



# **PHARMACY BENEFITS MANAGEMENT (PBM) EXTRACT ENHANCEMENTS**

## **INSTALLATION GUIDE**

PSU\*4\*3

Version 4.0  
February 2006



## Revision History

Date	Revised Pages	Patch Number	Description
02/2006	All	PSU*4*3	PBM Extract Enhancements #3 project. The amount of network traffic generated by this enhancement caused irresolvable circumstances on the PBM side once approximately twenty sites were sending data. This caused us to partner with the HLO (HL7 Optimized) team and implement a new and improved HLO process. (R. Singer, PM; M. Newman, Tech. Writer)
08/2005	All	PSU*4*3	This patch adds the functionality of creating flat files for PBM containing Chemistry Lab results that are sent via HL7 messages that will be transmitted from each facility in real-time.

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# 1. Introduction

## 1.1 Purpose

The current Pharmacy Benefits Management (PBM) national database is unable to meet the reporting requirements placed on the PBM Strategic Healthcare Group by external bodies such as the General Accounting Office (GAO), the Institute of Medicine (IOM), and congressional oversight bodies. In addition, the current PBM extracts lack important variables necessary for the PBM disease management initiatives, the VHA Medical Advisory Panel (MAP) and VHA research community. To meet the above requirements, enhancements have been made to the Veterans Health Information Systems and Technology Architecture (VistA) PBM V. 4.0 application.

The intended audiences for this document are PBM SHG, PBM Extract Enhancement Workgroup, Provider Systems Health Systems Design and Development (HSD&D) staff, National VistA support staff, technical writers, and Software Quality Assurance (SQA) staff.

## 1.2 Scope

PBM Patch PSU\*4\*3 updates PBM 4.0. This is the third in a series of three enhancements. This new functionality captures and sends all chemistry lab results to the CMOP-NAT server using HL7 messages. High traffic caused the CMOP server to crash and a new, dedicated server was implemented. The heavy traffic overloaded the HL 1.6 software down to the point of failure. To remedy this, the PBM team has forged a partnership with the HLO (HL7 Optimized) implementation team. The HL7 messages will be sent and received using the new HLO VistA implementation. Eventually, this lab result data will end up in flat files on the CMOP-NAT server where the PBM team will collect them. For more details, refer to the *Pharmacy Benefits Management V. 4\*3 Release Notes* document.

## 1.3 Dependencies and Constraints



**Note:** HL\*1.6\*126 and PBM 4.0 are required for PSU\*4\*3.

This patch contains the PSU SEND HL LOGICAL LINK and the PSU-SITE HLO Application Registry entries that are needed for a site to send their PBM HL7 messages to the CMOP-NAT server. HL\*1.6\*126 and PBM 4.0 must be installed before patch PSU\*4\*3 is installed.

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## 2. Pre-Installation

### 2.1 Minimum Required Packages

This product shall run on standard hardware platforms used by the Department of Veterans Affairs Healthcare facilities. These systems consist of standard or upgraded Alpha AXP clusters and run VMS DSM, Cache NT, or Cache VMS.

Package	Minimum Version Needed
Adverse Reaction Tracking (ART)	4.0
Auto Replenishment/Ward Stock (AR/WS)	2.3
Controlled Substances	3.0
Drug Accountability	3.0
HLO (Health Level 7 Optimized)	1.6
Inpatient Medications	5.0
Integrated Funds Control, Accounting and Procurement (IFCAP)	5.1
Kernel	8.0
Laboratory	5.2
MailMan	8.0
National Drug File (NDF)	4.0
Outpatient Pharmacy	7.0
Patient Care Encounter (PCE)	1.0
Patient Information Management System (PIMS)	5.3
Pharmacy Data Management (PDM)	1.0
VA FileMan	22.0
Visit Tracking	2.0

The above listed software is not included in this build and must be installed before this build is completely functional.

## 2.2 Required Setup

### 2.2.1 Creating/Configuring your PSU SEND HL LOGICAL LINK

If the PSU SEND HL LOGICAL LINK does not exist in the account where you are installing this distribution, you will need to create the link, then configure it as specified below:

```
Select OPTION NAME: INTERFACE DEVELOPER OPTIONS  HL MENU INTERFACE TK      Interface Developer
Options

Select Interface Developer Options Option: EL Link Edit

Select HL LOGICAL LINK NODE: PSU SEND
  Are you adding 'PSU SEND' as a new HL LOGICAL LINK (the 224TH)? No// YES

-----
                        HL7 LOGICAL LINK
-----

                        NODE: PSU SEND
```

\* Use the configuration details listed below to finish creating this link.

The configuration of your PSU SEND HL LOGICAL LINK depends on where (live or test) you are loading this distribution. You must ensure this link exists and is configured correctly before you begin. If this link is configured wrong, or if the link does not exist, the distribution will fail to load.

#### a) Configuring PSU SEND HL LOGICAL LINK in your **TEST** account.

```
Select OPTION NAME: INTERFACE DEVELOPER OPTIONS  HL MENU INTERFACE TK      Interface Developer
Options

Select Interface Developer Options Option: EL Link Edit

Select HL LOGICAL LINK NODE: PSU SEND
  Are you adding 'PSU SEND' as a new HL LOGICAL LINK (the 224TH)? No// YES

-----
                        HL7 LOGICAL LINK
-----

                        NODE: PSU SEND

                        INSTITUTION:

                        MAILMAN DOMAIN:

                        AUTOSTART: ← This should NOT be set to 'ENABLED'
```

```
QUEUE SIZE: 10

LLP TYPE: TCP <RET>

DNS DOMAIN: This must be blank
```

```
HL7 LOGICAL LINK
-----
[-----TCP LOWER LEVEL PARAMETERS-----]
|
|           PSU SEND
|
| TCP/IP SERVICE TYPE: CLIENT (SENDER)
| TCP/IP ADDRESS: This must be blank
| TCP/IP PORT: 5000
| TCP/IP PORT (OPTIMIZED): 5026
|
| ACK TIMEOUT: 600                RE-TRANSMISSION ATTEMPTS:
| READ TIMEOUT: 60                EXCEED RE-TRANSMIT ACTION: restart
| BLOCK SIZE:                      SAY HELO:
|
| STARTUP NODE:                    PERSISTENT:
| RETENTION: 10                    UNI-DIRECTIONAL WAIT:
|-----]
```

**b) Configuring PSU SEND HL LOGICAL LINK in your LIVE account.**

```
Select OPTION NAME: INTERFACE DEVELOPER OPTIONS  HL MENU INTERFACE TK      Interface Developer
Options

Select Interface Developer Options Option: EL Link Edit

Select HL LOGICAL LINK NODE: PSU SEND

HL7 LOGICAL LINK
-----

NODE: PSU SEND

INSTITUTION:

MAILMAN DOMAIN:

AUTOSTART: ← This should be set to 'ENABLED'

QUEUE SIZE: 10

LLP TYPE: TCP <RET>

DNS DOMAIN: CMOP-NAT.MED.VA.GOV
```

```

                                HL7 LOGICAL LINK
-----
[-----TCP LOWER LEVEL PARAMETERS-----]
|
|           PSU SEND
|
|   TCP/IP SERVICE TYPE: CLIENT (SENDER)
|   TCP/IP ADDRESS: 10.189.110.70
|   TCP/IP PORT: 5000
|   TCP/IP PORT (OPTIMIZED): 5001
|
|   ACK TIMEOUT: 600
|   READ TIMEOUT: 60
|   BLOCK SIZE:
|
|   RE-TRANSMISION ATTEMPTS:
|   EXCEED RE-TRANSMIT ACTION: restart
|   SAY HELO:
|
|   STARTUP NODE:
|   RETENTION: 10
|
|   PERSISTENT:
|   UNI-DIRECTIONAL WAIT:
|
[-----]

```

## 2.2.2 Disabling the PSU EVENT LAB protocol

Perform a FileMan lookup on the PROTOCOL file/PSU EVENT LAB protocol. If your site has the PSU EVENT LAB protocol defined, you **must** perform the activities listed below prior to installing PSU\*4\*3. It is recommended that these steps are started a day before the actual install of PSU\*4\*3 to ensure no trace of PBM HL7 messages remain.

Disable the PSU EVENT LAB protocol to stop PBM message creation. Do **NOT** use the disable flag on the protocol. Instead, edit the protocol via Fileman and set the **Entry Action** to “Quit”.

```

VA FileMan 22.0

Select OPTION: 1  ENTER OR EDIT FILE ENTRIES

INPUT TO WHAT FILE: PROTOCOL//
EDIT WHICH FIELD: ALL// ENTRY ACTION
THEN EDIT FIELD: enter

Select PROTOCOL NAME: PSU EVENT LAB          LAB RESULTS => Send to PBM
ENTRY ACTION: D HL7^PSULRHL1// QUIT

Select OPTION: ENTER OR EDIT FILE ENTRIES

Select PROTOCOL NAME:

```

### 2.2.3 PBM HL7 Messages Waiting to be Transmitted to CMOP

Use the *HL MAIN MENU* option and select the *SYSTEM LINK MONITOR* option to see the PSU SEND HL LOGICAL LINK. If any PBM HL7 messages are waiting to be transmitted to CMOP, they **must** be cleared out before the next step. It is recommended that the PSU SEND HL LOGICAL LINK be monitored periodically until message numbers no longer change, meaning no more messages are being created or transmitted, then clear the messages from the queue.

To clear the messages from the queue:

1. Look up the IEN of the PSU SEND entry in the HL LOGICAL LINK file.
2. Delete the queue at the programmer prompt by entering:

**>KILL ^HLMA("AC","O",<LINK IEN>)**

SYSTEM LINK MONITOR for SITE (T System)						
NODE	MESSAGES RECEIVED	MESSAGES PROCESSED	MESSAGES TO SEND	MESSAGES SENT	DEVICE TYPE	STATE
LL18VISN	0	0	71	0	NC	Shutdown
PSU SEND			1			Enabled

## 2.2.4 Stopping the PSU SEND HL LOGICAL LINK

Once no more messages are being created or transmitted through the PSU SEND HL LOGICAL LINK and the site is ready to install PSU\*4\*3, the link should be stopped. Stop the PSU SEND HL LOGICAL LINK via the *Filer and Link Management Options Menu* option of the *HL7 Main Menu*, using the *Start/Stop Links* option.

```
Select OPTION NAME: HL MAIN MENU          HL7 Main Menu

<TEST ACCOUNT>      Event monitoring menu ...
<TEST ACCOUNT>      Systems Link Monitor
<TEST ACCOUNT>      Filer and Link Management Options ...
<TEST ACCOUNT>      Message Management Options ...
<TEST ACCOUNT>      Interface Developer Options ...
<TEST ACCOUNT>      Site Parameter Edit

Select HL7 Main Menu <TEST ACCOUNT> Option: FILer and Link Management Options

<TEST ACCOUNT> SM   Systems Link Monitor
<TEST ACCOUNT> FM   Monitor, Start, Stop Filers
<TEST ACCOUNT> LM   TCP Link Manager Start/Stop
<TEST ACCOUNT> SA   Stop All Messaging Background Processes
<TEST ACCOUNT> RA   Restart/Start All Links and Filers
<TEST ACCOUNT> DF   Default Filers Startup
<TEST ACCOUNT> SL   Start/Stop Links
<TEST ACCOUNT> PI   Ping (TCP Only)
<TEST ACCOUNT> ED   Link Edit
<TEST ACCOUNT> ER   Link Errors ...

Select Filer and Link Management Options <TEST ACCOUNT> Option: SL Start/Stop Links

This option is used to launch the lower level protocol for the
appropriate device. Please select the node with which you want
to communicate

Select HL LOGICAL LINK NODE: PSU SEND
The LLP was last started on JUNE 27, 2005 16:32:41.

Okay to shut down this job? YES
The job for the PSU SEND Lower Level Protocol will be shut down.
```

## 2.3 Before Checksums

Sites may, or may not have ^PSULRHL1, depending on whether or not they deleted it, as instructed to in Section 5.2 of the *Installation Guide* for the re-release of PBM V. 4.0. In either case, the before checksums can be ignored.

### 2.3.1 PBM 4.0 Routines

PSULRHL1 N/A  
PSULRHL2 N/A  
PSULRHL3 N/A  
PSU3ENCK N/A

## 3. Installation Instructions

### 3.1 Environmental Check Routine

Before you can install this patch, an environmental check routine will inspect your environment to ensure the required HLO elements are set for your particular configuration.

If any corrections are necessary before this install, detailed messages will display, and the program will exit so you can fix what is necessary, then try the install again.

Only answer “YES” to the legacy system prompt if you are loading this distribution into a legacy system. This routine will determine if you are in a live or test system. Answering “YES” to the “legacy system?” prompt will treat this load as if it were in a test system.

#### Example: Screen Display of Environmental Check Routine:

```
Want to Continue with Load? YES//
Loading Distribution...

    PSU*4.0*3
Will first run the Environment Check Routine, PSU3ENCK

*****
This patch you are about to install sends LAB data out via
HL7 messages through the new HLO HL7 engine.

Messages should never be sent from anything other than a live account

If this install is for a live area, please ensure HLO is up and running
If this is a test or legacy system, please ensure HLO is NOT up and running

Is this a legacy system (Y/N)? NO//

You are about to load patch PSU*4*3 into this area

Are you certain you want to continue (Y/N)? YES// YES

*** ENVIRONMENTAL CHECK COMPLETE ***
*** ENVIRONMENT PASSES ~ PROCEED ***
```

## 3.2 Loading PSU\*4.0\*3

This section contains detailed steps to install PSU\*4\*3. The table below contains the steps necessary to install the software.

Step	Action
1	Data for this patch is being distributed in a Packman message. Read the PackMan message.
2	At the "Enter message action (in IN basket): Ignore/" prompt, select <b>Xtract PackMan</b> .
3	Select " <b>Select PackMan function: 6 INSTALL/CHECK MESSAGE.</b> "
4	<p>From the KIDS installation menu, you may select from the following options. When prompted for INSTALL NAME, enter <b>PSU*4.0*3</b>.</p> <ul style="list-style-type: none"> <li>a. <i>Backup a Transport Global</i> - This option will create a backup message of any routines exported with the build. It will not back up any other changes, such as DDs or templates.</li> <li>b. <i>Compare Transport Global to Current System</i> - This option will allow you to view all changes that will be made when the build is installed. It compares all components of the release (routines, DDs, templates, etc.).</li> <li>c. <i>Verify Checksums in Transport Global</i> - This option will ensure the integrity of the routines that are in the transport global.</li> </ul>
6	Select <b><i>Install Package</i></b> option and enter <b>PSU*4.0*3</b> .
7	<p>Install Questions for PSU*4.0*3:</p> <ul style="list-style-type: none"> <li>a. When prompted "Want KIDS to Rebuild Menu Trees Upon Completion of Install? YES/", enter <b>NO</b>.</li> <li>b. When prompted "Want KIDS to INHIBIT LOGONs during the install? YES/", enter <b>NO</b>.</li> <li>c. When prompted "Want to DISABLE Scheduled Options, Menu Options, and Protocols? YES/", enter <b>NO</b>.</li> </ul>



**Example: Screen Display During Installation of PSU\*4.0\*3**

```
Select Programmer Options Option: K  Kernel Installation & Distribution System

    Edits and Distribution ...
    Utilities ...
    Installation ...
    Patch Monitor Main Menu ...

Select Kernel Installation & Distribution System Option: Installation

Select Installation Option: INstall Package(s)
Select INSTALL NAME:   PSU*4.0*3      Loaded from Distribution  2/24/06@10:47:19
    => Completed/NotReleased PSU*4*3

This Distribution was loaded on Feb 24, 2006@10:47:19 with header of
    Completed/NotReleased PSU*4*3
    It consisted of the following Install(s):
        PSU*4.0*3
Checking Install for Package PSU*4.0*3
Will first run the Environment Check Routine, PSU3ENCK

*****
This patch you are about to install sends LAB data out via
HL7 messages through the new HLO HL7 engine.

Messages should never be sent from anything other than a live account

If this install is for a live area, please ensure HLO is up and running
If this is a test or legacy system, please ensure HLO is NOT up and running
Is this a legacy system (Y/N)? NO//

You are about to load patch PSU*4*3 into this area

Are you certain you want to continue (Y/N)? YES//

***  ENVIRONMENTAL CHECK COMPLETE  ***
***  ENVIRONMENT PASSES ~ PROCEED  ***

Install Questions for PSU*4.0*3

Incoming Files:

    779.2      HLO APPLICATION REGISTRY  (including data)
Note:  You already have the 'HLO APPLICATION REGISTRY' File.

Want KIDS to INHIBIT LOGONS during the install? YES// NO
Want to DISABLE Scheduled Options, Menu Options, and Protocols? YES// NO

Enter the Device you want to print the Install messages.
You can queue the install by enter a 'Q' at the device prompt.
Enter a '^' to abort the install.

DEVICE: HOME//  TELNET PORT
```

Install Started for PSU\*4.0\*3 :  
Feb 24, 2006@12:20:51

Build Distribution Date: Feb 01, 2006

Installing Routines:  
Feb 24, 2006@12:20:51

Installing Data Dictionaries:  
Feb 24, 2006@12:20:51

PSU\*4.0\*3

---

Installing Data:  
Feb 24, 2006@12:20:52

Installing PACKAGE COMPONENTS:

Installing HL7 APPLICATION PARAMETER

Installing PROTOCOL  
Feb 24, 2006@12:20:52

Updating Routine file...

Updating KIDS files...

PSU\*4.0\*3 Installed.  
Feb 24, 2006@12:20:52

Install Message sent #207575

---

100% Complete 

25	50	75
----	----	----

Install Completed

## 4. Post-Installation

This section contains the tasks that **must** be performed after this PBM distribution has been installed.

### 4.1 Configuring PSU SEND HL LOGICAL LINK in your LIVE account

```
Select OPTION NAME: INTERFACE DEVELOPER OPTIONS  HL MENU INTERFACE TK      Interface Developer
Options

Select Interface Developer Options Option: EL Link Edit

Select HL LOGICAL LINK NODE: PSU SEND

-----
                HL7 LOGICAL LINK
-----

                NODE: PSU SEND

            INSTITUTION:

        MAILMAN DOMAIN:

            AUTOSTART: ← This should be set to 'DISABLED'

            QUEUE SIZE: 10

            LLP TYPE: TCP <RET>

            DNS DOMAIN: CMOP-NAT.MED.VA.GOV
-----
```

```

                                HL7 LOGICAL LINK
-----
[-----TCP LOWER LEVEL PARAMETERS-----]
|                                     PSU SEND                                     |
| TCP/IP SERVICE TYPE: CLIENT (SENDER)                                         |
|   TCP/IP ADDRESS: 10.189.110.70                                               |
|   TCP/IP PORT: 5000                                                            |
|   TCP/IP PORT (OPTIMIZED): 5001                                              |
|                                                                                 |
|   ACK TIMEOUT: 600                                                            |
|   READ TIMEOUT: 60                                                            |
|   BLOCK SIZE:                                                                |
| RE-TRANSMISSION ATTEMPTS:                                                     |
| EXCEED RE-TRANSMIT ACTION: restart                                           |
| SAY HELO:                                                                     |
|                                                                                 |
| STARTUP NODE:                                                                 |
| RETENTION: 10                                                                |
| PERSISTENT:                                                                    |
| UNI-DIRECTIONAL WAIT:                                                         |
[-----]

```

## 4.2 Ensuring the PSU EVENT LAB protocol is active

If the ENTRY ACTION is set to “Quit”, re-enable the PSU EVENT LAB protocol to send messages to the CMOP by editing the protocol and ensuring the Entry Action is set to “D HL7^PSULRHL1”.

```

VA FileMan 22.0

Select OPTION: 1  ENTER OR EDIT FILE ENTRIES

INPUT TO WHAT FILE: PROTOCOL//
EDIT WHICH FIELD: ALL// ENTRY ACTION
THEN EDIT FIELD: enter

Select PROTOCOL NAME: PSU EVENT LAB      LAB RESULTS => Send to PBM
ENTRY ACTION: Q// D HL7^PSULRHL1

Select OPTION: ENTER OR EDIT FILE ENTRIES

Select PROTOCOL NAME:

```

### 4.3 Monitoring PSU Messages in HLO System Monitor

Use HLO to monitor and ensure that PBM HL7 messages are being sent to the CMOP-NAT server at least once a day for several weeks.

```
Select OPTION NAME: HL MAIN MENU           HL7 Main Menu

    Event monitoring menu ...
    Systems Link Monitor
    Filer and Link Management Options ...
    Message Management Options ...
    Interface Developer Options ...
    Site Parameter Edit
HLO  HL7 (Optimized) MAIN MENU ...

Select OPTION NAME: HLO MAIN MENU           HL7 (Optimized) MAIN MENU

SM   HL7 (Optimized) SYSTEM MONITOR
MV   HL7 (Optimized) MESSAGE VIEWER
APPS Application Registry (HL7 Optimized)

Select HL7 (Optimized) MAIN MENU Option: SM  HL7 (Optimized) SYSTEM MONITOR
```

\* Please review the *HLO Technical Manual* for instructions on monitoring the HLO system and the HL7 messages.

### 4.4 After Checksums

This section lists the routines and related checksums for PSU\*4\*3 after the installation process.

#### 4.4.1 PSU 4\*3 Routines

PSU3ENCK value = 6398350  
PSULRHL1 value = 5062019  
PSULRHL2 value = 5243630  
PSULRHL3 value = 8314247



**Note:** The environmental check routine, PSU3ENCK, will be deleted from your system upon completion of the installation.

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## 5. Troubleshooting

For any issues and questions related to installation issues, please contact EVS and request technical support.

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