RESOURCE AND PATIENT MANAGEMENT SYSTEM

IHS Personal Health Record

(BPHR)

Technical Manual

Version 2.1
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Office of Information Technology (OIT)
Division of Information Technology
Albuquerque, New Mexico
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Preface

The purpose of this manual is to provide technical information about the IHS PERSONAL HEALTH RECORD (BPHR) package. The BPHR package contains an Application Programming Interface (API) call used by a Meaningful Use 2014 Performance Measure.
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 have access to their medical information. Patients will access their Personal Health Record via the internet. The RPMS side only contains an API that is used by a Meaningful Use 2014 Performance Measure to count how many patients have accessed their PHR and how many patients have done 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 below in Figure 2-1. Each of the main components identified in Figure 2-1 are detailed in the sections that follow.

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 to retrieve a list of documents related to the patient accessing the PHR application then another call to retrieve 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.
3.0 **Implementation and Maintenance**

The BPHR APIs are designed to provide a MUMPS-based programming interface for the MU 2014 Performance Measures 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**

The following table shows the prerequisite patch requirements.

<table>
<thead>
<tr>
<th>Package and Version</th>
<th>Associated Patch Designation(s)</th>
<th>Brief Patch Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

3.2 **System Requirements**

The following table shows the versions of other packages that should be installed for BPHR to work properly.

<table>
<thead>
<tr>
<th>Module</th>
<th>Minimum Version</th>
<th>Recommended Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensemble 2012</td>
<td>v2012</td>
<td></td>
</tr>
<tr>
<td>VA FileMan (DI)</td>
<td>v22.0 Patch 1017</td>
<td></td>
</tr>
<tr>
<td>IHS/VA Utilities (XB)</td>
<td>v3.0 through Patch 11</td>
<td></td>
</tr>
<tr>
<td>IHS Kernel Toolkit (XT)</td>
<td>V7.3 through Patch 1017</td>
<td></td>
</tr>
<tr>
<td>VA Kernel (XU)</td>
<td>v8.0 Patch 1017</td>
<td></td>
</tr>
</tbody>
</table>

3.3 **Package-wide Variables**

There are no package-wide BPHR variables in RPMS.

3.4 **Security Keys**

These are the security keys which govern BPHR that can be assigned to users.

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPHRZMENU</td>
<td>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.</td>
</tr>
</tbody>
</table>
4.0 Menu Diagram

RPMS menus in the BPHR system:

- IHS Personal Health Record Management [BPHRMENU]
  Menu option needs key BPHRMENU and contains the following option for managing BPHR.

- Edit PHR Web Service [BPHR EDIT WEB SERVICE]
  Updates information about the web service used by the site to connect to the PHR server.
5.0 Routine

5.1 Routine List
This routine list includes all BPHR routines:

- BPHR1POS
- BPHRCLAS
- BPHRMUPM
- BPHRUPD

5.2 Routines with Description
This routine list describes each routine in this version.

<table>
<thead>
<tr>
<th>Routine</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPHR1POS</td>
<td>Post-installation program</td>
</tr>
<tr>
<td>BPHRCLAS</td>
<td>Cache Class Compiler</td>
</tr>
<tr>
<td>BPHRMUPM</td>
<td>API to be called by MU 2014 Performance Measure</td>
</tr>
<tr>
<td>BPHRUPD</td>
<td>Updates the web service information</td>
</tr>
</tbody>
</table>

5.3 API List

5.3.1 PHR^BPHRMUPM(DFN,BDT,EDT,.RESULT)
This API returns information needed in calculating certain Performance Measures.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFN</td>
<td>Numeric (Required)</td>
<td>The internal entry number of the patient, identified by the MU Performance Measure.</td>
</tr>
<tr>
<td>BDT</td>
<td>Numeric (Required)</td>
<td>The beginning date of the MU Performance report in FileMan date format.</td>
</tr>
<tr>
<td>EDT</td>
<td>Numeric (Required)</td>
<td>The ending date of the MU Performance report in FileMan date format.</td>
</tr>
</tbody>
</table>

5.3.2 TMZ^BPHRMUPM()
This API returns the system timezone.
### 5.3.3 DATE^BPHRMUPM(BPX)

This API takes a FileMan date and formats it the way that the PHR system needs it.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPX</td>
<td>Date</td>
<td>3131101.0001 to 2013-11-01T00:00:01-0600</td>
</tr>
</tbody>
</table>

### 5.3.4 FMDT^BPHRMUPM(BPX)

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPX</td>
<td>Date/Time</td>
<td>2013-09-13T08:46:17-0600 to 3130913.084617</td>
</tr>
</tbody>
</table>
6.0 Files and Tables

6.1 File List

The following table contains a list of new files.

<table>
<thead>
<tr>
<th>File #</th>
<th>Filename</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>90670.2</td>
<td>BPHR WEB SERVICE</td>
<td>This file contains information about the connections to web service endpoints.</td>
</tr>
<tr>
<td>90670.5</td>
<td>BPHR CLASS TRANSPORT</td>
<td>This file contains the classes that will need to be defined as part of the installation.</td>
</tr>
</tbody>
</table>

6.2 File Access

The following table contains the FileMan access to new files.

<table>
<thead>
<tr>
<th>File #</th>
<th>Filename</th>
<th>GL</th>
<th>RD</th>
<th>WR</th>
<th>LYG</th>
<th>DD</th>
<th>DEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>90670.2</td>
<td>BPHR WEB SERVICE</td>
<td>^BPHR(90670.2, @, @, @, @, @)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90670.5</td>
<td>BPHR CLASS TRANSPORT</td>
<td>^BPHRCLS( @, @, @, @, @)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.3 Cross References

90670.2 (BPHR WEB SERVICE)

.01 Name

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>
<thead>
<tr>
<th>Field #</th>
<th>Field Name</th>
<th>Subscript</th>
<th>Piece</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>.01</td>
<td>NAME</td>
<td>D0,0</td>
<td>1</td>
<td>F</td>
</tr>
<tr>
<td>.02</td>
<td>URL ROOT</td>
<td>&quot;</td>
<td>2</td>
<td>F</td>
</tr>
<tr>
<td>.03</td>
<td>PORT NUMBER</td>
<td>&quot;</td>
<td>3</td>
<td>F</td>
</tr>
<tr>
<td>.05</td>
<td>TIMEOUT OVERRIDE</td>
<td>&quot;</td>
<td>5</td>
<td>F</td>
</tr>
<tr>
<td>.06</td>
<td>CURRENT VERSION</td>
<td>&quot;</td>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>.07</td>
<td>USERNAME</td>
<td></td>
<td>7</td>
<td>F</td>
</tr>
<tr>
<td>.08</td>
<td>PASSWORD</td>
<td></td>
<td>8</td>
<td>F</td>
</tr>
<tr>
<td>.09</td>
<td>INACTIVE</td>
<td></td>
<td>9</td>
<td>S</td>
</tr>
<tr>
<td>.1</td>
<td>INACTIVE DATE</td>
<td></td>
<td>10</td>
<td>D</td>
</tr>
<tr>
<td>.11</td>
<td>SERVICE PATH</td>
<td></td>
<td>11</td>
<td>F</td>
</tr>
</tbody>
</table>

1     | VERSION                  | D0,1,D1,0 | 1     |      |

.01    | VERSION                  | "         | 1     | F    |

.02    | DATE INSTALLED           | "         | 2     | D    |

File: 90670.5 BPHR CLASS TRANSPORT

Global: ^BPHRCLS(

<table>
<thead>
<tr>
<th>Field #</th>
<th>Field Name</th>
<th>Subscript</th>
<th>Piece</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>.01</td>
<td>PACKAGE NAME</td>
<td>D0,0</td>
<td>1</td>
<td>F</td>
</tr>
</tbody>
</table>

1.02    | RPMS STATUS              | "         | 2     | S    |

1.03    | RPMS DATE/TIME INSTALLED | "         | 3     | D    |

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) ;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>
<thead>
<tr>
<th>Option Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPHRMENU</td>
<td>Menu option</td>
</tr>
<tr>
<td>BPHR EDIT WEB SERVICE</td>
<td>Edit a site’s PHR Web Service, if needed</td>
</tr>
</tbody>
</table>
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 Indian Health Service (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 Section 508 compliance checklist is not applicable.
Appendix A: Sample API Calls

13.2 PHR^BPHRMUPM(DFN,BDT,EDT,.RESULT)

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:

```
> 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 used secure messaging:

```
> D PHR^BPHRMUPM(31818,3130301,3130801,.RESULT)
> W RESULT
1^3130617.1046^1^3130819.1458^1^3130617.1046
```
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)**
*Software company that develops and distributes the Visual Studio® (VS) tool used to develop the BPHR application.*

**Office of Information Technology (OIT)**
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)**
The office within OIT responsible for ensuring that the system conforms to RPMS Programming Standards and Conventions (SAC).
## Acronym List

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>API</td>
<td>Application Programmer Interface</td>
</tr>
<tr>
<td>BPHR</td>
<td>Namespace for BPHR files and routines</td>
</tr>
<tr>
<td>DSM</td>
<td>Digital Standard Mumps</td>
</tr>
<tr>
<td>DTS</td>
<td>Distributed Terminology System</td>
</tr>
<tr>
<td>EHR</td>
<td>Electronic Health Record</td>
</tr>
<tr>
<td>GUI</td>
<td>Graphical User Interface</td>
</tr>
<tr>
<td>I/T/U</td>
<td>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.</td>
</tr>
<tr>
<td>IDE</td>
<td>Integrated development environment</td>
</tr>
<tr>
<td>IHS</td>
<td>Indian Health Service</td>
</tr>
<tr>
<td>ITSC</td>
<td>Information Technology Support Center currently referred to as Office of Information Technology (OIT)</td>
</tr>
<tr>
<td>MS</td>
<td>Microsoft®</td>
</tr>
<tr>
<td>MU</td>
<td>Meaningful Use</td>
</tr>
<tr>
<td>OIT</td>
<td>Office of Information and Technology</td>
</tr>
<tr>
<td>RPMS</td>
<td>Resource and Patient Management System</td>
</tr>
<tr>
<td>SAC</td>
<td>Standards and Conventions</td>
</tr>
<tr>
<td>SQA</td>
<td>Software Quality Assurance</td>
</tr>
<tr>
<td>SRD</td>
<td>Software Requirements Document</td>
</tr>
<tr>
<td>UI</td>
<td>User Interface</td>
</tr>
</tbody>
</table>
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)
Web:   http://www.ihs.gov/helpdesk/
Email:  support@ihs.gov