

**Department of Veterans Affairs
Veterans Health Administration (VHA)
Office of Informatics and Analytics
Innovation Program**

OneVA Pharmacy Implementation Project

**System Design Document (SSD)
(CLIN #0002AC)**

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1. Introduction

Leadership at the Department of Veterans Affairs (VA) initiated the OneVA Pharmacy project to enhance and integrate the OneVA Pharmacy prototype into VistA. The OneVA Pharmacy module will provide the Department of Veterans Health Administration (VHA) the capability to allow Veterans travelling across the United States to refill their active VA prescription at any VA Pharmacy regardless of where the prescription originated. The module expands available pharmacy information in VistA to pharmacists providing direct access to any active and refillable prescription from any VA Healthcare System. The OneVA Pharmacy project modifies the existing prototype software to expand its current capability and includes the development of documentation to support a national rollout in 2016.

The OneVA Pharmacy module and this implementation provides a foundation to build and extend new capabilities to the Veteran, who are better served by integrating virtual care into pharmacies, using technology to close the gap between the previous quality of information, and the Veteran's level of engagement. A well-designed OneVA Pharmacy builds upon the history of the VHA, and advances in modern technology to allow Veterans to take a more active role in their own health care.

1.1. Scope

This System Design Document (SDD) will define the high level design for the OneVA Pharmacy project objectives. It defines and describes system components, architectural views, system constraints, and design rationale.

1.2. User Profiles

The user profile of the OneVA Pharmacy module are those users, specifically pharmacists, that use the Pharmacy [PSO LM BACKDOOR ORDERS] menu to dispense prescriptions.

1.3. Acronyms and Abbreviations

The following table provides the list of acronyms used throughout the document along with their descriptions.

Table 1: Acronym & Abbreviation Table

Acronym/Abbreviation	Description
ADT	Admission Discharge Transfer
AITC	Austin Information Technology Center
API	Application Programming Interface
BITS	Business Information Technology Solutions, Inc.
CDS	Clinical Data Services

Acronym/Abbreviation	Description
CLIN	Contract Line Item Number
DFN	Data File Number
DHCP	Dynamic Host Configuration Protocol
eMI	Enterprise Messaging Infrastructure
ESB	Enterprise Service Bus
HDR	Health Data Repository
HL7	Health Level 7
ICN	Integration Control Number
IOC	Initial Operating Capability
IT	Information Technology
MLLP	Minimal Lower Layer Protocol
MUMPS	Massachusetts General Hospital Utility Multi Programming System
MVI	Master Veteran Index
NPI	National Patient Index
OIA	Office of Informatics and Analytics
PSO	Outpatient Prescription Pharmacy
[PSO LM BACKDOOR ORDERS]	Patient Prescription Processing
RDNG	IBM Rational DOORS Next Generation
RSD	Requirements Specification Document
RTM	Requirements Traceability Matrix
SDD	System Design Document
SME	Subject Matter Expert

Acronym/Abbreviation	Description
SOAP	Simple Object Access Protocol
TRM	Technical Reference Model
VA	Department of Veterans Affairs
VHA	Department of Veterans Health Administration
VistA	Veterans Health Information Systems and Technology Architecture

1.4. Processes and References

The references that support the implementation of the OneVA Pharmacy SDD are:

- [Requirements Specification Document \(RSD\)](#)

2. Background

2.1. Overview of the System

The overall OneVA Pharmacy system design is partitioned into two main components. They are:

1. VistA Server
2. Enterprise Messaging Infrastructure (eMI) Enterprise Service Bus (ESB) (VAeMI)

The VistA Server is the user interface where a pharmacist uses the “Patient Prescription Processing [PSO LM BACKDOOR ORDERS]” menu option to query for and refill, patient’s active and refillable prescriptions; local and remote. The VAeMI receives requests from VistA to query the Health Data Repository/Clinical Data Service (HDR/CDS) for a patient’s active and refillable remote prescriptions. The VistA server and the VAeMI communicate with each other using Health Level 7 (HL7) v2.5.1 over Minimal Layer Protocol (MLLP). Communication to the HDR/CDS will also be via SOAP web services.

The following figure displays the OneVA Pharmacy system design approach.

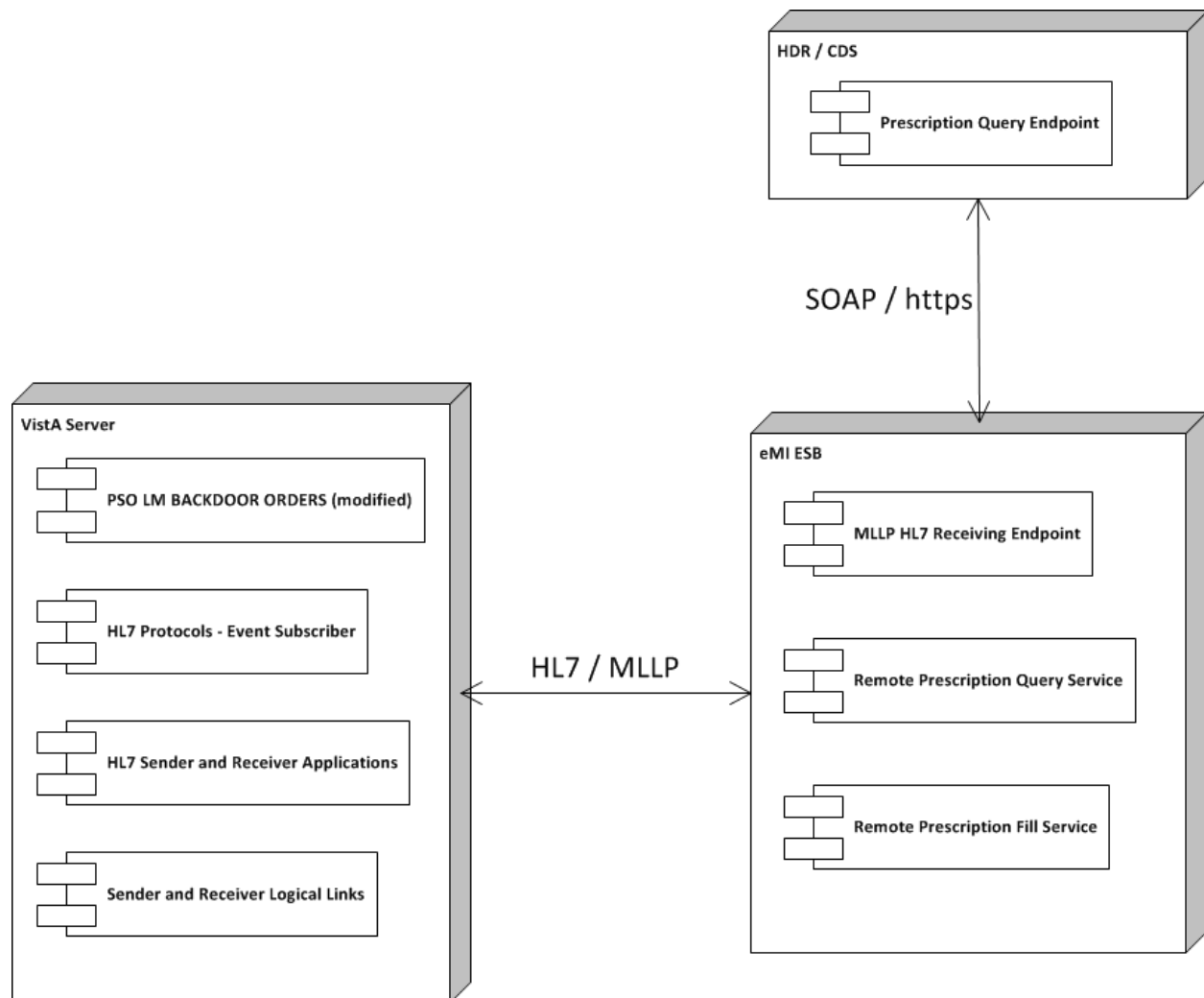


Figure 1: OneVA Pharmacy Design Overview

2.2. Overview of the Business Process

OneVA Pharmacy provides VistA the functionality to allow pharmacists to refill a prescription at any VA pharmacy location. It decrements the patients number of remaining refill balance at the originating pharmacy and manages controlled substances by displaying a message that a controlled substance cannot be refilled outside of the originating pharmacy.

2.3. Overview of the Significant Requirements

2.3.1. Business Rules

Business rules are a high-level functionality condition that the system must support in order to complete the business of the organization. Business rules describe the operations, definitions, and constraints that apply to an organization. The high-level overview of the business rules for OneVA Pharmacy project includes filtering on only 'active' prescriptions with one or more refills

remaining and the date of the next refill is no earlier than one week. The prescription cannot be a controlled substance and the patient must be registered in one or more VistAs.

The detailed business rules for the OneVA Pharmacy project can be found in the OneVA Pharmacy Requirements Specification Document (RSD), located on the VA SharePoint. The OneVA Pharmacy RSD can be accessed by following this [LINK](#).

2.3.2. Design Constraints

Design constraints mandate design decisions that the system must support in order to complete the business of the organization. The high-level overview of the design constraints for the OneVA Pharmacy project includes using the VistA routine ‘Patient Prescription Processing’ [PSO LM BACKDOOR ORDERS] to access local patient information; HDR/CDS will be accessed via the VAeMI to retrieve data for the medication profile screen; and the VAeMI and the VistA Dynamic Host Configuration Protocol (DHCP) HL7 interface will be integrated for information exchange between VistA systems.

The details for the design constraints for the OneVA Pharmacy project can be found in the OneVA Pharmacy RSD, located on the VA SharePoint. The OneVA Pharmacy RSD can be accessed by following this [LINK](#).

2.3.3. Documentation Specifications

The goal of the ‘Documentation Specifications’ is to ensure necessary documentation is developed according to standard. The product and project documentation for the OneVA Pharmacy project can be found in the OneVA Pharmacy RSD, located on the VA SharePoint. The OneVA Pharmacy RSD can be accessed by following this [LINK](#).

2.3.4. Functional Requirements

A requirement specifies functions that the application should be able to perform and constraints on application performance. The high-level overview functional specifications for the OneVA Pharmacy project includes displaying the Medication Profile for a patient from all other facilities, capability to refill full or partial active prescription for a patient at remote site other than the site the prescription originated from, dispense local refills as currently designed, generate a prescription label, and generate new reports.

The functional requirements are detailed in the OneVA Pharmacy RSD, located on the VA SharePoint. The OneVA Pharmacy RSD can be accessed by following this [LINK](#).

3. Conceptual Design

3.1. Conceptual Application Design

The software architecture for the OneVA Pharmacy project follows the peer-to-peer architectural model, where one VistA node sends and receives data to and from another VistA node. The system utilizes the ESB model providing message routing and coordination of multiple services to view a patient’s prescription record and modify that record in remote VistA systems.

3.1.1. Application Context

The following diagram displays the VistA application and how it will exist within the design of the ESB model when the OneVA Pharmacy project is implemented.

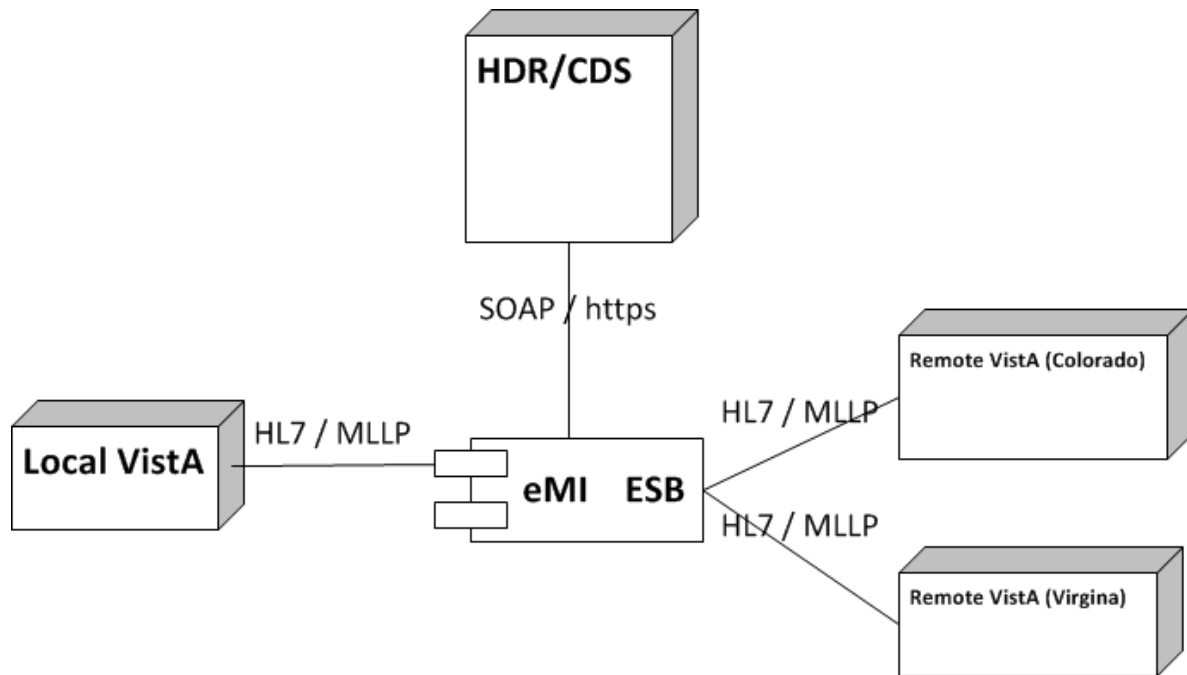


Figure 2: Application Architectural Diagram

The entities displayed in the Application Architecture Diagram are explained as follows:

- VistA is the user interface for initiating prescription queries and requesting prescription refills from remote VistAs.
- VAeMI ESB is the messaging component to handle MLLP HL7 endpoints, SOAP web service call to the HDR/CDS.

3.1.2. High-Level Application Design

The High-Level Application Design identifies the major components of the application and the relationships of the major application components to each other. Use Cases are being used in this SDD to document the logical application design for the OneVA Pharmacy project.

The following use cases have the pre-condition that the patient is known and registered in one or more VistAs.

Note: The act of registering a patient in VistA triggers an Admission Discharge Transfer (ADT) registration message to be sent to the Master Veteran Index (MVI) located in the Austin Information Technology Center (AITC). For each new patient, the MVI creates and assigns an Integration Control Number (ICN) and sends this number among other information to the initiating VistA in response to the ADT message. Further the MVI, stores and correlates the local VistA Patient Data File Numbers (DFNs) with the national ICN. One national patient ICN is correlated

to (among other systems' patient identifiers) many local VistA patient identifiers. The ICN enables the sharing of patient data between operationally diverse systems.

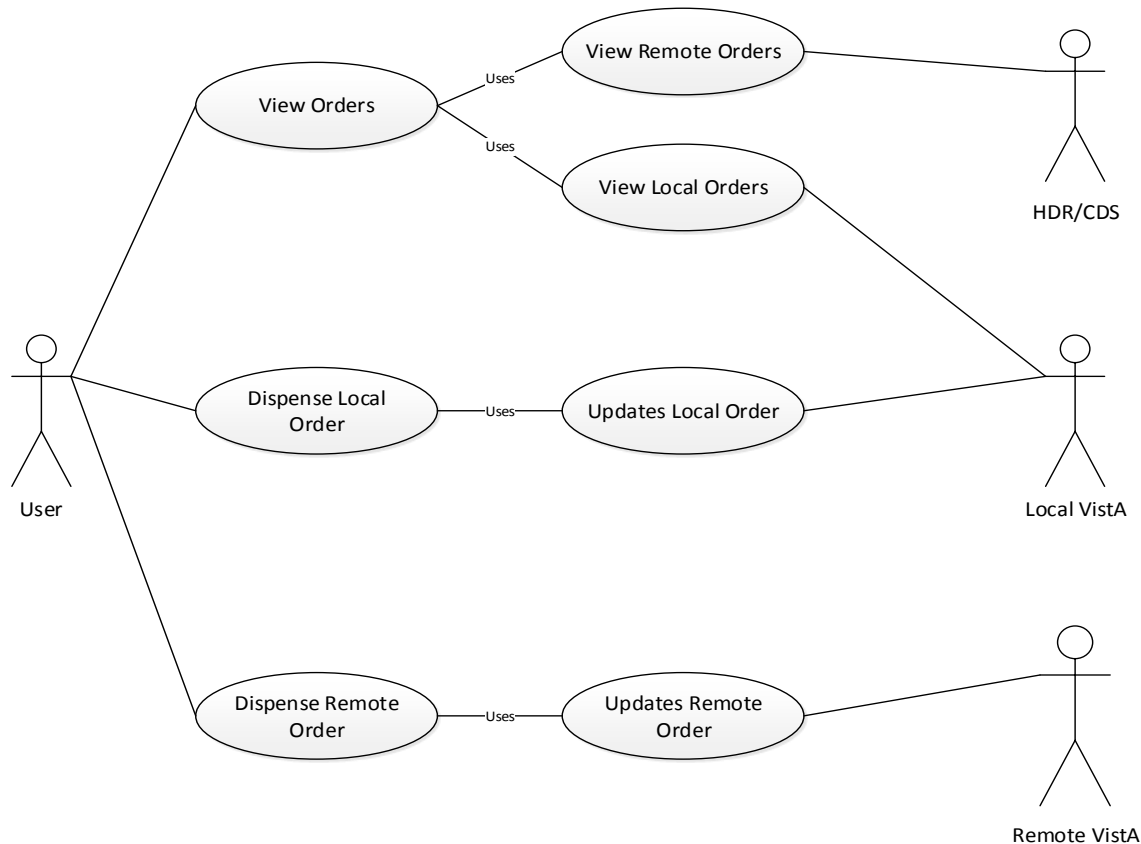


Figure 3: High-level Context Diagram

3.1.2.1. Use Case Name: View Orders

The 'View Orders' Use Case describes the process for users to view all of a patient's active prescription orders. This process allows a user to view prescription order information in one place whether the order originated from a local or remote VistA instance.

Actors

- User (Provider, Pharmacist, etc.)
- Local VistA instance
- HDR/CDS
- VAeMI ESB (proxy to remote VistAs)

Pre-Conditions

- Patient must have an ICN
- User has accessed the PBM Manager Menu [PSU PBM MANAGER MENU] (no separate Security Keys required)

Flow of Events

1. User enters the Medication Profile screen.
2. The local VistA instance will retrieve the local prescriptions.
3. The local VistA instance will send a request via the VAeMI ESB to the HDR/CDS with the patient identifiers to retrieve the prescriptions with a status of 'Suspended', 'Active', or 'Hold' from all previous treatment facilities excluding local facility.
4. The local VistA instance will display all prescriptions.

Exceptions

- 3a. VAeMI ESB is not accessible.
- 3b. HDR/CDS is not accessible.

System Message

- 1a. Please wait. Checking for remote prescriptions. This may take a moment...
- 1b. Eligibility: RX PATIENT STATUS: OPT NSC//
- 3a. The system is down or not responding. Could not query remote prescriptions. Press RETURN to continue.

3.1.2.2. Use Case Name: Dispense Local Order

The "Dispense Local Order" Use Case describes the process for users to dispense local order. Note: Documented in the RSD there is a business requirement that the system shall provide the ability to dispense local refills as currently designed therefore this Use Case is being presented for test cases development and documentation purpose.

Actors

- User (Provider, Pharmacist, etc.)
- Local VistA Instance

Pre-Conditions

- Patient must have an ICN.
- Local VistA instance has the required amount of prescribed medication inventory on-hand.
- User has accessed the PBM Manager Menu [PSU PBM MANAGER MENU] (no separate Security Keys required)

Flow of Events

1. User selects RF (Refill) for a local prescription from the Medication Profile screen.
2. The local VistA will update the prescription; decrement refills, etc.
3. The local VistA will dispense the prescription.

Alternate Flow

1. User selects PF (Partial fill) for a local prescription from the Medication Profile screen.
2. The local VistA will update the prescription; partial fill date, etc.
3. The local VistA will dispense the prescription.

3.1.2.3. Use Case Name: Dispense Remote Order

The 'Dispense Remote Order' Use Case describes the process for users to dispense a remote order.

Actors

- User (Provider, Pharmacist, etc.)
- Local VistA Instance
- VAeMI ESB
- Remote VistA Instance

Pre-Conditions

- Patient must have an ICN.
- Local VistA instance has the required amount of prescribed medication inventory on-hand.
- User has accessed the PBM Manager Menu [PSU PBM MANAGER MENU] (no separate Security Keys required)

Flow of Events

1. User selects a remote prescription and RF (Refill) from the Medication Profile screen.
2. The local VistA instance will send a refill order request to the VAeMI ESB.
3. The VAeMI ESB will route the refill order request to remote VistA instance.
4. The remote VistA will conduct order checks.
5. The remote VistA will update the prescription order; decrement refills, without affecting inventory.
6. The local VistA instance will dispense medication.

Alternate Flow

1. User selects a remote prescription and PF (Partial fill) from the Medication Profile screen.
2. The local VistA instance will send a partial fill order request to the VAeMI ESB.
3. The VAeMI ESB will send partial fill order request to remote VistA instance.
4. The remote VistA will conduct order checks.
5. The remote VistA will update the prescription order; update partial fill date without affecting inventory.
6. The local VistA instance will dispense medication.

Exceptions

- 2a. VAeMI ESB is not accessible.
- 3a. The remote VistA is not accessible
- 3b. The prescription is a controlled substance
- 4a. The remote VistA instance fails the order.

System Message

- 1a. Please wait. Checking for remote prescriptions. This may take a moment...
- 1b. Eligibility: RX PATIENT STATUS: OPT NSC//
- 3a. The system is down or not responding. Could not query remote prescriptions. Press RETURN to continue.

3.1.3. Application Locations

The OneVA Pharmacy module extends the existing VistA to provide pharmacists direct access to any active, refillable prescription from any VA Healthcare System. However, integration with the VAeMI-middleware and the HDR/CDS repository are critical for the success of the deployment. but are outside the development of the OneVA Pharmacy team's deliverables.

3.2. Conceptual Data Design

3.2.1. Project Conceptual Data Model

Not applicable.

3.2.2. Database Information

3.2.2.1. Remote Prescription Log File

STANDARD DATA DICTIONARY #52.09 -- REMOTE PRESCRIPTION LOG FILE

MAR 4,2016@12:07:28 PAGE 1

STORED IN ^PSRXR(52.09, *** NO DATA STORED YET *** SITE: TEST.CHEYENNE.MED.VA
.GOV UCI: VISTA,ROU DATA NAME GLOBAL DATA ELEMENT TITLE LOCATION TYPE

DD ACCESS: @

RD ACCESS: @

WR ACCESS: @

DEL ACCESS: @

LAYGO ACCESS: @

AUDIT ACCESS: @

(NOTE: Kernel's File Access Security has been installed in this UCI.)

CROSS REFERENCED BY: LOG DATE/TIME(B), PATIENT(C), RX NUMBER(D), SITE NUMBER(E)

52.09,.01 LOG DATE/TIME 0;1 DATE (Required)

INPUT TRANSFORM: S %DT="ESTR" D ^%DT S X=Y K:Y<1 X

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the date/time for this transaction.

DESCRIPTION: This is the date/time associated with this remote prescription transaction. The date/tim represents the date/time the message was processed and filed locally.

CROSS-REFERENCE: 52.09^B

1)= S ^PSRXR(52.09,"B",\$E(X,1,30),DA)=""

2)= K ^PSRXR(52.09,"B",\$E(X,1,30),DA)

52.09,.02 PATIENT 0;2 POINTER TO PATIENT FILE (#2) (Required)

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the Patient for which this refill or partial fill occurred.

DESCRIPTION: This is the patient for which a refill or partial fill request was generated.

CROSS-REFERENCE: 52.09^C

1)= S ^PSRXR(52.09,"C",\$E(X,1,30),DA)=""

2)= K ^PSRXR(52.09,"C",\$E(X,1,30),DA)

Cross reference for patient IEN. 52.09,.03 RX NUMBER 0;3 FREE TEXT (Required)

INPUT TRANSFORM: K:\$L(X)>20!(\$L(X)<1) X

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the remote RX number. This is the RX number from the remote facility.

DESCRIPTION: The RX# as stored at the remote facility.

CROSS-REFERENCE: 52.09^D

1)= S ^PSRXR(52.09,"D",\$E(X,1,30),DA)=""

2)= K ^PSRXR(52.09,"D",\$E(X,1,30),DA)

Cross reference for site number.

52.09,.04 SITE NUMBER 0;4 POINTER TO INSTITUTION FILE (#4) (Required)

LAST EDITED: APR 28, 2014

HELP-PROMPT: This is the site number of the facility for the remote RX.

DESCRIPTION: Site number for the remote facility.

CROSS-REFERENCE: 52.09^E

1)= S ^PSRXR(52.09,"E",\$E(X,1,30),DA)=""

2)= K ^PSRXR(52.09,"E",\$E(X,1,30),DA)

Site Number Cross reference. 52.09,.05 REQUEST TYPE 0;5 SET

'RF' FOR REFILL;

'PR' FOR PARTIAL FILL;

'OR' FOR OUTSIDE REFILL;

'OP' FOR OUTSIDE PARTIAL FILL;

LAST EDITED: AUG 04, 2014

HELP-PROMPT: This is the type of request that was made.

Refill(RF), Partial Fill(PR), Outside Refill

(OR), or Outside Partial Fill (OP).

DESCRIPTION: This field holds the type of request being made for this RX. 52.09,.06 OUTGOING
REQUEST PHARMACIST 0;6 POINTER TO NEW PERSON FILE (#200) (Required)

LAST EDITED: AUG 04, 2014

HELP-PROMPT: Enter the Pharmacist for this refill or partial fill request.

DESCRIPTION: This is the Pharmacist who initiated the refill or partial fill request to the remote facility.
52.09,.061 REMOTE FILLING PHARMACIST 0;11 FREE TEXT

INPUT TRANSFORM: K:\$L(X)>30!(\$L(X)<3) X

LAST EDITED: AUG 04, 2014

HELP-PROMPT: Answer must be 3-30 characters in length.

52.09,.07 QUANTITY 0;7 NUMBER

INPUT TRANSFORM: K:+X'=X!(X>9999)!(X<0)!(X?.E1"."1N.N) X

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the quantity that was dispensed with this refill or partial fill.

DESCRIPTION: This is the quantity associated with this refill or partial fill.

52.09,.08 DAYS SUPPLY 0;8 NUMBER

INPUT TRANSFORM: K:+X'=X!(X>999)!(X<0)!(X?.E1"."1N.N) X

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the days supply for this refill or partial fill.

DESCRIPTION: This is the days supply for this refill or partial fill action.

52.09,.09 REFILL/PARTIAL DATE 0;9 DATE

INPUT TRANSFORM: S %DT="E" D ^%DT S X=Y K:Y<1 X

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the date for this refill or partial fill request.

DESCRIPTION: This is the date for the refill or partial fill request. This represents the date as it is logged in the .01 field of either the REFILL or PARTIAL subfile within the PRESCRIPTION file (#52) on the remote system.

52.09,.1 DISPENSED DATE 0;10 DATE

INPUT TRANSFORM: S %DT="E" D ^%DT S X=Y K:Y<1 X

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the dispense date for this refill or partial fill request.

DESCRIPTION: This is the Dispense date as it is held in the DISPENSED DATE within the REFILL subfile of the PRESCRIPTION (#52) file, or the DISPENSED DATE within the PARTIAL subfile of the PRESCRIPTION file.

52.09,1 REMOTE DRUG NAME 1;1 FREE TEXT

INPUT TRANSFORM: K:\$L(X)>120!(\$L(X)<1) X

LAST EDITED: AUG 12, 2014

HELP-PROMPT: Enter the name of the drug associated with this refill or partial fill request.

DESCRIPTION: This is the name of the drug being dispense for this request.

52.09,1.1 LOCAL (MATCHED) DRUG 1;2 POINTER TO DRUG FILE (#50)

LAST EDITED: AUG 12, 2014

DESCRIPTION: This is the drug that was used for locally for the 'remote' refill or partial fill. Since drug IENS and names may differ between sites, a user must match the remote drug name to a local drug.

52.09,1.2 TOTAL REFILL/PARTIAL FILL COST 1;3 NUMBER

INPUT TRANSFORM: S:X["\$" X=\$P(X,"\$",2) K:X'?.N.1"."2N!(X>99999999.9999999)!(X<0) X

LAST EDITED: AUG 12, 2014

HELP-PROMPT: Type a dollar amount between 0 and 9999999.99, 2 decimal digits.

DESCRIPTION: This is the total cost for the 'remote'/filling facility. The cost is derived by using the cost of the drug at the time of the refill or partial fill. The cost is being retrieved from file 50, field 13.

52.09,2 MESSAGE DETAILS 2;0 WORD-PROCESSING #52.092 (IGNORE "|")

52.09,3 LABEL DATA 3;0 WORD-PROCESSING #52.093 (NOWRAP) (IGNORE "|")

FILES POINTED TO	FIELDS dRUG (#50)	LOCAL (MATCHED) DRUG (#1.1)
INSTITUTION (#4)	SITE NUMBER (#.04) NEW PERSON (#200)	OUTGOING REQUEST
PHARMACIST (#.06) PATIENT (#2)	PATIENT (#.02)	

STANDARD DATA DICTIONARY #52.1 -- REFILL SUB-FILE

MAR 4,2016@12:08:35 PAGE 1

STORED IN ^PSRX(D0,1, SITE: TEST.CHEYENNE.MED.VA.GOV UCI: VISTA,ROU DATA NAME
GLOBAL DATA ELEMENT TITLE LOCATION TYPE-----

52.1,91 REMOTE FILL SITE RF;1 POINTER TO INSTITUTION FILE (#4)

LAST EDITED: APR 26, 2014

DESCRIPTION: This is the institution number of the facility that performed the physical refill.

CROSS-REFERENCE: 52^RFIL

1)= S ^PSRX("RFIL",\$E(X,1,30),DA(1),DA)=""

2)= K ^PSRX("RFIL",\$E(X,1,30),DA(1),DA)

Index to identify remote refills.

52.1,92 REMOTE PHARMACIST RF;2 FREE TEXT

INPUT TRANSFORM: K:\$L(X)>45!(\$L(X)<1) X

LAST EDITED: APR 22, 2014

HELP-PROMPT: Answer must be 1-45 characters in length.

DESCRIPTION: This is the name of the Pharmacist that remotely completed a refill for a prescription.

52.1,93 REMOTE PHARMACIST PHONE RF;3 FREE TEXT

INPUT TRANSFORM: K:\$L(X)>15!(\$L(X)<1) X

LAST EDITED: APR 22, 2014

HELP-PROMPT: Answer must be 1-15 characters in length.

DESCRIPTION: This is the contact telephone number for the remote pharmacist requesting a refill.

STANDARD DATA DICTIONARY #52.2 -- PARTIAL DATE SUB-FILE

MAR 4,2016@12:09:34 PAGE 1

STORED IN ^PSRX(D0,"P", SITE: TEST.CHEYENNE.MED.VA.GOV UCI: VISTA,ROU DATA NAME
GLOBAL DATA ELEMENT TITLE LOCATION TYPE

52.2,91 REMOTE FILL SITE PF;1 POINTER TO INSTITUTION FILE (#4)

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the site number that is requesting this partial fill.

DESCRIPTION: This holds the site number for the facility requesting a remote partial fill.

CROSS-REFERENCE: 52^PFIL

1)= S ^PSRX("PFIL",\$E(X,1,30),DA(1),DA)=""

2)= K ^PSRX("PFIL",\$E(X,1,30),DA(1),DA)

Index to identify partial fills.

52.2,92 REMOTE PHARMACIST PF;2 FREE TEXT

INPUT TRANSFORM: K:\$L(X)>45!(\$L(X)<1) X

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the name of the Pharmacist that made this remote partial fill request.

DESCRIPTION: This holds the name of the pharmacist that initiated the remote partial fill request.

52.2.93 REMOTE PHARMACIST PHONE PF;3 FREE TEXT

INPUT TRANSFORM: K:\$L(X)>15!(\$L(X)<1) X

LAST EDITED: APR 26, 2014

HELP-PROMPT: Enter the contact telephone number for the pharmacist requesting this partial fill.

DESCRIPTION: This is the contact number for the remote pharmacist who initiated this partial fill request.

FILES POINTED TO
INSTITUTION (#4) REMOTE FILL SITE (#91).

3.2.2.2. Refill Multiple (#52.1) of the Prescription File (#52)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
91	Remote Fill Site	Institution File (#4)	“RFIL”	This is the site that performed the remote refill action.
92	Remote Pharmacist	N/A	N/A	This is the name of the remote pharmacist that performed the refill action.
93	Remote Pharmacist Phone	N/A	N/A	This is the phone number for the pharmacist that performed the refill action.

3.2.2.3. Partial Multiple (#52.2) of the Prescription File (#52)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
91	Remote Fill Site	Institution File (#4)	“RFIL”	This is the site that performed the remote partial fill action.
92	Remote Pharmacist	N/A	N/A	This is the name of the remote pharmacist that performed the partial fill action.
93	Remote Pharmacist Phone	N/A	N/A	This is the phone number for the pharmacist that performed the partial fill action.

3.2.2.4. Remote Prescription Log (#52.09)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
.01	LOG DATE/TIME	N/A	52.09^B	Date/Time of refill/partial fill transaction.
.02	PATIENT	PATIENT (#2)	52.09^C	This is the patient for which a refill or partial fill was executed remotely.
.03	RX NUMBER	N/A	52.9^D	This is the RX Number from the prescription file (#52). ** Should this be converted to a pointer??**
.04	SITE NUMBER	INSTITUTION (#4)	5209^E	
.05	REQUEST TYPE	N/A		RF – REFILL PR – PARTIAL FILL OR – OUTSIDE REFILL OP – OUTSIDE PARTIAL FILL
.06	OUTGOING REQUEST PHARMACIST	NEW PERSON (#200)	N/A	This is the pharmacist who initiated the refill or partial fill request to the remote facility
.061	REMOTE FILLING PHARMACIST	N/A	N/A	This is the pharmacist that requested a refill or partial fill from a remote facility.
.07	QUANTITY	N/A	N/A	This is the quantity dispensed.
.08	DAYS SUPPLY	N/A	N/A	This is the day's supply for the medication.
.09	REFILL/PARTIAL DATE	N/A	N/A	This is the date of the refill or partial fill request. This represents the date as it is logged in the .01 field of either the refill or partial sub files within the prescription file.
.1	DISPENSED DATE	N/A	N/A	This is the Dispense date as it is held in the DISPENSED DATE within the REFILL or PARTIAL sub files of the PRESCRIPTION file.

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
1	REMOTE DRUG NAME	N/A	N/A	This is the name of the drug being dispensed for this request.** Note, we may want both the name and VA product id..***
1.1	LOCAL (MATCHED) DRUG	DRUG (#50)	N/A	This is the drug that was used locally for the 'remote' refill or partial fill.
1.2	TOTAL REFILL/PARTIAL FILL COST	N/A	N/A	This is the total cost for the 'remote'/filling facility. The cost is derived by using the cost of the drug at the time of the refill or partial fill. The cost is being retrieved from file 50, field 13.
2	MESSAGE DETAILS	N/A	N/A	Any message details related to the transaction.
3	LABEL DATA	N/A	N/A	Label data word processing field.

3.2.3. User Interface Data Mapping

The OneVA Pharmacy patch uses the same VistA user interface found in all the VistA instances deployed throughout the VA Enterprise.

3.2.3.1. Application Screen Interface

The OneVA Pharmacy patch uses the same VistA application screen interface found in the VistA instances deployed throughout the VA Enterprise.

3.2.3.2. Application Report Interface

The system shall provide the ability to generate and print remote prescription reports. There are three reports being developed as part of the OneVA Pharmacy project. They are:

1. Prescriptions we have filled for other facilities
2. Our prescriptions filled by other facilities
3. All Remote activity

3.2.3.2.1. Prescriptions we have filled for other facilities

There are three search options available for the 'Prescriptions we have filled for other facilities' report. They are:

1. D: Date Range
2. P: Patient
3. S: Site

When selecting ‘D: Date Range’ the user is prompted to enter a start date and end date. The system defaults to 30-days prior to current system date as the start date and the current date as the end date.

When selecting ‘P: Patient’ the user is prompted to specify the patient’s name, social securing number, last four digits of the social security number, or first initial of last name with the last four digits of the social security number.

When selecting ‘S: Site’ the user is promoted to enter a site name, status, station number, official VA name, current location, coding system/id pair, National Patient Index (NPI), name (changed from), or coding system.

The following table lists the values displayed on the report.

Table 2: Prescriptions we have filled for other facilities

Report Column	Data Source
DATE FILLED	REMOTE PRESCRIPTION LOG FILE (#52.09) – REFILL/PARTIAL DATE (.09)
PATEINT	REMOTE PRESCRIPTION LOG FILE (#52.09) – PATIENT (.02)
DRUG NAME	REMOTE PRESCRIPTION LOG FILE (#52.09) – LOCAL (MATCHED) DRUG (1.1)
TYPE	REMOTE PRESCRIPTION LOG FILE (#52.09) – REQUEST TYPE (.05)
QTY	REMOTE PRESCRIPTION LOG FILE (#52.09) – QUANTITY (0.7)
DSUP	REMOTE PRESCRIPTION LOG FILE (#52.09) – DAYS SUPPLY (.08)

The following image displays the remote report example.

```

PSO LM REMOTE RX REPORT          Sep 08, 2014@14:08:37          Page:      1 of      1
PSO Report of Remote Rx's refilled or partially filled.

-O---DATE-----PATIENT-----DRUG NAME-----TYPE--QTY--DSUP-
1.   JUL 08, 2014  REDTEST,BRENT      DIPHENHYDRAMINE 25MG  RF    90   30
2.   AUG 29, 2014  INTREGVO,OXO      ATORVASTATIN CALCIUM PR    14   14
3.   AUG 29, 2014  INTREGVO,OXO      ATORVASTATIN CALCIUM PR    14   14
4.   AUG 29, 2014  INTREGVO,OXO      VERAPAMIL HCL 120MG  PR    14   14
5.   SEP 02, 2014  MITTY,OXO        ATORVASTATIN CALCIUM OP    14   14
6.   SEP 08, 2014  INTREGVO,ROO      NAPROXEN 250MG TAB   PR    14   14

Total Cost for items in this report: $4305.4228

-----Enter ?? for more actions-----
SI      Select Item
Select Action:Quit//

```

Figure 4: Remote Report Content Example

3.2.3.2.2. Our prescriptions, filled by other facilities

There are three search options available for the ‘Our prescriptions, filled by other facilities’ report. They are:

4. D: Date Range
5. P: Patient
6. S: Site

When selecting ‘D: Date Range’ the user is prompted to enter a start date and end date. The system defaults to 30-days prior to current system date as the start date and the current date as the end date.

When selecting ‘P: Patient’ the user is prompted to specify the patient’s name, social securing number, last four digits of the social security number, or first initial of last name with the last four digits of the social security number.

When selecting ‘S: Site’ the user is promoted to enter a site name, status, station number, official VA name, current location, coding system/id pair, NPI, name (changed from), or coding system.

The following table lists the values displayed on the report.

Table 3: Our prescriptions, filled by other facilities

Report Column	Data Source
DATE FILLED	REMOTE PRESCRIPTION LOG FILE (#52.09) – REFILL/PARTIAL DATE (.09)

Report Column	Data Source
PATEINT	REMOTE PRESCRIPTION LOG FILE (#52.09) – PATIENT (.02)
DRUG NAME	REMOTE PRESCRIPTION LOG FILE (#52.09) – LOCAL (MATCHED) DRUG (1.1)
TYPE	REMOTE PRESCRIPTION LOG FILE (#52.09) – REQUEST TYPE (.05)
QTY	REMOTE PRESCRIPTION LOG FILE (#52.09) – QUANTITY (0.7)
DSUP	REMOTE PRESCRIPTION LOG FILE (#52.09) – DAYS SUPPLY (.08)

The following image displays the remote report example.

```
PSO LM REMOTE RX REPORT          Sep 08, 2014@14:08:37          Page:      1 of      1
PSO Report of Remote Rx's refilled or partially filled.

-O---DATE-----PATIENT-----DRUG NAME-----TYPE--QTY--DSUP-
1.   JUL 08, 2014  REDTEST,BRENT      DIPHENHYDRAMINE 25MG  RF    90    30
2.   AUG 29, 2014  INTREGVO,OXO      ATORVASTATIN CALCIUM PR    14    14
3.   AUG 29, 2014  INTREGVO,OXO      ATORVASTATIN CALCIUM PR    14    14
4.   AUG 29, 2014  INTREGVO,OXO      VERAPAMIL HCL 120MG  PR    14    14
5.   SEP 02, 2014  MITTY,OXO      ATORVASTATIN CALCIUM OP    14    14
6.   SEP 08, 2014  INTREGVO,ROO    NAPROXEN 250MG TAB   PR    14    14

Total Cost for items in this report: $4305.4228

-----Enter ?? for more actions-----
SI      Select Item
Select Action:Quit//
```

Figure 5: Remote Report Content Example

3.2.3.2.3. All Remote activity

There are three search options available for the 'All Remote activity' report. They are:

7. D: Date Range
8. P: Patient
9. S: Site

When selecting 'D: Date Range' the user is prompted to enter a start date and end date. The system defaults to 30-days prior to current system date as the start date and the current date as the end date.

When selecting 'P: Patient' the user is prompted to specify the patient's name, social securing number, last four digits of the social security number, or first initial of last name with the last four digits of the social security number.

When selecting 'S: Site' the user is promoted to enter a site name, status, station number, official VA name, current location, coding system/id pair, NPI, name (changed from), or coding system. The following table lists the values displayed on the report.

Table 4: All Remote Activity

Report Column	Data Source
DATE FILLED	REMOTE PRESCRIPTION LOG FILE (#52.09) – REFILL/PARTIAL DATE (.09)
PATEINT	REMOTE PRESCRIPTION LOG FILE (#52.09) – PATIENT (.02)
DRUG NAME	REMOTE PRESCRIPTION LOG FILE (#52.09) – LOCAL (MATCHED) DRUG (1.1)
TYPE	REMOTE PRESCRIPTION LOG FILE (#52.09) – REQUEST TYPE (.05)
QTY	REMOTE PRESCRIPTION LOG FILE (#52.09) – QUANTITY (0.7)
DSUP	REMOTE PRESCRIPTION LOG FILE (#52.09) – DAYS SUPPLY (.08)

The following image displays the remote report example.

```

PSO LM REMOTE RX REPORT          Sep 08, 2014@14:08:37          Page:      1 of      1
PSO Report of Remote Rx's refilled or partially filled.

-O---DATE-----PATIENT-----DRUG NAME-----TYPE--QTY--DSUP-
1.   JUL 08, 2014  REDTEST,BRENT      DIPHENHYDRAMINE 25MG  RF      90    30
2.   AUG 29, 2014  INTREGVO,OXO      ATORVASTATIN CALCIUM PR      14    14
3.   AUG 29, 2014  INTREGVO,OXO      ATORVASTATIN CALCIUM PR      14    14
4.   AUG 29, 2014  INTREGVO,OXO      VERAPAMIL HCL 120MG  PR      14    14
5.   SEP 02, 2014  MITTY,OXO      ATORVASTATIN CALCIUM OP      14    14
6.   SEP 08, 2014  INTREGVO,ROO    NAPROXEN 250MG TAB   PR      14    14

Total Cost for items in this report: $4305.4228

-----Enter ?? for more actions-----
SI      Select Item
Select Action:Quit//

```

Figure 6: Remote Report Content Example

3.2.3.3. Unmapped Data Element

Not applicable.

3.3. Conceptual Infrastructure Design

The OneVA Pharmacy project uses the VAeMI ESB for calls to the HDR/CDS repository. The following diagram depicts the message flow through the system.

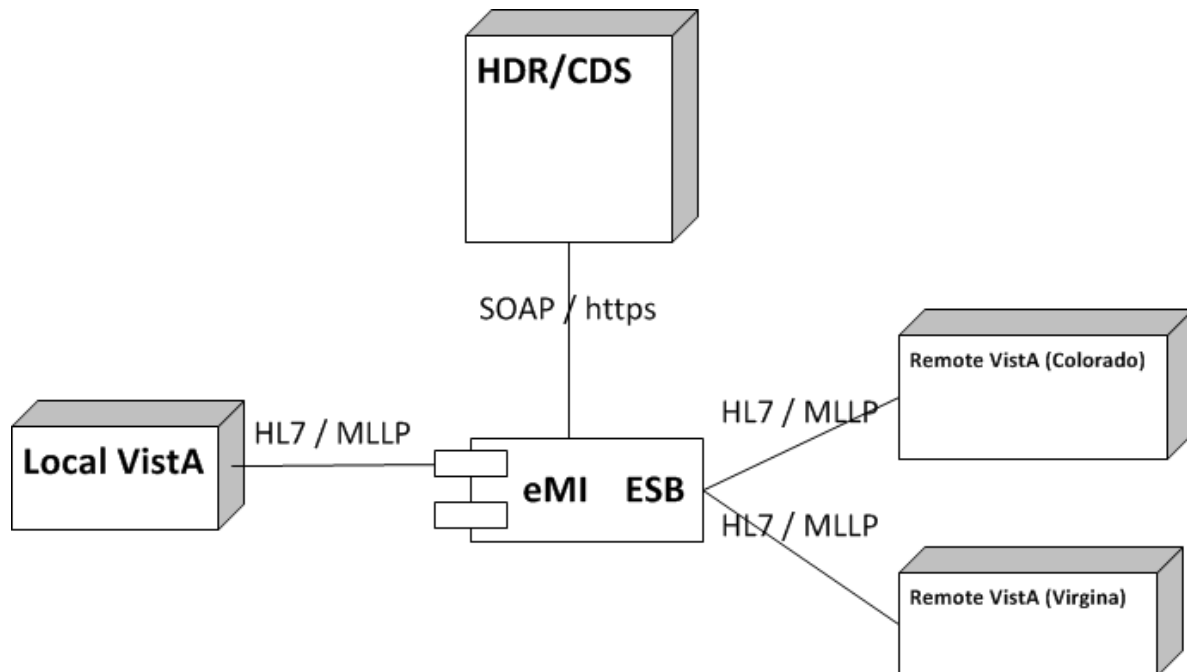


Figure 7: OneVA Pharmacy Components

3.3.1. System Criticality and High Availability

The OneVA Pharmacy extends the VistA application and will incorporate by default the same rules of engagement as VistA.

3.3.2. Special Technology

The OneVA Pharmacy engages the VAeMI-Middleware components and the HDR/CDS repository. They are:

- Integration Bus (IB) v9 – the ESB supplied by the VA
- HCP: Healthcare Connectivity Pack (HCP) – contains the HL7 API and other health-related software to run in the ESB, also supplied by VA
- Message Broker (MQ) – A message queue that will handle messages passed into the ESB, also supplied by VA

Table 5: Special Technology Requirements

Special Technology	Description	Notional Location	TRM Status
Integration Bus (IB) v9	IBM's ESB supplied by the VA	Application Server	Yes

Special Technology	Description	Notional Location	TRM Status
HCP: Healthcare Connectivity Pack (HCP)	Supports HL7 data flows	Integrated into the ESB	Yes
Message Broker (MQ)	IBM's message queue that will handle messages passed into the ESB for reliable messaging	Application Server	Yes

3.3.3. Technology Locations

The OneVA Pharmacy software uses the existing VistA instances deployed in the VA Enterprise. There are no changes to the technology locations

The following table describes the technology components used and locations.

Table 6: Technology Components Used

Technology Component	Location	Usage
Production 1		
Workstations	VA VistA Pharmacy	Pharmacists and support staff.
Special Hardware	None.	
Interface Processors	Same as current.	Same as current.
Legacy Mainframe	None.	
Legacy Application Server	Same as current	Same as current.
Legacy Databases	Same as current	Same as current
Other		

3.3.4. Conceptual Infrastructure Diagram

3.3.4.1. Location of Environments and External Interfaces

The system shall use existing locations and existing VistA technology as noted in [Technology Components Used Table](#).

3.3.4.2. Conceptual Production String Diagram

This is the Conceptual production string diagram that shows a broad overview of a production system. The Pharmacist will pull up a patient's medication profile screen from a local VistA instance. A message will be routed to the HDR/CDS to retrieve the complete list of prescriptions active for a patient, regardless of where the prescription originated. The Pharmacist will fill the prescription sending the sending a message to the originating VistA instance to decrement the remaining balance and last fill date. Once the data is in the VistA Server it can be used to produce a report and shown in the following figure.

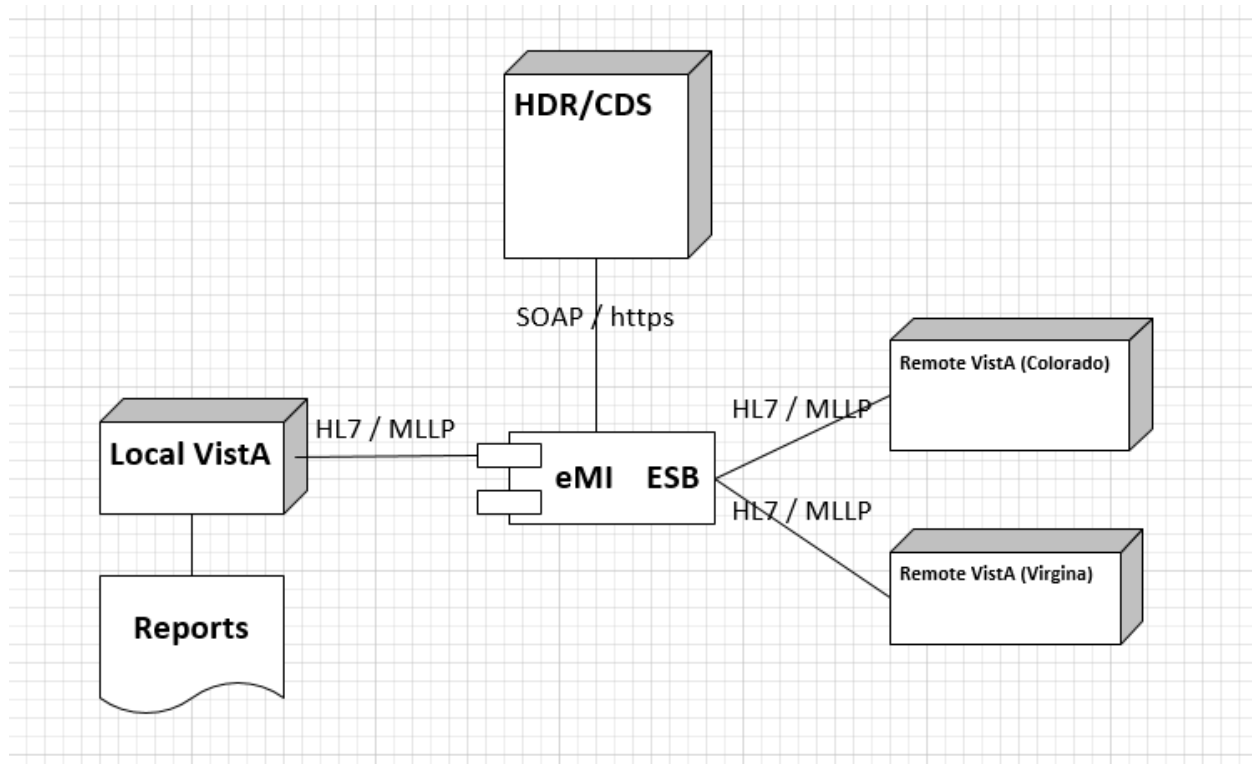


Figure 8: Conceptual Production String Diagram

4. System Architecture

4.1. Hardware Architecture

Not applicable.

4.2. Software Architecture

4.2.1. VAeMI ESB

The VAeMI ESB is responsible for message passing, routing and transformation. By utilizing several communication protocols and handling various message format, the VAeMI ESB is the backbone of the system. This system contains an MLLP Service to handle all incoming MLLP HL7 v2.x requests. The requests will be routed based on the message type and trigger event (MSH-10). The MLLP Service will route the following messages to the appropriate service:

Table 7: MLLP HL7 Endpoint Messages

Message	Response	Description	Service Reference
QBP^Q13	RTB^K13	Query by parameter	
RDS^O13	RRD^O14	Pharmacy/Treatment Dispense Message	

4.2.2. HDR/CDS Endpoint

The VAeMI ESB will handle QBP-Q13 HL7 query requests to the HDR/CDS to retrieve a patient's list of active prescriptions. The response will be in a XML SOAP format which will be transformed into an HL7 v2.x RTB-K13 message with tabular data containing aggregated, active prescription information in the remote VistAs.

The following diagram displays the HDR/CDS endpoints, which consist of several method calls that can be accessed from SOAP clients. The first method, `readClinicalData`, is the only method required by OneVA Pharmacy.

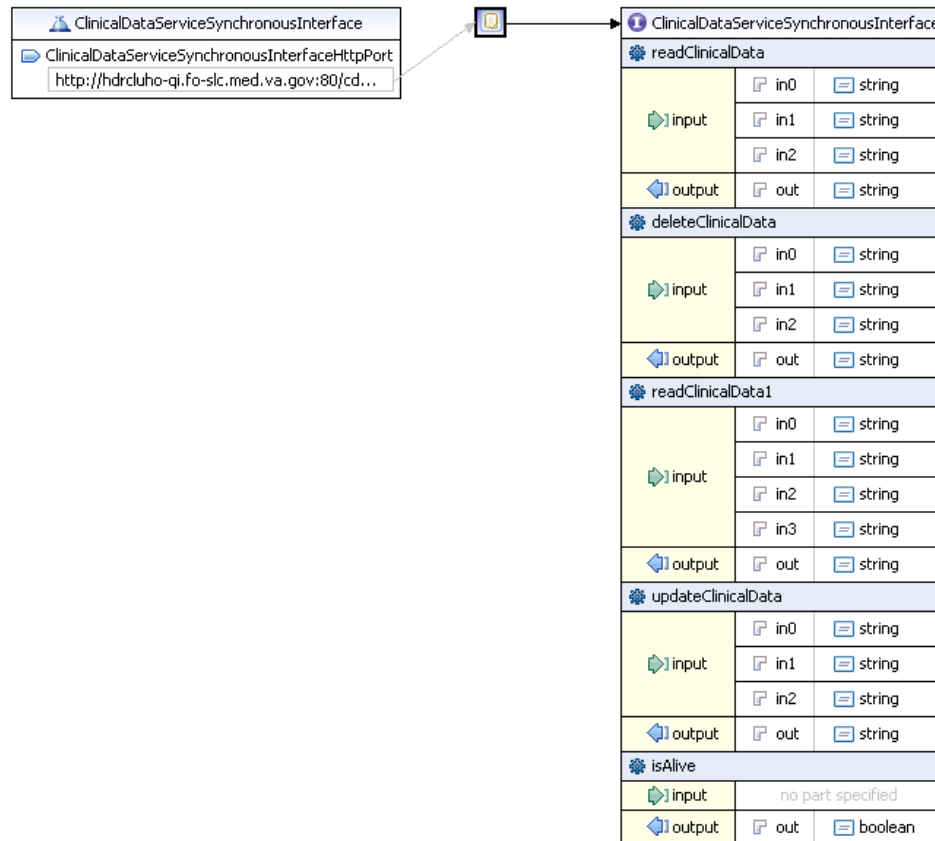


Figure 9: HDR Endpoint Methods and Parameters

The following imaged displays a template of the SOAP request and parameters.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:cli="http://client.cds.med.va.gov">
  <soapenv:Header/>
  <soapenv:Body>
    <cli:readClinicalData1>
      <in0>PharmacyRead40010</in0>
      <in1>
        <![CDATA[
          <?xml version="1.0" encoding="UTF-8"?>
          <filter:filter xmlns:filter="Filter"
            xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            vhimVersion="Vhim_4_00">
            <filterId>RX_SINGLE_PATIENT_ALL_DATA_FILTER</filterId>
            <patients>
              <NationalId>${patientId}</NationalId>
            </patients>
            <entryPointFilter queryName="OutpatientMedicationPromiseQuery">
              <domainEntryPoint>OutpatientMedicationPromise</domainEntryPoint>
              <startDate>${startDate}</startDate>
              <endDate>${endDate}</endDate>
            </entryPointFilter>
          </filter:filter>
        ]]>
      </in1>
      <in2>RX_SINGLE_PATIENT_ALL_DATA_FILTER</in2>
      <in3>${requestId}</in3>
    </cli:readClinicalData1>
  </soapenv:Body>
</soapenv:Envelope>
```

Figure 10: Template of the SOAP Request

The following is a list of parameters and their meaning:

- in0 – Static parameter
- in1 – “Filter” request to the HDR/CDS in order to process the request
- in2 – Static parameter
- in3 – Client-supplied request id in order to correlate requests and response for potentially asynchronous calls

The ‘in1’ parameter is fairly complex. The HDR/CDS has many clients with changing needs for querying patient information. In order to supply a single interface, the HDR/CDS employs a “filter” mechanism for some parameters. OneVA pharmacy will access one patient’s medical record profile. The HDR/CDS responds with an array of OutpatientMedicationPromises.

Table 8: Variables and Description

Variable	Description
patientId	National Patient ID that exists across all VistA systems
startDate	Beginning date in which to retrieve a patient’s records. All records are required, therefore the startDate is hard-coded to January 1 st , 1900
endDate	End date will always be the current date

Variable	Description
requestId	Client-supplied request id in order to correlate requests and responses for potentially asynchronous calls

The following diagram provides the response structure from the HDR/CDS.

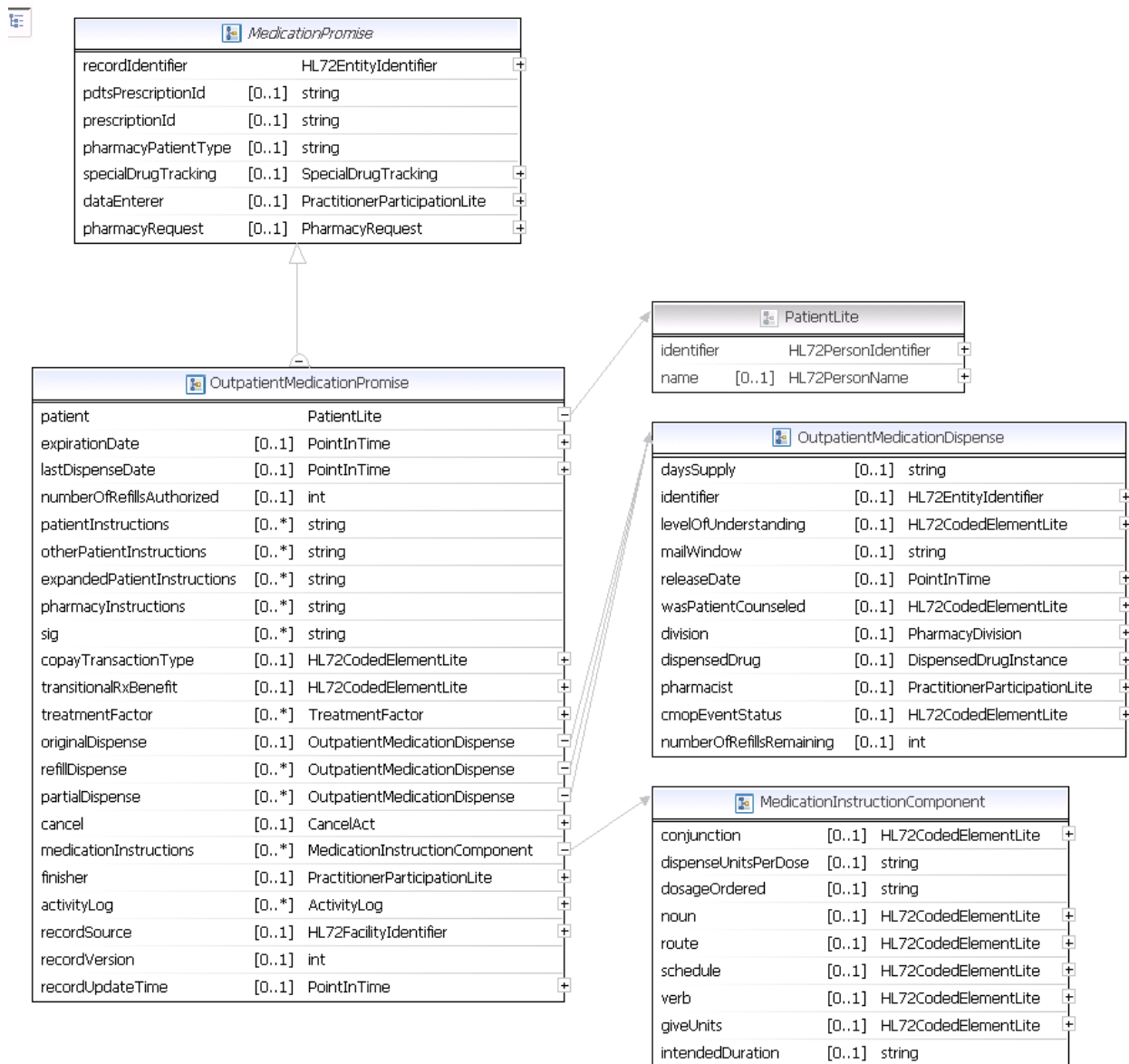


Figure 11: Diagram of the HDR/CDS Pharmacy.xsd's OutpatientMedicationPromise

The diagram of the HDR/CDS xsd is only portion of the entire structure, relevant to OneVA Pharmacy. The xsd utilizes the concepts of inheritance and data types. The array of objects returned from the HDR/CDS will be transformed into the RTB^K13 HL7 message that is returned to the calling VistA.

4.2.3. Sequence Diagrams

The next sub-sections show the sequence of events among key entities when the Use Cases are being executed.

4.2.3.1. View Order

The following figure displays a VistA instance querying the HDR/CDS (the local VistA system currently in use by the end user.) The local VistA is where the patient is physically located at the time the refill is requested that is not their normal VA facility. The provider will view all the active prescriptions via a request made to the HDR/CDS repository. The HDR/CDS repository contains all active prescriptions for this patient. The pharmacist will have the ability to view on the medication profile screen a list of both local and remote prescriptions for the patient.

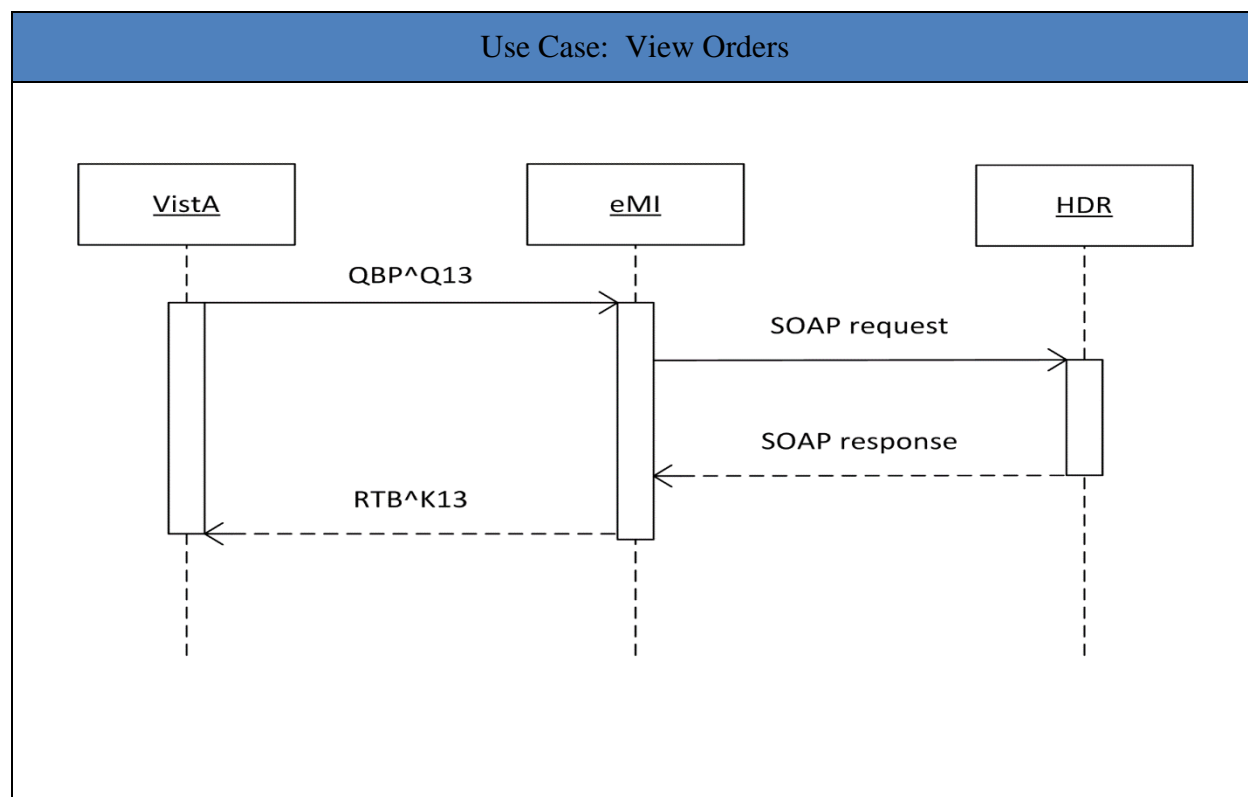


Figure 12: View Order Sequence Diagram

4.2.3.2. Dispense Remote Order Sequence Diagram

Dispense Remote Order displays the sequence of events to fill a remote order. Similar to the View Order Use Case, an order was created for the patient at a remote VistA system. The pharmacist will be able to view all active prescriptions for the patient and can select an active prescription from a remote VistA to refill. Once selecting a remote prescription and executing the fill order request, the system will send a message to the VAeMI ESB, which will route the request to the originating VistA instance. This request will decrement the prescription count, but will not affect the inventory of the remote facility. When the decrement is successful, communication is made back to the local VistA instance to complete the dispense processing locally and print a prescription label.

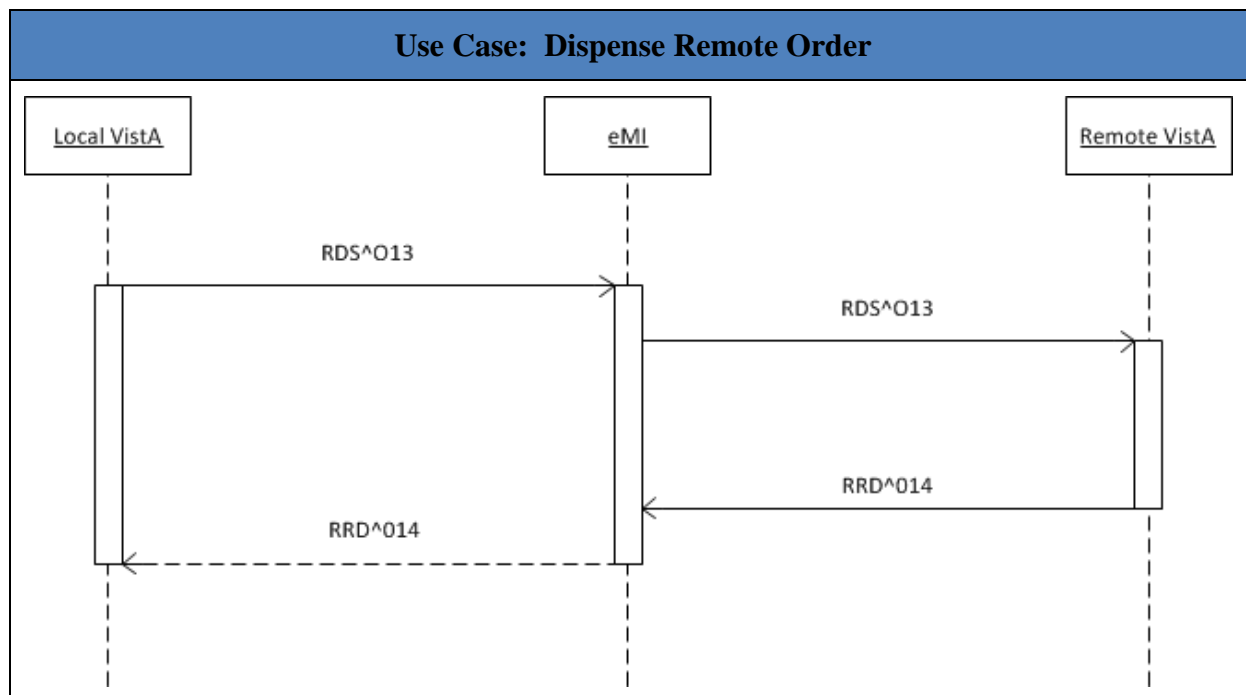


Figure 13: Dispense Remote Order Sequence Diagram

4.2.4. Design Rationale

The basis of this project is to allow standalone VistA instances to route and transform messages and affect each other's state, using the VAeMI-Middleware and integrating with the HDR/CDS repository.

4.2.5. HL7 Protocol

The communication protocol used between components is HL7 v2. x. HL7 v2.x is a standard messaging protocol used to communicate among health information systems.

4.3. Network Architecture

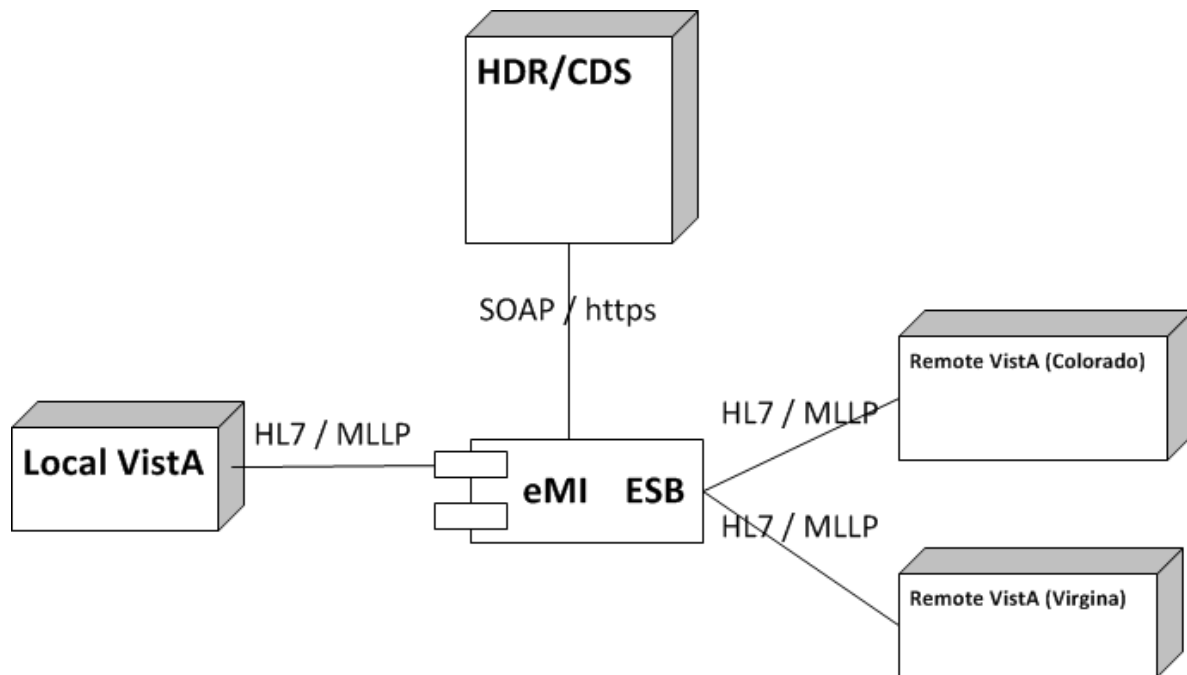


Figure 14: Network Architecture

4.4. Service Oriented Architecture / ESS

The following diagram displays the VistA application and how it will exist within the design of the ESB model.

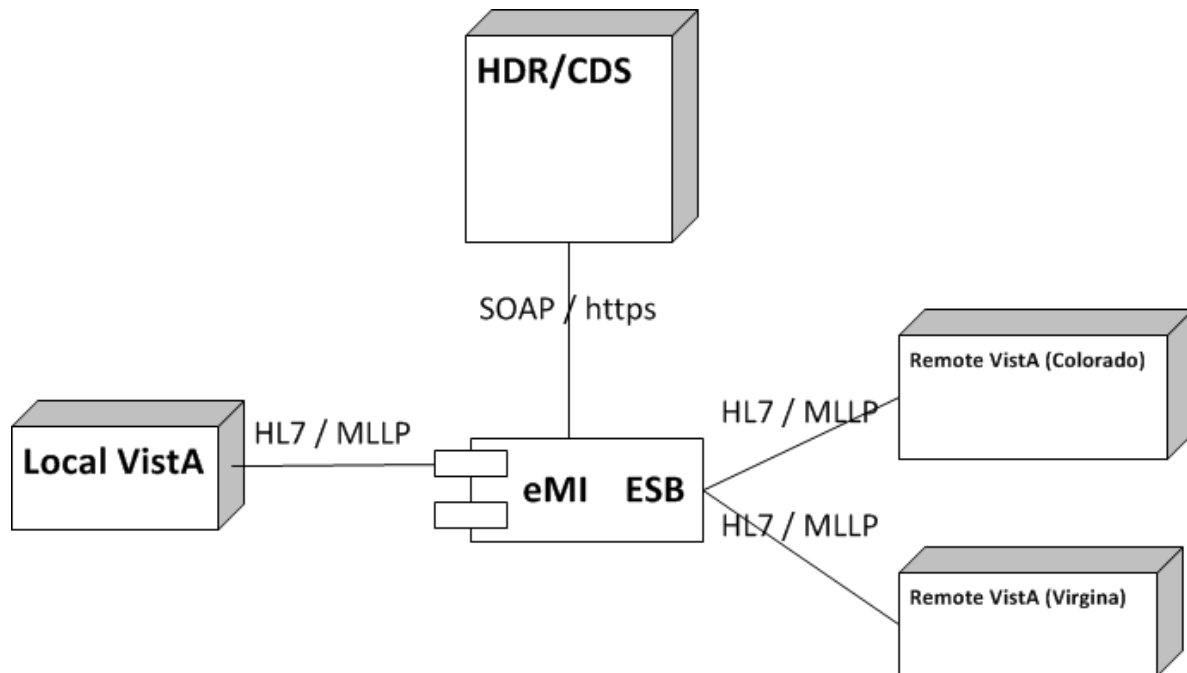


Figure 15: VistA and VAeMI ESB Integration

The entities displayed in the Application Architecture Diagram are explained as follows:

- VistA is the user interface for initiating prescription queries and requesting prescription refills from remote VistAs.
- VAeMI ESB is the messaging component to handle MLLP HL7 endpoints and the HDR/CDS.

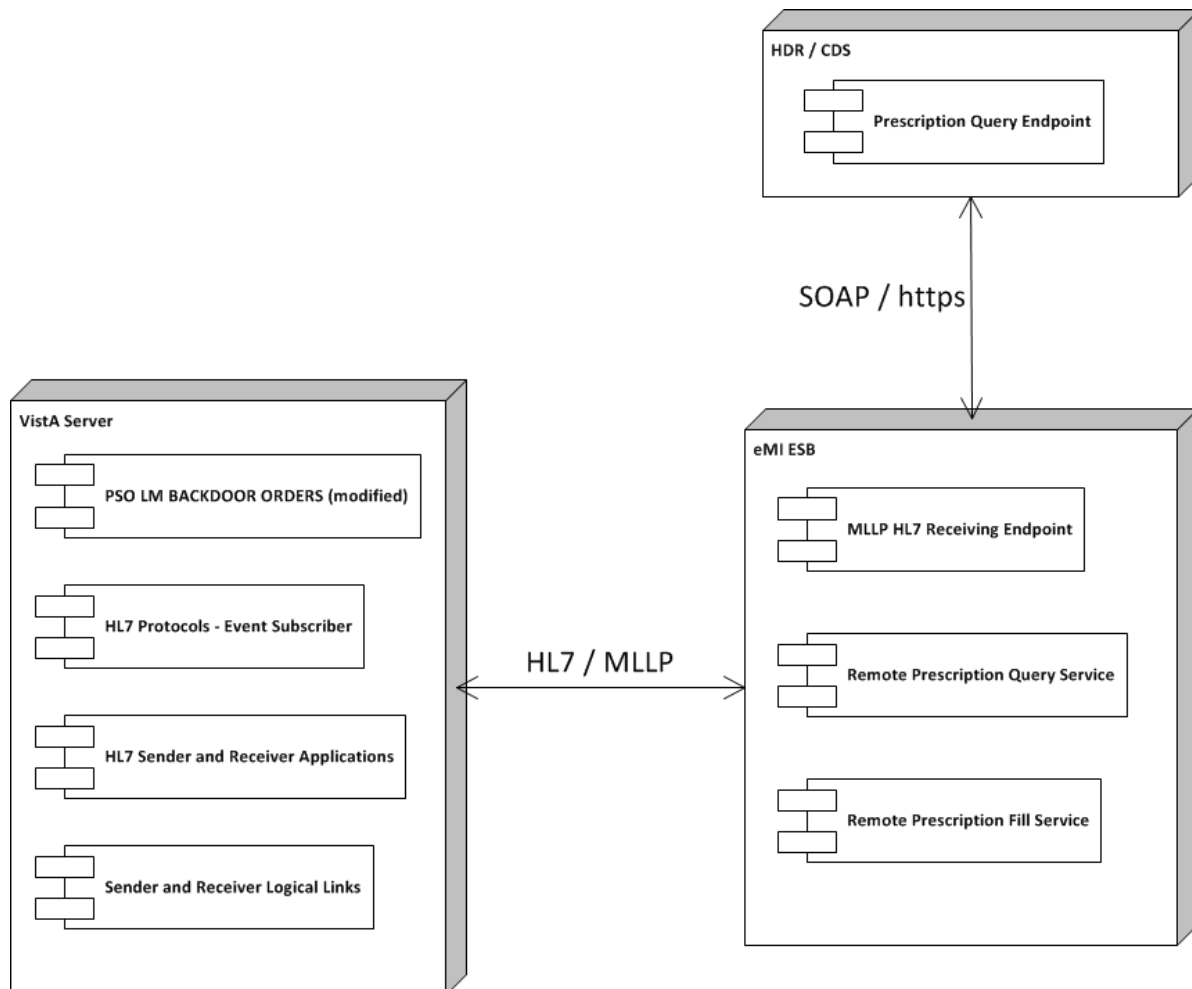


Figure 16: HL7/MLLP and SOAP/https Integration

4.5. Enterprise Architecture

The Enterprise Architecture of OneVA Pharmacy consists of three main components. They are:

1. VistA
2. VAeMI ESB (for communication)
3. HDR/CDS

To use an example to explain the architecture, a Pharmacist at one VA facility will use VistA to display all the prescriptions for a Veteran that originated at another VA facility. In order to display all of the active prescriptions the HDR/CDS will be used to accumulate all prescriptions. The local

VistA instance will send an HL7 message to the VAeMI ESB. The VAeMI ESB will transform the HL7 message into a SOAP request over https to the HDR/CDS service endpoint. The SOAP response from the HDR/CDS is transformed into an RTB^K13 HL7 message and sent as a response to the calling VistA instance. The VistA instance will display the entire prescription record for the user. Once the Pharmacist selects a prescription from a remote VistA to refill a prescription, another message is generated and sent to the VAeMI ESB. The VAeMI ESB will detect that the message is a prescription fill request and then route the message to the destination VistA. The remote VistA instance receives the message on it's logical link and performs the necessary decrement to the patient's prescription refill allotment without affecting the remote facilities inventory.

5. Data Design

5.1. DBMS Files

5.1.1. Refill Multiple (#52.1) of the Prescription File (#52)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
91	Remote Fill Site	Institution File (#4)	"RFIL"	This is the site that performed the remote refill action.
92	Remote Pharmacist	N/A	N/A	This is the name of the remote pharmacist that performed the refill action.
93	Remote Pharmacist Phone	N/A	N/A	This is the phone number for the pharmacist that performed the refill action.

5.1.2. Partial Multiple (#52.2) of the Prescription File (#52)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
91	Remote Fill Site	Institution File (#4)	"RFIL"	This is the site that performed the remote partial fill action.
92	Remote Pharmacist	N/A	N/A	This is the name of the remote pharmacist that performed the partial fill action.
93	Remote Pharmacist Phone	N/A	N/A	This is the phone number for the pharmacist that performed the partial fill action.

5.1.3. Remote Prescription Log (#52.09)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
.01	LOG DATE/TIME	N/A	52.09^B	Date/Time of refill/partial fill transaction.
.02	PATIENT	PATIENT (#2)	52.09^C	This is the patient for which a refill or partial fill was executed remotely.
.03	RX NUMBER	N/A	52.9^D	This is the RX Number from the prescription file (#52). ** Should this be converted to a pointer??**
.04	SITE NUMBER	INSTITUTION (#4)	5209^E	
.05	REQUEST TYPE	N/A		RF – REFILL PR – PARTIAL FILL OR – OUTSIDE REFILL OP – OUTSIDE PARTIAL FILL
.06	OUTGOING REQUEST PHARMACIST	NEW PERSON (#200)	N/A	This is the pharmacist who initiated the refill or partial fill request to the remote facility
.061	REMOTE FILLING PHARMACIST	N/A	N/A	This is the pharmacist that requested a refill or partial fill from a remote facility.
.07	QUANTITY	N/A	N/A	This is the quantity dispensed.
.08	DAYS SUPPLY	N/A	N/A	This is the day's supply for the medication.
.09	REFILL/PARTIAL DATE	N/A	N/A	This is the date of the refill or partial fill request. This represents the date as it is logged in the .01 field of either the refill or partial sub files within the prescription file.
.1	DISPENSED DATE	N/A	N/A	This is the Dispense date as it is held in the DISPENSED DATE within the REFILL or PARTIAL sub files of the PRESCRIPTION file.

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
1	REMOTE DRUG NAME	N/A	N/A	This is the name of the drug being dispensed for this request.** Note, we may want both the name and VA product id..***
1.1	LOCAL (MATCHED) DRUG	DRUG (#50)	N/A	This is the drug that was used locally for the 'remote' refill or partial fill.
1.2	TOTAL REFILL/PARTIAL FILL COST	N/A	N/A	This is the total cost for the 'remote'/filling facility. The cost is derived by using the cost of the drug at the time of the refill or partial fill. The cost is being retrieved from file 50, field 13.
2	MESSAGE DETAILS	N/A	N/A	Any message details related to the transaction.
3	LABEL DATA	N/A	N/A	Label data word processing field.

5.2. Non-DBMS Files

Not applicable.

5.3. Data View

Not applicable.

6. Detailed Design

6.1. Hardware Detailed Design

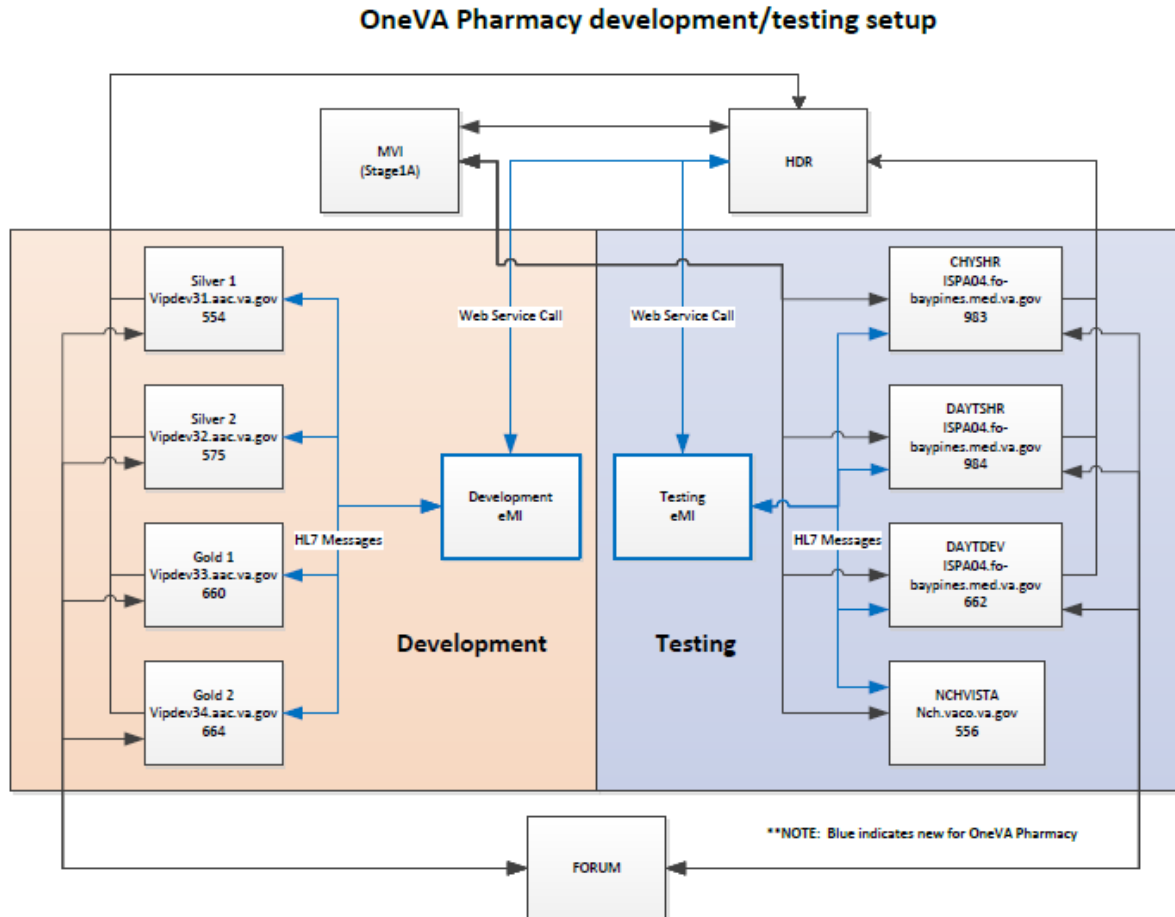


Figure 17: Hardware Detailed Design

6.2. Software Detailed Design

6.2.1. Conceptual Design

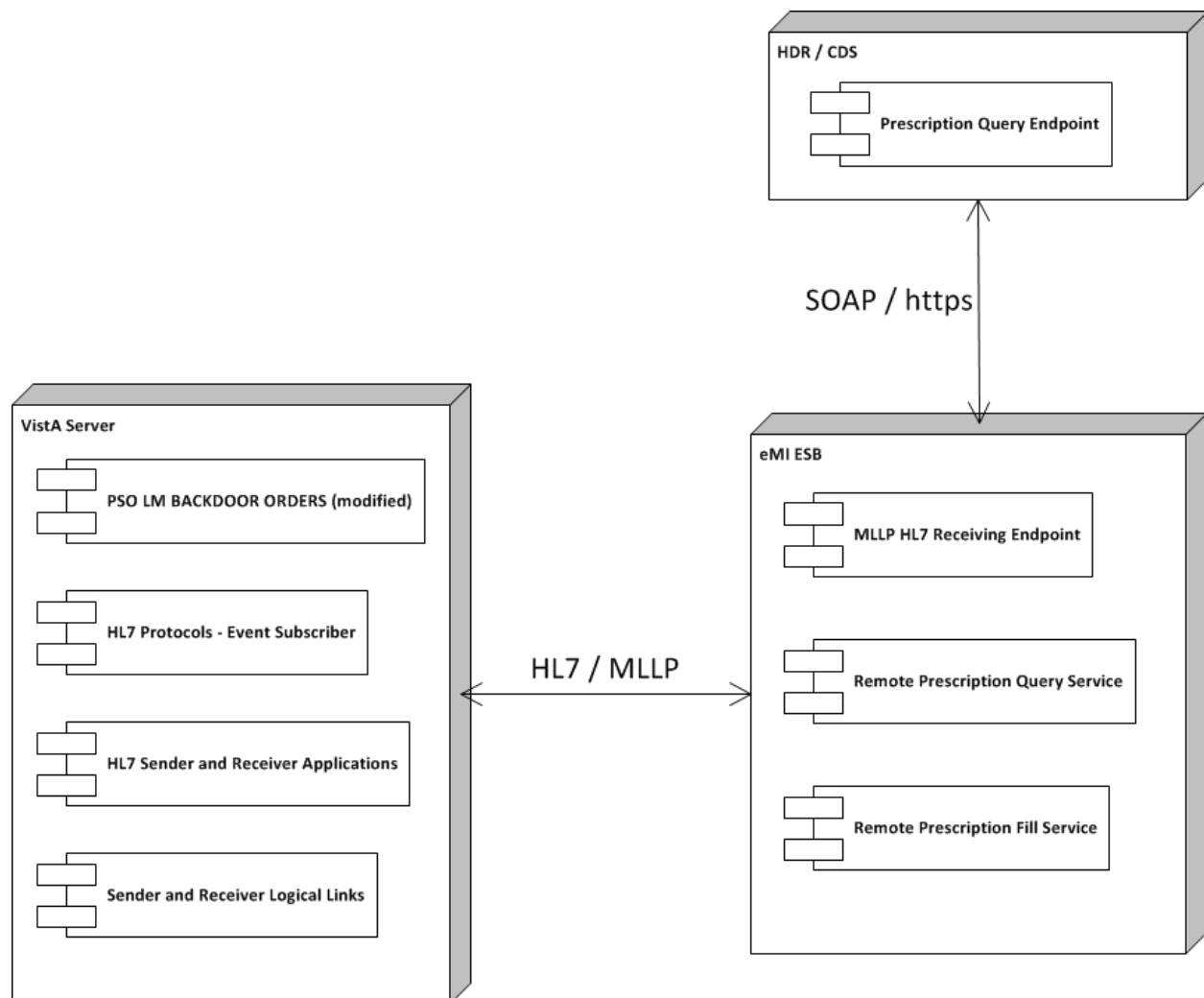


Figure 18: Conceptual Design

6.2.1.1. Product Perspective

The OneVA Pharmacy extends the existing VistA, specifically Patient Prescription Processing [PSO LM BACKDOOR ORDERS] to provide pharmacists direct access to any active, refillable prescription from any VA Healthcare System.

6.2.1.1.1. User Interfaces

The OneVA Pharmacy extends the existing VistA application so the user interface is the VistA [PSO LM BACKDOOR ORDERS].

6.2.1.1.2. Hardware Interfaces

The hardware interface will utilize the existing architecture found within the VA Enterprise.

6.2.1.1.3. Software Interfaces

The software interfaces by

6.2.1.1.4. Communications Interfaces

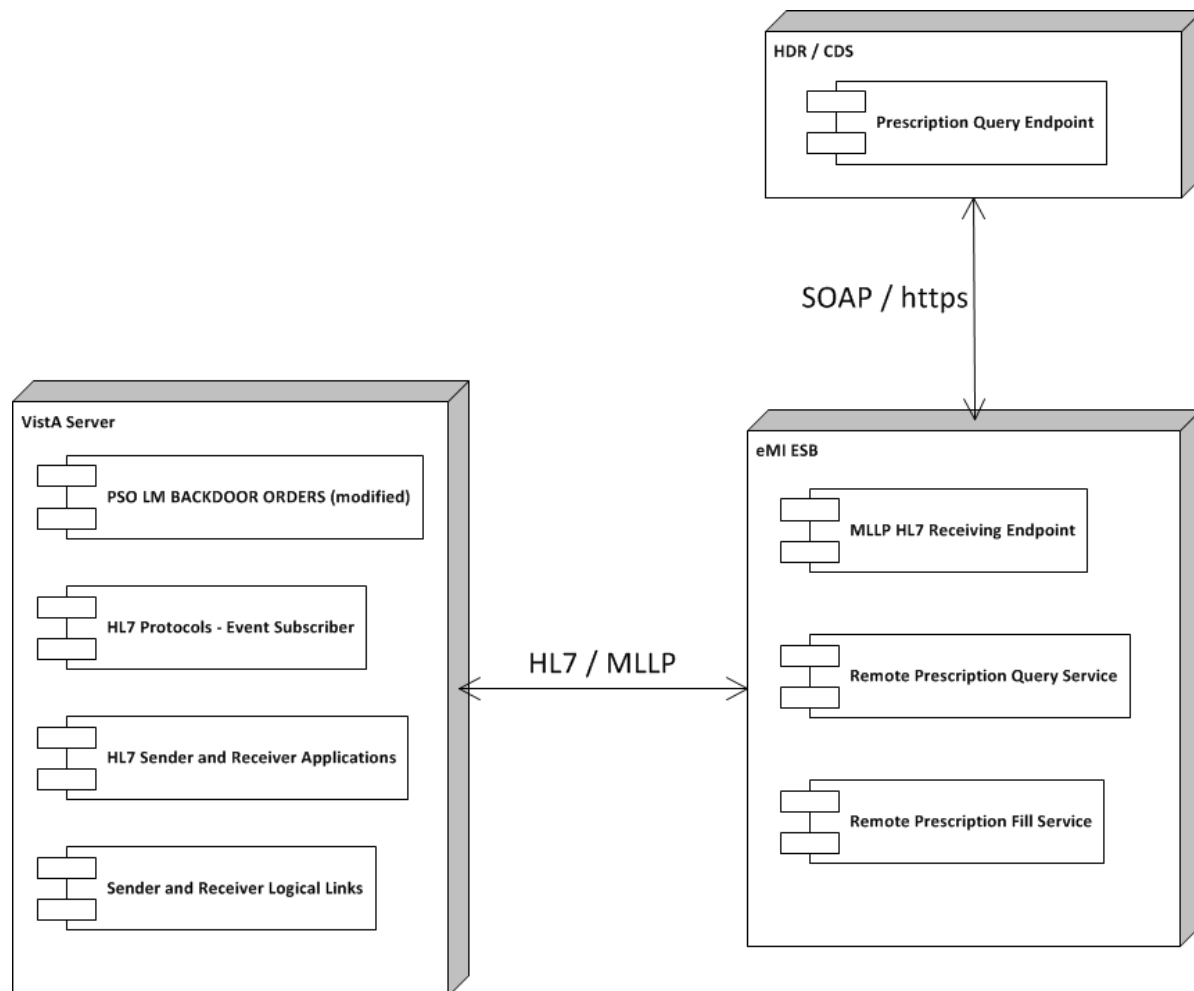


Figure 19: Communications Interface

The services within the VAeMI ESB are logical capabilities the ESB is expected to perform. The actual service names may be different due to the VAeMI team's implementation.

6.2.1.1.5. Memory Constraints

Not applicable.

6.2.1.1.6. Special Operations

Not applicable.

6.2.1.2. Product Features

The OneVA Pharmacy Implementation at a high level includes:

- VistA Patch PSO*7*454
 - PSO LM BACKDOOR ORDERS
- VAeMI-Middleware
- Connectivity to the Health Data Repository/ Clinical Data Services (HDR/CDS) via the Enterprise Service Bus (VAeMI)
- Validation of Health Level 7 (HL7) messages

6.2.1.3. User Characteristics

The user profile of the OneVA Pharmacy module are those users, specifically pharmacists, that use the Pharmacy [PSO LM BACKDOOR ORDERS] menu to dispense prescriptions.

6.2.1.4. Dependencies and Constraints

The OneVA Pharmacy implementation is dependent upon the availability of the VAeMI ESB and its connectivity to the HDR/CDS repository and all 130 VistA instances where Pharmacy locations are included.

6.2.2. Specific Requirements

6.2.2.1. Database Repository

Not applicable.

6.2.2.2. System Features

The system features include functional requirements, sub-requirements, business rules, design constraints, etc. and are organized in a Requirements Specification Document (RSD). The OneVA Pharmacy RSD, located on the VA SharePoint. The OneVA Pharmacy RSD can be access by following this [LINK](#).

6.2.2.3. Design Element Tables

Not applicable.

6.2.2.3.1. Routines (Entry Points)

6.2.2.3.1.1. PSOORNE2

The 'PSOORNE2' routine has been modified to include the display of the remote prescriptions. This routine will display the details related to the remote Rx that has been selected.

Table 15 (Grouping): Routines

Routines	Activities
Routine Name	PSOORNE2
Enhancement Category	<input type="checkbox"/> New <input checked="" type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change

Routines	Activities
Routine Name	PSOORNE2
RTM	
Related Options	PSO LM BACKDOOR ORDERS

Related Routines	Routines “Called By”	Routines “Called”
	PSODISPS, PSOLMUTL, PSOMPHRC, PSOORCPY, PSOOREDIT, PSOREF, PSORREF, PSORXEDT	PSOORNE6, PSOVER1, PSORRX1, PSOBUILD, PSORUT1, PSODRG, PSOORNE5, PSONFI, PSOBPSUT, PSOHELP, PSOUTLA2, PSOORNE3, PSODAWUT, PSSDAWUT, PSOLMLST, PSOROS

Routines	Activities
Data Dictionary (DD) References	^PSDRUG(^YSCL(603.01, ^PS(50.606, ^PS(50.7, ^PS(52.5 ^PSRX(^DIC(4,
Related Protocols	N/A
Related Integration Control Registrations (ICRs)	4708 – Call to DAWEXT^PSSDAWUT (Active/Controlled Subscription)
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input checked="" type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local
Input Attribute Name and Definition	Name: N/A Definition:
Output Attribute Name and Definition	Name: N/A Definition:

Current Logic
Cannot get current logic until we have all patches associated with this routine.

Modified Logic (Changes are in bold)

6.2.2.3.1.2. PSOORUT1

The 'PSOORUT1' routine has been modified to include the display of remote prescriptions within the [PSO LM BACKDOOR ORDER] prescription list. The prescriptions are sorted by facility and include the same display elements at eh local prescription. Each remote facility's prescription list has a programmatically generated header that separates the prescriptions by status (Active, Suspended, Hold, etc.)

Routines	Activities
Routine Name	PSOORUT1
Enhancement Category	<input type="checkbox"/> New <input checked="" type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	PSO LM BACKDOOR ORDERS

Related Routines	Routines "Called By"	Routines "Called"
	PSOCAN4, PSODISP3, PSOHLNEW, PSOLMUTL, PSONEW, PSOORFI2, PSOORFL, PSOORNE2, PSOORUTL, PSOREF, PSORENW4, PSORX1, PSOTPRX1, PSOVER	%DTC,DICN, DIK, DIQ, PSOBPSU1, PSOBPSUT, PSOHLN1,PSOORUTL, PSOREJUT, PSOUTL,

Routines	Activities
Data Dictionary (DD) References	^PS(52.41, ^PSRX(^PS(52.5, ^DIC(4,
Related Protocols	
Related Integration Control Registrations (ICRs)	IA #221 – Access to ^PSDRUG IA #2203 – Call to ^PSXOPUTL
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input checked="" type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local
Input Attribute Name and Definition	Name: N/A Definition: N/A
Output Attribute Name and Definition	Name: N/A Definition: N/A

Current Logic
Cannot get current logic until we have all patches associated with this routine.

Modified Logic (Changes are in bold)

6.2.2.3.1.3. PSOROS

The ‘PSOROS’ routine is the driving routine for selection of a ‘remote’ prescription within list manager. This routine controls the list template [PSO LM REMOTE ORDER SELECTION].

Routines	Activities
Routine Name	PSOROS
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	

Related Routines	Routines “Called By”	Routines “Called”
		VALM, PSONFI, XQORM1

Routines	Activities
Data Dictionary (DD) References	
Related Protocols	PSO LM REMOTE ORDER MENU PSO LM REFILL REMOTE ORDER PSO LM REMOTE PARTIAL
Related Integration Control Registrations (ICRs)	N/A
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local
Input Attribute Name and Definition	Name: N/A Definition: N/A
Output Attribute Name and Definition	Name: N/A Definition: N/A

Current Logic
N/A

Modified Logic (Changes are in bold)											
<p>6.2.2.3.1.4. PSORRD</p> <p>The ‘PSORRD’ routine is the routine that controls the PSO LM REMOTE REPORTS DETAILS list manager template. This routine is part of the Remote Prescription Report functionality.</p> <table border="1"> <tr> <th>Routines</th> <th>Activities</th> </tr> <tr> <td>Routine Name</td> <td>PSORRD</td> </tr> <tr> <td>Enhancement Category</td> <td> <input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change </td> </tr> <tr> <td>RTM</td> <td></td> </tr> <tr> <td>Related Options</td> <td></td> </tr> </table>		Routines	Activities	Routine Name	PSORRD	Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change	RTM		Related Options	
Routines	Activities										
Routine Name	PSORRD										
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change										
RTM											
Related Options											

Related Routines	Routines “Called By”	Routines “Called”
		VALM, XQORM1

Routines	Activities
Data Dictionary (DD) References	N/A
Related Protocols	N/A
Related Integration Control Registrations (ICRs)	N/A
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local
Input Attribute Name and Definition	Name: Definition:
Output Attribute Name and Definition	Name: Definition:

Current Logic
N/A

Modified Logic (Changes are in bold)	
6.2.2.3.1.5. PSORREF	
The 'PSORREF' routine is the main driving routine for the 'receiving' or 'originating' facility to process incoming refill requests.	
Routines	Activities
Routine Name	PSORREF
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	PSO LM BACKDOOR ORDERS

Related Routines	Routines "Called By"	Routines "Called"
		%DTC, %ZISH, DIE, DIQ, PSOBUILD, PSOCPTRI, PSOREJU1, PSORREF0, PSORREF1, PSORRX1, PSSLOCK, XLFDT, XUAF4

Routines	Activities
Data Dictionary (DD) References	^PSRX(%ZIS(1, ^PS(55,
Related Protocols	N/A
Related Integration Control Registrations (ICRs)	Need to see if we need any IA's
Data Passing	<input checked="" type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local

Routines	Activities
Input Attribute Name and Definition	Name: RXNUM Definition: Prescription Number Name: FDATE Definition: Fill Date Name: MW Definition: Mail/Window Name: RPHARM Definition: Remote Pharmacists Name Name: RPHONE Definition: Remote Pharmacists Telephone Number Name: RISTE Definition: Remote site requesting the refill
Output Attribute Name and Definition	Name: RET Definition: Return array “Rx # xxxxx refilled.”, or error message.

Current Logic
N/A

Modified Logic (Changes are in bold)	
6.2.2.3.1.6. PSORREF0 The ‘PSORREF0’ is a supporting routine to ‘PSORREF’.	
Routines	Activities
Routine Name	PSORREF0
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	PSO LM BACKDOOR ORDERS

Related Routines	Routines “Called By”	Routines “Called”
	PSORREF1	%DT, DIR, PSOPTPST, PSOR52, PSOREF1, PSOREF2, PSOUTIL, PSOUTLA, PSOUTLA1, VALM1

Routines	Activities
Data Dictionary (DD) References	^PSRX
Related Protocols	
Related Integration Control Registrations (ICRs)	Will need to get included in IA 221
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	Name: Definition:
Output Attribute Name and Definition	Name: PSORMSG Definition: Output message containing information about the refill request.

Current Logic
N/A

Modified Logic (Changes are in bold)	
6.2.2.3.1.7. PSORREF1 The 'PSORREF1' is a supporting routine for 'PSORREF'.	
Routines	Activities
Routine Name	PSORREF1
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	PSO LM BACKDOOR ORDERS

Related Routines	Routines "Called By"	Routines "Called"
	PSORREF	%DT

Routines	Activities
Data Dictionary (DD) References	^PSRX

Routines	Activities
Related Protocols	N/A
Related Integration Control Registrations (ICRs)	N/A
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	N/A
Output Attribute Name and Definition	N/A

Current Logic
N/A

Modified Logic (Changes are in bold)	
6.2.2.3.1.8. PSORRP The ‘PSORRP’ routine assists in prompting for search criteria and display of the Remote Prescription Report.	
Routines	Activities
Routine Name	PSORRP
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	PSO REMOTE RX REPORT

Related Routines	Routines “Called By”	Routines “Called”
	N/A	%DT, DIC, DIQ, DIR, PSOROS, PSORRD, VALM, VALM1, VALM10, XLFDT, XQORM1

Routines	Activities
Data Dictionary (DD) References	^PSR XR(52.09,
Related Protocols	

Routines	Activities
Related Integration Control Registrations (ICRs)	N/A
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local
Input Attribute Name and Definition	N/A
Output Attribute Name and Definition	N/A

Current Logic
N/A

Modified Logic (Changes are in bold)	
6.2.2.3.1.9. PSORRPA1 The ‘PSORRPA1’ is the main routine for processing an incoming partial fill request.	
Routines	Activities
Routine Name	PSORRPA1
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	PSO LM BACKDOOR ORDERS

Related Routines	Routines “Called By”	Routines “Called”
	N/A	%ZISH, DIE, DIK, DIQ, PSOBPSUT, PSOCAN3, PSOCPTRI, PSOHLN1, PSORRX1, PSORXL1, PSSLOCK, VADPT, XLFDT, XUAF4

Routines	Activities
Data Dictionary (DD) References	^PSRX(^PS(59, ^PS(52.5, ^%ZIS(1, ^PS(55,

Routines	Activities
Related Protocols	
Related Integration Control Registrations (ICRs)	IA 221? IA 999??
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	Name: RXNUM Definition: Name: PFDATE Definition: Partial fill date Name: MW Definition: Mail/Window Name: QTY Definition: Quantity Name: DSUPP Definition: Days supply Name: REMARKS Definition: Remarks (if applicable) Name: PHARM Definition: Name of Filling pharmacist (remote) Name: PHONE Definition: Phone number of remote pharmacist Name: SITE Definition: Remote Site number
Output Attribute Name and Definition	Name: VALMSG Definition: Response message for partial fill

Current Logic
N/A

Modified Logic (Changes are in bold)
<p>6.2.2.3.1.10. PSORRX1</p> <p>The ‘PSORRX1’ routine builds the HL7 messages that are sent to the Pharmacy Remote Prescription Manager to retrieve, refill, and partial fill prescriptions from another facility. This routine uses the treating facility list to properly build the HL7 information to send to the ‘remote’ site(s).</p>

Routines	Activities
Routine Name	PSORRX1
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	PSO LM BACKDOOR ORDERS

Related Routines	Routines “Called By”	Routines “Called”
	PSORX1	%ZIS, DIC, DIE, DILFD, DIQ, DIR, HLFNC2, HLMA, PSODIR2, VAFCTFU2, VALM1, XLFDT, XUAF4

Routines	Activities
Data Dictionary (DD) References	
Related Protocols	
Related Integration Control Registrations (ICRs)	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input checked="" type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	Name: DFN Definition: Patients local IEN
Output Attribute Name and Definition	HL7 MESSAGE IN HL7 QUEUE

Current Logic
N/A

Modified Logic (Changes are in bold)	
6.2.2.3.1.11. PSORWRAP The ‘PSORWRAP’ routine is the wrapper utility for the calls into VistA.	
Routines	Activities
Routine Name	PSORWRAP

Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	N/A

Related Routines	Routines “Called By”	Routines “Called”
	N/A	PSORREF, PSORRPA1, XLFDT, XUP

Routines	Activities
Data Dictionary (DD) References	N/A
Related Protocols	N/A
Related Integration Control Registrations (ICRs)	N/A
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input checked="" type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	Name: QBSESSID Definition: Session ID Name: QBDUZ Definition: Users DUZ value
Output Attribute Name and Definition	Name: Status Definition: returns session id and 1 if successful

Current Logic
N/A

Modified Logic (Changes are in bold)	
6.2.2.3.1.12. PSORX1 The ‘PSORX1’ routine has been modified to call ‘PSORRX1’ for retrieval of remote prescription data.	
Routines	Activities
Routine Name	PSORX1
Enhancement Category	<input type="checkbox"/> New <input checked="" type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change

RTM	
Related Options	

Related Routines	Routines “Called By”	Routines “Called”
		DTC, \$ZISS, DGPFAP, DIC, DICN, DIE, DIK, DIQ1, DIR, ORRDI1, PSOBAL, PSOBING, PSOBUILD, PSODDPR2, PSODEM, PSOHLUP, PSOLMAO, PSOLMUTL, PSOLSET, PSOORFI2, PSOORUT1, PSOORUT2, PSOPATLK, PSOPTPST, PSORMRX, PSORRX1, PSORXL, PSOSUPOE, PSUHL, VADPT, VALM1

Routines	Activities
Data Dictionary (DD) References	^PS(55, ^DIC(31, ^DPT(DO,372, ^XTMP(“ORRDI” ^PSUHL ^PSRX
Related Protocols	N/A
Related Integration Control Registrations (ICRs)	External reference ^PS(55 supported by DBIA 2228 External reference ^DIC(31 supported by DBIA 658 external reference ^DPT(D0,372 supported by DBIA 1476 External reference DISPPRF^DGPFAP supported by DBIA #4563 External reference ^ORRDI1 is supported by DBIA 4659 External reference ^XTMP(“ORRDI” is supported by DBIA 4660 External reference ^PSUHL supported by DBIA 4803
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local
Input Attribute Name and Definition	N/A
Output Attribute Name and Definition	N/A

Current Logic
Cannot get current logic until we have all patches associated with this routine.

Modified Logic (Changes are in bold)

6.2.2.3.2. Templates

6.2.2.3.2.1. PSO LM REMOTE ORDER SELECTION

The ‘PSO LM REMOTE ORDER SELECTION’ provides the logic needed to display a remote prescription within PSO LM BACKDOOR ORDERS.

Templates	Description
Template Name	PSO LM REMOTE ORDER SELECTION
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RSD	
Template Type	<input type="checkbox"/> Sort <input checked="" type="checkbox"/> Input <input type="checkbox"/> Print <input type="checkbox"/> Other
Related Options	

Related Routines	Routines “Called By”	Routines “Called”
	^VALM	

Routines	Description
Data Dictionary (DD) References	N/A
Global References	

6.2.2.3.2.1.1. PSO LM REMOTE REPORT DETAILS

The ‘PSO LM REMOTE REPORT DETAILS’ provides the logic that will display details about the remote report item.

Templates	Description
Template Name	PSO LM REMOTE REPORT DETAILS
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RSD	
Template Type	<input type="checkbox"/> Sort <input checked="" type="checkbox"/> Input <input type="checkbox"/> Print <input type="checkbox"/> Other
Related Options	

Related Routines	Routines “Called By”	Routines “Called”

Routines	Description
Data Dictionary (DD) References	N/A
Global References	

6.2.2.3.2.1.2. PSO LM REMOTE RX REPORT

The ‘PSO LM REMOTE RS REPORT’ is the menu system for the selected items of the remote prescription report.

Templates	Description
Template Name	PSO LM REMOTE RX REPORT
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RSD	
Template Type	<input type="checkbox"/> Sort <input checked="" type="checkbox"/> Input <input type="checkbox"/> Print <input type="checkbox"/> Other
Related Options	

Related Routines	Routines “Called By”	Routines “Called”

Routines	Description
Data Dictionary (DD) References	N/A
Global References	

6.2.2.3.3. Bulletins

Not applicable.

6.2.2.3.4. Data Entries Affected by the Design

Not applicable.

6.2.2.3.5. Unique Record(s)

Not applicable.

6.2.2.3.6. File or Global Size Changes

6.2.2.3.6.1. Global

The Pharmacy Remote Prescription Manager uses the following globals:

^PSRX

^PSRXXR

The ^PSRX global holds the prescription data. The ^PSRXXR global holds a comprehensive list of information regarding remote refill and partial fill activity.

Table 9: Global Placement and Protection

Global	Type	Placement	Journal	Protection
^PSRX	Dynamic	No changes should be made to the current placement or settings related to this global	No change	No change
^PSRXXR	Static	Place this global in a volume set that can accommodate the following yearly growth rate: 2,000 bytes * visits per year	Yes	RWP or D

6.2.2.3.6.2. Files

Table 10: Files

File #	File Name	Root Global	Global Protection
52	PRESCRIPTION	^PSRX	No change
52.09	REMOTE PRESCRIPTION LOG	^PSRXXR(52.09	@

6.2.2.3.6.2.1. Prescription (#52) File

The overall prescription file definition remains unchanged, however there are a few modifications that track information related to a remote refill or partial fill. Those changes are listed in the following tables and are isolated to the sub-files for refill and partial fill.

6.2.2.3.6.2.2. REFILL Sub File (#52.1)

Table 11: REFILL Sub file (#52.1)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
91	REMOTE FILL SITE	Pointer to the Institution file (#4)	52^RFIL	Pointer field: Points to the Institution from which the refill or partial fill request was generated.
92	REMOTE PHARMACIST	N/A	N/A	Free-text field: This free text field holds the name of the remote requesting pharmacist. This is the pharmacist that made the remote refill or partial fill request.
93	REMOTE PHARMACIST PHONE	N/A	N/A	Free-text field: This is the contact number for the remote (requesting) pharmacist. This is the pharmacist that initiated the remote refill or partial fill request.

6.2.2.3.6.2.3. PARTIAL FILL Sub file (#52.2)

Table 12: PARTIAL FILL sub file (#52.2)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
91	REMOTE FILL SITE	Pointer to the Institution file (#4)	52^PFIL	Pointer field: Points to the Institution from which the refill or partial fill request was generated.
92	REMOTE PHARMACIST	N/A	N/A	Free-text field: This free text field holds the name of the remote requesting pharmacist. This is the pharmacist that made the remote refill or partial fill request.
93	REMOTE PHARMACIST PHONE	N/A	N/A	Free-text field: This is the contact number for the remote (requesting) pharmacist. This is the pharmacist that initiated the remote refill or partial fill request.

6.2.2.3.6.2.4. Remote Prescription Log (#52.09) File

Table 13: Remote Prescription Log (#52.09)

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
.01	LOG DATE/TIME	N/A	52.09^B	Date/Time (required): This is the date/time of the refill or partial fill activity.

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
.02	PATIENT	Pointer to the PATIENT file (#2)	52.09^C	Pointer field (required): This is the pointer to the patient file, which identifies what patient the refill or partial refill request is for.
.03	RX NUMBER	N/A	52.09^D	Free Text (required): This is the prescription number as it exists at the 'originating' facility.
.04	SITE NUMBER	Pointer to the INSTITUTION file (#4)	52.09^E	Pointer field (required): This is the pointer that identifies which facility was the 'originating' facility for this refill or partial fill request.
.05	REQUEST TYPE	N/A		Set of codes: RF for REFILL (outgoing) PR for PARTIAL FILL (outgoing) OR for OUTSIDE REFILL (incoming) OP for OUTSIDE PARTIAL FILL (incoming)
.06	OUTGOING REQUEST PHARMACIST	Pointer to the NEW PERSON file (#200)		Pointer field (required): This is the pointer to the person who initiated a refill or partial fill request to a remote facility.
.07	REMOTE FILLING PHARMACIST	N/A	N/A	Free Text: This is the textual name of the pharmacist who is requesting a refill or partial fill from a remote facility. This field is used to log 'incoming' refill and partial fill pharmacist data.
.07	QUANTITY	N/A	N/A	Numeric: This is the quantity associated with the remote refill or partial fill.
.08	DAYS SUPPLY	N/A	N/A	Numeric: This is the day's supply associated with the remote fill or partial fill request.
.09	REFILL/PARTIAL DATE	N/A	N/A	Date: This is the date for the refill or partial fill request. This represents the date as it is logged in the .01 field of either the REFILL (#52.1) or PARTIAL DATE (#52.2) sub file within the PRESCRIPTION file (#52).
.1	DISPENSED DATE	N/A	N/A	Date: This is the date that the remote prescription request was dispensed.
1	REMOTE DRUG NAME	N/A	N/A	Free Text: This is the textual value for the remote drug.

Field Number	Field Name	Pointers	Cross References and Record Indices	Description
1.1	LOCAL (MATCHED) DRUG	Pointer to the DRUG file (#50)	N/A	Pointer to the DRUG file (#50). This holds the locally identified drug that is equivalent to the drug name that is received from the remote (originating) facility.
1.2	TOTAL REFILL/PARTIAL COST	N/A	N/A	Numeric: This field is used to store the total cost for the refill or partial fill request. This value is based on the current cost of the drug, multiplied by the quantity.
2	MESSAGE DETAILS	N/A	N/A	Word-processing: This is where any additional message details are stored.
3	LABEL DATA	N/A	N/A	Word-processing: Once label data has been received from the originating facility, it is stored here for future reference and reprint.

6.2.2.3.7. Mail Groups

Not applicable.

6.2.2.3.8. Security Keys

Not applicable.

6.2.2.3.9. Options

6.2.2.3.9.1. Pharmacy Remote Prescription Manager Options

Name	Type	Description
PSO LM BACKDOOR ORDERS	Menu	
PSO RX	Menu	The overarching menu in which PSO REMOTE RX REPORT is contained.
PSO REMOTE RX REPORT	Run Routine	This option provides details about remote refill and partial fill request, as well as incoming refill and partial fill requests.

6.2.2.3.9.1.1. PSO LM BACKDOOR ORDERS Option

Options	Activities
Option Name	PSO LM BACKDOOR ORDERS

Options	Activities
Enhancement Category	<input type="checkbox"/> New <input checked="" type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Menu Options that will invoke this reference	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
Menu Text Description	
Option Type	<input type="checkbox"/> Edit <input type="checkbox"/> Print <input type="checkbox"/> Menu <input type="checkbox"/> Inquire <input type="checkbox"/> Action <input type="checkbox"/> Run Routine <input type="checkbox"/> Other
Associated Routine	
Option Definition	

Current Entry Action Logic

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic

Modified Exit Action Logic (Changes are in bold)

6.2.2.3.9.1.2.	PSO RX Options
Options	Activities
Option Name	PSO RX
Enhancement Category	<input type="checkbox"/> New <input checked="" type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Menu Options that will invoke this reference	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
Menu Text Description	Rx (Prescriptions)

Modified Exit Action Logic (Changes are in bold)	
Option Type	<input type="checkbox"/> Edit <input type="checkbox"/> Print <input checked="" type="checkbox"/> Menu <input type="checkbox"/> Inquire <input type="checkbox"/> Action <input type="checkbox"/> Run Routine <input type="checkbox"/> Other
Associated Routine	PSOLSET, PSOORFIN
Option Definition	

Current Entry Action Logic
D ^PSOLSET:\$D(PSOPAR) D CHK^PSOORFIN

Modified Entry Action Logic (Changes are in bold)
N/A

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)
N/A

6.2.2.3.9.1.3. PSO REMOTE RX REPORT Option

Options	Activities
Option Name	PSO REMOTE RX REPORT
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Menu Options that will invoke this reference	PSO RX
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
Menu Text Description	Remote Prescription Report
Option Type	<input type="checkbox"/> Edit <input type="checkbox"/> Print <input type="checkbox"/> Menu <input type="checkbox"/> Inquire <input checked="" type="checkbox"/> Action <input type="checkbox"/> Run Routine <input type="checkbox"/> Other
Associated Routine	PSOLSET, PSOORFIN
Option Definition	Remote RX Prescription report display.

Current Entry Action Logic
N/A

Modified Entry Action Logic (Changes are in bold)
D ^PSORRP

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)
N/A

6.2.2.3.10. Protocols

6.2.2.3.10.1.1. PSO LM REFILL REMOTE ORDER Protocol

Protocols	Activities
Protocol Name	PSO LM REFILL REMOTE ORDER
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	PSO LM REMOTE ORDER MENU
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
Item Text Description	
Protocol Type	<input checked="" type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	PSORRX1

Current Entry Action Logic
N/A

Modified Entry Action Logic (Changes are in bold)
D REFREQ^PSORRX1

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)
N/A

6.2.2.3.10.1.2.

PSO LM REMOTE ORDER MENU Protocol

Protocols	Activities
Protocol Name	PSO LM REMOTE ORDER MENU
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	PSO LM REFILL REMOTE ORDER PSO LM REMOTE PARTIAL
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
Item Text Description	Remote Order Menu
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input checked="" type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	N/A

Current Entry Action Logic

N/A

Modified Entry Action Logic (Changes are in bold)

N/A

Current Exit Action Logic

N/A

Modified Exit Action Logic (Changes are in bold)

N/A

6.2.2.3.10.1.3.

PSO LM REMOTE PARTIAL Protocol

Protocols	Activities
Protocol Name	PSO LM REMOTE PARTIAL
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	PSO LM REMOTE ORDER MENU
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
Item Text Description	Partial

Protocols	Activities
Protocol Type	<input checked="" type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	PSORRX1

Current Entry Action Logic
N/A

Modified Entry Action Logic (Changes are in bold)
D PARTIAL^PSORRX1

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)
N/A

6.2.2.3.10.1.4.

PSO LM REMOTE RX REPORT MENU Protocol

Protocols	Activities
Protocol Name	PSO LM REMOTE RX REPORT MENU
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	PSO LM SELECT REPORT ITEM
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
Item Text Description	Remote Rx Selection**
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input checked="" type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	N/A

Current Entry Action Logic
N/A

Modified Entry Action Logic (Changes are in bold)
N/A

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)
N/A

6.2.2.3.10.1.5.

PSO LM SELECT REPORT ITEM Protocol

Protocols	Activities
Protocol Name	PSO LM SELECT REPORT ITEM
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	PSO LM REMOTE RX REPORT MENU
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
Item Text Description	
Protocol Type	<input checked="" type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	PSORRP

Current Entry Action Logic
N/A

Modified Entry Action Logic (Changes are in bold)
D SEL^PSORRP

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)
N/A

6.2.2.3.10.1.6.

PSO PHARM QBP Q13 ESUBS** Protocol

Protocols	Activities
Protocol Name	PSO PHARM QBP-Q13 ESUBS**

Protocols	Activities
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
Item Text Description	
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	

Current Entry Action Logic

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic

Modified Exit Action Logic (Changes are in bold)

6.2.2.3.10.1.7.

PSO PHARM QBP Q13 EVENT** Protocol

Protocols	Activities
Protocol Name	PSO PHARM QBP-Q13 EVENT**
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
Item Text Description	
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	

Current Entry Action Logic

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic

Modified Exit Action Logic (Changes are in bold)

6.2.2.3.10.1.8.

PSO PHARM RDS-013 ESUBS Protocol

Protocols	Activities
Protocol Name	PSO PHARM RDS-O13 ESUBS
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
Item Text Description	
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	

Current Entry Action Logic

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic

Modified Exit Action Logic (Changes are in bold)

6.2.2.3.10.1.9.

PSO PHARM RDS-013 EVENT Protocol

Protocols	Activities
Protocol Name	PSO PHARM RDS-O13 EVENT
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change

Protocols	Activities
Associated Protocols	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
Item Text Description	
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	

Current Entry Action Logic

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic

Modified Exit Action Logic (Changes are in bold)

6.2.2.3.11. Remote Procedure Call (RPC)

Not Applicable

6.2.2.3.12. Constants Defined in Interface

Not Applicable

6.2.2.3.13. Variables Defined in Interface

Not Applicable.

6.2.2.3.14. Types Defined in Interface

Not Applicable.

6.2.2.3.15. GUI

Not Applicable

6.2.2.3.16. GUI Classes

Not Applicable.

6.2.2.3.17. Current Form

Nor Applicable.

6.2.2.3.18. Modified Form

Not Applicable.

6.2.2.3.19. Components on Form

Not Applicable.

6.2.2.3.20. Events

Not Applicable

6.2.2.3.21. Methods

Not Applicable

6.2.2.3.22. Special References

Not Applicable.

6.2.2.3.23. Class Events

Not Applicable.

6.2.2.3.24. Class Methods

Not Applicable.

6.2.2.3.25. Class Properties

Not Applicable.

6.2.2.3.26. Uses Clause

Not Applicable.

6.2.2.3.27. Forms

Not applicable.

6.2.2.3.28. Functions

Not applicable.

6.2.2.3.29. Dialog

Not applicable.

6.2.2.3.30. Help Frame

Not applicable.

6.2.2.3.31. HL7 Application Parameter

The MUMPS Patient Prescription Processing [PSO LM BACKDOOR ORDERS] menu option will be modified. The modifications include making a HL7 requests to the Prescription Manager Server for viewing and filling remote prescriptions.

6.2.3. HL7 Protocols

An HL7 protocol event and subscriber will be configured in VistA to handle sending HL7 requests to the Prescription Manager Server. Protocols will be set up to handle all messages. The following is an example configuration of a protocol to handle QBP-Q13 Events:

Cache TRM:3800 (CACHE)

File Edit Help

HL7 INTERFACE SETUP PAGE 1 OF 2

NAME: ZJTH PHARM QBP-Q13 EVENT

DESCRIPTION {wp}: (empty)

ENTRY ACTION:

EXIT ACTION:

TYPE: event driver

COMMAND:

Press <PF1>H for help Insert

Figure 20: Example of Configuration of a Protocol to handle QBP-Q13 Events

Cache TRM:3800 (CACHE)

File Edit Help

HL7 EVENT DRIVER PAGE 2 OF 2

ZJTH PHARM QBP-Q13 EVENT

SENDING APPLICATION: ZJTH VISTA PHAR

TRANSACTION MESSAGE TYPE: QBP EVENT TYPE: Q13

MESSAGE STRUCTURE:

PROCESSING ID: VERSION ID: 2.5.1

ACCEPT ACK CODE: NE APPLICATION ACK TYPE: AL

RESPONSE PROCESSING RTN:

SUBSCRIBERS

ZJTH PHARM QBP-Q13 ESUBS

COMMAND:

Press <PF1>H for help Insert

Figure 21: Example of Configuration of a Protocol to handle QBP-Q13 Events

Cache TRM:3800 (CACHE)

File Edit Help

HL7 EVENT DRIVER

ZJTH PHARM QBP-Q13 EVENT

PAGE 2 OF 2

Sending Application Edit

NAME: ZJTH VISTA PHAR

ACTIVE/INACTIVE: ACTIVE

FACILITY NAME: 2201

COUNTRY CODE: USA

HL7 FIELD SEPARATOR: |

HL7 ENCODING CHARACTERS: ^~\&

MAIL GROUP:

COMMAND: Press <PF1>H for help Insert

Figure 22: Example of Configuration of a Protocol to handle QBP-Q13 Events

Cache TRM:3800 (CACHE)

File Edit Help

HL7 EVENT DRIVER

ZJTH PHARM QBP-Q13 ESUBS

PAGE 2 OF 2

RECEIVING APPLICATION: ZJTH ESB PHARM

RESPONSE MESSAGE TYPE: RTB

EVENT TYPE: K13

SENDING FACILITY REQUIRED?:

RECEIVING FACILITY REQUIRED?:

SECURITY REQUIRED?:

LOGICAL LINK: ZJTHS36500

PROCESSING RTN:

ROUTING LOGIC:

COMMAND: Press <PF1>H for help Insert

Figure 23: Example of Configuration of a Protocol to handle QBP-Q13 Events

6.2.4. HL7 Sender and Receiver Applications

Sender and Receiver HL7 applications will be configured in VistA to fill MSH-3, 4, 5 and 6 fields. The Sending Application Facility Name is used to convey the site number of the VistA. The following is an example configuration of applications used in the protocols above:

Cache TRM:3800 (CACHE)

File Edit Help

HL7 APPLICATION EDIT

NAME: ZJTH ESB PHARM ACTIVE/INACTIVE: ACTIVE

FACILITY NAME: 36500 COUNTRY CODE: USA

HL7 FIELD SEPARATOR: | HL7 ENCODING CHARACTERS: ^~\&

MAIL GROUP:

COMMAND: Press <PF1>H for help Insert

Figure 24: Receiving HL7 Application Configuration

Cache TRM:3800 (CACHE)

File Edit Help

HL7 APPLICATION EDIT

NAME: ZJTH VISTA PHAR ACTIVE/INACTIVE: ACTIVE

FACILITY NAME: 2201 COUNTRY CODE: USA

HL7 FIELD SEPARATOR: | HL7 ENCODING CHARACTERS: ^~\&

MAIL GROUP:

COMMAND: Press <PF1>H for help Insert

Figure 25: Sending HL7 Application Configuration

6.2.5. Sender and Receiver Logical Links

A client logical link will be configured in VistA with the IP and Port of the VAeMI ESB. Additionally, a server or listening logical link will be added. HL7 messaging will be used to exchange requests between the initiating VistA and the VAeMI ESB. The following is an example configuration of logical links used in the applications above:

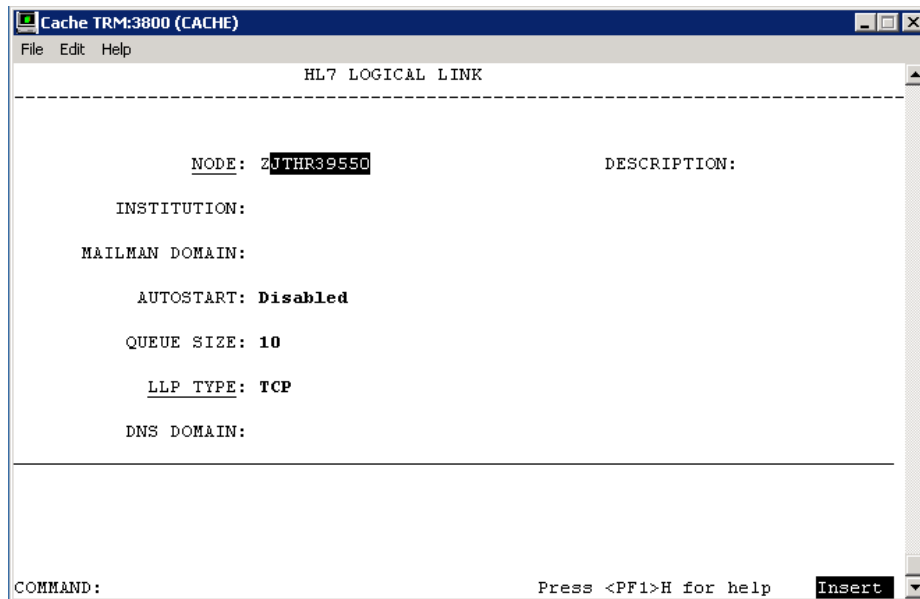


Figure 26: Example of Configuration of Logical Links

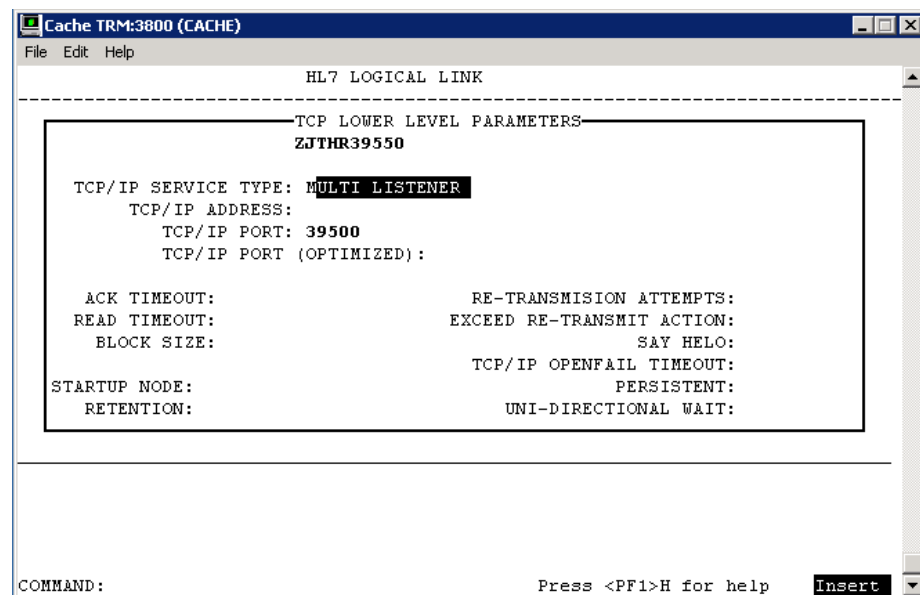


Figure 27: Example of Configuration of Logical Links

Cache TRM:3800 (CACHE)

File Edit Help

HL7 LOGICAL LINK

NODE: ZJTHS36500 DESCRIPTION:

INSTITUTION:

MAILMAN DOMAIN:

AUTOSTART: Enabled

QUEUE SIZE: 10

LLP TYPE: TCP

DNS DOMAIN:

COMMAND: Press <PF1>H for help Insert

Figure 28: Example of Configuration of Logical Links

Cache TRM:3800 (CACHE)

File Edit Help

HL7 LOGICAL LINK

TCP LOWER LEVEL PARAMETERS

ZJTHS36500

TCP/IP SERVICE TYPE: CLIENT (SENDER)

TCP/IP ADDRESS: 10.139.26.223

TCP/IP PORT: 36500

TCP/IP PORT (OPTIMIZED):

ACK TIMEOUT:

READ TIMEOUT:

BLOCK SIZE:

STARTUP NODE:

RETENTION: 15

RE-TRANSMISSION ATTEMPTS:

EXCEED RE-TRANSMIT ACTION: restart

SAY HELO:

TCP/IP OPENFAIL TIMEOUT:

PERSISTENT: NO

UNI-DIRECTIONAL WAIT:

COMMAND: Press <PF1>H for help Insert

Figure 29: Example of Configuration of Logical Links

6.2.5.1.1. HL7 Logical Link

Table 56: HL7 Logical Link

HL7 Logical Link	Description
HL7 Logical Link Parameter Name	PSOR39550** - NAME CHANGE REQUIRED

Enhancement Category	<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modify	<input type="checkbox"/> Delete	<input type="checkbox"/> No Change
-----------------------------	---	---------------------------------	---------------------------------	------------------------------------

Enhancement Category	Current	Modified
Node	N/A	ALL??
Institution	N/A	N/A
Domain	N/A	N/A
Autostart	N/A	Disabled
Queue Size	N/A	10
LLP Type	N/A	TCP

HL7 Logical Link	Description
HL7 Logical Link Parameter Name	PSOS36500** - NAME CHANGE REQUIRED

Enhancement Category	<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modify	<input type="checkbox"/> Delete	<input type="checkbox"/> No Change
-----------------------------	---	---------------------------------	---------------------------------	------------------------------------

Enhancement Category	Current	Modified
Node	N/A	ALL??
Institution	N/A	N/A
Domain	N/A	N/A
Autostart	N/A	Enabled
Queue Size	N/A	10
LLP Type	N/A	TCP

6.2.5.1.2. COTS Interface

Not applicable.

6.3. Network Detailed Design

The Network Design is a VA implementation and not being changed by the software being implemented within OneVA Pharmacy.

6.4. Security and Privacy

6.4.1. Security

6.4.1.1. Secure Sockets Layer (SSL)

The OneVA Pharmacy architecture does not use SSL to transport HL7 from VistA to/from the VAeMI ESB. The use of SSL is achieved from the VAeMI ESB to the HDR/CDS. The scope and complexity of the changes required to VistA to support HL7 over SSL are unknown.

6.4.1.2. Authentication and Authorization

OneVA Pharmacy authentication and authorization occur fully within the context of existing VistA systems and as such rely on the pre-existing compliance of these applications with the security and privacy requirements and their resulting authentication and authorization.

6.4.1.3. Remote Prescription Locking

Before any action is taken on a remote prescription, the prescription is locked. The lock only remains long enough for the routines to file the data, which is generally only a few milliseconds. This prevents a 'remote' refill or partial fill from occurring in the event that a user at the originating site is taking action on the same patient's prescription.

6.4.2. Privacy

OneVA Pharmacy privacy standards occur fully within the context of existing VistA systems and as such rely on the pre-existing compliance of these applications with the security and privacy requirements.

6.5. Service Oriented Architecture / ESS Detailed Design

Services provided includes:

- Provides: Transport of HL7 messages to target VistA
- Provides: Proxy call to the HDR for a patient's active prescriptions.
- Consumes: HDR query service

6.5.1. Service Description for <Consumed Service Name>

Not Applicable. No development of new service.

6.5.2. Service Design for <Provided Service Name>

Not Applicable. No development of new service.

7. External System Interface Design

7.1. Interface Architecture

7.2. Interface Detailed Design

HL7 v2.5.1 messaging is used to communicate between VistA and the VAeMI ESB. The following codes are provided for reference.

7.3. Acknowledgement Codes

Table 14: Acknowledgement Codes

Code	Status	Description
AA	Application Accept	Requested action or operation was successfully performed
AR	Application Reject	Requested action or operation failed due to service errors
AE	Application Error	Requested action or operation failed due to HL7 message or semantic errors

7.4. Order Control Codes

Table 15: Order Control Codes

Code	Status
RF	Refill order request
PF	Partial fill order request*
AF	Order refill authorization request approved
DF	Order refill authorization request denied
FU	Order refilled unsolicited at patient's request
OF	Order refilled as requested by placer system

*PF is not an HL7 standard code

7.5. Remote Prescription Query Transaction

The remote prescription query request is a QBP^Q13 message type and the response is a RTB^K13 message type. The “Chapter” reference below refers to the HL7 Standard Version 2.5.1 documentation.

7.5.1. Remote Prescription Query Request

The QBP^Q13 request is defined in Table 4. The implementation will ignore RDF and DSC segments and additionally, any segment not shown below is ignored.

Table 16: Remote Prescription Query Request

QBP^Q13	QBP Message	Chapter
MSH	Message Header Segment	2.15.9
QPD	Query Parameter Definition	5.5.4
PID	Patient Identification	3.4.2
[RDF]	Table Row Definition Segment	5.5.6.6
RCP	Response Control Parameter	5.5.6
[DSC]	Continuation Pointer	2.15.4

Table 17: QPD Field Description and Commentary

Field Seq	Field Name	HL7 Data Type	Description
1	Message Query Name	CE	Must be Q13^Active Prescriptions^HL70471
2	Query Tag	ST	Unique to each query message instance

Table 18: PID Field Description and Commentary

Field Seq	Field Name	HL7 Data Type	Description
1			Ignored
2			Ignored
3	MRN	CX	One or more patient identifiers may be sent. Each site provided and configured will be queried for prescriptions.
n			Ignored

RCP FIELD DESCRIPTION AND COMMENTARY

Table 19: RCP Field Description and Commentary

Field Seq	Field Name	HL7 Data Type	Description
1	Query Priority	ST	Must be “I” for Immediate
n			Ignored

7.5.2. Sample QBP^Q13 Request

MSH|^~\&|PSO VISTA PHARM|2101|PSO MIRTH PHARM|36500|20140102125951-0500||QBP^Q13|301|T|2.5.1|||NE|AL|USA

QPD|Q13^Active Prescriptions^HL70471|512123456

PID|||1666000286V397907^^^USVHA^NI^200M~100232^^^USVHA^PI^500~100445^^^USVHA^PI^612~100232^^^USVHA^PI^2204~100232^^^USVHA^PI^2202

RCPI|I

7.5.3. Remote Prescription Query Response

The RTB^K13 response is defined as follows.

Structure for the RTB^K13 message

Table 20: Remote Prescription Query Response

RTB^K13	QBP Message	Chapter
MSH	Message Header Segment	2.15.9
MSA	Message Acknowledgement	2.15.8
[ERR]	Error	2.15.5
QAK	Query Acknowledgement	5.5.2
ZAK	Z-Segment	Defined below
QPD	Query Definition Segment	5.5.4
RDF	Table Row Definition Segment	5.5.6.6
[{{RDT}}]	Table Row Data Segment	5.5.6

An ERR segment will be sent when MSA.1 acknowledgement code is AR or AE.

Table 21: RCP Field Description and Commentary

Field Seq	Field Name	HL7 Data Type	Description
1	Site Number	ST	VistA site number
2	Count returned	NM	Count of rows returned from VistA site
3	Success indicator	NM	1 – success 0 – unknown error

Field Seq	Field Name	HL7 Data Type	Description
			-1 – connection failure -2 – response timeout

The RDF segment and data in the RDT segment contains the following fields:

- Site Number
- Rx Number
- Drug Name
- Quantity
- Refills
- Days Supply
- Expiration Date
- Issue Date
- Stop Date
- Last Fill
- Sig
- Detail

7.5.4. Sample RTB^K13 Response

MSH|^~\&|PSO MIRTH PHARM|36500|PSO VISTA PHARM|2101|20140109155138.281-0500||ACK^Q13^ACK|19|T|2.5.1

MSA|AA|50022643

QAK|512123456|OK|Q13^Active Prescriptions^HL70471|2

ZAK|2302|3|1|Success

ZAK|2303|0|-1|Connection timeout.

RDF|12|Site Number~Rx Number~Drug Name~Quantity~Refills~Days Supply~Expiration Date~Issue Date~Stop Date~Last Fill Date~Sig~Detail

RDT|2302|501109|NAPROXEN 250MG
TAB|60|11|30|20150517.000000|20140516.000000|20150517.000000|20140516.000000|TAKE ONE TABLET BY MOUTH TWICE A DAY|NAPROXEN 250MG TAB Qty: 60 for 30 days

RDT|2302|501110|RANITIDINE HCL 25MG EFFER
TAB|60|6|30|20150517.000000|20140516.000000|20150517.000000|20140516.000000|DISSOLVE 1 MOUTH TWICE A DAY|RANITIDINE HCL 25MG EFFER TAB Qty: 60 for 30 days

RDT|2302|501123|ACETAMINOPHEN 325MG
TAB|240|5|30|20150726.000000|20140725.000000|20150726.000000|20140814.000000|TAKE TWO TABLETS BY MOUTH EVERY 6 HOURS AS NEEDED |ACETAMINOPHEN 325MG TAB Qty: 240 for 30 days

7.6. Remote Prescription Dispense Transaction

The remote prescription refill dispense request is a RDS^O13 message type and the response is a RRD^O14 message type. This message is used to convey that the requesting system wishes to lock the remote order. The “Chapter” reference below refers to the HL7 Standard Version 2.5.1 documentation.

7.6.1. Remote Description Dispense Request

The RDS^O13 request is defined in the following table and any segment not shown is ignored.

Table 22: Remote Description Dispense Request

RDS^O13	RDS Message	Chapter
MSH	Message Header Segment	2.15.9
PID	Patient Identification	3.4.2
ORC	Common Order	4.5.1
RXO	Pharmacy/Treatment Prescription Order	4.14.1

Table 23: PID Field Description and Commentary

Field Seq	Field Name	HL7 Data Type	Description
1			Ignored
2			Ignored
3	MRN	CX	One or more patient identifiers may be sent. Each site provided and configured will be queried for prescriptions.
n			Ignored

Table 24: ORC Field Description and Commentary

Field Seq	Field Name	HL7 Data Type	Description
1	Order Control	ID	Error! Reference source not found. Error! Reference source not found.
2	Placer Order Number	EI	The originating order prescription number
3			Ignored
4			Ignored
5			Ignored

Field Seq	Field Name	HL7 Data Type	Description
6			Ignored
7			Ignored
8			Ignored
9	Date/Time Transaction	TS	Date/Time of request
10	Entered By	XCN	Provides pharmacist identifier and name
11			Ignored
12			Ignored
13	Enterer's Location	PL	Provides pharmacist's site number
14	Call Back Phone Number	XTN	Provides pharmacist's callback phone number

Table 25: RXO Field Description and Commentary

Field Seq	Field Name	HL7 Data Type	Description
1			Ignored
2			Ignored
3			Ignored
4			Ignored
5			Ignored
6			Ignored
7			Ignored
8	Deliver-To Location	LA1	Provides (W)indow, (M)ail and requesting site number

SAMPLE RDS^O13 REFILL REQUEST

MSH|^~\&|PSO VISTA PHARM|2201|PSO ESB PHARM|36500|20140415110833-0500||RDS^O13|50024242|T|2.5.1|||NE|AL|USA

PID|||1666000286V397907^^^USVHA^NI^200M~100232^^^USVHA^PI^2202

ORC|RF|500974^2202|||||20140415|1^PROGRAMMER^ONE|||^^^500|6655544

RXO|||||||W^^^2201

SAMPLE RDS^O13 PARTIAL FILL REQUEST

MSH|^~\&|PSO VISTA PHARM|2201|PSO ESB PHARM|36500|20140716081903-0500||RDS^O13|50030627|T|2.5.1|||NE|AL|USA

PID|||1111000440V046182^^^USVHA^NI^200M~101016^^^USVHA^PI^2202

ORC|PF|501145^2202|||||20140710|10000000225^TERRELL^GAIL|||^^^500|502-233-2355

RXO|1|10|||||W^^^500|||10

NTE|1|L|test

7.6.2. Remote Description Dispense Response

The RRD^O14 response is defined as follows.

Table 26: Remote Description Dispense Response

RRD^O14	RRD Message	Chapter
MSH	Message Header Segment	2.15.9
MSA	Message Acknowledgement	2.15.8
[ERR]	Error	2.15.5
ORC	Common Order	4.5.1
RXD	Pharmacy/Treatment Dispense Segment	4.14.1

An ERR segment will be sent when MSA.1 acknowledgement code is AR or AE.

Table 27: RXD Field Description and Commentary

Field Seq	Field Name	HL7 Data Type	Description
1			Ignored
2	Dispense/Give Code	CE	National Drug Code (NDC)
3	Date/Time Dispensed	TS	
4	Actual Dispense Units	CE	
5			Ignored
6			Ignored
7	Prescription Number	ST	Format: PSOIEN::REFIEN
8	Number of Refills Remaining	NM	
9			Ignored
10	Dispensing Provider	XCN	
11			

Field Seq	Field Name	HL7 Data Type	Description
12	Total Daily Dose	CQ	Days Supply

SAMPLE RRD^O14 REFILL RESPONSE

MSH|^~\&|PSO ESB PHARM|36500|PSO VISTA PHARM|2302|20140723091250.151-0400||ACK^O13^ACK|12173|T|2.5.1

MSA|AR|50024459

PID|||1111000449V272697^^^USVHA^NI^200M~101044^^^USVHA^PI^2303

ORC|UF|501109^2303|||||20140723|10000000225^TERRELL^GAIL|||^^^500|490-444-5555

SAMPLE RRD^O14 PARTIAL FILL RESPONSE

MSH|^~\&|PSO ESB PHARM|36500|PSO VISTA PHARM|2201|20140716081939.298-0400||ACK^O13^ACK|10412|T|2.5.1

MSA|AA|50030627

NTE|1||Partial complete for RX #501145.

PID|||1111000440V046182^^^USVHA^NI^200M~101016^^^USVHA^PI^2202

ORC|OF|501145^2202|||||20140710|10000000225^TERRELL^GAIL|||^^^500|502-233-2355

RXD|1|^NAPROXEN 125MG/5ML SUSP^NDC|20140710000000-0400|10||404366::1||^RADIOLOGIST^ONE^^^^^^^^^^^^^^2&VEHU
SITE^^^20140717162300-0400||10

8. Human-Machine Interface

The OneVA Pharmacy project will utilize existing Vista functionality to the fullest extent possible.

8.1. Interface Design Rules

Not Applicable.

8.2. Inputs

Not Applicable

8.3. Outputs

TBD

8.4. Navigation Hierarchy

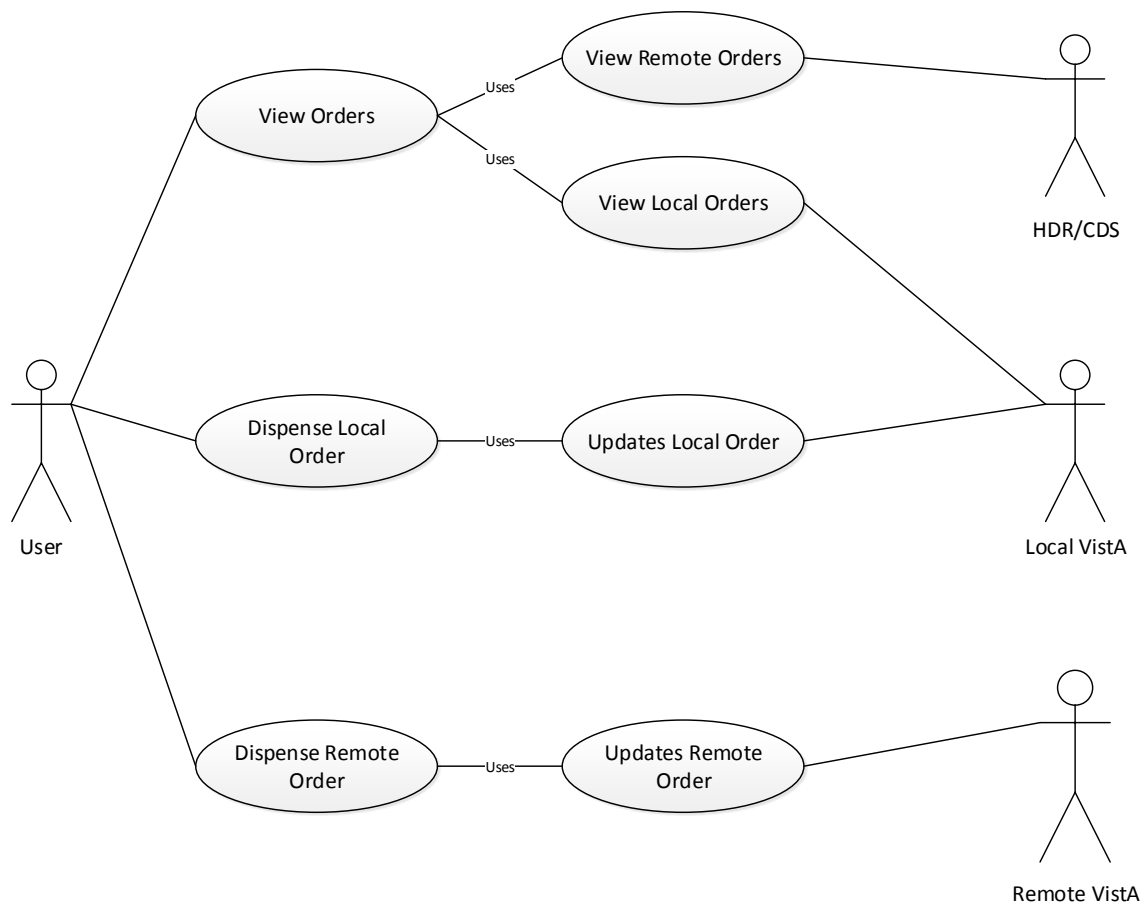


Figure 30: Navigational Hierarchy

8.4.1. Prescription Display

PSO LM BACKDOOR ORDERS will be modified to display remote Rx's in the same screen where the local Rx's are displayed for a patient. The remote prescriptions will occur after any local Rx's and will have a section header '-----SITE NAME (SITE NUMBER)-----' delineation. Leveraging existing functionality means less training, and more immediate familiarity with the process.

Once the user selects to 'Refill' or 'Partially Refill', a prompt will display to enter the required information for sending a request to the 'originating' system, so that the refill or partial fill may be completed and the Rx data updated.

The 'Select Order' function within PSO LM BACKDOOR ORDERS will be modified to differentiate between the local and remote orders and pull from the remote order ^XTMP array when needed.

Once the user has selected the order, a new option will be available to either 'refill remote order' or 'partial refill remote order'. The updates to the data will occur on the system of origin. Additional fields will be added to the Prescription file (#52) but have yet to be fully determined.

The fields will include, remote pharmacist name, remote pharmacist phone number, and remote filling site.

A new local file will be added to hold the information about the remote prescription that has been filled. This file will contain information about the site, Rx number, pharmacist who filled the Rx, and the date the prescription was filled in the 'local' system. This file will be used for reporting and tracking purposes. Additional options may be made available for reprinting of labels.

Cache TRM:4708 (CACHE)

File Edit Help

Medication Profile Mar 06, 2014@19:17:24 Page: 1 of 1

TWOHUNDREDEIGHTYSIX, PATIENT <NO ALLERGY ASSESSMENT>

PID: 666-00-0286 Ht (cm): 177.80 (04/05/2003)

DOB: APR 7, 1935 (78) Wt (kg): 79.09 (04/15/2003)

SEX: MALE

CrCL: <Not Found> BSA (m2): 1.97

#	RX #	DRUG	QTY	ST	DATE	ISSUE	LAST REF	DAY	FILL	REM	SUP
-----ACTIVE-----											
1	500971A\$	ACETAMINOPHEN 325MG TAB	360	S>	02-19	03-26	3	90			
-----DISCONTINUED-----											
2	500973\$	IBUPROFEN 200MG TAB	60	DC>	01-16	01-16	0	30			
-----ONEVA PHARMACY GOLDDEV2 (2202) ACTIVE REMOTE-----											
3	500973	PYRIDOXINE 25MG TABS	180	AR	12-30	01-05	3	90			
4	500974	IBUPROFEN 800MG TAB	60	AR	01-21	02-20	10	30			

Enter ?? for more actions

PU Patient Record Update NO New Order

PI Patient Information SO Select Order

Select Action: Quit// so Select Order

Select Orders by number: (1-4): 3

Figure 31: Medication Profile Screen Example – Remote Active Rx

Cache TRM:4708 (CACHE)

File Edit Help

REMOTE OP Medications (ACTIVE) Mar 06, 2014@19:18:50 Page: 1 of 1

TWOHUNDREDEIGHTYSIX, PATIENT <NO ALLERGY ASSESSMENT>

PID: 666-00-0286 Ht (cm): 177.80 (04/05/2003)

DOB: APR 7, 1935 (78) Wt (kg): 79.09 (04/15/2003)

SEX: MALE

CrCL: <Not Found> BSA (m2): 1.97

Site #: 2202 (PHARMACY TESTING)

Rx #: 500973

Drug Name: PYRIDOXINE 25MG TABS

Days Supply: 90

Quantity: 180

Refills: 3

Expiration Date: 12/31/14

Issue Date: 12/30/13

Stop Date: 12/31/14

Last Fill Date: 01/05/14

Detail: PYRIDOXINE 25MG TABS Qty: 180 for 90 days

Sig: TAKE ONE TABLET BY MOUTH EVERY 12 HOURS

Enter ?? for more actions

RF Refill Remote Order PR Partial

Select Action: Quit//

Figure 32: Remote OP Medication Screen

9. Attachment A – Approval Signatures

This section is used to document the approval of the OneVA Pharmacy Implementation System Design Document during the Formal Review. The review should be ideally conducted face to face where signatures can be obtained ‘live’ during the review however the following forms of approval are acceptable:

1. Physical signatures obtained face to face or via fax
2. Digital signatures tied cryptographically to the signer
3. /es/ in the signature block provided that a separate digitally signed e-mail indicating the signer’s approval is provided and kept with the document

The following members of the governing Integrated Project Team (IPT) are required to sign. Please annotate signature blocks accordingly.

Signed:

Joshua Patterson	Date
Integrated Project Team (IPT) Chair	

Michael Valentino	Date
Business Sponsor	

Cecelia Wray	Date
Project Manager	

A. Additional Information

A.1. Identification of Technology and Standards

Reference materials includes the following:

- IEEE 2016-2009, Systems Design / Software Design Descriptions – <http://standards.ieee.org/findstds/standard/1016-2009.html>
- HL7 Messaging Standard v2.5.1 - http://www.hl7.org/implement/standards/product_brief.cfm?product_id=144
- VA118-13-R-0445, B.3 Performance Work Statement issued 2013-07-26
- Medical Domain Web Services (MDWS) documentation - <http://va.gov/vdl/application.asp?appid=192>
- HL7 (VistA Messaging) documentation - <http://va.gov/vdl/application.asp?appid=8>
- My HealtheVet documentation - <http://va.gov/vdl/application.asp?appid=153>

A.2. Constraining Policies, Directives and Procedures

Not applicable.

A.3. Requirements Traceability Matrix

The Requirements Traceability Matrix (RTM) can be found on the VA SharePoint. The OneVA Pharmacy RTM can be access by following this LINK.

A.4. Packaging and Installation

There are no known special considerations for software packaging of this VistA patch and the installations instructions will be delivered with the OneVA Pharmacy Installation, Back out, and Roll Back Plan.

A.5. Design Metrics

Not applicable.