



RESOURCE AND PATIENT MANAGEMENT SYSTEM

# **IHS Personal Health Record**

(BPHR)

## **Technical Manual**

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Office of Information Technology (OIT)  
Division of Information Technology  
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## Preface

The purpose of this manual is to provide technical information about the Indian Health Service (IHS) Personal Health Record (BPHR) package. The BPHR package contains an Application Programming Interface (API) call used by the Meaningful Use Performance Report and by the DIRECT Mail button in the Electronic Health Record (EHR).

## 1.0 Introduction

The BPHR package is a component of the Indian Health Service (IHS) Resource and Patient Management System (RPMS) that provides an interface for patients to access their medical information. Patients will access their Personal Health Record via the internet. The RPMS side only contains an API that is used by the Meaningful Use (MU) Performance report to count how many patients have accessed their PHR and how many patients have used secure messaging.

This manual provides IHS site managers with a technical description of the BPHR APIs, routines, files, menus, cross-references, globals, and other necessary information required to effectively maintain this component of PHR.

All APIs, routines, files, options, and keys are namespaced starting with the letters BPHR. The file number range for this package is 90670–90679.

## 2.0 Orientation

The API package will be distributed as a Kernel Installation and Distribution System (KIDS) package which will contain the appropriate files and routines to enable MU Performance measure to calculate their data.

Interaction between RPMS and the actual PHR is accomplished via web service calls or requests. All APIs and classes in this package begin with the namespace letters BPHR.

A high-level diagram of the PHR services architecture is shown in Figure 2-1. Each of the main components identified in Figure 2-1 are detailed in the sections that follow.

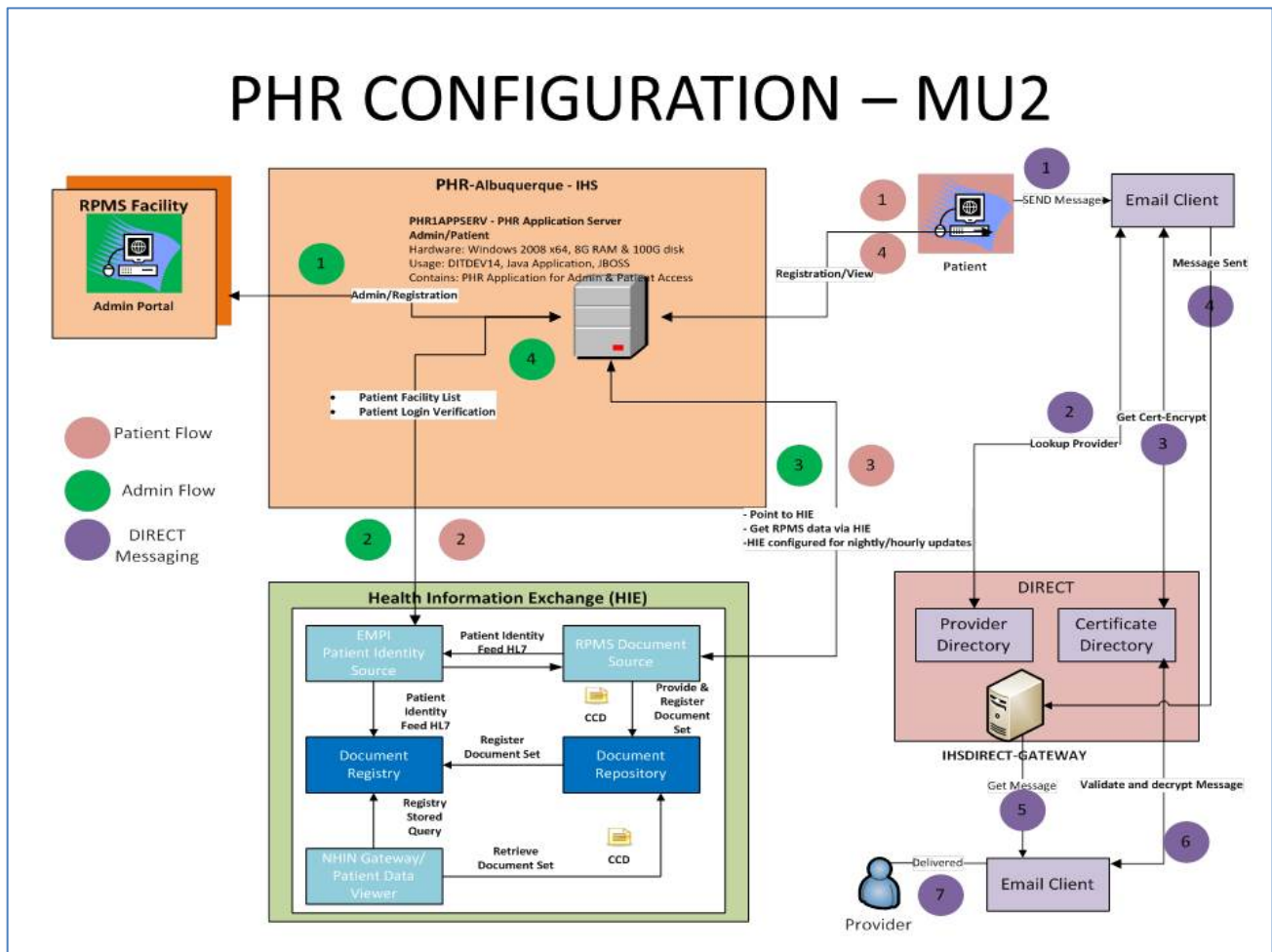


Figure 2-1: High-level application architecture diagram for the Personal Health Record

## 2.1 Health Information Exchange (HIE)

The PHR application will make a SOAP-based web service call to the HIE service. There will be two calls made. One retrieves a list of documents related to the patient accessing the PHR application. Another call retrieves the actual CCDA that the patient chooses to view. This information is provided to the Performance Measures.

## 2.2 Direct Email Services

In order to allow secure messaging, the PHR application will use Direct email.

## 3.0 Implementation and Maintenance

The BPHR APIs are designed to provide a MUMPS-based programming interface for the MU Performance report development team to obtain needed information from the PHR. The API in turn utilizes a web service interface to interact with the PHR server.

### 3.1 General Information

Table 3-1 shows the prerequisite patch requirements.

Table 3-1: Patch requirements

Package and Version	Associated Patch Designation(s)
IHS PERSONAL HEALTH RECORD 2.1 (BPHR)	v2.1 Patch 1

### 3.2 System Requirements

Table 3-2 shows the versions of other packages that should be installed for BPHR to work properly.

Table 3-2: BPHR system requirements by module and minimum version

Module	Minimum Version	Recommended Version
Ensemble 2012	v2012	
VA FileMan (DI)	v22.0 Patch 1019	
IHS/VA Utilities (XB)	v3.0 through Patch 11	
IHS Kernel Toolkit (XT)	v7.3 through Patch 1018	
VA Kernel (XU)	v8.0 Patch 1018	
IHS Personal Health Record (BPHR)	v2.1 Patch 1	

### 3.3 Package-wide Variables

There are no package-wide BPHR variables in RPMS.

### 3.4 Security Keys

Table 3-3 lists the security keys which govern BPHR that can be assigned to users.



Table 3-3: BPHR security key and description

Key Name	Description
BPHRZMENU	This security key should only be assigned to those persons who will manage the BPHR system. It should not be given to the general RPMS user population.

## 4.0 Menu Diagram

The following RPMS menus are in the BPHR system:

- IHS Personal Health Record Management [BPHRMENU]
  - This menu option needs the key BPHRZMENU and contains the following option for managing BPHR.
- Edit PHR Web Service [BPHR EDIT WEB SERVICE]
  - Updates information about the web services used by the site to connect to the PHR server.
- Check the PHR connection [BPHR CHECK CONNECTION]
  - Using a patient, check if the PHR connection is working.
- Check Patient for DIRECT Message [BPHR MU DIRECT CHECK]
  - Checks for a provider, date range and patient, whether a DIRECT message was sent.

## 5.0 Routine

### 5.1 Routine List

The routine list in Table 5-1 includes all BPHR routines.

Table 5-1: BPHR complete routine list

Routine	Routine	Routine	Routine
BPHR1POS	BPHR21P1	BPHR21P2	BPHRCHK
BPHRCLAS	BPHRMUPM	BPHRSSL	BPHRUPD

### 5.2 Routines with Description

Table 5-2 lists and describes each routine in this version.

Table 5-2: BPHR routines and descriptions

Routine	Description
BPHR1POS	Post-install routine
BPHR21P1	Installation program for v 2.1 Patch 1
BPHR21P2	Installation program for v 2.1 Patch 2
BPHRCHK	Checks the connection and checks a patient's information.
BPHRCLAS	Cache Class Compiler
BPHRMUPM	API to be called by MU Performance report and DIRECT email button.
BPHRSSL	Sets up the SSL/TLS Configuration
BPHRUPD	Updates the web service information and contains two APIs; one for setting up the Messaging Agent(s) and one for the report Provider.

### 5.3 API List

#### 5.3.1 PHR^BPHRMUPM(DFN,BDT,EDT,.RESULT,PROV)

This API returns information needed in calculating certain Performance Measures.

Table 5-3: Parameters, data types, and descriptions

Parameter	Data Type	Description
DFN	Numeric (Required)	The internal entry number of the patient, identified by the MU Performance report.

Parameter	Data Type	Description
<b>BDT</b>	Numeric (Required)	The beginning date of the MU Performance report in FileMan date format.
<b>EDT</b>	Numeric (Required)	The ending date of the MU Performance report in FileMan date format.
<b>RESULT</b>	String	Specified as: [1] PHR Access ^ [2] Date Access Granted ^ [3] Login ^ [4] Date of Last Login ^ [5] Secure Message ^ [6] Date of Last Secure Message ^ [7] Patient's DIRECT email address
<b>PROV</b>	Numeric	The internal entry number of the provider, identified by the MU Performance report.

### 5.3.2 TMZ^BPHRMUPM()

This API returns the system time zone.

Table 5-4: System time zone parameter and description

Parameter	Data Type	Description
<b>None</b>		

### 5.3.3 DATE^BPHRMUPM(BPX)

This API takes a FileMan date and formats it the for the PHR system requirements.

Table 5-5: FileMan date parameter

Parameter	Data Type	Description
<b>BPX</b>	Date	3131101.0001 to 2013-11-01T00:00:01-0600

### 5.3.4 FMDT^BPHRMUPM(BPX)

This API takes a PHR system date/date (with time zone) and converts it to a FileMan date/time.

Table 5-6:Parameter to convert PHR date/time to FileMan date/time

Parameter	Data Type	Description
<b>BPX</b>	Date/Time	2013-09-13T08:46:17-0600 to 3130913.084617

### 5.3.5 GMT^BPHRMUPM(DATE)

This API takes a GMT date/time and converts it to the local FileMan date/time.

Table 5-7: Parameter to convert GMT to FileMan date/time

Parameter	Data Type	Description
DATE	Date/Time	2013-09-13T08:46:17-0600 to 3130913.084617

### 5.3.6 PROV^BPHRUPD(PROV)

This API takes a provider and determines the provider's DIRECT email address based on the instructions given on how to create their address.

[firstname.lastname@FACILITYdomainaddress](#)

Table 5-8: PROV parameter data type and description

Parameter	Data Type	Description
PROV	Numeric	The internal entry number of the provider.

### 5.3.7 AGNT^BPHRUPD(DFN)

This API takes a patient and determines the patient's messaging agents during the date range of the report period.

Table 5-9: DFN parameter and description

Parameter	Data Type	Description
DFN	Numeric (Required)	The internal entry number of the patient.

## 6.0 Files and Tables

### 6.1 File List

Table 6-1 contains a list of new files.

Table 6-1: New files by number, name, and description

File #	Filename	Description
90670.2	BPHR WEB SERVICE	This file contains information about the connections to web service endpoints.
90670.5	BPHR CLASS TRANSPORT	This file contains the classes that will need to be defined as part of the installation.

### 6.2 File Access

Table 6-2 contains the FileMan access to new files.

Table 6-2: FileMan access by file number, name, etc.

File #	Filename	GL	RD	WR	LYG	DD	DEL
90670.2	BPHR WEB SERVICE	^BPHR(90670.2,	@	@	@	@	@
90670.5	BPHR CLASS TRANSPORT	^BPHRCLS(	@	@	@	@	@

### 6.3 Cross References

#### 90670.2 (BPHR WEB SERVICE)

.01 Name

B Regular type cross reference

1 VERSION (multiple)

.01 VERSION

B Regular type cross reference

#### 90670.5 (BPHR CLASS TRANSPORT)

.01 Package Name

B Regular type cross reference

11 Class (multiple)

.01 Class

B Regular type cross reference

## 6.4 Table File

**File: 90670.2 BPHR WEB SERVICE**

**Global: ^BPHR(90670.2,**

Table 6-3: Web service field numbers, names, subscripts, pieces, and types

Field #	Field Name	Subscript	Piece	Type
.01	NAME	D0,0	1	F
.02	URL ROOT	"	2	F
.03	PORT NUMBER	"	3	F
.05	TIMEOUT OVERRIDE	"	5	F
.06	CURRENT VERSION	"	6	F
.07	USERNAME	"	7	F
.08	PASSWORD	"	8	F
.09	INACTIVE	"	9	S
.1	INACTIVE DATE	"	10	D
.11	SERVICE PATH	"	11	F
.12	CONNECTION TIMEOUT OVERRIDE	"	12	
1	VERSION (90670.21)	D0,1,D1,0	1	
.01	VERSION	"	1	F
.02	DATE INSTALLED	"	2	D
2.01	SSL/TLS CONFIGURATION	D0,2	1	F
4.01	RETRIES ON FAILURE	D0;4	1	N
4.02	MAXIMUM FAILURES	"	2	N

**File: 90670.5 BPHR CLASS TRANSPORT**

**Global: ^BPHRCLS(**

Table 6-4: Class transport by field number, name, subscript, piece, and type

Field #	Field Name	Subscript	Piece	Type
.01	PACKAGE NAME	D0,0	1	F
1.02	RPMS STATUS	"	2	S
1.03	RPMS DATE/TIME INSTALLED	"	3	D

Field #	Field Name	Subscript	Piece	Type
10	XML (90670.51)	D0,10,D1,		W
11	CLASS (90670.511)	D0,11,D1		
.01	CLASS		1	F

## 6.5 Callable Routines

There are no remote procedure calls added in this release.

## 6.6 Published Entry Points

BPHRMUPM.INT

PHR(DFN,BDT,EDT,RESULT,PROV) ;PEP



## 7.0 Internal Relations

All functions within this application work independently.

There are no documented internal relations in BPHR.

## 8.0 External Relations

### 8.1 External Calls

### 8.2 Callable Routines – Published Entry Points

This application contains no calls to external published entry points other than to standard Kernel/FileMan calls.

### 8.3 Exported Options

Table 8-1: Exported option names and descriptions

Option Name	Description
BPHRMENU	Menu option
BPHR EDIT WEB SERVICE	Edit a site's PHR Web Service, if needed

## **9.0 Archiving and Purging**

There is no archiving or purging in BPHR.

## 10.0 Documentation Resources

This section describes a few methods to generate BPHR technical documentation.

### 10.1 %INDEX Option

This option analyzes the structure of a routine to determine in part if the routine adheres to RPMS programming standards. The %INDEX output can include the following components:

- Compiled list of errors and warnings
- Routine listing
- Local variables
- Global variables
- Naked globals
- Label references
- External references

Running %INDEX for a specified set of routines allows users to discover any deviations from RPMS programming standards that exist in the selected routines and to see how routines interact with one another (i.e., which routines call or are called by other routines).

To run %INDEX for the Patient Registration package, type the BPHR namespace at the “Routine(s)?>” prompt.

### 10.2 List File Attributes Option

This VA FileMan option allows users to generate documentation pertaining to files and file structure. Using the standard format of this option yields the following data dictionary information for a specified file:

- File name and description
- Identifiers
- Cross-references
- Files pointed to by the file specified
- Files that point to the file specified
- Input, print, and sort templates

In addition, the following applicable data is supplied for each field in the file:

- Field name, number, title, and description

- Global location
- “Help” prompt
- Cross-references
- Input transform
- Date last edited
- Notes

Using the Global Map format of this option generates an output that lists the following information:

- All cross-references for the file selected
- Global location of each field in the file
- Input, print, and sort templates

## **11.0 SAC Requirements and Exemptions**

No exemptions are noted at this time.

## **12.0 Templates, Forms, and Protocols**

### **12.1 Print Templates**

There are no print templates in BPHR.

### **12.2 Sort Templates**

There are no sort templates in BPHR.

### **12.3 Input Templates**

BPHR ADD/EDIT WEB SERVICE

### **12.4 List Templates**

There are no list templates in BPHR.

### **12.5 Forms**

There are no forms in BPHR.

### **12.6 Protocols**

There are no protocols in BPHR.

## **13.0 Accessibility Checklist**

### **13.1 IHS Section 508 36 CFR Part §1194.21 Software Applications and Operating Systems Checklist**

The BPHR package is not a software application that includes a user interface, and therefore the Section 508 compliancy checklist is not applicable.



## Appendix A: Sample API Calls

### A.1 PHR^BPHRMUPM(DFN,BDT,EDT,.RESULT,PROV)

The following example shows the record of a patient who does not have an ICN (Master Patient Index) identifier or a patient who has not signed up for PHR:

```

Input Parameters:
DFN - Internal entry number of the patient
BDT - Beginning date of the report period
EDT - Ending date of the report period
Output Parameter:
RESULT - result of the query to the PHR server
Piece 1 - Signed up for PHR (0=No, 1=Yes)
Piece 2 - Date
Piece 3 - Accessed PHR (0=No, 1=Yes)
Piece 4 - Last date accessed
Piece 5 - Used secure messaging (0=No, 1=Yes)
Piece 6 - Last date used secure messaging
Piece 7 - Patient's DIRECT email address

>D PHR^BPHRMUPM(365,3130301,3130801,.RESULT)

>W RESULT
0^^0^^0^

```

The following example shows the record of a patient who signed up for PHR, has logged in, and has used secure messaging:

```

>D PHR^BPHRMUPM(31818,3130301,3130801,.RESULT,"")

>W RESULT
1^3130617.1046^1^3130819.1458^1^3130617.1046^testpatient@directihs.net

```

## Glossary

### **Electronic Health Record (EHR)**

An application used by medical organizations to track patient medical records and care.

### **Meaningful Use (MU)**

Meaningful Use (MU) is a term used by CMS to ensure that providers and hospitals that have adopted certified EHR are using the technology to further the goals of information exchange among health care professionals. Eligible Providers (EPs) and Eligible Hospitals (EHs) will achieve meaningful use if the EP or EH (a) demonstrate use of certified EHR technology in a meaningful manner, (b) demonstrate the certified EHR technology provides for electronic exchange of health information to improve quality of care, and (c) use certified EHR technology to submit information on clinical quality and other measures.

### **Microsoft (MS)**

Microsoft is a software company that develops and distributes the Visual Studio (VS) tool used to develop the BPHR application.

### **Office of Information Technology (OIT)**

OIT is the organization within IHS that is responsible for developing and maintaining RPMS and related IT functions.

### **Resource and Patient Management System (RPMS)**

A series of integrated software components that includes clinical, administrative, and financial functions.

### **Software Quality Assurance (SQA)**

SQA is the office within OIT responsible for ensuring that the system conforms to RPMS Programming Standards and Conventions (SAC).

## Acronym List

Acronym	Term Meaning
API	Application Programmer Interface
BPHR	Namespace for BPHR files and routines
DSM	Digital Standard Mumps
DTS	Distributed Terminology System
EHR	Electronic Health Record
GUI	Graphical User Interface
HIE	Health Information Exchange
I/T/U	Abbreviation referring to all IHS direct, tribal, and urban facilities. Using the abbreviation I/T/U generally refers to all components of the Indian healthcare system.
IDE	Integrated development environment
IHS	Indian Health Service
ITSC	Information Technology Support Center currently referred to as Office of Information Technology (OIT)
MS	Microsoft
MU	Meaningful Use
OIT	Office of Information and Technology
RPMS	Resource and Patient Management System
SAC	Standards and Conventions
SQA	Software Quality Assurance
SRD	Software Requirements Document
UI	User Interface

## Contact Information

If you have any questions or comments regarding this distribution, please contact the OIT Help Desk (IHS).

**Phone:** (888) 830-7280 (toll free)

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