

Virtual Patient Record (VPR) 1.0

Technical Manual



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Revision History

Date	Revision	Description	Author
01/31/2019	1.4	Patch VPR*1.0*8 Updates: <ul style="list-style-type: none"> • Added the VPRHST1 and VPRP8I to Section 4; Table 3. • Added ICRs 6978, 2045, and 7014 to Section 8.1; Table 6. • Removed VAFC ADT-A04 SERVER from Section 8.4; Table 8. • Added LR70 AP EVSEND OR, SCMC PATIENT TEAM CHANGES, and SCMC PATIENT TEAM POSITION CHANGES to Section 8.4; Table 9. • Updated Section 14.1, “Menus and Options.” 	Developer: MB Tech Writer: TB
11/15/2018	1.3	Updates: <ul style="list-style-type: none"> • Section 8.4: Added Table 8 with listener information and revised Table 9 to include listener information. • Added Section 10, “Global Journaling and Placement.” • Section 14. Added and updated the following sections: <ul style="list-style-type: none"> ○ Section 14.1, “Menus and Options.” ○ Section 14.2, “Protocol Events and Listeners.” ○ Section 14.3, “Special Instructions for Error Correction.” ○ Section 14.4, “Enterprise Service Desk and Organizational Contacts.” 	Developer: MB Tech Writer: TB
11/01/2018	1.2	Updates: <ul style="list-style-type: none"> • Section 1. • Section 2.1.3. • Section 4; Table 3. • Section 8.1; Table 6. • Section 8.2. • Section 8.4; added Table 9. 	Developer: MB Tech Writer: TB

Date	Revision	Description	Author
10/24/2018	1.1	<p>Updates:</p> <ul style="list-style-type: none"> • Section 1.2; modified historical references to Health Informatics Initiative (hi²). • Section 1.4. • Section 2.1, 2.1.1, and 2.1.2. • Section 2.1.3. • Section 2.1.4. • Section 2.2. • Section 3, Table 2. • Section 4, Table 3; removed checksum and added summary descriptions for each routine listed. • Section 5, Table 4. • Section 6, Table 5. • Sections 7, 8, 9, 10, 12, and 13 and all subsections; mainly stating does not apply to VPR or adding some explanatory text. • Added Enterprise Service Desk (ESD) contact information to Section 14.4. • Updated the Glossary. 	<p>Developer: MB Tech Writer: TB</p>
09/25/2018	1.0	<p>Updates for Patch VPR*1.0*8:</p> <ul style="list-style-type: none"> • Created a new, separate Technical Manual (this manual). • Moved other content to a new, separate Developer's Guide, which will be released at a later date. • Updated document to follow current documentation standards and style guidelines. 	<p>Developer: MB Tech Writer: TB</p>

Table of Contents

Revision History	ii
List of Figures	v
List of Tables	v
Orientation	vi
1 Introduction.....	1
1.1 Purpose.....	1
1.2 System Overview	1
1.3 Enhancements.....	1
1.4 Background	2
2 Implementation and Maintenance.....	2
2.1 System Requirements	2
2.1.1 Hardware Requirements	2
2.1.2 Software Requirements.....	2
2.1.3 Application Proxy	3
2.1.4 Database Requirements	4
2.2 System Setup and Configuration.....	4
3 Files	4
4 Routines	4
5 Exported Options.....	7
6 Parameters	8
7 Mail Groups, Alerts, and Bulletins.....	8
8 Public Interfaces	9
8.1 Integration Control Registrations	9
8.2 Application Programming Interfaces	12
8.3 Remote Procedure Calls.....	12
8.4 HL7 Messaging and Protocols	12
8.5 Web Services.....	13
9 Standards and Conventions Exemptions	13
9.1 Internal Relationships.....	14
9.2 Software-Wide Variables	14
10 Global Journaling and Placement	14
11 Security	14
11.1 Security Menus and Options.....	14
11.2 Security Keys and Roles	14
11.3 File Security.....	14

11.4	Electronic Signatures	15
11.5	Secure Data Transmission	15
12	Archiving	15
13	Non-Standard Cross-References	15
14	Troubleshooting.....	15
14.1	Menus and Options.....	15
14.2	Protocol Events and Listeners.....	15
14.3	Special Instructions for Error Correction.....	16
14.4	Enterprise Service Desk and Organizational Contacts.....	16
15	Glossary	17

List of Figures

Figure 1:	VPR Application Proxy Entry.....	4
Figure 2:	File Security—Recommended VPR File Security Access	14

List of Tables

Table 1:	Documentation Symbol Descriptions.....	viii
Table 2:	VPR Files	4
Table 3:	VPR Routines.....	4
Table 4:	VPR Options.....	7
Table 5:	VPR Parameters	8
Table 6:	VPR ICRs.....	9
Table 7:	VPR Remote Procedure Calls	12
Table 8:	VPR HL7 Event Protocols and Associated Listeners	12
Table 9:	VPR <i>Non</i> -HL7 Event Protocols and Associated Listeners.....	12
Table 10:	VPR Glossary of Terms and Acronyms.....	17

Orientation

How to Use this Manual

The *Virtual Patient Record (VPR) Technical Manual* provides information about the technical structure of the VPR software. It includes the following information about VPR:

- [Implementation and Maintenance](#)
- [Files](#)
- [Routines](#)
- [Exported Options](#)
- [Parameters](#)
- [Remote Procedure Calls](#)



REF: For VPR installation instructions in the Veterans Health Information Systems and Technology Architecture (VistA) environment see the *Virtual Patient Record (VPR) Installation Guide* and any national patch description of the patch being released.

Intended Audience

The intended audience of this manual is all key stakeholders. The stakeholders include the following:

- Enterprise Program Management Office (EPMO)—VistA legacy development teams.
- System Administrators—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 Kernel 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 and the functionality contained in Virtual Patient Record (VPR) 1.0; 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 (OIT) 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. [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/Abbreviation/Namespace>*PATIENT,<N>
 - *<Application Name/Abbreviation/Namespace>*USER,<N>

Where:

- *<Application Name/Abbreviation/Namespace>* is defined in the Approved Application Abbreviations document.
- <N> represents the first name as a number spelled out and incremented with each new entry.

For example, in Virtual Patient Record (VPR) test patient and user names would be documented as follows:

- VPRPATIENT,ONE; VPRPATIENT,TWO; VPRPATIENT,THREE; ... VPRPATIENT,14; etc.
- VPRUSER,ONE; VPRUSER,TWO; VPRUSER,THREE; ... VPRUSER,14; etc.

- “Snapshots” of computer online displays (i.e., screen captures/dialogues) and computer source code, if any, are shown in a *non*-proportional font and enclosed within a box:
 - User’s responses to online prompts are **bold** typeface and sometimes highlighted in yellow (e.g., **<Enter>**).
 - Emphasis within a dialogue box is **bold** typeface and highlighted in blue (e.g., **STANDARD LISTENER: RUNNING**).
 - Some software code reserved/key words are **bold** typeface 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 sometimes 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 MUMPS (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, security keys, and RPCs (e.g., VPR GET PATIENT DATA).



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 (*not* the Ribbon section).
2. Select **Customize Quick Access Toolbar** from the secondary menu.
3. Select 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. Select/Highlight the Back command and select 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. Select/Highlight the Forward command and select **Add** to add it to your customized toolbar.
9. Select **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.

How to Obtain Technical Information Online

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



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

REF: For further information, see the *VA FileMan 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 the 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** [DILIST] option on the **Data Dictionary Utilities** [DI DDU] menu 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” section in the “File Management” section in 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
 - VA FileMan data structures and terminology—VistA M Server software
- Microsoft Windows environment
- M programming language

Reference Materials

Readers who wish to learn more about Virtual Patient Record (VPR) should consult the following:

- *Virtual Patient Record (VPR) Installation Guide*
- *Virtual Patient Record (VPR) Technical Manual* (this manual)

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 software documentation can be downloaded from the VA Software Document Library (VDL) at: <http://www.va.gov/vdl/>



REF: VPR manuals are located on the VDL at:
<https://www.va.gov/vdl/application.asp?appid=197>

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

1 Introduction

A technical manual is a required end-user document for all Office of Information and Technology (OIT) software releases. It provides sufficient technical information about the software for developers and technical personnel to operate and maintain the software with only minimal assistance from Product Support (PS) personnel.

The intended audience for this document is local information technology (IT) support, management, and development personnel for nationally released software.

1.1 Purpose

The purpose of this document is to provide technical information about the Virtual Patient Record (VPR) 1.0 software, which is a developer tool.

1.2 System Overview

VPR 1.0 was originally developed as a part of the Health Informatics Initiative (hi²). It has been expanded to support VA's interfaces to InterSystems' Health Connect (HC) and HealthShare (HS).

VPR extracts patient data from domains at a local Veterans Health Information Systems and Technology Architecture (VistA) site to provide a cached view of the patient chart. It provides normalized fields with common field names and data structures across domains. VPR includes four remote procedure calls (RPCs) that do the following:

- Extract data from VistA in Extensible Markup Language (XML) format.
- Extract VistA data in JavaScript Object Notation (JSON) format.
- Calculates checksums for returned data.
- Returns the current VPR version number.

1.3 Enhancements

VPR Patch VPR*1*8 extends the Virtual Patient Record (VPR) application, to provide a new method of retrieving patient health data from a VistA database.

VA FileMan Patch DI*22.2*9 released a new VA FileMan utility that provides the ability to map VistA files and fields to other data models and extract that data as XML or JSON objects. Patch VPR*1*8 populates the new ENTITY (#1.5) file to map VistA data elements to InterSystems' Summary Data Architecture (SDA) model and use the new supported calls to retrieve the requested data.

Patch VPR*1*8 also installs a mechanism to monitor clinical data events in VistA, to enable retrieval of updated information as a patient's data changes. This patch adds new PROTOCOL (#101) file entries and links to appropriate clinical application events; the file and record numbers modified will be collected in the VPR SUBSCRIPTION (#560) file until retrieved and updated.

1.4 Background

The VPR RPC for XML-formatted data extraction was initially created in the Nationwide Health Information Network (NwHIN) namespace, which was called **NHIN**. The NwHIN client used most of the VPR's extract routines in production to get and share data. After this initial version, VPR RPCs were moved into the VPR's own (**VPR**) namespace and renumbered as VPR Version 1.0. NwHIN could continue to use the extract routines in its **NHIN** namespace, but would need to access VPR 1.0, or subsequent versions, to take advantage of future extract routine enhancements.



NOTE: After the VPR package installed its RPCs in its own (**VPR**) namespace with VPR 1.0, NwHIN began to use VPR 1.0 to take advantage of future extract-routine enhancements. The Veterans Health Information Exchange (VHIE) and Joint Legacy Viewer (JLV) are currently the primary users of the RPCs.

2 Implementation and Maintenance

This section provides information to assist technical support staff with the implementation and maintenance of the software.

2.1 System Requirements

VPR is a typical legacy Veterans Health Information Systems and Technology Architecture (VistA) Kernel Installation and Distribution System (KIDS) software release.

2.1.1 Hardware Requirements

VPR does *not* require any special hardware. It requires the same minimum hardware, servers, virtual systems, workstations, and peripheral devices required by any legacy VistA product.

2.1.2 Software Requirements

VPR expects the following VistA software packages to be installed and fully patched:

- VA FileMan 22.2
- Kernel 8.0
- Adverse Reaction Tracking 4.0
- Care Management 1.0
- Clinical Procedures 1.0
- Clinical Reminders 2.0
- Consult/Request Tracking 3.0
- Enterprise Terminology Service 1.0
- Functional Independence 1.0
- Gen. Med. Rec. – Vitals 5.0

- Hospital Inquiry (HINQ) 4.0
- Integrated Billing 2.0
- Laboratory 5.2
- Lexicon Utility 2.0
- Master Patient Index (MPI) 1.0
- National Drug File 4.0
- Order Entry/Results Reporting 3.0
- Outpatient Pharmacy 7.0
- Patient Care Encounter (PCE) 1.0
- Pharmacy Data Management 1.0
- Problem List 2.0
- Radiology/Nuclear Medicine 5.0
- Registration 5.3
- Scheduling 5.3
- Surgery 3.0
- Text Integration Utilities (TIU) 1.0
- Women's Health 1.0

You can download the latest versions of VPR software and documentation, including this manual, via SSH File Transfer Protocol (SFTP) from the Product Support (PS) Anonymous Directories.

Patches to the VPR application are available via the National Patch Module (NPM) on FORUM.

2.1.3 Application Proxy

The VPR package contains an application proxy for connecting to the local VistA system; it is currently being used by the Joint Legacy Viewer (JLV) and Veterans Health Information Exchange (VHIE) clients.



CAUTION: Do *not* terminate the VPR Application Proxy from the NEW PERSON (#200) file, it *must* remain active.

If your site is experiencing connection issues, verify the VPR entry in the NEW PERSON (#200) file looks like the listing in [Figure 1](#):

Figure 1: VPR Application Proxy Entry

NAME: VPR, APPLICATION PROXY	DATE ENTERED: SEP 08, 2011
SECONDARY MENU OPTIONS: VPR APPLICATION PROXY	
User Class: APPLICATION PROXY	ISPRIMARY: Yes
PROVIDER KEY (c): 0	

2.1.4 Database Requirements

VA FileMan 22.2 and Kernel 8.0 are required to install and run the VPR application.

VPR provides data from the VA FileMan 22.2 database to InterSystems' HealthShare (HS) database. VPR runs only inside VistA and does *not* connect to or rely on the HS database.

2.2 System Setup and Configuration

VPR does *not* require any special system setup or configuration. It is a standard KIDS installation.

VPR is a developer tool; so, there are no end-user menus or security keys that need to be assigned.

3 Files

VPR distributes the following VA FileMan file:

Table 2: VPR Files

File #	File Name	Global Location	Description
560	VPR SUBSCRIPTION	^VPR(This file contains patients who are monitored for changes to their medical record.

4 Routines

[Table 3](#) lists the VPR routines with a summary description:

Table 3: VPR Routines

Routine	Description
VPRD	Main driver to serve VistA data as XML via RPC routine.
VPRDCRC	Compute CRC32 for VistA data routine.
VPRDGMPL	Problem extract routine for XML.
VPRDGMRA	Allergy/Reaction extract routine for XML.

Routine	Description
VPRDGMRC	Consult extract routine for XML.
VPRDGMV	Vitals extract routine for XML.
VPRDGPF	Patient Record Flags extract routine for XML.
VPRDIB	Integrated Billing (insurance) extract routine for XML.
VPRDJ	Main driver to serve VistA data as JSON via RPC routine.
VPRDJ0	Serve VistA data as JSON via RPC (continued) routine.
VPRDJ00	Patient demographics extract routine for JSON.
VPRDJ01	Orders extract routine for JSON.
VPRDJ02	Problems, Allergies, and Vitals extract routine for JSON.
VPRDJ03	Consults, Clin Procedures, and CLiO extract routine for JSON.
VPRDJ04	Appointments and Visits extract routine for JSON.
VPRDJ04A	Admissions and PTF extract routine for JSON.
VPRDJ05	Medications by order extract routine for JSON.
VPRDJ05V	IV/Infusions extract routine for JSON.
VPRDJ06	Laboratory extract routine for JSON.
VPRDJ07	Radiology and Surgery extract routine for JSON.
VPRDJ08	Text Integration Utilities (TIU) extract routine for JSON.
VPRDJ08A	TIU (continued) extract routine for JSON.
VPRDJ09	Patient Care Encounter (PCE) extract routine for JSON.
VPRDJT	Test VistA data JSON RPC routine.
VPRDLR	Laboratory extract routine for XML.
VPRDLRA	Laboratory extract by accession routine for XML.
VPRDLRO	Lab extract by order/panel routine for XML.
VPRDMC	Clinical Procedures (Medicine) extract routine for XML.
VPRDMDC	CLiO extract routine for XML.
VPRDOR	Orders extract routine for XML.
VPRDPROC	Procedure extract routine for XML.
VPRDPS	Pharmacy extract routine for XML.
VPRDPSI	Inpatient Pharmacy extract routine for XML.
VPRDPSO	Outpatient Pharmacy extract routine for XML.
VPRDPSOR	Medication extract by order routine for XML.


Routine	Description
VPRDPT	Patient demographics extract routine for XML.
VPRDPXAM	PCE V Exams extract routine for XML.
VPRDPXED	PCE V Patient Education extract routine for XML.
VPRDPXHF	PCE Health Factors extract routine for XML.
VPRDPXIM	Immunizations extract routine for XML.
VPRDPXRM	Reminders extract routine for XML.
VPRDPXSK	PCE V Skin Tests extract routine for XML.
VPRDRA	Radiology extract routine for XML.
VPRDRMIM	Functional Independence Measurement (FIM) extract routine for XML.
VPRDSDAM	Appointment extract routine for XML.
VPRDSR	Surgical Procedures extract routine for XML.
VPRDTIU	Text Integration Utility (TIU) extract routine for XML.
VPRDTST	Test VistA data XML RPC routine.
VPRDVSIT	Visit/Encounter extract routine for XML.
VPREHL7	VPR HL7 Message Processor routine.
VPREVNT	VistA event listeners routine.
VPRHS	HealthShare (HS) utilities routine.
VPRHST	Test HS utilities routine.
VPRHST1	Display XML or JSON object for testing.
VPRHSX	HS utilities management Options routine.
VPRIDX	Create AVPR index post install routine.
VPRJSON	Decode/Encode JSON routine.
VPRJSOND	Decode JSON routine.
VPRJSONE	Encode JSON routine.
VPRP2I	VPR*1.0*2 patch post install routine.
VPRP8I	VPR*1.0*8 patch post install routine.
VPRPI	VPR package post install routine.
VPRPATCH	VPR patch post install routine.
VPRPROC	Clinical Procedures interface routine.
VPRSDA	SDA general utilities routine.
VPRSDAL	SDA Allergy utilities routine.

Routine	Description
VPRSDAP	SDA Pharmacy utilities routine.
VPRSDAQ	SDA queries routine.
VPRSDAR	SDA Radiology utilities routine.
VPRSR	Surgery interface routine.
VPRUTILS	VPR utilities routine.

5 Exported Options

[Table 4](#) lists the VPR options:

Table 4: VPR Options

Option Name	Option Text	Description
VPR APPLICATION PROXY	VPR Application Proxy	This option allows the VPR connector proxy access to the VistA system.
VPR TEST JSON	View JSON results	This option allows testers to view JSON-formatted results.
VPR TEST XML	View XML results	This option allows testers to view XML-formatted results.
VPR HS MENU	VPR Health Share Utilities	This menu contains utilities for managing the interface between the VistA Virtual Patient Record (VPR) and the Regional Health Connect (HC) servers.
VPR HS ENABLE	Enable Data Monitoring	This option enables or disables the tracking of patient data changes in the ^VPR("AVPR") index, for retrieval by the Regional Health Connect server.
VPR HS CLEAR LIST	Clear the Update List	<p>This option allows a site to remove entries from the Health Connect update list, if needed.</p> <p> CAUTION: Only use this option at the direction of Health Product Support (HPS) or development staff!</p>

Option Name	Option Text	Description
VPR HS PUSH	Add records to Update List	This option allows a site to add a patient and container to the update list, to force that container to rebuild if it is suspected that the data cache has gotten out of synch.
VPR HS TEST	Test SDA Extracts	This option allows a site to run the data extracts for the Regional Health Connect server from programmer mode, to view the SDA objects.

6 Parameters

[Table 5](#) lists the parameters released with VPR 1.0:

Table 5: VPR Parameters

VPR Parameter	Description
VPR OBS VIEW TYPE	This parameter names, or names types of, Clinical Observations (CLiO) observation collections that reside in the supplemental pages of flowsheets and group multiple, related observations. The CLiO groupings have no names or descriptions that other applications can display. By naming (or typing) these collections, the VPR OBS VIEW TYPE parameter enables applications that are interested in specific groups, such as groups that identify an instance of catheter care (e.g., Foley, IV, or drain), to display the information they contain.
VPR SYSTEM NAME	This parameter holds the local VistA system's name as a hashed hexadecimal (base 16) value. A VPR post-initialization routine calculates this value and places it into the system-level value; it should not be modified.
VPR VERSION	This parameter holds the current version number of the VPR data-extract RPCs in the following form: V.PP , where V is the package version number and PP is the latest patch number.

7 Mail Groups, Alerts, and Bulletins

There are no mail groups, alerts, or bulletins released with VPR 1.0.

8 Public Interfaces

VPR subscribes to many public integration control registrations (ICRs; [Table 6](#)) and provides a set of public remote procedure calls (RPCs; [Table 7](#)).

8.1 Integration Control Registrations

[Table 6](#) lists the VPR Integration Control Registrations (ICRs) that cover usage of which routines and global references.

Table 6: VPR ICRs

ICR	Global Reference	Package
5703	^AUPNPROB	Problem List
2028	^AUPNVSIT	Patient Care Encounter (PCE)
4295	^AUTTHF	Patient Care Encounter (PCE)
7014	^DDE("SDA")	VA FileMan
1865	^DGPM	Registration
3796	^DGS(41.1)	Registration
767	^DGSL(38.1)	Registration
733	^DIC(31)	HINQ
557	^DIC(40.7)	Scheduling
723	^DIC(42)	Registration
5597	^DPT	Registration
5708	^DPT	Registration
6978	^DPT(DFN, "S")	Scheduling
4753	^GMR(120.5)	Gen. Med. Rec. – Vitals
6973	^GMR(120.8)	Adverse Reaction Tracking
3449	^GMR(120.86)	Adverse Reaction Tracking
6974	^GMRD(120.82)	Adverse Reaction Tracking
6975	^GMRD(120.83)	Adverse Reaction Tracking
524	^LAB(61)	Laboratory
525	^LR	Laboratory
1963	^LRO(68)	Laboratory
2407	^LRO(69)	Laboratory
5748	^MDC(704.101)	Clinical Procedures
5809	^MDC(704.102)	Clinical Procedures
5999	^MDC(704.1122)	Clinical Procedures
5995	^MDC(704.116)	Clinical Procedures

ICR	Global Reference	Package
5996	^MDC(704.1161)	Clinical Procedures
5810	^MDC(704.117)	Clinical Procedures
5811	^MDC(704.118)	Clinical Procedures
6985	^MDD(702)	Clinical Procedures
5771	^OR(100)	Order Entry/Results Reporting
6981	^OR(100,D0,4.5)	Order Entry/Results Reporting
5769	^ORA(102.4)	Care Management
2638	^ORD(100.01)	Order Entry/Results Reporting
6982	^ORD(100.98)	Order Entry/Results Reporting
2843	^ORD(101.43)	Order Entry/Results Reporting
5909	^PSB(53.79)	Bar Code Med Admin (BCMA)
4290	^PXRMINDX	Patient Care Encounter (PCE)
2480	^RADPT	Radiology/Nuclear Medicine
2588	^RADPT('AO')	Radiology/Nuclear Medicine
5605	^RARPT	Radiology/Nuclear Medicine
2045	^SCE("AVSIT")	Scheduling
5675	^SRF(130)	Surgery
4872	^SRO(136)	Surgery
2321	^TIU(8925.1)	Text Integration Utilities
5677	^TIU(8925.1)	Text Integration Utilities
5678	^TIU(8926.1)	Text Integration Utilities
4984	^USC(8932.1)	Kernel
6088	^USR(8930)	Authorization/Subscription
6089	^USR(8930.1)	Authorization/Subscription
5772	^WV(790.05)	Women's Health
2248	DGACT	Registration
3860	DGPFAP I	Registration
4457	DGPTPXR M	Registration
2977	GMPLEDT3	Problem List
2741	GMPLUTL2	Problem List
6082	GMRCAP I	Consult/Request Tracking
2980	GMRCGUI B	Consult/Request Tracking
2740	GMRCSLM1	Consult/Request Tracking
1446	GMRVUT0	Gen. Med. Rec. – Vitals

ICR	Global Reference	Package
5702	GMVRPCM	Gen. Med. Rec. – Vitals
5747	ICDEX	DRG Grouper
2503	LR7OR1	Laboratory
2955	LR7OU1	Laboratory
4245	LRPXAPI	Laboratory
4246	LRPXAPIU	Laboratory
4230	MDPS1	Clinical Procedures
5493	ORCD	Order Entry/Results Reporting
3154	ORQ1	Order Entry/Results Reporting
5704	ORQ12	Order Entry/Results Reporting
2467	ORX8 [\$\$OI, \$VALUE]	Order Entry/Results Reporting
3071	ORX8 [\$\$PKGID]	Order Entry/Results Reporting
871	ORX8 [EN]	Order Entry/Results Reporting
2400	PSOORRL	Outpatient Pharmacy
1894	PXAPI	Patient Care Encounter (PCE)
4250	PXPXRM	Patient Care Encounter (PCE)
4811	PXRMMHV	Clinical Reminders
4745	RMIMRP	Functional Independence
3533	SROESTV	Surgery
5546	TIUCNSLT	Text Integration Utilities
3568	TIUCP	Text Integration Utilities
2693	TIULQ	Text Integration Utilities
3058	TIULX	Text Integration Utilities
2864	TIUPP3	Text Integration Utilities
5676	TIUSROI	Text Integration Utilities
4751	TIUSRVLO [\$\$IMGCNT]	Text Integration Utilities
2834	TIUSRVLO [\$\$RESOLVE]	Text Integration Utilities
2865	TIUSRVLO [CONTEXT]	Text Integration Utilities
2944	TIUSRVR1	Text Integration Utilities
6077	TIUVRP	Text Integration Utilities
2324	USRLM	Authorization/Subscription
325	VADPT2	Registration
4677	XUSAP	Kernel

ICR	Global Reference	Package
4911	XUSTAX	Kernel

8.2 Application Programming Interfaces

VPR has no *public* VPR Application Programming Interfaces (APIs), parameters, or variables for use by any other VistA products. VPR is intended to be called by external applications via Remote Procedure Calls (RPCs).

8.3 Remote Procedure Calls

[Table 7](#) lists the remote procedure calls (RPCs) released with VPR 1.0:

Table 7: VPR Remote Procedure Calls

Remote Procedure Call	M Entry Point	Category
VPR GET CHECKSUM	CHECK^VPRDCRC	Supporting RPC
VPR DATA VERSION	VERSION^VPRD	Supporting RPC
VPR GET PATIENT DATA	GET^VPRD	Data Extract RPC
VPR GET PATIENT DATA JSON	GET^VPRDJ	Data Extract RPC

8.4 HL7 Messaging and Protocols

VPR does *not* send or receive any Health Level 7 (HL7) messages. VPR adds a listener to the following four HL7 event protocols:

Table 8: VPR HL7 Event Protocols and Associated Listeners

Event Protocol	Listener
DGPF PRF ORU/R01 EVENT	VPR DGPF EVENTS
RMIM DRIVER	VPR RMIM EVENTS
VAFC ADT-A08 SERVER	VPR ADT-A08 CLIENT

VPR also monitors the following *non*-HL7 event protocols:

Table 9: VPR Non-HL7 Event Protocols and Associated Listeners

Event Protocol	Listener
DG FIELD MONITOR	VPR DG UPDATES
DGPM MOVEMENT EVENTS	VPR INPT EVENTS

Event Protocol	Listener
FH EVSEND OR	VPR XQOR EVENTS
GMPL EVENT	VPR GMPL EVENT
GMRA ASSESSMENT CHANGE	VPR GMRA ASSESSMENT
GMRA ENTERED IN ERROR	VPR GMRA ERROR EVENTS
GMRA SIGN-OFF ON DATA	VPR GMRA EVENTS
GMRC EVSEND OR	VPR XQOR EVENTS
IBCN NEW INSURANCE EVENTS	VPR IBCN EVENTS
LR70 AP EVSEND OR	VPR LRAP EVENTS
LR70 CH EVSEND OR	VPR XQOR EVENTS
OR EVSEND FH	VPR NA EVENTS
OR EVSEND GMRC	VPR NA EVENTS
OR EVSEND LRCH	VPR NA EVENTS
OR EVSEND ORG	VPR XQOR EVENTS
OR EVSEND PS	VPR NA EVENTS
OR EVSEND RA	VPR NA EVENTS
OR EVSEND VPR	VPR XQOR EVENTS
PS EVSEND OR	VPR XQOR EVENTS
PXK VISIT DATA EVENT	VPR PCE EVENTS
RA EVSEND OR	VPR XQOR EVENTS
SCMC PATIENT TEAM CHANGES	VPR PCMM TEAM
SCMC PATIENT TEAM POSITION CHANGES	VPR PCMM TEAM POSITION
SDAM APPOINTMENT EVENTS	VPR APPT EVENTS

8.5 Web Services

VPR simply produces arrays of data strings. VPR is called by external clients, but the VPR application does *not* include or export any web services of its own.

9 Standards and Conventions Exemptions

The *Standards and Conventions (SAC)* document is a set of guidelines and standards that application developers *must* follow. Through a process of quality assurance, software is reviewed

with respect to SAC guidelines as set forth by the Standards and Conventions Committee (SACC).

The SACC may grant exemptions from compliance with a particular section of the SAC for a specified timeframe.

There are no Standards and Conventions (SAC) exemptions with VPR 1.0.



REF: For more information on the SAC or SAC exemptions, see the SACC intranet SharePoint site.

9.1 Internal Relationships

There are no VPR routines, files, or options that *cannot* function independently.

9.2 Software-Wide Variables

VPR does *not* create any software-wide variables.

10 Global Journaling and Placement

The VPR SUBSCRIPTION (#560) file is located in its own global, ^VPR(. The update list accumulates in the ^VPR(“AVPR”) index, so it can be managed as needed.

11 Security

11.1 Security Menus and Options

VPR does *not* distribute any security menus or options.

11.2 Security Keys and Roles

VPR does *not* distribute any security keys.

11.3 File Security

File number ranges for VPR are **560** through **564**. Currently, only the VPR SUBSCRIPTION (#560) file has been released.

[Figure 2](#) lists the *recommended* file security settings for access to the VPR SUBSCRIPTION (#560) file:

Figure 2: File Security—Recommended VPR File Security Access

FILE SECURITY ACCESS		Sep 25, 2018 11:14					PAGE 1
NAME	NUMBER	DD ACCESS	RD ACCESS	WR ACCESS	DEL ACCESS	LAYGO ACCESS	AUDIT ACCESS
VPR SUBSCRIPTION	560	@	@	@	@	@	@

11.4 Electronic Signatures

VPR does *not* use any electronic signatures.

11.5 Secure Data Transmission

VPR does *not* itself send any data transmissions or make external calls; it is the application being called.

12 Archiving

VPR has no data archiving capabilities.

13 Non-Standard Cross-References

VPR does *not* use any *non*-standard or special cross-references.

14 Troubleshooting

This section anticipates any problems, issues, or items that a user may need assistance with and provide guidance to the extent possible. It includes any general troubleshooting tips.

The Virtual Patient Record (VPR) software is read-only, so that limits what can go wrong.

14.1 Menus and Options

Use the options located on the **VPR Health Share Utilities** [VPR HS MENU] menu to help troubleshoot the VPR software. For example, use the **Test SDA Extracts** [VPR HS TEST] option to run the data extracts for the Regional Health Connect server from programmer mode, to view the SDA objects.

Use the following VPR options to view XML and JSON results:

- **View XML results** [VPR TEST XML]
- **View JSON results** [VPR TEST JSON]



REF: These two “view results” options are standalone and *not* located on the VPR HS MENU.



REF: For more information on the VPR options, see the “[Exported Options](#)” section.

14.2 Protocol Events and Listeners

If any updates are *not* going to HealthShare (HS), the site should check the protocol events and listeners included in this manual. For example, with the Computerized Patient Record System (CPRS) software, it was found that the protocol listeners can be “kicked off” the events if other applications are *not* careful when they update those events in their own patches.



REF: For more information on the VPR protocol event and listeners, see the “[HL7 Messaging and Protocols](#)” section.

14.3 Special Instructions for Error Correction

VPR is read-only and makes no changes to the VistA database. If an error is found in the error trap from a VPR call, it is generally due to hitting older data that may be incomplete or does *not* conform to current application requirements.

Sites should review any errors, and address those that are due to bad data. The HealthShare (HS) utility traps M errors when they occur. It then continues with the next record to process, so it may not be obvious at the time that errors occurred. If bad data is corrected, sites can use the **Add records to Update List [VPR HS PUSH]** option on the **VPR Health Share Utilities [VPR HS MENU]** menu to get the record pulled into HS.

Software errors should still be reported via the usual methods ([Enterprise Service Desk](#) or [YourIT](#)), as VistA Maintenance is currently supporting the legacy RPCs.

14.4 Enterprise Service Desk and Organizational Contacts

For Information Technology (IT) support 24 hours a day, 365 days a year call the VA Enterprise Service Desk:

- Phone: **855-673-4357** or **888-326-6780**
- Enter an **Incident** or **Request** ticket (**YourIT**) in Information Technology Service Management (ITSM) **ServiceNow** system via the shortcut on your workstation.

15 Glossary

Table 10: VPR Glossary of Terms and Acronyms

Term	Description
CLiO	Clinical Observations
CRC	Cyclic Redundancy Check
DBIA	Database Integration Agreement
EDIS	Emergency Department Integration Software
EHRM	Electronic Health Record Modernization
EPMO	Enterprise Program Management Office
HC	InterSystems' Health Connect
hi ²	Health Informatics Initiative
HMP	Health Management Platform
HS	InterSystems' HealthShare.
ICR	Integration Control Registration
IV	Intravenous
JLV	Joint Legacy Viewer
JSON	JavaScript Object Notation
KIDS	Kernel Installation and Distribution System
MPI	Master Patient Index
NPM	National Patch Module
NwHIN	Network Nationwide Health Information Network
OIT	Office of Information and Technology
PCE	Patient Care Encounter
PS	Product Support
PTF	Patient Treatment File
SAC	Standards and Conventions
SDA	Summary Data Architecture
UID	Universal Identifier
RPC	Remote Procedure Call
VHIE	Veterans Health Information Exchange
VistA	Veterans Health Information System Technology Architecture

Term	Description
VLER	Virtual Lifetime Electronic Record
VPR	Virtual Patient Record
XML	Extensible Markup Language