RPC Broker 1.1

Installation Guide

June 2015

Department of Veterans Affairs (VA)

Office of Information and Technology (OI&T)

Enterprise Program Management Office (EPMO)

Revision History

Documentation Revisions

Date	Revision	Description	Authors
04/27/2016	6.0	Tech Edits based on release of RPC Broker Patch XWB*1.1*60 (released 06/11/2015): • Reformatted document to follow current documentation standards and style formatting requirements. • Updated Table 4, Table 5, and Table 6. • Added "Disclaimer" statement to Section 3. • Updated Table 9 and Table 10. • Deleted Section 3.2.2, "Modify the XWB_DFLT.INI file for Site-specific Settings (optional)." • Updated version references in Table 7 and Section 4 (i.e., XE7, XE6, XE5, and XE4). • Updated Table 11 and Table 12. • Updated Section 4.4. • Updated Section 4.5; removed references to TSharedRPCBroker and TSharedBroker components. Also, corrected references to the help file name throughout. • Updated Figure 2, Figure 3, and Figure 4. • Replaced references to "Remedy" with "Service Desk Manager (SDM)." • Changed references form Patch 50 to Patch 60 where appropriate. • Updated references to show RPC Broker Patch XWB*1.1*60 supports Delphi XE7, XE6, XE5, and XE4 throughout. **RPC Broker 1.1**	• Developer H. W. • Technical Writer: T. B.
12/04/2013	5.1	Tech Edit: • Updated document for RPC Broker Patch XWB*1.1*50 based on feedback from H Westra. • Removed instructions related to Virgin Installations throughout. • Updated file name references	• Developer: H. W. • Technical Writer: T. B.

Date	Revision	Description	Authors
		throughout. • Removed distribution files that are obsolete or no longer distributed throughout. • Updated RPC Broker support on the following software: o Microsoft® XP and 7 (operating system) throughout. o Microsoft® Office Products 2010 throughout. o Changed references from "Borland" to "Embarcadero" and updated support for Delphi Versions XE5, XE4, XE3, and XE2 throughout. • Updated RPC Broker *Developer's Guide*—Document and BDK Online Help, which provides an overview of development with the RPC Broker. The help is distributed in two zip files: o Broker_1_1.zip (i.e., Broker_1_1.chm)—This zip file contains the standalone online HTML help file. Unzip the contents and double-click on the **Broker_1_1.chm** file to open the help. o Broker_1_1-HTML_Files.zip— This zip file contains the associated HTML help files. Unzip the contents in the same directory and double-click on the **index.htm** file to open the help. You can create an entry for **Broker_1_1.chm** in Delphi's Tools Menu, to make it easily accessible from within Delphi. To do this, use Delphi's **Tools | Configure Tools** option and create a new menu entry (see Figure 4). • Updated content in Section 1.2. RPC Broker no longer supports Delphi versions prior to Delphi XE2. • Retitled Section 1.3.1. • Updated Table 3. • Retitled Section 1.3.2 (added	

Date	Revision	Description	Authors

		reference to Patch XWB*1.1*58).
		• Updated Table 4 for Patch XWB*1.1*58 (unreleased).
		• Updated Table 5.
		• Updated Table 6 for supported Windows version and other note references.
		• Updated Table 7 for supported Delphi versions.
		• Updated Section 1.7.
		• Updated Table 8.
		• Updated Section 2.2.
		• Deleted prior Section 2.3 through 2.10, and Section 2.12 – 2.14, and Section 2.17.
		• Chapter 3 needs updates for Patch XWB*1.1*58.
		• Deleted prior Section 3.16 related to HOSTS file.
		• Updated Section 3.1.6.
		• Updated Table 11 Windows registry access information and design-time references.
		• Updated Table 12.
		• Updated the procedures in Section 4.4.
		• Updated procedure in Section 4.5.
		• Updated Figure 2 and Figure 3.
		• Updated Figure 4.
		• Redacted document for the following information:
		  o Names (replaced with role and initials).
		  o Production IP addresses and ports.
		  o Intranet websites.
		RPC Broker 1.1	

07/25/2013	5.0	Tech Edit: • Baselined document. • Updated all styles and formatting to follow current internal team style template. • Updated all organizational references. **RPC Broker 1.1**	• Developer: H. W. • Technical Writer: T. B.

Date	Revision	Description	Authors
06/29/2010	4.2	Updates for RPC Broker Patch XWB*1.1*50: • Added new properties. • Support for Delphi 5, 6, 7, 2005, 2006, and 2007. • Changed references form Patch 47 to Patch 50 where appropriate. • Updated the RPC Broker and Delphi help integration steps. • Updated the RPC Broker and Delphi help integration steps. • Reformatted document to follow current *OED National Documentation Standards* and current style guidelines. **RPC Broker 1.1**	• Development Manager: J. Sch. • Developer: J. I. • SQA: G. S. • Technical Writer: T. B.
07/03/08	4.1	Updates for RPC Broker Patch XWB*1.1*47: • No content changes required; no new public classes, methods, or properties added to those available in XWB*1.1*40. • Bug fixes to the ValidAppHandle function and fixed memory leaks. • Support added for Delphi 2005, 2006, and 2007. • Reformatted document. • Changed references form Patch 40 to Patch 47 where appropriate. **RPC Broker 1.1**	• Development Manager: J. Sch. • Developer: J. I. • SQA: G. S. • Technical Writer: T. B.
02/28/05	4.0	Revised Version for RPC Broker Patches XWB*1.1*35 and 40. Also, reviewed document and edited for the "Data Scrubbing" and the "PDF 508 Compliance" projects. **Data Scrubbing—**Changed all patient/user TEST data to conform to standards and conventions as indicated below: • The first three digits (prefix) of any Social Security Numbers (SSN) start with "000" or "666." • Patient or user names are formatted as follows: XWBPATIENT,[N] or XWBUSER,[N] respectively, where the N is a number written out and incremented with each new entry (e.g., XWBPATIENT, ONE, XWBPATIENT, TWO, etc.). • Other personal demographic-related	• Developer: J. I. • Technical Writer: T. B.

Date	Revision	Description	Authors
		data (e.g., addresses, phones, IP addresses, etc.) were also changed to be generic. **PDF 508 Compliance**—The final PDF document was recreated and now supports the minimum requirements to be 508 compliant (i.e., accessibility tags, language selection, alternate text for all images/icons, fully functional Web links, successfully passed Adobe Acrobat Quick Check). **RPC Broker 1.1**	
05/08/02	3.0	Revised Version for RPC Broker Patch XWB*1.1*26. **RPC Broker 1.1**	• Developer: J. I. • Technical Writer: T. B.
04/08/02	2.0	Revised Version for RPC Broker Patch XWB*1.1*13. **RPC Broker 1.1**	• Developer: J. I. • Technical Writer: T. B.
09/97	1.0	Initial RPC Broker Version 1.1 software release. **RPC Broker 1.1**	• Developer: J. I. • Technical Writer: T. B.

Patch Revisions

For the current patch history related to this software, see the Patch Module on FORUM.

Contents

List of Figures

List of Tables

Orientation

How to Use this Manual

Throughout this manual, advice and instructions are offered regarding the use of the Remote Procedure Call (RPC) Broker 1.1 Development Kit (BDK) and the functionality it provides for Veterans Health Information Systems and Technology Architecture (VistA).

Intended Audience

The intended audience of this manual is the following stakeholders:

- Enterprise Program Management Office (EPMO)—VistA legacy development teams.

- Information Resource Management (IRM)—System administrators at Department of Veterans Affairs (VA) sites who are responsible for computer management and system security on the VistA M Servers.

- Information Security Officers (ISOs)—Personnel at VA sites responsible for system security.

- Product Support (PS).

Disclaimers

Software Disclaimer

This software was developed at the Department of Veterans Affairs (VA) by employees of the Federal Government in the course of their official duties. Pursuant to title 17 Section 105 of the United States Code this software is *not* subject to copyright protection and is in the public domain. VA assumes no responsibility whatsoever for its use by other parties, and makes no guarantees, expressed or implied, about its quality, reliability, or any other characteristic. We would appreciate acknowledgement if the software is used. This software can be redistributed and/or modified freely provided that any derivative works bear some notice that they are derived from it, and any modified versions bear some notice that they have been modified.

CAUTION: To protect the security of VistA systems, distribution of this software for use on any other computer system by VistA sites is prohibited. All requests for copies of this software for *non*-VistA use should be referred to the VistA site's local Office of Information Field Office (OIFO).

Documentation Disclaimer

This manual provides an overall explanation of RPC Broker and the functionality contained in RPC Broker 1.1; however, no attempt is made to explain how the overall VistA programming system is integrated and maintained. Such methods and procedures are documented elsewhere. We suggest you look at the various VA Internet and Intranet Websites for a general orientation to VistA. For example, visit the Office of Information and Technology (OI&T) VistA Development Intranet website.

DISCLAIMER: The appearance of any external hyperlink references in this manual does *not* constitute endorsement by the Department of Veterans Affairs (VA) of this Website or the information, products, or services contained therein. The VA does *not* exercise

any editorial control over the information you find at these locations. Such links are provided and are consistent with the stated purpose of this VA Intranet Service.

Documentation Conventions

This manual uses several methods to highlight different aspects of the material:

- Various symbols are used throughout the documentation to alert the reader to special information. The following table gives a description of each of these symbols:

Table 1: Documentation symbol descriptions

Symbol	Description
![i]	**NOTE/REF:** Used to inform the reader of general information including references to additional reading material
![warning]	**CAUTION / RECOMMENDATION / DISCLAIMER:** Used to caution the reader to take special notice of critical information

- Descriptive text is presented in a proportional font (as represented by this font).

- Conventions for displaying TEST data in this document are as follows:

  - The first three digits (prefix) of any Social Security Numbers (SSN) begin with either "000" or "666."

  - Patient and user names are formatted as follows:

    – [*Application Name*]PATIENT,[*N*]

    – [*Application Name*]USER,[*N*]

    Where "*Application Name*" is defined in the Approved Application Abbreviations document and "*N*" represents the first name as a number spelled out and incremented with each new entry.

    For example, in RPC Broker (XWB) test patient names would be documented as follows:

    XWBPATIENT,ONE; XWBPATIENT,TWO; XWBPATIENT,14, etc.

    For example, in RPC Broker (XWB) test user names would be documented as follows:

    XWBUSER,ONE; XWBUSER,TWO; XWBUSER,14, etc.

- "Snapshots" of computer online displays (i.e., screen captures/dialogues) and computer source code is shown in a *non*-proportional font and may be enclosed within a box.

- User's responses to online prompts are in **boldface** and highlighted in yellow (e.g., **<Enter>**).

- Emphasis within a dialogue box is in **boldface** and highlighted in blue (e.g., STANDARD LISTENER: RUNNING).

- Some software code reserved/key words are in **boldface** with alternate color font.

- References to "**<Enter>**" within these snapshots indicate that the user should press the <**Enter**> key on the keyboard. Other special keys are represented within **< >** angle brackets. For example, pressing the **PF1** key can be represented as pressing **<PF1>**.

- Author's comments are displayed in italics or as "callout" boxes.

  NOTE: Callout boxes refer to labels or descriptions usually enclosed within a box, which point to specific areas of a displayed image.

- This manual refers to the M programming language. Under the 1995 American National Standards Institute (ANSI) standard, M is the primary name of the MUMPS programming language, and MUMPS is considered an alternate name. This manual uses the name M.

- All uppercase is reserved for the representation of M code, variable names, or the formal name of options, field/file names, and security keys (e.g., the XUPROGMODE security key).

  NOTE: Other software code (e.g., Delphi/Pascal and Java) variable names and file/folder names can be written in lower or mixed case.

Documentation Navigation

This document uses Microsoft® Word's built-in navigation for internal hyperlinks. To add **Back** and **Forward** navigation buttons to your toolbar, do the following:

1. Right-click anywhere on the customizable Toolbar in Word 2010 (*not* the Ribbon section).

2. Select **Customize Quick Access Toolbar** from the secondary menu.

3. Press the drop-down arrow in the "Choose commands from:" box.

4. Select **All Commands** from the displayed list.

5. Scroll through the command list in the left column until you see the **Back** command (circle with arrow pointing left).

6. Select/Highlight the **Back** command and press **Add** to add it to your customized toolbar.

7. Scroll through the command list in the left column until you see the **Forward** command (circle with arrow pointing right).

8. Select/Highlight the **Forward** command and press **Add** to add it to your customized toolbar.

9. Press **OK**.

You can now use these **Back** and **Forward** command buttons in your Toolbar to navigate back and forth in your Word document when clicking on hyperlinks within the document.

NOTE: This is a one-time setup and is automatically available in any other Word document once you install it on the Toolbar.

Commonly Used Terms

The following is a list of terms and their descriptions that you may find helpful while reading the RPC Broker documentation:

Table 2: Commonly used RPC Broker terms

Term	Description
Client	A single term used interchangeably to refer to a user, the workstation (i.e., PC), and the portion of the program that runs on the workstation.
Component	A software object that contains data and code. A component may or may not be visible. **REF:** For a more detailed description, please refer to the *Embarcadero Delphi for Windows User Guide*.
GUI	The Graphical User Interface application that is developed for the client workstation.
Host	The term Host is used interchangeably with the term Server.
Server	The computer where the data and the RPC Broker remote procedure calls (RPCs) reside.

REF: For additional terms and definitions, see the "Glossary" section in the other RPC Broker manuals.

How to Obtain Technical Information Online

Exported VistA M Server-based software file, routine, and global documentation can be generated using Kernel, MailMan, and VA FileMan utilities.

NOTE: Methods of obtaining specific technical information online is indicated where applicable under the appropriate section.

REF: For further information, see the *RPC Broker Technical Manual*.

Help at Prompts

VistA M Server-based software provides online help and commonly used system default prompts. Users are encouraged to enter question marks at any response prompt. At the end of the help display, you are immediately returned to the point from which you started. This is an easy way to learn about any aspect of VistA M Server-based software.

Obtaining Data Dictionary Listings

Technical information about VistA M Server-based files and the fields in files is stored in data dictionaries (DD). You can use the List File Attributes option on the Data Dictionary Utilities submenu in VA FileMan to print formatted data dictionaries.

REF: For details about obtaining data dictionaries and about the formats available, see the "List File Attributes" chapter in the "File Management" section of the *VA FileMan Advanced User Manual*.

Assumptions

This manual is written with the assumption that the reader is familiar with the following:

- VistA computing environment:
  - Kernel—VistA M Server software
  - Remote Procedure Call (RPC) Broker—VistA Client/Server software
  - VA FileMan data structures and terminology—VistA M Server software
- Microsoft® Windows environment
- M programming language
- Object Pascal programming language.
- Object Pascal programming language/Embarcadero Delphi Integrated Development Environment (IDE)—RPC Broker

References

Readers who wish to learn more about RPC Broker should consult the following:

- *RPC Broker Release Notes*
- *RPC Broker Installation Guide* (this manual)
- *RPC Broker Systems Management Guide*
- *RPC Broker Technical Manual*
- *RPC Broker User Guide*
- *RPC Broker Developer's Guide*—Document and BDK Online Help, which provides an overview of development with the RPC Broker. The help is distributed in two zip files:
  - Broker_1_1.zip (i.e., Broker_1_1.chm)—This zip file contains the standalone online HTML help file. Unzip the contents and double-click on the **Broker_1_1.chm** file to open the help.
  - Broker_1_1-HTML_Files.zip—This zip file contains the associated HTML help files. Unzip the contents in the same directory and double-click on the **index.htm** file to open the help.

  You can create an entry for **Broker_1_1.chm** in Delphi's Tools Menu, to make it easily accessible from within Delphi. To do this, use Delphi's **Tools | Configure Tools** option and create a new menu entry (see Figure 4).
- RPC Broker VA Intranet website.

This site provides announcements, additional information (e.g., Frequently Asked Questions [FAQs], advisories), documentation links, archives of older documentation and software downloads.

VistA documentation is made available online in Microsoft® Word format and in Adobe Acrobat Portable Document Format (PDF). The PDF documents *must* be read using the Adobe Acrobat Reader, which is freely distributed by Adobe Systems Incorporated at: http://www.adobe.com/

VistA documentation can be downloaded from the VA Software Document Library (VDL) Website: http://www.va.gov/vdl/

VistA documentation and software can also be downloaded from the Product Support (PS) Anonymous Directories.

1 Preliminary Considerations

1.1 Purpose

The purpose of this guide is to provide instructions for installing the Veterans Health Information Systems and Technology Architecture (VistA) Remote Procedure Call (RPC) Broker (also referred to as "Broker") Version 1.1 software.

This version of the RPC Broker provides programmers with the capability to develop and deploy VistA client/server software using the Broker Delphi components in the 32-bit environment.

1.2 Installation Procedures—Outline

The installation of the RPC Broker can be a *multi-part* process. Separate installation procedures are provided in this guide for each of the following target environments:

- I. VistA M Server Installation Instructions
- II. *Standard* Client Workstation Installation Instructions:
  - o A. Interactive Installation Instructions
  - o B. Non-Interactive Installation Instructions
- III. *Programmer-only* Client Workstation Installation Instructions

For all patches, please read the patch installation instructions in the Patch module on FORUM first. For patches and new releases (including virgin installations), please read the XWB_1_1_README.TXT file for any supplemental instructions *not* included in the manuals. Based on the release/patch type indicated, do the following:

- *Standard* **Client Workstation and/or Server Patch:**
  - o *Standard* **Client Only**—If this is a *standard* client workstation only patch installation, follow the client installation instructions in the "*Standard* Client Workstation Installation Instructions" section.
  - o *Standard* **Client and Server**—If this is a *standard* client workstation *and* a server patch installation, follow the client installation instructions in the "*Standard* Client Workstation Installation Instructions" section and the server installation instructions in the Patch module on FORUM.
- *Programmer-only* **Client Workstation and/or Server Patch:**
  - o *Programmer-only* **Client Only**—If this is an RPC Broker Development Kit (BDK) only patch installation, follow the client installation instructions in the "*Programmer-only* Client Workstation" section.
  - o *Programmer-only* **Client and Server**—If this is an RPC Broker Development Kit (BDK) *and* a server patch installation, follow the client installation instructions in the "*Programmer-only* Client Workstation" section and the server installation instructions in the Patch module on FORUM.
- **Server-side Only Patch**—Follow the server installation instructions in the Patch module on FORUM.
- **Full Release/Virgin Installation (*standard* client workstation, *programmer-only* client workstation, and VistA M Server)**—Follow all installation instructions in this manual.

For *standard* client workstations, two methods are provided for installing the RPC Broker client software:

- **Interactive**—user input required
- *Non*-**interactive**—"silent," no user input required

For *programmer-only* client workstations, there are separate installation procedures, depending on the version of Delphi for which support is needed:

- Delphi XE7
- Delphi XE6
- Delphi XE5
- Delphi XE4

NOTE: Delphi Versions *prior* to Delphi XE4 are no longer supported.

For first-time field deployments, we strongly recommend the following approach to installing the RPC Broker:

1. Obtain the RPC Broker documentation. It is available in Acrobat PDF format, and can be downloaded from the National Product Support (NPS) anonymous directories or from the VHA Software Documentation Library (VDL) Website: http://www.va.gov/vdl/

2. Install the server software in a Test account prior to installing it in a Production account.

REF: Some RPC Broker distribution files have been replaced with patched versions, making them obsolete, including the original, unpatched Programmer client workstation software. All such obsolete files remain available from the RPC Broker website's archive.

1.3 Distribution Files

1.3.1 RPC Broker Development Kit: XWB*1.1*60

Confirm the following RPC Broker Patch XWB*1.1*60 software and documentation files:

Table 3: Distribution files—RPC Broker Patch XWB*1.1*60 client/server files

File Name	Type	Description
XWB_1_1_README.TXT	ASCII	**Readme File** (manual). This file provides any pre-installation instructions, last minute changes, new instructions, and additional information to supplement the manuals. Read all sections of this file prior to following the installation instructions in the *RPC Broker Installation Guide* (i.e., XWB_1_1_IG.PDF).
XWB_1_1_IG.PDF	Binary	**Installation Guide** (manual). Use this manual in conjunction with the Readme text file (i.e., XWB_1_1_RM.TXT).
XWB_1_1_UG.PDF	Binary	**User Guide** (manual).
XWB_1_1_SM.PDF	Binary	**Systems Management Guide** (manual).
XWB_1_1_TM.PDF	Binary	**Technical Manual** (manual).
XWB_1_1_RN.PDF	Binary	**Release Notes** (manual).

File Name	Type	Description
XWB_1_1_P60.zip	Binary	**_Programmer-only_ Client Workstation Software** (client software). This is a Zip file that contains the following: • Source code. • Samples. • Broker Development Kit (BDK): Provides the RPC Broker Delphi Components for development of RPC Broker-enabled applications. • Broker_1_1.chm: The complete online reference to the BDK.

1.3.2   RPC Broker 1.1 Base Software: XWB*1.1*58

Confirm the following RPC Broker Patch XWB*1.1*58 software and documentation files:

Table 4: Distribution files—RPC Broker 1.1 base client/server software files

File Name	Type	Description
xwb1_1ws.exe	Binary	**_Standard_ Client Workstation Software** (client software). This is a self-installing executable that contains the Client Agent Software. This software is installed on client workstations to run RPC Broker applications. **i** **REF:** For more information, see the "System Features" chapter of the *RPC Broker Systems Management Guide*.

i **REF:** These RPC Broker software files are distributed separately from the RPC Broker Patch XWB*1.1*60 BDK and are available for download from the Product Support (PS) Anonymous directories. Prior versions of RPC Broker software and documentation distributions can be obtained from the VA Intranet RPC Broker Archive website.

1.4   VistA M Server Requirements

The following minimum software tools are required on your VistA M Server in order to install and use the RPC Broker:

Table 5: Minimum server requirements—VistA M Server

Item	Software	Version	Description
Server Operating System	InterSystems Caché	2014.1.3 for Linux, Windows 7, and OpenVMS	Fully Patched.
VistA Legacy Software	Kernel	8.0	Fully Patched M Accounts. Patches *must* be installed in published sequence.
	Kernel Toolkit	7.3	Fully Patched M Accounts. Patches *must* be installed in published

Item	Software	Version	Description
			sequence.
	VA FileMan	22.0	Fully Patched M Accounts. Patches *must* be installed in published sequence.
	RPC Broker	1.1	Fully Patched M Accounts. Patches *must* be installed in published sequence. You should have both a development Test account and a Production account for the Broker software.
Server Network Communications Software	Microsoft®	TCP/IP	The server needs to have TCP/IP running.

1.5 Standard Client Workstation Requirements

The following minimum hardware and software tools are required on your *standard* client workstation in order to install and use the RPC Broker:

Table 6: Minimum workstation requirements—*Standard* Client Workstation

Item	Software	Version	Description
Client Hardware	NA	NA	80x86-based client workstation.
Client Operating System	Microsoft® Windows	• 7 • 8.1 • 10	Fully Patched.
Client Network Communications Software	Microsoft®	TCP/IP	The RPC Broker requires networked client workstations running Microsoft's® native TCP/IP stack. **NOTE:** Currently only Winsock compliant TCP/IP IPv4 protocol is supported on the LAN or remotely as VPN Client.

1.6 Programmer-only Client Workstation Requirements

The workstation requirements for *programmer-only* workstations are the same as for *standard* client workstations (see Section 1.5).

Table 7: Minimum workstation requirements—*Programmer-only* Client Workstation

Item	Software	Version	Description
Client Software	Delphi	• XE7 • XE6 • XE5 • XE4	(required) For the Broker Development Kit BDK). Delphi is *not* required for developers who use the RPC Broker Dynamic Link Library (DLL), rather than the TRPCBroker Delphi component. For such developers, any development product that supports linking to 32-bit

Item	Software	Version	Description
			Microsoft® Windows DLLs can be used. Versions 1.1 and greater of the RPC Broker do *not* support development of Delphi 1.0 16-bit (i.e., Microsoft® Windows 3.1 and below) applications. However, the Broker routines on the VistA M Server continue to support VistA applications previously developed in the 16-bit environment. **CAUTION: This statement defines the extent of support relative to use of Delphi. The Office of Information and Technology (OI&T) only supports the Broker Development Kit (BDK) running in the currently offered version of Delphi and the immediately previous version of Delphi. This level of support became effective 06/12/2000.** **Sites can continue to use outdated versions of the RPC Broker Development Kit, but do so with the understanding that:** • **Support is *not* available.** • **Continued use of outdated versions does *not* afford features that can be essential to effective client/server operations in the VistA environment.** **An archive of old (no longer supported) Broker Development Kits is maintained in the VA Intranet Broker Archive.**

1.7 Skills Needed for Installation

Skills required to perform the installation are listed below. Instructions for performing these functions are provided in vendor-supplied operating system manuals as well as VistA publications.

Installers need to know how to do the following:

- Back up the system

  [VistA M Server and Programmer/Standard client workstations]

- Create directories on the Host file system

  [Programmer/Standard client workstation only]

- Copy files using commands of the Host file system

  [VistA M Server and Programmer/Standard client workstations]

- Run a KIDS installation

  [VistA M Server only]

2 VistA M Server Installation Instructions

 CAUTION: First, determine if you need to follow the installation instructions in this section by consulting the patch installation instructions, the XWB_1_1_README.txt file, and the "Preliminary Considerations" section.

Do *not* use the instructions in this section, if you are installing a server-side RPC Broker patch. Instead, follow the installation instructions included with the patch.

Only use the instructions in this section if you are performing a VIRGIN server installation, or UPGRADING VERSIONS of the RPC Broker on the server.

The instructions in this section are applicable for the Test/Production accounts in the Caché environment.

2.1 Confirm Distribution Files *(recommended)*

Use the following files to install the VistA M Server routines:

Table 8: Distribution files—RPC Broker VistA M Server files

File Name	Type	Description
XWB_1_1_P60_README.TXT	ASCII	**Readme File** (manual). This file provides any pre-installation instructions, last minute changes, new instructions, and additional information to supplement the manuals. Read all sections of this file prior to following the installation instructions in the *RPC Broker Installation Guide* (i.e., XWB_1_1_IG.PDF).
XWB_1_1_IG.PDF	Binary	**Installation Guide** (manual). Use this manual in conjunction with the Readme text file (i.e., XWB_1_1_P60_README.TXT).

2.2 Retrieve Released RPC Broker 1.1 Patches *(required)*

Prior to installation of the RPC Broker Development Kit, all current server side patches should be installed.

Obtain all released RPC Broker 1.1 server-side patches from the Patch Module on FORUM or through normal procedures.

2.3   Setup for XWB LISTENER STARTER Option *(recommended)*

The XWB LISTENER STARTER Option needs some setup performed so that it knows how to specify on what node(s) to launch listeners.

To set up the XWB LISTENER STARTER option, perform the following procedure:

1. Use VA FileMan to edit the BOX-VOLUME PAIR field (#.01) in the TASKMAN SITE PARAMETERS file (#14.7). For each Box-Volume pair where you plan to run a Broker Listener, make sure that the Box-Volume pair is entered in the BOX-VOLUME PAIR field.

    REF: For more information on configuring TaskMan, see the "Task Manager System Management: Configuration" chapter in the *Kernel Systems Management Guide* located on the VDL at: http://www.va.gov/vdl/application.asp?appid=10

2. Type the following at the M prompt:

    ```
    S XWBCHK="ALLOW"
    ```

3. Invoke VA FileMan using D Q^DI and edit the RPC BROKER SITE PARAMETERS file (#8994.1):

    a. Select your site domain in the DOMAIN NAME field (#.01); only one entry is allowed here.

    b. For nodes where you plan to run Broker Listeners, enter/make sure their Box-Volume pairs are entered in the BOX-VOLUME PAIRS subfield (#.01) of the LISTENER multiple (#7):

    -   For each Box-Volume pair enter all the ports in the PORT subfield (#.01) of the PORT multiple that you plan to use for the Listeners.

    -   Also, enter the UCI in the UCI field (#1) of the PORT multiple where the Listener should run.

2.4   Start the Broker Listener on the Server *(recommended)*

RPC Broker 1.1 uses an M Listener that should always be running in the background, listening to a known port. To start a single Listener on a given port, do the following:

1. Log into your VistA M Server.

2. Enter the following command at the M prompt:

    ```
    D STRT^XWBTCP(listener port)
    ```

    NOTE: Sites can choose any available port greater than 1024 (i.e., sockets 1 to 1024 are reserved for standard, well-known services such as SMTP, FTP, Telnet, etc.).

    Alternatively, with Caché, you can invoke VA FileMan (D Q^DI) and edit the RPC BROKER SITE PARAMETERS file (#8994.1). Set the STATUS field to **START** and, assuming that TaskMan is running, the Listener is started. The STATUS field changes to **RUNNING**.

2.5 Automatically Start the Broker Listener(s) *(optional)*

The XWB LISTENER STARTER option can be used to start all configured Broker Listeners at one time (i.e., listeners configured to start in the RPC Broker's site parameters). Additionally, this option can be used to automatically start all of the Listener processes you need when TaskMan starts up, such as after the system is rebooted or configuration is restarted.

REF: For information on automatically starting the Broker Listener(s) via the XWB LISTENER STARTER option, see the "Broker Listeners and Ports" section in Chapter 1 of the *RPC Broker Systems Management Guide*.

CONGRATULATIONS: You have now completed the installation of the RPC Broker software on the *VistA M Server*.

3 *Standard* Client Workstation Installation Instructions

⚠️ **DISCLAIMER: First, determine if you need to follow the installation instructions in this section by consulting the patch installation instructions, the XWB_1_1_README.txt file, and the "Preliminary Considerations" section.**

Do *not* use the instructions in this section, if you are installing a server-side RPC Broker patch. Instead, follow the installation instructions included with the patch.

Only use the instructions in this section if you are performing a VIRGIN Standard Client Workstation installation, or UPGRADING VERSIONS of the RPC Broker on the Standard Client Workstation.

The Standard Client Workstation installation took place with the initial release of RPC Broker 1.1. If this is *not* a "virgin" RPC Broker client workstation, you do *not* need to perform this step again, since no updates to the CIAgent.exe have taken place since RPC Broker Patch XWB*1.1*58. The instructions in this section are here for historical reference only but may be updated in a future release.

There is a "beta" CIAgent.exe included in RPC Broker Patch XWB*1.1*60 for developer testing. When IPv6 is rolled out to the VA, a new CIAgent.exe will be released in a subsequent patch.

Two sets of instructions are provided for *standard* client workstations:

- Interactive
- *Non*-Interactive

⚠️ **CAUTION: The RPCBI.DLL and Client Manager (i.e., CLMAN.EXE) previously distributed and installed in the VISTA/Broker directory on the client workstation (i.e., via Broker 1.0) are *not* used by this version of the Broker. However, they should *not* be removed from client workstations. Any 16-bit RPC Broker 1.0-based applications in use on the workstation (e.g., early versions of PCMM) would still need the RPCBI.DLL and Client Manager.**

3.1 Interactive Installation Instructions

3.1.1 Confirm Distribution Files *(recommended)*

You need the following files to install the RPC Broker *standard* client workstation software:

Table 9: Distribution files—RPC Broker *standard* client workstation files (interactive installation)

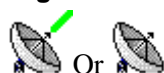| File Name	Type	Description
XWB_1_1_RM.TXT	ASCII	**Readme File** (manual). This file provides any pre-installation instructions, last minute changes, new instructions, and additional information to supplement the manuals. Read all sections of this file prior to following the installation instructions in the *RPC Broker Installation Guide* (i.e., XWB_1_1_IG.PDF).
XWB_1_1_IG.PDF	Binary	**Installation Guide** (manual). Use this manual in conjunction with the Readme text file (i.e., XWB_1_1_RM.TXT).
xwb1_1ws.exe	Binary	***Standard* Client Workstation** (client software). This is a self-installing executable that contains the Client Agent Software. This software is installed on client workstations to run RPC Broker applications. **REF:** For more information, see the "System Features" chapter of the *RPC Broker Systems Management Guide*. **CAUTION: This self-installing executable is *not* Windows 7 compatible and requires Admin privilege to run. In future releases, the RPC Broker Development Team will write an "msi" for files to be pushed to client workstations, rather than using the "exe" self-extracting loader.**

3.1.2 Shut Down Microsoft® Windows Applications *(required)*

We recommend shutting down all other Microsoft® Windows-based applications running on the workstation you're installing on. In particular, you must *not* be running *any* application that uses the Broker during the installation.

3.1.3 Shut Down the Client Agent *(required)*

If the RPC Broker Client Agent is running, shut it down. To determine if the Client Agent is running, look in the workstation's menu bar tray. If you see one of the following the RPC Broker Client Agent icons, the Client Agent is running:

Figure 1: RPC Broker Client Agent icons (connected, *not* connected)

If it is running, to shut down the Broker Client Agent, do one of the following:

- Right-click on the RPC Broker Client Agent icon in the workstation's menu bar tray, and choose **ShutDown** from the pop-up Client Agent menu.

- Double-click on the RPC Broker Client Agent icon to open the Client Agent window, and then click ☒ in that window.

At the prompt "If you close the client agent, your ability to access the VistA server may be reduced. Do you want to proceed with closing the client agent?" select **Yes**.

3.1.4   Run the Installation Program *(required)*

Run XWB1_1WS.EXE on the client workstation, starting the interactive *standard* client workstation installation. For example, on a Microsoft® Windows 7 system, do the following:

1. Go to the **Start** menu.

2. Select the **Run** option (may need to enable the Run command first in Windows 7).

3. Click **Browse** to locate **XWB1_1WS.EXE**.

4. Click **OK** to run XWB1_1WS.EXE.

5. Follow the online instructions provided when you run the installation program. We *strongly* recommend the following:

   a. **Accept default directories**—When prompted to accept the default Broker Directories, click **OK**.

   > **CAUTION: RPC Broker 1.1 is a 32-bit application. We strongly recommend that you load it in a separate directory from any previously installed 16-bit (version 1.0) RPC Broker.**

   b. **Always start the Client Agent**—When prompted whether to always start the Broker Client Agent, click **Yes**. This starts the Broker Client Agent whenever Microsoft Windows starts.

REF: For a complete listing of installed client files after installation, see the "File List" chapter in the *RPC Broker Technical Manual*.

3.1.5   Restart Microsoft® Windows *(recommended)*

Restart Microsoft® Windows so the latest version of the Broker Client Agent is running.

3.1.6   Add Listeners/Ports to the Microsoft® Windows Registry *(optional)*

If IRM wishes to add, modify, or delete servers and ports to be used by the Broker, see the "Client Features" section in Chapter 2 of the *RPC Broker Systems Management Guide*.

3.2 *Non*-Interactive Installation Instructions

CAUTION: The *standard* client workstation installation does more than copy files into directories; it also makes entries in the Microsoft® Windows Registry. Thus, simply doing a mass copy of files from a server to various *standard* client workstations is insufficient.

3.2.1 Confirm Distribution Files *(recommended)*

The following files are needed to install the RPC Broker *standard* client workstation software *non*-interactively:

Table 10: Distribution files—RPC Broker *standard* client workstation files (*non*-interactive installation)

File Name	Type	Description
XWB_1_1_RM.TXT	ASCII	**Readme File** (manual). This file provides any pre-installation instructions, last minute changes, new instructions, and additional information to supplement the manuals. Read all sections of this file prior to following the installation instructions in the *RPC Broker Installation Guide* (i.e., XWB_1_1_IG.PDF).
XWB_1_1_IG.PDF	Binary	**Installation Guide** (manual). Use this manual in conjunction with the Readme text file (i.e., XWB_1_1_RM.TXT).
xwb1_1ws.exe	Binary	***Standard* Client Workstation** (client software). This is a self-installing executable that contains the Client Agent Software. This software is installed on client workstations to run RPC Broker applications. **REF:** For more information, see the "System Features" chapter of the *RPC Broker Systems Management Guide*.
xwb_dflt.ini	ASCII	**Initialization File** (client software). Use for *non*-interactive installation of the Broker on *standard* client workstations.

3.2.2 Load and Run XWB1_1WS.EXE with Switches *(required)*

Prior to beginning an installation, we recommend you shut down all other Microsoft® Windows-based applications running on the workstation. Specifically, you must *not* be running the Broker Client Agent or *any* application that uses the Broker during the installation.

To start the *non*-interactive *standard* client workstation installation setup program, run XWB1_1WS.EXE *with switches:* **/S AUTO**:

```
XWB1_1WS.EXE /S AUTO
```

The switches must be in UPPERCASE. Follow the procedures on how to run a program non-interactively as described in your operating system's Systems Manual.

3.2.3 Finish Remaining Installation Tasks *(recommended)*

To complete the *non*-interactive installation, follow the steps in Sections 3.1.5 – 3.1.6 of the "Interactive Installation Instructions" section. Special workstation management software and/or local procedures may enable you to perform these remaining steps non-interactively.

⚠️ **CONGRATULATIONS: You have now completed the installation of the RPC Broker software on the *standard* client workstation.**

4 *Programmer-only* Client Workstation Installation Instructions

NOTE: The installation instructions in this section apply to the following Delphi Versions: XE7, XE6, XE5, and XE4.

CAUTION: First, determine if you need to follow the installation instructions in this section by consulting the patch installation instructions, the XWB_1_1_P60_README.TXT file, and the "Preliminary Considerations" section.

4.1 Considerations before Installing the BDK

Installers should consider the following items before installing the RPC Broker BDK:

Table 11: Preliminary considerations *before* installing the BDK

Item	Description
Installation Sequence	The Programmer Client Workstation installation no longer requires that the *standard* client workstation software be installed prior to installing the Programmer Client Workstation.
Microsoft® Windows Registry Access	While the RPC Broker Development Kit installation on the client workstation does *not* require Administrator privileges, it does require the ability to write to the HKEY_LOCAL_MACHINE entries under the Software key in the Microsoft Windows Registry.
Source Code	The release of the source code does *not* affect how a developer uses the Broker components or other parts of the BDK. **CAUTION: Modified BDK source code should *not* be used to create VistA GUI applications.** **NOTE:** Suggestions for changes to the BDK should be done via Service Desk Manager (SDM) (for bugs) or NSR (for enhancements) for review and possible inclusion in another patch.

Item	Description
Design-time and Run-time Packages	The BDK has separate run-time and design-time packages. The packages are as follows: • XWB_**D**_XEn_ • XWB_**R**_XEn_ Where: • "**D**"—Design-time • "**R**"—Run-time • "_**XEn**_"—Number indicating the version of Delphi with which it should be used (e.g., XWB_DXE7 is the design-time package for Delphi XE7). The run-time package should _not_ be used to create executables that depend on a separate XWB_RXEn.bpl installed on client workstations. There is no procedure in place at this time to reliably install the correct version of the run-time bpl on client workstations. **CAUTION: Do _not_ compile your project so that it relies on dynamic linking with the BDK's run-time package; that is, do _not_ check the "Build with runtime packages" box on the Packages tab of the Project Options dialogue.**

Package Dependencies	A Package may have been defined to _require_ the Broker package. Patch XWB*1.1*14 changed the identity of the Broker design-time package. If you try to install a package into the Delphi IDE that requires the Broker, you may receive an error message similar to the following:
	
	`Can't load package <Package1>.`
	`One of the library files needed to run this package cannot be found.`
	
	To resolve this problem:
	1. Open the DPK file associated with that package.
	2. Delete the reference to the old version of the Broker in the "Requires" section.
	3. Add a reference to the design-time Broker package (XWB_DXEn) into the "Requires" section.
	4. Recompile and install the package.

Item	Description
Component Dependencies	Some VA-developed components may reference the TRPCBroker component. If you develop applications using such components, be aware that installing a newer version of the TRPCBroker component may cause incompatibilities, until the Broker-dependent components have been recompiled with the new version of the TRPCBroker component. Any such incompatibilities would show up as a compilation error: `Unit <Unit1> was compiled with a different version of <Unit2>` To resolve this problem, you need to either of the following: • Obtain the source code for the components so that you can recompile the components with the new BDK units. • Obtain a compiled version of their component that was compiled with the same version of the BDK you are using. The VA FileMan Delphi Components (FMDC) is one example of a package whose source code references the TRPCBroker component. Patch FMDC*1.0*1 was released to issue the FMDC source code, so that you can easily recompile FMDC whenever new BDKs are released.
Delphi XE*n* Standard Edition	Delphi comes in three flavors: • Standard • Professional • Enterprise The Standard editions of Delphi are targeted mainly at students, and as such leaves out many features. The Standard Editions do *not* ship with Delphi's OpenHelp help system. This makes it difficult to integrate the BDK help with Delphi XE*n*, Standard Editions. **CAUTION: We do *not* recommend using the Standard Editions of Delphi for RPC Broker development at this time.**

4.2 Confirm Distribution Files *(recommended)*

Use the following files to install the BDK for Delphi XE7, XE6, XE5, or XE4:

Table 12: Distribution files—RPC Broker *programmer-only* client workstations files

File Name	Type	Description
XWB_1_1_P60_READ ME.TXT	ASCII	**Readme File** (manual). This file provides any pre-installation instructions, last minute changes, new instructions, and additional information to supplement the manuals. Read all sections of this file prior to following the installation instructions in the *RPC Broker Installation Guide* (i.e., XWB_1_1_IG.PDF).
XWB_1_1_IG.PDF	Binary	**Installation Guide** (manual). Use this manual in conjunction with the Readme text file (i.e., XWB_1_1_P60_README.TXT).
XWB_1_1_P60.zip	Binary	**Programmer Client Workstation** (client software). This is a Zip file that contains the following: • Source code.

File Name	Type	Description
		• Samples. • Broker Development Kit (BDK): Provides the RPC Broker Delphi Components for development of RPC Broker-enabled applications. • Help Files: The complete online reference to the BDK.

4.3 Uninstall any Previous BDK Installed with Delphi *(required)*

To uninstall any previous BDK installed with Delphi, perform the following procedure:

1. Start Delphi and close any open projects.

2. From the Delphi menu, select **Component** | **Install Packages**.

3. Remove any previous version of the BDK from the Design Packages listing. To do this:

   a. Scroll through the listing of installed design packages until you find the entry for the previous version of the BDK (e.g., TRPCBroker).

   > **NOTE:** The name of the previous BDK version may be: `VistA RPC Broker`, `VistaBroker`, or it may start with the pattern `VistA Broker -- designtime*`.
   >
   > The remainder of this section refers to this package as `YourOldBroker`.

   b. Select (highlight) this entry.

   c. Click **Remove**.

   d. Delphi presents one of two confirmation dialogue boxes, which say one of the following:

   Confirm 1:

   Remove 'c:\program files\...*YourOldBroker*.bpl' from the design package list?

   If Delphi presents this confirmation dialogue, click **Yes**.

   Confirm 2:

   Package(s) xxx will be uninstalled because they require package *YourOldBroker*. Continue remove?

   If this is correct, press **OK**.

   Any packages dependent on the RPC Broker are also uninstalled. You need to re-install them after you install or update the TRPCBroker component files. If you click **No**, you *cannot* uninstall the previous RPC Broker software.

   e. If you chose to remove any packages, Delphi may also present a Remove Runtime Packages dialogue, stating:

   ```
   The package names in the following list are not used by any installed
   packages. Remove the selected names from the runtime packages list?
   ```

   If Delphi presents this dialogue, press **Yes** or **OK**.

   f. Press **OK** in the "Project Options" dialogue box to finish the uninstallation.

4. Close Delphi, answer **No** if you are prompted to save changes to any projects.

4.4 Install the RPC Broker Software *(required)*

⚠️ **CAUTION: Prior to installing the RPC Broker, make sure that you exit/close *all* versions of Delphi running on your system.**

To install the RPC Broker software, perform the following procedure:

1. Navigate to the following directory:

   C:\Program Files (x86)\VistA

2. Rename the existing BDK32 directory (e.g., BDK32_P60) to maintain the existing files. Note that you need Administrator privileges on your computer to write to this directory. Alternatively, install the files into a directory that you control, such as C:\Users\YourName\My Documents\BDK32.

3. Unzip **XWB_1_1_P60.zip** file, making sure the "use folders" box is checked; this creates the BDK32 directory and subdirectories under the VistA directory.

4. After installing the zip file, there should be a BDK32 directory with the following subdirectories:

   - Help—Contains the RPC Broker Help file (Broker_1_1.chm).

   - Samples—Contains sample programs compiled with Delphi XE4.

     o BrokerEx—Contains BrokerExample

     o BSE-Contains a Broker Security Enhancement sample application

   - Source—Contains the source code and related files for the components.

   - ClAgent.exe—An IPv4/IPv6 dual-stack "beta" version of the user Client Agent software, which can be used for IPv6 testing. This is *not* a released version and has *not* been field tested or reviewed for Section 508 compliance.

   - ServerList.exe—A "beta" application to set Windows Registry IPv4 or IPv6 entries for VistA server address/port/SSHUser combinations. This is *not* a released version and has *not* been field tested or reviewed for Section 508 compliance.

     ℹ️ **NOTE:** The BDK installation supports several different versions of Delphi, which at the current time includes Delphi Versions: XE7, XE6, XE5, and XE4.

     ℹ️ **NOTE:** The "Bin" directory is gone. Users are now instructed to compile the BDK themselves, which creates the bpl and dcp files in a directory set by their Delphi environment (varies by version).

5. Open Delphi.

6. Enter the directories into the Library path fields:

   a. Open the menu **Tools | Options**.

   b. Expand the **Environment Options | Delphi Options** and select the **Library** tab.

   c. Press the ellipsis (**…**) at the right of the combo box for Library path.

   d. Add entries for the following paths ahead of all other entries:

      - C:\Program Files (x86)\VistA\BDK32 (should be first in the list)

      - C:\Program Files (x86)\VistA\BDK32\Source

   e. After entering both directories, press **OK** to close the dialogue.

7. To install the components into Delphi, it is best to compile and build them in your version of the Delphi IDE, so that all of the necessary files are placed in the proper default directories during installation. In the instructions that follow, replace the "**#**" with your version of Delphi (e.g., "#" should be replaced with "7" for Delphi XE7).

8. Select the menu **File | Open**, and select the **XWB_RXE#.dpk** file from the BDK32\Source directory.

9. For the **R** or run-time files:

   a. Right-click on the **XWB_RXE#.bpl** file in the Project Manager dialogue.

   b. Click **Compile**.

   c. Select the menu **File | Close All**; respond **YES** if it asks to save changes.

   > **NOTE:** The Run-time files should always be compiled first, since the Design-time files are dependent upon them.

10. Select **File | Open** again to select the **Design-time XWB_DXE#.dpk** file:

    a. Right-click on the **XWB_DXE#.bpl** file in the Project Manager dialogue.

    b. Click **Build**.

11. For the **D** or design-time files:

    a. Right-click on the **XWB_DXE#.bpl** file in the Project Manager dialogue.

    b. Click **Install** to install or update the version of the component.

    c. Close *all* files; respond **YES** if it asks to save changes.

4.5 Verify the Installation of the RPC Broker Components in Delphi *(recommended)*

To verify the installation of the RPC Broker components in Delphi, perform the following procedure:
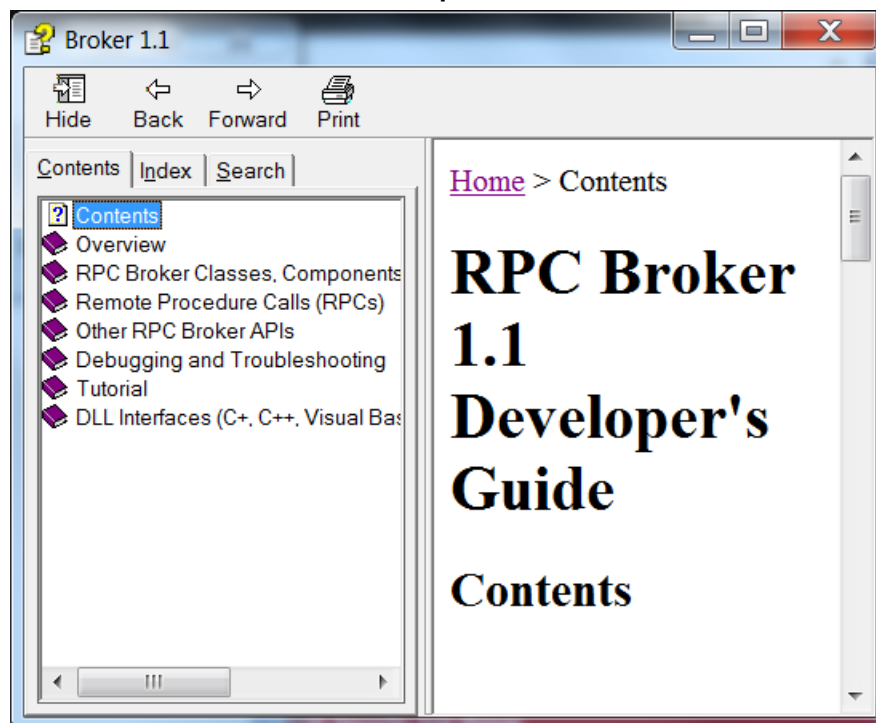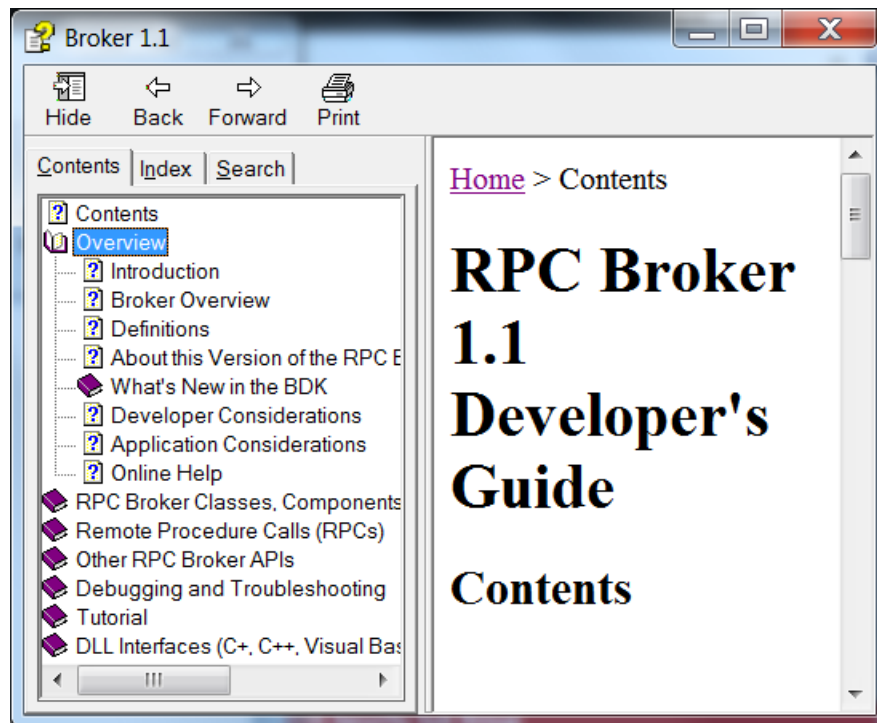
1. Verify the component installation. If the RPC Broker components installed correctly, you should see the following components on the **Kernel** tab of the Delphi palette:

   - —TCCOWRPCBroker

   - —TRPCBroker

   - —TXWBRichEdit

   - —TContextorControl

2. Locate the RPC Broker standalone Help file.

   a. In a Windows explorer, navigate to the following directory:

      `C:\Program Files\vista\BDK32\Help`

   b. To open the BDK Help, double-click on the following file:

      `Broker_1_1.chm`

   c. You should see the following Help dialogue:

Figure 2: Help topics: RPC Broker Developer's Guide—RPC Broker BDK standalone Help file
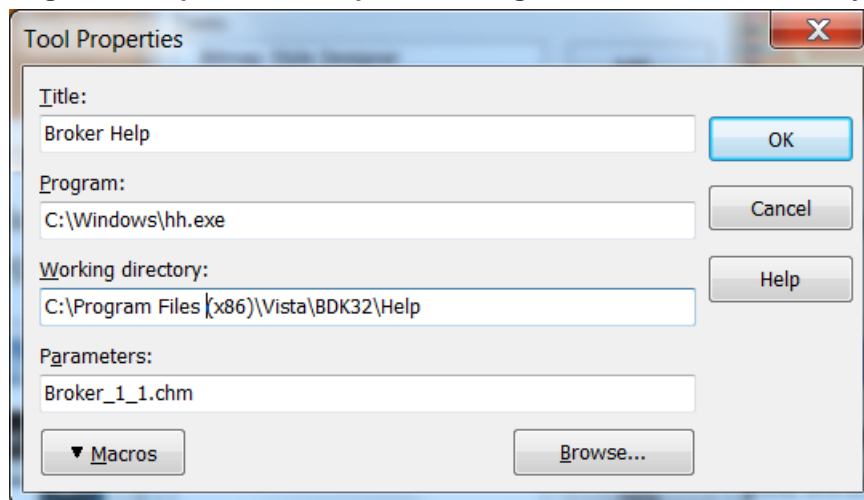
d. To expand the Help topics, double-click on the **Book** icons:

**Figure 3: Help topics: RPC Broker Developer's Guide—RPC Broker BDK standalone
Help file: Expanded directories**

NOTE: You can make an entry for **Broker_1_1.chm** in Delphi's Tools Menu, to make it easily accessible from within Delphi. To do this, use Delphi's **Tools | Configure Tools** option. Create a new menu entry similar to the following:

Figure 4: Delphi's Tool Properties dialogue—Broker_1_1.chm entry

⚠ **CONGRATULATIONS: You have now completed the installation of the RPC Broker software on the *programmer-only* client workstation**

⚠ **CONGRATULATIONS: Upon completing the installation of the RPC Broker software on both the VistA M Server *and* client workstations, you are now ready to work with the RPC Broker interface and install VistA GUI applications that use the RPC Broker.**