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**OSEHRA Patch Module 2.5**  
**Technical Manual**  
June 2015

prepared for



by



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# Orientation

This manual is for anyone who will be troubleshooting and maintaining the OEHRA Patch Module for their site or organization. To use this manual effectively, programmers should have a solid working knowledge of MUMPS, Fileman, Kernel, and Mailman, including 1-2 years of development or patching experience.

Although this manual includes information that may be useful to all OEHRA Patch Module users, most ordinary users are probably better off beginning with the specific manual for their job role. The complete documentation suite is available from [www.osehra.org](http://www.osehra.org).

The OEHRA Patch Module documentation suite:

- Release Notes
- Value Proposition
- Installation Guide
- User Manual: Primary Developers
- User Manual: Secondary Developers
- User Manual: Verifiers
- User Manual: Patch Subscribers
- Technical Manual
- Security and Privacy Manual

# Introduction

The OSEHRA Patch Module, as the name implies, is a software package that allows users and developers to create, revise, distribute, review, and receive software patches and updates for VistA. Options are provided for systematic entry, revision, and review of patches by developers, review and release of patches by verifiers, and display and distribution of the released patches to the users.

But before we get to talking about all the things we can do with patches, it's probably best to take a moment and make sure we're all on the same page about what a patch is, and what it does. Patches began as a way of fixing problems in an active VistA system, and many patches released today are simple bug fixes. However, most patches include more than fixes. Developers found that patches were the easiest way to add the enhancements and new features that their users wanted without taking the system offline or releasing a new version. Today, patches are the primary method for making updates and improvements to VistA.

A patch, then, can include bug fixes, upgrades, enhancements, new features, or all of the above. Its main feature is that it can be installed on an active, running VistA system with minimal disruption.

Patches are created in KIDS (the Kernel Installation and Distribution System), but are packaged and distributed via the OSEHRA Patch Module. Until relatively recently, only the developers at the Department of Veterans Affairs (VA) had access to the Patch Module. With this release, the OSEHRA Patch Module becomes more widely available, and more developers have the opportunity to create and release patches.

## ***The OSEHRA Patch Module at Sites***

Most of the OSEHRA Patch Module is designed for an organization

running a Forum system. In other words, it is designed for those creating, verifying, and distributing patches. However, individual sites who are not distributing patches use a subset of OEHRA Patch Module features to receive and install patches. For the most part, these features are described in the corresponding User Manuals (See the Orientation for a complete list). If you are a system administrator responsible for configuring the OEHRA Patch Module for your site, Chapter 11 contains the information you need.

## ***Namespaces and Numberspaces Used by the OEHRA Patch Module***

The OEHRA Patch Module uses the A1AE namespace, and the 11000-11010 numberspace.

# Section 1: Links and Interactions

## ***Chapter 1: Dependencies***

The OSEHRA Patch Module version 2.5 requires the following:

- MUMPS (1995 Standard)
- Mash Utilities (M/Unit) version 0.1
- MSC File Manager version 22.2
- Kernel version 8.0
- Mail Manager version 8.0

## ***Chapter 2: Menus***

### **All OSEHRA Patch Module Options**

<b>Option Name</b>	<b>Menu Text</b>	<b>Found in Menu</b>
A1AE ADD/EDIT PATCH STREAMS	Add/Edit Patch Streams	A1AE MGR
A1AE AUTHORIZED DOMAINS	Authorized Domains	(out of order)
A1AE CHANGE SITE SUBSCRIPTION	Change Site Subscription	(orphan)
A1AE COMPLIANCE COMMENT PRT	Compliance Date Print	A1AE VERIFIER
A1AE COMPLIANCE DISPLAY	Compliance Date Display	A1AE VERIFIER
A1AE COMPLIANCE EDIT	Compliance Date Edit	A1AE VERIFIER
A1AE COPY PATCH	Copy a patch into a new patch	A1AE DEVELOPER
A1AE DEV CREATE	Create a packman message	A1AE DEVELOPER
A1AE DEV FORWARD	Forward a Completed/NotReleased Patch Message	A1AE DEVELOPER A1AE VERIFIER
A1AE DEVELOPER	Developer's Menu	A1AE MGR A1AE USER
A1AE DISCOMPH	Display a Completed/NotReleased Patch	A1AE DEVELOPER A1AE VERIFIER
A1AE EDIT PATCH STREAM HISTORY	Forum Approval of Change Patch Stream	A1AE MGR

Option Name	Menu Text	Found in Menu
	Request	
A1AE EXPORT PATCH TO HFS	Export Patch(es) to the Filesystem	A1AE VERIFIER
A1AE FORWARD	Forward a Released Patch message	A1AE USER
A1AE FULL SUMMARY BY DATE	Full Summary by Date for Every Package	A1AE USER
A1AE HFS CHKSUM SVR	HFS CHECKSUM MSG SERVER	(server option)
A1AE IMPORT MENU	Patch Import from Filesystem Menu	A1AE USER
A1AE IMPORT RECURSIVE	Import Patches recursive from a Directory Tree	A1AE IMPORT MENU
A1AE IMPORT SINGLE DIR	Import Patches in a Single Directory	A1AE IMPORT MENU
A1AE LOAD RELEASED PATCH	Load Released Patch into Patch Module	(server option)
A1AE MGR	Patch Module Management	A1AE USER
A1AE MGRADD	Add Package to Patch Module	A1AE MGR
A1AE PATCHDOC	Patch Options Documentation	A1AE USER
A1AE PBADD	Add a New Problem	A1AE PBPROBLEM
A1AE PBDEL	Delete a Problem	A1AE PBPROBLEM
A1AE PBEDIT	Edit a Problem	A1AE PBPROBLEM
A1AE PBPROBLEM	Problem Menu	(out of order)
A1AE PBRESREV	Resolve/ Review a	(out of order)

Option Name	Menu Text	Found in Menu
	Problem	
A1AE PHADD	Add a Patch	A1AE DEVELOPER
A1AE PHDEL	Delete an NotReleased Patch	A1AE DEVELOPER
A1AE PHEDIT	Edit a Patch	A1AE DEVELOPER
A1AE PHEXTEND	Extended (DIQ) Display of a Patch	A1AE DEVELOPER
A1AE PHVER	Release a Patch (and/or edit internal comments)	A1AE SUPPORT A1AE VERIFIER
A1AE PKADD	Add a Package Release	A1AE PKMENU
A1AE PKDEL	Delete a Package Release	A1AE PKMENU
A1AE PKEDIT	Edit a Package Release	A1AE PKMENU
A1AE PKGEDIT	Enter/Edit Authorized Users	A1AE PKGMGT
A1AE PKGLIST	List of Package Users	A1AE PKGMGT
A1AE PKGMGT	Package Management	A1AE DEVELOPER
A1AE PKGPRT	Set All patches for selected Packages as Printed	A1AE USER
A1AE PKGSEL	Select Packages for Notification	A1AE USER
A1AE PKMENU	Package Menu	A1AE DEVELOPER
A1AE PKVER	Package Release (and/or edit internal comments)	A1AE PKMENU A1AE VERIFIER
A1AE POST VERIFY	Actually Verify Patches Verified by Postmaster	(obsolete)
A1AE PRT BY SEC ST	Patches in a single	A1AE SEC REPORTS

<b>Option Name</b>	<b>Menu Text</b>	<b>Found in Menu</b>
BY DATE SUM	Secondary Status by Date	
A1AE PRT SUM DT ORG	Released Patch Summary Report by Date	(obsolete)
A1AE PRTCNRP	Completed / Not Released Listing	A1AE USER
A1AE PRTCOMDETDT	Released Patches by Date Detailed Report	A1AE USER
A1AE PRTCOMPH	Completed / NotReleased Patches Report	A1AE DEVELOPER A1AE SUPPORT A1AE VERIFIER
A1AE PRTCOMPHDTE	Completed Patch Summary Report by Date	A1AE USER A1AE VERIFIER
A1AE PRTCOMPHVER	Completed Patch Summary for Assigned Packages	A1AE VERIFIER
A1AE PRTCOMSUMDT	Released Patch Summary Report by Date	A1AE USER
A1AE PRTDETDT ORG	Detailed Report of Released Patches by Date	(orphan)
A1AE PRTNEWPH	New Patch Report	A1AE USER
A1AE PRTNEWPHNUM	Display Number of New Patches	A1AE USER
A1AE PRTPHA	All Released Patches for a Package, Detailed	A1AE USER
A1AE PRTPHA SEC	All Patches for a	A1AE SEC REPORTS



<b>Option Name</b>	<b>Menu Text</b>	<b>Found in Menu</b>
	Package in a Sec Status, Detail	
A1AE PRTPHD	Display a Patch	A1AE DEVELOPER A1AE USER
A1AE PRTPHS	All Released P's for a Package, Summary w/Routines	(orphan)
A1AE PRTPHS ORG	Summary Report of All Patches for a Package	A1AE USER
A1AE PRTPHS SEC	Summary Report of All Patches for a Package (Sec)	A1AE SEC REPORTS
A1AE PRTUDP	Under Development Patch Listing	A1AE USER
A1AE PRTUDVPH	Under Development Patches Report	A1AE DEVELOPER
A1AE PRTUDVPH VER	Under Development Patches Report for Releasers	A1AE SUPPORT
A1AE PRTVRPH	Released Patch Report	A1AE SUPPORT
A1AE RELEASE SUMMARY	Release Summary	A1AE USER
A1AE ROUTINE INQUIRE	Routine Inquire	A1AE DEVELOPER A1AE USER
A1AE ROUTINES IN A PATCH	Routines in a patch	(orphan)
A1AE ROUTINES THAT OVERLAP	Routines that overlap in patches	A1AE DEVELOPER A1AE VERIFIER
A1AE SEC REPORTS	Secondary Statuses Reports	A1AE USER

Option Name	Menu Text	Found in Menu
A1AE SERVER VERIFIED	Serve and preserve verified messages	(out of order)
A1AE SHOW PATCH RELATIONSHIPS	Show a Patch's Relationships	A1AE DEVELOPER
A1AE SUPPORT	Support Menu	(orphan)
A1AE TEST SCANNER	Scan Patch for Discrepancies and Contents	A1AE DEVELOPER
A1AE USER	Patch User Menu	A1AE MGR
A1AE VERIFIER	Releaser Menu	A1AE USER
A1AE XUSEC	Key Allocation for Patch Functions	A1AE MGR AIAE PKGMGT

## OSEHRA Patch Module Menus

The menu system for the OSEHRA Patch Module is in need of an overhaul, which is planned for a future phase of the current project. In the meantime, managers and system administrators should be aware that the options that some job roles will need are scattered across different menus. In addition, there are “orphan” options listed in the table above that may be worth adding to certain users’ Secondary menus.

### *A1AE DEVELOPER Developer’s Menu*

At present, this is the main menu for primary and secondary development. The main options most developers will use from this menu are: Add a Patch, Edit a Patch, Display a Patch, and Extended (DIQ) Display of a Patch. This menu should also be given to secondary reviewers and verifiers, as those roles do not presently have their own menus.

DP	Display a Patch
IN	Routine Inquire
TS	Scan Patch for Discrepancies and Contents

```

**> Locked with A1AE SCAN MESSAGE
Add a Patch
Completed/NotReleased Patches Report
Copy a patch into a new patch
Create a packman message
Delete an NotReleased Patch
Display a Completed/NotReleased Patch
Edit a Patch
Extended (DIQ) Display of a Patch
Forward a Completed/NotReleased Patch Message
Package Management ...
Package Menu ...
Routines that overlap in patches
Show a Patch's Relationships
Under Development Patches Report

```

### *A1AE IMPORT MENU Patch Import from Filesystem Menu*

This menu should only be assigned to the OSEHRA Patch Module management team for an organization.

```

S      Import Patches in a Single Directory
      **> Locked with A1AE IMPORT
M      Import Patches recursive from a Directory Tree
      **> Locked with A1AE IMPORT

```

### *A1AE MGR Patch Module Management*

This menu should only be assigned to the OSEHRA Patch Module management team for an organization.

```

D      Developer's Menu ...
      **> Locked with A1AE DEVELOPER
U      Patch User Menu ...
      Add Package to Patch Module
      **> Locked with A1AE MGR
      Add/Edit Patch Streams
      **> Locked with A1AE MGR
      Forum Approval of Change Patch Stream Request
      Key Allocation for Patch Functions
      **> Locked with A1AE XUSEC

```

### *A1AE PBPROBLEM Problem Menu*

This menu includes options for functionality that is not currently included in the OSEHRA Patch Module. This functionality may be added in a future version; until that time, these options should not be given to users.

NAME: A1AE PBPROBLEM	MENU TEXT: Problem Menu
OUT OF ORDER MESSAGE: NOT AVAILABLE	TYPE: menu
CREATOR: TESTMASTER,USER	LOCK: OBSOLETE
ITEM: A1AE PBADD	
ITEM: A1AE PBDEL	
ITEM: A1AE PBEDIT	
TIMESTAMP: 63295,3145	UPPERCASE MENU TEXT:
PROBLEM MENU	

### *A1AE PKGMGT Package Management*

This menu should be given to the application or package manager for a particular package.

Enter/Edit Authorized Users
Key Allocation for Patch Functions
**> Locked with A1AE XUSEC
List of Package Users

### *A1AE PKMENU Package Menu*

This is the menu for releasing complete new versions of packages.

Add a Package Release
Edit a Package Release
Delete a Package Release
Package Release (and/or edit internal comments)

### *A1AE SEC REPORTS Secondary Statuses Reports*

This menu should be given to anyone who does secondary development.

All Patches for a Package in a Sec Status, Detail
Patches in a single Secondary Status by Date

## Summary Report of All Patches for a Package (Sec)

*A1AE SUPPORT Support Menu*

This menu is intended for field support personnel, who track user issues and problems. It is also intended for verifiers and releasers.

```

Completed/NotReleased Patches Report
Problem Menu ...
  **> Locked with OBSOLETE
  **> Out of order:  NOT AVAILABLE
Release a Patch (and/or edit internal comments)
  **> Locked with A1AE PHVER
Released Patch Report
Under Development Patches Report for Releasers
  **> Locked with A1AE PHVER

```

*A1AE USER Patch User Menu*

This is the basic standard menu for the OSEHRA Patch Module; it should be given to all users. For Patch Subscribers, it is the only menu they will have. Other roles should also be given other menus and/or keys as needed.

```

AD   All Released Patches for a Package, Detailed
DNNP Display Number of New Patches
DP   Display a Patch
E    Developer's Menu ...
      **> Locked with A1AE DEVELOPER
FSBD Full Summary by Date for Every Package
RPDR Released Patches by Date Detailed Report
RPSR Released Patch Summary Report by Date
SEC  Secondary Statuses Reports ...
SUMM Summary Report of All Patches for a Package
VER  Releaser Menu ...
      **> Locked with A1AE PHVER
      Completed/Not Released Listing
      Forward a Released Patch message
      New Patch Report
      Patch Import from Filesystem Menu ...
        **> Locked with A1AE IMPORT
      Patch Module Management ...
        **> Locked with A1AE MGR
      Patch Options Documentation

```

Release Summary  
 Routine Inquire  
 Select Packages for Notification  
 Set All patches for selected Packages as Printed  
 Under Development Patch Listing

### *A1AE VERIFIER Releaser Menu*

This menu should be given to all verifiers and releasers in primary development.

```
CDE  Compliance Date Edit
      **> Locked with A1AE COMPDATE
      Completed Patch Summary for Assigned Packages
      Completed Patch Summary Report by Date
      Completed/NotReleased Patches Report
      Compliance Date Display
      Compliance Date Print
      **> Locked with A1AE COMPDATE
      Display a Completed/NotReleased Patch
      Export Patch(es) to the Filesystem
      Forward a Completed/NotReleased Patch Message
      Package Release (and/or edit internal comments)
      Release a Patch (and/or edit internal comments)
      **> Locked with A1AE PHVER
      Routines that overlap in patches
```

## **OSEHRA Patch Module Security Keys**

### *A1AE COMPDATE*

The NVS Managers will need this key to change a patch compliance date. At the present time, the patch compliance date isn't used outside of VA, though it is available to other organizations should they choose to use it.

This key unlocks the following options:

A1AE COMPLIANCE EDIT Compliance Date Edit  
 A1AE COMPLIANCE COMMENT PRT Compliance Date Print

### ***A1AE DEVELOPER***

This key gives the user access to the developer's menu.

This key unlocks the following options:

A1AE DEVELOPER Developer's Menu

### ***A1AE IMPORT***

The OEHRA Patch Module checks this key to see if a user is allowed to load an entire patch directly into the OEHRA Patch Module automatically. Patches can be loaded from the file system or sent as a mail message from the VA Forum. This key should only be given to the OEHRA Patch Module manager, and only temporarily when actual importing needs to be done. It should be removed again once the import is complete, to avoid accidental system corruption.

This key unlocks the following options:

A1AE IMPORT MENU Patch Import from Filesystem Menu

A1AE IMPORT SINGLE DIR Import Patches from a Single Directory

A1AE IMPORT RECURSIVE Import Patches Recursive from a Directory Tree

### ***A1AE MGR***

This key gives the user access to the Patch Module Management option.

This key should only be given to the OEHRA Patch Module manager.

This key unlocks the following options:

A1AE ADD/EDIT PATCH STREAMS Add/Edit Patch Streams

A1AE MGR Patch Module Management

A1AE MGRADD Add Package to Patch Module

### *A1AE PHVER*

The patch verifier needs this this key in order to have verification options show up on the Support Menu. It also unlocks the Releaser Menu.

This key unlocks the following options:

- A1AE PHVER Release a Patch (and/or edit internal comments)
- A1AE PRTUDVPH VER Under Development Patches Report for Releasers
- A1AE VERIFIER Releaser Menu

### *A1AE PKGEDIT*

This key is not currently associated with any options. We recommend that it be used to lock A1AE PKGMGT Package Management Menu and A1AE PKMENU Package Menu. If used in this way, this key should be given only to package managers.

### *A1AE SCAN MESSAGE*

This key is for those testing the A1AE\*2.2\*7 patch's inventorier and checksum verifier. It is a highly specialized function and should not generally be assigned to any users. If it is ever used, it should only be used by the OSEHRA Patch Module manager.

This key unlocks the following options:

- A1AE TEST SCANNER Scan Patch for Discrepancies and Content

### *A1AE SUPPORT*

This key gives the user access the the support personnel menu.

This key unlocks the following options:



## A1AE SUPPORT Support Menu

### *A1AE XUSEC*

This key should be given to the OEHRA Patch Module manager, and to any application managers experienced enough to use it.

This key unlocks the following options:

### A1AE XUSEC Key Allocation for Patch Functions

## **OEHRA Patch Module Locked Options**

The following options are locked by default.

<b>Option Name</b>	<b>Menu Text</b>	<b>Key</b>
A1AE ADD/EDIT PATCH STREAMS	Add/Edit Patch Streams	A1AE MGR
A1AE COMPLIANCE COMMENT PRT	Compliance Date Print	A1AE COMPDATE
A1AE COMPLIANCE EDIT	Compliance Date Edit	A1AE COMPDATE
A1AE DEVELOPER	Developer's Menu	A1AE DEVELOPER
A1AE IMPORT MENU	Patch Import from Filesystem Menu	A1AE IMPORT
A1AE IMPORT RECURSIVE	Import Patches recursive from a Directory Tree	A1AE IMPORT
A1AE IMPORT SINGLE DIR	Import Patches in a Single Directory	A1AE IMPORT
A1AE MGR	Patch Module Management	A1AE MGR

<b>Option Name</b>	<b>Menu Text</b>	<b>Key</b>
A1AE MGRADD	Add Package to Patch Module	A1AE MGR
A1AE PBPROBLEM	Problem Menu	OBSOLETE
A1AE PBRESREV	Resolve/Review a Problem	A1AE DEVELOPER
A1AE PHVER	Release a Patch (and/or edit internal comments)	A1AE PHVER
A1AE PRTUDVPH VER	Under Development Patches Report for Releasers	A1AE PHVER
A1AE SUPPORT	Support Menu	A1AE SUPPORT
A1AE TEST SCANNER	Scan Patch for Discrepancies and Contents	A1AE SCAN MESSAGE
A1AE VERIFIER	Releaser Menu	A1AE PHVER
A1AE XUSEC	Key Allocation for Patch Functions	A1AE XUSEC

In addition, the following option locks are recommended:

<b>Option Name</b>	<b>Menu Text</b>	<b>Key</b>
A1AE PKGMGT	Package Management Menu	A1AEPKGEDIT
A1AE PKMENU	Package Menu	A1AEPKGEDIT

## ***Chapter 3: Remote Procedures and Protocols***

OSEHRA Patch Module 2.5 uses no remote procedures and no protocols.

## ***Chapter 4: Integration Agreements***

The OSEHRA Patch Module currently supports no Integration Agreements with other packages.

## Section 2: Internal Structure

### ***Chapter 5: Globals***

OSEHRA Patch Module 2.5 ships and uses the following globals:

^A1AE(11005)	DHCP PATCHES
^A1AE(11005.1)	DHCP PATCH MESSAGE
^A1AE(11005.2)	DHCP PATCH STATUS
^A1AE(11005.5)	DHCP HFS MESSAGE
^A1AE(11006)	DHCP PROBLEMS
^A1AE(11007)	DHCP PATCH/PROBLEM PACKAGE
^A1AE(11007.1)	DHCP PATCH STREAM

More information about these files, including cross-references, is given in the next chapter.

In addition, OSEHRA Patch Module 2.5 makes use of (but does not ship) the following globals:

^TMP	SCRATCH GLOBAL
^UTILITY	SCRATCH GLOBAL
^XTMP	SCRATCH GLOBAL

## ***Chapter 6: Files***

### **File Patch (11004)**

#### *Description*

This file contains patch information from the OSEHRA Patch Module. It is automatically populated by the installation of each patch by KIDS. It acts as the authoritative source of what a patch is on the Vista system.

#### *Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11004).

#### *Fields*

.01	Patch Designation
.2	Patch Stream
3	Version
4	Patch Number
5	Patch Subject
5.2	Derived from Patch
5.5	Patch Description
5.7	Update to Patch
6	Sequential Release Number
6.5	Category of Patch
	.01 Category of Patch
7	Priority
18	Compliance Date
19	Compliance Date Comment
40	New Package
100	Routine Name
	.01 Routine Name

	2	Routine Checksum
	2.5	Description of Routine Changes
	3	KIDS Checksum
	4	Patch List
	5	Old Checksum
102		Second Line

### *Keys and Identifiers*

PRIMARY KEY: A (#126)

Uniqueness Index: B (#1126)

File, Field: 1) PATCH DESIGNATION (11004,.01)

### *Security*

Like all files in the OSEHRA Patch Module, this file is not intended to be manipulated directly through Fileman. Developers should use the provided options to make changes to this file. Therefore, only system managers should have access to Data-Dictionary and Delete options.

DD ACCESS: #

DEL ACCESS: #

### *Pointed to By*

Derived from Patch field (#5.2) of the PATCH File (#11004)

Update to Patch field (#5.7) of the PATCH File (#11004)

### *Points To*

DHCP Patch Stream File(#11007.1)

Package File (#9.4)

Patch File (#11004)

## *Summary of Cross-references and Indexes*

This file is cross-referenced by:

- Category of Patch (AC)
- Priority (AP)
- Patch Designation (BA)
- Patch Subject (C)
- Compliance Date (CD)
- Package (D)
- New Package (PK)
- Patch Subject (PS)
- Routine Name (R)
- Patch Designation (AB)
- Derived from Patch (ADERIVED)
- Patch Designation (ADERIVEDK)
- Patch Designation/ Patch Stream (APTCSTM)
- Patch Designation (B)

## **File DHCP Patches (11005)**

### *Description*

This file describes all VistA patches. Each patch is applied to some version of some VistA application. For patches to be described in this file, the application must reside in the Package file (#9.4) and in the DHCP Patch/ Problem Package file (#11007). To enter patches you must be an authorized developer of the application in file (#11007).

### *Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11005).



*Fields*

.001	Number
.01	Patch Designation
.2	Patch Stream
.21	Currently Importing
2	Package
3	Version
4	Patch Number
5	Patch Subject
5.2	Derived from Patch
5.3	TXT File Name
5.4	KID File Name
5.5	Patch Description
	.01 Patch Description
5.6	Missing KID?
5.7	Update to Patch
6	Sequential Release Number
6.1	Imported Patch Path
6.5	Category of Patch
	.01 Category of Patch
7	Priority
8	Status of Patch
8.09	Date Imported
8.1	User Imported
8.11	Date of Sec Development
8.12	User of Sec Development
8.13	Date of Sec Completion
8.14	User of Sec Completion
8.15	Date of Sec Release
8.16	User of Sec Release
8.17	Date Denied Sec Release
8.18	User Denied Sec Release
8.5	Entered in Error Description
	.01 Entered in Error Description
9	User Entering

10	Date Patch Completed
11	Date Patch Verified
11.5	Date Patch Released
12	Date Patch First Entered
13	User Completion
14	User Verify
15	Retired After Version
15.5	Retirement Comments
	.01 Retirement Comments
16	Internal Comments
	.01 Internal Comments
17	Holding Date
18	Compliance Date
19	Compliance Date Comment
	.01 Compliance Date Comment
20	Last Edited
26	In Review Description
	.01 In Review Description
27	Sec Development Description
	.01 Sec Development Description
28	Not for Sec Release Desc
	.01 Not for Sec Release Desc
40	New Package
50	Problems Solved
	.01 Problem
100	Routine Name
	.01 Routine Name
2	Routine Checksum
	.01 Routine Checksum
2.5	Description of Routine Changes
	.01 Description of Routine Changes
3	KIDS Checksum
4	Patch List
5	Old Checksum
102	Second Line
103	Display Routine Patch List

150	Patch Release Check
.01	Patch Release Check
2	Required for Verification
200	Printed By
.01	User
2	Initially Printed
3	Last Time Printed

### *Keys and Identifiers*

#### **Primary Key: A**

Patches, which are recorded in file DHCP Patches (11005) are uniquely identified by their patch identifier (for example, “ZZ\*4.2\*10001”), which is recorded in field Patch Designation (.01). The A Key’s uniqueness is checked using the B Index.

#### **Special Identifier: field Number (.001)**

The record number for patches has been exposed as a special field. It acts as a secondary unique identifier.

#### **Required Identifier: field Patch Subject (5)**

Although the Patch Designation is the main identifier, it’s also a bit cryptic and difficult to remember. The Patch Subject is therefore critically important in helping developers know that they are accessing and working with the correct patch.

Since developers will be using the Patch Subject to locate the correct patch, it is important that the subject be as meaningful and distinct as possible. “Bug Fix” is not a good Patch Subject; most patches fix bugs and “Bug Fix” doesn’t give a developer much to go on.

When you first create and begin working on a patch, it is possible—even likely—that you won’t yet have much of an idea what the patch is about.

As temporary placeholder text, “Bug Fix” may have to do for a while, but remember to change it to something more distinctive once the patch has taken shape.

## Display-only Identifier: WRITE

This identifier is created by combining the following information:

[Patch Stream] Patch Subject Status Developer Derived From

MUMPS command: D ID11005^A1AEUTL

sample:

```
Select DHCP PATCHES PATCH DESIGNATION: ??

Choose from:
127569   PRCA*4.5*261   [FV]FIX <NOLINE> ERRORS           IN  TH
127570   PRCA*4.5*10261 [OV]FIX <NOLINE> ERRORS           IN  TH
                                     derived from [FV]PRCA*4.5*261
127571   PRCA*4.5*263   [FV]FIX RCIB VARS & TRANS NUM   IN  TH
127572   PRCA*4.5*10263 [OV]FIX RCIB VARS & TRANS NUM   IN  TH
                                     derived from [FV]PRCA*4.5*263
```

## Security

Like all files in the OSEHRA Patch Module, this file is not intended to be manipulated directly through Fileman. Developers should use the provided options to make changes to this file. Therefore, only system managers should have access to Data-Dictionary and Delete options.

DD ACCESS: #  
DEL ACCESS: #

## Pointed to By

Patch field (#.01) of the Patch subfield (#9.619) of the Build File (#9.6)  
Patch field (#.01) of the Patch subfield (#9.719) of the Install File (#9.7)

Derived from Patch field (#5.2) of the DHCP Patches File (#11005)  
Update to Patch field (#5.7) of the DHCP Patches File (#11005)  
Patch Release Check field (#.01) of the Patch Release Check sub-field  
(#11005.09) of the DHCP Patches File (#11005)  
Name field (#.01) of the DHCP Patch Message File (#11005.1)  
Name field (#.01) of the DHCP HFS Message File (#11005.5)  
Patch field (#13) of the DHCP Problems File (#11006)  
Deleted by Patch field (#1.1) of the Routine sub-field (#11007.11) of the  
DHCP Patch Stream File (#11007.1)

### *Points To*

DHCP Patch Stream File (#11007.1)  
Package File (#9.4)  
DHCP Patches File (#11105)  
New Person File (#200)  
DHCP Problems File (11006)

### *Summary of Cross-references and Indexes*

This file is cross-referenced by:

Category of Patch (AC)  
Date Patch Verified (AD)  
Status of Patch (AE)  
Priority (AP)  
Status of Patch (AS)  
Last Time Printed (AU)  
Date Patch Verified (AV)  
Status of Patch (AVERCONT)  
Patch Designation (BA)  
Patch Subject (C)  
Compliance Date (CD)  
Package (D)  
New Package (PK)  
Patch Subject (PS)

Routine Name (R)  
 Patch Designation (AB)  
 Derived from Patch (ADERIVED)  
 Patch Designation (ADERIVEDK)  
 Patch Designation (B)

## **File DHCP Patch Message (11005.1)**

### *Description*

This file is a partner to file 11005, the DCHP Patches file. File 11005 contains information about the patch; this file contains the actual KIDS distribution, stored in Field 20.

### *Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11005,1).

### *Fields*

.01	Name
2	Input Message Number
3	Input Date/Time
4	Verifier Message Number
5	Verifier Date/Time
6	Released Message Number
7	Released Date/Time
11	Message Type
12	Test #
20	Message Text

### *Keys and Identifiers*

**Required Identifier: field Name (.01)**

The Name field points to the DHCP Patches file (#11005). Most information relating to the patch can be found in file #11005; this file contains mainly the KIDS distribution for the patch.

### *Security*

Like all files in the OSEHRA Patch Module, this file is not intended to be manipulated directly through Fileman. Developers should use the provided options to make changes to this file. This file has no Fileman-level security.

### *Pointed to By*

This file is not pointed to by other files. Most information about patches resides in file #11005.

### *Points To*

DHCP Patches File (#11005)

### *Summary of Cross-References and Indexes*

This file is cross-referenced by:

Name (B)  
Release Date/Time (AC)

## **File DHCP Patch Status (11005.2)**

### *Description*

This file describes the statuses that a patch can have. It supports the input transform of the Status of Patch field (8) in the DHCP Patches file (11005), and is used by routine A1AEPHS to help properly process patches when

they change status. Some day, the Status of Patch field should be changed to point to this file, and the corresponding routines changes along with it.

### *Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11005,2).

### *Fields*

- .01 Code
- .02 Meaning
- .03 Display
- .04 Bulletin Name
- .06 Alternate Meaning
- .07 Option Menu Text
- .08 Same Status Generates Test Msg

### *Keys and Identifiers*

PRIMARY KEY: A (#127)  
 Uniqueness Index: B (#1102)  
 File, Field: 1) CODE (11005.2,.01)

SECONDARY KEY:B (#128)  
 Uniqueness Index: C (#1103)  
 File, Field: 1) MEANING (11005.2,.02)

### *Security*

Like all files in the OSEHRA Patch Module, this file is not intended to be manipulated directly through Fileman. Developers should use the provided options to make changes to this file.

DD ACCESS: @  
 RD ACCESS:



WR ACCESS: @  
DEL ACCESS: @  
LAYGO ACCESS: @  
AUDIT ACCESS: @

### *Pointed To By*

This file is not pointed to by any other files.

### *Points To*

This file does not point to any other files.

### *Summary of Cross-References and Indexes*

This file is cross-referenced by:

Code (B)  
Meaning (C)  
Display (D)  
Alternate Meaning (E)

## **File DHCP HFS Message (11005.5)**

### *Description*

This file is a partner to file 11005, the DHCP Patches file. File 11005 contains information about the patch; this file is used as a temporary scratch space to keep track of routines affected by the patch and their corresponding checksums.

### *Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11005,5).

### *Fields*

.01	Name
2	Input Message Number
3	Input Date/Time
4	Release Date/Time
5	From Domain
11	Routine
	.01 Routine
	2 Add/Delete
	2.5 NOP
	3 Checksum
	5 Patch List
21	Linked Patches
	.01 Linked Patches

### *Keys and Identifiers*

#### **Required Identifier: field Name (.01)**

The Name field points to the DHCP Patches file (#11005). Most information relating to the patch can be found in file #11005.

### *Security*

Like all files in the OSEHRA Patch Module, this file is not intended to be manipulated directly through Fileman. Developers should use the provided options to make changes to this file.

DD ACCESS: @  
 DEL ACCESS: @  
 AUDIT ACCESS: @

*Pointed to By*

This file is not pointed to by other files. Most information about patches resides in file #11005.

*Points To*

DHCP Patches File (#11005)  
Message File (#3.9)  
Routine File (#9.8)

*Summary of Cross-References and Indexes*

This file is cross-referenced by:

Name (B)  
Routine, subfield .01 (B)  
Linked Patches, subfield .01 (B)

**File DHCP Problems (11006)***Description*

This file is not yet in use. It provides the basic framework for what will someday be a trouble-ticket system.

*Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11006).

*Fields*

.01	Problem Number
2	Package

3	Version
4	Problem Number
5	Problem Subject
5.5	Problem Description
6	Reporting Station
7	Reported By / Phone
8	User Entering Problem
9	Date Problem Entered
10	Status of Problem
11	Tabled Date
11.5	Tabled Comments
12	Date Resolved
12.5	Resolved Comments
13	Patch
14	Date Released for Review

### *Keys and Identifiers*

Required Identifier: field Problem Number (.01)

Required Identifier: field Problem Subject (5)

Write Identifier: Problem Subject Entering Problem	Status of Problem	User
---	-------------------	------

### *Security*

Like all files in the OSEHRA Patch Module, this file is not intended to be manipulated directly through Fileman. Developers should use the provided options to make changes to this file.

DD ACCESS: #  
DEL ACCESS: #

*Pointed To By*

PROBLEM field (#.01) of the PROBLEMS SOLVED sub-field (#11005.06)  
of the DHCP PATCHES File (#11005)

*Points To*

Package File (#9.4)  
Institution File (#4)  
New Person File (#200)  
DHCP Patches File (#11005)

*Summary of Cross-References and Indexes*

This file is cross-referenced by:

Problem Number (B)  
Problem Number (PN)  
Problem Subject (PS)  
Problem Subject (S)

Status of Problem (10) -> Tabled Date (11)

Status of Problem (10) -> Date Resolved (12)

Status of Problem (10) -> Date Released for Review (14)

**File DHCP Patch/Problem Package (11007)**

*Description*

Applications cannot be patched until an entry is made in this file for that application. The records in this file correspond to records in the package file, and unlock them to allow patching.

This file also contains authorized development, support and verify personnel for the patch file, the next patch/ problem number, and the package versions.

### *Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11007).

### *Fields*

.01	Package
2	User Selection Permitted
3	*Permit Developer to Complete
4	For Test Site Only?
5	Ask Patch Description Copy
6	Performance Measure Flag
50	Selected Users for Package
	.01 Selected Users for Package
	2 Date User Selected
	3 Test Site Domain
100	Support Personnel
	.01 Support Personnel
	2 Verify Personnel
	3 Verifier's Domain
200	Development Personnel
	.01 Development Personnel
300	Version
	.01 Version
	2 Date Verified
	25 Next Problem Number
	26 Next Patch Number
	27 Next Sequence Number
400	Network Mail Group
	.01 Network Routing
	2 Domain

### 3 Test Site

#### *Keys and Identifiers*

Record Number: although the record number in this file is not exposed to users, it is used as a hidden key field, linked to the record numbers in the Package file (#9.4).

Required Identifier: .01 Package

Required Identifier: User Selection Permitted (#2)[R]

#### *Security*

Like all files in the OEHRA Patch Module, this file is not intended to be manipulated directly through Fileman. Developers should use the provided options to make changes to this file.

DD ACCESS: #

DEL ACCESS: #

#### *Pointed To By*

The DHCP Patches file (#11005) points to the Package file (#9.4). The supporting logic ensures that it can't point to Package unless Package has a corresponding record in this file. Therefore, although no other files point directly to this one, there is a relationship with both the DHCP Patches file and the Package file.

#### *Points To*

The Package field (#.01) points to the Package file (#9.4).

The Selected Users for Package sub-field (#.01) of the Selected Users for Package field (#50) points to the New Person file (#200).

The Support Personnel sub-field (#.01) of the Support Personnel field (#100) points to the New Person file (#200).

The Development Personnel sub-field (#.01) of the Development Personnel field (#200) points to the New Person file (#200).

### *Summary of Cross-References and Indexes*

This file is cross-referenced by:

- Performance Measure Flag (AC)
- Development Personnel (AD)
- Support Personnel (AS)
- Selected Users for Package (AU)
- Verify Personnel (AV)
- Package (B)

## **File DHCP Patch Stream (11007.1)**

### *Description*

Each separate dialect of VistA requires a separate patch stream for updates. Before version 2.4, the Patch Module could only support a single patch stream. This file enables the OSEHRA Patch Module to support multiple patch streams for multiple dialects of VistA.

This file enables the numberspacing of patch streams. If you decide patches coming out of this Patch Module need to be numberspaced starting at 20001, you must create an entry here with an IEN of 20001 (in the NUMBER field) and set it as Primary.

The logic to use this file can be found in the routine A1AEUTL in the tags SEQ and NUM.

Multiplexing of patches (having multiple input and multiple output



streams) is supported in the file design but has not been implemented as of Jan 24 2014.

This file requires Fileman 22.2 patched up to at least DI\*22.2\*2 to be operational. Contact the developer for details or see the APRIM cross-reference which uses the new capabilities.

### *Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11007,1).

### *Fields*

.001	Patch Number Start
.01	Name
.02	Primary
.03	Feeds into Stream
.04	Domain
.05	Abbreviation
.06	Subscription
.07	Forum Domain
1	Subscription Date
.01	Subscription Date
1	Authorizing Individual
2	Comments
10	Routine
.01	Routine
.02	Current Checksum
.03	Checksum Date
.04	Patch List at Checksum Time
1.1	Deleted by Patch

### *Keys and Identifiers*

PRIMARY KEY: A (#124)

Uniqueness Index: B (#1024)  
File, Field: 1) NAME (11007.1,.01)

SECONDARY KEY: B (#125)  
Uniqueness Index: C (#1027)  
File, Field: 1) ABBREVIATION (11007.1,.05)

In addition, the record number (.001) is exposed as Patch Number Start, a supplemental key.

### *Security*

DD ACCESS: #  
RD ACCESS:  
WR ACCESS:  
DEL ACCESS: #  
LAYGO ACCESS:  
AUDIT ACCESS:

### *Pointed To By*

Patch Stream field (#.2) of the DHCP Patches file (#11005)

### *Points To*

Feeds into Stream field (#.03) of the DHCP Patch Stream file (#11007.1)  
Patch Stream field (#.01) of the Patch Stream History file (#11007.2)

### *Summary of Cross-References and Indexes*

This file is cross-referenced by:

Forum Domain (AFORUM)  
Primary? (APRIM)  
Primary? (APRIM1)  
Subscription (ASUBCNG)

Subscription (ASUBS)  
 Subscription (ASUBS1)  
 Name (B)  
 Abbreviation (C)  
 Subscription Date (SUBSDT)

## File Patch Stream History (11007.2)

### *Description*

This file maintains a record of the patch stream (FOIA VistA or OSEHRA VistA) in use at this site. The file is automatically updated when a patch stream in file 11007.1 is updated changing the PRIMARY field of an entry from NO to YES indicating a decision by the site to switch to another patch stream.

### *Context*

This file is part of the OSEHRA Patch Module version 2.5. It is stored in global variable ^A1AE(11007.2).

### *Fields*

.01	Domain
.02	Active Patch Stream
.03	Date Patch Stream Active
.04	Informational Patches Required
.05	Informational Patches Sent
.06	Stream Change Status
1	Date Stream Change Requested
.01	Date Stream Change Requested
1	Server
2	Active Subscription
3	Date Subscription Active
4	Requestor DUZ

- |    |                               |
|----|-------------------------------|
| 5  | Switch to Subscription        |
| 6  | Switch Request Date           |
| 7  | Approved                      |
| 8  | Forum Action Edit             |
| 9  | New Subscription Date         |
| 10 | New Active Subscription       |
| 11 | Subscription Change Confirmed |
| 12 | Most Recent Msg Number        |

### *Keys and Identifiers*

None.

### *Security*

DD ACCESS: @  
 RD ACCESS: @  
 WR ACCESS: @  
 DEL ACCESS: @  
 LAYGO ACCESS: @  
 AUDIT ACCESS: @

### *Pointed to By*

There are no files that point to the Patch Stream History file.

### *Points To*

DHCP Patch Stream file (#11007.1)  
 Domain file (#4.2)  
 Message file (#3.9)  
 UMBER file (#12)

### *Summary of Cross-References and Indexes*

None.

## ***Chapter 7: Routines***

A1AE2POS	Post installs for A1AE pkg
A1AEAU	DHCP Problem/ Patch File Edits
A1AEBLD	Handle transport of build entries for DHCP patches file(#11005)
A1AECL1	Released Patch ROUTINE file updater
A1AECOPD	Copy message into patch description
A1AECOPR	Copy routines into routine text
A1AECOPY	Copy Routine Code into Routine Description
A1AEDD1	Data Dictionary related code
A1AEF1	Functions: calculating required builds
A1AEF2	Functions: minimum required builds
A1AEF3	Required builds option
A1AEF4	Add required patches other streams
A1AEF5	Find every related build
A1AEHSVR	HFS Checksum Msg server
A1AEK1	Check patch against site's stream
A1AEK2	Forum-site subscription messaging
A1AEK2M	Load an HFS KIDS file into the Patch Module
A1AEK2M0	A1AEK2M Continuation
A1AEK2M1	Analyze KIDS file and extract information
A1AEK2M2	Analyze text message and extract information
A1AEK2M3	Interactive KIDS loading utilities
A1AEK2MT	KIDS HFS files to Patch Module testing code
A1AEK2V0	Continuation of A1AEK2VC
A1AEK2VC	KIDS to Version Control

A1AEK3	Site-forum subscription messaging
A1AEKEY	Supports assignment of security keys
A1AEM	Called entries for mailing patches
A1AEM1	Copy message
A1AEM2	Forward a patch message
A1AEM2K	Save patches to HFS files
A1AEMAL	Creates the mail message when v or c
A1AEMAL1	Creates the Patch mail message
A1AEMGR	Update patches as printed for ALL selected packages for a given user
A1AEOS	Patch Module Operating System Interface
A1AEP	Generated from 'A1AE STANDARD PRINT' print template
A1AEPB1	Entry / Edit Problem Menu
A1AEPH1	Patch control
A1AEPH2	Support for the patch report options
A1AEPH3	Under Development DHCP Patches Report
A1AEPH4	DHCP Summary Report of Released Patches
A1AEPH5	Detailed Report of Verified Patches by Date
A1AEPH6	Support for the patch display options
A1AEPH8	Copy a Patch into a New Patch
A1AEPHD	Option delete a patch [A1AE PHDEL]
A1AEPHS	Logic from DD, U triggers test Message
A1AEPHS1	Continuation of A1AEPHS
A1AEPK	Package Module
A1AEPSVR	Mailman Patch Server
A1AERCON	Check for routine overlap on unreleased patches

A1AERD	Read Processor
A1AESP	Special load of package releases
A1AESPLT	Initialize DHCP PATCHES file for a new split stream
A1AEUALL	Perform all unit tests
A1AEUBL1	Utility support for unit tests for updating Packman message and KIDS build
A1AEUBLD	Unit tests related to transport of entries in builds
A1AEUDD	Unit tests for Data Dictionary Code
A1AEUF1	Unit tests for A1AEF1
A1AEUF1A	Unit tests for A1AEF1 cont
A1AEUF1B	Unit tests for A1AEF1 cont
A1AEUF2	Unit tests for A1AEF2
A1AEUF3	Unit tests for A1AEF3
A1AEUF4	Unit tests for A1AEF4
A1AEUF5	Unit tests for A1AEF5
A1AEUF5A	Unit tests for A1AEF5
A1AEUF5B	Unit tests for A1AEF5
A1AEUF5C	Unit tests for A1AEF5
A1AEUF5D	Unit tests for A1AEF5
A1AEUF5E	Unit tests for A1AEF5
A1AEUK1	Unit tests for A1AEK1
A1AEUK2	Unit tests for A1AEK2
A1AEUK3	Unit tests for A1AEK3
A1AEUPS1	Unit tests for the Patch Module
A1AEUPS2	Unit tests for the Patch Module
A1AEUSPL	Unit tests for the Patch Module
A1AEUT1	Unit Tests for the Patch Module

A1AEUT2	KIDS test file
A1AEUT3	Unit Tests for the Patch Module
A1AEUT4	Unit Tests for the Patch Module
A1AEUTL	Patch Utilities
A1AEUTL1	Patch Utilities
A1AEUTL2	Utility: Routine Info
A1AEUTLC	Patch tools
A1AEVP	Screen Display and Print of New Verified Patch
A1AEVP1	Update as printed
A1AEZCON	Patch prefix conversion
A1AEZTST	Check messages



## ***Chapter 8: Non-Routine Elements***

### **New Persons (Pseudo-Users)**

The OSEHRA Patch Module does not have any application-specific pseudo-users; however, it does make use of the Postmaster pseudo-user.

### **Devices**

The OSEHRA Patch Module has no application-specific devices. However, it makes extensive use of the Host File Server (HFS) to import and export patches in host file format (host file format is an alternative to Mailman).

### **Help Frames**

<b>Help Frame</b>	<b>Option</b>
A1AE HELP MENU DEVELOPER	A1AE DEVELOPER
A1AE HELP MENU IMPORT	A1AE IMPORT MENU
A1AE HELP MENU PACKAGE	A1AE PKMENU
A1AE HELP MENU PATCH MGR	A1AE MGR
A1AE HELP MENU PKG MGT	A1AE PKGMGT
A1AE HELP MENU SEC REPORTS	A1AE SEC REPORTS
A1AE HELP MENU SUPPORT	A1AE SUPPORT
A1AE HELP MENU USER	A1AE USR
A1AE HELP MENU VERIFIER	A1AE VERIFIER
A1AE HELP OPTION ADD PACKAGE	A1AE MGRADD
A1AE HELP OPTION ADD PATCH	A1AE PHADD
A1AE HELP OPTION ADD PGK REL	A1AE PKADD

<b>Help Frame</b>	<b>Option</b>
A1AE HELP OPTION ALL REL DET	A1AE PRTPHA
A1AE HELP OPTION ALL REL SUMM	A1AE PRTPHS
A1AE HELP OPTION ALL SECONDARY	A1AE PRTPHA SEC
A1AE HELP OPTION ALLOCATE KEY	A1AE XUSEC
A1AE HELP OPTION AUTH USERS	A1AE PKGEDIT
A1AE HELP OPTION COMP DATE DSP	A1AE COMPLIANCE DISPLAY
A1AE HELP OPTION COMP DATE EDT	A1AE COMPLIANCE EDIT
A1AE HELP OPTION COMP DATE PRT	A1AE COMPLIANCE COMMENT PRT
A1AE HELP OPTION COMP SUMM PKG	A1AE PRTCOMPHVER
A1AE HELP OPTION COMPL LISTING	A1AE PRTCNRP
A1AE HELP OPTION COMPL NOT REL	A1AE PRTCOMPH
A1AE HELP OPTION COMPL SUM RPT	A1AE PRTCOMPHDTE
A1AE HELP OPTION COPY PATCH	A1AE COPY PATCH
A1AE HELP OPTION DEL NR PATCH	A1AE PHDEL
A1AE HELP OPTION DEL PGK REL	A1AE PKDEL
A1AE HELP OPTION DET RPT REL	A1AE PRTDETD T ORG
A1AE HELP OPTION DISPLAY PATCH	A1AE PRTPHD
A1AE HELP OPTION DOCUMENTATION	A1AE PATCHDOC
A1AE HELP OPTION DSPL NOT REL	A1AE DISCOMPH
A1AE HELP OPTION EDIT PATCH	A1AE PHEDIT
A1AE HELP OPTION EDIT PKG REL	A1AE PKEDIT
A1AE HELP OPTION EXPORT PATCH	A1AE EXPORT PATCH TO HFS
A1AE HELP OPTION EXT DISPLAY	A1AE PHEXTEND
A1AE HELP OPTION FULL SUMM	A1AE FULL SUMMARY BY

<b>Help Frame</b>	<b>Option</b>
	DATE
A1AE HELP OPTION FWD NOT REL	A1AE DEV FORWARD
A1AE HELP OPTION FWD RELEASED	A1AE FORWARD
A1AE HELP OPTION LIST USERS	A1AE PKGLIST
A1AE HELP OPTION NEW NUMBER	A1AE PRTNEWPHNUM
A1AE HELP OPTION NEW PATCHES	A1AE PRTNEWPH
A1AE HELP OPTION PACKMAN MSG	A1AE DEV CREATE
A1AE HELP OPTION PATCH STREAMS	A1AE ADD/EDIT PATCH STREAMS
A1AE HELP OPTION PGK RELEASE	A1AE PKVER
A1AE HELP OPTION PKG NOTIFY	A1AE PKGSEL
A1AE HELP OPTION REL DETAIL	A1AE PRTCOMDETD
A1AE HELP OPTION REL SUMM RPT	A1AE PRT SUM DT ORG
A1AE HELP OPTION REL SUMMARY	A1AE RELEASE SUMMARY
A1AE HELP OPTION RELEASE PATCH	A1AE PHVER
A1AE HELP OPTION RELEASED RPT	A1AE PRTVRPH
A1AE HELP OPTION ROUTINE INQ	A1AE ROUTINE INQUIRE
A1AE HELP OPTION RT OVERLAP	A1AE ROUTINES THAT OVERLAP
A1AE HELP OPTION SEC BY DATE	A1AE PRT BY SEC ST BY DATE SUM
A1AE HELP OPTION SET PRINTED	A1AE PKGPRT
A1AE HELP OPTION SHOW RELAT	A1AE SHOW PATCH RELATIONSHIPS
A1AE HELP OPTION SINGLE IMPORT	A1AE IMPORT SINGLE DIR

<b>Help Frame</b>	<b>Option</b>
A1AE HELP OPTION SUMMARY ALL	A1AE PRTPHS ORG
A1AE HELP OPTION SUMMARY SEC	A1AE PRTPHS SEC
A1AE HELP OPTION TEST SCAN	A1AE TEST SCANNER
A1AE HELP OPTION TREE IMPORT	A1AE IMPORT RECURSIVE
A1AE HELP OPTION UNDER DEV LST	A1AE PRTUDP
A1AE HELP OPTION UNDER DEV RPT	A1AE PRTUDVPH
A1AE HELP OPTION UNDER DEV VER	A1AE PRTUDVPH VER

## Print Templates

The following print templates are used by options in the OSEHRA Patch Module. More information on options can be found in Chapter 2.

<b>Template Name</b>	<b>Called by Option</b>
A1AE FULL SUMMARY BY DATE	A1AE FULL SUMMARY BY DATE
A1AE PACKAGE USERS	A1AE PKGLIST
A1AE PATCH COMPL / COMMENT RPT	A1AE COMPLIANCE DISPLAY
A1AE PATCH OPTS DOC	A1AE PATCHDOC
A1AE PATCH RELATIONSHIPS	A1AE SHOW PATCH RELATIONSHIPS
A1AE PROBLEM DETAILS	A1AE PBRESREV
A1AE STANDARD HEADER	Compiled into routine ^A1AEP, which is called directly by five options
A1AE VERIFIED PATCH SUMMARY	A1AE PRTCOMPHDTE

The following print templates are namespaced for the OEHRA Patch Module, but are not called by any OEHRA Patch Module options or routines. At the present writing, it is unclear whether they are used at all.

A1AE GT 500  
 A1AE PATCH COMPLIANCE PRT  
 A1AE PATCH SUMMARY  
 A1AE ROUTINE INQUIRE  
 A1AE RTN CHECKSUM  
 A1AE SELECTED USERS  
 A1AE STANDARD PRINT  
 A1AE TABLED PROBLEM  
 A1AEZPKE

The following print templates are called by options in the OEHRA Patch Module, but are not themselves namespaced for the Patch Module.

Template Name	Called by Option
DBA PATCH RELEASE SUMMARY	A1AE RELEASE SUMMARY
ROUTINES IN A PATCH	A1AE ROUTINES IN A PATCH

## Sort Templates

The following sort templates are used by options in the OEHRA Patch Module. More information on options can be found in Chapter 2.

Template Name	Called by Option
A1AE COM PATCH BY STRM BY DT	A1AE PRTCOMPHDTE
A1AE FULL SUMARY SORT	A1AE FULL SUMMARY BY DATE
A1AE PATCH COMPL / COMM SORT	A1AE COMPLIANCE DISPLAY

The following sort templates are namespaced for the OSEHRA Patch Module, but are not called by any Patch Module options or routines. At the present writing, it is unclear whether they are used at all.

Template Name	Notes
A1AE FULL SUMMARY BY DATE	SEARCH
A1AE GT 500	SEARCH Find packages with patch numbers > 500.
A1AE PROBLEM SORT	
A1AE SEQ REV SAVE	
A1AE SEQ REV SUMMARY SORT	
A1AE SEQ SAVE	
A1AE SEQ SUMMARY SORT	
A1AE STANDARD SORT	
A1AE STANDARD SORT1	
A1AE SUMMARY SORT	
A1AEZPKE	

The following sort templates are called by options in the OSEHRA Patch Module, but are not themselves namespaced for the Patch Module.

Template Name	Used by Option
DBA PATCH RELEASE SUMMARY	A1AE RELEASE SUMMARY
ROUTINES IN A PATCH	A1AE ROUTINES IN A PATCH

## Input Templates

A1AE ADD/EDIT PATCHES (File #11005) is used in the following options:

A1AE PHADD [Add a Patch]  
A1AE PHEDIT [Edit a Patch]  
A1AE COPY PATCH [Copy a patch into a new patch]  
A1AE PKADD [Add a Package Release]  
A1AE PKEDIT [Edit a Package Release]

A1AE ADD/EDIT PROBLEMS (File #11006) is used in the following options:

A1AE PBADD [Add a New Problem] 1^A1AEPB1  
A1AE PBEDIT [Edit a Problem] 3^A1AEPB1

A1AE ADD/EDIT USERS (File #11007) is used in the following options:

A1AE PKGEDIT [Enter/Edit Authorized Users] 1^A1AEAU  
A1AE MGRADD [Add Package to Patch Module] 3^A1AEAU

A1AE CHANGE PROBLEM STATUS (File #11006) is used in the following option:

A1AE PBRESREV [Resolve/Review a Problem] 4^A1AEPB1

A1AE CHANGE SITE SUBSCRIPTION (File #11007.1) is used in the following option:

A1AE CHANGE SITE SUBSCRIPTION [CHANGE SITE PATCH  
SUBSCRIPTION]

It is also called by OSEHRA Patch Module Version 2.5 Post-install, to optionally let sites change their patch-stream subscription as part of the installation process.

A1AE COMP DATE (File #11005) is used by the following option:

A1AE COMPLIANCE EDIT [Compliance Date Edit]

A1AE EDIT PATCH STREAM HISTORY (File #11007.2) is a new template that is used by the following option:

## Mail Groups

```
A1AE HFS Messages      TYPE: public
ALLOW SELF ENROLLMENT?: Yes  COORDINATOR: POSTMASTER
DESCRIPTION:  This mail group gets forwarded messages from the HFS
checksum server in A1AEHFSVR so problems can be tracked.
```

A1AE Package Release	TYPE: public
ALLOW SELF ENROLLMENT?: No	COORDINATOR: POSTMASTER
DESCRIPTION: This mail group will get a message when a package or patch is released thru the NPM.	

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A1AEHSVR when a KIDS build is exported to the file system at a client VistA instance.

A1AEFMSC

TYPE: public

DESCRIPTION: FORUM side mail group to receive client site/domain requests to change their ACTIVE PATCH STREAM.

The OSEHRA Patch Module uses the following mail group on all client sites:

A1AESTRMCHG

TYPE: public

DESCRIPTION: Mailgroup to receive email message if the site's patch stream is changed. This mailgroup notifies local users AND sends email out through the MEMBERS - REMOTE server S.A1AENEWSTRM to notify FORUM.

In addition, each site subscribing to a patch stream should have a Patches mail group set up. See the Patch Subscriber manual for more information.

## Bulletins

Name	Description
A1AE Completed Patch	Sent when patch module user marks patch as COMPLETED/UNVERIFIED in Edit a Patch [A1AE PHEDIT].
A1AE Compliance Date Edit	Used by routine A1AECDE. Compliance Date tools are not used outside of VA.
A1AE Denied Sec Release Patch	Sent when patch module user marks patch as NOT FOR SEC RELEASE in Edit a Patch [A1AE PHEDIT].
A1AE Entered in Error Patch	Sent when patch module user marks patch as ENTERED IN ERROR in Edit a Patch [A1AE PHEDIT]

<b>Name</b>	<b>Description</b>
A1AE Load Released Patch	This bulletin will be sent to members of A1AE LOAD RELEASED PATCH whenever a new released patch has been imported from Mailman or the host file system.
A1AE Pkg	(not used)
A1AE Retired Patch	Sent when patch module user marks patch as RETIRED in Edit a Patch [A1AE PHEDIT].
A1AE Sec Completion Patch	Sent when patch module user marks patch as SEC COMPLETION in Edit a Patch [A1AE PHEDIT].
A1AE Sec Development Patch	Sent when patch module user marks patch as SEC DEVELOPMENT in Edit a Patch [A1AE PHEDIT].
A1AE Sec Release Patch	Sent when patch module user marks patch as SEC RELEASE in Edit a Patch [A1AE PHEDIT].
A1AE Verified Package	(not used)
A1AE Verified Patch	Sent when patch module user marks patch as VERIFIED in Edit a Patch [A1AE PHEDIT] or from Release a Patch (and/or edit internal comments) [A1AE PHVER].

## Parameter Definitions

OSEHRA Patch Module 2.5 includes no parameter definitions.

## **Parameters**

OSEHRA Patch Module 2.5 includes no parameters.

## Section 3: Systems and Configurations

### ***Chapter 9: Forum Configuration and System Requirements***

#### **Linux Configuration**

The base installation of UNIX (in this case CentOS 6) is supplemented with the installation of a few standard services: the GT.M database by Fidelity Information Systems, the OSEHRA VistA software, and a few support scripts from Fourth Watch BCS. The steps below must be done on both systems, Forum-A and Forum-B (see below).

#### **Prerequisites**

You must be a moderately experienced Linux system administrator able to do the following:

- Install Linux
- Install Linux packages
- Create and Manager Users
- Set-up DNS
- Set-up an SMTP server
- Administer GT.M
- Configure lsyncd, xinetd, nfs, pvm/lvm, and ssh

#### **Baseline Linux System (Step #1)...**

Peter Li created the two machines, [forum-a.osehra.org](http://forum-a.osehra.org) and [forum-b.osehra.org](http://forum-b.osehra.org)

b.osehra.org. based on Rackspace CentOS 6. This is done through the Rackspace console.

In addition to this, create two extra disks of 500G and 20G and attach them to the machine. We refer to these disks later.

## DNS Set-up (Step #2)...

The IP address of each of forum-a and forum-b are assigned and do not change. Only one of forum-a or forum-b is the primary, and the well-known address of forum.osehra.org always points to the active primary. It is not expected that any external users are at all aware of there being more than one forum machine. Only system administrators and some forum programmers know that there is more than a single machine. Switching between these is done via a load balancer.

This is done externally on Rackspace.

```
FORUM.OSEHRA.ORG (A) pointing to the either forum-a or forum-b  
ip address.  
Q-PATCH.OSEHRA.ORG (MX) pointing to FORUM.OSEHRA.ORG  
FORUM.OSHERA.ORG (SPF) (NOT COMPLETED YET)  
REVERSE DNS RECORD TO FORUM.OSHERA.ORG
```

## Extra packages (Step #3)

Install the following packages on each of the systems.

```
yum install ctags dos2unix figlet git hg locatedb locatem\  
lsb_release lsyncd mailx mlocate nc ntp ntpdate\  
rcs redhat-lsb-core screen system-config-firewall-tui\  
system-config-network-tui system-config-network-tui\  
system-config-services system-config-users tree unzip\  
vim wireshark xinetd
```

## User and Group Set-up (Step #4)

There are two collections of users (and groups) that have special mention:

Infrastructure user  
 Application user

Infrastructure users are those that hold a special place because of the infrastructure. These users are similar in their role to the root user, in that their presence serves a specific purpose. (Usage of the root user is eschewed for all uses but for the uses that are necessary for management of the system).

These are:

Username	Purpose
gtm	To own the database software
osehra	To own the OSEHRA VistA repository clone
bup	To own the backup areas
fwbcs	To own the infrastructure support

Application users are those that hold a special place for the VistA application. There are two:

Username	Purpose
forum	To own the VistA instance
citizen	For all users of the OSEHRA forum

Any users needing access to Forum VistA and Linux need to be added to the forum group.

See below for reference tables on how everything is set-up.

Execute the following as root.

```
# groupadd gtm -g 101
# groupadd osehra -g 102
# groupadd bup -g 103
# groupadd fwbc -g 104
# groupadd forum -g 400
# groupadd citizen -g 400
# groupadd fuse -g 603
# useradd gtm -u 101 -g 101 -c "GT.M"
# useradd osehra -u 102 -g 102 -c "OSEHRA Local Git Repository"
-G bup
# useradd bup -u 103 -g 103 -c "Backup Manager"
# useradd fwbc -u 104 -g 104 -c "Fourth Watch BCS"
# useradd forum -u 400 -g 400 -c "Forum Database Instance Home"
-G bup,gtm,fuse
# useradd citizen -u 401 -g 401 -c "Forum Citizen" -G forum,fuse
# useradd sampleLinuxUser -u 600 -g 600 -c "A sample user" -G
forum
```

After this, create the system administrators and users. They have been redacted from this document for security reasons.

### *Reference Tables*

#### **System Users (100 range)**

username	uid	gid	Real Name
gtm	101	101	GT.M
osehra	102	102	OSEHRA Local Git Repository
bup	103	103	Backup Manager
fwbc	104	104	Fourth Watch BCS

#### **Forum and Forum User (400 range)**

username	uid	gid	Real Name
forum	400	400	Forum Database Instance Home
citizen	401	401	Forum Citizen

#### **Forum System Administrators (500 range)**

username	uid	gid	Real Name
-- (redacted)	502	502	(redacted)
-- (redacted)	503	503	(redacted)

### Forum Administrative Programmers (600 range)

username	uid	gid	Real Name
-- (redacted)	600	600	(redacted)
-- (redacted)	601	601	(redacted)
-- (redacted)	602	602	(redacted)

### *Group Membership Assignments*

The following group assignments were made to the various users:

Group	Users that are members of the group
bup	forum
gtm	forum
forum	(redacted), citizen
admin	(redacted)
fuse	forum, citizen

## GT.M Installation (Step #5)

Download the latest version of GT.M from  
<http://sourceforge.net/projects/fis-gtm/>.

As root, install by untarring and then running ./configure. As this is interactive, here's a transcript:

```
Script started on Tue 31 Dec 2013 12:07:36 PM PST
[root@forum fis-gtm]# mkdir x
[root@forum fis-gtm]# cd x
[root@forum x]# tar xfz
../Archive/gtm_V61000_linux_x8664_pro.tar.gz
```



```
[root@forum x]# ./configure
                    GT.M Configuration Script
Copyright 2009, 2013 Fidelity Information Services, Inc. Use of
this
software is restricted by the provisions of your license
agreement.

What user account should own the files? (bin)
What group should own the files? (bin) gtm
Should execution of GT.M be restricted to this group? (y or n) y
In what directory should GT.M be installed? /opt/fis-gtm/6.1-
000/

Directory /opt/fis-gtm/6.1-000/ does not exist. Do you wish to
create it as part of
this installation? (y or n) y

Installing GT.M....

Should UTF-8 support be installed? (y or n) n

All of the GT.M MUMPS routines are distributed with uppercase
names.
You can create lowercase copies of these routines if you wish,
but
to avoid problems with compatibility in the future, consider
keeping
only the uppercase versions of the files.

Do you want uppercase and lowercase versions of the MUMPS
routines? (y or n)n

Compiling all of the MUMPS routines. This may take a moment.

Object files of M routines placed in shared library /opt/fis-
gtm/6.1-000//libgtmutil.so
Keep original .o object files (y or n)? n

Removing world permissions from gtmsecshr wrapper since group
restricted to "gtm"

Installation completed. Would you like all the temporary files
removed from this directory? (y or n) y
[root@forum x]# exit
exit
```

```
Script done on Tue 31 Dec 2013 12:08:21 PM PST
```

## FWS Scripts installation (Step #6)

As root, in a temp directory, clone <https://github.com/ldlandis/lsb-fws>

```
git clone https://github.com/ldlandis/lsb-fws
```

Copy the files to /opt/lsb-fws

```
cp -rv lsb-fws /opt/
```

## VistA Repository (Step #7)

The 'osehra' user holds a local copy of the OSEHRA VistA, from which the Forum instance is populated. The repositories holding OSEHRA VistA are cloned as follows.

```
$ su - osehra
$ git clone https://github.com/OSEHRA/VistA
$ git clone https://github.com/OSEHRA/VistA-M
```

OSEHRA VistA routines and data are segmented by package. The forum-a:~osehra/Makefile takes the current clone (in which VistA is scattered by the various packages) and creates two directories in the home directory of ~osehra:

```
r/   All of the routines
zwr/  All of the data files
```

The Makefile contents are as follows:

```
all:
    r zwr
    rm r/files.m zwr/files.zwr

r: files.m
```

```
mkdir r/
while read r ; do cp -p "$$r" r/ ; done < files.m

zwr: files.zwr
mkdir zwr/
while read zwr ; do cp -p "$$zwr" zwr/ ; done < files.zwr

files.m: Makefile
-rm -rf r/
find . -name "*.m" -print | sed "s:^.:`pwd`:" > files.m

files.zwr: Makefile
-rm -rf zwr/
find . -name "*.zwr" -print | sed "s:^.:`pwd`:" > files.zwr
```

Invoke the Makefile as follows (still as the osehra user).

```
$ make all
```

Once gathered from the package directories, the routines and data are now ready to load into a VistA instance.

## Installation of VistA (Step #8)

The 'forum' user is the owner of the Forum database instance.

Change to the forum user:

```
su - forum
```

Make a bunch of directories:

```
mkdir o p r s v j g G p/6.1-000 r/6.1-000 etc lib bin
```

Make symbolic links to lsb-fws and fis-gtm:

```
ln -s /opt/lsb-fws/201301/ ~/lib/fws
ln -s /opt/fis-gtm/6.1-000/ ~/lib/gtm
ln -s ~/lib/fws/inst.bin/set_env ~/bin/set_env
```

As root, Make init.d symbolic links:

```
cd /etc/init.d/
ln -s forum voe
ln -s voe /opt/lsb-fws/201301/inst.bin/voe
```

As root, Make xinet.d symbolic link:

```
cd /etc/xinetd.d
ln -s mailman-forum-smtp-25 ~forum/etc/mailman-forum-smtp-25
```

As root, Add the additional disks and link them to the globals (g) and journals (j) directory in fstab. Add these two lines to /etc/fstab. You may need to adjust them for the mount names.

```
/dev/xvdb1 /home/forum/g ext3 defaults 0 0
/dev/xvde1 /home/forum/j ext3 defaults 0 0
```

Remount everything

```
mount -a
```

Go back to being the forum user:

```
sudo su - forum
```

Create the environment file as follows:

```
$ cat etc/env.conf
#!/usr/bin/env bash
# $Source: /var/nas/repository/lsb-
fws/src/inst.etc/RCS/env.conf-primary,v $
# $Revision: 20130122.1 $

export ENV="forum"
export BUP="forum-a"
export GTM_REPLICATION="on" #[on|off]
#export GTM_REPLICATION="off" #[on|off]
export REPL_PORT="50188" # /etc/services gtmrepl 50188/tcp #
GT.M Repl
export REPL_HOST="forum-b.osehra.org"
```

```

export REPL_HOST="localhost"      #use ssh tunnel
export REPL_HOST_SSH_HOST="forum-b.osehra.org"
export REPL_HOST_SSH_PORT="22"
export REPL_BUFSIZE="4096"  # journal buffer size in 512-byte
blocks
export REPL_AUTOSWITCH=8388600  # ~800MB

##
# GT.M symbols
export gtm_buffer_size="${REPL_BUFSIZE}"
export gtm_repl_instname="forumforum"
export gtm_repl_instsecondary="forumbforum"

###
# Nothing should be needing changes below here
# -----

export DBINST="/home/${ENV}"
export PATH="${DBINST}/lib/fws/inst.bin:${DBINST}/lib/gtm:${PATH}"

##
# Local symbols
export REPL_DAT="${DBINST}/g"      # Database files
export REPL_JNL="${DBINST}/j"      # Database journals
export REPL_CNF="${REPL_DAT}/db.conf"  # Replication
Configuration
export REPL_SIDE="`cat ${REPL_DAT}/db.side`"

##
# GT.M symbols (do not change the symbol names)
export gtm_dist="${DBINST}/lib/gtm"
export gtm_sysid="${ENV}"
export gtm_log="${DBINST}/log"
export gtmgblldir="${REPL_DAT}/db.gld"
if [ ${GTM_REPLICATION} = "on" ] ; then
export gtm_repl_instance="${REPL_DAT}/db.repl"
fi

##
# Get GT.M version in use
export GTMVER=`ls -l lib/gtm | awk '{print $NF}'`
export GTMVER=`basename ${GTMVER}`

#export m2web="${DBINST}/w"
export ewd="${DBINST}/w/${GTMVER}(${DBINST}/w)"
##
# Build up GT.M Routine Path (using GTMVER where needed)

```

```
#export gtmroutines="${DBINST}/p/${GTMVER}(${DBINST}/p)"
export gtmroutines="${gtmroutines} ${DBINST}/r/${GTMVER}(${DBINST}/r)"
export gtmroutines="${gtmroutines} lib/gtm/libgtmutil.so"

export gtm_zinterrupt='I $$JOBEXAM^ZU($ZPOSITION) '

# Added by VEN/SMH
export gtm_prompt="DEV,FORUM>"
export EDITOR=`which vim`
```

Make sure to invoke set\_env every time you log in:

```
echo 'source bin/set_env' >> ~/.bash_profile
```

Source it yourself:

```
source ~/bin/set_env
```

Copy the etc files ~/lib/fws/inst.etc/\* to your etc

```
cp -v ~/lib/fws/inst.etc/* ~/etc/
```

Create the Global directory as follows:

```
File: ~/g/db.gde

change -segment DEFAULT -file="$DBINST/g/default.dat"
-allocation=400000
        -block_size=4096 -lock_space=1000 -extension_count=0
add     -segment TEMPGBL -file="$DBINST/g/tempgbl.dat"
-allocation=10000
        -block_size=4096 -lock_space=1000 -extension_count=0
change -region  DEFAULT -record_size=4080 -key_size=355
add     -region  TEMPGBL -record_size=4080 -key_size=355
-dyn=TEMPGBL
add     -name     HLTMP   -region=TEMPGBL
add     -name     TMP     -region=TEMPGBL
add     -name     UTILITY -region=TEMPGBL
add     -name     XTMP    -region=TEMPGBL
add     -name     XUTL    -region=TEMPGBL
show -all
```

Load the Global Directory into GT.M:

```
mumps -r GDE < g/db.gde > g/db.gde.out 2>&1
```

Create the Databases:

```
mupip create
```

Routines were loaded and compiled from the OSEHRA repository (located in ~osehra) using the following script:

```
File: bin/cprtns.sh

(cd ~osehra/; tar cf - r) | (tar xf -)
(cd r/${GTMVER};
date > compile.log
for r in ../*.m ; do mumps ${r} >> compile.log 2>&1 ; done
date >> compile.log
)
```

Data was loaded into the database from the OSEHRA repository (located in ~osehra) using the following script:

```
File: bin/loadadb.sh

for z in ~osehra/zwr/*.zwr ; do cp -v "${z}" x ; mupip load x ;
done
rm x
```

## External OS configuration for Mailman (Step #9)

As root, install postfix.

```
# yum install postfix
```

Then follow the instructions provided by this link

[https://github.com/shabiel/patch-module/blob/master/doc/vista\\_config.md#postfix-configuration](https://github.com/shabiel/patch-module/blob/master/doc/vista_config.md#postfix-configuration).

After that is done and tested, create a xinetd service for Mailman on port 25. Follow instructions here: [https://github.com/shabiel/patch-module/blob/master/doc/vista\\_config.md#create-xinetd-service-and-shell-script](https://github.com/shabiel/patch-module/blob/master/doc/vista_config.md#create-xinetd-service-and-shell-script).

## SSH Configuration (Step #10)

In /etc/ssh/sshd\_config, modify or add the following directives.

```
# Allow other users as needed, but sparingly!!
AllowUsers forum citizen

PermitRootLogin no

GSSAPIAuthentication no
GSSAPICleanupCredentials yes

UsePAM yes

X11Forwarding yes

ClientAliveInterval 30

ClientAliveCountMax 30
```

Then put a nice banner in /etc/issue.net

```
CentOS release 6.5 (Final)

Welcome to the forum.osehra.org  [F]o[r]u[m]=([C])

To get to the forum instance:
$ sudo su - forum
$ mumps -dir
```

Then enable ssh through the firewall.

```
cat /etc/sysconfig/system-config-firewall
```



```
--enabled  
--service=ssh
```

## Sudo configuration (Step #11)

We allow sudo privileges for users citizen and forum.

```
cat /etc/sudoers.d/citizen  
# User citizen  
## Allows users of various VistA instances to access the  
instance  
%citizen          ALL=      NOPASSWD: /bin/su - citizen  
  
## citizen captive user  
citizen  ALL=      NOPASSWD: /bin/chown  
citizen  ALL=      NOPASSWD: /bin/chmod  
citizen  ALL=      NOPASSWD: /bin/su - forum -c  
/home/forum/lib/fws/inst.bin/captive_user  
citizen  ALL=      NOPASSWD: /bin/su - forum -c  
/home/forum/lib/fws/inst.bin/interactive_shell  
  
cat /etc/sudoers.d/forum  
%forum          ALL=      NOPASSWD: /bin/su - forum
```

## Cloud Backup (Step #12)

We use Cloudfuse to mount Rackspace Cloud files for backups as they are cheaper.

As root,

```
wget https://github.com/redbo/cloudfuse/archive/master.zip  
yum install gcc.x86_64  
yum install libcurl-devel.x86_64  
yum install libxml2-devel.x86_64  
yum install fuse-devel.x86_64  
unzip master  
cd master  
./configure  
make  
sudo make install
```

Create Cloudfuse configuration file under /root. Note that this is a hidden file - .cloudfuse, also the username is the account name to the Rackspace account and the api\_key comes from the key that belongs to the account.

```
# cat /root/.cloudfuse
username=xxxxxxxxxxxxxxxxxx
api_key=77777777777777
authurl=https://auth.api.rackspacecloud.com/v1.0
region=ORD
cache_timeout=600
```

Create a directory as the mount point for the Rackspace Cloudfile container, set group owner to “fuse” so other users can have access

```
cd /
mkdir cloudbkup
chown root:fuse cloudbkup
```

Edit /etc/fstab by adding the following entry, note that the gid is the “fuse” group id

```
cloudfuse /cloudbkup fuse defaults,gid=603,umask=002,allow_other
```

Remount fstab by running:

```
mount -a
```

## GT.M Replication Set-up (Step #13)

GT.M Replication has to be set-up to replicate globals and replicate routines.

Globals are replicated using GT.M replication; Routines are replicated using lsync.

For GT.M Replication, it's done as follows:

In `etc/env.conf`, these lines accomplish the replication on forum-a TO forum-b:

```
export BUP="forum-a"
export REPL_HOST="forum-b.osehra.org"
export REPL_HOST_SSH_HOST="forum-b.osehra.org"
export gtm_repl_instname="forumforum"
export gtm_repl_instsecondary="forumbforum"
```

On forum-b, the corresponding lines in `etc/env.conf` are:

```
export BUP="forum-b"
export REPL_HOST="forum-a.osehra.org"
export REPL_HOST_SSH_HOST="forum-a.osehra.org"
export gtm_repl_instname="forumbforum"
export gtm_repl_instsecondary="forumforum"
```

Routines are replicated using `lsync`. In the `~forum/etc` directory, there is an `lsync` file, one for forum-a and one for forum-b. The only differences between them is in the host directive, where forum-a refers to forum-b, and the converse.

```
$ cat forum-a-lsyncd.conf
settings {
    logfile          = "/home/forum/log/lsyncd.log",
    pidfile          = "/home/forum/log/lsyncd.pid",
    statusFile       = "/home/forum/log/lsyncd.status.log",
    statusInterval   = 20
}

sync {
    default.rsyncssh,
    source           = "/home/forum/p",
    host             = "forum-b",
    targetdir        = "/home/forum/p",
    exclude          = "*.o",
    rsync            = {
        archive      = true,
        verbose       = true,
        compress      = true
    }
}

sync {
```

```

default.rsyncssh,
source      = "/home/forum/r",
host       = "forum-b",
targetdir  = "/home/forum/r",
exclude    = "*.o",
rsync      = {
    archive = true,
    verbose = true,
    compress = true
}
}

```

## Back-up (Step #14)

Load this crontab into cron on the forum user.

```

PATH=/home/forum/bin:/home/forum/lib/fws/inst.bin:/usr/bin:/bin
:/home/forum/lib/gtm

00      * * * * gtm_journal_switch.sh >>
log/gtm_journal_switch.log 2>&1
05      * * * * gtm_journal_backup.sh >>
log/gtm_journal_backup.log 2>&1
00      18 * * * gtm_journal_purge.sh
01      00 * * * gtm_backup.sh > log/gtm_backup.log 2>&1
#0-55/5 * * * * run.sh P gtm_repl_stat.sh
#1-56/5 * * * * run.sh P gtm_repl_stat_alert.sh
0-55/5 * * * * run.sh B gtm_freecnt_alert.sh
00      06 * * * run.sh B gtm_freecnt.sh
00      00 * * * ls -la j >> log/ls-l-j.log 2>&1

```

## Enabling Journaling and Replication for GT.M (Step #15)

From /opt/lsb-fws/201301/inst.bin/, run the following to start journaling:

```
sh gtm_journal_enable.sh
```

To disable:

```
sh gtm_journal_disable.sh
```

To enable replication:

```
sh gtm_replication_start.sh
```

To disable replication:

```
sh gtm_replication_stop.sh
```

## Configuring the tied user (citizen) (Step #16)

We previously configured sudo and ssh for the tied user. Now configure .bash\_profile.

```
cat ~citizen/.bash_profile
# .bash_profile

trap "" INT
stty susp undef
stty rows 24 columns 80

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi

# User specific environment and startup programs
if false ; then
#if true ; then
    echo "Sorry, in maintenance mode"
    read -s x # the password is 'xyzzzy'
    if [ "`echo ${x} | md5sum`" !=
"89d447eb9afaeb94e463615e8ded6479  -" ] ; then
        exit
    fi
fi

PATH=$PATH:$HOME/bin
export PATH

# Allow users to use screen
sudo chown forum `tty`
sudo chmod 666 `tty`

sudo su - forum -c /home/forum/lib/fws/inst.bin/captive_user
```

exit
------

## VistA configuration

Summary of the VistA system configuration:

UCI: DEV  
 VOLUME SET: FORUM  
 SITE NUMBER: 121  
 INTERNET DOMAIN NAMES: FORUM.OSEHRA.ORG (A), Q-  
 PATCH.OSEHRA.ORG [MX].

## Baseline Routines and Globals

Cloned from <https://github.com/OSEHRA/VistA-M> on December 25th 2013.

Applied fixes for GT.M:

<https://github.com/OSEHRA/VistA/blob/master/Testing/Setup/XINDX2.ro>

<https://github.com/OSEHRA/VistA/blob/master/Testing/Setup/ZTLOAD1.ro>

My random utility routines for VistA were imported into the system:

<https://github.com/shabiel/random-vista-utilities>

## ZTMGRSET

UCI,VOLUME SET: DEV,FORUM Temp Directory: /tmp/
--

## DINIT

VA Forum is at 120. We chose 121 for OSEHRA forum.

SITE NAME: FORUM.OSEHRA.ORG SITE NUMBER: 121
---

## Taskman configuration (done automatically using ^KBANTCLN)

### VOLUME SET (#14.5)

VOLUME SET: FORUM OUT OF SERVICE?: NO TASKMAN FILES UCI: DEV 0 TYPE: GENERAL PURPOSE VOLUME SET SET: Yes	INHIBIT LOGONS?: NO REQUIRED VOLUME SET?: NO DAYS TO KEEP OLD TASKS: SIGNON/PRODUCTION VOLUME
---	--

### UCI ASSOCIATION (#14.6)

NUMBER: 1 FROM VOLUME SET (FREE TEXT): FORUM	FROM UCI: DEV FROM VOLUME SET: FORUM
---	---

### TASKMAN SITE PARAMETERS (#14.7)

BOX-VOLUME PAIR: FORUM:forum-a TIME: 0 TASKMAN JOB LIMIT: 24 JOBS: 0 MODE OF TASKMAN: GENERAL PROCESSOR Auto Delete Tasks: Yes	SUBMANAGER RETENTION TASKMAN HANG BETWEEN NEW MIN SUBMANAGER CNT: 0 Manager Startup Delay: 1
---	---

## OPTION SCHEDULING (#19.2)

OPTION SCHEDULING List		JAN
3,2014@11:10    PAGE 1		
-----		
-----		
NAME: XUSER-CLEAR-ALL STARTUP	SPECIAL QUEUEING:	
NAME: XUDEV RES-CLEAR STARTUP	SPECIAL QUEUEING:	
NAME: XU PROC CNT CLUP		
QUEUED TO RUN AT WHAT TIME: JAN 3,2014@11:22		
RESCHEDULING FREQUENCY: 1H	TASK ID: 190	
NAME: XMAUTOPURGE		
QUEUED TO RUN AT WHAT TIME: JAN 4,2014@00:10		
RESCHEDULING FREQUENCY: 1D	TASK ID: 156	
NAME: XMCLEAN		
QUEUED TO RUN AT WHAT TIME: JAN 4,2014@00:15		
RESCHEDULING FREQUENCY: 1D	TASK ID: 157	
NAME: XQBUILDTREEQUE		
QUEUED TO RUN AT WHAT TIME: JAN 4,2014@00:20		
RESCHEDULING FREQUENCY: 1D	TASK ID: 158	
NAME: XQ XUTL \$J NODES		
QUEUED TO RUN AT WHAT TIME: JAN 4,2014@00:25		
RESCHEDULING FREQUENCY: 1D	TASK ID: 160	
NAME: XUERTRP AUTO CLEAN		
QUEUED TO RUN AT WHAT TIME: JAN 4,2014@00:30		
RESCHEDULING FREQUENCY: 1D	TASK ID: 161	
NAME: XUTM QCLEAN		
QUEUED TO RUN AT WHAT TIME: JAN 4,2014@00:35		
RESCHEDULING FREQUENCY: 1D	TASK ID: 162	

## Volume Set in KSP

MAX	LOG
-----	-----



VOLUME SET	SIGNON ALLOWED	SYSTEM RT?
-----		
-----		
FORUM	30	

## Fileman Upgrade

Fileman 22.2 was installed. See <http://flap.vistaexpertise.net/>.

## Device configuration

I fixed GTM-UNIX-CONSOLE so that SIGN-ON/SYSTEM DEVICE is YES. Other Null devices had to be renamed to make sure there is only one Null.

```

NAME: GTM-UNIX-CONSOLE                                $I: /dev/tty
  ASK DEVICE: YES                                       SIGN-ON/SYSTEM DEVICE:
YES
  LOCATION OF TERMINAL: Console (GT.M)
MNEMONIC: GTM-LINUX-CONSOLE
MNEMONIC: CONSOLE
  SUBTYPE: C-VT100                                     TYPE: VIRTUAL TERMINAL

NAME: GTM-UNIX-TELNET                                  $I: /dev/pts/
  ASK DEVICE: YES                                       SIGN-ON/SYSTEM DEVICE:
YES
  QUEUING: ALLOWED                                     LOCATION OF TERMINAL:
TELNET
  ASK HOST FILE: YES                                    OPEN COUNT: 427
MNEMONIC: GTM-LINUX-TELNET
MNEMONIC: TELNET
  SUBTYPE: C-VT320                                     TYPE: VIRTUAL TERMINAL

NAME: NULL                                              $I: /dev/null
  SIGN-ON/SYSTEM DEVICE: NO
  LOCATION OF TERMINAL: Bit Bucket (GT.M-Unix)
  OPEN COUNT: 459
MNEMONIC: GTM-LINUX-NUL
MNEMONIC: GTM-UNIX-NUL

```

SUBTYPE: P-OTHER

TYPE: TERMINAL

## Mailman configuration

### *Forum Instance Domain Name Creation*

All of these are entries in the DOMAIN (#4.2) file.

#### *Main Domain*

TURN enabled so that it can function as a mail drop.

NAME: FORUM.OSEHRA.ORG

DISABLE TURN COMMAND: NO

#### *Patches Domain*

Must be entered so that Mailman will know to store the messages and not forward them.

NAME: Q-PATCH.OSEHRA.ORG

#### *Mailman External SMTP Gateway*

GW.OSEHRA.ORG (named per mailman/Forum code usage) sends emails out using Postfix. Postfix listens on 10025 ONLY on localhost.

NAME: GW.OSEHRA.ORG

FLAGS: S

STATION: 121

DISABLE TURN COMMAND:

YES

TRANSMISSION SCRIPT: MAIN

PRIORITY: 1

NUMBER OF ATTEMPTS: 2

TYPE: Simple Mail

Transfer Protocol

PHYSICAL LINK / DEVICE: NULL

NETWORK ADDRESS (MAILMAN HOST): 127.0.0.1

TEXT:

O H="127.0.0.1",P=TCP/GTM

X S XMRPORT=10025

C TCPCHAN-SOCKET25/GTM

SYNONYM: ORG

```
SYNONYM: COM
SYNONYM: INFO
SYNONYM: NAME
SYNONYM: US
SYNONYM: UK
SYNONYM: NET
SYNONYM: IN
SYNONYM: JO
```

### *Remote Instance Domain Name Creation*

To send messages to Q-PATCH.OSEHRA.ORG from your own Vista system, you can send it via the internet by setting up postfix and having it do the work for you (as above). An easier alternative is to configure a direct link, as follows: (NB: This example is only for GT.M. Use the Cache Mailman Conduits for Cache.) To send HFS checksum messages (for packages exported via HFS) you need to create FORUM.OSEHRA.ORG.

```
NAME: Q-PATCH.OSEHRA.ORG          FLAGS: Q
TRANSMISSION SCRIPT: MAIN         PRIORITY: 1
  NUMBER OF ATTEMPTS: 2           TYPE: Simple Mail
Transfer Protocol
  PHYSICAL LINK / DEVICE: NULL
  NETWORK ADDRESS (MAILMAN HOST): FORUM.OSEHRA.ORG
TEXT:
O H="FORUM.OSEHRA.ORG",P=TCP/GTM
C TCPCHAN-SOCKET25/GTM

NAME: FORUM.OSEHRA.ORG           FLAGS: Q
TRANSMISSION SCRIPT: MAIN        PRIORITY: 1
  NUMBER OF ATTEMPTS: 2           TYPE: Simple Mail
Transfer Protocol
  PHYSICAL LINK / DEVICE: NULL
  NETWORK ADDRESS (MAILMAN HOST): FORUM.OSEHRA.ORG
TEXT:
O H="FORUM.OSEHRA.ORG",P=TCP/GTM
C TCPCHAN-SOCKET25/GTM
```

### *Christening*

System is christened using menu option XMCHIRS as FORUM.OSEHRA.ORG with parent GW.OSEHRA.ORG in EDT Time Zone.

### *Pointing KSP and RSP to new Domain*

Domain FORUM.OSEHRA.ORG has an IEN of 76.

```
DEV, FORUM>S $P(^XTV(8989.3,1,0),"^")=76
DEV, FORUM>S $P(^XWB(8994.1,1,0),"^")=76
```

Re-index the files after making this change.

```
DEV, FORUM>F DIK="^XTV(8989.3,","^XWB(8994.1," S DA=1 D
IXALL2^DIK,IXALL^DIK
```

### *Identifying local mail for relay*

In the MAILMAN SITE PARAMTERS file (#4.3), the MY DOMAINS multiple contains .OSEHRA.ORG as one of the sites we can relay mail for. Without that, mailman will reject incoming messages coming for us.

### *Postfix configuration*

Postfix's function is to send emails to the outside world from VistA.

In /etc/postfix/main.cf, mynetworks\_style = host was added to have postfix only listen to the localhost for messages.

In /etc/postfix/master.cf, comment out the smtp line and add a line for listening on 10025.

```
#smtp      inet  n       -       n       -       -       smtpd #
VEN/SMH - don't listen on 25 but on 10025
10025      inet  n       -       n       -       -       smtpd
```

### *XMRUCX routine changes for xinetd support*

Add this code to the bottom of the routine.

```
GTMLNX ;From Linux xinetd script
S U="^",$ETRAP="D ^%ZTER S ZZIO=$ZIO H 33 D R^XMCTRAP Q"
```

```

;S (XMRPORT,IO,IO(0))=$P X "U XMRPORT:
(nowrap:delimiter=$C(13))"
S (XMRPORT,IO,IO(0))=$P X "U XMRPORT:
(nowrap:delimiter=$C(13):ioerror="GTMIOER")"
S @("$ZINTERRUPT="I $$JOBEXAM^ZU($ZPOSITION)""")
;GTM specific code
S %="",@("%=$ZTRNLNM("REMOTE_HOST")) S:$L(%) IO("GTM-IP")=%
D SETNM^%ZOSV($E(XMRPORT_"INETMM",1,15)),COUNT^XUSCNT(1)
;Process counting under GT.M
S XMCHAN="TCP/GTM",XMNO220=""
N DIQUIET S DIQUIET=1 D DT^DICRW,DUZ^XUP(.5)
D ENT^XMR
D COUNT^XUSCNT(-1) ;Check out GT.M counting
Q
GTMIOER ; For Sam...
D COUNT^XUSCNT(-1)
QUIT

```

### Create xinetd service and shell script

Create a xinetd service listening on port 25 to run the shell script.

```

[forum@forum-a ~]$ cat /etc/xinetd.d/mailman-forum-smtp-25
# Written by Sam Habel on 30 Dec 2013 for Mailman

service mailman-forum-smtp-25
{
    port                = 25
    socket_type         = stream
    protocol            = tcp
    type                = UNLISTED
    user                = forum
    server               = /home/forum/bin/mailman_smtp.sh
    wait                = no
    disable              = no
    per_source           = UNLIMITED
    instances            = UNLIMITED
    env                 = HOME=/home/forum
}

```

### Shell script that invokes GTMLNX^XMRUCX:

```

[forum@forum-a ~]$ cat /home/forum/bin/mailman_smtp.sh
#!/bin/bash
# Written by Sam Habel on 30 December 2013

```

```
cd # goto home directory
source /home/forum/bin/set_env

$gtm_dist/mumps -run GTMLNX^XMRUCX 2>>
/home/forum/log/mailman.log
```

## *Firewall*

Not VistA related, but the Firewall was modified to allow port 25 in.

## *DNS Records*

- FORUM.OSEHRA.ORG (A)
- Q-PATCH.OSEHRA.ORG (MX)
- FORUM.OSHERA.ORG (SPF) (NOT COMPLETED YET)
- REVERSE DNS TO FORUM.OSHERA.ORG (NOT COMPLETED YET)

Dig output:

```
sakura@icarus:~$ dig forum.osehra.org ANY +short
10 forum.osehra.org.
23.253.7.225
sakura@icarus:~$ dig q-patch.osehra.org ANY +short
10 q-patch.osehra.org.
23.253.7.225
```

Host output:

```
sakura@icarus:~$ host 23.253.7.225
Host 225.7.253.23.in-addr.arpa. not found: 3(NXDOMAIN)
```

## *Testing*

Testing was done using netcat and telnet to confirm that the VistA SMTP service works. Testing was done also by making a direct link between two VistA instances and using the script runner (shown below) to send the message.

Sending emails to external domains using VistA was tested from VistA's script runner. First change the domain to Queue in the domain file rather than send, and when you send a message, run the script runner.

First, XMMGR > XMNET > XMNET-TRANSMISSION-MANAGEMENT, then...

```
Select Transmission Management <TEST ACCOUNT> Option: EDIT a
script
Select DOMAIN NAME:      GW.OSEHRA.ORG                0 msgs
PHYSICAL LINK DEVICE:
FLAGS: S// Q
SECURITY KEY: ^
TRANSMISSION TASK#: ^
```

Second, send a message

```
Select Transmission Management <TEST ACCOUNT> Option: "MAILMAN

VA MailMan 8.0 service for POSTMASTER@FORUM.OSEHRA.ORG
You last used MailMan: 01/03/14@14:13
You have no new messages.

    NML    New Messages and Responses
    RML    Read/Manage Messages
    SML    Send a Message
           Query/Search for Messages
    AML    Become a Surrogate (SHARED,MAIL or Other)
           Personal Preferences ...
           Other MailMan Functions ...
           Help (User/Group Info., etc.) ...

Select MailMan Menu <TEST ACCOUNT> Option: SML  Send a Message

Subject: TEST
You may enter the text of the message...
  1>TEST
  2>
EDIT Option:
Send mail to: POSTMASTER// SAM.HABIEL@GMAIL.COM  GW.OSEHRA.ORG
via GW.OSEHRA.ORG
(Queued)
And Send to:
```

Select Message option: Transmit now// Sending [69]...  
Sent

Thrid, transmit using the script runner.

```
Select Transmission Management <TEST ACCOUNT> Option: play a
script
Select DOMAIN NAME: gw.OSEHRA.ORG                                1 msg
```

#	Script Name	Type	Priority
1	MAIN	SMTP	1

```

14:16:06 To GW.OSEHRA.ORG from FORUM.OSEHRA.ORG on 1/3/2014
14:16:06 Script: MAIN
14:16:06 O H="127.0.0.1",P=TCP/GTM
14:16:06 Channel opened to GW.OSEHRA.ORG
14:16:06 Device 'NULL', Protocol 'TCP/GTM' (file 3.4)
14:16:06 Xecuting 'S XMRPORT=10025'
14:16:06 C TCPCHAN-SOCKET25/GTM
14:16:06 Calling script 'TCPCHAN-SOCKET25/GTM' (file 4.6)
14:16:06 Xecuting 'L +^XMBX("TCPCHAN",XMHOST):99 E S
ER=1,XMER="CHANNEL IN USE"
'
14:16:06 Xecuting 'S X="ERRSCRPT^XMRTCP",@^%ZOSF("TRAP")'
14:16:06 Xecuting 'S XMRPORT=$G(XMRPORT,25)'
14:16:06 Xecuting 'D CALL^%ZISTCP(XMHOST,XMRPORT) I POP S ER=1 L
-^XMBX("TCPCHAN
",XMHOST)'
14:16:06 Xecuting 'S XMHANG="D CLOSE^%ZISTCP"'
14:16:06 Xecuting 'U IO:(DELIMITER=$C(13))'
14:16:06 Look: Timeout=45, Command String='220'
14:16:06 R: 220
14:16:06 Beginning sender-SMTP service
14:16:06 R: forum-a.osehra.org ESMTP Postfix
14:16:06 S: NOOP
14:16:06 R: 250 2.0.0 Ok
14:16:06 S: HELO FORUM.OSEHRA.ORG
14:16:06 R: 250 forum-a.osehra.org
14:16:06 S: MAIL FROM:<POSTMASTER@FORUM.OSEHRA.ORG>
14:16:06 R: 250 2.1.0 Ok
14:16:06 S: RCPT TO:<SAM.HABIEL@GMAIL.COM>
14:16:06 R: 250 2.1.5 Ok
14:16:06 S: DATA
14:16:06 R: 354 End data with <CR><LF>.<CR><LF>
14:16:06 S: Subject: TEST
14:16:06 S: Date: 3 Jan 2014 14:14:40 -0400 (EDT)

```



```
14:16:06 S: Message-ID: <69.3140103@FORUM.OSEHRA.ORG>
14:16:06 S: From: <POSTMASTER@FORUM.OSEHRA.ORG>
14:16:06 S: To: SAM.HABIEL@GMAIL.COM
14:16:06 S:
14:16:06 S: TEST
14:16:06 S: .
14:16:06 R: 250 2.0.0 Ok: queued as 9E45213E0DE
14:16:07 TURN command disabled for GW.OSEHRA.ORG
14:16:07 S: QUIT
14:16:07 R: 221 2.0.0 Bye
14:16:07 Xecuting 'L -^XMBX("TCPHAN",XMHOST) K XMSIO'
14:16:07 Returning to script 'MAIN'.
14:16:07 Script complete.
14:16:07 1 sent, 0 received.
```

### *Extra config item*

There was an old domain with a transmission script that was failing. This was deleted from the domain file and the entries pointing to it were repointed to FORUM.OSEHRA.ORG.

## Insitution and Station Set-up

The OSEHRA FORUM institution was modeled after the FORUM institution, except that it has the station number of 121 instead of FORUM's 120.

```
Select INSTITUTION NAME: OSEHRA FORUM      VA  OTHER  121
Another one:
Standard Captioned Output? Yes//      (Yes)
Include COMPUTED fields:  (N/Y/R/B): NO//  - No record number
(IEN), no Computed
Fields

NAME: OSEHRA FORUM                        STATE: VIRGINIA
STATUS: National
STREET ADDR. 1: Virginia Tech Research Building
STREET ADDR. 2: 900 North Glebe Road, Suite 4-009
CITY: ARLINGTON                          ZIP: 22203
CONTACT: MAIN                            PHONE #: (571) 858-3061
FACILITY TYPE: OTHER                     DOMAIN: FORUM.OSEHRA.ORG
STATION NUMBER: 121                     OFFICIAL VA NAME: OSEHRA
```

<p>FORUM</p> <p>AGENCY CODE: EHR</p> <p>CODING SYSTEM: VASTANUM</p>	<p>POINTER TO AGENCY: EHR</p> <p>ID: 121</p>
---	--

The lone entry in the STATION NUMBER (TIME SENSITIVE) file was modified to look as follows:

<p>Output from what File: INSTITUTION// STATION NUMBER (TIME SENSITIVE)</p> <p>(1 entry)</p> <p>Select STATION NUMBER (TIME SENSITIVE) REFERENCE NUMBER: 121</p> <p>12-30-13</p> <p>OSEHRA FORUM 121</p> <p>Another one:</p> <p>Standard Captioned Output? Yes// (Yes)</p> <p>Include COMPUTED fields: (N/Y/R/B): NO// - No record number (IEN), no Computed Fields</p> <p>REFERENCE NUMBER: 121 EFFECTIVE DATE: DEC 30,2013</p> <p>MEDICAL CENTER DIVISION: OSEHRA FORUM</p> <p>STATION NUMBER: 121 IS PRIMARY DIVISION: YES</p>	
---	--

The lone entry in the MEDICAL CENTER DIVISION file was modified to point to the correct institution and modified to have the right station number.

<p>Output from what File: STATION NUMBER (TIME SENSITIVE)// medical center DIVISION</p> <p>(1 entry)</p> <p>Select MEDICAL CENTER DIVISION NAME: `1 OSEHRA FORUM 121</p> <p>Another one:</p> <p>Standard Captioned Output? Yes// (Yes)</p> <p>Include COMPUTED fields: (N/Y/R/B): NO// - No record number (IEN), no Computed Fields</p> <p>NUM: 1 NAME: OSEHRA FORUM</p> <p>FACILITY NUMBER: 121 INSTITUTION FILE</p> <p>POINTER: OSEHRA FORUM</p>	
--	--

To test all these changes, the API \$\$SITE^VASITE should return the correct data:

```
DEV, FORUM>W $$SITE^VASITE
2957^OSEHRA FORUM^121
DEV, FORUM>W $$PRIM^VASITE
1
```

Not strictly necessary on this system, but we need to change the MASTER PATIENT INDEX (LOCAL NUMBERS) file to have the right station number.

```
Output from what File: MEDICAL CENTER DIVISION// MASTER PATIENT
INDEX (LOCAL NUMBERS) (1 entry)
Select MASTER PATIENT INDEX (LOCAL NUMBERS) SITE ID NUMBER: `1
121
Another one:
Standard Captioned Output? Yes// (Yes)
Include COMPUTED fields: (N/Y/R/B): NO// - No record number
(IEN), no Computed
Fields

SITE ID NUMBER: 121 LAST NUMBER USED:
500000000
CHECK SUM FOR LAST NUMBER USED: 217407
NEXT NUMBER TO USE: 500000001 CHECK SUM FOR NEXT:
075322
```

## Kernel Site Parameters adjustments

These are just a few tweaks to make sure the system is configured properly.

- DEFAULT INSTITUTION -> OSEHRA FORUM
- AGENCY CODE -> EHR
- MULTIPLE SIGN-ON -> YES
- AUTO-MENU -> YES
- DEFAULT HFS DIRECTORY -> /tmp/
- DNS IPs -> (same as those in /etc/resolve.conf)

## HFS Checksum server Set-up

### *Remote system Set-up*

You need to set-up outgoing mail to FORUM.OSEHRA.ORG. See that in the domain section above.

You then need to set the following parameter to tell KIDS where to send the message.

```
GTM>D ^XPAREDIT

                                --- Edit Parameter Values ---

Select PARAMETER DEFINITION NAME:      XPD PATCH HFS SERVER
Patch module HFS server
ver

----- Setting XPD PATCH HFS SERVER   for Package: KIDS
-----
DHCP patch module server name: S.A1AE HFS CHKSUM
SVR@FORUM.OSEHRA.ORG
-----
```

## Forum system Set-up

On the Forum system, you must add a active user (must have an access code and a mailbox) to these two groups:

```
* A1AE PATCH ERRORS - Couldn't process the Message
* A1AE HFS MESSAGES - Copy of the messages sent to the server
```

This means that the active user cannot be remote user.

To activate the server, you must add either one of these two mail groups to the XQSERVER bulletin, like this:

```
NAME: XQSERVER                                SUBJECT: Server Request
```

```
Notice
MAIL GROUP: A1AE HFS MESSAGES
...
```

The last thing you need to activate the server, you need to have your package file point to the domain from which the message will be coming. As of today, this domain multiple does not exist on our system. It appears to be a local mod on the Forum System.

```
^DIC(9.4,PACKAGE,25,IX,
```

## VistA system local mods

Lloyd Milligan's excellent ZSY routine for M process monitoring was downloaded from <http://www.seaislandsystems.com/ZSY/ZSY.m> and applied. For it to be invoked, JOBEXAM+1^ZU needs to be

```
I $T(NTRUPT^ZSY)]" D NTRUPT^ZSY Q 1; SIS/LM - Custom interrupt completion
```

I made that change ZUGTM and then ran ^ZUSET.

As mentioned before, XMRUCX now has an entry point for GTMLNX for xinetd entry. XMRUCX has an issue right now with TCP alive checks which tend to invoke the boiler plate code for process set-up in VistA. I need to fix that before deciding that XMRUCX is good enough.

Because of this same issue, the process counting in %ZOSV for GT.M (already pretty awful) was not working. I got Bhaskar's %ZOSV routine, changed the process counting code so that it doesn't use a global reference, fixed another bug in \$\$RTNDIR, and modified COUNT^XUSCNT so that it is a no op. I would have liked to make CLEAR^XUSCNT a no op as well, but I have to fix the mailman problem first as it is setting ^XUTL("XUSYS") nodes and they are only cleaned by CLEAR^XUSCNT.

Joel Ivey's M-Tools (XT7.381) was applied. I then applied my modified

routines (XTMUNIT and XTMUNIT1) from the vista-less-branch  
<https://github.com/shabiel/M-Tools/tree/vista-less-support/Utilities%20XT%207.3%2081%20not%20yet%20released>. I plan to put these in the main KIDS build once I have unit tests for everything I changed in there and can prove to my satisfaction that everything is still working.

## **Patch module configuration**

The following will be a brief overview of how to configure the patch module so that it is operational.

### *Install the Patch Module*

KIDS: Latest package in this repository for the PATCH MODULE (not the PATCH CLIENT).

### *Hang the main menu*

Menu is A1AE USER. Hang it off XUCORE and EVE.

### *Create Users*

For a complete workflow, you need at least 3 users: 2 developers and 1 verifier.

### *Allocate keys*

Allocate all for the set-up user. I know that A1AE MGR is certainly required for set-up.

- A1AE COMPDATE
- A1AE DEVELOPER
- A1AE MGR
- A1AE PHVER
- A1AE PKGEDIT

- A1AE SCAN MESSAGE
- A1AE SUPPORT
- A1AE XUSEC

### *Set-Up Patch Moudle Package in the Patch Module (!!)*

That's a weird step, but it's necessary. The PM uses this to figure out where to send messages out. Here we configure it to use mail group A1AE PACKAGE RELEASE on domain FORUM.OSEHRA.ORG, which happens to be the local domain. Right now the patch module cannot support arbitrary domains. Any domain has to be in the Domain file.

```
A1AE USER > A1AE MGR > A1AE MGRADD

Select PACKAGE: A1AE  PATCH MODULE      A1AE
                ...OK? Yes//    (Yes)

-----
USER SELECTION PERMITTED: NO//
* PERMIT DEVELOPER TO COMPLETE: YES//
FOR TEST SITE ONLY?: NO//
PERFORMANCE MEASURE FLAG:
ASK PATCH DESCRIPTION COPY:
-----
Select SUPPORT PERSONNEL:
-----
Select DEVELOPMENT PERSONNEL:
-----
Select NETWORK ROUTING: G.A1AE PACKAGE RELEASE//
  NETWORK ROUTING: G.A1AE PACKAGE RELEASE  Replace
  DOMAIN: FORUM.OSEHRA.ORG//
For Verified Patches
  TEST SITE:
Select NETWORK ROUTING:
```

### *Add users to the mail group*

Through mailman menus, you need to add users to the A1AE PACKAGE RELEASE group. All external emails must go through remote users.

### *Set-up your new package for patching in the Patch Module*

Your package has to be in the Package file already. If you are modifying a new package, you have to manually add it to the package file then add it the Patch Module.

```
Select PACKAGE:      TEST PACKAGE      ZZZ

This package is considered a TEST SITE PACKAGE in the Patch
Module.

-----
* PERMIT DEVELOPER TO COMPLETE: YES// <-- NOT USED!
FOR TEST SITE ONLY?: YES// <-- Affects where you can send this.
PERFORMANCE MEASURE FLAG: YES// <-- Don't know what that does
ASK PATCH DESCRIPTION COPY: YES// <-- Affects a question to ask
when importing patches from mailman.
-----
Select SELECTED USERS FOR PACKAGE: MARSHALL,RICK// <-- This user
can see patches for this package. Just SEE! No keys necessary
  SELECTED USERS FOR PACKAGE: MARSHALL,RICK//
  TEST SITE DOMAIN: FORUM.OSEHRA.ORG//
Select SELECTED USERS FOR PACKAGE:
-----
Select SUPPORT PERSONNEL: EDWARDS,CHRISTOPHER// <-- This user is
the verifier. Must have AlAE PHVER.
  SUPPORT PERSONNEL: EDWARDS,CHRISTOPHER//
  VERIFY PERSONNEL: VERIFIER//
  VERIFIER'S DOMAIN: FORUM.OSEHRA.ORG//
Select SUPPORT PERSONNEL:
-----
Select DEVELOPMENT PERSONNEL: MARSHALL,RICK// ? <-- This user is
a developer. Must have AlAE DEVELOPER.
  Answer with DEVELOPMENT PERSONNEL
  Choose from:
    50          HABIEL,SAM
    51          MARSHALL,RICK

      You may enter a new DEVELOPMENT PERSONNEL, if you wish

  Answer with NEW PERSON NAME, or INITIAL, or SSN, or VERIFY
CODE, or
    NICK NAME, or SERVICE/SECTION, or DEA#, or VA#, or ALIAS,
or NPI
  Do you want the entire NEW PERSON List? n  (No)
```



```
Select DEVELOPMENT PERSONNEL: MARSHALL,RICK// 50  HABIEL,SAM  
DEVELOPMENT PERSONNEL: HABIEL,SAM//  
Select DEVELOPMENT PERSONNEL: 51  MARSHALL,RICK  
DEVELOPMENT PERSONNEL: MARSHALL,RICK//  
Select DEVELOPMENT PERSONNEL:  
-----
```

### *Typical workflow*

1. Developer emails patch to PM via XXX AT Q-PATCH.OSEHRA.ORG
2. Developer creates PM patch via Add a Patch and loads emailed patch. Status is now UNDER DEVELOPMENT. Second developer gets emailed that there is a patch ready to review.
3. Second developer reviews patch via Edit a Patch and then changes status to COMPLETED. Verifier gets emailed that there is a patch ready to review.
4. Verifier reviews patch via Release a Patch and then changes status to VERIFIED. Once verified, patch automatically gets emailed to the Network routing list configured inside the A1AE package.

## ***Chapter 10: Archiving, Purging, and Maintenance***

OSEHRA Patch Module 2.5 makes extensive use of email. As such, it will gradually accumulate data and consume a lot of disk space.

Disk space usage by Mailman must be monitored, and appropriate actions need to be taken to manage the system storage based on the size of the Mailman globals.

There are no current recommendations on purging data.

## ***Chapter 11: OSEHRA Patch Module Configuration for Sites***

### **PORT 25 WARNING**

Port 25 is frequently abused. If you are on a residential internet connections, it is very likely that you will not be able to send anything over port 25. If you try these instructions on a local machine at a residential address, you will fail. You must do this on a business connection. An easy way to obtain a business connections is by ssh'ing into a cloud server; e.g. AWS, Rackspace, or DigitalOcean.

If you set-up port 25 for your server, especially if you are holding patient data, make sure you follow the following steps:

1. Use XINETD rather than Mumps to listen to port 25.
2. Restrict XINETD to one process
3. Restrict XINETD to traffic from forum.osehra.org

See this page for more information:

[https://access.redhat.com/documentation/en-US/Red\\_Hat\\_Enterprise\\_Linux/3/html/Reference\\_Guide/s1-tcpwrappers-xinetd-config.html](https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/3/html/Reference_Guide/s1-tcpwrappers-xinetd-config.html)

### **Setting up your system in order to become a subscriber**

We won't go over configuring each item in detail as most of that should have been done by you or your agent when first setting up a VistA system.

#### ***Prerequisites***

- VISTA domain configuration is complete

- NULL device must work correctly
- Taskman must be running
- Mailman Background Filer is running
- DNS on VISTA must be functional
- Have at least one active user (i.e. must have access and verify code and can sign in)

If you are on GT.M, make sure that you fix bug with \$\$RETURN^%ZOSV so it won't steal your device.

To check that your domain configuration is complete in VISTA, all of these three calls must return the same result.

```
VISTA>W ^DD("SITE")
MEMPHIS.SMH101.COM
VISTA>W ^XMB("NETNAME")
MEMPHIS.SMH101.COM
VISTA>W $$GET1^DIQ(8989.3,1,.01)
MEMPHIS.SMH101.COM
```

## ***Steps***

### **Install Patch Client KIDS build**

Ask your Forum Contact for the Patch Client KIDS build and install it.

```
Select Installation <TEST ACCOUNT> Option: 1  Load a
Distribution
Enter a Host File: /home/sam/repos/patch-
module/KID/PATCH_CLIENT_2P5_150703B.KID

KIDS Distribution saved on Jul 03, 2015@21:27:34
Comment: Patch Client 2.5

This Distribution contains Transport Globals for the following
Package(s):
Build PATCH CLIENT 2.5 has been loaded before, here is when:
```

```
PATCH CLIENT 2.5    Install Completed
                    was loaded on Jul 03, 2015@14:03:45
OK to continue with Load? NO// YES

Distribution OK!

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

    PATCH CLIENT 2.5
Use INSTALL NAME: PATCH CLIENT 2.5 to install this Distribution.


    1    Load a Distribution
    2    Verify Checksums in Transport Global
    3    Print Transport Global
    4    Compare Transport Global to Current System
    5    Backup a Transport Global
    6    Install Package(s)
        Restart Install of Package(s)
        Unload a Distribution

Select Installation <TEST ACCOUNT> Option: 6  Install Package(s)
Select INSTALL NAME:    PATCH CLIENT 2.5    Loaded from
Distribution    7/3/15@
14:55:01
    => Patch Client 2.5    ;Created on Jul 03, 2015@21:27:34

This Distribution was loaded on Jul 03, 2015@14:55:01 with
header of
    Patch Client 2.5    ;Created on Jul 03, 2015@21:27:34
    It consisted of the following Install(s):
PATCH CLIENT 2.5
Checking Install for Package PATCH CLIENT 2.5

Install Questions for PATCH CLIENT 2.5

Incoming Files:

    11004    PATCH
Note:  You already have the 'PATCH' File.

    11007.1    DHCP PATCH STREAM
Note:  You already have the 'DHCP PATCH STREAM' File.
```

```

Incoming Mail Groups:

Enter the Coordinator for Mail Group 'A1AESTRMCHG': POSTMASTER//
Want KIDS to Rebuild Menu Trees Upon Completion of Install? NO//

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

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

DEVICE: HOME// ;P-OTHER;  TELNET

    Install Started for PATCH CLIENT 2.5 :
                Jul 03, 2015@14:55:10

Build Distribution Date: Jul 03, 2015

    Installing Routines:.....
                Jul 03, 2015@14:55:11

    Installing Data Dictionaries: ...
                Jul 03, 2015@14:55:11

    Installing PACKAGE COMPONENTS:

    Installing HELP FRAME..

    Installing SECURITY KEY..

    Installing INPUT TEMPLATE..

    Installing MAIL GROUP..

    Installing OPTION...
                Jul 03, 2015@14:55:11

    Running Post-Install Routine: ^A1AE2POS.

    Updating Routine file.....

    Updating KIDS files.....
    
```

```
PATCH CLIENT 2.5 Installed.  
Jul 03, 2015@14:55:21  
  
NO Install Message sent
```

## **Add a new domain, FORUM.OSEHRA.ORG to your DOMAIN**

### **(#4.2) File.**

This is a simple Fileman entry where you just need to enter the name.

## **Re-christen your domain, this time making**

### **FORUM.OSEHRA.ORG the parent**

```
GTM>D ^XMUDCHR  
  
      * * * *  WARNING  * * * *  
  
You are about to change the domain name of this facility  
in the MailMan Site Parameters file.  
  
Currently, this facility is named: FOIA.DOMAIN.EXT  
  
You must be extremely sure before you proceed!  
  
Are you sure you want to change the name of this facility? NO//  
YES  
Select DOMAIN NAME: FOIA.DOMAIN.EXT// HELIOPOLIS.SMH101.COM  
  
The domain name for this facility is now: HELIOPOLIS.SMH101.COM  
PARENT: DOMAIN.EXT// FORUM.OSEHRA.ORG  
TIME ZONE: EST// PST          PACIFIC STANDARD  
  
FORUM.OSEHRA.ORG has been initialized as your 'parent' domain.  
(Forum is usually the parent domain, unless this is a  
subordinate domain.)  
  
You may edit the MailMan Site Parameter file to change your  
parent domain.
```

We will not initialize your transmission scripts.

Use the 'Subroutine editor' option under network management menu to add your site passwords to the MINIENGINE script, and the 'Edit a script' option to edit any domain scripts that you choose to.

## Set-up Mailman Transmission Script to Forum

While it's possible to send email to Forum via a regular SMTP server, this will require more set-up on your side.

Instead, here we set-up a DIRECT Polling connection to Forum. Please note the Cache vs. GT.M section below. If you use another MUMPS Virtual Machine, please consult your FORUM contact for more information.

Use the menu option Edit a script [XMSCRIPTEdit]

```

Select Transmission Management <TEST ACCOUNT> Option: EDIT a
script
Select DOMAIN NAME: FORUM.OSEHRA.ORG                                0 msgs
PHYSICAL LINK DEVICE: NULL Stored internally as NULL
FLAGS: SP
SECURITY KEY:
VALIDATION NUMBER:
NEW VALIDATION NUMBER:
DISABLE TURN COMMAND: N  NO
RELAY DOMAIN:
Select TRANSMISSION SCRIPT: MAIN
Are you adding 'MAIN' as a new TRANSMISSION SCRIPT (the 1ST
for this DOMAIN)?
No// Y  (Yes)
PRIORITY: 1
NUMBER OF ATTEMPTS: 3
TYPE: SMTP  Simple Mail Transfer Protocol
PHYSICAL LINK / DEVICE: NULL Stored internally as NULL
NETWORK ADDRESS (MAILMAN HOST): FORUM.OSEHRA.ORG
OUT OF SERVICE:
TEXT:
No existing text
Edit? NO// YES
    
```



```

==[ WRAP ]==[ INSERT ]=====< TEXT
>=====[ <PF1>H=Help ]=====
O H="FORUM.OSEHRA.ORG",P=TCP/GTM
C TCPCHAN-SOCKET25/GTM

```

On Cache, you have to change the text above to say:

```

O H="FORUM.OSEHRA.ORG",P=TCP/IP-MAILMAN
C TCPCHAN-SOCKET25/CACHE/NT

```

## Test transmission script

This will test whether you can connect to Forum. This is a very important QA step.

Use menu option Play a script [XMSCRIPTPLAY]:

```

Select Transmission Management <TEST ACCOUNT> Option: Play a
script
Select DOMAIN NAME:      FORUM.OSEHRA.ORG                      0 msgs

  #  Script Name                Type      Priority
  --  -
  1  MAIN                      SMTP      1

15:10:44 To FORUM.OSEHRA.ORG from HELIOPOLIS.SMH101.COM on
7/3/2015
15:10:44 Script: MAIN
15:10:44 O H="FORUM.OSEHRA.ORG",P=TCP/GTM
15:10:44 Channel opened to FORUM.OSEHRA.ORG
15:10:44 Device 'NULL', Protocol 'TCP/GTM' (file 3.4)
15:10:44 C TCPCHAN-SOCKET25/GTM
15:10:44 Calling script 'TCPCHAN-SOCKET25/GTM' (file 4.6)
15:10:44 Xecuting 'L +^XMBX("TCPCHAN",XMHOST):99 E S
ER=1,XMER="CHANNEL IN USE"
'
15:10:44 Xecuting 'S X="ERRSCRIPT^XMRTCP",@^%ZOSF("TRAP")'
15:10:44 Xecuting 'S XMRPORT=$G(XMRPORT,25)'
15:10:44 Xecuting 'D CALL^%ZISTCP(XMHOST,XMRPORT) I POP S ER=1 L
-^XMBX("TCPCHAN
",XMHOST)'
15:10:44 Xecuting 'S XMHANG="D CLOSE^%ZISTCP"'

```

```

15:10:44 Xecuting 'U IO:(DELIMITER=$C(13))'
15:10:44 Look: Timeout=45, Command String='220'
15:10:46 R: 220
15:10:46 Beginning sender-SMTP service
15:10:46 R:  FORUM.OSEHRA.ORG MailMan 8.0 ready
15:10:46 S: NOOP
15:10:47 R: 250 OK
15:10:47 S: HELO HELIOPOLIS.SMH101.COM
15:10:47 R: 250 OK FORUM.OSEHRA.ORG [8.0,DUP,SER,FTP]
15:10:47 There are no messages in the queue to send
15:10:47 S: TURN
15:10:47 R: 502 FORUM.OSEHRA.ORG has TURN disabled.
15:10:47 S: QUIT
15:10:47 R: 221 FORUM.OSEHRA.ORG Service closing transmission
channel
15:10:47 Xecuting 'L -^XMBX("TCPHAN",XMHOST) K XMSIO'
15:10:47 Returning to script 'MAIN'.
15:10:47 Script complete.
15:10:47 0 sent, 0 received.

```

## Set-up Polling

In order to avoid having to open port 25 on your machine, it's easiest to talk to FORUM by having it store the email for you so that you can grab it; rather than having it send it to you via your port 25 over the Internet. To do that, set up the job XMPOLL to run every 120 seconds. Schedule this job via Schedule/Unschedule Options [XUTM SCHEDULE].

## Provide your Forum contact with your VISTA Domain Name.

This is the value of ^XMB("NETNAME").

```

VISTA>W ^XMB("NETNAME")
MEMPHIS.SMH101.COM

```

## FORUM CONTACT'S Tasks

*Add Domain to DOMAIN file.*

```
Select OPTION: ENTER OR EDIT FILE ENTRIES

Input to what File: MAIL GROUP// DOMAIN      (1095 entries)
EDIT WHICH FIELD: ALL//

Select DOMAIN NAME: MEMPHIS.SMH101.COM
Are you adding 'MEMPHIS.SMH101.COM' as a new DOMAIN (the
1096TH)? No// Y
(Yes)
```

*Add Domain to 11007.2 file*

```
Select OPTION: ENTER OR EDIT FILE ENTRIES

Input to what File: DOMAIN// 11007.2  PATCH STREAM HISTORY
                                     (3 entries)
EDIT WHICH FIELD: ALL//

Select PATCH STREAM HISTORY DOMAIN: MEMPHIS.SMH101.COM
Are you adding 'MEMPHIS.SMH101.COM' as
a new PATCH STREAM HISTORY (the 4TH)? No// Y  (Yes)
ACTIVE PATCH STREAM: ^
```

## Set-up Change Request Mail Group

You MUST add the server option S.A1AENEWSTRM to the mail group A1AESTRMCHG. Optionally, you should add an active user so that they can see the mail messages going back and forth.

```
Select MAIL GROUP NAME:      A1AESTRMCHG
NAME: A1AESTRMCHG//
```

```
Select MEMBER:
DESCRIPTION:
Mailgroup to receive email message if the site's patch stream is
changed. This mailgroup notifies local users AND sends email
out through
the MEMBERS - REMOTE server S.A1AENEWSTRM to notify FORUM.

    Edit? NO//
TYPE: public//
ORGANIZER: USER,ONE//
COORDINATOR: POSTMASTER//
Select AUTHORIZED SENDER:
ALLOW SELF ENROLLMENT?:
REFERENCE COUNT: 3//
LAST REFERENCED: JUL 3,2015//
RESTRICTIONS:
Select MEMBER GROUP NAME:
Select REMOTE MEMBER: S.A1AENEWSTRM
    Are you adding 'S.A1AENEWSTRM@HELIOPOLIS.SMH101.COM' as
    a new REMOTE MEMBER (the 1ST for this MAIL GROUP)? No// Y
(Yes)
Select REMOTE MEMBER:
```

## Ask for a stream change using the standalone menu option

### A1AE CHANGE SITE SUBSCRIPTION

We are finally at the point where we can ask to change the patch stream subscription. Go ahead and follow the prompts below to change subscription.

Before you invoke this menu option, you need to hold the key A1AE MGR. Give yourself that key, then run the menu option:

```
Select OPTION NAME:      A1AE CHANGE SITE SUBSCRIPTION      CHANGE
SITE PATCH SUBSC
RIPTION
CHANGE SITE PATCH SUBSCRIPTION

Select DHCP PATCH STREAM NAME: ?
    Answer with DHCP PATCH STREAM PATCH NUMBER START, or NAME,
or
    ABBREVIATION, or SUBSCRIPTION DATE
```

```
Choose from:
1           FOIA VISTA
10001       OSEHRA VISTA

Select DHCP PATCH STREAM NAME: OSEHRA VISTA
SUBSCRIPTION: NO// YES

Confirm desire to switch PATCH SUBSCRIPTION? N// YES

*** Forum is being notified of your request
to change your site's SUBSCRIPTION to
    OSEHRA VISTA***
??
    Only editable by Forum Action
    Choose from:
        1           YES
        0           NO
SUBSCRIPTION: NO//
```

Once you do that, you can check in your mailbox (provided that you set-up yourself as part of the mail group A1AESTRMCHG) for the message that got sent to Forum:

```
MailMan message for USER,ONE
Printed at MEMPHIS.SMH101.COM 07/05/15@15:08
Subj: MEMPHIS.SMH101.COM:::SUBSCRIPTION CHNG REQUEST  [#1]
07/05/15@03:06
6 lines
From: POSTMASTER In 'IN' basket. Automatic Deletion Date: Oct
13, 2015
Page 1
-----
SERVER:::MEMPHIS.SMH101.COM
ACTIVE SUBSCRIPTION:::1
DATE SUBSCRIPTION ACTIVE:::
REQUESTOR DUZ:::1
SWITCH TO SUBSCRIPTION:::10001
SWITCH REQUEST DATE:::3150705.030648

Local Message-ID: 1@MEMPHIS.SMH101.COM (4 recipients)

POSTMASTER          Last read: 07/05/15@03:06 [First read:
07/05/15@03:06]
USER,ONE             Last read: 07/05/15@15:08 [First read:
07/05/15@15:08]
G.A1AEFMSC@FORUM.OSEHRA.ORG Sent: 07/05/15@03:25 Time: 2 seconds
```

S.A1AENEWSTRM	Message ID: 36563@FORUM.OSEHRA.ORG Forwarded by: POSTMASTER 07/05/15@03:06 Date: 07/05/15@03:06 Status: Served (hand off done)
---------------	--

## FORUM Administrator turn to approve

Once you have sent the message, the FORUM administrator needs to approve your site to receive new streams. They do that by editing the subscription field in file PATCH STREAM HISTORY (#11007.2):

When a message is received from your site, here is what the FORUM user should see:

Output from what File: PATCH STREAM HISTORY//      (3 entries)	
Select PATCH STREAM HISTORY DOMAIN:      HELIOPOLIS.SMH101.COM	
Another one:	
Standard Captioned Output? Yes//      (Yes)	
Include COMPUTED fields: (N/Y/R/B): NO//      - No record number (IEN), no Computed Fields	
DOMAIN: HELIOPOLIS.SMH101.COM	ACTIVE PATCH STREAM:
FOIA VISTA	
STREAM CHANGE STATUS: WAITING FORUM APPROVAL	
DATE STREAM CHANGE REQUESTED: JUL 4,2015@20:47:49	
ACTIVE SUBSCRIPTION: 1	SERVER:
HELIOPOLIS.SMH101.COM	
REQUESTOR DUZ: 1	SWITCH TO SUBSCRIPTION:
10001	
SWITCH REQUEST DATE: 3150704.204749	
MOST RECENT MSG NUMBER: HELIOPOLIS.SMH101.COM:::SUBSCRIPTION	
CHNG REQUEST	

To approve, the FORUM user edits the "STREAM CHANGE STATUS". An approval message is sent to the client.

Select OPTION: ENTER OR EDIT FILE ENTRIES
Input to what File: PATCH STREAM HISTORY//      (3 entries)

```
EDIT WHICH FIELD: ALL//

Select PATCH STREAM HISTORY DOMAIN:      HELIOPOLIS.SMH101.COM
DOMAIN: HELIOPOLIS.SMH101.COM//
ACTIVE PATCH STREAM: FOIA VISTA//
DATE PATCH STREAM ACTIVE:
INFORMATIONAL PATCHES REQUIRED:
INFORMATIONAL PATCHES SENT:
STREAM CHANGE STATUS: WAITING FORUM APPROVAL// ?
    Choose from:
        0          NO REQUESTS
        1          IN REVIEW
        2          WAITING FORUM APPROVAL
        3          CHANGE CONFIRMED
STREAM CHANGE STATUS: WAITING FORUM APPROVAL// 3  CHANGE
CONFIRMED One moment. S
ending email to Client.
Select DATE STREAM CHANGE REQUESTED: JUL 4,2015@20:47:49
// ^
```

After approval, the FORUM administrator needs to add the G.PATCHES mail group on your server so that it can receive anything that gets released to the remote recipients of the A1AE PACKAGE RELEASE mail group.

For example:

```
Select REMOTE MEMBER: XXXXXXXX@OSEHRA.ORG//
G.PATCHES@HELIOPOLIS.SMH101.COM
    Are you adding 'G.PATCHES@HELIOPOLIS.SMH101.COM' as
        a new MEMBERS - REMOTE (the 6TH for this MAIL GROUP)? No// Y
(Yes)
Select REMOTE MEMBER:
```

At this point, you are approved and you are subscribed to the OSEHRA Forum stream.

For completeness, here are the messages that are actually sent during the approval process.

First, this message is received.

```

Subj: SUBSCRIPTION CHNG APPROVED  [#4] 5 Jul 2015 07:28:16 -0400
(EDT)
7 lines
From: <POSTMASTER@FORUM.OSEHRA.ORG>  In 'IN' basket.
Automatic Deletion Date: Oct 12, 2015@20:01  Page 1
-----
SERVER::MEMPHIS.SMH101.COM
ACTIVE SUBSCRIPTION::1
DATE SUBSCRIPTION ACTIVE::
REQUESTOR DUZ::1
SWITCH TO SUBSCRIPTION::10001
SWITCH REQUEST DATE::3150705.030648
APPROVED::YES

```

Then, your VISTA instance echoes back to FORUM that it got this message:

```

Subj: SUBSCRIPTION CHNG COMPLETED  [#5] 07/05/15@03:28  21 lines
From: POSTMASTER  In 'IN' basket.  Automatic Deletion Date: Oct
13, 2015
Page 1
-----
Received: from FORUM-A.OSEHRA.ORG by MEMPHIS.SMH101.COM
(MailMan/8.0 TCP/GTM) i
d 4 ; 5 Jul 2015 03:28:20 -0800 (PST)
Received: from FORUM.OSEHRA.ORG (localhost.localdomain
[127.0.0.1])
by forum-a.osehra.org (Postfix) with SMTP id 5ED5D13E13C
for <G.A1AESTRMCHG@MEMPHIS.SMH101.COM>; Sun,  5 Jul 2015
07:28:17 +0000 (UTC)
Subject: SUBSCRIPTION CHNG APPROVED
Date: 5 Jul 2015 07:28:16 -0400 (EDT)
Message-ID: <36566.3150705@FORUM.OSEHRA.ORG>
From: <POSTMASTER@FORUM.OSEHRA.ORG>
Expiry-Date: 13 Oct 2015 00:00:00 -0400 (EDT)
To: G.A1AESTRMCHG@MEMPHIS.SMH101.COM

SERVER::MEMPHIS.SMH101.COM
ACTIVE SUBSCRIPTION::1
DATE SUBSCRIPTION ACTIVE::
REQUESTOR DUZ::1
SWITCH TO SUBSCRIPTION::10001
SWITCH REQUEST DATE::3150705.030648
APPROVED::YES
FORUM ACTION EDIT::SUCCESSFUL
NEW SUBSCRIPTION DATE::3150705.03282
NEW ACTIVE SUBSCRIPTION::10001

```



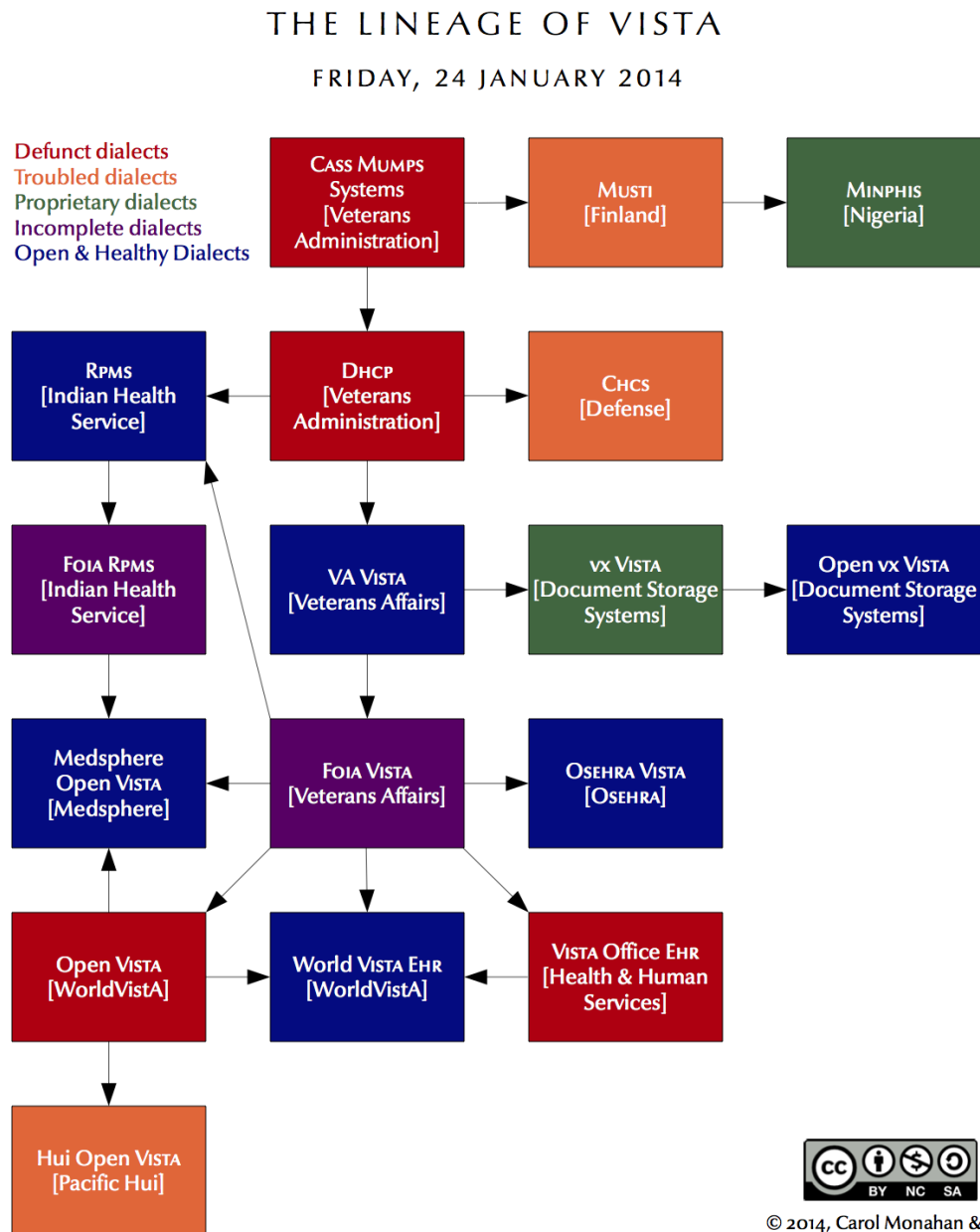
Forum Sends back another message saying that it got the last confirmation.

```
Subj: SUBSCRIPTION CHNG CONFIRMED  [#6] 5 Jul 2015 07:28:28
-0400 (EDT)
11 lines
From: <POSTMASTER@FORUM.OSEHRA.ORG>  In 'IN' basket.
Automatic Deletion Date: Oct 12, 2015@20:01    Page 1    *New*
-----
SERVER::MEMPHIS.SMH101.COM
ACTIVE SUBSCRIPTION::1
DATE SUBSCRIPTION ACTIVE::
REQUESTOR DUZ::1
SWITCH TO SUBSCRIPTION::10001
SWITCH REQUEST DATE::3150705.030648
APPROVED::YES
FORUM ACTION EDIT::SUCCESSFUL
NEW SUBSCRIPTION DATE::3150705.03282
NEW ACTIVE SUBSCRIPTION::10001
SUBSCRIPTION CHANGE CONFIRMED::3150705.03282
```

## Steps after approval

The FORUM administrator needs to place your G.PATCHES@NAME mailgroup into the mailgroup A1AE PACKAGE RELEASE on FORUM. You will receive approved patches from FORUM there.

# Appendix A: The Lineage of VistA



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## Appendix B: Patch Description Boilerplate

### Executive Summary:

=====

[write one- or two-sentence executive summary of what this patch is about, what it solves or adds overall]

### Source, Copyright, & Licensing:

=====

This patch to [VISTA dialect, application, and version] was produced in the [name of development environment] by [principal developer(s)] on [date principal development ended] and released through [name of Forum system]. See User Information below for more details.

[Use following or similar text if patch includes copyrighted materials: Copyright (year) by (individual(s) or agency).]

[Use following or similar text if patch is in the public domain: Released into the public domain by (VA/IHS/other).]

[Use following or similar text if patch includes publicly licensed materials: Released under the (name and version of public license): (link to license).]

[Use following or similar text if patch includes privately licensed materials: This patch contains privately licensed content. Only use if you have an agreement with (name of license holder).]

### Functionality:

=====

[first write patch overview or background]

[then number each discrete thing it fixes or adds (functionally, not technically) and describe the before-and-afters]

[if these changes derive from support tickets or e-mails, list them here. You might also list the support tickets or e-mails along with each numbered item above that addresses it.]

## OSEHRA Patch Module 2.5 Technical Manual Appendix B: Patch Description Boilerplate

```
Package Elements:
=====
[For each package element added, removed, or changed, identify
it, briefly summarize the change technically, and tie it back to
the functional changes above it goes with. Group the
descriptions by package-element type (files, fields, cross-
references, templates, options, remote procedures, protocols,
mail groups, security keys, routines, documentation, etc.)]

[at the end of the section on routines (if any), include this:]

Routine Versioning:

The second line of each of these routines now looks like:
[insert sample second line]
[in place of patch list, insert **[Patch List]**]

The following checksums can be checked with CHECK1^XTSUMBLD:

Routine      Before      After      Patch List
-----
[Name]      [Before]      [After]      **[Patch List]**

Documentation:

[for any changed documentation, name it, describe it, and say
where to get it]

Test Sites:
=====
[list alpha and beta test sites. Make sure you have tested the
patch in production before submitting it for verification,
certification, and release.]

Compliance:
=====
This software complies with the VA MUMPS Programming Standards
and
Conventions (version 3 April 2007). [make sure it is]

This software is 508 compliant. [make sure it is]

Blood Bank Clearance - [if VA, date of clearance]
EFFECT ON BLOOD BANK FUNCTIONAL REQUIREMENTS: Patch [patch ID]
contains changes to a package referenced in VHA OI SEPG SOP 192-
```

023 Review of VISTA Patches for Effects on VISTA Blood Bank Software. This patch does not alter or modify any VistA Blood Bank software design safeguards or safety critical elements functions. [first sentence only applies if the application in question is referenced in VHA OI SEPG SOP 192-023, so find out. If not, cut first sentence but keep second. Also, make sure second sentence is true.]

RISK ANALYSIS: Changes made by patch [patch ID] have no effect on Blood Bank software functionality, therefore RISK is none. [make sure it is]

[Custom tailor the installation instructions until they precisely describe the necessary steps. Wherever atypical instructions need to be added, add a capture of the actual dialog users can expect to see. Generally, these instructions are different for typical patches than for deep infrastructure patches, because of the latter's invasiveness. Here are two sample boilerplates. Remember, your patch may require some third combination of instructions; for example, if it is a typical patch but includes a long list of affected options or protocols, or deep conversions of the application's database, it might be better to inhibit logons or to install the patch with users off the system.]

Installation Instructions: [for typical patches]  
=====

Before installation . . . [if there are any such tasks that need to be done]

This patch can be loaded with users on the system.

Install Time - less than [max time to follow install, end to end]

[if patch includes an Environment Check, insert & complete the following:] The Environment Check routine XXX will perform the following task:

[if patch includes a Pre-install Routine, insert & complete the following:] The Pre-installation routine XXX will perform the following tasks:

1. LOAD PATCH DISTRIBUTION

If your patch distribution arrived in the form of an e-mail

message, choose the Packman message containing this patch and invoke Packman's

INSTALL/CHECK MESSAGE option to load the distribution.

If it arrived in the form of a host file, choose KIDS's Load a Distribution option (see step 2, below) to load it.

## 2. START UP KIDS

Start up the Kernel Installation and Distribution System Menu

[XPD MAIN]:

Edits and Distribution ...

Utilities ...

Installation ...

Select Kernel Installation & Distribution System Option:  
INSTallation

Load a Distribution

Print Transport Global

Compare Transport Global to Current System

Verify Checksums in Transport Global

Install Package(s)

Restart Install of Package(s)

Unload a Distribution

Backup a Transport Global

Select Installation Option:

## 3. Select Installation Option:

NOTE: The following are OPTIONAL - (When prompted for the INSTALL NAME, enter [patch ID]):

a. Backup a Transport Global - This option will create a backup message of any routines exported with this patch. It will not backup any other changes such as DDs or templates.

b. Compare Transport Global to Current System - This option will allow you to view all changes that will be made when this patch is installed. It compares all components of this patch (routines, DDs, templates, etc.).

c. Verify Checksums in Transport Global - This option will allow you to ensure the integrity of the routines that are in the transport global.

```

4.  Select Installation Option: Install Package(s)

    ** This is the step to start the installation of this KIDS
patch **

    a.  Choose the Install Package(s) option to start the patch
install and enter [patch ID] at the INSTALL NAME prompt. As part
of the Environment Check routine, the message below will display

    [if patch includes an Environment Check, insert the following:]
Will first run the Environment Check Routine, [routine name]

    [if patch distributes options, include the following
instruction:]
    b.  When prompted 'Want KIDS to Rebuild Menu Trees Upon
Completion of Install? NO//'  answer YES

    c.  When prompted 'Want KIDS to INHIBIT LOGONs during the
install? NO//'  answer NO

    d.  When prompted 'Want to DISABLE Scheduled Options, Menu
Options, and Protocols? NO//'  answer [YES if the package
elements that this patch changes will affect one or more options
or protocols; else NO. Include steps E and F below only if YES]

    e.  When prompted "Enter options you wish to mark as "Out of
Order":", enter the following option(s):

        [list menu text and name of each option to disable. You
should disable any options affected by the package elements that
this patch changes. If none are affected, then instead of "enter
the following option(s):" above insert "press return." ]

    f.  When prompted "Enter protocols you wish to mark as 'Out
of Order':", enter the following protocol(s):

        [list menu text and name of each protocol to disable.
You should disable any protocols affected by the package
elements that this patch changes. If none are affected, then
instead of "enter the following protocol(s):" above insert
"press return." ]

    g.  When prompted "Delay Install (Minutes): (0-60): 0//",
enter the number of minutes to delay installation.

    [if patch includes a Pre-install Routine, insert & complete the
following:]

```

```
The Pre-installation routine [routine name] will perform the
following tasks:

<additional instructions, if needed>

[if patch includes a Post-install Routine, insert & complete
the following:] The Post-installation routine [routine name]
will perform the following tasks:

After installation, . . . [if there are any such tasks that
need doing]

Installation Instructions: [for deep infrastructure patches]
=====

Before installation . . . [if there are any such tasks that
need to be done]

** Although queuing of this patch is allowed, it is HIGHLY
recommended that ALL users be off the system and VISTA
background jobs be STOPPED before this patch is installed.
Failure to do so may result in 'source routine edited' errors
during a database update. Edits may be lost and records may be
left in an inconsistent state. An error that occurs before a
cross-reference is executed, for example, may lead to corrupted
data or hard errors in the future. **

Also, please make sure that no other patches are installed
until installation for this patch has completed.

The following installation instructions are based upon the
premise that the installer has heeded the above warning.

Install Time - less than [max time to follow install, end to
end]

[if patch includes an Environment Check, insert & complete the
following:] The Environment Check routine XXX will perform the
following task:

[if patch includes a Pre-install Routine, insert & complete the
following:] The Pre-installation routine XXX will perform the
following tasks:

1.  LOAD PATCH DISTRIBUTION

    If your patch distribution arrived in the form of an e-mail
```



message, choose the Packman message containing this patch and invoke Packman's INSTALL/CHECK MESSAGE option to load the distribution.

If it arrived in the form of a host file, choose KIDS's Load a Distribution option (see step 2, below) to load it.

## 2. START UP KIDS

Start up the Kernel Installation and Distribution System Menu

[XPD MAIN]:

Edits and Distribution ...  
Utilities ...  
Installation ...

Select Kernel Installation & Distribution System Option:  
INSTallation

Load a Distribution  
Print Transport Global  
Compare Transport Global to Current System  
Verify Checksums in Transport Global  
Install Package(s)  
Restart Install of Package(s)  
Unload a Distribution  
Backup a Transport Global

Select Installation Option:

## 3. Select Installation Option:

NOTE: The following are OPTIONAL - (When prompted for the INSTALL NAME, enter [patch ID]):

a. Backup a Transport Global - This option will create a backup message of any routines exported with this patch. It will not backup any other changes such as DDs or templates.

b. Compare Transport Global to Current System - This option will allow you to view all changes that will be made when this patch is installed. It compares all components of this patch (routines, DDs, templates, etc.).

c. Verify Checksums in Transport Global - This option will allow you to ensure the integrity of the routines that are in the transport global.

4. Select Installation Option: Install Package(s)

**\*\*This is the step to start the installation of this KIDS patch:**

a. Choose the Install Package(s) option to start the patch install and enter [patch ID] at the INSTALL NAME prompt. As part of the Environment Check routine, the message below will display

[if patch includes an Environment Check, insert the following:]  
Will first run the Environment Check Routine, [routine name]

[if patch distributes options, include the following instruction:]

b. When prompted 'Want KIDS to Rebuild Menu Trees Upon Completion of Install? NO//' answer YES

c. When prompted 'Want KIDS to INHIBIT LOGONs during the install? NO//' answer NO

d. When prompted 'Want to DISABLE Scheduled Options, Menu Options, and Protocols? NO//' answer NO

[if patch includes a Pre-install Routine, insert & complete the following:] The Pre-installation routine [routine name] will perform the following tasks:

<additional instructions, if needed>

[if patch includes a Post-install Routine, insert & complete the following:] The Post-installation routine [routine name] will perform the following tasks:

After installation, . . . [if there are any such tasks that need doing]

**ASSOCIATED PATCHES:**

=====

[list all required patches here, e.g.]

- [patch name]

# Glossary

Application	An administrative division of VistA that automates part or all of one hospital or clinical service. Pharmacy and Nursing are examples of applications.
Application Version	A complete new release of an application. Versions are numbered sequentially.
Build	See KIDS Build
Checksum	A number unique to any given version of a software element. Even a small change to the software will change the checksum, so checksums are used to detect changes and verify a particular version.
Dialect	See VistA Dialect
Distribution	See KIDS Distribution
FOIA	Freedom of Information Act. The term “FOIA” can refer to the Act itself, or to a request sent to the government under the auspices of the Act.
Forum	A VistA system used as the hub of an organization’s VistA software lifecycle. VA and OSEHRA each have their own Forums.
Gerrit	A code-review system for use with a repository such as Github.
Git	A version-control system.

Github	A platform that hosts repositories using the Git system.
Host-File Format	A file-based format for a KIDS distribution. It consists of two parts: the KIDS file and the text file.
KIDS	The Kernel Installation and Distribution System. KIDS is the primary method for preparing a patch for the OSEHRA Patch Module, as well as the mechanism for installing patches.
KIDS Build	The “manifest” of a KIDS distribution, which lists all the components included in the distribution.
KIDS Distribution	A host file or Packman message containing a software update and associated tools and conversions for applying it.
KIDS File	In a host-file format, the portion of the file containing the software.
KIDS Install	A record describing what happened during each installation of a KIDS distribution at a specific site.
Local Modification	A change to VistA made for a specific facility or organization. Local modifications are necessary in VistA, but result in changes to checksums that make version control more challenging.
Mailman	VistA’s native email system. Patches can be distributed using Mailman’s Packman module.
Namespace	A convention for naming VistA package elements. Each developer or organization is assigned a

	namespace, which is a unique character string, to be used use in naming routines, options, and other package elements. Namespacing helps keep similar elements from different developers distinct and easily identifiable.
Numberspace	Similar to a namespace, a numberspace is a unique numeric string assigned to a developer or organization. Numberspaces are used for VistA elements that have numbers rather than names.
Package	A distribution of a new version of an application.
Packman	A module of Mailman used to ship patches and other software.
Packman Format	A format for a KIDS distribution designed for use with Packman.
Packman Message	Any email message that contains a KIDS distribution in Packman format.
Patch	Any small change or update intended for installation in an active VistA system. Most patches can be installed with minimal disruption to the system or its users.
Patch Completer	The developer who reviews the patch developer's work, then updates the status of the patch in the OSEHRA Patch Module to "completed."
Patch Developer	Person who initially entered the information on the patch into the OSEHRA Patch Module. That person will be listed as the "developer" in the OSEHRA Patch Module, whether they did any actual development work or not.

Patch ID	A multi-part identification number for a patch, which includes the application namespace, the application version number, and the patch number.
Patch Message	An email message that contains a patch description and a Packman-format KIDS distribution. This is the default method for the OSEHRA Patch Module to distribute patches.
Patch Number	Unique number given to a patch, as it relates to the specific application and version. Patch numbers are numberspaced, so patches from different sources can be immediately distinguished.
Patch Reviewer	In secondary development, the developer who reviews the released patch to determine what kind of secondary development might be needed.
Patch Stream	The series of patches developed and released for a specific application or dialect.
Patch Subscriber	A person or organization who has signed up to receive a particular patch stream.
Patch Verifier	Specialist who confirms that the patch is functionally complete, and meets all standards. Verifiers make the decision to release the patch.
Primary Developer	The person or team who initiates the patching process and releases a new patch.
Primary Development	The actions involved in creating and distributing a new patch.

Repository	Online electronic storage which houses reference versions of a specific software. Generally, one version is designated as the “official” version. OEHRA provides repositories for OEHRA VistA and FOIA VistA.
Required Patch	A prerequisite patch. All patches should list their required patches—that is, their prerequisites—for installation.
Secondary Developer	The person or team who re-purposes a released patch for their VistA dialect.
Secondary Development	The actions involved in re-purposing a patch for a different VistA dialect.
Sequence Number	Unique number assigned when a patch is verified. It determines the default order in which patches should be installed.
Text File	In host-file format, the portion of the file that contains the patch description.
Version	See Application Version
Version Control	A system or methodology for ensuring that all software within a given organization is the same version.
Version Number	The sequential number of the current application version. Each VistA application has its own version number. For example, the current version of Laboratory is 5.2, while the current version of Fileman is 22.2.
VistA Dialect	A unique, stable version of VistA supported by a

	specific vendor. Popular VistA dialects include OSEHRA VistA, vxVistA (Document Storage Systems), Medsphere Open VistA and WorldVistA EHR.
VistA Service Pack	A bundle of VistA packages and patches, which can be used to upgrade an existing VistA system.
VistA Snapshot	A copy of an existing VistA system. A VistA snapshot is most commonly used to clone a new VistA instance.