



# **Care Management**

**Care Management within the HealthVet Desktop**

**Clinician Dashboard**

**Nurse Dashboard**

**Sign List**

**Query Tool**

# **Technical Manual**

**Version 1.8**

**July 2016**

**Department of Veterans Affairs  
Office of Information and Technology (OIT)  
Enterprise Program Management Office (EPMO)**



## Revision History

Date	Patch	Page	Description	Project Manager	Technical Writer
6/16	ORRC*1*8	1,37-40,43	Added errors encountered during installation and instructions how to change shortcut icon. Applied recommended changes on CM/JRE installation process. Updated Java Baseline version to 1.8. Also applied recommended changes on CM VistA installation procedures. Also revised installation procedures and updated software versions.	Jay Singh	J. Torreno / T. Jackson
6/07	ORRC*1*7	49	Added instructions for determining HeV version	Tim Landy	JoAnn Green
6/07	ORRC*1*7	46, 50	Added troubleshooting info: error msgs for wrong jre and mismatch of client and server	Tim Landy	JoAnn Green
5/07	ORRC*1*7	7, 33	Added information about ORRCMM CM CLINICIAN NURSE, ORRCMM CM ALL, and ORRCMM TROUBLE-SHOOTER	Tim Landy	JoAnn Green
4/07	ORRC*1*7	9	Added description of new routine, ORRCY7, to Routine section	Tim Landy	JoAnn Green
3/07	ORRC*1*7	1, 38	Changed references to JRE version from 1.4.1 to 1.4.1_12	Tim Landy	JoAnn Green
1/07	ORRC*1*5	9	Added description of new routine, ORRCOA, to Routine section	Tim Landy	JoAnn Green
12/06	ORRC*1*2	36	Added info describing sign-on modifications	Tim Landy	JoAnn Green
11/06	ORRC*1*2	3	In the Time-out section, added VistALink Time-out and RPC Time-Out sections.	Tim Landy	Bob Sutton
6/06	ORRC*1*3	3-4	Replaced "CM" with "ORRC" in documentation and installation filenames.	Tim Landy	Bob Sutton
4/05	ORRC*1*3	25-26	Added info about two new RPCs.	Tim Landy	Cheryl Walton

<b>Date</b>	<b>Patch</b>	<b>Page</b>	<b>Description</b>	<b>Project Manager</b>	<b>Technical Writer</b>
12/04	N/A	Whole manual	Updated to conform to new standard operating procedure (SOP) for displaying sensitive patient data.	Tim Landy	Cheryl Walton
9/04	ORRC*1*3	22	Added info about new RPC, ORRC_SYSID.	Tim Landy	Cheryl Walton
9/04	N/A	11	Updated explanation of alert notifications.	Tim Landy	Cheryl Walton



## Table of Contents

<b>1 Introduction.....</b>	<b>1</b>
1.1 Related Manuals.....	1
1.2 Related Web Sites .....	1
<b>2 General Information .....</b>	<b>2</b>
2.1 Installation.....	2
2.2 System Performance Capacity .....	2
2.2.1 Scaling Guide: Memory and CPU .....	2
2.2.2 Disk Space .....	2
2.2.3 Timeouts .....	3
2.2.4 System Response Time .....	3
<b>3 Parameters.....</b>	<b>6</b>
3.1 HealtheVet Desktop (XHD) Parameters .....	6
3.2 Care Management (ORRC) Parameters .....	6
3.3 Existing Parameters Used .....	7
<b>4 Routines .....</b>	<b>8</b>
4.1 Care Management Routines .....	8
4.1.1 Care Management Routine Definitions .....	8
4.2 HealtheVet Desktop Routines .....	9
4.2.1 HealtheVet Desktop Routine Definitions .....	9
4.3 Order Entry/Results Reporting Routines.....	9
4.3.1 Order Entry/Results Reporting Routine Definitions .....	9
<b>5 Alert Notifications .....</b>	<b>11</b>
5.1 Alert Notifications in CPRS and Care Management.....	11
5.1.1 Alert Notifications in CPRS and the Care Management Clinician Dashboard .....	12
5.1.2 Alert Notifications in CPRS and the Care Management Nurse Dashboard.....	15
<b>6 Files and Globals .....</b>	<b>18</b>
6.1 Globals .....	18
6.2 Files.....	18
6.2.1 Files .....	18
6.2.2 Existing (Updated) Files .....	20
<b>7 Exported RPCs.....</b>	<b>22</b>
7.1 Care Management RPCs .....	22
7.2 HealtheVet Desktop RPCs .....	26
<b>8 Exported Options .....</b>	<b>29</b>
8.1 Care Management Options .....	29
8.2 HealtheVet Desktop Options .....	31
8.3 Including Care Management Options in Users' Menu Trees .....	31
8.4 Assigning Care Management Perspectives to Users .....	31
8.4.1 Using the CPRS Configuration (IRM) Menu.....	32
8.4.2 Using the General Parameter Tools [XPAR MENU TOOLS] menu .....	33
8.5 Assigning HealtheVet Desktop Default Perspectives to Users.....	34
<b>9 Care Management Security.....</b>	<b>35</b>

9.1	Authentication .....	35
9.2	Security Keys.....	35
9.2.1	ORELSE .....	35
9.2.2	ORES .....	35
9.2.3	ROR VA HEPC USER .....	36
9.3	File Security.....	36
<b>10</b>	<b>Java and the HealtheVet Desktop .....</b>	<b>37</b>
10.1	HealtheVet Desktop Client .....	37
10.2	The Java Virtual Machine (JVM) and Java Runtime Environment (JRE) .....	37
10.2.1	Installing the JVM .....	37
10.3	Jar Files .....	37
10.4	Plug-ins .....	38
10.5	The HealtheVet Desktop Batch and Configuration File .....	38
10.5.1	Creating a Shortcut .....	38
10.5.2	Launching the Batch File .....	38
10.6	The Module Update Manager (MUM).....	39
10.6.1	How The MUM Works:.....	39
10.7	The Settings File (Suggested Name: Config.settings) .....	39
<b>11</b>	<b>Troubleshooting .....</b>	<b>42</b>
11.1	Showing Details of an Error .....	42
11.2	Common Errors .....	42
11.2.1	A Plug-in Update is Currently in Progress .....	42
11.2.2	Error Trying to Install Required System Updates .....	43
11.2.3	A Plug-in update has failed on this workstation.....	43
11.3	Troubleshooting the Go to Chart Feature.....	43
11.4	General Troubleshooting .....	44
11.4.1	The Log Window .....	44
11.4.2	CLIENT / SERVER mismatch error that occurs when the BUILD is not in Vista.....	44





# 1 Introduction

---

The *Care Management Technical Manual* provides technical information for managing and troubleshooting the Care Management software package.

Patch ORRC\*1.0\*8 enhances the functionality of the Care Management application by supporting the co-existence of the Clinician and the Nursing Dashboard.

In support of Section 508 Standards, Subpart B, '1194.21, paragraph (i), a theme choice for users with limited color perception is also included in this patch, as well as several fixes to enhance the 508 compliance of the Care Management application.

**Background Information.** The HealtheVet Desktop is an application framework that hosts the Veterans Health Administration's (VHA) new generation of clinical applications. It includes The Module Update Manager (MUM), which is an advanced utility for updating local workstations. This distribution of HealtheVet Desktop also includes the modules that make up the four Care Management perspectives (Clinician Dashboard, Nurse Dashboard, Sign List, and Query Tool). Eventually, the HealtheVet Desktop will host most VHA clinical applications.

**Architectural Scope.** The HealtheVet Desktop is a Java Swing client and requires the Java Runtime Environment (JRE) 8 (32bit) or greater on desktop workstations. In addition, HealtheVet Desktop implementations require the VistALink version 1.5 software package, which provides a transport layer that enables Java applications such as the HealtheVet Desktop to communicate with M-based applications.

The HealtheVet Desktop includes a feature that enables you to access the CPRS patient chart from within the HealtheVet Desktop interface. To use this feature, your site needs a properly configured Sentillion Vault and users need to have the Sentillion desktop components installed on their desktop machines. The Go-to-Chart feature also requires a CCOW-compliant version of CPRS (CPRS version 29 or later).

## Recommended Users

- Department of Veterans Affairs Medical Center (VAMC) Information Resources Management (IRM) staff
- Department of Veterans Affairs Clinical Application Coordinators (CACs)

## 1.1 Related Manuals

- Care Management User Manual                      ORCC\_1\_8\_0\_UM .pdf
- Care Management Installation Guide              ORCC\_1\_8\_0\_IG.pdf

## 1.2 Related Web Sites

- Care Management Home Page- <http://vista.med.va.gov>

## 2 General Information

---

### 2.1 Installation

The *Care Management Installation Guide* provides detailed instructions for installing and configuring the HealtheVet Desktop and Care Management software package. Care Management manuals are available on the VHA Software Document Library (<http://www.va.gov/vdl>) and via FTP in the Office of Information Field Office (OIFO) ANONYMOUS.SOFTWARE directories listed below:

OIFO	FTP Address	Directory
Albany	ftp.fo-albany.med.va.gov	anonymous.software
Hines	ftp.fo-hines.med.va.gov	anonymous.software
Salt Lake City	ftp.fo-slc.med.va.gov	anonymous.software
VistA Download Site	download.vista.med.va.gov	anonymous.software

### 2.2 System Performance Capacity

#### 2.2.1 Scaling Guide: Memory and CPU

Workstations should comply with VA Desktop Minimum Acceptable Configurations <http://vaww.vairm.vaco.va.gov/VADesktop>. As with all applications on multi-use systems, other programs—and their activities—may substantially impact the performance of the HealtheVet Desktop. In initial tests, desktops running only Care Management allocate between 35 and 60 MB of RAM. The RAM overhead for Java applications is substantial compared with that of other Windows applications.

#### 2.2.2 Disk Space

Care Management and the HealtheVet Desktop consume roughly 30 MB of disk space. This includes several third-party libraries distributed as part of the client software. We expect the amount of disk space used by Care Management and HealtheVet Desktop to increase slowly as desktop plug-ins are added.

##### 2.2.2.1 Query Tool

###### 2.2.2.1.1 Permanent Storage

The Care Management Query Tool uses the same M-based storage files that the CPRS Query Tool uses. These files store the custom query definitions that users produce. Because these definitions are relatively small, and because only a small number of users should have access to the Query Tool, we expect these files to grow slowly.

**Note:** For more information about these files, see page three of the CPRS Query Tool Installation Guide. (This guide is available on the CPRS page of the VDL).

**Note:** Temporary Storage

Like the CPRS Query Tool, the Care Management Query Tool makes extensive use of the ^TMP storage global while executing and displaying completed queries. Users who execute queries with a large number of result objects could consume a large amount of temporary storage. Temporary storage requirements could further increase if users sort the results of large queries. (However, Care

Management releases all ^TMP storage for the Query Tool each time users go back to the query-selection screen.)

The Query Tool does not cap the size or scope of queries, and temporary storage usage did not cause problems for Alpha test sites that used the Query Tool. However, *we urge you to consider carefully the number of users who can access the Query Tool and to communicate to these users appropriate precautions for using the tool.*

## 2.2.3 Timeouts

The HealthVet Desktop and the CPRS GUI use the same system timeout, which you can set via the ORWOR TIMEOUT CHART parameter. The default is users' DTIME settings. You can set the timeout countdown via the ORWOR TIMEOUT COUNTDOWN parameter. The default is 20 seconds.

### 2.2.3.1 VistALink Socket Timeout

In VistALink 1.0, the socket timeout defaulted to (10 \* 1000 \* the M-side "HEARTBEAT RATE" VL site parameter). The minimum value of HEARTBEAT RATE is 180, resulting in a minimum socket timeout of 1,800,000 ms (1800 seconds).

In VistALink 1.5, the default is always set to 10000 ms (10 seconds).

In order to avoid RPC timeout issues with VistALink 1.5, Care Management overrides the default 10000 ms set by VistALink and sets the socket timeout to 300,000 ms (5 minutes) from within the application. The timeout is set at the connection level.

### 2.2.3.2 RPC Timeout

The default RPC timeout set by the Care Management client code is 300,000 ms (5 minutes). However, currently, Care Management does not use this timeout on the M server side.

## 2.2.4 System Response Time

### 2.2.4.1 Nurse Dashboard

Date ranges for items that appear in the Nurse Dashboard can affect system response times. If users experience long response times, you may need to decrease the default start and stop times that define these date ranges. (On the other hand, if users aren't seeing items on the Nurse Dashboard, or aren't seeing the number of items they need to see, you may need to increase the default start and stop times.)

You can redefine date ranges by setting the following parameters:

- ORRC NURSE EVENT DATE MAX
- ORRC NURSE EVENT DATE MIN
- ORRC NURSE RESULT DATE MAX
- ORRC NURSE RESULT DATE MIN
- ORRC NURSE TEXT ORDER DATE MAX
- ORRC NURSE TEXT ORDER DATE MIN
- ORRC NURSE UNVERIFIED DATE MAX
- ORRC NURSE UNVERIFIED DATE MIN
- ORRC NURSE VITALS DATE MAX
- ORRC NURSE VITALS DATE MIN

These parameters enable you to set date ranges at the user, service, division, and system level. Because user-level date ranges override the date ranges set at all other levels, you may need to set these parameters

at the user level for individual users or instruct individual users to set specific date ranges via the *Preferences* dialog box in the Nurse Dashboard. (The *Care Management User Manual* contains systematic instructions for setting date ranges using the *Preferences* dialog box.)

**Note:** The following table lists the maximum and minimum values users can assign through the Preferences dialog box. These limitations do not exist when you specify date ranges by accessing the parameters directly.

#### Minimum and Maximum Date Ranges

	Desktop Minimum	Desktop Maximum
Events Stop	T-30	T+30
Events Start	T-180	T
Results Stop	T-30	T+30
Results Start	T-180	T
Text Order Stop	T-30	T+180
Text Order Start	T-365	T
Unverified Order Stop	T-30	T+30
Unverified Order Start	T-180	T
Vitals Stop	T-30	T
Vitals Start	T-180	T

### 2.2.4.2 Clinician Dashboard

The Clinician Dashboard uses only one parameter—ORRC ACTIVATION DATE—that could potentially affect your system’s response time. This parameter defines the date after which unacknowledged orders begin accumulating in the Order Acknowledgement file (#102.4). However, this file cannot accumulate orders that were unacknowledged before the date and time you physically set this parameter.

Because this file cannot accumulate orders that were unacknowledged before the day and time you physically set the ORRC ACTIVATION DATE parameter, the likelihood that this parameter can adversely affect your system’s response time is quite low.

### 2.2.4.3 Query Tool

To process queries, the Care Management Query Tool uses an iterative process model much like the one that the CPRS Query Tool uses. When users execute queries, Care Management calls an RPC to save the query definitions in the M database. The Query tool then makes repeated RPC calls to the database, one for every patient it needs to process. Field tests indicate that processing queries in this manner takes from approximately a quarter of a second to four seconds per patient and uses eight to 18 percent of the CPU’s processing power.

**Note:** These figures are based on RUM reports from Puget Sound, Martinez, and San Francisco for the weeks of November 2 and 11, 2003.

Because these are per-patient calculations, you might assume that processing queries for a large patient cohort requires more time and system resources than does processing queries for a small patient cohort (or a subset of a large cohort). This is usually, but not always, the case.

While testing indicates acceptable response times for most queries, in isolated cases, processing for a single patient has taken minutes to complete. Several factors influence the time and resources required to process each patient (including system memory and operating system). However, the number of patient objects the system must evaluate to identify a match is the biggest factor. These objects include the following:

- Number of orders
- Number of documents
- Number of appointments
- Number of consults

The default timeout for a one-patient iteration (RPC call) is five minutes. According to information gathered from field tests, this time limit has covered all known cases where RPC calls take longer than average.

Because tests indicate that CPU utilization has been up to 18 percent per patient iteration, allowing a large number of users to execute simultaneous queries could impact overall system performance. To reiterate, you should carefully consider the number of users whom you allow to use the Query Tool and should give these users proper precautions for doing so.

## 3 Parameters

### 3.1 HealtheVet Desktop (XHD) Parameters

XHD Parameter Name	Description
XHD PRISM ADA S508 NOTICE	Stores a Boolean flag that indicates whether users have received the opportunity to review the Americans with Disabilities Act (Section 508) Notice. This parameter is set to NO by default. After a user has viewed the notice, Care Management sets this parameter to YES.
XHD PRISM DEFAULT PERSPECTIVE	Enables you to set default perspectives. You can specify default perspectives for users, divisions, or systems. The current settings for this parameter are clinicianDashboard, dashboard.nurseDashboard, queryTool, rpclogger, and dashboard.signatureList. The list of default settings will grow as additional programs become available for the HealtheVet Desktop. The default settings are case sensitive. Although <b>VISTA</b> seems to accept the formal names of Care Management perspectives (ORRCMP DASH CLINICIAN, for example) as default settings, if you don't enter default settings exactly as they appear in the preceding list, <b>VISTA</b> will not set your selections as defaults.
XHD PRISM DESKTOP THEME	Enables a 508-compliance feature for those with limited color perception by providing a theme choice alternative that uses symbols in the patient list to convey information that is otherwise conveyed via headlight color.
XHD PRISM PERSPECTIVE SELECTOR	Enables you to specify the perspectives individual users or services can access: ORRCMM CLINICIAN enables users to access the Clinician Dashboard and Sign List perspective; ORRCMM CLINICIAN QUERY enables users to access the Clinician Dashboard, Query Selector, and Sign List perspective; ORRCMM NURSE QUERY enables users to access the Nurse Dashboard, Sign List perspective, and Query Selector; ORRCMM NURSING enables users to access the Nurse Dashboard and Sign List perspective, ORRCMM CM CLINICIAN NURSE enables users to access the Clinician Dashboard, Nurse Dashboard, and SignList perspectives and ORRCMM CM ALL enables users to access the Clinician Dashboard, Nurse Dashboard, SignList, and QueryTool perspectives.
XHD TEST SCALAR PARAMETER	A parameter for integration testing of the HealtheVet Desktop Configuration module. This parameter is not used in production applications.
XHD TEST WP PARAMETERS	A parameter for integration testing of scalar values. This parameter is not used in production applications.

### 3.2 Care Management (ORRC) Parameters

ORRC Parameter Name	Description
ORRC ACTIVATION DATE	A Clinician Dashboard parameter that specifies the date you expect new users to use Care Management. After this date, unacknowledged orders begin accumulating in the Order Acknowledgement file (#102.4). If you change this date, orders that precede the new date are removed.
ORRC DASHBOARD PT SELECT LIST	Stores XML-based custom lists, which you set up in the Clinician and Nurse Dashboards. For best results, edit custom lists in the Care Management GUI.
ORRC NURSE EVENT DATE MAX	Events with this or previous dates are added to the Nurse Dashboard. (Events that appear on the Nurse Dashboard have dates that fall between ORRC NURSE EVENT DATE MAX and ORRC NURSE EVENT DATE MIN.)
ORRC NURSE EVENT DATE MIN	Events with this or following dates are added to the Nurse Dashboard. (Events that appear on the Nurse Dashboard have dates that fall between ORRC NURSE EVENT DATE MAX and ORRC NURSE EVENT DATE MIN.)

ORRC Parameter Name	Description
ORRC NURSE RESULT DATE MAX	Results with this or previous dates are added to the Nurse Dashboard. (Results that appear on the Nurse Dashboard have dates that fall between ORRC NURSE RESULT DATE MAX and ORRC NURSE RESULT DATE MIN.)
ORRC NURSE RESULT DATE MIN	Results with this or following dates are added to the Nurse Dashboard. (Results that appear on the Nurse Dashboard have dates that fall between ORRC NURSE RESULT DATE MAX and ORRC NURSE RESULT DATE MIN.)
ORRC NURSE TEXT ORDER DATE MAX	Text orders with this or previous dates are added to the Nurse Dashboard. (Text orders that appear on the Nurse Dashboard have dates that fall between ORRC NURSE TEXT ORDER DATE MAX and ORRC NURSE TEXT ORDER DATE MIN.)
ORRC NURSE TEXT ORDER DATE MIN	Text orders with this or following dates are added to the Nurse Dashboard. (Text orders that appear on the Nurse Dashboard have dates that fall between ORRC NURSE TEXT ORDER DATE MAX and ORRC NURSE TEXT ORDER DATE MIN.)
ORRC NURSE UNVERIFIED DATE MAX	Unverified orders with this or previous dates are added to the Nurse Dashboard. (Unverified orders that appear on the Nurse Dashboard have dates that fall between ORRC NURSE UNVERIFIED DATE MAX and ORRC NURSE UNVERIFIED DATE MIN.)
ORRC NURSE UNVERIFIED DATE MIN	Unverified orders with this or following dates are added to the Nurse Dashboard. (Unverified orders that appear on the Nurse Dashboard have dates that fall between ORRC NURSE UNVERIFIED DATE MAX and ORRC NURSE UNVERIFIED DATE MIN.)
ORRC NURSE VITALS DATE MAX	Vitals with this or previous dates are added to the Nurse Dashboard. (Vitals that appear on the Nurse Dashboard have dates that fall between ORRC NURSE VITALS DATE MAX and ORRC NURSE VITALS DATE MIN.)
ORRC NURSE VITALS DATE MIN	Vitals with this or following dates are added to the Nurse Dashboard. (Vitals that appear on the Nurse <b>Dashboard</b> have dates that fall between ORRC NURSE VITALS DATE MAX and ORRC NURSE VITALS DATE MIN.)

### 3.3 Existing Parameters Used

The HealtheVet Desktop and Care Management software package also uses the following Order Entry/Results Reporting parameters:

#### 3.3.1 Order Entry/Results Reporting (OR) Parameters

Parameter Name	Description
ORHEPC ABNORMAL START	The date that the Hepatitis C patches were installed. The Query Tool uses this date to determine which abnormal results it will return. (The Query Tool will not return abnormal results that occurred before this date.)
ORPF ACTIVE ORDERS CONTEXT HRS	Controls how long orders remain on the Nurse Dashboard after they have been completed.
ORWOR TIMEOUT CHART	This value overrides users' DTIME for HealtheVet Desktop and the Windows version of the CPRS chart (CPRSChart.exe). This value is measured in seconds (up to 1,000,000 seconds).
ORWOR TIMEOUT COUNTDOWN	The number of seconds (up to 1,000) used for the timeout countdown.
ORB DELETE MECHANISM	A set of codes used to determine how notifications are deleted at a site.

## 4 Routines

---

### 4.1 Care Management Routines

#### 4.1.1 Care Management Routine Definitions

Following is a brief definition of these routines.

- **ORRCACK:** Creates a new entry in the Order Acknowledgement file (#102.4) when new results are posted and returns to users' dashboards a list of orders for which there are new results that have not yet been acknowledged. When users acknowledge these results, this routine returns to the Order Acknowledgement file relevant order-related dates.
- **ORRCDPT:** Based on a number of items (including, but not limited to: user ID, unacknowledged results, unsigned orders, and incomplete tasks) returns a list of relevant patients to users' Clinician Dashboards.
- **ORRCDPT1:** Based on a variety of items—including, but not limited to, user ID, unacknowledged results, due tasks, appointments, unverified orders, active text orders, and recent vitals—returns a list of relevant patients to users' Nurse Dashboards.
- **ORRCEVT:** An event utility that returns to users' dashboards a list of patients who have events with associated ADT alerts. It also returns for each of these patients past and future appointments and document text that is associated with patient visits. In addition, this routine clears visit-related alerts.
- **ORRCLNP:** Provides person functions for Care Management. Among many other things, ORRCLNP uses the ORRC SYSID RPC to call XUPROD, which is a new (with patch XU\*8\*284) routine that identifies whether systems are production or non-production systems.
- **ORRCOA:** Order acknowledgement query utility that displays, via List Manager, the acknowledged orders, either by order number or for a provider.
- **ORRCOR:** Provides Order Entry/Results Reporting data for Care Management—including the list of patients who have orders that require users' signatures, the list of active orders that are unverified by nursing, a detailed display of these orders (including the first line of order text), and the status of these orders.
- **ORRCQLPT:** Provides CPRS Query Tool libraries for Care Management.
- **ORRCSIG:** A signature utility that returns to users' dashboards a patient-specific, detailed list of unsigned orders and documents. This routine also marks as complete items signed in Care Management.
- **ORRCTIU:** Provides TIU (Text Integration Utility) data for Care Management
- **ORRCTSK:** A Patient Task file (#102.3) utility that returns to each user a list of his or her patients who have tasks that are due now. It also provides details about tasks, creates new tasks, edits existing tasks, marks tasks as completed (by the user), and provides a list of task subjects that have been used previously.
- **ORRCVIT:** A vitals utility that uses the date range for vitals to return recent vitals measurement identifiers. It also returns values for specified vitals, such as blood pressure, temperature, and respiration.
- **ORRCXQ:** An alert utility for Care Management.
- **ORRCLPT:** A set of library functions that resolve patient demographics.
- **ORRCY7:** Post-install routine for patch 7.
- **ORRCY08:** Post-install routine for patch 8; Maintains server Care Management versioning.
- **ORRCYP, ORRCYPRE, and ORRCYP01:** Installation routines. These routines are not needed after Care Management is successfully installed. (The installation program automatically deletes ORCYP and ORRCYPRE.)



**Note:** KIDS automatically deletes ORRCYP and ORRCYPRE during installation.

## 4.2 HealtheVet Desktop Routines

### 4.2.1 HealtheVet Desktop Routine Definitions

Following is a brief definition of these routines.

- XHDAUTH: An authentication utility that performs several tasks—including, but not limited to, authenticating users based on their access/verify pair and getting user demographic information.
- XHDLSITE: Retrieves site-related information such as site identifiers, division names, and integration names.
- XHDLXM: Makes XML-based library calls for Care Management.
- XHDPAR: Gets a list of all parameter definitions.
- XHDPARAM: Sets parameter values.
- XHDPCAT: Performs server configuration tasks for HealtheVet Desktop—including, but not limited to, the following: inserts parameter categories, adds parameters to categories, creates primary and sub categories, updates parameter categories, removes sub categories from parent categories, and deletes parameter categories and all descendants.
- XHDPDEF: Loads parameters.
- XHDPEDIT: Makes server-configuration calls for HealtheVet Desktop.
- XHDPMUT: Transforms leaf entries in the configuration tree into an Extensible Markup Language (XML) document, which the HealtheVet Desktop then uses.
- XHDPTREE: Transforms the main branches of the configuration tree into an Extensible Markup Language (XML) document, which the HealtheVet Desktop then uses.
- XHDTST: Makes test calls for HealtheVet Desktop.
- XHDX: A HealtheVet Desktop configuration utility that lists in each user's dashboard the available perspectives. This routine also assigns perspectives to users.
- XHDYP, XHDYP01, XHDYPRE: Routines for installing HealtheVet Desktop. These routines are not needed after the Care Management software package is successfully installed. (The installation routine automatically deletes XHDYP and XHDYPRE.)

**Note:** KIDS automatically deletes XHDYP and XHDYPRE during installation.

## 4.3 Order Entry/Results Reporting Routines

### 4.3.1 Order Entry/Results Reporting Routine Definitions

- ORMGMRC: Processes ORM consult messages.
- ORMLR: Processes ORM lab messages.
- ORMRA: Processes radiology messages.
- ORQRY: An order-query utility for Order Entry/Results Reporting.
- ORQRY01: An Order Entry/Results Reporting query utility that returns a list of patients who have clinic appointments that fall within a specified date range.
- ORRHQC: A CPRS Query Tool utility.
- ORRHQC1: A CPRS Query Tool utility that performs several tasks—including, but not limited to, the following: performs queries for the standard iterator, saving off the names of sensitive patients; performs queries for the current sensitive patient iterator; removes sensitive patients from the patient list; and screens sensitive patients.
- ORRHCU: A CPRS Query Tool utility that performs several tasks—including, but not limited to the following: converts relative date ranges to FileMan dates, returns the current fiscal or calendar

quarter, returns external values for a set of IENs, lists patients from the registry, lists available local registries, and returns a list of defined display fields.

- ORRU: Provides scroll-mode utility subroutines.

## 5 Alert Notifications

---

### 5.1 Alert Notifications in CPRS and Care Management

Care Management uses alert notifications to display headlights in some—but not all—dashboard columns. For example, it does not use alert notifications to display headlights in the Clinician Dashboard **Result** column, but it does use them to display headlights in the Clinician Dashboard **Event** column. However, although Care Management does not use alert notifications to display headlights in the Clinician Dashboard's **Result** column, if users acknowledge results in Care Management and the users have alert notifications for these results in CPRS, their actions clear the alert notifications in CPRS.

Actions that users take in Care Management cause CPRS to process alert notifications according to existing CPRS parameter settings. For example, suppose you have set alert notification parameters in CPRS to notify specific users if a patient makes an unscheduled clinic visit. Further, suppose that you have set the ORB DELETE MECHANISM parameter to A (all recipients), which clears the alert notification for everyone after any one of these specified recipients has viewed it. If one of the specified recipients views an alert notification for an unscheduled clinic visit in Care Management, the user's action causes CPRS to clear this alert notification for all of the specified recipients.

The following tables explain the conditions that cause headlights to appear in the Clinician and Nurse Dashboards, actions that remove the headlights (usually after users refresh or close and then open their dashboard), and the effect these actions have on alert notifications in CPRS.

## 5.1.1 Alert Notifications in CPRS and the Care Management Clinician Dashboard

CM Column	What Turns On the CM Headlight?	What Action Turns Off the CM Headlight?	For Whom Is the CM Headlight Removed?	What Are the Associated CPRS Alert(s)?	Does The CPRS Alert Cause the Headlight to Appear in CM?	What Happens to the CPRS Alert?
Result	The user is the ordering provider and to the item ordered (lab, radiology, procedure, consult) has a result available for review and the order occurred after the date specified in the ORRC ACTIVATION DATE parameter	Acknowledge	Removed for ordering provider	Imaging Results Abnormal Imaging Results Imaging Patient Examined Imaging Results Amended Lab Results Abnormal Lab Results (Info) Abnormal Lab Results (Action) Consult/Request Resolution Critical Lab Results (Info) Critical Lab Results (Action) Flagged OI Results-Inpt Flagged OI Results-Outpt Orderer-Flagged Results Stat Results	No No No No No No No No No No No No No	Removed for ordering provider, and adheres to local alert-deletion settings for individual or all recipients (ORB DELETE MECHANISM) Note: Additional information regarding CPRS notifications is located at <a href="http://vista.med.va.gov/cprs/html/itc_notification_and_alert_ref.html">http://vista.med.va.gov/cprs/html/itc_notification_and_alert_ref.html</a>
Task	The uncompleted task is due and the user created the task or the user is the patient's primary or attending provider or is associated with the patient via a patient list (Team/Personal/ Auto Linked)	Complete or delete	Removed for all users when: the task is completed by any user or the creator of the task deletes it	N/A	N/A	N/A
Event (For Events)	The event notification is activated in CPRS and the user is the patient's primary or attending provider	View	Removed for the user only	Admission Discharge Unscheduled Visit Transfer from	Yes Yes Yes	Removed for the user, and adheres to local alert-deletion settings for individual or all recipients (ORB DELETE)

CM Column	What Turns On the CM Headlight?	What Action Turns Off the CM Headlight?	For Whom Is the CM Headlight Removed?	What Are the Associated CPRS Alert(s)?	Does The CPRS Alert Cause the Headlight to Appear in CM?	What Happens to the CPRS Alert?
	or is associated with the patient via a patient list (Team/Personal/ Auto Linked)			Psychiatry	Yes	MECHANISM)
Event (For Other Notifications)	When the alerts are enabled and applicable to the patient in CPRS, and the user has selected the CPRS Default or a custom patient list, alerts for items in the Other Notifications box trigger a headlight to display or when alerts are enabled and	<p>N/A</p> <p>Note: Users cannot act on these alerts from Care Management; they are view only</p> <p>Note: Users must act on alerts for items listed in the <i>Other Notifications</i> display box via CPRS.</p>	<p>No Users</p> <p>Care Management removes a patient from the Dynamic</p>	<p>Deceased Patient</p> <p>All other non-event CPRS alerts (i.e., alerts for unsigned orders, expiring medications, etc.), excluding alerts for items that trigger headlights in the Result column</p> <p>The following result alerts are not displayed for the ordering provider in the Event column because they are</p>	<p>Yes</p> <p>Yes</p>	<p>N/A</p> <p>Note: Users must act on alerts for items listed in the <i>Other Notifications</i> display box via CPRS</p> <p>Note: Additional information regarding CPRS notifications is located at</p>

CM Column	What Turns On the CM Headlight?	What Action Turns Off the CM Headlight?	For Whom Is the CM Headlight Removed?	What Are the Associated CPRS Alert(s)?	Does The CPRS Alert Cause the Headlight to Appear in CM?	What Happens to the CPRS Alert?
	applicable to the patient in CPRS and the user has selected the <b>Dynamic</b> patient list, alerts for items in the <b>Other Notifications</b> box trigger a headlight to appear in the <b>Events</b> column		patient list when a user resolves all other headlights associated with the patient  Users must clear CPRS alerts listed within the Other Notifications display box in CPRS	represented by headlights in the Result column: Lab Results Abnormal Lab Result (Info) Abnormal Lab Results (Action) Critical Lab Result (Info) Critical Lab Results (Action) Consult/Request Resolution Imaging Results Abnormal Imaging Results Imaging Patient Examined Imaging Results Amended Flagged OI Results-Inpt Flagged OI Results-Outpt Orderer-Flagged Results Stat Results		<a href="http://vista.med.va.gov/cprs/html/itc_notification_and_alert_ref.html">http://vista.med.va.gov/cprs/html/itc_notification_and_alert_ref.html</a>
Sign	The user is the expected signer or the user is the expected cosigner or the user is the expected additional signer	Sign	Removed for the user	Unsigned Document  Uncosigned Document  Unsigned Document	No  No  No	Removed for the user after signature

### 5.1.2 Alert Notifications in CPRS and the Care Management Nurse Dashboard

[illegible]

CM Column	What Turns on the CM Headlight?	What Action Turns off the CM Headlight?	For Whom Is the CM Headlight Removed?	What Are the Associated CPRS Alert(s)?	Does the CPRS Alert Cause the Headlight to Appear in CM?	What Happens to the CPRS Alert?
Event	The appointment is scheduled within the date range specified for events and the user's Nurse – Dashboard preferences (associated parameters: ORRC NURSE EVENT DATE MAX and ORRC NURSE EVENT DATE MIN) And the patient appears on the user's Nurse Dashboard	None  Note: controlled by date range settings	N/A	N/A	N/A	N/A
UnVer (Unverified Orders)	The unverified order falls within the date range specified on the orders tab into user's Nurse Dashboard preferences (associated parameters: ORRC NURSE UNVERIFIED DATE MAX and ORRC NURSE UNVERIFIED DATE MIN) And the patient appears on the user's Nurse Dashboard	Verify/Sign	The unverified order falls within the date range specified on the orders tab into user's Nurse Dashboard preferences (associated parameters: ORRC NURSE UNVERIFIED DATE MAX and ORRC NURSE UNVERIFIED DATE MIN) And the patient appears on the user's Nurse Dashboard	Unverified order	No	Removed for the user and adheres to local alert-deletion settings for individual or all recipients (ORB DELETE MECHANISM)



CM Column	What Turns on the CM Headlight?	What Action Turns off the CM Headlight?	For Whom Is the CM Headlight Removed?	What Are the Associated CPRS Alert(s)?	Does the CPRS Alert Cause the Headlight to Appear in CM?	What Happens to the CPRS Alert?
TxOrd (Text Orders)	The patient has uncompleted text orders that fall within the date range specified on the Orders tab in the user's Nurse Dashboard preferences (associated parameters: ORRC NURSE TEXT ORDER DATE MAX and ORRC NURSE TEXT ORDER DATE MIN Or the patient has or that have been completed for fewer hours than specified in the ORPF ACTIVE ORDERS CONTEXT HRS parameter And the patient appears on the user's Nurse Dashboard	Complete/Sign  Note: controlled by date-range settings and parameters	Complete – signed text orders are removed for all users based on the value specified in the All RPF active orders context HRS parameter And active text orders are removed for individual users based on the date range specified in the user's nurse dashboard preferences	N/A	N/A	N/A
Vitals	The vitals measurements were entered within the date range specified for vitals in the user's Nurse Dashboard Preferences (associated parameters: ORRC NURSE VITALS DATE MAX and ORRC NURSE VITALS DATE MIN)  and  the patient appears on the user's Nurse Dashboard	None  Note: Controlled by date-range settings	For individual users based on the date range specified in the user's Nurse Dashboard Preferences	N/A	N/A	N/A

## 6 Files and Globals

---

### 6.1 Globals

HealtheVet Desktop and Care Management use the following globals:

- ^ORA
- ^ORRT
- ^XHD

The ^ORA global holds acknowledgments for results and the ^ORRT global holds tasks. The ^XHD global currently holds parameter categories that the HealtheVet Desktop uses in the *Preferences* dialog. In the future, this global may also hold new files that the HealtheVet Desktop needs for data persistence.

### 6.2 Files

#### 6.2.1 Files

The following table lists the files associated with the globals listed above:

File #	File Name	Root Global	Global Protection
102.3	PATIENT TASK	^ORRT(102.3,	@
102.4	ORDER ACKNOWLEDGEMENT	^ORA(102.4,	@
8935.91	XHD PARAMETER CATEGORY	^XHD(8935.91,	@

##### 6.2.1.1 File Descriptions

###### 6.2.1.1.1 Patient Task (102.3)

The Patient Task file contains the patient-related tasks that users create via the Care Management Nurse and Clinician Dashboards. This file stores all supporting attributes for these tasks and contains information for tracking their cancellation or fulfillment. The following table describes the fields in the Patient Task file and the pointers (if any) that define the relationship between these fields and other files.

Field Number	Field Name	Pointers	Description
.01	CREATED		The date and time the task was created
1	SUBJECT		A description of the task
2	USER	Pointer to New Person file (#200)	The name of the user who created the task for this patient
3	PATIENT	Pointer to Patient file (#2)	The patient to whom this task applies
4	PRIORITY		The priority for accomplishing this task. Values: L – LOW; M - MEDIUM; H – HIGH
5	DUE DATE		The date [and time] by which this task should be completed
6	COMPLETED		Indicates when this task was completed
7	COMPLETED BY	Pointer to New Person file (#200)	The user who marked this task as complete

Field Number	Field Name	Pointers	Description
8	CANCELLED		Indicates when this task was cancelled
9	CANCELLED BY	Pointer to New Person file (#200)	The name of the user who marked this task as cancelled
10	LINKED ITEMS		Multiple identifiers for items that have been linked to this task
1.01	ITEM		A text string that identifies particular items associated with this task

#### 6.2.1.1.2 Order Acknowledgement (102.4)

The Order Acknowledgement file contains acknowledgments captured via the Care Management Clinician or Nurse Dashboard. When results become available for orders, Care Management creates within this file, entries for the ordering provider(s).

It then updates these entries when the providers—or other authorized personnel, such as the nursing staff—use Care Management to acknowledge these results.

Field Number	Field Name	Pointers	Description
.01	ORDER	Pointer to Order file (#100)	The number of an order and results from the Orders file (#100)
2	PROVIDER	Pointer to New Person file (#200)	The name of the provider (from the New Person file (#200)) who placed the order (an individual order can have several different entries in this file, each with a different provider)
3	ACKNOWLEDGED		The date/time that the results of this order were viewed and acknowledged in Care Management

#### 6.2.1.1.3 XHD Parameter Category (8935.91)

The HealtheVet Desktop relies on a variety of modules called plug-ins. Each plug-in can obtain values through a number of related Vista parameters. This file enables plug-in developers to group parameters into logical categories and to associate these categories with the plug-ins to which they apply.

Through this file, plug-in developers can also associate categories with preference pages, which the HealtheVet Desktop uses to make available user-configurable features that correspond to plug-ins. HealtheVet Desktop plug-in developers distribute entries in this file: VA facilities should not alter this file, as doing so can severely compromise the behavior of HealtheVet Desktop plug-ins.

Field Number	Field Name	Pointers	Description
.01	FULL NAME		The name of the parameter category
.02	PLUGIN ID		The identifier of the plug-in to which the category applies (e.g., gov.va.med.hds.prism)
.03	NAME		The name by which the category is known to the outside world
.04	PARENT ID	Pointer to XHD Parameter Category file (#8935.91)	The parent category

Field Number	Field Name	Pointers	Description
.05	PACKAGE ROOT		A Boolean field identifying the root category for a given plug-in
.06	OK TO TRANSPORT		A Boolean field that indicates whether or not it is okay to transport a given Category with a KIDS distribution
1	PREFERENCE PAGE ID		In the Manifest.xml file of a plug-in, the free text identifier of the extension point that maps to the Java class for the preference page associated with this category
2	PARAMETERS		The multiple of parameters for the category
2.01	PARAMETER NAME		The name by which the parameter is identified to the application (e.g., "Look and Feel")
2.02	PARAMETER DEFINITION	Pointer to XHD Parameter Definition file (#8989.51)	The Parameter Definition file (#8989.51) to which the entry applies
3	SUBCATEGORIES		The multiple of subcategories that allows a theoretically infinite nested hierarchy of categories
3.01	SEQUENCE		Specifies the sequence in which a subcategory is presented
3.02	SUBCATEGORY	Pointer to XHD Parameter Definition file (#8989.51)	Holds a reference to the subcategory entry in the Parameter Categories file

## 6.2.2 Existing (Updated) Files

Care Management also uses the following file:

File #	File Name	Root Global	Global Protection
102.21	CPRS QUERY DEFINITION	^ORD(102.21,	@

### 6.2.2.1 File Descriptions

#### 6.2.2.1.1 CPRS QUERY DEFINITION (102.21)

The CPRS query tool provides a mechanism by which clinical users may search for items typically managed by CPRS. A wizard helps users construct the criteria for the limited queries available through this tool.

As its name suggests, the CPRS Query Definition file contains query definitions used to build reports of CPRS items (such as orders, consults, and documents). Each query definition contains a list of constraints, which the query routines use to return a specified subset of CPRS items.

This file also contains report criteria definitions. (A report criterion contains a list of the constraints that apply to it and behaves much like a mini report.) Care Management updates the Scheduled/Due Activity Report query for the Find Orders and Find Consults criteria as follows:

1. From:  
Find Orders...where the order status is PENDING or SCHEDULED  
Find Consults...where the consult status is PENDING or SCHEDULED
2. To:  
Find Orders...where the order status is PENDING  
Find Consults...where the consult status is ACTIVE or PENDING or SCHEDULED

Users select and modify report criteria when they build custom reports.

Finally, this file stores a list of fields to be displayed after a user runs a query. (The query produces a columnar report with selected display items in each column.)

The following table describes the CPRS Query Definition fields used by Care Management. It also describes the pointers (if any) that define relationships between these fields and other files.

Field Number	Field Name	Pointers	Description
.01	NAME		The name of the report or criterion; personally created reports are stored as RPTUduz user-created-name, which assures unique names for personal custom reports
2	DISPLAY TEXT		Contains the text (for selecting a criterion or a report) displayed in the list box
3	DISABLE		Contains the text that is displayed when the definition is disabled
4	TYPE		Specifies whether the record is a report or a criterion
5	OWNER	Pointer to New Person file (#200)	Contains the name of the owner of a custom report
6	PARENT	Pointer to CPRS Query Definition file (#102.21)	Identifies the parent criterion entry (criteria may appear in a hierarchy)
7	TAG		Contains an integer matching the Windows control Tag property that references this criterion
10	QUERY TEXT		A multiple that allows the definition of a sequence of captions comprising the default text of a query description
20	FORMAT		A multiple containing formatting information for report columns

## 7 Exported RPCs

---

### 7.1 Care Management RPCs

Care Management distributes the following remote procedure calls.

#### 7.1.1 ORRC ALERTS BY PATIENT

The ORRCXQ routine uses this RPC to return a list of patients' non-ADT (Admission, Discharge, or Transfer) alerts. Items in the list include the following details: ID (the item's alert-identifier string prefixed by NOT, text, and date (YYYYMMDDHHMMSS)). It takes as input two pointers: one to the Patient file and the other to the New Person file.

#### 7.1.2 ORRC UNSIGNED BY ID

The ORRCSIG routine uses this RPC to return to users' Clinician Dashboard a list of orders and documents. For orders, it returns the following details: order ID, title, and date (in Health Level 7—HL7—format). For documents, it returns a line of report text. This RPC takes as input a list that includes each item for which it is to return details. Items on this list take the following form: XXX:###, where XXX indicates item type (order or document) and ### is a pointer to one of two files (the Orders file or the TIU Documents file).

#### 7.1.3 ORRC DASHBOARD PATIENTS

The ORRCDPT routine uses this RPC to return to each user's dashboard a list of patients who are relevant to the user. It takes as input several lists—including the provider list (New Person file #200), the OE/RR Team list (OE/RR List file #100.21), the Specialty list (Facility Treating Specialty file #45.7), the Ward list (Ward Location file #42), and the Clinic list (Hospital Location file #44). In addition to relevant patient names, this RPC returns patient ID information such as social security number, date of birth, and age.

#### 7.1.4 ORRC PHY DASHBD PATIENTS

The ORRCDPT routine uses this RPC to return to users' Clinician Dashboards a list of relevant patients who have recent activity (such as new results or ADT [Admission Discharge Transfer] movements) or items that need attention (such as tasks that are due or unsigned orders or notes). This RPC also returns information that specifies recent activity and/or the items that need attention.

#### 7.1.5 ORRC RESULTS BY PATIENT

The ORRCACK routine uses this RPC to return to users' dashboards a list of patient orders that were placed by the users and that have new unacknowledged results. It accepts as input the value of a flag that indicates whether to return the results along with each order (true) or a list of order identifiers that does not include results (false).

### 7.1.6 ORRC RESULTS BY ID

The ORRCACK routine uses this RPC to return to users' dashboards the results for a list of orders.

### 7.1.7 ORRC RESULTS ACKNOWLEDGE

The ORRCACK routine uses this RPC to mark newly acknowledged results in the Order Acknowledgement file (#102.4). It accepts as input the list of order identifiers for which results can be acknowledged. This RPC also returns a value of true or false to indicate whether the acknowledgement update was successful or unsuccessful, respectively.

### 7.1.8 ORRC RESULTS BY DATE

The ORRCACK routine uses this RPC to return a list of orders that have new, unacknowledged results. This RPC accepts as input the specified start and stop dates for unacknowledged results. It also accepts a Boolean flag that indicates whether to return results with each order or simply return a list of order identifiers for which unacknowledged results are available. It returns as output a patient-specific list of orders that were placed between the specified start and stop dates and that have unacknowledged results available.

### 7.1.9 ORRC SIGN

The ORRCSIG routine uses this RPC to apply users' electronic signatures to documents. It accepts as input an ITEM array and returns a Boolean result indicating success for each item to which it successfully applies a signature or failure for each item to which it unsuccessfully applies a signature. In the latter case, this RPC also returns explanatory text.

### 7.1.10 ORRC SYSID

The ORRCLNP routine uses this RPC to return a system identifier that enables Care Management to know whether it is running in a production or non-production (i.e., test) system. (ORRC SYSID returns a 1 (one) if a Clinical Context Management (CCOW)-enabled system is a production system and a 0 (zero) if the system is not marked as a production system.) Care Management also uses this RPC to learn about the system (production or non-production) in which other applications are running. In other words, this routine helps prevent Care Management from synchronizing (via CCOW) with applications running in different systems.

### 7.1.11 ORRC EVENTS BY PATIENT

The ORRCEVT routine uses this RPC to return to users' dashboards a patient-specific list of events that have associated alerts. It accepts as input a Boolean flag that indicates whether to return event details or note text with each of these events (true) or simply a list of event identifiers (false).

### 7.1.12 ORRC EVENTS BY ID

The ORRCEVT routine uses this RPC to return to users' dashboards the text of documents associated with events in the alert-identifier list (which this RPC accepts as input).

### **7.1.13 ORRC EVENTS ACKNOWLEDGE**

The ORRCEVT routine uses this RPC to clear event alerts in users' dashboards. This RPC accepts as input a list of event identifiers for which alerts must be cleared. It returns this list along with a Boolean flag that indicates whether the alert was successfully cleared.

### **7.1.14 ORRC APPTS BY PATIENT**

The ORRCEVT routine uses this RPC to return to users' dashboards a list of each patient's appointments—including scheduled procedures—that fall within a specified date range. It accepts as input the specified start and stop dates for appointment searches. It also accepts a Boolean flag that indicates whether to return the details or note text associated with each appointment (true) or simply a list of appointment identifiers (false).

### **7.1.15 ORRC NURS DASHBD PATIENTS**

The ORRC DPT1 routine uses this RPC to return to users' Nurse Dashboards a list of patients with recent activity (such as new results, vitals, or appointments) or items that require attention (such as tasks that are due, generic text orders, or unverified orders). To provide this list, this RPC accepts as input several lists, including: the Provider list (New Person file #200), the OE/RR Team list (OE/RR List file #100.21), the Specialty list (Facility Treating Specialty file #45.7), the Ward list (Ward Location file #42), and the Clinic list (Hospital Location file #44).

### **7.1.16 ORRC ORDERS BY PATIENT**

The ORRCOR routine uses this RPC to return a list of specific types of orders and (optionally) the details of these orders. This RPC accepts as input the specified start and stop dates for order searches and a three-character string that identifies the specific type of order for which it should search (active nursing (text) orders or orders that are unverified by nursing). It also accepts a Boolean flag that indicates whether to return details with each order (true) or simply a list of order identifiers (false).

### **7.1.17 ORRC ORDERS BY ID**

The ORRCOR routine uses this RPC to return to various dashboard views a detailed display report for a given list of order identifiers. It accepts as input a list of order identifiers that includes the dashboard view to which the order belongs.

### **7.1.18 ORRC ORDERS VERIFY**

The ORRCOR routine uses this RPC to return a list of the order identifiers that the RPC accepts as input and a Boolean flag that indicates whether requested updates relating to these identifiers were successful or unsuccessful. It accepts as input a list of order identifiers that need to be updated (marked as verified).



### **7.1.19 ORRC ORDERS COMPLETE**

The ORRCOR routine uses this RPC to accept a list of order identifiers to be marked as completed. It accepts as input a list of order identifiers that include a pointer to both the Orders file (#100) and the IEN in the Order Actions sub file. Along with the list of identifiers it accepts as input, this RPC returns a Boolean flag that indicates whether the requested update was successful or unsuccessful. (That is, this flag indicates whether the identifier was successfully marked as completed.)

### **7.1.20 ORRC VITALS BY PATIENT**

The ORRCVIT routine uses this RPC to return recent vitals measurements for a given patient. This RPC accepts as input the specified start and stop dates for vitals searches and a Boolean flag that indicates whether to return the details of each vital sign (true) or simply a list of identifiers for the measurement set (false).

### **7.1.21 ORRC VITALS BY ID**

The ORRCVIT routine uses this RPC to return the details of specified vitals measurement sets. It accepts as input a list of identifiers for requested measurement sets.

### **7.1.22 ORRC TASKS DUE BY PATIENT**

The ORRCTSK routine uses this RPC to return for a specified patient a list of tasks that are due now. This routine also includes details about each task—including, but not limited to, the subject, the date the task was created, the task's priority, and the user who completed the task.

### **7.1.23 ORRC TASKS BY ID**

The ORRCTSK routine uses this RPC to return output details (such as task subjects, creators, creation dates, etc.) for a list of requested tasks. The RPC accepts as input a list of identifiers for these tasks.

### **7.1.24 ORRC TASK ADD**

The ORRCTSK routine uses this RPC for task creation. The RPC accepts as input task-related data (such as subject, user, patient, etc.), which it then uses to create a task in the Patient Task file (#102.3). It returns either an identifier for the successfully created task or an indication that it could not successfully create the new task.

### **7.1.25 ORRC TASK EDIT**

The ORRCTSK routine uses this RPC for task editing. The routine accepts as input data strings, which it uses to update the Patient Task file (#102.3). It returns a Boolean flag to indicate whether it successfully updated the task (true) or not (false).

### **7.1.26 ORRC TASK COMPLETE**

The ORRCTSK routine uses this RPC to accept a list of patient task identifiers that need to be marked as completed. It returns a list of the identifiers it accepted and a Boolean flag that indicates whether the requested update was successfully completed (1) or not (0). In the latter case, the RPC also returns an

error message.

### **7.1.27 ORRC TASK SUBJECTS BY PT**

The ORRCTSK routine uses this RPC to return a list of the subjects that have been previously used to create tasks for a given patient.

### **7.1.28 ORRHCQ1 DELSEN**

The ORRHCQ1 routine uses this RPC to delete a specified patient from the sensitive-patient list that Care Management generates while executing a query. After deleting the sensitive patient from the list, Care Management does not use this patient's record for further evaluation. The RPC returns a Boolean flag to indicate whether it successfully deleted the sensitive patient from the list (1), or failed to do so (-1).

### **7.1.29 ORRHCQ1 GETCNT**

The ORRHCQ1 routine uses this RPC to return the count of sensitive patients left to evaluate after the Care Management Query Tool runs its main query iteration.

### **7.1.30 ORRHCQ1 GETSLN**

The ORRHCQ1 routine uses this RPC to return the sensitive message text when the Care Management Query Tool queries the records of sensitive patients.

### **7.1.31 ORRHCQ1 GETSPT**

The ORRHCQ1 routine uses this RPC to get the names of sensitive patients from the unscreened patient cohort that the Care Management Query Tool is using for its search.

### **7.1.32 ORRHCQ1 QRYSITR**

The ORRHCQ1 routine uses this RPC to return an iterator that the routine then uses for subsequent calls. This RPC functions much as the Care Management Query Tool's main query iterator routine does. However, unlike the main query iterator routine, this RPC does not process sensitive patients. Instead, it saves off the list of sensitive patients without screening the patients. The Care Management Query Tool calls subsequent routines to manage this list of patients and process the patient records that users select for reporting.

### **7.1.33 ORRHCU DFLDMAP**

The ORRHCU routine uses this RPC to return an array that maps criteria categories to display-field categories.

## **7.2 HealtheVet Desktop RPCs**

HealtheVet Desktop distributes the following remote procedure calls:

## 7.2.1 XHD DELETE PARAMETER CATEGORY

The XHDPCAT routine uses this RPC to delete parameter categories and—optionally—their descendants from the M backing store. The RPC accepts as input a primary parameter category (the category to be deleted) and a secondary category (DELKIDS) that uses a Boolean flag to indicate whether the RPC is to delete all descendants of the primary category. It returns a 0 if it successfully deleted the parameter and a 1 if it did not.

## 7.2.2 XHD GET ALL PARAMETER DEFS

The XHDPDEF routine uses this RPC to return all parameter definitions.

## 7.2.3 XHD GET CONFIGURATION

The XHDPTREE routine uses this RPC to return the main branches of the configuration tree as an Extensible Markup Language (XML) global array.

## 7.2.4 XHD GET MUTABLE CONFIGURATION

The XHDPMUT routine uses this RPC to return the leaf entries of the configuration tree as an Extensible Markup Language (XML) array.

## 7.2.5 XHD GET PARAMETER DEF LIST

The XHDPDEF routine uses this RPC to return a global array containing all parameter definitions as a list and IEN^NAME^DISPLAY NAME in each node.

## 7.2.6 XHD GET PARAMETER DEFINITION

The XHDPDEF routine uses this RPC to return an Extensible Markup Language (XML) representation of a given parameter. It accepts as input the IEN of the parameter in the Parameter Definition file (#8989.51).

## 7.2.7 XHD GET PARAMETER DEFINITIONS

The XHDPDEF routine uses this RPC to return a local array of parameter definitions with IEN^NAME^DISPLAY NAME^ENTITYLIST in each node. The RPC accepts as input a number of parameters, including SIZE (the number of definitions that it should return with each invocation), DIR (the direction [ascending or descending] it takes from the beginning definition), and FROM (the definition from which the list should begin). The RPC returns in its array only the definitions that fall within these parameters.

## 7.2.8 XHD GET SITE INFO

The XHDLSITE routine uses this RPC to return site identifiers, division names, and integration names (DIVISION ID^SITE NAME^PRIMARY STATION ID^INTEGRATION NAME).

## **7.2.9 XHD GET USER DEMOGRAPHICS**

The XHDAUTH routine uses this RPC to return users' demographic information—including users' unique identifiers, first and last names, middle initials, titles, and the last four digits of users' social security numbers.

## **7.2.10 XHD INSERT PARAMETER CATEGORY**

The XHDPCAT routine uses this RPC to insert new parameter categories. The RPC accepts as input a list of parameter fields and returns a Boolean flag that indicates error status. (It returns a 0 if no errors occur during the filing process and a 1 if errors do occur. In the latter case, it also returns an explanatory message.)

## **7.2.11 XHD PUT PARAMETER**

The XHDPARAM routine uses this RPC to call either the PUT^XPAR or PUTWP^XPAR routine to file a given parameter. The RPC accepts as input the key for and value of the parameter.

## **7.2.12 XHD REMOVE PARAMETER CATEGORY**

The XHDPCAT routine uses this RPC to remove child parameter categories from their parent category. It accepts as input the record number (IEN) of the parameter category to be removed and the record number of this category's parent category. It returns a 0 if the child category was successfully removed from its parent category or a 1 and a message if it failed to perform this task.

## **7.2.13 XHD UPDATE PARAMETER CATEGORY**

The XHDPCAT routine uses this RPC to update parameter categories.

## **7.2.14 XHDX PERSEL**

The XHDX routine uses this RPC to return the list of perspective identifiers that should be visible to a given (the current) user. Perspective identifiers are sorted according to the order in which they should be listed on the user's desktop.

## **7.2.15 XHDX VERSRV**

The XHDX routine uses this parameter to return a list of menu options that includes each option's version number

## 8 Exported Options

### 8.1 Care Management Options

Care Management exports the following options. Asterisks that follow option names indicate that these options are relatively important.

Name	Type	Description
ORRCM CLIENT*	Menu	The login context for Care Management
ORRCMC DASHBOARD	Broker (Client/Server)	The option context for the remote procedure calls that the Care Management dashboards use
ORRCMC PATIENT TASK	Broker (Client/Server)	The option context for the remote procedure calls that the Care Management Task Editor uses
ORRCMC GENERAL	Broker (Client/Server)	The option context for remote procedure calls used by clinical perspectives within the HealtheVet Desktop
ORRCMC QUERY TOOL	Broker (Client/Server)	The option context for remote procedure calls that the Care Management Query Tool perspective uses
ORRCMC SIGN LIST	Broker (Client/Server)	The option context for remote procedure calls that the Sign List perspective uses
ORRCMM CLINICIAN*	Menu	The Clinician Dashboard perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH CLINICIAN DISPLAY ORDER (1) and ORRCMP SIGN LIST DISPLAY ORDER (2)
ORRCMM CLINICIAN QUERY*	Menu	The Clinician Dashboard, Query Tool, and Sign List perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH CLINICIAN DISPLAY ORDER (1), ORRCMP QUERY TOOL DISPLAY ORDER (2), and ORRCMP SIGN LIST DISPLAY ORDER (3)
ORRCMM NURSING*	Menu	The Nurse Dashboard and Sign List perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH NURSING DISPLAY ORDER (1) and ORRCMP SIGN LIST DISPLAY ORDER (2)
ORRCMM NURSE QUERY*	Menu	The Nurse Dashboard, Query Tool, and Sign List perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH NURSING DISPLAY ORDER (1), ORRCMP QUERY TOOL DISPLAY ORDER (2), and ORRCMP SIGN LIST DISPLAY ORDER (3)
ORRCMM CM CLINICIAN N URSE	Menu	The Clinician Dashboard, Nurse Dashboard, and Sign List perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH CLINICIAN DISPLAY ORDER (1), ORRCMP DASH NURSING DISPLAY ORDER (2) , and ORRCMP SIGN LIST DISPLAY ORDER (3)

<b>Name</b>	<b>Type</b>	<b>Description</b>
ORRCMM CM ALL	Menu	The Clinician Dashboard, Nurse Dashboard, Query Tool, and Sign List perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH CLINICIAN DISPLAY ORDER (1), ORRCMP DASH NURSING DISPLAY ORDER (2), ORRCMP QUERY TOOL DISPLAY ORDER (3), and ORRCMP SIGN LIST DISPLAY ORDER (4)
ORRCMM TROUBLESHOOTER CLIN	Menu	The Clinician Dashboard, Query Tool, Sign List, and RPC Logger perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH CLINICIAN DISPLAY ORDER (1), ORRCMP QUERY TOOL DISPLAY ORDER (3), ORRCMP SIGN LIST DISPLAY ORDER (4), and ORRCMP RPC LOGGER DISPLAY ORDER (6)
ORRCMM TROUBLESHOOTER NURS	Menu	The Nurse Dashboard, Query Tool, Sign List, and RPC Logger perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH NURSING DISPLAY ORDER (2), ORRCMP QUERY TOOL DISPLAY ORDER (3), ORRCMP SIGN LIST DISPLAY ORDER (4) and ORRCMP RPC LOGGER DISPLAY ORDER (6)
ORRCMM TROUBLESHOOTER	Menu	The Clinician Dashboard, Nurse Dashboard, Query Tool, Sign List, and RPC Logger perspective selector; includes the following parameters, which control the order in which these perspectives appear on the dashboard (listed by default order): ORRCMP DASH CLINICIAN DISPLAY ORDER (1), ORRCMP DASH NURSING DISPLAY ORDER (2), ORRCMP QUERY TOOL DISPLAY ORDER (3), ORRCMP SIGN LIST DISPLAY ORDER (4) and ORRCMP RPC LOGGER DISPLAY ORDER (6)
ORRCMP DASH CLINICIAN	Menu	The Clinician Dashboard and Sign List perspective selector
ORRCMP DASH NURSING	Menu	The Nurse Dashboard and Sign List perspective selector
ORRCMP QUERY TOOL	Menu	The Query Tool perspective
ORRCMP RPC LOGGER	Menu	The RPC Logger perspective
ORRCMP SIGN LIST	Menu	The Sign List perspective

## 8.2 HealtheVet Desktop Options

Name	Type	Description
XHDX ASSIGN MULTIPLE USERS	Action	Enables you to assign a perspective list option to multiple users
XHDX ASSIGN SERVICE	Action	Enables you to assign a perspective list option for a service
XHDX ASSIGN USER PERSPECTIVE	Action	Enables you to assign a perspective list option to individual users
XHDX HEALTHERVET	Menu	Enables you to control various HealtheVet Desktop settings
XHDXC DESKTOP	Broker (Client/Server)	The option context for remote procedure calls that HealtheVet Desktop uses

## 8.3 Including Care Management Options in Users' Menu Trees

Include one or more of the following options in each user's menu tree:

- ORRCMM CLINICIAN
- ORRCMM CLINICIAN QUERY
- ORRCMM NURSING
- ORRCMM NURSE QUERY
- ORRCMM CM ALL
- ORRCMM CM CLINICIAN NURSE

The options you include should correspond to users' Care Management perspectives. For example, a nurse practitioner may need access to the Nurse Dashboard perspective, but not the Query Tool perspective. In this case, you would include in this nurse practitioner's menu tree the ORRCMM NURSING option. You could then assign to this user the ORRCMM NURSING perspective.

**Note:** To assign a user more than one dashboard at a time, use ORRCMM CM ALL or ORRCMM CM CLINICIAN NURSE. DO NOT use both ORRCMM CLINICIAN and ORRCMM NURSING, as this will adversely affect the behavior of Care Management.

## 8.4 Assigning Care Management Perspectives to Users

Before users can access Care Management, they must have an assigned perspective. You can assign perspectives to individual users through either of the following menus:

- HealtheVet Desktop Configuration [HD] menu, which is located within the CPRS Configuration (IRM) menu [CPRS CONFIGURATION (IRM)].
- General Parameter Tools menu [XPAR MENU TOOLS]

Assigning perspectives through either of these menu options establishes the value for the XHD PRISM PERSPECTIVE SELECTOR parameter.

### 8.4.1 Using the CPRS Configuration (IRM) Menu

To set the XHD PRISM PERSPECTIVE SELECTOR parameter using the CPRS Configuration (IRM) menu, follow these steps:

1. Log on to **VISTA**.
2. From the CPRS Configuration (IRM) menu, type **HD** to select *HealtheVet Desktop Configuration...* The HealtheVet Desktop Configuration menu appears.

A	Assign Perspective List to Multiple Users
M	Assign Perspective List to User
A	Assign Perspective List to Service

The **AM** selection enables you to choose a perspective and then iterate through the list of users to whom you want this perspective to apply. Care Management checks each user you enter. If the user does not have access to the perspective somewhere in his or her menu tree, Care Management displays a warning similar to the following:

CMPATIENT, TWO does not have the ORRCMM Clinician Query in the menu tree. You may need to add this as a secondary menu for this user.
---

When you use the **AP** selection to assign a perspective for a single user, Care Management checks this user and displays his or her current perspective, if applicable. You can then replace the current perspective with a new perspective. If the user does not have access to the perspective somewhere in his or her menu tree, Care Management displays a warning similar to the one mentioned above.

When you use the **AS** selection to assign a perspective for a service, Care Management displays a note telling you that the perspective you assign must be available in the menu tree of each user who is assigned to this service.

3. At the *Select HealtheVet Desktop Configuration Option* prompt, type one of the options listed above.
4. Select the person(s) to whom (or service to which) you want to assign a perspective, and enter one of the following choices at the *Select Perspective Option* prompt:
  - a. **ORRCMM CLINICIAN**  
Select this option to assign to users or services the Clinician Dashboard and Sign List perspectives.
  - b. **ORRCMM CLINICIAN QUERY**  
Select this option to assign to users or services the Clinician Dashboard, Query Tool, and Sign List perspectives.
  - c. **ORRCMM NURSING**  
Select this option to assign to users or services the Nurse Dashboard and Sign List perspectives.
  - d. **ORRCMM NURSE QUERY.**  
Select this option to assign to users or services the Nurse Dashboard, Query Tool, and Sign List perspectives.
  - e. **ORRCMM CM ALL**  
Select this option to assign to users or services the Clinician Dashboard, Nurse Dashboard, Query Tool, and Sign List perspectives.



f. **ORRCMM CM CLINICIAN NURSE**

Select this option to assign to users or services the Clinician Dashboard, Nurse Dashboard, and Sign List perspectives.

## 8.4.2 Using the General Parameter Tools [XPAR MENU TOOLS] menu

To set the XHD PRISM PERSPECTIVE SELECTOR parameter using the General Parameter Tools [XPAR MENU TOOLS] menu, follow these steps:

1. Log on to **VISTA**.
2. From the General Parameter Tools [XPAR MENU TOOLS] menu, select **EP** (Edit Parameter Values).
3. At the *Select PARAMETER DEFINITION NAME* prompt, type **XHD PRISM PERSPECTIVE SELECTOR**. The General Parameter Tools menu displays the following options:

XHD PRISM PERSPECTIVE SELECTOR may be set for the following:

2	User	USR	[choose from NEW PERSON]
5	Service	SRV	[choose from SERVICE/SECTION]

Enter selection:

*Options for setting the XHD PRISM PERSPECTIVE SELECTOR parameter*

4. Set the XHD PRISM PERSPECTIVE SELECTOR parameter by typing one of the following at the *Enter Selection* prompt:
  - a. **2** – for user level. If you select 2, the *Select NEW PERSON NAME* prompt appears.
  - b. **5** – for service level. If you select 5, the *Select SERVICE/SECTION* prompt appears.
5. Type the appropriate response. The *Perspective Option* prompt appears.
6. Type one of the perspectives listed in Step 4 of the instructions for setting the XHD PRISM PERSPECTIVE SELECTOR parameter using the CPRS Configuration (IRM) menu.

Care Management also includes the ORRCMM TROUBLESHOOTER CLIN, ORRCMM TROUBLESHOOTER NURS, ORRCMM TROUBLESHOOTER, ORRCMM CM CLINICIAN NURSE, and ORRCMM CM ALL options for developers and IRM staff. Along with the Sign List, Query Tool, and RPC Logger perspectives, these options assign either the Clinician Dashboard perspective, Nurse Dashboard perspective, or both, respectively.

## 8.5 Assigning HealtheVet Desktop Default Perspectives to Users

If a default perspective is set, the HealtheVet Desktop displays this perspective each time users launch the HealtheVet Desktop. Users can set their own default perspective using the *Preferences* dialog in the HealtheVet Desktop GUI interface. You can also assign a default perspective to users through the General Parameter Tools menu [XPAR MENU TOOLS]. Assigning a default perspective through this menu option or the *Preferences* dialog establishes the value for the XHD PRISM DEFAULT PERSPECTIVE parameter. To set the XHD PRISM DEFAULT PERSPECTIVE parameter, follow these steps:

1. Log on to **VISTA**.
2. From the General Parameter Tools [XPAR MENU TOOLS] menu, select **EP** (Edit Parameter Values).
3. At the *Select PARAMETER DEFINITION NAME* prompt, type **XHD PRISM DEFAULT PERSPECTIVE**. The General Parameter Tools menu displays the following options:

XHD PRISM DEFAULT PERSPECTIVE may be set for the following:			
1	User	USR	[choose from NEW PERSON]
2	Division	DIV	[choose from INSTITUTION]
3	System	SYS	[TEST.FO-SLC.MED.VA.GOV]

*Options for setting the XHD PRISM DEFAULT PERSPECTIVE parameter*

4. Type one of the following at the *Enter Selection* prompt:
  - a. **1** – for user level. If you select 1, the *Select NEW PERSON NAME* prompt appears; type the appropriate response.
  - b. **2** – for Division level. If you select 2, the *Select INSTITUTION NAME* prompt appears; type the appropriate response.
  - c. **3** – for System level. If you select 3, the General Parameter Tools menu prompts you to enter a default perspective at the system level.
5. Type the appropriate default perspective. The following default perspectives are currently available for the HealtheVet Desktop:

• ORRCMP DASH CLINICIAN	<b>clinicianDashboard</b>
• ORRCMP DASH NURSING	dashboard.nurseDashboard
• ORRCMP QUERY TOOL	<b>queryTool</b>
• ORRCMP RPC LOGGER	<b>rpclogger</b>
• ORRCMP SIGN LIST	dashboard.signatureList

Default perspective settings are case-sensitive: To set a default perspective, you **MUST** enter only the text in the right-hand column, and you must enter it exactly as it appears. For example, if you want to set a user's default perspective to the Clinician Dashboard, you must enter the following: **clinicianDashboard**. (Although VistA accepts the formal names of the perspectives—ORRCMP DASH CLINICIAN, for example—as default settings, it actually *sets* defaults *only* if you enter the settings exactly as they appear in the right-hand column.)

**Note:** Because Care Management is currently the only package that runs within the HealtheVet Desktop, only Care Management perspectives are available as defaults. As additional programs become available, users will have more default options from which to choose.

## 9 Care Management Security

---

### 9.1 Authentication

The Care Management software package uses the VistALink M-listener process to authenticate users to the Kernel. See the *VistALink 1.5 Technical Manual and Security Guide* for further information about securing client applications such as the HealtheVet Desktop through VistALink. (You can download this manual via FTP from the OIFO ANONYMOUS.SOFTWARE\_directories listed in this manual.)

Patch 2 (ORRC\*1\*2) introduced sign-on modifications to the Care Management application.

The following features and functionality are provided by the Simplified Sign-On/User Context (SSO/UC) project:

1. If Care Management is the first SSO/UC application to be launched on the clinician's desktop, the current login screen appears and users must log in with their Access/Verify code. Thereafter, any GUI VISTA SSO/UC-enabled application launched on the desktop and connecting to the same M server will not have to log in.
2. On the other hand, if another GUI VISTA SSO/UC enabled application is already running on the desktop and then Care Management is launched and is connecting to the same M server, the user would not have to log in again.

For more details, see: <http://vista.med.va.gov/kernel/sso/download.asp>

### 9.2 Security Keys

The Care Management software package exports one new security key and uses several existing security keys:

Parameter Name	
New Security Key:	ORRC QUERY RESULT EXPORT
Existing keys	ORELSE
	ORES
	ROR VA HEPC USER

- **ORRC QUERY RESULT EXPORT**

This key controls users' ability to print or export to a Microsoft Excel spreadsheet the reports they generate through the Care Management Query Tool perspective. Assign this key only to users who need to perform these tasks.

#### 9.2.1 ORELSE

The ORELSE key activates the Verify checkbox on the Nurse Dashboard. Users who need to verify orders should already have this key.

#### 9.2.2 ORES

The ORES key enables providers to sign orders. Users who need to sign orders should already have this key.

### 9.2.3 ROR VA HEPC USER

- This key enables users to see Hepatitis C Registry information. Users who need this information should already have the ROR VA HEPC USER key.

## 9.3 File Security

The table below indicates the security that the Care Management software package establishes for its files.

Number	Name	DD	D	WR	EL	LAYGO	AUDIT
102.3	PATIENT TASK	@	@	@	@	@	@
102.4	ORDER ACKNOWLEDGEMENT	@	@	@	@	@	@
8935.91	XHD PARAMETER CATEGORY	@	@	@	@	@	@

## 10 Java and the HealtheVet Desktop

---

### 10.1 HealtheVet Desktop Client

The HealtheVet Desktop client is a Java application that provides a modular framework in which client portions of client/server and three-tier, rich-client applications can run. Eventually, most of the VA's clinical applications will run inside the HealtheVet Desktop. However, Care Management is the only project included with this initial distribution. Therefore, in this distribution, Care Management and HealtheVet Desktop are installed together.

### 10.2 The Java Virtual Machine (JVM) and Java Runtime Environment (JRE)

Most programming languages are either interpreted languages or compiled languages. An interpreted language uses a program called an interpreter to read code and execute commands. M is an example of an interpreted language (although modern implementations, such as Cache, compile code). A compiled language uses a compiler to change the human-readable code into machine code. Machine code is specific to a machine and operating system, and can be executed without an interpreter. Delphi is an example of a compiled language.

Java (the language in which HealtheVet Desktop is written) is a byte code-interpreted language. In interpreted languages, human-readable code is compiled into interpreted code that is not human readable and that cannot be executed directly by the operating system. In order to run Java interpreted code, you need a JVM. To execute a Java program, you launch the JVM and point it at the interpreted code (class files). The JVM then executes the code.

One advantage of the JVM is that it is not dependent on a particular operating system. If you have the proper JVM for your operating system and CPU, you can run Java interpreted code, even if it was written on a different operating system and CPU.

The HealtheVet desktop requires JRE 8 (32 bit) or greater.

The JVM is included in a package called the Java Runtime Environment Standard Edition, which is available from Oracle Corporation. This package includes items such as basic libraries for network communication and graphic user interfaces. A larger package, called the Java Developer Kit (JDK), also contains the JVM. In addition, the JDK includes developer utilities that are not required on client workstations.

The Java 2 Enterprise Edition (J2EE) package is a set of libraries that allow certain server-side functions. The J2EE is included with the HealtheVet Desktop. You do **not** need to download or install this package.

#### 10.2.1 Installing the JVM

For directions on installing the JVM, please see the *Care Management Installation Guide*.

### 10.3 Jar Files

Java applications are usually distributed as one or more Jar (.jar) files. Jar files are essentially ZIP files—in fact, they can be opened and examined with most ZIP programs. Java application Jar files contain class files (compiled java code), image files, configuration files, and other types of files.

## 10.4 Plug-ins

The HealtheVet Desktop is made up of distribution units called plug-ins. A plug-in usually comprises one or more Jar files and a manifest. (If you look at the plug-in directory, you'll find some plug-ins without Jar files. These plug-ins allow access to other plug-ins...think of them as plug-in aliases.) The manifest is an XML file that describes what the plug-in does and how it works with other plug-ins. The jar files contain the code for the plug-in.

Each plug-in handles only a small piece of the HealtheVet Desktop functionality. For example, the Prism plug-in provides the user interface (or personality) of the HealtheVet Desktop. It also provides the structures through which HealtheVet Desktop components interact with users. In other words, this plug-in provides the look and feel of the HealtheVet Desktop.

Another plug-in, the Context Manager, provides an interface through which various applications and components running within the HealtheVet Desktop can access the clinical context in CPRS. (The clinical context includes the current patient, encounter, and observation and can potentially include other [custom] links.)

These and other plug-ins—such as the Help Registry and Print Manager, which provide application help and print services, respectively—comprise the basic functionality of HealtheVet Desktop.

## 10.5 The HealtheVet Desktop Batch and Configuration File

Although most of the HealtheVet Desktop is written in Java, a small Windows batch file helps deploy and launch the HealtheVet Desktop. This batch file uses a configuration file that is, essentially, a map of the plug-ins you want to use together. A particular configuration might have a hundred different plug-ins. The configuration file also contains some global configuration information.

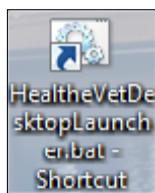
When you launch the batch file, it refers to a configuration file by passing an argument that specifies the location of the file. (The HealtheVet Desktop/Care Management software package includes this file—which is called *config.xml*.) Depending on where your configuration file resides, you specify its location in one of the following ways:

- **On your Local Disk**

You pass the configuration file in a format similar to this: C:\path\to\config\file\config.xml.

### 10.5.1 Creating a Shortcut

The easiest way to launch the HealtheVet desktop is to create a shortcut of batch file called *HealtheVetDesktopLauncher.bat*.



### 10.5.2 Launching the Batch File

Double-click the shortcut to launch the HealtheVet Desktop. After you do this, the application reads the configuration file and launches the Care Management application.

## 10.6 The Module Update Manager (MUM)

The MUM is responsible for downloading a group of plug-ins (specified by the configuration file) from the HealtheVet Server and starting the HealtheVet desktop with these plug-ins enabled. The MUM is essentially the HealtheVet Desktop installer and launcher. The MUM also checks to make sure that plug-ins are compatible with one another.

### 10.6.1 How The MUM Works:

1. The executable launches the MUM. More specifically, the executable launches the JVM with the MUM as its initial program.
2. To make sure that it hasn't been manually altered, the MUM uses a checksum to check the configuration file used by the executable. If this file has been altered, the MUM returns an error.
3. The MUM takes the list of all plug-ins and their versions and checks to see if they exist on the workstation. If they do not, the MUM gets the appropriate plug-ins from the HealtheVet Server and places them in the plug-ins directory on the workstation.

**Note:** The MUM deletes old plug-ins after 90 days.

4. The MUM reads the settings file (if you have one) and/or the command-line options to determine the settings.
5. The MUM hands the list of needed plug-ins and files to the HealtheVet Desktop, which then opens the login window.

When the MUM starts, the splash screen displays the plug-ins that are being downloaded, the version number of these plug-ins, and a status bar. The MUM downloads only plug-ins that need to be updated. The HealtheVet Desktop starts after the MUM has updated the necessary plug-ins.



The MUM automatically downloads new plug-ins.

In this case, the HealtheVet Desktop batch file initially downloads only changes to the MUM. You must then restart the HealtheVet Desktop batch file so that the MUM can use its updated code to process the plug-in updates properly.

## 10.7 The Settings File (Suggested Name: Config.settings)

The .settings files contain several settings that can differ from site to site—the name/IP address of the server, VistALink port, and broker port, for example. The contents of .settings files might look

something like this:

```
M Server Name = brokerserver
M VistaLink Port = 8000
M RPCBroker Port = 9000
CPRS Chart Path = C:\Program Files\Vista\CPRS\CPRSCart.exe
```

In addition to specifying settings that apply only to your site—such as the name of your M server—you can add the following settings to your .settings file:

- **M RPC Timeout Override** = [the length of time after which M-based remote procedure calls time out]. As its name suggests, this setting overrides the M RPC timeout specified for your system.
- **value setting** = [desktop logger value] This setting enables you to set the level at which the HealtheVet Desktop logs information. You can specify one of the following values:
  - off (logs no information)
  - info (logs all events, including warnings)
  - warning (logs all warnings, including errors and fatal errors)
  - error (the default setting for HealtheVet Desktop; logs all errors and fatal errors)
  - fatal (logs only fatal errors)

For trouble shooting purposes only, you may set the level at which the HealtheVet Desktop logs information.

For example, to enable debug level logging, the following lines can be added to the “config.settings” for foundations, desktop and network packages.

Foundations Logger Value = DEBUG

Desktop Logger Value = DEBUG

Network Logger Value=DEBUG

Name your .settings files after their corresponding Extensible Markup Language (XML) configuration files. (As mentioned above, the HealtheVet Desktop/Care Management software package includes an XML-based configuration file, which is called config.xml by default. This file is located in the HEVD directory and contains tags that define the settings available for the HealtheVet Desktop/Care Management software package.) You need a separate .settings file and corresponding configuration file for each account you want users to access via the HealtheVet Desktop.

You can override the settings in a .settings file by using the following command-line options:

- **-s or -server:** Use one of these options to override the name of the M server specified in your .settings file.
- **-p or port:** Use one of these options to override the M VistaLink port number specified in your .settings file.
- **-t or -timeout:** Use one of these options to override the M RPC timeout override specified in your .settings file.
- **-cprsPort:** Use this option to override the value of the M RPC Broker port specified in your .settings file.
- **-cprsPath:** Use this option to override the value of the CPRS chart path specified in your .settings file.

For example, suppose you want users to temporarily access an account other than the one they usually access. Because this situation is temporary, you don’t necessarily want to create a new .settings file.

In this case, you can simply override the original settings with the temporary settings using the -s, -p, -cprsPort, and -cprsPath command line options.

Suggested Use of Configuration Files and Command Line Options



The following scenarios explain where you might use the configuration files and command line options.

**Scenario:**

You need to install a new HealtheVet Desktop release on all workstations.

**Solution:**

1. Extract to the HEVD directory the distributed zip file containing all necessary new plug-ins.
2. Overwrite the existing (production) config.xml file with the new version distributed with the desktop release.
3. Verify that the config.settings file contains the correct (new) entries. (This file is located in the HEVD/CareManagement directory).

When users subsequently launch the HealtheVet Desktop, all of their client plug-ins will be updated.

**Scenario:**

You want to have a single user connect to an alternate server as a troubleshooting measure.

**Solution:**

Change the config.settings file to include a server and a port option that point to the alternate server.

The HealtheVet Desktop will attempt to run against the alternate server and port with its existing configuration. If the existing client plug-ins and server versions are not compatible, the HealtheVet Desktop will not launch.

# 11 Troubleshooting

---

## 11.1 Showing Details of an Error

Many HealthVet Desktop error message boxes include a **Show Details** button. Click the **Show Details** button to display the **More Details** window, which contains additional information about the error. This information can help developers troubleshoot the error. The first line often indicates which Java exception (error) occurred. For example, you may see something like this after clicking the **Show Details** button:

```
"gov.va.med.hds.cd.mum.boot.UpdateAuthorizationFailureException"
```

Additional lines give the names of java classes. For example:

```
"gov.va.med.hds.cd.mum.update.PluginUpdater."
```

You can use this information to guess which plug-in created the error. However, keep in mind that the error may be caused by a plug-in or instance not specified in the error message.

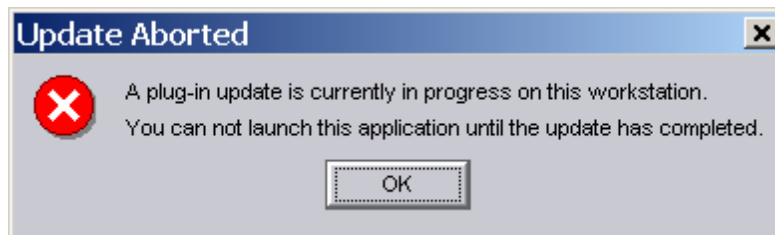
When submitting a bug or a help-desk ticket, it is useful to provide the information displayed in the **More Details** window.

## 11.2 Common Errors

### 11.2.1 A Plug-in Update is Currently in Progress

This error usually indicates that another session on the same workstation or thin-client server is updating plug-ins.

However, this error can also occur if your system crashes while plug-ins are downloading (or if you abort a plug-in update by some means other than clicking the Cancel button—by using the Windows Task Manager, for example). When this happens, the MUM cannot clean up the HealthVet Desktop directory, as it does when you abort an update by clicking the Cancel button. If you have files in the updates directory that are more than a few minutes old, you may have this problem. To fix the problem, simply delete the updates directory, and restart the desktop. (The updates directory is located on HealthVet Desktop/Care Management client machines in the Program Files (x86)\Vista\HealthVetDesktop\client\ directory.)

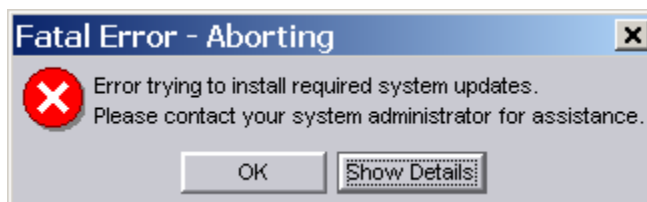


*The Updated Aborted message box.*

## 11.2.2 Error Trying to Install Required System Updates

This error indicates one of three things:

- A plug-in that is specified in the configuration file is not available on the server. For example, the configuration file specifies querytool 1.0.3, but querytool 1.0.3 is not available on the server.
- A plug-in that is specified in the configuration file cannot be written to the client directory.
- The network connection failed during the update.



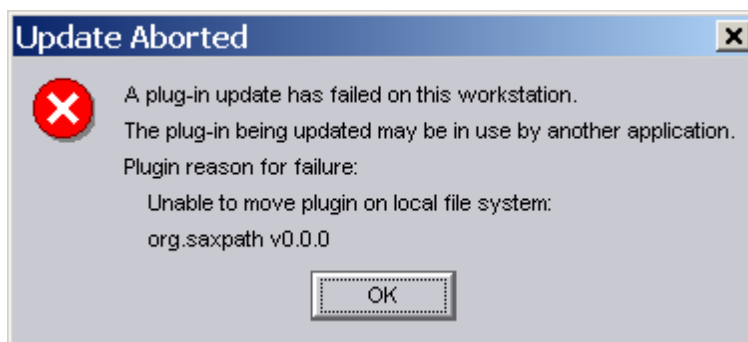
*The Fatal Error – Aborting dialog box.*

## 11.2.3 A Plug-in update has failed on this workstation

This error indicates that a plug-in has been successfully downloaded from the server to the local updates directory and verified, but cannot be copied into the plug-in directory. This happens for one of two reasons:

HealtheVet Desktop cannot write new or updated plug-ins to your local plug-in directory. Make sure HealtheVet Desktop has permission to write to this directory. (Set the permissions to Read-Write.) Also, check your disk space: the update may have failed for lack of available space.

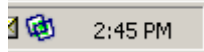
- The client is trying to overwrite a plug-in with a different plug-in of the same name and version. (This should happen only if the development group incorrectly maintains the plug-in or the system is installed improperly on the server. In the later case, reinstall the HealtheVet Desktop/Care Management software package on the server. If this step does not correct the problem, enter a NOIS call for this incident.



*The Update Aborted dialog box.*

## 11.3 Troubleshooting the Go to Chart Feature

The left-hand column of the following table contains a list of the error messages associated with the Care Management Go-to-Chart feature. The right-hand column contains the troubleshooting tips that correspond to these messages.

If the error dialog reads:	Then:
“Sorry, this program encountered an unexpected error which prevented it from following the hyperlink.”	Your Sentillion Vergence context vault is not properly configured. Obtain the correct version of the vault configuration file (the file name will end in .ldif) and restore this configuration to the context vault using the instructions in the CCOW vault installation guide.
<p>“Sorry, this feature is unavailable because the CCOW Desktop Components are not installed and running on your computer.”</p> <p>“Sorry, this feature is unavailable because the CCOW clinical context manager could not be reached.”</p>	<p>Make certain that Sentillion Vergence desktop components are installed and running on the workstation. When running, the desktop components display this small icon in the system tray:</p>  <p>Hover the mouse over the desktop components icon illustrated above. A tool tip appears. This tip identifies the icon as the VergenceLocator and provides the IP address of the context vault. If this address does not match the virtual IP address of your context vault, then you need to uninstall and reinstall the Sentillion Vergence desktop components, providing the correct IP address during the installation process.</p> <p>If the IP address displayed is correct, network problems may be preventing the computer from reaching the context vault.</p>
“Sorry, this feature is unavailable because you do not have a CCOW-enabled version of CPRS installed on your computer.”	<p>This message is displayed when the value of the CPRS Chart Path setting (in your config.settings file) does not point to the location of the CPRS executable.</p> <p>(Care Management launches the CPRS executable by using the value of this setting.) Ensure that the value of this setting is correct, and that the correct version of CPRS is installed at the indicated location.</p>

## 11.4 General Troubleshooting

### 11.4.1 The Log Window

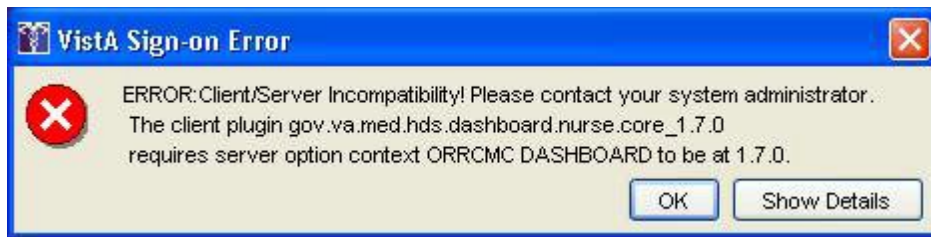
The HealtheVet Desktop has a window that displays all error logging, including messages that are not critical enough to interrupt the user. This window is called the **Log Output** window and is available from **Help | Show Log Output**.

The **Log Output** window can contain many different types of errors. Errors printed to this window can be affected by the debug mode of the desktop. When an error occurs, this window often displays the same information that the **More Details** window displays. However, because this window also displays non-critical errors, it can be particularly useful for troubleshooting a system that is misbehaving.

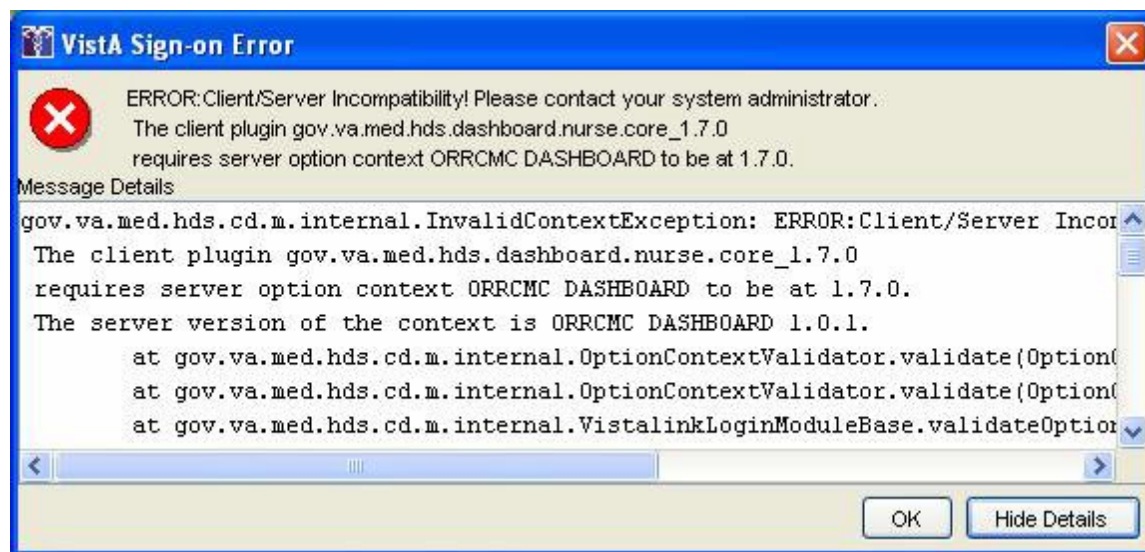
### 11.4.2 CLIENT / SERVER mismatch error that occurs when the BUILD is not in Vista

A client server compatibility check has been added as of ORRC\*1\*7.

The following example shows the error where java client is at 1.7.0 but the server is at 1.6. The error means the M build is old and newer 1.7 build needs to be installed on the M side.



Click Show Details:



- The following example shows the error where java client is at 1.0.1 but the server is at 1.7.0. The error means the java client is old and the newer 1.7 plugins need to be installed on the HealtheVetDesktop server.

