

RPC Broker 1.1

Technical Manual



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Department of Veterans Affairs (VA)
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Revision History

Documentation Revisions

Date	Revision	Description	Authors
04/27/2016	6.0	<p>Tech Edits:</p> <ul style="list-style-type: none"> • Reformatted document to follow current documentation standards and style formatting requirements. • Updated the “Orientation” section. • Updated Sections 3.2.1 and 3.2.2. • Updated Table 6. • Updated Sections 5.3.4, 5.3.5, and 5.3.6. • Updated Sections 8.1.2 and 8.1.4. • Updated Sections 8.2.1 and 8.2.3. • Added the “Troubleshooting” section. • Deleted references to TSharedRPCBroker and TSharedBroker components throughout, since they were removed from the software. • Updated help file references from “BROKER.HLP” to “Broker_1_1.chm” throughout. • Updated references to show RPC Broker Patch XWB*1.1*60 supports Delphi XE7, XE6, XE5, and XE4 throughout. 	<ul style="list-style-type: none"> • Developer: H. W. • Technical Writer: T. B.
12/04/2013	5.1	<p>Tech Edit:</p> <ul style="list-style-type: none"> • Updated document for RPC Broker Patch XWB*1.1*50 based on feedback from H Westra. • Removed references related to Virgin Installations throughout. • Updated file name references throughout. • Removed distribution files that are obsolete or no longer distributed throughout. • Updated RPC Broker support on the following software: <ul style="list-style-type: none"> ○ Microsoft® XP and 7.0 (operating system) throughout. ○ Microsoft® Office Products 2010 throughout. 	<ul style="list-style-type: none"> • Developer: H. W. • Technical Writer: T. B.

Date	Revision	Description	Authors
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08/26/2008	4.3	Updates for RPC Broker Patch XWB*1.1*50: <ul style="list-style-type: none"> • Added new properties. • Support for Delphi 5, 6, 7, 2005, 2006, and 2007. • Changed references form Patch 47 to Patch 50 where appropriate. 	<ul style="list-style-type: none"> • Project Manager: J. Sch. • Developer: J. I. • SQA: G. S. • Technical Writer: T. B.

Date	Revision	Description	Authors
07/03/2008	4.2	<p>Updates for RPC Broker Patch XWB*1.1*47:</p> <ul style="list-style-type: none"> • 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 from Patch 40 to Patch 47 where appropriate. 	<ul style="list-style-type: none"> • Project Manager: J. Sch. • Developer: J. I. • SQA: G. S. • Technical Writer: T. B.
08/29/2006	4.1	<p>Added new REMOTE APPLICATION file (#8994.5) to the file list. This file was released with RPC Broker Patch XWB*1.1*45 as part of the Broker Security Enhancement (BSE) Project.</p>	<ul style="list-style-type: none"> • Project Manager: J. She. • Project Planner: L. R. • Developers: W. F. & J. I. • SQA: M. A. • Functional Analyst: L. G. • Technical Writer: T. B. • Security Engineer: J. M. • Release Managers: M. P. and L. T.
02/28/2005	4.0	<p>Revised Version for RPC Broker Patches XWB*1.1*35 and 40.</p> <p>Also, reviewed document and edited for the “Data Scrubbing” and the “PDF 508 Compliance” projects.</p> <ul style="list-style-type: none"> • Data Scrubbing—Changed all patient/user TEST data to conform to standards and conventions as indicated below: <ul style="list-style-type: none"> ○ 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, 	<ul style="list-style-type: none"> • Project Manager: J. Sch. • Developer: J. I. • Technical Writer: T. B.

Date	Revision	Description	Authors
		<p>etc.).</p> <ul style="list-style-type: none"> ○ Other personal demographic-related 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). 	
05/08/2002	3.0	Revised Version for RPC Broker Patch XWB*1.1*26.	<ul style="list-style-type: none"> ● Developer: J. I. ● Technical Writer: T. B.
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09/--/1997	1.0	Initial RPC Broker Version 1.1 software release.	<ul style="list-style-type: none"> ● Developer: J. I. ● Technical Writer: T. B.

Patch Revisions

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

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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 and Technology Field Office (OI&TFO).

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.



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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. [Table 1](#) gives a description of each of these symbols:

Table 1: Documentation Symbol Descriptions

Symbol	Description
	NOTE/REF: Used to inform the reader of general information including references to additional reading material.
	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 are 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 will be 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 (green circle with arrow pointing left).
6. Click/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 (green circle with arrow pointing right).
8. Click/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

[Table 2](#) lists terms and their descriptions that can be 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, see the <i>Embarcadero Delphi for Windows User Guide</i> .
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 definition, see the “[Glossary](#).”

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 will be indicated where applicable under the appropriate section.

REF: See the *RPC Broker Technical Manual* for further information.

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

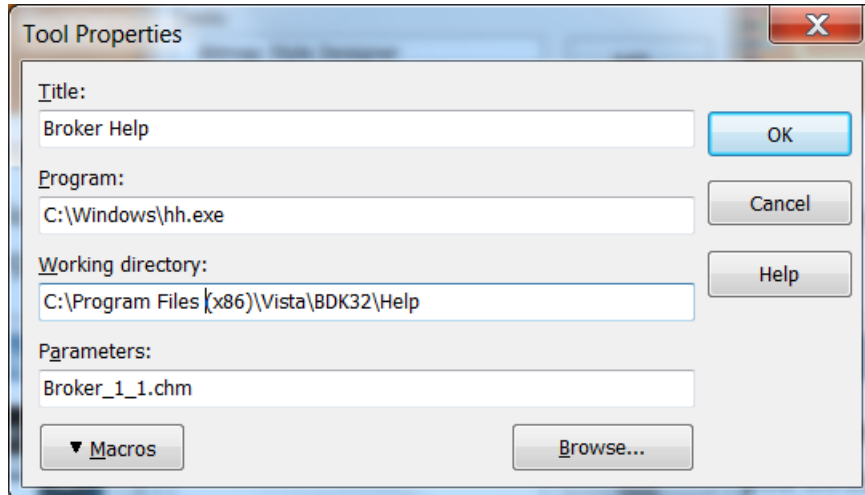
References

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

- *RPC Broker Release Notes*
- *RPC Broker Installation Guide*
- *RPC Broker Systems Management Guide*
- *RPC Broker Technical Manual* (this 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 as shown in [Figure 1](#).

Figure 1: Delphi's Tool Properties dialogue—Broker_1_1.chm entry



- 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 Introduction

The RPC Broker Technical Manual” provides descriptive information and instructions on the use of the Remote Procedure Call (RPC) Broker (also referred to as “Broker”) software within the VA’s Veterans Health Information Systems and Technology Architecture (VistA) environment. This document is intended for systems managers—Information Resource Management (IRM) personnel who are responsible for implementing and maintaining this software, application programmers, and developers. It acquaints system managers with the utilities, software structure, and functionality of the RPC Broker system modules, including information about the routines and files that comprise this software. It also has information about the software’s structure and recommendations regarding its efficient use. Additional information on installation, security, management features, and other requirements is also included.

1.1 Product Overview

The RPC Broker is considered to be part of the infrastructure of VistA. It establishes a common and consistent foundation for communication between clients and VistA M Servers.

The RPC Broker is a bridge connecting the client application front-end on the workstation (e.g., Delphi GUI applications) to the M-based data and business rules on the server. It links one part of a program running on a workstation to its counterpart on the server. The client and the server can be, and most often are, written in different computer languages. Therefore, the RPC Broker bridges the gap between the traditionally proprietary VistA and COTS/HOST products.

1.1.1 RPC Broker Includes

- A common communications driver for the M server interface that handles the device-specific characteristics of the supported communications protocol.
- An interface component on the M server, separate from the communications driver, that interprets client messages, executes the required code, and eventually returns data to the communications driver.
- A common file on the M server that all applications use to store the information about the queries to which they respond (i.e., REMOTE PROCEDURE file [#8994]).
- The Client Agent application that runs on client workstations, supporting single signon.
- The TRPCBroker component for Delphi, enabling development of client applications that can communicate via the RPC Broker.
- A dynamic link library (DLL) that provides access to RPC Broker functionality for development environments other than Delphi.

2 Implementation and Maintenance

The “RPC Broker Installation Guide” provides detailed information regarding the installation of the RPC Broker. It also contains many requirements and recommendation regarding how the Broker should be configured. Be sure to read the Installation Guide before attempting to install the RPC Broker.

2.1 Site Parameters

The following two areas of the Broker require site parameter review and configuration:

Table 3: RPC Broker—Site parameter references

Functional Area	Documentation Reference
Broker Listeners	See the “RPC Broker Site Parameters File” section in the <i>RPC Broker Systems Management Guide</i> .
Single Signon	See the “Integrated Auto Signon For Multiple Users” section in the <i>RPC Broker Systems Management Guide</i> .

2.2 Performance and Scalability

Current performance statistics are limited. However, results indicate that the processing time and resources consumed by the Broker itself are minimal. The RPC Broker does not introduce any additional overhead to the messages sent between the client and the server.

The RPC Broker listener does not tend to get overloaded, because it jobs off incoming requests to another process and then keeps listening for another request. This action is only limited by the number of partitions the M configuration supports.



Performance should instead be measured at the application level to determine the amount of resources consumed by VistA client/server applications that use the Broker. Performance and scalability, from a site’s point of view, have been impacted by the load introduced by application executing on the host system, as opposed to the load introduced by the RPC Broker itself.

3 Files


3.1 VistA M Server Files

The RPC Broker consists of a single global with three files. This chapter describes the RPC Broker files including the file number, file name, global location, and description of the files.

Table 4: RPC Broker—Files and Globals

File #	File Name	Global Location	Description	Data w/ File	Data Setting
8994	REMOTE PROCEDURE	^XWB(8994,	<p>This file is used as a repository of server-based procedures (i.e., remote procedure calls [RPCs]) in the context of the Client/Server architecture. All RPCs used by any site-specific client/server application software using the RPC Broker interface must be registered and stored in this file. Applications running on client workstations can invoke (call) the RPCs in this file to be executed by the server and the results are returned to the client application. Each RPC is associated with an entry point (i.e., ROUTINE with optional TAG).</p> <p> NOTE: The RPC subfield (#19.05) of the OPTION file (#19) points to the RPC field (#.01) of the REMOTE PROCEDURE file (#8994).</p>	NO  NOTE: RPCs are distributed and installed as separate components during the installation of the RPC Broker.	NA
8994.1	RPC BROKER SITE PARAMETERS	^XWB(8994.1,	Site managers can use this file to configure and adjust many characteristics of an RPC Broker installation/implementation at a site.	NO	NA
8994.5	REMOTE APPLICATION	^XWB(8994.5,	This file was introduced as part of the Broker Security Enhancement (BSE) Project. It was released with RPC Broker Patch	NO	NA

File #	File Name	Global Location	Description	Data w/ File	Data Setting
			<p>XWB*1.1*45. This file helps better secure remote user/visitor access to Remote VistA M Servers initiated by RPC Broker-based GUI applications. Remote user/visitor access permits applications where users need to access a large number of sites and do so <i>without</i> requiring a separate Access and Verify code at each site.</p> <p>Once BSE is fully implemented, those RPC Broker-based applications that require remote/visitor access <i>must</i> have an entry in this file with a one-way hash of a secure phrase. Identification of an entry in the file is based on the application passing in the original phrase which is then hashed and used for a cross-reference lookup.</p> <p>The application must have at least one entry in the CALLBACKTYPE Multiple field (#1) indicating all of the following:</p> <ul style="list-style-type: none"> Connection type Valid address for the authenticating server Connection port number. <p>This information is necessary for the Remote VistA M Server to directly connect the Authenticating VistA M Server to obtain the demographic information necessary to create or match the user/visitor entry in the NEW PERSON file (#200). The application will also specify the desired context option for the user/visitor. This will be given to the remote user/visitor instead</p>		

File #	File Name	Global Location	Description	Data w/ File	Data Setting
			<p>of forcing the application to determine how to set this value.</p> <p> NOTE: This will be a very small file, containing only entries for those applications that will use the Broker Security Enhancement (BSE) for remote visitor's access mechanism. The total number of entries should be well under 20.</p>		

3.2 Client Files

3.2.1 End-User Workstation



NOTE: RPC Broker 1.0 released the initial end-user client workstation files (XWB1_0.EXE; 1996). RPC Broker 1.1 released an updated version (XWB1_1WS.EXE; 1997). Thus, this installation has *not* been updated since 1997. However, the standard VA workstation disk image includes the field-tested end-user client workstation files from (unreleased) patch XWB*1.1*58. A “beta” IPv4/IPv6 dual-stack version of the CIAgent.exe is included in XWB*1.1*60, but this version has *not yet* been field tested and is *not* approved for installation on end-user workstations.

- ..\Program Files (x86)\Vista\Broker
 - CLAGENT.exe
 - CLAGENT.hlp
 - rpctest.exe
 - rpctest.hlp
- ..\Windows\System32

3.2.2 Programmer Workstation



NOTE: RPC Broker 1.1 supports Delphi Versions: XE7, XE6, XE5, and XE4.

Files installed vary depending on BDk patch level, installation choices, and Delphi version. For XWB*1.1*60, files are often placed in the following directories:

- ..\Program Files (x86)\Vista\BDK32\Help
- ..\Program Files (x86)\Vista\BDK32\Samples\BrokerEx
- ..\Program Files (x86)\Vista\BDK32\Samples\BSE
- ..\Program Files (x86)\Vista\BDK32\Source

After installing and compiling the Broker Development Kit (BDK) in a developer workstation, Delphi stores .bpl and .dcp files in the default working paths for the Delphi Integrated Development Environment (IDE). The exact path and file name depends on the versions of Delphi and the version of Microsoft® Windows you are running. For example, with Delphi XE5 running on Microsoft® Windows 7, the default paths and file names are:

- C:\Users\Public\Public Documents\RAD Studio\12.0\Bpl\XWB_DXE5.bpl
- C:\Users\Public\Public Documents\RAD Studio\12.0\Bpl\XWB_RXE5.bpl
- C:\Users\Public\Public Documents\RAD Studio\12.0\Dcp\XWB_DXE5.dcp
- C:\Users\Public\Public Documents\RAD Studio\12.0\Dcp\XWB_RXE5.dcp

3.3 Global Translation, Journaling, and Protection

3.3.1 Translation

Translation is recommended for the sole RPC Broker global (i.e., ^XWB global). The ^XWB global has the potential to be read-intensive as more and more remote procedures are added to it in the future.



REF: Consult the Cookbook recommendations for suggestions regarding journaling, translation, and replication; the information here may not apply.

3.3.2 Journaling

Journaling of this global is not required, since the ^XWB global, for the most part is static (except during the addition of new remote procedures).

3.3.3 Protection

The following global protection should be set:

Table 5: RPC Broker—Global Information


Global Name	Caché Protection
^XWB	Owner: RWD Group: N World: N Network: RWD

4 Routines

This section contains a list of the routines exported with the RPC Broker (and includes routines exported with the M2M Broker software, entries are shaded in [Table 6](#)). A brief description of the routines is provided.

Table 6: RPC Broker—Routines

Routine	Description
XWB2HL7	This routine contains various functions and procedures that are used by the Broker for Remote Data Views (RDV) via HL7.
XWB2HL7A	This routine contains various functions and procedures that are used by the Broker for Remote Data Views (RDV) via HL7.
XWB2HL7B	This routine contains various functions and procedures that are used by the Broker for Remote Data Views (RDV) via HL7.
XWB2HL7C	This routine contains various functions and procedures that are used by the Broker for Remote Data Views (RDV) via HL7.
XWB45PO	This post-install routine was released with RPC Broker Patch XWB*1.1*45. It contains REMOTE APPLICATION file (#8994.5) entries that are used for development and testing by the Broker Security Enhancement (BSE) Project.
XWBBRK	This routine contains calls that are designed to parse the various attributes of the Broker messages. All of this information is used internally. In the case of large arrays sent by the client, the function BREAD is used to read in the variable length subscripts and values.
XWBBRK2	This routine is a continuation of XWBBRK. The main entry point (i.e., CAPI actually calls the application RPC.
XWBCAGNT	Server code for RPC Broker client agent application.
XWBDLOG	Debug Logging for Broker
XWBDRPC	This routine contains various functions and procedures that are used for deferred RPCs by the Broker for Remote Data Views (RDV).
XWBEXMPL	This routine is used to support the Broker Example application. The Broker Example application is used to test the RPC Broker connectivity, actions, and RPCs. It is distributed with the Broker.
XWBFM	This routine contains entry points used to interface to the VA FileMan database server.
XWBLIB	This routine contains various functions and procedures used by the Broker. It is best described as a library or depository.
XWBM2MC	M2M Broker Client APIs.
XWBM2MEZ	This routine was released with RPC Broker Patch XWB*1.1*45. It contains various functions and procedures for M-to-M Broker server connections that are used by the Broker Security Enhancement (BSE) Project.
XWBM2MS	M2M Broker Server.
XWBM2MT	M2M Broker Example.
XWBPRS	RPC Broker Message Parser.

Routine	Description
XWBPRS2	RPC Broker Message Parser.
XWBRL	M2M Broker Link Methods.
XWBRM	M2M Broker Server Request Manager. This routine was enhanced with RPC Broker Patch XWB*1.1*45 for the Broker Security Enhancement (BSE) Project.
XWBRMX	M2M Broker Server Request Manager.
XWBRPC	M2M Broker Server Message Request Handler (MRH).
XWBRPCC	M2M Broker Client Utilities.
XWBRW	Read/Write for Broker TCP.
XWBSEC	This routine contains various functions and procedures used by the Broker. Calls in this routine are used for client/server security.
XWBTCP	This routine contains functions and procedures used to control the Broker TCP/IP Listener process. Systems personnel can use calls in this routine to start, stop, and debug the Broker process.
XWBTCP	This job is started for each Broker request. The Listener process (i.e., XWBTCP) will receive a connection request from a client and then dispatch, using the M JOB command, XWBTCP to manage the rest of the interaction.
XWBTCP	This is the Broker Listener process. IRM starts this job. It remains running on a system listening for TCP/IP connection requests. Once a request is received, this routine will start a separate process to manage the rest of the connection, then returns to "listening" for a new request.
XWBTCPM	TCP/IP Process Handler.
XWBTCPM1	Support for XWBTCPM.
XWBTCPM2	Test WEB Service. This routine was enhanced with RPC Broker Patch XWB*1.1*45 for the Broker Security Enhancement (BSE) Project.
XWBTCPMT	This routine was released with RPC Broker Patch XWB*1.1*43. Test a connection.
XWBUTL	M2M Programmer Utilities.
XWBVL	M2M Broker Server Link Utility.
XWBVLC	M2M Broker Client.
XWBVLL	M2M Broker Listener.
XWBZ1	<p>Archive: This routine supports the RPC Broker 1.0 Echo application, which was originally used to test RPC Broker connectivity, actions, and APIs.</p> <p> NOTE: The Echo client application is <i>not</i> distributed with RPC Broker 1.1; it was replaced by the RPC Test application (i.e., rpctest.exe). It is listed here for historical purposes only.</p>

5 Exported Options

The following options are exported with the RPC Broker:

Table 7: RPC Broker—Exported Options (listed alphabetically by option name)

Name	Menu Text	Type
XWB BROKER EXAMPLE	RPC BROKER PROGRAMMING EXAMPLE	Broker (Client/Server) (See Section 5.1.)
XWB DEBUG EDIT	Debug Parameter Edit	VistA M Server: Run Routine (See Section 5.3.5.)
XWB EGCHO	RPC BROKER DEMO/TEST	Broker (Client/Server) (See Section 5.4.)
XWB LISTENER EDIT	RPC Listener Edit	VistA M Server: Edit (See Section 5.3.1.)
XWB LISTENER STARTER	Start All RPC Broker Listeners	VistA M Server: Run Routine (See Section 5.3.2.)
XWB LISTENER STOP ALL	Stop All RPC Broker Listeners	VistA M Server: Run Routine (See Section 5.3.3.)
XWB LOG CLEAR	Clear XWB Log Files	VistA M Server: Run Routine (See Section 5.3.4.)
XWB LOG VIEW	View XWB Log	VistA M Server: Run Routine (See Section 5.3.6.)
XWB M2M CACHE LISTENER	Start M2M RPC Broker Cache Listener	VistA M Server: Run Routine (See Section 5.5.)
XWB MENU	RPC Broker Management Menu	VistA M Server: Menu (See Section 5.3.)
XWB RPC TEST	RPC	Broker (Client/Server) (See Section 5.2.)

Broker client/server applications are Type “B” options (i.e., Broker client/server options) in the OPTION file (#19):

- User *must* have the client/server application option assigned to them as with any other assigned option in VistA.
- Client/Server application only runs for those users who are allowed to activate it.



NOTE: The client/server application options will not be displayed in the user’s menu tree.

5.1 XWB BROKER EXAMPLE

The RPC BROKER PROGRAMMING EXAMPLE option [XWB BROKER EXAMPLE] is a Broker (Client/Server) option. It supports the Broker Example (BrokerEx) demonstration program provided in the Broker Development Kit (BDK). Developers should assign this option to themselves, if they want to try out the BrokerEx application. For programmers who have the XUPROGMODE security key, however, assigning this option to themselves is not necessary.

5.2 XWB RPC TEST

The RPC option [XWB RPC TEST] is a Broker (Client/Server) option. It is a tool that can be used to verify and test the Broker client/server connection and signon process. It displays information about the client and the server and can be a useful debugging tool for IRM. The rpctest.exe application on the client workstation runs the RPC Broker Diagnostic application.

It is recommended that the XWB RPC TEST option be given to users running Broker-based Vista client/server applications. To enable remote troubleshooting by IRM for all users, you can put this option on the Common menu (i.e., System Command Options menu [XUCOMMAND]). This enables any user to run the rpctest.exe application on their workstation at your request.

5.3 XWB MENU

The RPC Broker Management Menu [XWB MENU] is for system managers. It contains the following options:

Figure 2: RPC Broker Management Menu option [XWB MENU]

```
Select RPC Broker Management Menu Option:

RPC Listener Edit
Start All RPC Broker Listeners
Stop All RPC Broker Listeners
Clear XWB Log Files
Debug Parameter Edit
View XWB Log
```



NOTE: This menu was introduced with RPC Broker Patch XWB*1.1*9 and updated with subsequent RPC Broker patches.

5.3.1 XWB LISTENER EDIT

The RPC Listener Edit option [XWB LISTENER EDIT] creates or edits listener entries in the RPC BROKER SITE PARAMETERS file (#8994.1).



REF: For more information on this option, see the *RPC Broker Systems Management Guide*.

5.3.2 XWB LISTENER STARTER

The Start All RPC Broker Listeners option [XWB LISTENER STARTER] automatically starts all listeners configured in the RPC BROKER SITE PARAMETERS file (#8994.1). This option first **stops** any of these listeners that may be running, and then starts all of them up.



NOTE: TaskMan *must* be running to use this option.



NOTE: This option was introduced with patch XWB*1.1*9.



REF: For more information on this option, see the *RPC Broker Systems Management Guide*.

5.3.3 XWB LISTENER STOP ALL

The Stop All RPC Broker Listeners option [XWB LISTENER STOP ALL] stops all running listeners configured in the RPC BROKER SITE PARAMETERS file (#8994.1) set to automatically start.

5.3.4 XWB LOG CLEAR

The Clear XWB Log Files option [XWB LOG CLEAR] clears (KILLs) the XWB log files, which are stored in a temporary global under ^TMP("XWBDEBUG", \$J).

5.3.5 XWB DEBUG EDIT

The Debug Parameter Edit option [XWB DEBUG EDIT] edits the Broker debug parameter (XWBDEBUG) defined in the PARAMETER DEFINITION file (#8989.51) and stored in the PARAMETERS file (#8989.5) when set.

5.3.6 XWB LOG VIEW

The View XWB Log option [XWB LOG VIEW] allows the user to view the temporary debug log files that the Broker can set. The XWBDEBUG parameter *must* be set for log files to be recorded in the ^TMP("XWBDEBUG", \$J) temporary global.

5.4 XWB EGCHO

The RPC BROKER DEMO/TEST option [XWB EGCHO] is a Broker Client/Server option. It supports development and testing of new versions of the RPC Broker using restricted Remote Procedure Calls (RPCs).

5.4.1 Historical Use

The RPC BROKER DEMO/TEST option [XWB EGCHO] was originally used to run the Echo client application, which was first released with RPC Broker 1.0. It was used to test RPC Broker connectivity, actions, and APIs. It was replaced by the RPC Test application (i.e., rpctest.exe).

It called the following RPCs:

- XWB EGCHO LIST
- XWB EGCHO BIG LIST
- XWB EGCHO STRING
- XWB EGCHO MEMO
- XWB EGCHO SORT LIST
- XWB GET VARIABLE VALUE



REF: For more information on the RPC Test application (i.e., rpctest.exe), see Section [5.2](#).

5.5 XWB M2M CACHE LISTENER



NOTE: This option is for Caché/NT only. It calls STRT^XWBVLL() and is jobbed off.

The Start M2M RPC Broker Cache Listener option [XWB M2M CACHE LISTENER] starts the RPC Broker M2M listener. It prompts the user for the port number, and it provides a default value used for M2M.

5.6 Exported RPCs

The RPC Broker distributes the following remote procedure calls (RPCs):

- XWB ARE RPCS AVAILABLE
- XWB CREATE CONTEXT
- XWB DEFERRED CLEAR
- XWB DEFERRED CLEAR ALL
- XWB DEFERRED GETDATA
- XWB DEFERRED RPC
- XWB DEFERRED STATUS
- XWB DIRECT RPC
- XWB EGCHO BIG LIST
- XWB EGCHO LIST
- XWB EGCHO MEMO
- XWB EGCHO SORT LIST
- XWB EGCHO STRING
- XWB EXAMPLE BIG TEXT

- XWB EXAMPLE ECHO STRING
- XWB EXAMPLE GET LIST
- XWB EXAMPLE GLOBAL SORT
- XWB EXAMPLE SORT NUMBERS
- XWB EXAMPLE TRAP PARAMS
- XWB EXAMPLE WPTTEXT
- XWB FILE LIST
- XWB FILENAME CHECK
- XWB GET BROKER INFO
- XWB GET VARIABLE VALUE
- XWB IM HERE
- XWB IS RPC AVAILABLE
- XWB M2M EXAMPLE LARRY
- XWB M2M EXAMPLE REF
- XWB REMOTE CLEAR
- XWB REMOTE GETDATA
- XWB REMOTE RPC
- XWB REMOTE STATUS CHECK
- XWB RPC LIST

6 Archiving and Purging

6.1 Archiving

There are no software-specific archiving procedures or recommendations for the following RPC Broker components:

- ^XWB global
- REMOTE PROCEDURE (#8994)
- RPC BROKER SITE PARAMETERS file (#8994.1)

6.2 Purging

There are no software-specific purging procedures or recommendations for the following RPC Broker components:

- ^XWB global
- REMOTE PROCEDURE file (#8994)
- RPC BROKER SITE PARAMETERS file (#8994.1)

7 Callable Routines

The RPC Broker does *not* provide any callable M routines. However, other programming interfaces are provided (e.g., Delphi components, DLL, Pascal functions, and RPCs).



REF: For information on these other programming interfaces, see the “[External Relationships](#)” section.

8 External Relationships

8.1 External Interfaces

The following external interfaces to RPC Broker functionality are provided:

8.1.1 RPC Broker Components

RPC Broker 1.1 (fully patched) provides programmers with the capability to develop new Vista client/server software using the following RPC Broker Delphi components in the 32-bit environment (listed alphabetically):

- TCCOWRPCBroker
- TRPCBroker (original component)
- TContextorControl
- TXWBRichEdit



NOTE: These RPC Broker components wrap the functionality of the Broker resulting in a more modularized and orderly interface. Those components derived from the original TRPCBroker component, inherit the TRPCBroker properties and methods.

These RPC Broker components (with the exception of TXWBRichEdit) provide all functionality needed for client applications to communicate with Vista M servers via the RPC Broker. All of these components are compatible with Embarcadero Delphi XE4 and greater.



NOTE: As of RPC Broker Patch XWB*1.1*60, this version of the Broker supports Delphi XE7, XE6, XE5, and XE4.



CAUTION: This statement defines the extent of support relative to use of Delphi. The Office of Information and Technology (OIT) 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 may continue to use outdated versions of the RPC Broker Development Kit but do so with the understanding that support is not be available and that continued use of outdated versions do 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 will be maintained in the VA Intranet Broker Archive.



REF: For more information on the Broker components, see the *RPC Broker User Guide* and the BDK online help (i.e., BROKER.HLP).

8.1.2 RPC Broker Dynamic Link Library (DLL)

The RPC Broker DLL (BAPI32.DLL) provides access to RPC Broker functionality for development environments other than Delphi.



NOTE: The RPC Broker DLL has *not* been updated to support Secure Shell (SSH) or IPv4/IPv6 dual-stack connections. It is expected that VA Applications which currently use this DLL will migrate from RPC Broker to the VA Enterprise Services Bus (ESB).



REF: For more information on the RPC Broker DLL, see the *RPC Broker User Guide* and the BDK online help (i.e., Broker_1_1.chm).

8.1.3 Pascal Functions

The following Pascal functions are provided by the TRPCBroker component:

- GetServerInfo function
- Splash Screen functions: SplashOpen and SplashClose
- Piece function
- Translate function
- Encryption functions: Decrypt and Encrypt



REF: For more information on these Pascal functions, see the *RPC Broker User Guide* and the BDK online help (i.e., Broker_1_1.chm).

8.1.4 RPC Broker Remote Procedures

The following RPCs are provided for use by developers:

XWB CREATE CONTEXT

XWB GET VARIABLE VALUE



REF: For more information, see the *RPC Broker User Guide* and the BDK online help (i.e., Broker_1_1.chm).

8.2 External Relations

8.2.1 Relationship to Other Software

The RPC Broker software was developed to aid the VistA development community and Information Resources Management (IRM). It is considered to be part of the VistA infrastructure. Other infrastructure products include:

- Kernel
- Kernel Toolkit
- VA FileMan
- MailMan

The RPC Broker is used by all VistA client/server applications. The RPC Broker fully integrates with Kernel 8.0 and VA FileMan 22.0.

Remote Procedure Calls (RPCs) are also being used by other applications to provide the same functionality and security as the RPC Broker, and in some cases are being exposed as registered services on the Enterprise Services Bus (ESB). In this case, the REMOTE PROCEDURE file (#8994) *must* be present for those applications to function correctly.

8.2.2 Relationship with Kernel and VA FileMan

Before installing the RPC Broker, the following software must be in place and fully patched:

- Kernel 8.0
- Kernel Toolkit 7.3
- VA FileMan 22.0

8.2.3 Relationships with Operating Systems

On the client side, it was decided that the 32-bit Microsoft® Windows environment would be the supported platform. Thus, the client portions of the RPC Broker are compatible with the following Microsoft® Windows operating systems:

- Windows 10
- Windows 8.1
- Windows 7

On the server side, the RPC Broker supports the following ANSI M environments:

- InterSystems Caché for:
 - NT
 - Linux
 - OpenVMS
- Greystone Technology MUMPS (GT.M) on Linux

8.3 DBA Approvals and Integration Control Registrations (ICRs)

The Database Administrator (DBA) maintains a list of Integration Control Registrations (ICR) or mutual agreements between software developers allowing the use of internal entry points or other software-specific features that are not available to the general programming public.

8.3.1 ICRs—Current List for RPC Broker as Custodian

To obtain a current list of ICRs to which the RPC Broker (XWB) software is a custodian, perform the following procedure:

1. Sign on to the **FORUM** system.
2. Go to the **DBA** menu [DBA].
3. Select the **Integration Agreements Menu** option [DBA IA ISC].
4. Select the **Custodial Package Menu** option [DBA IA CUSTODIAL MENU].
5. Choose the **ACTIVE by Custodial Package** option [DBA IA CUSTODIAL].
6. When prompted for a package, enter **XWB** or **RPC BROKER**.
7. All current ICRs to which the RPC Broker software is custodian are listed.

8.3.2 ICRs—Detailed Information

To obtain detailed information on a specific ICR:

1. Sign on to the **FORUM** system.
2. Go to the **DBA** menu [DBA].
3. Select the **Integration Agreements Menu** option [DBA IA ISC].
4. Select the **Inquire** option [DBA IA INQUIRY].
5. When prompted for “INTEGRATION REFERENCES,” enter the specific Integration Control Registration (ICR) number you would like to display.
6. The option then lists the full text of the ICR you requested.

8.3.3 ICRs—Current List for RPC Broker as Subscriber

To obtain the current list of ICRs, if any, to which the RPC Broker software is a subscriber, perform the following procedure:

1. Sign on to the **FORUM** system.
2. Go to the **DBA** menu [DBA].
3. Select the **Integration Agreements Menu** option [DBA IA ISC].
4. Select the **Subscriber Package Menu** option [DBA IA SUBSCRIBER MENU].
5. Choose the **Print ACTIVE by Subscribing Package** option [DBA IA SUBSCRIBER].
6. When prompted with “START WITH SUBSCRIBING PACKAGE,” enter **XWB** or **RPC BROKER** (uppercase).
7. When prompted with “GO TO SUBSCRIBING PACKAGE,” enter **XWB** or **RPC BROKER** (uppercase).
8. All current ICRs to which the RPC Broker (XWB) software is a subscriber are listed.

9 Internal Relationships

No options in the RPC Broker product assume that the entry/exit logic of another option has already occurred.

10 Global Variables

The RPC Broker does *not* create any global (software-wide) variables that have received Standards and Conventions Committee (SACC) exemptions.

11 Security

11.1 Security Management

There are no special legal requirements involved in the use of the RPC Broker software.

11.2 Mail Groups and Alerts

There are no mail groups exported or alerts associated with the RPC Broker software.

11.3 Remote Systems

11.3.1 Connections

The RPC Broker M server process:

- Allows connections from client applications.
- Authenticates client application connection as any normal logon requires.
- Allows client applications to use any remote procedure call (RPC) authorized to the application, if the application is authorized to the signed-on user.
- Exchanges data (typically) between clients and the RPC Broker server.
- Allows clients can be anywhere on VA's TCP/IP network.
- Uses encryption when a user's Access and Verify codes are sent from the client to the server.
- Provides an encryption API for developer to use in their own applications to encode and decode messages passed between client and server.

Security with the RPC Broker is a four-part process:

1. Client workstations *must* send a valid connection request to the M Server.
2. Users *must* have valid Access and Verify codes.
3. Users *must* be valid users of a VistA client/server application.
4. Any remote procedure call *must* be registered and valid for the application being executed.



REF: For more information regarding Broker security, see Chapter 2, "Security," in the *RPC Broker Systems Management Guide*.

11.3.2 Remote Data Views

The RPC Broker can be used to facilitate invocation of Remote Procedure Calls on a remote server. Applications can use either of the following RPCs to pass information between servers:

- XWB DIRECT RPC
- XWB REMOTE RPC

These RPC pass the following:

- Desired remote server.
- Desired remote RPC.
- Parameters for the remote RPC.

Communications between local and remote servers is as follows:

1. RPC Broker on the local server passes the remote RPC name and parameters to the remote server using VistA HL7.
2. VistA HL7 sends any results from the remote server back to the local server.
3. RPC Broker on the local server passes the results back to the client application.



NOTE: The XWB DIRECT RPC and XWB REMOTE RPC are available only on a controlled subscription basis.

11.4 Interfaces

No *non-VA* products are embedded in or required by the RPC Broker software, other than those provided by the underlying operating systems.

11.5 Electronic Signatures

There are no electronic signatures used within the RPC Broker software.

11.6 Security Keys

There are *no* specific security keys exported with the RPC Broker software. However, to bypass security for development purposes, we recommend client/server application developers be assigned the XUPROGMODE security key.

All users assigned the XUPROGMODE security key can do the following:

- Run any VistA client/server application, regardless of whether it is in their menu tree or not.
- Access any RPC without regard to the application context.

11.7 File Security

The RPC Broker establishes the following file security:

Table 8: RPC Broker—File Security

Number	Name	DD	RD	WR	DEL	LAYGO	AUDIT
8994	REMOTE PROCEDURE	@	@	@	@	@	@
8994.1	RPC BROKER SITE PARAMETERS	@	@	@	@	@	@
8994.5	REMOTE APPLICATION	@	@	@	@	@	@



REF: For more information on these files, see the “[VistA M Server Files](#)” section.

11.8 Official Policies

- Modification of any part of the RPC Broker software is *strongly* discouraged.
- Distribution of the RPC Broker software is unrestricted.
- The VHA IT Architecture Statement of Direction for FY98 prescribes “*Use of Kernel Broker for client-server communication...*”
- As per the Software Engineering Process Group/Software Quality Assurance (SEPG/SQA) Standard Operating Procedure (SOP) 192-039—Interface Control Registration and Approval (effective 01/29/01), application programmers *must* not alter any Health_Vet VistA Class I software code.

12 Troubleshooting

12.1 Test the Broker Using the RPC Broker Diagnostic Program

RPC Broker Patch XWB*1.1*47 included a diagnostic tool for the client workstation ([Figure 3](#)). This tool can be used to verify and test the Broker client/server connection and signon process. This program (i.e., RPCTEST.EXE) also displays specific information about the client workstation that can be useful to IRM personnel when trying to determine and/or correct any problems with or to test the Broker.



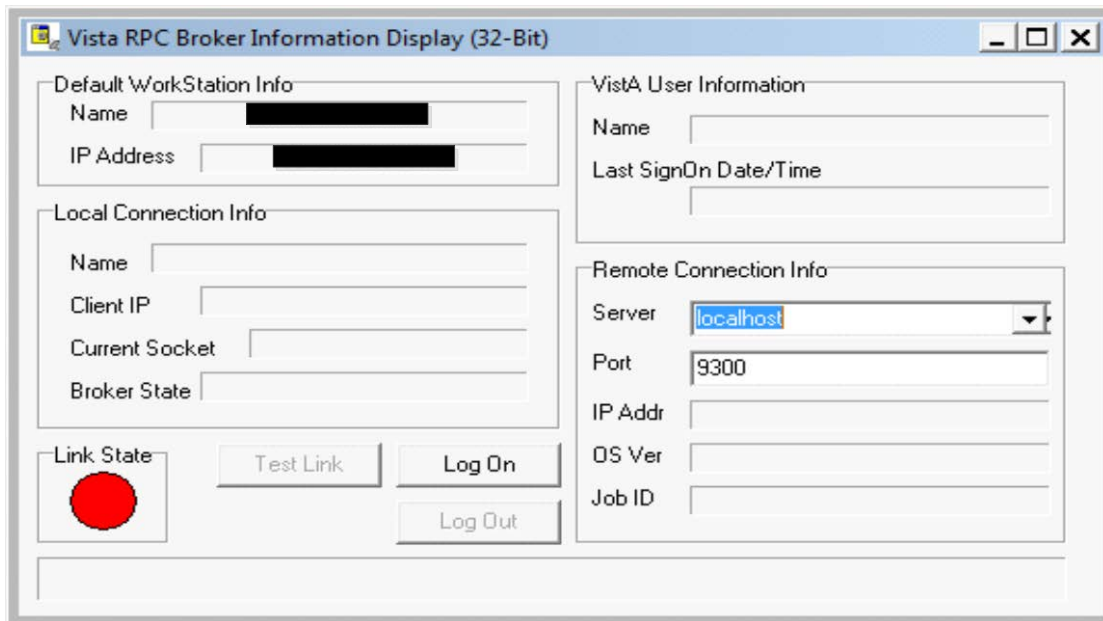
NOTE: This utility has *not yet* been updated to support IPv4/IPv6 dual-stack environment testing and has not been reviewed for Section 508 conformance.

It displays the following information:

- Default workstation information that includes the Name and IP Address.
- Local connection information that includes the Name, Client IP, Current Socket, and Broker State.
- VistA user information that includes the Name and Last Signon Date/Time.
- Remote connection information that includes the Server, Port, IP Address, Operating System Version information, and Job ID.
- A color-coded Link State indicator that shows the status of your connection:
 - Red = no link/connection.
 - Yellow = attempting link/connection.
 - Green = successful link/connection.

When you run the RPC Broker Connection Diagnostic Program (i.e., RPCTEST.EXE), the dialogue in [Figure 3](#) is displayed:

Figure 3: RPC Broker connection diagnostic program




You should verify that the connection from the client workstation to the server is functioning correctly. For example:

- Try logging on to the server by choosing a server/port combination and pressing **Log On**; you will be presented with the VistA Sign-on dialogue. The Link State indicator will change from red to yellow to green as you progress through the connection process.
- Test various connections by changing the server and port information under the “Remote Connection Info” block. To verify the connection process is working properly, try logging on to known servers and ports with Listeners running.

You can also use this tool to resolve a server address without having to log on to the server. Type in a server name in the “Server” box located in the “Remote Connection Info” section of the dialogue and press the enter key. If the server can be found, the IP address will be displayed in the “IP Addr” box in that same section.

If you encounter an error while testing the Broker, make sure you check the following:

- Is the Broker Listener running on the specified port? If not, start the Broker Listener on the specified port.
-  **REF:** For more information on starting the Broker Listener, see the “Broker Listeners and Ports” section in the *RPC Broker Systems Management Guide*.
- Have you installed all current Kernel, Kernel Toolkit, and VA FileMan patches? If not, you must install all required patches (see the *RPC Broker Installation Guide*).

- Did you change the IP address for BROKERSERVER in the HOSTS file in this session? If the IP address and server name are not resolvable, you need to correct the entry.



NOTE: Your site can use the HOSTS file or DNS to resolve IP addresses and server names. If the HOSTS file is not supported in your LAN, then you will need to work with the DNS database and see if the value returned by the DNS query really identifies the machine where the listener is running.

- Is the IP address resolvable for the BROKERSERVER listed under the TCP/IP Server? If not, edit the HOSTS file in your Microsoft® Windows directory and correct the IP address for the BROKERSERVER or resolve the IP address with DNS.
- Does the TCP/IP address (used in the HOSTS file) correspond to the IP address that is owned by the node used to start up the Broker Listener? If you have several nodes that can service your Test/Production account, you must make sure that the one used to start up the Listener is the one being referenced in the HOSTS file.

12.2 Verify and Test the Network Connection

To detect and avoid network problems, do the following:

1. First, make sure you actually have TCP/IP running correctly on your workstation.

At the DOS/Command prompt type PING ###.###.###.### to the server host to which you are trying to connect (where ###.###.###.### equals the IP address of the server). For example:

```
C:\>PING 127.0.0.1
```

Alternatively, you can PING the same server name you are trying to connect to or resolve (e.g., BROKERSERVER). For example:

```
C:\>PING BROKERSERVER
```



NOTE: “PINGing” is a way to test connectivity. PINGing sends an Internet Control Message Protocol (ICMP) packet to the server in question and requests a response. It verifies that the server is running and the network is properly configured.

- If the host is unreachable, there is a network problem and you should consult with your network administrator.
 - If you get a timeout, it may be your network configuration on the client workstation, proceed to Step #2.
 - If the server is reachable, proceed to Step #4.
2. Check the properties of the WINSOCK.DLL on the client workstation and make sure it's the correct version. Install the latest Service Pack.
 3. Make sure that the files on the client are in the correct directories.
 4. Make sure that all of the client workstation TCP/IP settings are correct in the network properties. Typos, etc. can be a real problem, as can gateways, DNS servers, etc. Try removing items in your WINS configuration/DNS configuration, etc.



REF: For more information on telecommunications support, please visit the Telecommunications Support Office Home Page on the VA Intranet.

12.3 Signon Delays

Users signing on to VistA on a client workstation with the Broker Client Agent running should *not* experience any signon delays.

In order to provide users with the capability of Auto Signon in both a GUI and roll-and-scroll Telnet session, the Kernel signon process was modified.

The Kernel signon process now tries to contact the RPC Broker 1.1 Client Agent on the client workstation (i.e., prior to and following the Access and Verify code prompts) to allow Auto Signon to take place. A three-second (or less) delay is built into this process while attempting to connect to the Client Agent and allow for any possible network delays.

If you wish to eliminate the 3-second (or less) signon delay in a GUI/Telnet session (i.e., *not* associated with network delays), do either of the following:

- Disable Auto Signon for *all* users by setting the DEFAULT AUTO SIGN-ON field in the KERNEL SYSTEM PARAMETERS file (#8989.3) to “DISABLED”
- Install and run the Broker Client Agent on *all* client workstations, if Auto Signon is enabled on your system.



REF: For more information on the DEFAULT AUTO SIGN-ON field, see the “Integrated Auto Signon for Multiple User Sessions” section in the RPC Broker Systems Management Guide.

12.4 RPC Broker FAQs

For examples of general or development-specific frequently asked questions (FAQs) about the RPC Broker, see VA Intranet website.

Glossary

Term	Definition
CLIENT	A single term used interchangeably to refer to the user, the workstation, and the portion of the program that runs on the workstation. In an object-oriented environment, a client is a member of a group that uses the services of an unrelated group. If the client is on a local area network (LAN), it can share resources with another computer (server).
COMPONENT	An object-oriented term used to describe the building blocks of GUI applications. A software object that contains data and code. A component may or may not be visible. These components interact with other components on a form to create the GUI user application interface.
DHCP	D ynamic H ost C onfiguration P rotocol.
DLL	D ynamic L ink L ibrary. A DLL allows executable routines to be stored separately as files with a DLL extension. These routines are only loaded when a program calls for them. DLLs provide several advantages: <ul style="list-style-type: none"> • Help save on computer memory, since memory is only consumed when a DLL is loaded. They also save disk space. With static libraries, your application absorbs all the library code into your application so the size of your application is greater. Other applications using the same library will also carry this code around. With the DLL, you do not carry the code itself; you have a pointer to the common library. All applications using it will then share one image. • Ease maintenance tasks. Because the DLL is a separate file, any modifications made to the DLL will not affect the operation of the calling program or any other DLL. • Help avoid redundant routines. They provide generic functions that can be used by a variety of programs.
GUI	G raphical U ser I nterface. A type of display format that enables users to choose commands, initiate programs, and other options by selecting pictorial representations (icons) via a mouse or a keyboard.
ICON	A picture or symbol that graphically represents an object or a concept.
REMOTE PROCEDURE CALL	A remote procedure call (RPC) is essentially M code that may take optional parameters to do some work and then return either a single value or an array back to the client application.
SERVER	The computer where the data and the Business Rules reside. It makes resources available to client workstations on the network. In VistA, it is an entry in the OPTION file (#19). An automated mail protocol that is activated by sending a message to a server at another location with the "S.server" syntax. A server's activity is specified in the OPTION file (#19) and can be the running of a routine or the placement of data into a file.

Term	Definition
USER ACCESS	<p>This term is used to refer to a limited level of access to a computer system that is sufficient for using/operating software, but does not allow programming, modification to data dictionaries, or other operations that require programmer access. Any of VistA's options can be locked with a security key (e.g., XUPROGMODE, which means that invoking that option requires programmer access).</p> <p>The user's access level determines the degree of computer use and the types of computer programs available. The Systems Manager assigns the user an access level.</p>
USER INTERFACE	<p>The way the software is presented to the user, such as Graphical User Interfaces that display option prompts, help messages, and menu choices. A standard user interface can be achieved by using Embarcadero's Delphi Graphical User Interface to display the various menu option choices, commands, etc.</p>
WINDOW	<p>An object on the screen (dialogue) that presents information such as a document or message.</p>



REF: For a list of commonly used terms and definitions, see the OIT Master Glossary VA Intranet Website.

For a list of commonly used acronyms, see the VA Acronym Lookup Intranet Website.

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