project Workspace** window, select the folder called network components. Right-click and select "Include network components" from the context menu. Uncheck **BSD interface support** and check **PPP** and **PPP boot** or **ULIP** and **ULIP boot**. Click **OK**.

2. If you are only using PPP, go to the obsolete components folder and include 5.2 serial drivers. Right-click the element to open the **Properties** window, click the **Params** tab, and confirm that **NUM_TTY** is set to 2.

3. On the **VxWorks** tab in the **Project Workspace** window, select the folder called '**select WDB connection**' and check "**WDB network connection**." Then select the folder called '**select WDB mode**' and uncheck '**WDB system debugging**.'

4. Remove the BSD attach interface and BSD interface support components **(INCLUDE_BSD_BOOT and INCLUDE_BSD)** from the network devices subfolder. If you are using PPP, also remove ULIP and ULIP boot **(INLUDE_ULIP** and **INCLUDE_ULIP_BOOT**). See "Known problems" on page 19 for more information.

5. Ensure that **#undef INCLUDE_NETWORK** and **#undef INCLUDE_NET_INIT** are removed from **config.h** or that the "undef" parts are changed to "define."

6. If you want to use multiple simulators simultaneously, using **ULIP** on Solaris, add the following to the **config.h** of your **BSP**:

   #undef WDB_COMM_TYPE

   #define WDB_COMM_TYPE   WDB_COMM_NETWORK

7. If you are using PPP, define the following in **config.h**:
   #ifdef BSD43_COMPATIBLE
   #undef BSD43_COMPATIBLE
   #endif

8. Rebuild and download VxWorks.

   Note: *While downloading VxWorks, change your target server configuration from* **wdbpipe** *to* **wdbrpc***.*

Known problems

■ At the time of this release, end-points specifying the IP address (see Table 3) have been specified for Connexis binaries to establish connection, while running on top of the simulator.

■ When downloading the VxWorks image, change the default value in the Memory size(bytes) field from 3000000 to 8000000 to ensure you have sufficient memory for your application.

- When connecting between two Solaris machines, configure the Solaris machines for IP forwarding.

  Note: *If either of the two machines does not have IP forwarding turned on, the vxSim processes will not be able to talk to each other.*

- Ensure that the routing tables are configured correctly for vxSim processes (if connecting two vxSim processes) and the Solaris machines (see "Example of routing tables" on page 20).

Example of routing tables

The following example illustrates how to configure routing tables. Assume that you have the following hosts:

```
147.11.50.5limpopo
127.0.1.1vxsim1 (running on limpopo)
147.11.50.3kaveri
127.0.1.9vxsim9 (running on kaveri)

You would then need to have the following routes:

(obtained by use of "netstat -rn"):

on limpopo:
    limpopo->vxsim1  127.0.1.1   127.0.1.254   UH    3   0   ipd0
    limpopo->vxsim9  127.0.1.9   147.11.50.3   UGH   0   3

on kaveri:
    kaveri->vxsim9   127.0.1.9   127.0.1.254   UH    3   0   ipd0
    limpopo->vxsim1  127.0.1.1   147.11.50.5   UGH   0   3

(obtained by use of "routeShow"):

on vxsim1:
    vxsim1->kaveri (network route)
    147.11.0.0        127.0.1.254      3        1        5        ppp0

    vxsim1->vxsim9 (host route)
    127.0.1.9         147.11.50.3      7        0        5        ppp0
```

```
on vxsim9:
   vxsim9->limpopo (network route)
   147.11.0.0        127.0.1.254     3       1       5       ppp0

   vxsim9->vxsim1 (host route)
   127.0.1.1         147.11.50.5     7       0       5       ppp0
```

Demonstrating the example

To demonstrate the routing table example, send a ping from vxsim1 to limpopo on the localhost address, from limpopo on 147.11.50.5 to kaveri, and from to vxsim9:

```
-> ping "127.0.0.1",1
127.0.0.1 is alive
value = 0 = 0x0
-> ping "147.11.50.5",1
147.11.50.5 is alive
value = 0 = 0x0
-> ping "147.11.50.3",1
147.11.50.3 is alive
value = 0 = 0x0
-> ping "127.0.1.9",1
127.0.1.9 is alive
value = 0 = 0x0
```

Note: *If you experience problems using VXsim on a host, communicating with another host, contact WindRiver technical support.*

Chapter 4

Installation

The Professional Edition installation key is included in the Welcome Letter that you received with the product shipment. Contact Rational License Support if you did not receive a Professional Edition installation key.

Note: *Rational Connexis version 2002.05.00 has been tested with Rational Rose RealTime version 2002.05.00 only. It will not work with earlier releases of Rational Rose RealTime.*

Contents

This chapter is organized as follows:

Before You Install

Before you install the Rational Rose RealTime Companion Products, you must have previously installed Rational Rose RealTime DevelopmentStudio RealTime.

Installing Rational Rose RealTime Professional Edition

Before you install Rational Rose RealTime Professional Edition, you must first install Rational Rose RealTime version 2002.05.00.

Windows Installations

When you install Rational Rose RealTime Professional Edition on Windows, you have the following options:

- **Client Installation** (Typical) - installs Rational Rose RealTime Professional Edition on your local system.

  Note: Rational Rose RealTime must be currently installed on your local system prior to installing the Client Installation on the Rational Rose RealTime Companion Product CD.

- **Client Installation over the Network** - installs the required components on your local system to run the Rose RealTime Professional Edition from a network location.

  Note: Rational Rose RealTime, then the Administrative Installation of Rational Rose RealTime Professional Edition must be currently installed on your local system prior to installing a Client Installation over the Network installation.

- **Administrative Installation** - installs the files required to run Rational Rose RealTime Professional Edition from a location on the network.

  Note: Rational Rose RealTime must be installed before installing the Administrative Installation of Rational Rose RealTime Professional Edition. You must complete an Administrative Installation of Rational Rose RealTime Professional Edition before you perform a Client Installation over the Network.

Client Installation

A typical installation installs Rational Rose RealTime Professional Edition on your local system. Rational Rose RealTime must be installed previously before you perform a Client Installation.

To install the Rational Rose RealTime Professional Edition:

1. Launch Rational Rose RealTime, click **Help > About**, then verify that Rational Rose RealTime version 2002.05.00 is currently installed.

2. Insert the Rational Rose RealTime Companion Products CD into your CD-ROM drive.

   If the system is configured with the autorun feature enabled, the setup program will run automatically and you may continue with step 4.

3. Use Windows Explorer to open a window displaying the contents of the CD-ROM. For example, double-click **My Computer** and double-click the icon for the Rational Rose RealTime Companion Products CD. Double-click the **Setup.exe** icon to run Setup.

   Note: *The .exe file name extension may not be visible.*

   The Setup dialog box appears followed by the **Welcome** dialog box.

4. Click **Next** to view the License Agreement.

   You must accept the license agreement to proceed.

   If you do not agree with the terms of the license agreement, you should exit the installation. All software and documentation should be returned to Rational Software.

   If you accept the terms and conditions of the license agreement, click **Yes**.

   The **Setup Type** dialog appears.

5. Select **Typical**.

6. When prompted, type the installation key.

7. Click Next.

   Note: *The Professional Edition installation key is included in the Welcome Letter you received with the product shipment. Contact Rational License Support if you did not receive a Rational Rose RealTime Professional Edition installation key.*

8. Select a **Program Folder**, then click **Next**.

9. In the **Information Summary** dialog, review the information and click **Next**.

    The products selected for installation are listed.

10. Click **Next** to start the installation.

11. Click **OK** when prompted to copy both DLLs.

12. Click **Finish**.

Administrative Installation

To successfully complete the Administrative Installation of Rational Rose RealTime Professional Edition, you must first install an Administrative Installation of Rational Suite DevelopmentStudio RealTime on the network. For information on installing Rational Suite DevelopmentStudio, see the book *Installing Rational Suite DevelopmentStudio*.

During an Administrative Installation of Rational Rose RealTime Professional Edition, the required components necessary to run Rational Rose RealTime Professional Edition over a network are copied to the Administrative Installation Target directory. The Administrative Installation Target directory is created by the administrative installation of Rational Suite DevelopmentStudio RealTime and is available on the network.

To install the Rational Rose RealTime Professional Edition:

1. Launch Rational Rose RealTime, click **Help > About**, then verify that Rational Rose RealTime version 2002.05.00 is currently installed.

2. Insert the Rational Rose RealTime Companion Products CD into your CD-ROM drive.

    If the system is configured with the autorun feature enabled, the setup program will run automatically and you may continue with step 4.

3. Use Windows Explorer to open a window displaying the contents of the CD-ROM. For example, double-click **My Computer** and double-click the icon for the Rational Rose RealTime Companion Products CD. Double-click the **Setup.exe** icon to run Setup.

    Note: *The .exe file name extension may not be visible.*

    The **Setup** dialog box appears followed by the **Welcome** dialog box.

4. Click **Next** to view the License Agreement.

   You must accept the license agreement to proceed.

   If you do not agree with the terms of the license agreement, you should exit the installation. All software and documentation should be returned to Rational Software.

   If you accept the terms and conditions of the license agreement, click **Yes**.

   The Setup Type dialog appears.

5. Select **Administrative** from the **Setup Type** dialog list.

   Note: An Administrative Installation of Rational DevelopmentStudio RealTime Edition must be completed, before installing the Rose RealTime Professional Edition for administrative use.

6. Click **Next**.

7. Enter your installation key.

8. Click **Next**.

   Note: The Rational Rose RealTime Professional Edition installation key is provided in the Welcome Letter that you received with the product shipment. Contact Rational License Support if you did not receive a Professional Edition installation key.

9. The products selected for installation are listed. Click **Next**.

10. In the **Information Summary** dialog, review the information and click **Next**.

    The **Choose Destination Location** dialog appears.

11. Browse to the Administrative Install Target directory. This is the destination path provided during the administrative installation of Rational DevelopmentStudio RealTime Edition.

12. Click **Next** to start the installation.

13. Click **Finish**.

Client Installation over the Network

A client installation over the network configures the client computer to run Rational Rose RealTime Professional Edition from a location on the network. Before you can perform a client installation over the network, you must have Rational Rose RealTime version 2002.05.00 installed, then have installed an Administration Installation of Rational Rose RealTime Professional Edition.

To install the Rational Rose RealTime Professional Edition:

1. Launch Rational Rose RealTime, click **Help > About**, then verify that Rational Rose RealTime version 2002.05.00 is currently installed.

2. Insert the Rational Rose RealTime Companion Products CD into your CD-ROM drive.

   If the system is configured with the autorun feature enabled, the setup program will run automatically and you may continue with step 4.

3. Use Windows Explorer to open a window displaying the contents of the
   CD-ROM. For example, double-click **My Computer** and double-click the icon for the Rational Rose RealTime Companion Products CD. Double-click the **Setup.exe** icon to run Setup.

   Note: The .exe file name extension may not be visible.

   The Setup dialog box appears followed by the **Welcome** dialog box.

4. Click **Next** to view the License Agreement.

   You must accept the license agreement to proceed.

   If you do not agree with the terms of the license agreement, you should exit the installation. All software and documentation should be returned to Rational Software.

   If you accept the terms and conditions of the license agreement, click **Yes**.

   The **Setup Type** dialog appears.

5. Select **Network**.

6. When prompted, type the installation key.

7. Click **Next**.

   Note: The Professional Edition installation key is included in the Welcome Letter you received with the product shipment. Contact Rational License Support if you did not receive a Rational Rose RealTime Professional Edition installation key.

8. Select a **Program Folder**, then click **Next**.

9. In the **Information Summary** dialog, review the information and click **Next**.

   The products selected for installation are listed.

10. Click **Next** to start the installation.

11. Click **Finish**.

UNIX installation

Before you install Rational Rose RealTime Professional Edition, you must first install Rational Suite DevelopmentStudio RealTime (UNIX). For information on installing Rational Rose RealTime, see the *Rational Rose RealTime Installation Guide*.

To install the Rational Rose RealTime Professional Edition, follow these steps:

1. Insert the Rational Rose RealTime Companion Products CD into your CD-ROM drive.

2. Mount the CD-ROM device.

   Typically, to mount a CD-ROM device, you are a system administrator (root or super-user). See the instructions for your particular CD-ROM drive and operating system for details.

   HP-UX:

   ```
   mount -rt cdfs /dev/dsk/c201d511 /cdrom
   ```

   Solaris

   ```
   mount -rF hsfs /dev/sr1/cdrom
   ```

   where

   /dev/sr1 is the CD-ROM device

   Note: *In Solaris, the CD-ROM may be automatically mounted.*

3. From a shell window, change the directory to the mounted CD-ROM device.

   For example,

   ```
   cd /cdrom
   ```

4. Run the setup script.

   ```
   ./setup.sh
   ```

5. Enter the installation key and press **ENTER**.

    Note: The Rational Rose RealTime Professional Edition installation key is provided in the Welcome Letter that you have received with the product shipment. Contact Rational License Support if you did not receive a Professional Edition installation key.

6. Review the terms of the license agreement and do one of the following:

    ■ To accept the agreement, type Y and press **ENTER**.

    ■ To read the agreement again, type R and press **ENTER**.

    ■ To quit, type Q and press **ENTER**.

    You must accept the license agreement to proceed.

    If you do not agree with the terms of the license agreement, you should quit the installation. All software and documentation should be returned to Rational Software.

7. Select a platform.

    You can specify HP10 only, Sun5 only, or both HP10 and Sun5. Regardless of which configuration you specify, the corresponding files are installed to a separate directory.

    Note: Install the correct configuration (an HP or Sun installed RoseRT) from the Rational Suite DevelopmentStudio - RealTime (UNIX).

8. To modify the platform settings, type M or to accept the platform settings, type Y.

9. Press **ENTER**.

10. Specify an absolute installation path in which the Rational Rose RealTime product is installed.

11. After the installation completes, dismount the CD and store it in a safe place with the Welcome Letter.

After You Install

After you install the Rational Rose RealTime Companion Products, you must set the environment variable for CONNEXIS_HOME to the appropriate location, such as:

```
setenv CONNEXIS_HOME $ROSERT_HOME/Connexis
```

> **Note:** *Set this environment variable after* `$ROSERT_HOME` *is created (either by* `setenv ROSERT_HOME` *or in a rs_install setup after you* `source <rational_dir>/rosert_setup.xxx,` *where xxx is .csh or .sh.)*

Verifying the Connexis Installation

To increase efficiency and eliminate improper installation and/or setup misconfiguration, you are strongly encouraged to verify your installation after you have installed the Professional Edition package on your machine. As a minimum, you should verify your Connexis installation by using the BasicTest model provided with Connexis in `$CONNEXIS_HOME/Connexis`. This model uses the CDM transport.

Verifying your installation using BasicTest

You can easily verify your installation by using the BasicTest model provided with Connexis in:

`$ROSERT_HOME/Connexis/C++/examples`

Host configuration installation verification

The following instructions are for Windows NT, Windows 2000, and Windows XP Pro setup with Microsoft Visual C++ 6.0. If you use Visual C++ 6.0, please use the elements corresponding to VC++6.0.

The following instructions are for the host platforms (Windows, Solaris, HP-UX). The package names, component names, and component instance names differ for each platform. Table 4 and Table 5 define the names that are applicable for each of the supported host platforms.

Please use the information provided in Table 4 and Table 5, when completing the following steps:

1. Start Rose RealTime.
2. Load the BasicTest model from $ROSERT_HOME/Connexis/C++/examples.
3. From the Component View, expand the component package corresponding to your host platform.
4. Select the client component and from its item menu, choose **Build > Rebuild All** to recompile it.

5. Select the server component and from its item menu, choose **Build > Rebuild All** to recompile it

6. From the Deployment View's NT40 package, expand the processor that corresponds to you host platform.

7. The client will listen at port 9100 and the server will listen at port 9900. If these ports are being used by other another application on your workstation, you will need to change them. Open the server component instance's specification sheet and change the "9900" in the -CNXep startup parameter to an available port number. Open the client component instance's specification sheet and change the "9900" specified in the "-s" argument to the server's port number. Change the "9100" in the "-CNXep" startup parameter to an available port number. Save your changes.

8. Select the server component instance and choose Run from its item menu. On the RTS panel of the instance, click the Start button to execute the server.

9. On the Model panel, select the client component instance and choose **Run** from its item menu. On the RTS panel of the instance, click the **Start** button to execute the client.

10. Verify that your output for client and server looks similar to the output shown in sections "BasicTest Server output" and "BasicTest."

Table 4   Components for referenced configurations

	Component Package	Client Component	Server Component
WindowsMS Visual Studio 6.0	NT40-x86-VCC60	basicTestClient_31	basicTestServer_31
SolarisGnu 2.81	SUN5-sparc-gnu-281	basicTestClient_5	basicTestServer_5
SolarisSun Workshop 5.0	SUN5-sparc-SunCC-50	basicTestClient_4	basicTestServer_4
HP-UXGnu 2.81	HPUX10-hppa-gnu-281	basicTestClient_35	basicTestServer_35

Table 5   Component Instances for referenced configurations

	Component Package	Client Component	Client Component Instance	Server Component Instance
WindowsMS Visual Studio 6.0	NT40	MyNT40Workstation	basicTestClient_3 1Instance	basicTestServer_3 1Instance
SolarisGnu 2.81	Solaris	MySparcstation	basicTestClient_5 Instance	basicTestServer_5 Instance
SolarisSun Workshop 5.0	Solaris	MySparcstation	basicTestClient_4 Instance	basicTestServer_4 Instance
HP-UXGnu 2.81	Hpux	MyHPWorkstation	basicTestClient_3 5Instance	basicTestServer_3 5Instance

BasicTest server output

```
Rational Rose RealTime C++ Target Run Time System
Release 6.40.B.00 (+c)
Copyright (c) 1993-2001 Rational Software
rosert: observability listening at tcp port 30399


********************************************************************
*              Please note: STDIN is turned off.              *
*   To use the command line, telnet to the above mentioned port.   *
* The _output_ of any command will be displayed in _this_ window. *
********************************************************************


Rational Software Corp. Connexis(tm) - Distributed Connection Service
(dcs)
Release 6.40.B.82
Copyright (c) 1999-2001 Rational Software Corporation

dcs: CRM Transport : enabled
dcs: CDM Transport : enabled
dcs: CRM listening at [crm://192.139.251.167:2005]
dcs: CDM listening at [cdm://192.139.251.167:9900]
dcs: target agent enabled
dcs: locator service not available
dcs: metric service enabled


BasicTest-Server-started:

Server : Received simple greeting message... sending it back

Server : test cycle completed, received rtunbound !

Server : Received simple greeting message... sending it back

Server : test cycle completed, received rtunbound !
```

Note: *The above represents a partial listing of the BasicTest Server Output.*

BasicTest client output

```
Rational Rose RealTime C++ Target Run Time System
Release 6.40.B.00 (+c)
Copyright (c) 1993-2001 Rational Software
rosert: observability listening at tcp port 30380

*******************************************************************
*                 Please note: STDIN is turned off.               *
*   To use the command line, telnet to the above mentioned port.  *
* The _output_ of any command will be displayed in _this_ window. *
*******************************************************************


Rational Software Corp. Connexis(tm) - Distributed Connection Service
(dcs)
Release 6.40.B.82
Copyright (c) 1999-2001 Rational Software Corporation


BasicTest-Client-started:

dcs: CRM Transport : enabled
dcs: CDM Transport : enabled
dcs: CRM listening at [crm://192.139.251.167:2010]
dcs: CDM listening at [cdm://192.139.251.167:9100]
dcs: target agent enabled
dcs: locator service not available
dcs: metric service enabled

Client : sending a greeting message...

->Client: received message:
RTString"Hello, Welcome to the Connexis world!"

Client : unbound received

Client : reregistering SAP

Client : sending a greeting message...

->Client: received message:
RTString"Hello, Welcome to the Connexis world!"

Client : unbound received
```

Note: *The above represents a partial listing of the BasicTest Client Output.*

Uninstalling the Professional Edition

Uninstalling in Windows

To uninstall the Rational Rose RealTime Professional Package:

1. Copy any model changes that you made to the example models.

2. Copy any files added to, or modified in the $ROSERT_HOME/C++/TargetRTS directories to a temporary directory to preserve these changes. Later, you will migrate these changes to the new installation location.

3. From the **Start** menu, select **Start > Programs > Rational Rose RealTime Companion Products > Uninstall Companion Products for Rational Rose RealTime**.

   Note: *Uninstalling Rose for RealTime will not uninstall Rational Rose RealTime Professional products.*

Uninstalling in Solaris or HP-UX

To uninstall the Rational Rose RealTime Professional Package:

1. Save any user models or user data files in another location before removing the installation directory.

2. Remove the installation directory and all of its contents.

3. Remove the following files from the *$ROSERT_HOME/bin/registry* directory:

   - Connexis.reg

   - Connexis.svr

   - rqart.svr

4. Recreate the Rose RealTime registry to completely remove the Connexis add-in by entering the following:

   ```
   RoseRT -recreate_registry
   ```

Chapter 5

Converting Models from Connexis

This section describes how to convert a model from Rational Connexis version 2000.02.10 to Rational Connexis, version 2002.05.00.

Converting Connexis version 2000.02.10 Models to Connexis Version 2002.05.00 Models

If you are using version 2000.02.10 of Connexis, the Connexis Model Conversion Tool searches your model, identifying any incompatibilities, and provides a detailed description, explaining the changes. Table 6, explains the changes that are made to your model during the conversion process.

Table 6   Model Conversion for Connexis version 2000.02.10 to Connexis version 2002.05.00

Condition	Change
RTDXBase, RTDXBase_Agent, RTDXBase_Locator, RTDXBase_Agent_Locator fixed capsule roles are in the model	Replaces the capsule roles with the corresponding RTDBase configuration. Integrates the CDM transport with the capsules containing the new RTDBase or RTDBase_Locator capsule roles. Integrates the CRM transport into the containing capsule.
RTDBase, RTDBase_Locator fixed capsule roles are in the model but do not have the CDM transport as an attribute.	Integrates the CDM transport using a composite aggregation relationship into the capsules containing RTDBase or RTDBase_Locator capsule roles.

Table 6   Model Conversion for Connexis version 2000.02.10 to Connexis version 2002.05.00

Condition	Change
RTDXBase optional capsule role is in the model	Converts to the RTDBase and integrates the CRM and CDM transports.
RTDXBase_Agent optional capsule role is in the model	Converts to RTDBase_Agent and integrates the CRM transport.
RTDXBase_Locator optional capsule role is in the model	Converts to RTDBase_Locator and integrates the CDM and CRM transports
RTDXBase_Locator_Agent optional capsule role is in the model	Converts to RTDBase_Locator_Agent and integrates the CRM transport.
RTDBase or RTDBase_Locator optional capsule role is in the model	Users are notified that the CDM transport is integrated.
RTDBase_Agent or RTDBase_Locator_Agent optional capsule role is in the model	Searches the model identifying any of the components that have a dependency on the ORB. If the dependency exists, the CRM transport is integrated.
A component depends on a XDCS library component	Changes the component dependency to use the DCS library component.
The TargetConfiguration property of a component references a -CNX-M or a -CNX- target configuration	Removes the -CNX- or -CNX-M from the TargetConfiguration name.

To convert your model:

1. Load a model that uses version 2000.02.10 of Connexis in Rose RealTime.
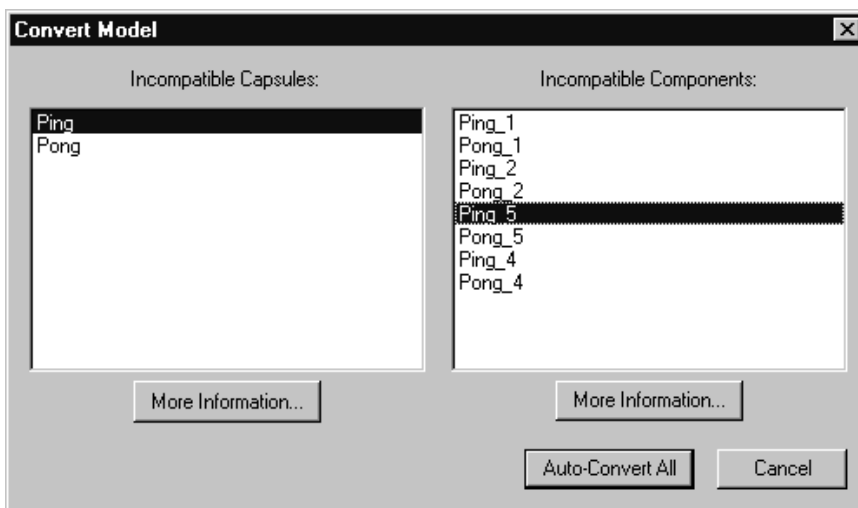2. Select **Tools > Connexis > Convert Model**.

Figure 1   Convert Model dialog

3. View more information about incompatible capsules and
    components by selecting the capsule or the component from the
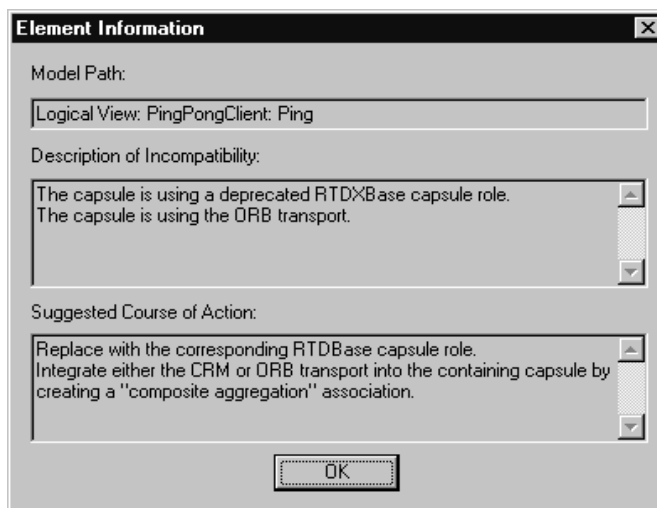   dialog and clicking **More Information**.

Figure 2   Element Information dialog

The "Element Information" dialog provides the following information:

Table 7   Element Information dialog chart

Information Heading	Description
Model Path	Shows the path of the selected capsule or component.
Description of Incompatibility	Explains the reason for the incompatibility between version 2000.02.10 and version 2002.05.00.
Suggested Course of Action	Explains how the Conversion tool will make the capsule or component compatible with Connexis version 2002.05.00.

4. Click **OK** once you have read the information, and repeat step three for additional capsules and components that appear in the "Convert Model" dialog.

5. Click **Auto-Convert All** from the "Convert Model" dialog.

   The Conversion Tool converts the incompatible capsules and components in your model. As the conversion takes place, the Conversion Tool may prompt you to confirm some conversion changes.

   Note: *Only run the Conversion Tool once. If you run the tool a second time, the information displayed in the Convert Model dialog may not be accurate.*

Verifying Component Compatibility with Connexis Version

The Component Verification Tool verifies that a component is compatible with Rational Connexis version 2002.05.00.

To verify that a component is compatible with version 2002.05.00:

1. Right-click a component.

2. Select **Connexis > Verify**.

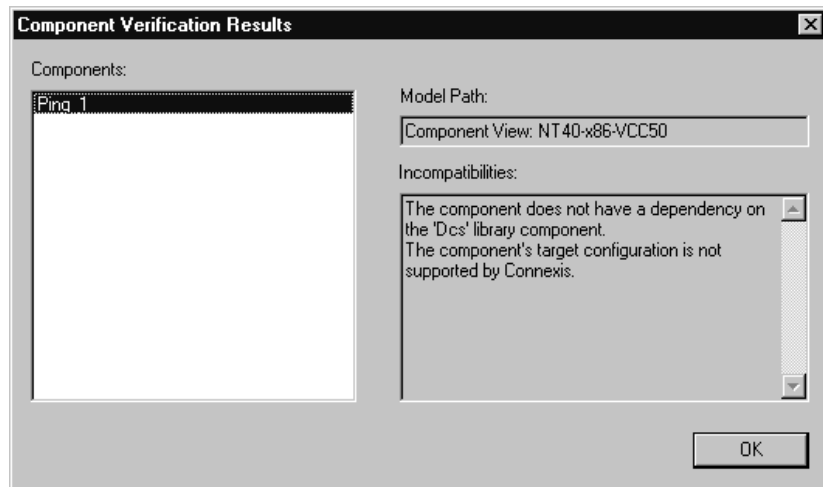The **Component Verification Results** dialog appears.

Figure 3   Component Verification dialog

3. Select the component from the **Components** area.

   The model path and the incompatibilities for the selected component appear.

4. Open the component from the browser and fix the incompatibilities.

   Note: You do not have to close the Component Verification Results dialog while fixing the incompatibilities.

5. Click **OK**.

Support

If you encounter any problems with migrating your model to Connexis version 2002.05.00, refer to "Technical Support" on page 53.

Chapter 6

Troubleshooting and Known Issues

The following is a list of the problems and limitations in the Rational Rose RealTime Professional Package products at the time of release. Some of these problems may have been addressed by the time you read this. For the most recent list of known problems and any fixes that may have been published, please visit the Rational Rose RealTime web site at:

http://www.rational.com/support/

Select **Upgrades and Patches**, then select **Rational Rose RealTime**.

Target Porting Package

There were no known issues at the time of release. Please visit the Rational Web Site for the latest Release Notes, patches and information:

Target Deployment Package

There were no known issues at the time of release. Please visit the Rational Web Site for the latest Release Notes, patches and information.

Rational Connexis

The following information explains the trouble shooting and known issues for Rational Connexis version 2002.05.00.

Troubleshooting

Transport Integration Framework

When implementing your Transport Integration using the Transport Integration Framework (TIF), you must create a component to build the Transport Integration. The Transport Integration component requires an additional inclusion path for the TargetRTS.

Add an inclusion for:

$(ROSERT_HOME)/C++/TargetRTS/src/target/<your target>, where <your target> maps to the target you are building.

Example:

If building for "NT40," the inclusion path would be:

$(ROSERT_HOME)/C++/TargetRTS/src/target/NT40

Turning off auditing for a single transport is not recommended

You may not be able to turn off auditing for a single transport. This is because setting -CNXtap=0 will result in no auditing taking place for the CRM and CDM transports. The internal timer used by the transporter will be set to 1 second. This may affect the -CNXtrre and -CNXtbrd parameters which are rounded up to a multiple of -CNXtap. Any transports integrated with an audit type other than "No Audit," will find the -CNXtcapi and -CNXtcapo periods to be a multiple of 1 second. Setting -CNXtap to be > 1 second will affect the frequency at which metrics can be collected by the viewer and other DCS enabled applications.

Signals no longer supported

The **RTDDCSRunning** and the **RTDDCSrunningReply** signals are no longer supported in this version of Connexis. The recommended fashion for determining if DCS is running, is to wait for the rtBound signal, indicating that a successful connection to the **RTDInitStatus** publisher has been made.

Rational Quality Architect - RealTime Edition

The following information explains the troubleshooting and known issues for Rational Quality Architect - RealTime Edition version 2002.05.00.

Lost Information in "To Port" for a Message

If you load an LF-file into Rational Rose RealTime and perform the conversion, there are a number of instances where the

information on the To Port of a message is lost. In Rational Rose RealTime 2002.05.00, the conversion was enhanced to determine the receiver port on any message sent between two instances that have a direct logical connection from the sender port. This calculation increases the time required to perform the conversion. Diagrams which have messages between instances that skip relay ports will continue to require the receiver port to be entered manually.

ReliableService.ebx Crashes When Running -runScriptAndQuit

When attempting to run the example RQA-RT model, called ReliableService.rtmdl, from the Command Prompt with the RRTEI script called ReliableService.ebs, and using the startup option -runScriptAndQuit, the model execution will abort. The example model runs well if you run the script from within Rose RealTime.

Do not use the VerifyBehavior command from RRTEI with the -runScriptAndQuit option because the verification process may not complete in this mode.

For example, if you use the **-runScriptAndQuit** option, Rose RealTime runs the script specified at the Command Prompt. Immediately after the script finishes, it sends a WM_CLOSE message to itself, which is equivalent to selecting **File > Close**. However, the RRTEI command RunVerifyBehavior works asynchronously from the toolset; it returns control to Rose RealTime before verification completes. We recommend that you make this command the last command in the script.

Asynchronous mode is required for RQA-RT to function properly.

Solution:

Do not use the option **-runScriptAndQuit** with RQA-RT. You can continue to specify the name of the ReliableService.ebs script at the Command Prompt.

Creation of Container Capsules

RQA-RT does not automatically create container capsules for a nested capsule when the container is not included in the Sequence Diagram.

Converting MSCs in Rational Rose RealTime using the RQA-RT

Problem

Many MSCs have a variable of the same name (prepareSetupReqD), but they can have a different type. When RQA-RT synthesizes these attributes from the multiple driver instances and attempts to generate one test driver, there is a name conflict and it selects the last Sequence Diagram attribute's type as the type for the attribute of the test driver class.

Background

In ObjecTime Developer, attributes are a characteristic of MSCs; each MSC can have its own attributes. These attributes can be considered variables for the environment which acts as a driver in TestScope.

When the MSCs are converted in Rational Rose RealTime using the RQA-RT conversion tool, each MSC is converted to a Sequence Diagram. In this Sequence Diagram, what was the environment in ObjecTime Developer is now a driver capsule that is automatically created. The interaction instance (of the driver) in the sequence diagram has attributes which were converted from the MSC in ObjecTime Developer.

This newly created interaction instance is set as a driver during the Verify Behavior operation. As a result, a new RQADriver is created.

For Example:

Seq1:: driver has an attribute *xAttrib* of type *Xtype*

Seq2:: driver has an attribute *xAttrib* of type *Ytype*

Test harness generates a driver class with an attribute *xAttrib* of type *Xtype* or *Ytype*. The compilation occurs and the result will be many errors in the test harness. The errors occur because some of the action code interprets xAttrib as type *Xtype* and some as type *Ytype*.

Workaround

Run the Sequence Diagrams from separate test harnesses. This means that you will have completely separate components and will have to compile again.

Creating Messages and Sequence Diagrams

The Item Properties in the Create Message Specification dialog, with the exception of Thread, only apply if you are creating a Capsule Under Test (CUT). Thread applies in every case. The Item Properties entries are as follows:

- **Capsule class** - a capsule name. Enter a value here only if you want to override the default capsule class associated with the role that is associated with the interaction instance being created.

- **Initial data** - Enter a value here only if your Capsule Under Test (CUT) requires data on startup. To provide data you must specify an attribute in the driver sending the create message with the appropriate initial values. You cannot provide initial data in create messages sent from the environment.

- **Data Descriptor** - if you provided initial data, you must specify the type descriptor of the type of data that you specified. This is in the format RTType_<type of initial data>

- **Thread name**

Sending Message Specification Data Field Format for Java

For the data to be passed with the messages, the data type should be specified as *<data_type> <constructor_arguments>*. For example, to pass Integer object referring to the number 5, place the following line:

Integer 5 **or** java.lang.Integer 5

If *<data_type>* is omitted, Integer is assumed.

The *<constructor_arguments>* should contain the exact line to be passed as an argument to constructor. For example, for the MyObject(Integer, String) the following line can be used: MyObject 5, "Acme"

Note: No additional brackets or quotes need to be placed around *<constructor_arguments>*.

Limitations

- States in a specification sequence diagram are not referenced to states in a model (they are independent).
- RQA-RT is not supported for C models.
- Only leaf node instances in the interaction/sequence diagram can be specified as a driver/stub.
- Within a sequence diagram, each interaction instance without a specified role must have a unique name. Only one interaction instance per test set can be left unnamed.
- Within a sequence diagram, if you run multiple tests in a single pass, a port from a CUT can be used by only one interaction instance with an unspecified role.
- As it is impossible to specify cardinality index for the interaction instances with no roles specified, care should be taken then using such objects with capsules under test and/or ports with cardinality greater than 1.
- If the generated trace sequence diagram is directly compared with the specification diagram, it is important to remember that such comparison is asymmetric - sequence diagram should be used in place of sequence diagram; trace diagram should be used in place of trace diagram.

- When running multiple specifications in a test in sequence, ensure that you complete each sequence when using a CUT, so that the CUT is self-contained. This prevents a CUT from replying to a message from a CUT in the previous sequence diagram.

- In a controlled model when you generate a new harness with affected model elements not checked out, many warnings will be generated.

- In RQA-RT Java, there may be some problems when specifying deeply nested replicated subcapsules as drivers/stubs. The RQA-RT test harness will not be able to distinguish particular driver instances if driver cardinality is greater than 1. This might lead to unexpected behavior as settings of the first driver instance (like minimum run time) will be used for all driver instances. This limitation does not applies to the drivers present on the top level of driver selection dialog and drivers with cardinality equal to 1.

- Interaction instances with unspecified roles cannot be used to simulate interaction with sub-capsules. An error will occur if an unsupported use of "unnamed" interaction instance is detected.

  Workaround: For example: top capsule A has capsule role B in it's structure. Capsule B has capsule role C in it's structure. If you run a test on the Sequence Diagram located under A's Structure Diagram, "unnamed" interaction instances can communicate with the B, but not C. To use "unnamed" interaction instance with the C, a Sequence Diagram should be located under B's Structure Diagram.

  Note: "unnamed" interaction instances are not a mandatory part of the verification process.

- If a capsule role has a cardinality greater than 1, the cardinality index should be specified on interaction instances.

- RQA-RT support of unspecified interaction instances allows you to easily drive an unconnected port without having to add a driver capsule to the collaboration. More complex tests will require the use of a driver capsule. Regardless, you cannot drive a test using a port that is part of the system currently being tested.

Chapter 7

Documentation Updates

For the most recent documentation updates please visit the Rational Rose RealTime web site at:

www.rational.com/support

Select **Documentation**.

Chapter 8

Technical Support

This section describes how to submit problem reports, feature requests and support requests to Rational Customer Service.

Submitting Problem Reports

With Rational Rose RealTime, you can email problem reports to the Rational Software Technical Support department that services your location. When you email a problem report directly from the Rose RealTime application, a wizard guides you through the process, ensuring that you provide the correct information to the Rational Customer Service team. This information includes contact and location information, and a detailed description of the problem that you are reporting.

To submit a problem report:

1. From the **Help** menu, click **Email Technical Support**.

   A submenu appears, providing you with three options.

2. Click **Problem Report**.

   The General Information dialog appears.

3. Type your contact and location information in the text areas provided and click **Next**.

   The Problem Report - Additional Information dialog appears.

4. In the **Defect Title** text area, type a detailed name for the problem that your are reporting.

5. Select the type of problem that you are reporting from the appropriate list boxes.

6. Describe the problem, using the categories provided in the **Details** area.

7. Click **Next**.

   The **Email Summary** dialog appears.

8. Ensure that the information that appears in the Email Summary dialog is accurate.

   Note: *The email information displayed in the Technical Support Email Address is chosen based on the location information that you provided in the General Information dialog. It is not recommended that you edit the e-mail address.*

9. If you want to save or print a copy of the email, click the appropriate button.

10. Click **Send Email** to send your email.

Submitting Feature Requests

With Rational Rose RealTime, you can email feature requests to the Rational Software Customer Service department that services your location. When you email a feature request directly from the Rose RealTime application, a wizard guides your through the process, ensuring that you provide the correct information to the Rational Software Customer Service department. This information includes contact and location information, and a detailed description of the feature that your are requesting.

To submit a feature request:

1. From the **Help** menu, click **Email Technical Support**.

   A submenu appears, providing you with three options.

2. Click **Feature Request**.

   The **General Information** dialog appears.

3. Type your contact and location information in the text areas provided and click **Next**.

   The **Feature Request - Additional Information** dialog appears.

4. In the **Request Title** text area, type a detailed name for the Feature that you are requesting.

5. Select the level of urgency for the feature that you are requesting.

6. Describe the feature, using the categories provided in the **Details** area.

7. Click **Next**.

   The **Email Summary** dialog appears.

8. Ensure that the information that appears in the Email Summary dialog is accurate.

   Note: The email information displayed in the Technical Support Email Address is chosen based on the location information that you provided in the General Information dialog. It is not recommended that you edit the e-mail address.

9. If you want to save or print a copy of the email, click the appropriate button.

10. Click **Send Email** to send your email.

Submitting Support Requests

With Rational Rose RealTime, you can email Support requests to the Rational Software Customer Service department that services your location. When you email a Support request directly from the Rose RealTime application, a wizard guides you through the process, ensuring that you provide the correct information to Rational Software Customer Service department. This information includes contact and location information, and a detailed description of the support request that you are submitting.

To submit a support request:

1. From the **Help** menu, click **Email Technical Support**.

   A submenu appears, providing you with three options.

2. Click **Support Request**.

   The **General Information** dialog appears.

3. Type your contact and location information in the text areas provided and click **Next**.

   The **Support Request - Additional Information** dialog appears.

4. In the **Request Title** text area, type a detailed name for the request that you require.

5. Select the level of urgency for the question with which you need help.

6. Type your question in the Question text area.
7. Click **Next**.

    The **Email Summary** dialog appears.
8. Ensure that the information that appears in the Email Summary dialog is accurate.

    Note: *The email information displayed in the Technical Support Email Address is chosen based on the location information that you provided in the General Information dialog. It is not recommended that you edit the e-mail address.*
9. If you want to save or print a copy of the email, click the appropriate button.
10. Click **Send Email** to send your email.

Contacting Rational Customer Service by Email or Telephone

When contacting Rational Customer Service by email or by telephone, please be prepared to supply the following information:

■ Name, telephone number, and company name
■ Product name and version number
■ Operating system and version number (for example, Windows NT 4.0, Windows 2000, Windows XP Pro, Solaris 2.6/2.7/2.8, or HP-UX 10.20)
■ Computer make and model
■ Your case id (if you're calling about a previously reported problem)
■ A summary description of the problem, related errors, and how it was made to occur

If your organization has a designated, on-site support person, please try to contact that person before contacting Rational Customer Service.

You can obtain technical assistance by sending electronic mail to the appropriate e-mail address. Electronic mail is acknowledged immediately and is usually answered within one working day of its arrival at Rational. When sending an email place "Rational Rose RealTime" in the subject line, and in the body of your message include a description of your problem.

When sending email concerning a previously-reported problem, please include in the subject field: "CaseID: v0XXXXX", where XXXXX is the caseid number of the issue. For example:

```
CaseID: v0176528 New data on rational rose realtime install issue
```

Sometimes Rational Customer Service engineers will ask you to fax information to help them diagnose problems. You can also report a technical problem by fax if you prefer. Please mark faxes "Attention: Customer Service" and add your fax number to the information requested above.

Telephone and fax numbers for Rational Customer Service are contained in the following table. If you have problems or questions regarding licensing, please see "License Support Contact Information" on page 58.

Table 8   Support Telephone and Fax

Region	Telephone Number	Fax Number
Americas	800-433-5444	408-863-4300
Asia Pacific (includes support for Japan, China, India, Korea, Taiwan)	+61-2-9419-0111	+61-2-9419 0123
Europe, Middle East, and Africa (includes support for Israel)	+31 (0)20-4546-200	+31 (0)20 4546-202
Other worldwide locations	408-863-5000	

Email addresses for Rational Technical Support are listed in the following table.

Table 9   Support Email

Region	Email Address
Americas and other worldwide locations	support@rational.com
Asia Pacific (includes support for Japan, China, India, Korea, Taiwan)	support@apac.rational.com
Europe, Middle East, Africa (includes support for Israel), and Scandinavia	support@europe.rational.com

License Support Contact Information

If you have a problem or questions regarding the licensing of your
Rational Software products, please contact the Licensing Support
office nearest you.

Telephone numbers for license support are listed in the following table.
Ask for, or select, Licensing Support.

Table 10   License Support Telephone and Fax

Region	Telephone Number	Fax Number
Americas	800-433-5444	781-676-2510
Europe, Israel, and Africa	+31 (0)20 4546 200	+31 (0)20 4546 202
North Asia Pacific (Mainland China, Hong Kong, Taiwan)	+852 2143 6382	+852 2143 6018
Korea	+82 2 556 9420	+82 2 556 9426
South Asia Pacific Australia, New Zealand, Malaysia, Singapore, Indonesia, Thailand, The Philippines, Vietnam, Guam and India	+61-2-9419-0111	+61-2-9419 0123
Japan	+81 3 5423 3611	+81 3 5423 3622

Email addresses for license support are listed in the following table.

Table 11   License Support Email

Region	Email Address
Americas	lic_americas@rational.com
Europe, Israel, and Africa	lic_europe@rational.com
North Asia PacificMainland China, Hong Kong, Taiwan, and Korea	lic_apac@rational.com
South Asia Pacific Australia, New Zealand, Malaysia, Singapore, Indonesia, Thailand, The Philippines, Vietnam, Guam and India	lic_apac@rational.com
Japan	lic_japan@rational.com

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