



**DUPLICATE RECORD MERGE:
PATIENT MERGE
TECHNICAL MANUAL**

Version 7.3

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Preface

This is the **Technical Manual** for the Veterans Health Information Systems and Technology Architecture (VistA) Duplicate Record Merge: Patient Merge application. It is designed to provide you, the Site Manager/Information Resource Management (IRM) Service Chief, the necessary information for use in the technical operation of the software. It is intended for use by technical computer personnel and not designed for use by the typical end user.

The Patient Merge component of the Duplicate Record Merge software will enhance the ability to associate appropriate data with a single patient identifier. It provides the tools necessary to review patient records that have a high likelihood of being duplicates, and merge verified duplicates.

Revision History

Date	Description	Author
11/2009	Final updates to documentation implementing feedback from Product Support (PS) for national release.	Susan Strack, Oakland OIFO; Danila Manapsal, Oakland OIFO, Project Manager
08/2009	<p>Kernel Toolkit Patch XT*7.3*113 changes the KERNEL Duplicate Resolution System [XDR MAIN MENU] options in support of the new PSIM Probabilistic Search. This patch is related to VistA patch MPIF*1.0*52 and MPI patch MPI*1.0*62.</p> <ul style="list-style-type: none"> Search for Potential Duplicate Record Pairs: <p>As of Kernel Toolkit Patch XT*7.3*113, the PATIENT file (#2) will no longer be selectable from the Duplicate Record Merge Search option. Instead, the Initiate Probabilistic Search Implementation in Person Service Identity Management (PSIM) will perform searches for duplicate patients. Although users with access to the Duplicate Record Merge menus will still be allowed to add records to the DUPLICATE RECORD file, this file will mainly be populated when Initiate identifies patient pairs as matches or potential matches. In the case of potential matches, HC IdM will use a new PSIM (IMDQ) Toolkit option to review the patient traits and select the Integration Control Number to retain. This will cause the pair of potential matches to be added as a record to your local DUPLICATE RECORD file.</p> <p>After patient pairs are added to the DUPLICATE RECORD file, the review, verification, approval and merge processes will continue to be performed as before.</p> <ul style="list-style-type: none"> New routine, XDRDADDS, and remote procedure call, XDR ADD POTENTIAL PATIENT DUP <p>Both will be called from the Master Patient Index (MPI) system to add records to the local VistA DUPLICATE RECORD (#15) file, as potential matches are identified.</p> <ul style="list-style-type: none"> New routine, XDRDEFLG, and remote procedure call, XDR UPD SUPPR EMAIL <p>The remote procedure call is called from Healthcare Identity Management (HC IdM) options to remotely set the field SUPPRESS NEW DUP EMAIL (#99) on the DUPLICATE RESOLUTION file (#15.1)</p> <ul style="list-style-type: none"> Modified Routines <p>XDRDPICK : If the status on a pair of patient records is changed to VERIFIED, NOT A DUPLICATE, and if this VistA system is attached to</p>	<p>Master Patient Index (MPI) development team.</p> <p>Oakland, CA OIFO:</p> <ul style="list-style-type: none"> Project Manager—Danila Manapsal Lead Developer—Tami Winn Technical Writer—Susan Strack

	<p>the MPI, a new routine, MPIFDNL, calls a remote procedure, MPI DNLADD UPD, on the MPI server, to add a record to the MPI DO NOT LINK (#985.28) file.</p> <p>-XDRDEDT: If the status on a patient pair is changed from VERIFIED, NOT A DUPLICATE back to POTENTIAL DUPLICATE, UNVERIFIED, and if the VistA system is attached to the MPI, a new routine, MPIFDNL, calls a remote procedure MPI DNL ADD UPD on the MPI server to inactivate the record on the MPI DO NOT LINK (#985.28) file.</p> <ul style="list-style-type: none"> • Updated Options—Utilities [XDR UTILITIES MENU]: <p>-Add Verified Duplicate Pair [XDR ADD VERIFIED DUPS] This option will no longer calculate a score on patient pairs.</p> <p>-Check Pair of Records to see if Duplicates [XDR CHECK PAIR] This option will no longer be available for patients.</p> <p>-Find Potential Duplicates for an Entry in a File [XDR FIND POTENTIAL DUPLICATES] This option will no longer be available for patients.</p> <ul style="list-style-type: none"> • Updated Options—Manager Utilities [XDR MANAGER UTILITIES] <p>-Purge Duplicate Record File [XDR PURGE] This option will no longer be available for patients.</p> <p>-Start/Halt Duplicate Search [XDR SEARCH ALL] This option will no longer be available for patients.</p> <p>ClearCase Requests/CodeCRs that cover updates to this manual:</p> <ul style="list-style-type: none"> • MPI_CR1072(MPI_CodeCR1384)—3.2.1.4 - MPIF API to capture the "VERIFIED, NOT A DUPLICATE" action. • MPI_CR1068(MPI_CodeCR1387)—3.2.1 - Duplicate record tools • MPI_CodeCR1436—3.2.1.2 - KERNEL API to create POTENTIAL DUPLICATE, UNVERIFIED pairs 	
12/06/04	Implemented new conventions for displaying TEST data. See Orientation section for details.	Susan Strack, Oakland OIFO
04/1998	Initial release via PATCH XT*7.3*23	Susan Strack, San Francisco ISC; Joel Ivey, San Francisco ISC; Raul Mendoza, San Francisco ISC

Table i. Revision History

Patch History

For the current patch history related to this software, please refer to the Patch Module (i.e., Patch User Menu [A1AE USER]) on FORUM.

Revision History

Contents

- Revision History v
- Orientation xi
- 1. Introduction 1-1
- Product Description 1-1
- 2. Implementation and Maintenance..... 2-1
 - Site Parameters 2-2
 - Ancillary Service Site Parameters 2-4
 - New Browser Setup: XDRBROWSER1 2-7
 - New Browser Setup: XDRBROWSER1 (OpenM) 2-8
- 3. Routine Descriptions 3-1
- 4. File List..... 4-1
 - Files and Globals 4-1
 - Templates 4-2
 - Form 4-2
 - Remote Procedures 4-3
- 5. Exported Options 5-1
 - Menus and Options..... 5-1
 - Menu and Option Diagrams 5-7
 - Options No Longer Referenced in Duplicate Resolution Utilities 5-8
 - Security Keys 5-8
- 6. Archiving and Purging..... 6-1
 - Archiving..... 6-1
 - Purging 6-1
- 7. Callable Routines..... 7-1
- 8. External Relations 8-1
 - Platform Requirements..... 8-1
 - Database Integration Agreements (DBIA) 8-2
- 9. Internal Relations..... 9-3
 - Namespace..... 9-3
 - File Numbers 9-3
 - Mail Groups..... 9-3

Contents

10. Package-wide Variables..... 10-1

11. Software Product Security 11-1

 Security Features 11-1

12. How to Generate Online Documentation..... 12-1

 Retrieving On-Line Help Using Question Marks..... 12-1

 Print Options File 12-1

 List File Attributes 12-1

 Inquire to Option File..... 12-1

GlossaryGlossary-1

Appendix A..... Appendix A-1

 Duplicate Tests and Scores: Technical Description..... Appendix A-1

 Initial Screen for Potential Duplicates Appendix A-1

 Further Testing of Potential Duplicates Appendix A-2

 Tests for Name Appendix A-2

 Tests for Social Security Number Appendix A-2

 Tests for Claim Number Appendix A-3

 Tests for Dates..... Appendix A-3

 Tests for Mother's Maiden Name Appendix A-3

 Tests for Gender Appendix A-4

Orientation

How to Use this Manual

This manual is intended for use in conjunction with the Duplicate Record Merge: Patient Merge application. Items included in the release of Patient Merge, such as routines and files, are briefly described for quick reference.

To gain a comprehensive understanding of this application, read the *Duplicate Record Merge: Patient Merge User Manual* in conjunction with using the application.

This manual uses several methods to highlight different aspects of the material. "Snapshots" of computer dialogue (or other on-line displays) are shown in a non-proportional font and enclosed within a box. User responses to on-line prompts are highlighted in boldface. Boldface is also used to highlight a descriptive word or sentence. The Return or Enter key is illustrated by the symbol <RET> when displayed in computer dialogue and is included in examples only when it may be unclear to the reader that such a keystroke must be entered. The following example indicates that you should type two question marks followed by pressing the Return key when prompted to select an option:

```
Select Primary Menu option: ??
```

Figure 1-1 - How to access online help

M code, variable names, acronyms, the formal name of options, actual field names, file names, and security keys (e.g., XDR, XDRMGR, and DG ELIGIBILITY) are represented with all uppercase letters.

Conventions for displaying TEST data in this document are as follows:

- The first three digits (prefix) of any Social Security Numbers (SSN) will begin with either "000" or "666".
- Patient and user names will be formatted as follows: [Application Name]PATIENT,[N] and [Application Name]USER,[N] respectively, where "Application Name" is defined in the Approved Application Abbreviations document, located on the [web site] and where "N" represents the first name as a number spelled out and incremented with each new entry. For example, Duplicate Record Merge test patient and user names would be documented as follows: MERGEPATIENT,ONE; MERGEPATIENT,TWO; MERGEPATIENT,THREE; etc. and MERGEUSER,ONE; MERGEUSER,TWO; MERGEUSER,THREE; etc.



NOTE: The list of Approved Application Abbreviations can be found at the following Web site:

http://vista.med.va.gov/iss/strategic_docs.asp#sop

Who Should Read this Manual?

This manual was written with many job functions in mind.

Since each site will determine who will control the patient merge process, what considerations are followed, how the merge will be accomplished, and when the merge should be started/stopped, everyone involved with the merge should read this manual.

1. Introduction

This software has been developed to assist VA facility staff in identifying and merging duplicate records found in VistA files.

As of Kernel Toolkit Patch XT*7.3*113, the PATIENT file (#2) will no longer be selectable from the Duplicate Record Merge Search option. Instead, the Initiate Probabilistic Search Implementation in Person Service Identity Management (PSIM) will perform searches for duplicate patients. The DUPLICATE RECORD file (#15) will be populated as the search engine identifies patient pairs as matches or potential matches; however, users with access to the Duplicate Record Merge menus will continue to be allowed to add records to the DUPLICATE RECORD file (#15).

The potential duplicates populated in File #15 are then validated through a review process to verify that they are duplicates, and then merged. This software is intended to provide a reliable approach to correctly identify and merge duplicate records.

In order to competently operate this package you must be familiar with the operations of the VistA computer system, in general. This information can be obtained at the following Web site:

<http://vaww.vista.med.va.gov>

A detailed understanding of VA FileMan is not required to use this application. However, reviewing the *VA FileMan User's Manual* provides you with a good background for how the system works.

On-line help is provided at all prompts by typing one or two question marks.

Product Description

Patient Merge provides an automated method to eliminate duplicate patient records within the VistA database. It is an operational implementation of the Duplicate Resolution Utilities, which were released to the field with Kernel Toolkit.

The overall process consists of three major subject areas: the search for potential duplicate record pairs, review, verification, and approval of those pairs, and the merge process.



NOTE: As of Patch XT*7.3*113, the PATIENT file (#2) will no longer be selectable from the Search option described below. Although users with access to the Duplicate Record Merge menus will still be allowed to add records to the DUPLICATE RECORD file (#15), this file will mainly be populated automatically when Person Service Identity Management (PSIM) identifies patient pairs as matches or potential matches.

After patient pairs are added to the DUPLICATE RECORD file (#15), the review, verification, approval, and merge processes will continue to be performed as before.

The search and identification of potential duplicate records performs comparisons on key patient traits in the centralized Person Service Identity Management (PSIM) database. The goal of PSIM is to provide an

authoritative source for persons' identity traits throughout the Veterans Health Administration (VHA). The Initiate Probabilistic Search Implementation in PSIM adds advanced search capabilities to improve the overall matching process during Search, Add and Update processes. The advanced search capabilities also provide enhanced capabilities for Identity Management Data quality (IMDQ) case workers who perform patient identity management data quality tasks.

PSIM determines that a pair of patients is a duplicate, or potential duplicates. Potential duplicates are further reviewed by the Identity Management Data Quality team (IMDQ). If a pair of patients is determined to be duplicates, and if both patients are known at a VistA site, the patient pair is added to the local VistA DUPLICATE RECORD file (#15). An email is sent to members of the mail group found in the DUPLICATE MANAGER MAIL GROUP field of the record associated with patients, in the DUPLICATE RESOLUTION file (#15.1).

Once a potential duplicate pair has been identified, the process of verifying record pairs begins.

The review and verification process includes two levels of review. The primary reviewer, initially seen as an MAS responsibility, performs a review of patient demographic information. The primary reviewer initially determines if the pair represents a duplicate record. If so, the primary reviewer selects the merge direction. If data from ancillary services is present, notification (via MailMan message or alert – or both) is sent to those designated as ancillary reviewers. A site may determine reviewers based upon their business practices. Reviewers determine whether the record pair is a duplicate, not a duplicate (so that subsequent processing need not occur), or that they are unable to determine the status. Where appropriate, reviewers may mark data to be overwritten. Those record pairs that are determined to be verified duplicates are marked as such and are then available for approving to be merged.

The intent of the approval step is to ensure that a conscious decision will be made in taking verified duplicate record pairs and making them available for a merge process. All verified record pairs, or selected pairs, can be approved. The approval step follows a site defined waiting period. Reviewers are responsible for approving verified duplicates.

The merge process is available for initiation by IRM personnel. All approved record pairs are included in a merge process when scheduled. The merge process is a lengthy process that is recommended for off-peak hours. Utilities are available for pausing and restarting the merge process. The merge process merges verified duplicate records in the following order: first, files that require special handling, then the primary file, then the resolution of pointers. The resolution of pointers for the primary file or any of those involving special processing involves three phases. The first two phases permit identification of entries requiring modification based on their IENs (DINUMed) or by cross-references and are fairly rapid. The third phase involves all other pointers and can be lengthy. Several special processing routines have been written to handle those database entries that point to the PATIENT file (#2) in an unusual manner. Entries for each special processing routine have been made in the PACKAGE file (#9.4) multiple, AFFECTS RECORD MERGE field (#20). A stub record is maintained in order to disallow reuse of PATIENT file (#2) internal entry numbers.

Concurrent with the merge, entries are made in a new global for each record making up the pair. The entries are intended to provide a "before-merge" image. However, please note that the merge is a non-reversible process. Once the pair of records is merged, there is no automated way of undoing the process.

The application has been written to support multiple parallel jobs (threads - as specified by the site) during the merge process. However, decreased overall processing time is exchanged for increased system utilization.



ADVISORY: The merge process is a background job. Be aware that it should not be running when changes are being made to Data Dictionaries or when data conversions are taking place.

2. Implementation and Maintenance

Kernel Toolkit Patch XT*7.3*113 is a Kernel Installation and Distribution System (KIDS) software release. It requires a standard VistA operating environment in order to function correctly. Check your VistA environment for packages and versions installed.

Minimum VistA application requirements for Patch XT*7.3*113, fully patched, are:

- VA FileMan V. 22.0
- Kernel V. 8.0
- Kernel Toolkit V. 7.3
- NDBI V. 1.0
- Patient Information Management System (PIMS) V. 5.3
- Health Summary V. 2.7

Before installing Patch XT*7.3*113, the following software *must* be installed.

Software	Version	Required Patches
Kernel Toolkit	V. 7.3	XT*7.3*42 XT*7.3*43 XT*7.3*47

Table 1: VistA Software Dependencies for Patch XT*7.3*113

The following VistA packages have files that require special processing during the merge process. Additionally, a routine for National Database Integration is also included for special processing during the merge process.

- Lab Service V. 5.2
- Immunology Case Registry V. 2.1
- Integrated Billing V. 2.0
- National Database Integration (Consolidation Site activity)

Records in these files contain fields affected by the merging of the PATIENT file (#2), but are not identified as pointer fields. Routines for processing these files are sent with this application since the PATIENT file commonly points to these files. Your site can create additional routines for processing other files pointed to the PATIENT file. Any time an additional routine is created, it is necessary that an entry be made in the PACKAGE file (#9.4) in the AFFECTS RECORD MERGE subfile.

The merge process is available for initiation by IRM personnel. All approved record pairs are included in a merge process when scheduled. The merge process is a lengthy process that is recommended for off-peak hours. Utilities are available for pausing and restarting the merge process. The merge process merges verified duplicate records in the following order: first, files that require special handling, then the primary file, then the resolution of pointers. The resolution of pointers for the primary file or any of those

involving special processing involves three phases. The first two phases permit identification of entries requiring modification based on their IENs (DINUMed) or by cross-references and are fairly rapid. The third phase involves all other pointers and can be lengthy. Several special processing routines have been written to handle those database entries that point to the PATIENT file (#2) in an unusual manner. Entries for each special processing routine have been made in the PACKAGE file (#9.4) multiple, AFFECTS RECORD MERGE field (#20). A stub record is maintained in order to disallow reuse of PATIENT file internal entry numbers.

Concurrent with the merge, entries are made in a new global for each record making up the pair. The entries are intended to provide a "before-merge" image. However, please note that the merge is a non-reversible process. Once the pair of records is merged, there is no automated way of undoing the process.

The application has been written to support multiple parallel jobs (threads - as specified by the site) during the merge process. However, decreased overall processing time is exchanged for increased system utilization.



ADVISORY: The merge process is a background job. Be aware that it should not be running when changes are being made to Data Dictionaries or when data conversions are taking place.

Site Parameters

The DUPLICATE RESOLUTION file (#15.1) is used to handle duplicate checking and merging duplicate record pairs for the PATIENT file (#2). It provides control over the information that is used to first identify potential duplicates within a file and then merge those verified duplicate entries.



NOTE: Duplicate record pairs are stored and merged in the DUPLICATE RECORD file (#15).

Several parameters are exported with this application in the DUPLICATE RESOLUTION file (#15.1) as default values. They are related to how potential duplicates are identified, to designating ancillary reviewers, to naming users to mail groups, and to defining the length of waiting periods applied in the process of identifying and merging duplicate records.

The following is a list of site parameter field names and descriptions. Default values that come with this application are identified. Also identified are values that the site must supply when configuring the Patient Merge application (i.e., when configuring the DUPLICATE RESOLUTION file [#15.1]).

Field Name	Description
MERGE MAIL GROUP	<p>This mail group has the following three functions:</p> <ol style="list-style-type: none"> 1) A bulletin is sent when a merge process has been completed. 2) A MailMan message is sent comprised of FROM and TO record pairs detected as having data errors during the beginning of the actual merge process. Records contained in this message are excluded from the merge process. The subject of this MailMan message is "MERGE PAIRS EXCLUDED DUE TO PROBLEMS". 3) A MailMan message is sent comprised of FROM and TO record pairs excluded from the merge process resulting from their multiple relationship(s) with the record pair selected to be merged. The subject of the MailMan message is "PAIRS EXCLUDED FROM MERGE DUE TO MULTIPLE REFERENCES". <p>(See the section "Schedule Process to Merge Verified Duplicates" in the <i>Duplicate Record Merge: Patient Merge User Manual</i> for more information on data error and/or multiple pair processing excluding records from being merged.)</p>
DUPLICATE MANAGER MAIL GROUP	<p>This mail group will be sent an email message when a new pair of potential duplicate patients is added to the DUPLICATE RECORD file by PSIM. This mail group will also be sent a bulletin whenever any known problems occur during the duplicate checking or merging process. This mail group must be an entry in the MAIL GROUP file (#3.8). Sites are required to supply their own mail groups.</p>
POTENTIAL DUPLICATE THRESHOLD%	<p>This field contains a computed percentage based on the values defined in the duplicate tests. When record pair scores evaluate equal to or above this percentage, they are considered to be potential duplicates. Record pairs may differ on the maximum score to which the percentage threshold is applied. The default potential duplicate threshold with this application release is 60%.</p> <p>NOTE: As of Patch XT*7.3*113, the data in this field will no longer be used for searching the PATIENT file (#2).</p>
DAYS BEFORE FINAL VERIFY	<p>This is the number of days within which ancillary reviewers are expected to conduct their reviews. All reviews must be resolved prior to merging the affected record pair. If action is still pending by any ancillary reviewers after this period, the site may take alternative action to:</p> <ul style="list-style-type: none"> • notify designated persons via a mail group, • establish an additional reviewer, • otherwise to resolve the review. <p>This would only apply if verification of a potential duplicate pair were not completed before the site configurable time runs out. The number of days entered in this field should be between zero and 30. This application is exported with the default value set to five days.</p>
DAYS BETWEEN VERIFY AND MERGE	<p>This is the number of days to elapse between final verification of a duplicate pair and the earliest possible merge date (i.e., the date records are approved to be merged). This parameter is available for sites that may be concerned about possible on-going actions related to entries that will</p>

Field Name	Description
	be merged and want to establish a period of inactivity prior to the actual merge. The value of this field is set by IRM. The number of days entered in this field should be between zero and 30. The default with this application release is five days.
NUMBER OF THREADS	<p>This field is used to help manage the most time consuming portion of the merge process. It is used to indicate the number of threads that should be used during the longest phase of the merge process. (Phase 3 is the longest phase of the merge process. It is described in more detail in the "Merge Process" section of this manual.) Your site can set the number of threads (jobs) according to your system resources.</p> <p>For example, an entry of 1 would indicate that only the main process would be running. An entry of 2 to 3 indicates that the main process along with one to two other threads should be used during this phase. The greater the number of threads, the more parallel processing occurs. Each thread is used to process one of the more time consuming files, which reduces the amount of time the overall process takes, at the expense of increased system utilization.</p> <p>The maximum allowable value is 5. It is resident in the DUPLICATE RESOLUTION file (#15.1). The site parameter NUMBER OF THREADS is exported with the Patient Merge application as a default of three.</p>

Ancillary Service Site Parameters

The necessary default values associated with each of the three ancillary services (i.e., Laboratory, Pharmacy, and Radiology) are included with this application. Sites are required to supply mail groups and/or assign individuals to receive alerts. Your site can add more ancillary services to the ancillary service multiple if desired.

The following table provides an "at a glance" view of the site parameters for all three ancillary services exported with this release. References are made to both site parameters that are default values included with this application release and to fields that require the site assignment of values. Ancillary service, field name, and default data value(s) list the information.

Ancillary Service	Field Name	Default Data Value
LABORATORY	PRIMARY FILE NUMBER	63
	SUBFILES (FIELD NUMBERS)	1;.085;2;4;5;8;
	DISPLAY NAMES FOR SUBFILES	Bld Bank;Transfusn;EM;Lab Tests;Mic
	MAIL GROUP NAME	<i>provided by site</i>
	INDIVIDUAL FOR ALERTS	<i>provided by site</i>
PHARMACY	PRIMARY FILE NUMBER	55
	SUBFILES (FIELD NUMBERS)	N/A
	DISPLAY NAMES FOR SUBFILES	N/A
	MAIL GROUP NAME	<i>provided by site</i>
	INDIVIDUAL FOR ALERTS	<i>provided by site</i>
RADIOLOGY	PRIMARY FILE NUMBER	70
	SUBFILES (FIELD NUMBERS)	2
	DISPLAY NAMES FOR SUBFILES	Radiology
	MAIL GROUP NAME	<i>provided by site</i>
	INDIVIDUAL FOR ALERTS	<i>provided by site</i>

File names and descriptions for the ancillary service site parameters are provided on the following pages. References are made to both site parameters that are default values included with this application release, and to fields that require the site assignment of values.

Field Name	Description
ANCILLARY SERVICE	Duplicate record pairs may require secondary reviews when data is present in ancillary files. This field is the name of the VISTA ancillary service associated with each duplicate record pair. Each of these ancillary services has an associated primary file, which could provide information on whether the entries are in fact, duplicates or not. In addition, the ancillary reviewers' expertise in evaluating other data in health summaries may provide information on the duplicate question. (This entry must be from three to 30 characters in length.) Three default ancillary services are released with Patient Merge: Laboratory, Pharmacy, and Radiology.
PRIMARY FILE NUMBER	Primary file number for the main file associated with the ancillary service. Enter the file number to be used for identifying duplicate record pairs for this ancillary service (e.g., LAB DATA file (#63), RADIOLOGY PATIENT file (#70), PHARMACY PATIENT file (#55), etc.). Each ancillary service distributed with this application release contains a default value for this field.
SUBFILES (FIELD NUMBERS)	Subfiles in the primary file. To show how many particular types of data, or entries, exist for some of the subfiles, you can enter the field numbers for the subfile(s) that should be displayed. These entries should be separated by semicolons (e.g., 1;.085;2;4;5). Each ancillary service distributed with this application release contains a default value for this field.
DISPLAY NAMES FOR SUBFILES	Respective subfile names for each of the specified subfiles in the primary file. Specify the names that will be associated with the subfile numbers as they are entered in the field SUBFILES (FIELD NUMBERS). The names entered must be in the same position as their corresponding field numbers. These names will appear on the screen so you might want to make them descriptive. Semicolons (e.g., Bld Bank; Transfusn; EM; Lab Tests; Microbiol) should separate these entries. Each ancillary service distributed with this application release contains a default value for this field.
MAIL GROUP NAME	Optional. This field is a pointer to the MAIL GROUP file (#3.8). Your answer must be the name of an actual mail group entry in that file. Once potential duplicate record pairs are established from the search, populated into File #15, and reviewed by the primary reviewers, MailMan messages are automatically sent to these designated mail groups, if data is present for both entries in the potential duplicate pair in the file specified as the primary file for the ancillary service. Alerts can also be sent to individuals separately by designating one or more reviewer in the INDIVIDUAL FOR ALERTS field. Sites are required to supply their own mail groups.
INDIVIDUAL FOR ALERTS	Optional. Enter one or more ancillary reviewer. Once potential duplicate record pairs are established from the search, populated into File #15, and reviewed by the primary reviewers, alerts are automatically sent to these designated individuals, if data is present for both entries in the potential duplicate pair in the file specified as the primary file for the ancillary service. Answer with the NEW PERSON NAME, INITIAL, SSN, NICK NAME, DEA#, or VA#. Sites are required to supply individuals for alerts. For a review by an ancillary service to be active, there must be at least one member in a specified mail group OR at least one individual specified to receive alerts.



NOTE: Not all ancillary services will have sub-files associated with the primary file.

New Browser Setup: XDRBROWSER1

Patient Merge brings in a new browser setup to your site. XDRBROWSER1 is specifically designed to work with Patient Merge. It is a modified version of the VA FileMan Browser. Setup instructions for OpenM platforms are included on the following page. The following information should be entered in your TERMINAL TYPE file (#3.2) and DEVICE file (#3.5), respectively:

Entry in TERMINAL TYPE File

```
NAME: P-XDRBROWSER
SELECTABLE AT SIGN-ON: NO
RIGHT MARGIN: 255
FORM FEED: #
PAGE LENGTH: 99999
BACK SPACE: $C(8)
OPEN EXECUTE: D OPEN^XDRDVAL
CLOSE EXECUTE: D CLOSE^XDRDVAL
DESCRIPTION: BROWSER FOR DUPLICATE RESOLUTION APPLICATIONS
```

Entry in DEVICE File

```
NAME: XDRBROWSER1
$I: XDRBROW.TXT
ASK DEVICE: NO
ASK PARAMETERS: NO
QUEUING: ALLOWED
LOCATION OF TERMINAL: HFS/CRT
ASK HOST FILE: NO
ASK HFS I/O OPERATION: NO
*MARGIN WIDTH: 255
*FORM FEED: #
*PAGE LENGTH: 99999
*BACK SPACE: $C(8)
OPEN PARAMETERS: NEW:DELETE

PRE-OPEN EXECUTE: S %ZIS("HFSNAME")="XDR"_$J_".TXT" I
'$D(XDRDVALF),'$$TEST^DDBRT S %ZISQUIT=1 W $C(7),!,"Browser not selectable
from current terminal.",!

SUBTYPE: P-XDRBROWSER
TYPE: HOST FILE SERVER
```



NOTE: You must have a NULL device defined in the device setup.

New Browser Setup: XDRBROWSER1 (OpenM)

The following setup instructions are for OpenM platforms. The information should be entered in your TERMINAL TYPE file (#3.2) and DEVICE file (#3.5), respectively:

Entry in TERMINAL TYPE File

```
NAME: P-XDRBROWSER
      SELECTABLE AT SIGN-ON: NO
      RIGHT MARGIN: 255
      FORM FEED: #
      PAGE LENGTH: 99999
      BACK SPACE: $(8)
      OPEN EXECUTE: D OPEN^XDRDVAL
      CLOSE EXECUTE: D CLOSE^XDRDVAL
      DESCRIPTION: BROWSER FOR DUPLICATE RESOLUTION APPLICATIONS
```

Entry in DEVICE File

```
NAME: XDRBROWSER1
      $I: T:\TEMP\XDRBR.TXT      (or the desired drive and directory)
      ASK DEVICE: NO
      ASK PARAMETERS: NO
      QUEUING: ALLOWED
      LOCATION OF TERMINAL: HFS/CRT
      ASK HFS I/O OPERATION: NO
      OPEN PARAMETERS: "NWS"

PRE-OPEN EXECUTE: S %ZIS("HFSNAME")=$P(IO,".")_$_J_"_"_$_P(IO,".",2) I
                  '$D(XDRDVALF),'$$TEST^DDBRT S %ZISQUIT=1 W $(7),!,"Browser not selectable from
                  current terminal.",!

SUBTYPE: P-XDRBROWSER
TYPE: HOST FILE SERVER
```



NOTE: You must have a NULL device defined in the device setup.

3. Routine Descriptions

Routines Distributed with Patch XT*7.3*113

The following routines are distributed with Patch XT*7.3*113. A brief description is given for each routine.

XDRCNT	Counts/Tallies records in file #15 by STATUS (verified, not a duplicate; potential duplicate, unverified; verified duplicate; verification in process). Also count/tally records by MERGE STATUS (not ready, ready, merged, in process). A report is generated to display the results.
XDRDADDS	Called from the Master Patient Index (MPI) system to add records to the local VistA DUPLICATE RECORD (#15) file, as potential matches are identified by PSIM.
XDRDCOMP	Compares two patients via duplicate checker algorithm.
XDRDEDT	If the status on a patient pair is changed from VERIFIED, NOT A DUPLICATE back to POTENTIAL DUPLICATE, UNVERIFIED, and if the VistA system is attached to the MPI, a new routine, MPIFDNL, calls a remote procedure MPI DNL ADD UPD on the MPI server to inactivate the record on the MPI DO NOT LINK (#985.28) file. Updates the STATUS field in File #15 from either Verified Duplicate or Verified Not a Duplicate to Potential Duplicate.
XDRDEFLG	Used to remotely set the field SUPPRESS NEW DUP EMAIL (#99) on the DUPLICATE RESOLUTION file (#15.1). This is called from a remote procedure XDR UPD SUPPR EMAIL that is called from an option on the MPI server used by the Identity Management Data Quality users.
XDRDFPD	Finds all potential duplicates for an entry in a file.
XDRDLIST	Prints various reports from the DUPLICATE RECORD file (#15). It prints listings of Unverified Potential Duplicates, Ready, and Not Ready To Merge Verified Duplicates, and Merged Verified Duplicates.
XDRDPICK	Verify a pair of potential duplicates after viewing their data. Calls LOOKUP^XDRDEDT to select entries from the DUPLICATE RECORD file (#15) instead of using the standard DIC lookup. If the status of a pair of patient records is changed to VERIFIED, NOT A DUPLICATE, and if this VistA system is attached to the MPI, a new routine MPIFDNL calls a remote procedure on the MPI server to add a record to the MPI DO NOT LINK file.

Routine Descriptions

XDRDPRGE Purges the DUPLICATE RECORD file (#15).



NOTE: As of Patch XT*7.3*113, the option that calls this routine was placed OUT OF ORDER and removed from the XDR MANAGER UTILITIES menu option.-In addition, the routine was changed so that PATIENT file records cannot be selected for purging.

XDRDQUE Starts and stops the search process. If no search is running, it allows the user to queue a search to start up. If a search has been halted, they may continue the search starting at the point they halted. Code has been added to inform user that the search can take a long time.

XDRMADD Adds entries to the DUPLICATE RECORD file (#15).

Patient Merge and Kernel Duplicate Record Merge Routines Not Distributed with Patch XT*7.3*113

XDR2NULL Identifies entries with null SSN.

XDRDADD After two records have been matched as potential duplicates, this routine will add the two records to the DUPLICATE RECORD file (#15).

XDRDADJ Updates the DUPLICATE RECORD file (#15) upon merge.

XDRDDATA Lists basic data on potential duplicates in global format.

XDRDMAIN Main driver for the duplicate checking software.

XDRDPDTI When the threshold is increased, this routines will check potential duplicates against it.

XDRDPRE1 Generates lists of patients identified by the preliminary scan (XDRDPREL).

XDRDPREL Preliminary identification of entries with bad data. This routine will scan the file for errors.

XDRDPRG2 Purges the XDR MERGE PROCESS file (#15.2).

XDRDSCOR Sets scores for duplicate checking.

XDRDSHOW Displays data in fields so users can select fields to overwrite.

XDRDSTAT Displays the status of a search.

XDRDUP	Compares two records and makes the determination, if they are duplicates of each other.
XDRDVAL	Contains the basic code for checking whether a data value would be acceptable as input.
XDRDVAL1	Entry points for the validation of data in terms of data entry.
XDRDVAL2	(Continued from XDRDVAL1.)
XDREMSG	Error message processor.
XDRMAIN	This is currently the main driver for duplicate merge software.
XDRMAINI	Initialization routine for XDRDMAIN.
XDRMERG	Tentative update pointer nodes.
XDRMERG0	Start of non-interactive batch merge. The merge can be queued.
XDRMERG1	Tentative update pointer nodes. (Continued from XDRMERG.)
XDRMERG2	Tentative update pointer nodes. (Continue from XDRMERG.)
XDRMERGA	Start of non-interactive batch merge. (Continued from XDRMERG0.)
XDRMERGB	Tentative update pointer nodes.
XDRMERC	Check Merge to exclude patient pairs if one of the patients was already processed in another pair.
XDRMPACK	Checks the PACKAGE file (#9.4) for special merge routines in the AFFECTS RECORD MERGE field.
XDRMRG	Merges duplicate records.
XDRMRG1	Error trap for XDRMRG.
XDRMSG	Sends various mail messages when verifying and merging have completed.
XDRMVFY	Verifies potential duplicates.
XDRPREL1	Identifies problem entries which are **NOT** pointed to.
XDRPTCAN	Screens for patient records with similar names, DOBs, and SSNs.
XDRPTCLN	Compares patient's claim numbers.
XDRPTDOB	Compares patient's DOB dates.

Routine Descriptions

XDRPTDOD	Compares patient's DOD dates.
XDRPTLSD	Compares last service separation dates.
XDRPTMMN	Compares mother's maiden names.
XDRPTN	Compares patient's names.
XDRPTSSN	Compares patient's SSNs.
XDRPTSX	Compares the sex of two patients.
XDRRMRG0	Triggers the data review for ancillary services - the verification process for potential duplicates that have ancillary data.
XDRRMRG1	Duplicate verification routine for RADIOLOGY.
XDRRMRG2	Retrieves patient's Health Summary.
XDRU1	Contains general utilities.
XDRUTL	XDR routine utilities.
XDRVCHEK	Checks for entries, which have passed the number of days required for verification.

4. File List

Files and Globals

This section lists all the Patient Merge files with their file numbers, shows their global location, and gives a file description.

15 DUPLICATE RECORD FILE ^VA(15,
Data Comes with File: No

This file contains information about duplicate records in any file as defined in the two variable pointer fields: RECORD1 and RECORD2 (in the .01 and .02 fields). The status of an entry in this file may be one of the following:

- Potential Duplicate, Unverified
- Verified, Not A Duplicate
- Verified Duplicate
- Verification In Process
- Requires Resolution

The envisioned sequence of events for this application include:

- Identifying potential duplicates from a file.
- Adding an entry in this file containing the two potential duplicate records.
- Setting the STATUS field to Potential Duplicate, Unverified.
- User makes the determination of whether the two entries were truly duplicates and changes the STATUS field appropriately.



WARNING: Please be advised that the DUPLICATE RECORD file (#15) can be used as a perpetual list of which records have been merged and when. This information could prove useful for other systems (e.g., national databases). To keep this data for future reference, it is recommended that entries in this file NOT be deleted.

15.1 DUPLICATE RESOLUTION FILE ^VA(15.1,
Data Comes with File: Yes

This file is used to handle duplicate checking and merging of files that have entries in the DUPLICATE RECORD file (#15). It is meant to provide the overall control information that would be used to first identify duplicates within a file (e.g., PATIENT file #2), and then to merge the entries.

Remote Procedures

XDR ADD POTENTIAL PATIENT DUP
XDR UPD SUPPR EMAIL

5. Exported Options

Menus and Options

This section details the three menus comprising the Duplicate Resolution System [XDR MAIN MENU]. They are the Operations, Utilities, and Manager Utilities menus. The Operations and the Utilities menus should be made accessible to personnel who would be involved with the review and verification of duplicate records. These people must be authorized to hold the XDR security key to access these menus. The Manager Utilities menu is restricted to those personnel authorized to hold the XDRMGR security key. Care should be used in granting the XDRMGR security key since other options that impact system resources (e.g., Schedule Process to Merge Verified Duplicates) are controlled by it.

The following pages list these menus, associated options, and descriptions. Personnel must be authorized to hold the XDR security key to access these menus.

Operations

[XDR OPERATIONS MENU]

This menu contains options for reviewing and verifying duplicate record status, and for approving verified duplicate record pairs for merging. As was mentioned previously, it should be made accessible to personnel who would be involved with the review and verification of duplicate records.

The following is a list of the options and descriptions that comprise this menu:

Approve Verified Duplicates For Merging

[XDR APPROVE FOR MERGE]

This option is used by the coordinator, or team, responsible for duplicate record verification to give final approval for selected duplicate pairs to be included in the next merge process.

Verify Potential Duplicates

[XDR VERIFY ALL]

This option is used to either mark potential duplicate pairs as an actual duplicates or mark a potential duplicate pair as verified that they are not duplicates. The FROM and TO records are identified and all top level patient file fields are resolved.

Ancillary Data Review

[XDR ANCILLARY REVIEW]

Ancillary service representatives can be designated as members of mail groups notified of potential duplicates through MailMan messages.

These representatives use this option to verify that record pairs are potential duplicates.

Utilities

[XDR UTILITIES MENU]

This menu contains the utility options available with the Patient Merge application. As was mentioned previously, it should be made accessible to personnel who would be involved with the review and verification of duplicate records.

The following is a list of the options and descriptions that comprise this menu:

Add Verified Duplicate Pair

[XDR ADD VERIFIED DUPS.]

This option allows the user to add a pair of records that are not already identified as potential or verified duplicate record pairs to the DUPLICATE RECORD file (#15). The record pairs will go through comparisons (Duplicate Tests). The comparison results are computed into a value based on the similarity of one record to the other. The resulting value is measured against the Potential Duplicate Threshold Percentage. When the duplicate record pairs scores evaluate equal to or above this percentage, they are considered to be potential duplicates, and are placed in the DUPLICATE RECORD file (#15).

Users who hold the XDRMGR key have the option to bypass the Potential Duplicate Threshold Percentage, thereby adding the duplicate record pair directly to the DUPLICATE RECORD file (#15).



NOTE: As of Patch XT*7.3*113, this option no longer performs the fuzzy logic check described above on patients (i.e., pointers to the PATIENT file [#2]). The site will be allowed to add any two patients to File #15 (DUPLICATE RECORD FILE). Most duplicate records will be automatically added to the file when the PSIM Initiate search engine determines that a pair of patients is a match or a potential match.

Check Merge Process Status

[XDR CHECK MERGE PROCESS STATUS]

This option indicates the status of a selected merge process (or all of them). The information is displayed by the last checkpoint during its operation. This information includes the file that is being processed, which stage it is in, and the last internal entry processed.

Check Pair of Records to see if Duplicates [XDR CHECK PAIR]

This option allows an operator to run two records through the duplicate resolution software to evaluate their Match Score. It does not add records to the DUPLICATE RECORD file (#15).



NOTE: As of Patch XT*7.3*113, users can no longer select PATIENT records from this option. Checking for potential duplicates will be done by PSIM.

Display Search Status [XDR DISPLAY SEARCH STATUS]

This option displays the search status. The search status can be either Running, Halted, Error(Stop) or Completed. If you are viewing the status to check if the search is still in progress, you must check to see that the status indicated is Running, and that the Count (the current number of records checked that have been for duplicates) is steadily increasing. If the Count is not increasing, notify your Site Manager.

Edit the Status Field of a Duplicate Record [XDR EDIT DUP RECORD STATUS]

This option is used to edit the STATUS field of duplicate record entries in the DUPLICATE RECORD file (#15). It would be used when a record pair was identified as Verified Duplicate or Verified Not A Duplicate and you want to change the STATUS back to Potential Duplicate, Unverified.

Find Potential Duplicates for an Entry in a File [XDR FIND POTENTIAL DUPLICATES]

This option will find all potential duplicates for a record entry in a selected file. The potential duplicate record pairs are then added to the DUPLICATE RECORD file (#15). The user is prompted to enter the selected file and the record entry within that file.



NOTE: As of Patch XT*7.3*113, users can no longer select PATIENT records from this option. Finding potential duplicates will be done by PSIM.

Identify Potential Merge Problems

[XDR VALID CHECK]

This option has been designed to display any data errors that might exist in a patient's record. Although distributed by another package, the DG ELIGIBILITY security key is required to edit any data fields in error, retrieved and displayed by this option.

Many of the "broken database/bad data" events that would have upset an actual merge can be detected through this option. The intent is to give the site the opportunity to make any necessary edits prior to merging duplicate record pairs. Errors that are not resolved prior to the merge process will result in a pair not being merged.

Print List of File Duplicates

[XDR PRINT LIST]

This option prints a selected list of duplicate record entries in a file or the files entire contents. You can choose to print Potential Duplicates, Verified Ready To Merge Duplicates, Not Ready To Merge Verified Duplicates, and Merged Verified Duplicates. You can choose to print a brief listing or a captioned listing.

Scan Possible Duplicates

[XDR SCAN POSSIBLE DUPLICATES]

This option provides a rapid scan of possible duplicate record pairs by listing the zero nodes for each record entry in the selected file. If the output is not queued to a printer, the data will be sent to the FileMan Browser.

Tally STATUS and MERGE STATUS fields

[XDR TALLY STATUS FIELDS]

This option produces a summary report of the number of records that are: Verified Duplicates, Verified Not Duplicates, or Potential Duplicates, Unverified. The total number of records Merged and Ready To Be Merged will be displayed.

View Duplicate Record Entries

[XDR VIEW DUPLICATE RECORD]

This option is used to view duplicate record entries in a captioned format.

Manager Utilities <Locked with XDRMGR>**[XDR MANAGER
UTILITIES]**

This menu is comprised of the various manager utilities that give IRM personnel control over critical decision elements involved with the merge process. They are designed to assist with editing site parameters, identifying duplicate records in the primary file, merging verified duplicate records, and purging files involved with the merge process that are specific to Patient Merge. Only authorized IRM personnel holding the XDRMGR security key can use this menu.

The following is a list of these options and descriptions:

Edit Site Parameters**[XDR EDIT DUP RESOLUTION FILE]**

Site Managers can set up patient identification and merge capability for the PATIENT file (#2) by entering the desired data into the DUPLICATE RESOLUTION file (#15.1). This option allows Site Managers to:

- Set up ancillary services to review ancillary data involved with the patient identification and merge processes.
- Assign reviewers to mail groups to receive the various bulletins involved with the patient identification and merge processes.
- Assign reviewers to alerts designating them as recipients of pending ancillary service review activity involved with the patient identification and merge processes.

Additionally, you can use this option to edit the default site parameters in the DUPLICATE RESOLUTION file (#15.1) that come with this application release.

List File Entries Identified in Preliminary Scan**[XDR PRELIMINARY
SCAN LIST]**

This option is used to generate a list of file entries with missing zero nodes, having a bad SSN values, or missing one or more of the identifiers in the file.

Preliminary Scan of File for Errors**[XDR PRELIMINARY SCAN]**

This option allows you to scan through a selected file before a search to check for entries which are missing identifiers (entries presumed to be significant data elements) or have other problems.

Purge Duplicate Record File [XDR PURGE]

This option is used to purge entries in the DUPLICATE RECORD file (#15). You can purge Potential Duplicates only, Verified Non-Duplicates, or both. The Site Manager should only use this option.



NOTE: As of Patch XT*7.3*113, this option was placed OUT OF ORDER and removed from the XDR MANAGER UTILITIES menu option.

Purge Merge Process File [XDR PURGE2]

This option is used to purge all selected entries in the MERGE PROCESS file (#15.2). The Site Manager should only use this option.

Restart a Merge Process [XDR RESTART MERGE PROCESS]

This option is used to schedule the restart of a merge process at the current time or at some point in the future.

Schedule Process to Merge Verified Duplicates [XDR MERGE READY
DUPLICATES]

This option merges all entries, which are ready to merge verified duplicate pairs, not included in another merge process.

Start/Halt Duplicate Search [XDR SEARCH ALL]

This utility searches a selected file for potential duplicate record pairs. It provides a choice of two methods. A Basic search starts at the beginning of the file and checks each record against a selected subgroup of potential duplicates. A New search takes records that have been edited and checks them against the select subgroup of records. This is a tasked job that can be started and halted until the entire file has been checked.



NOTE: As of Patch XT*7.3*113, users can no longer search the PATIENT file (#2) via this option.

STOP an Active Merge Process [XDR STOP MERGE PROCESS]

This option is used to stop a currently running merge process and any associated threads.


```

UTILITIES]
**LOCKED: XDRMGR**

-----LIST List File Entries Identified
in Preliminary Scan [XDR
PRELIMINARY SCAN LIST]

-----SCN Preliminary Scan of File for
Errors [XDR PRELIMINARY SCAN]

-----PRGM Purge Merge Process File [XDR
PURGE2]

-----RES Restart a Merge Process [XDR
RESTART MERGE PROCESS]

-----SCH Schedule Process to Merge
Verified Duplicates [XDR MERGE
READY DUPLICATES]

-----SRCH Start/Halt Duplicate Search
[XDR SEARCH ALL]

-----STOP STOP an Active Merge Process
[XDR STOP MERGE PROCESS]
    
```

Options No Longer Referenced in Duplicate Resolution Utilities

The following three options have become obsolete in Kernel Toolkit with the release of the Patient Merge application:

1. Automatically Merge all Ready Verified Duplicates [XDR AUTO MERGE]
2. Merge Selected Verified Duplicate Pair [XDR MERGE SELECTED PAIR]
3. Verify Selected Potential Duplicate Pair [XDR VERIFY SELECTED PAIR]

The following option has become obsolete in Kernel Toolkit with the new PSIM Initiate search engine (patch XT*7.3*113):

1. Purge Duplicate Record File [XDR PURGE]

Security Keys

Three security keys are involved with the Patient Merge release. Their purpose is to set a layer of protection on the range of available computing capabilities. Two of which (i.e., XDR and XDRMGR) are used in the Duplicate Resolution System menu. The accessibility of this menu is based on the level of system access granted to each user. These security keys are described below:

1. The **XDR** security key authorizes access to the Duplicate Resolution System menu on the Application Utilities menu.

2. The **XDRMGR** security key is required in order to access the Manager Utilities menu. This key should be given to IRM personnel responsible for managerial control over the file being searched for duplicate record pairs and the subsequent merge process.

The **XDRMGR** security key also authorizes the holder to add a pair of records directly into the DUPLICATE RECORD file (#15) through the option Add Verified Duplicate Pair, bypassing the Potential Duplicate Threshold Percentage.



NOTE: Care should be used in granting the **XDRMGR** security key, since other options that impact system resources (e.g., Schedule Process to Merge Verified Duplicates) are controlled by it.

3. Although distributed by another package, the person initiating the merge process must be authorized to hold the **DG ELIGIBILITY** security key.

The **DG ELIGIBILITY** security key, although not required to select and run the option Identify Potential Merge Problems, is required to provide valid error checking results. The key may or may not be required to actually make the necessary edits.

6. Archiving and Purging

Archiving

There are no application-specific archiving procedures or recommendations for the Duplicate Record Merge: Patient Merge application.

Purging

The following Manager Utilities menu option is provided to facilitate the purging of Patient Merge files:

1. Purge Merge Process File will purge entries in the XDR MERGE PROCESS file (#15.2).



NOTE: For more detailed description of this option, refer to the "Exported Options" section of this manual



NOTE: As of Patch XT*7.3*113, the Purge Duplicate Record File option, which purged entries from the DUPLICATE RECORD file (#15), was placed OUT OF ORDER and removed from the XDR MANAGER UTILITIES menu option.

7. Callable Routines

There are no callable routines in the Patient Merge application.

8. External Relations

Platform Requirements

The Patient Merge application requires a standard VistA operating environment in order to function correctly. Check your VistA environment for packages and versions installed.

Minimum VistA software requirements for Patch XT*7.3*113, fully patched, are:

- Kernel V. 8.0
- Kernel Toolkit V. 7.3
- VA FileMan V. 22.0
- NDBI V. 1.0
- Patient Information Management System (PIMS) V. 5.3
- Health Summary V. 2.7

Before installing Patch XT*7.3*113, the following patches *must* be installed:

Software	Version	Required Patches
Kernel Toolkit	V. 7.3	XT*7.3*42 XT*7.3*43 XT*7.3*47

Table 2: VistA Software Dependencies for Patch XT*7.3*113

VistA packages needed to fully utilize the capabilities of the Duplicate Record Merge: Patient Merge application are:

The following VistA packages have files that require special processing during the merge process. Additionally, a routine for National Database Integration is also included for special processing during the merge process.

- Lab Service V. 5.2
- Immunology Case Registry V. 2.1
- Integrated Billing V. 2.0
- National Database Integration (Consolidation Site activity)

Records in these files contain fields affected by the merging of the PATIENT file (#2), but are not identified as pointer fields. Routines for processing these files are sent with this application since the PATIENT file (#2) commonly points to these files. Your site can create additional routines for processing other files pointed to the PATIENT file (#2). Any time an additional routine is created, it is

External Relations

necessary that an entry be made in the PACKAGE file (#9.4) in the AFFECTS RECORD MERGE subfile.

Database Integration Agreements (DBIA)

Kernel Toolkit Integration Agreements (IAs) can be found on the DBA menu on FORUM.

9. Internal Relations

All of the Patient Merge options can be invoked independently. None require any special setup in order to run successfully.

Namespace

The Patient Merge application uses the namespace XDR.

File Numbers

Files for the application are numbered as follows: #15, #15.1, #15.2, #15.3, and #15.4. These files reside in the Global ^VA.

Mail Groups

If you don't have existing mail groups to designate as recipients of the various bulletins involved with the patient identification and merge processes, your site will have to create them using MailMan V. 8.0 utilities. If your site chooses to create mail groups, they must be added to the MAIL GROUP file (#3.8).

(For information on creating mail groups, see the VA Electronic Mail System (Mailman) Technical Manual and Systems Management Guide V. 8.0.)

You can assign these mail groups to the various bulletins involved with the patient identification and merge processes using the option Edit Site Parameters in the Manager Utilities menu. You must possess the XDRMGR security key to access this option. The following are descriptions of the mail groups associated with this application:

- Use the MERGE MAIL GROUP to enter the name of the mail group to which you want a bulletin sent:
 - 1) When a merge process has been completed.
 - 2) Comprised of FROM and TO record pairs detected as having data errors during the beginning of the actual merge process. Records contained in this message are excluded from the merge process. The subject of this MailMan message is "MERGE PAIRS EXCLUDED DUE TO PROBLEMS."
 - 3) Comprised of FROM and TO record pairs excluded from the merge process resulting from their multiple relationship(s) with the record pair selected to be merged. The subject of the MailMan message is "PAIRS EXCLUDED FROM MERGE DUE TO MULTIPLE REFERENCES."

(See the section "Schedule Process to Merge Verified Duplicates" in the *Duplicate Record Merge: Patient Merge User Manual* for more information on data error and/or multiple pair processing excluding records from being merged.)

- Use the DUPLICATE MANAGER MAIL GROUP to enter the name of the mail group that you want a bulletin sent to when an error causes the halting of a duplicate record search, or a merge process. After patch XT*7.3*113, a message is sent to this group when an entry is added to the DUPLICATE RECORD file as a result of the new PSIM matching algorithm.
- Use the MAIL GROUP NAME in the Ancillary Service data screen to enter members who need to be notified when their particular ancillary service needs to process duplicate record pairs.



NOTE: It is up to that particular ancillary service to elect who will be notified to process potential duplicates and through what means (i.e., as a member of a mail group or as a recipient of an alert). Designated ancillary reviewers must be entered during the application setup, either as members of a specified mail group or as individuals to receive alerts.

10. Package-wide Variables

The Patient Merge application contains no package-wide variables.

11. Software Product Security

Security Features

Mail Groups and Alerts

Site Managers can assign existing mail groups, or create new ones, to designate as recipients of the various bulletins involved with the patient identification and merge processes. New mail groups can be created using MailMan V. 8.0 utilities. If your site chooses to create new mail groups, they must be added to the MAIL GROUP file (#3.8).

Additionally, Site Managers can assign individuals to receive alerts. This designates them as recipients of pending ancillary service review activity. Potential duplicates are established from the search, populated into the DUPLICATE RECORD file (#15), and reviewed by the primary reviewers. After which, if there is ancillary data for the potential duplicate pairs, alerts are automatically sent to these designated individuals.

Recipients can be designated to receive alert notifications of potential duplicate record pairs, as well as belong to mail groups designated to receive MailMan message notifications for the same duplicate entries. Should recipients process alerts first, the same duplicate record pairs will not be accessible through the option Ancillary Data Review. The opposite is also true. Should the recipients process duplicate entries using the option Ancillary Data Review first, the alert goes away.

Mail groups to receive mail messages and individuals to receive alerts can be assigned by selecting the option Edit Site Parameters in the Manager Utilities menu. You must possess the XDRMGR key to access this option.

The following are descriptions of the mail groups associated with this application:

- Use the MERGE MAIL GROUP to enter the name of the mail group in which you want bulletins sent:
 - 1) when a merge process has been completed.
 - 2) Data errors: comprised of FROM and TO record pairs detected as having data errors during the beginning of the actual merge process. Records contained in this message are excluded from the merge process. The subject of this MailMan message is "MERGE PAIRS EXCLUDED DUE TO PROBLEMS."
 - 3) Excluded records: comprised of FROM and TO record pairs excluded from the merge process resulting from their multiple relationship(s) with the record pair selected to be merged. The subject of the MailMan message is "PAIRS EXCLUDED FROM MERGE DUE TO MULTIPLE REFERENCES."



NOTE: See the section "Schedule Process to Merge Verified Duplicates" in the *Duplicate Record Merge: Patient Merge User Manual* for more information on data error and/or multiple pair processing excluding records from being merged.



NOTE: When a merge process results in a message stating that pairs were excluded, it will still automatically send a message saying the merge completed even if no pairs were merged. If both messages are sent, it is necessary to review the information in the pairs excluded messages, address data discrepancies, and start another merge process to complete the merge on any previously excluded pairs.

- Use the **DUPLICATE MANAGER MAIL GROUP** to enter the name of the mail group that you want an email sent when a new pair of patients is added to the **DUPLICATE RECORD** file by **PSIM**, or a bulletin sent to when an error causes the halting of a duplicate record search, or a merge process.
- Use the **MAIL GROUP NAME** in the Ancillary Service data screen to enter members who need to be notified when their particular ancillary service needs to process duplicate record pairs.



NOTE: It is up to that particular ancillary service to elect who will be notified to process potential duplicates and through what means (i.e., as a member of a mail group or as a recipient of an alert). Designated ancillary reviewers must be entered during the application setup, either as members of a specified mail group or as individuals to receive alerts.

Remote Systems

Records will be added to the **DUPLICATE RECORD** file (#15) with new routine **^XDRDADDS**. This routine is called by **PSIM** from remote procedure call **XDR ADD POTENTIAL PATIENT DUP**, when **PSIM** finds patients on a single VistA system that exceed the auto-match threshold. The routine **^XDRDADDS** is also called from an A24 Link message sent when the **IMDQ** team verifies that a pair of patients are a match.

When a user changes the status of a pair of **PATIENTS** in the **DUPLICATE RECORD** file to **VERIFIED**, **NOT A DUPLICATE**, the routine **CALLRPC^MPIFDNL** is called. This routine calls a remote procedure call to add the pair of patients to the **MPI DO NOT LINK** file on the **MPI** server. If the status on a pair of patients is changed from **VERIFIED**, **NOT A DUPLICATE** back to **POTENTIAL DUPLICATE**, **UNVERIFIED**, the routine **CALLRPC^MPIFDNL** is called to set the status of the entry in the **MPI DO NOT LINK** file to “inactive”.

Archiving/Purging

Archiving

There are no application-specific archiving procedures or recommendations for the Duplicate Record Merge: Patient Merge application.

Purging

The following Manager Utilities menu option is provided to facilitate the purging of Patient Merge files:

- Purge Merge Process File (XDR PURGE2)

This option is used to purge selected entries in the XDR MERGE PROCESS file (#15.2). The Site Manager should only use this option.



NOTE: As of Patch XT*7.3*113, the Purge Duplicate Record File option, which purged entries from the DUPLICATE RECORD file (#15), was removed from the XDR MANAGER UTILITIES menu option.

Interfacing

There are no specialized (not VA produced) products (hardware and/or software) embedded within or required by the Patient Merge application.

Electronic Signatures

There are no electronic signatures used in the Patient Merge application.

Menus

There are no options of particular interest to Information Security Officers (ISOs) in the Patient Merge application.

Security Keys

Three security keys are involved with the Patient Merge release. Their purpose is to set a layer of protection on the range of available computing capabilities. Two of which (i.e., XDR and XDRMGR) are used in the Duplicate Resolution System menu. The accessibility of this menu is based on the level of system access granted to each user. These security keys are described below:

1. The **XDR** security key authorizes access to the Duplicate Resolution System menu on the Application Utilities menu.
2. The **XDRMGR** security key is required in order to access the Manager Utilities menu. This key should be given to IRM personnel responsible for managerial control over the file being searched for duplicate record pairs and the subsequent merge process.

The **XDRMGR** security key also authorizes the holder to add a pair of records directly into the DUPLICATE RECORD file through the option Add Verified Duplicate Pair, bypassing the Potential Duplicate Threshold Percentage.



NOTE: Care should be used in granting the **XDRMGR** security key, since other options that impact system resources (e.g., Schedule Process to Merge Verified Duplicates) are controlled by it.

3. Although distributed by another package, the person initiating the merge process must be authorized to hold the **DG ELIGIBILITY** security key.

The **DG ELIGIBILITY** security key, although not required to select and run the option Identify Potential Merge Problems, is required to provide valid error checking results. The key may or may not be required to actually make the necessary edits.

File Security

Number	File Name	DD	WR	DEL	RD	LAYGO	AUDIT
15	DUPLICATE RECORD	@	@	@	#	@	#
15.1	DUPLICATE RESOLUTION	@	@	@	#	@	#
15.2	XDR MERGE PROCESS	@					#
15.3	XDR REPOINTED ENTRY	@					#
15.4	MERGE IMAGES	@	@	@	@	@	@

12. How to Generate Online Documentation

On-line documentation about the Patient Merge application may be obtained in a number of ways:

Retrieving On-Line Help Using Question Marks

The use of question marks at the file and field level is described in the *VA FileMan Technical Manual*. The use of question marks within the menu system invokes help about options and menus. One question mark at the top-level menu prompt displays the items available on the menu. Two question marks will show the Common Menu available to all users, as well as any secondary menu options for the current user. Locked options are displayed, if the user holds the key. Three question marks display descriptions of the options from the OPTION file. Four question marks display a help frame, if one has been associated with this option in the OPTION file. A question mark followed by the name of an option on the current menu displays a help frame, if one has been named for that option in the OPTION file.

Print Options File

The PRINT OPTION file, in the Kernel's Menu Management Menu, displays a list of namespaced options associated with the Patient Merge application. Other namespaced entries may also be retrieved from the PRINT, INPUT, and SORT TEMPLATE files, and the SECURITY KEY, FUNCTION, BULLETIN, and HELP FRAME files.

List File Attributes

This FileMan option allows the user to generate documentation pertaining to files and file structure. Utilization of this option via the "Standard" format will yield the following data dictionary information for a specified file(s): file name and description, identifiers, cross-references, files pointed to by the file specified, files which point to the file specified, input templates, print templates, and sort templates. In addition, the following applicable data is supplied for each field in the file: field name, number, title, global location, description, help prompt, cross-reference(s), input transform, date last edited, and notes.

Using the "Global Map" format of this option generates an output which lists all cross-references for the file selected, global location of each field in the file, input templates, print templates, and sort templates.

Inquire to Option File

This Menu Manager option provides the following information about a specified option(s): option name, menu text, option description, type of option, and lock, if any. In addition, all items on the menu are listed for each menu option.

To secure information about Patient Merge options, the user must specify the name or namespace of the option(s) desired (i.e., XDR).

Glossary

Abbreviated Response	This feature allows you to enter data by typing only the first few characters for the desired response. This feature will not work unless the information is already stored in the computer.
Access Code	A code that, along with the Verify code, allows the computer to identify you as a user authorized to gain access to the computer. Your code is greater than 6 and less than 20 characters long; can be numeric, alphabetic, or a combination of both; and is usually assigned by a site manager or application coordinator. It is used by the Kernel's Sign-on/Security system to identify the user (see Verify Code).
Active Patients	Patients who have been seen at a site within the past three years.
ADPAC	Automated Data Processing Application Coordinator.
ADR	The Administrative Data Repository is a centralized database repository for person (PATIENT [#2] and NEW PERSON [#200] files). It is the authoritative data store within VHA for cross-cutting person administrative information. The Administrative Data Repository contains identification and cross-cutting demographics data as well as other administrative information.
Alerts	Brief online notices that are issued to users as they complete a cycle through the menu system. Alerts are designed to provide interactive notification of pending computing activities, such as the need to reorder supplies or review a patient's clinical test results. Along with the alert message is an indication that the View Alerts common option should be chosen to take further action.
Ancillary Reviewer	This can be a single person or group of people given the responsibility to conduct reviews of potential duplicate record pairs with data in files other than the PATIENT file (#2). For example, selected personnel in Laboratory, Radiology, and Pharmacy.
ANSI	American National Standards Institute.
ANSI M	The M (formerly known as MUMPS) programming language is a standard recognized by the American National Standard Institute (ANSI). M stands for Massachusetts Utility Multi-programming System.
API	<p>Program calls provided for use by application programmers. APIs allow programmers to carry out standard computing activities without needing to duplicate utilities in their own software. APIs also further DBA goals of system integration by channeling activities, such as adding new users, through a limited number of callable entry points. VistA APIs fall into the following three categories:</p> <ul style="list-style-type: none">• The first category is "Supported API" These are callable routines, which

are supported for general use by all VistA applications.

- The second category is "Controlled Subscription API." These are callable routines for which you must obtain an Integration Agreement (IA - formerly referred to as a DBIA) to use.
- The third category is "Private API," where only a single application is granted permission to use an attribute/function of another VistA package.

These IAs are granted for special cases, transitional problems between versions, and release coordination.

Application Coordinator	Designated individuals responsible for user-level management and maintenance of an application package such as IFCAP, Lab, Pharmacy, Mental Health, etc.
Array	An arrangement of elements in one or more dimensions. An M array is a set of nodes referenced by subscripts that share the same variable name.
AT-SIGN ("@")	A VA FileMan security Access code that gives the user programmer-level access to files and to VA FileMan's developer features. See Programmer Access. Also, the character "@" (i.e., at-sign, Shift-2 key on most keyboards) is used at VA FileMan field prompts to delete data.
Auto-Menu	An indication to Menu Manager that the current user's menu items should be displayed automatically. When auto-menu is not in effect, the user must enter a question mark at the menu's select prompt to see the list of menu items.
Callable Entry Point	An authorized programmer call that may be used in any VistA application package. The DBA maintains the list of DBIC-approved entry points.
Caret	A symbol expressed as up caret ("^"), left caret ("<"), or right caret (">"). In many M systems, a right caret is used as a system prompt and an up caret as an exiting tool from an option. Also known as the up-arrow symbol or shift-6 key.
Checksum	The result of a mathematical computation involving the individual characters of a routine or file.
Command	A combination of characters that instruct the computer to perform a specific operation.
Common Menu	The Common menu consists of options that are available to all users. Entering two question marks at the menus select prompt displays any secondary menu options available to the signed-on user, along with the common options available to all users.
Compiled Menu System (^XUTL Global)	Job-specific information that is kept on each CPU so that it is readily available during the user's session. It is stored in the ^XUTL global, which is maintained by the menu system to hold commonly referenced information. The user's place within the menu trees is stored, for example, to enable navigation via menu

jumping.

Control Key	The Control Key (Ctrl on the keyboard) performs a specific function in conjunction with another key. In word-processing, for example, holding down the Ctrl key and typing an A causes a new set of margins and tab settings to occur; Ctrl-S causes printing on the terminal screen to stop; Ctrl-Q restarts printing on the terminal screen; Ctrl-U deletes an entire line of data entry <u>before</u> the Return key is pressed.
Controlled Subscription Integration Agreement	This applies where the IA describes attributes/functions that must be controlled in their use. The decision to restrict the IA is based on the maturity of the custodian package. Typically, these IAs are created by the requesting package based on their independent examination of the custodian package's features. For the IA to be approved, the custodian grants permission to other VistA packages to use the attributes/functions of the IA; permission is granted on a one-by-one basis where each is based on a solicitation by the requesting package. An example is the extension of permission to allow a package (e.g., Spinal Cord Dysfunction) to define and update a component that is supported within the Health Summary package file structures.
Cross Reference	There are several types of cross-references available. Most generally, a VA FileMan cross-reference specifies that some action be performed when the field's value is entered, changed, or deleted. For several types of cross-references, the action consists of putting the value into a list; an index used when looking-up an entry or when sorting. The regular cross-reference is used for sorting and for lookup; you can limit it to sorting only.
Data	A representation of facts, concepts, or instructions in a formalized manner for communication, interpretation, or processing by humans or by automatic means. The information you enter for the computer to store and retrieve. Characters that are stored in the computer system as the values of local or global variables. VA FileMan fields hold data values for file entries.
Data Attribute	A characteristic unit of data such as length, value, or method of representation. VA FileMan field definitions specify data attributes.
Data Dictionary (DD)	The Data Dictionary is a global containing a description of the kind of data that is stored in the global corresponding to a particular file. VA FileMan uses the data internally for interpreting and processing files. It contains the definitions of a file's elements (fields or data attributes), relationships to other files, and structure or design. Users generally review the definitions of a file's elements or data attributes; programmers review the definitions of a file's internal structure.
Data Dictionary Access	A user's authorization to write/update/edit the data definition for a computer file. Also known as DD Access.
Data Integrity	This term refers to the condition of patient records in terms of completeness and

correctness. It also refers to the process in which a particular patient's data is synchronized at all the sites in which that patient receives care.

Data Type	A specific field or type of information, such as Name, Social Security Number, etc.
Database	A set of data, consisting of at least one file, that is sufficient for a given purpose. The VistA database is composed of a number of VA FileMan files. A collection of data about a specific subject, such as the PATIENT file (#2); a data collection has different data fields (e.g. patient name, SSN, Date of Birth, and so on). An organized collection of data about a particular topic.
Database Management System (DBMS)	A collection of software that handles the storage, retrieval, and updating of records in a database. A Database Management System (DBMS) controls redundancy of records and provides the security, integrity, and data independence of a database.
Database, National	A database that contains data collected or entered for all VHA sites.
DBA	Database Administrator, oversees software development with respect to VistA Standards and Conventions (SAC) such as namespacing. In addition, this term refers to the Database Administration function and staff.
DBIA	Database Integration Agreement, see Integration Agreements.
Debug	To correct logic errors or syntax errors or both types in a computer program. To remove errors from a program.
Default	Response the computer considers the most probable answer to the prompt being given. It is identified by double slash marks (//) immediately following it. This allows you the option of accepting the default answer or entering your own answer. To accept the default you simply press the Enter (or Return) key. To change the default answer, type in your response.
Delimiter	Special character used to separate a field, record, or string. VA FileMan uses the caret character ("^") as the delimiter within strings.
Department of Veterans Affairs	The Department of Veterans Affairs (formerly known as the Veterans Administration.)
Device	Peripheral connected to the host computer, such as a printer, terminal, disk drive, modem, and other types of hardware and equipment associated with a computer. The host files of underlying operating systems may be treated like devices in that they may be written to (e.g., for spooling).
DHCP	Decentralized Hospital Computer Program (now known as Veterans Health Information Systems and Technology Architecture [VistA]). VistA software, developed by VA, is used to support clinical and administrative functions at VA Medical Centers nationwide. It is written in M and, via the Kernel, runs on all major M implementations regardless of vendor. VistA is composed of packages

that undergo a verification process to ensure conformity with namespacing and other VistA standards and conventions.

Dictionary	Database of specifications of data and information processing resources. VA FileMan's database of data dictionaries is stored in the FILE of files (#1).
Direct Mode Utility	A programmer call that is made when working in direct programmer mode. A direct mode utility is entered at the MUMPS prompt (e.g., >D ^XUP). Calls that are documented as direct mode utilities cannot be used in application software code.
Domain	A site for sending and receiving mail.
Double Quotes ("")	Symbol used in front of a Common option's menu text or synonym to select it from the Common menu. For example, the five-character string "TBOX" selects the User's Toolbox Common option.
Duplicate Record Merge: Patient Merge	Patient Merge is a VistA application that provides an automated method to eliminate duplicate patient records within the VistA database (i.e., the VistA PATIENT file [#2]).
DUZ	Local variable holding the user number that identifies the signed-on user.
DUZ(0)	A local variable that holds the File Manager Access Code of the signed-on user.
EIE	Enterprise Infrastructure Engineering
Electronic Signature Code	Secret password that some users may need to establish in order to sign documents via the computer.
Enter (<RET>)	Pressing the return or enter key tells the computer to execute your instruction or command or to store the information you just entered.
Entry	VA FileMan record. An internal entry number (IEN, the .001 field) uniquely identifies an entry in a file.
EPG	Engineering Process Group (EPG) (formerly known as Software Engineering Process Group [SEPG]).
Error Trap	A mechanism to capture system errors and record facts about the computing context such as the local symbol table, last global reference, and routine in use. Operating systems provide tools such as the %ER utility. The Kernel provides a generic error trapping mechanism with use of the ^%ZTER global and ^XTER* routines. Errors can be trapped and, when possible, the user is returned to the menu system.
EVS	Enterprise VistA Support (renamed to Product Support)
Extrinsic Function	Extrinsic function is an expression that accepts parameters as input and returns a

value as output that can be directly assigned.

Facility	Geographic location at which VA business is performed.
Field	In a record, a specified area used for the value of a data attribute. The data specifications of each VA FileMan field are documented in the file's data dictionary. A field is similar to blanks on forms. It is preceded by words that tell you what information goes in that particular field. The blank, marked by the cursor on your terminal screen, is where you enter the information.
File	Set of related records treated as a unit. VA FileMan files maintain a count of the number of entries or records.
File Manager (VA FileMan)	VistA's Database Management System (DBMS). The central component of Kernel that defines the way standard VistA files are structured and manipulated.
Forced Queuing	Device attribute indicating that the device can only accept queued tasks. If a job is sent for foreground processing, the device rejects it and prompts the user to queue the task instead.
FORM	Please refer to the Glossary entry for "ScreenMan Forms."
FORUM	The central E-mail system within VistA. Developers use FORUM to communicate at a national level about programming and other issues. FORUM is located at the OI Field Office—Washington, DC (162-2).
Free Text	A DATA TYPE that can contain any printable characters.
GAL	Global Address List.
Global Variable	Variable that is stored on disk (M usage).
Go-Home Jump	A menu jump that returns the user to the Primary menu presented at sign-on. It is specified by entering two up-arrows (^) at the menu's select prompt. It resembles the rubber band jump but without an option specification after the up-arrows.
HealthVet-VistA	The next generation of VistA, HealthVet-VistA, will retain all of the capabilities of legacy VistA but will provide enhanced flexibility for future health care and compliance with the One VA Enterprise Architecture. It will allow seamless data sharing between all parts of VA to benefit veterans and their families.
Help Frames	Entries in the HELP FRAME file that may be distributed with application packages to provide online documentation. Frames may be linked with other related frames to form a nested structure.
Help Processor	A Kernel module that provides a system for creating and displaying online documentation. It is integrated within the menu system so that help frames associated with options can be displayed with a standard query at the menu's select prompt.

Help Prompt	The brief help that is available at the field level when entering one or more question marks.
HL7	National standard for electronic data exchange/messaging protocol.
Host File Server (HFS)	A procedure available on layered systems whereby a file on the host system can be identified to receive output. It is implemented by the Device Handler's HFS device type.
ICN	Patients are assigned a unique identifier, known as an Integration Control Number (ICN), within the process of being added to the MPI database. This number links patients to their records across VHA systems. The Integration Control Number is a unique identifier assigned to patients when they are added to the MPI. The ICN follows the ASTM-E1714-95 standard for a universal health identifier.
ICN/VPID	A combination of Integration Control Number and Veterans Administration Personal Identifier used to uniquely identify a person or record.
Identity Hub	Initiate's Probabilistic Algorithm implementation.
IMDQ	The Identity Management Data Quality Team (renamed the Healthcare Identity Management Team) is a group of Data Management Analysts committed to improving and safeguarding the quality and accessibility of patient data throughout the VA enterprise. They are involved in many data quality initiatives, but their primary role is to assist VHA facilities in all matters related to the MPI.
New name: "Healthcare Identity Management (HC IdM)"	
IMDQ Toolkit	Identity Management Data Quality ToolKit. The IMDQ Toolkit will provide functionality to allow HC IdM staff to search and view identity and exception information in ADR. This includes the ability to view the Primary View record and any associated correlations, correlation data, history, audit trails, and IMDQ Business Rule Events captured by PSIM and MPI. In addition, functionality is provided to support the re-hosting transition for a side-by-side comparison of ADR and MPI information.
Initiate	Identity Management software vendor that was selected by the VHA to provide an Identity Management Probabilistic Algorithm.
Input Template	A pre-defined list of fields that together comprise an editing session.
Institution	A Department of Veterans Affairs (VA) facility assigned a number by headquarters, as defined by Directive 97-058. An entry in the INSTITUTION file (#4) that represents the Veterans Health Administration (VHA).
Integration Agreements (IA)	Integration Agreements define agreements between two or more VistA software applications to allow access to one development domain by another. VistA software developers are allowed to use internal entry points (APIs) or other software-specific features that are not available to the general programming public. Any software developed for use in the VistA environment is required to

adhere to this standard; as such, it applies to vendor products developed within the boundaries of DBA assigned development domains (e.g., MUMPS AudioFax). An IA defines the attributes and functions that specify access. The DBA maintains and records all IAs in the Integration Agreement database on FORUM. Content can be viewed using the DBA menu or the Health Systems Design & Development's Web page.

Integration Control Number (ICN) Patients are assigned a unique identifier, known as an Integration Control Number (ICN), within the process of being added to the MPI database. This number links patients to their records across VHA systems. The Integration Control Number is a unique identifier assigned to patients when they are added to the MPI. The ICN follows the ASTM-E1714-95 standard for a universal health identifier.

Internal Entry Number (IEN) The number used to identify an entry within a file. Every record has a unique internal entry number.

IRM Information Resource Management. A service at VA medical centers responsible for computer management and system security.

ISO Information Security Officer.

ISS Infrastructure and Security Services (now known as Common Services Security Program).

IV&V IV&V is the principal activity that oversees the successful implementation and execution of all internal control processes for financial and interfacing systems.

In order to ensure overall systems integrity, IV&V is accomplished organizationally independent from the elements that acquire, design, develop or maintain the system.

KERNEL VistA software that functions as an intermediary between the host operating system and other VistA software applications so that VistA software can coexist in a standard operating-system-independent computing environment. Kernel provides a standard and consistent user and programmer interface between software applications and the underlying M implementation.

Key The purpose of Security Keys is to set a layer of protection on the range of computing capabilities available with a particular software package. The availability of options is based on the level of system access granted to each user.

Keyword A word or phrase used to call up several codes from the reference files in the LOCAL LOOK-UP file. One specific code may be called up by several different keywords.

LAN Local Area Network.

LAYGO Access A user's authorization to create a new entry when editing a computer file. (**Learn As You GO** allows you the ability to create new file entries.)

Lookup	To find an entry in a file using a value for one of its fields.
M (ANSI Standard)	Massachusetts General Hospital Utility Multi-Programming System (M, formerly named MUMPS) is a software package, which consists of a high level programming language and a built-in database.
Mail Message	An entry in the MESSAGE file (#3.9). The VistA electronic mail system (MailMan) supports local and remote networking of messages.
Mailman	VistA software that provides a mechanism for handling electronic communication, whether it's user-oriented mail messages, automatic firing of bulletins, or initiation of server-handled data transmissions.
Manager Account	UCI that can be referenced by non-manager accounts such as production accounts. Like a library, the MGR UCI holds percent routines and globals (e.g., ^%ZOSF) for shared use by other UCIs.
Mandatory Field	Field that requires a value. A null response is not valid.
Master Patient Index (Austin)	The MPI is a separate computer system located at the Austin Information Technology Center. It maintains a record for VA patients and stores data such as a unique patient identifier and Treating Facility lists (which tracks the sites where that ICN is known).
Master Patient Index/Patient Demographics (MPI/PD) VistA	<p>The Master Patient Index/Patient Demographics (MPI/PD) software resides in VistA enabling sites to:</p> <ul style="list-style-type: none"> • Request an ICN assignment. • Resolve a potential duplicate on the MPI. • Review and process exceptions received from MPI including Primary View Reject exceptions. • Query the MPI (Austin) for known data. • Update the MPI when changes occur to demographic fields stored on the MPI or of interest to other facilities/systems of interest.
Menu System	The overall Menu Manager logic as it functions within the Kernel framework.
Menu Template	An association of options as pathway specifications to reach one or more final destination options. The final options must be executable activities and not merely menus for the template to function. Any user may define user-specific menu templates via the corresponding Common option.
Menu Text	The descriptive words that appear when a list of option choices is displayed. Specifically, the Menu Text field of the OPTION file (#19). For example, User's Toolbox is the menu text of the XUSERTOOLS option. The option's synonym is

TBOX.

Menu Trees	The menu system's hierarchical tree-like structures that can be traversed or navigated, like pathways, to give users easy access to various options.
MPI Austin	The MPI is a separate computer system located at the Austin Information Technology Center. It maintains a record for VA patients and stores data such as a unique patient identifier and Treating Facility lists (which tracks the sites where that ICN is known).
MPI/PD	<p>The Master Patient Index/Patient Demographics (MPI/PD) software resides in VistA enabling sites to:</p> <ul style="list-style-type: none">• Request an ICN assignment.• Resolve a potential duplicate on the MPI.• Review and process exceptions received from MPI including Primary View Reject exceptions.• Query the MPI (Austin) for known data.• Update the MPI when changes occur to demographic fields stored on the MPI or of interest to other facilities/systems of interest.
Namespace	A convention for naming VistA package elements. The Database Administrator (DBA) assigns unique character strings for package developers to use in naming routines, options, and other package elements so that packages may coexist. The DBA also assigns a separate range of file numbers to each package.
Namespacing	Convention for naming VistA software elements. The DBA assigns unique two to four character string prefix for software developers to use in naming routines, options, and other software elements so that software can coexist. The DBA also assigns a separate range of file numbers to each software application.
NDBI	National Database Integration
Node	In a tree structure, a point at which subordinate items of data originate. An M array element is characterized by a name and a unique subscript. Thus the terms: node, array element, and subscripted variable are synonymous. In a global array, each node might have specific fields or "pieces" reserved for data attributes such as name.
Null	Empty—A field or variable that has no value associated with it is null.
Numeric Field	Response that is limited to a restricted number of digits. It can be dollar valued or a decimal figure of specified precision.
OED	Office of Enterprise Development

OI&T	Office of Information Technology
OIFO	Office of Information Field Office
Package (Software)	The set of programs, files, documentation, help prompts, and installation procedures required for a given application (e.g., Laboratory, Pharmacy, and PIMS). A VistA software environment is composed of elements specified via the PACKAGE file (#9.4). Elements include files, associated templates, namespaced routines, and namespaced file entries from the OPTION, HELP FRAME, BULLETIN, and FUNCTION files. As public domain software, VistA software can be requested through the Freedom of Information Act (FOIA).
PIMS	Patient Information Management System- VistA software package that includes Registration and Scheduling packages.
Pointer	The address at which a data value is stored in computer memory. A relationship between two VA FileMan files, a pointer is a file entry that references another file (forward or backward). Pointers can be an efficient means for applications to access data by referring to the storage location at which the data exists.
Primary Key	A Data Base Management System construct, where one or more fields uniquely define a record (entry) in a file (table). The fields are required to be populated for every record on the file, and are unique, in combination, for every record on the file.
Primary Menu	The list of options presented at sign-on. Each user must have a primary menu in order to sign-on and reach Menu Manager. Users are given primary menus by Information Resource Management (IRM). This menu should include most of the computing activities the user needs.
Primary Reviewer	This can be a single person or group of people given the overall responsibility to initiate reviews of potential duplicate record pairs. For example, selected personnel in Patient Administration or a task force or group formed to oversee and conduct the effort of reducing or eliminating the occurrence of duplicate records in the site's database.
Primary View	<p>Primary View of the MPI is a business process that updates the patient identity fields across VA facilities, overview as follows:</p> <ul style="list-style-type: none"> • Primary View is an update to the patient identity fields across VA facilities. • Primary View creates a centralized view of the patient data aka a Primary View • Primary View has the best data from any combination of sites for the patient • Synchronizing the patient identity fields becomes centralized under a

new set of business rules on the MPI.

- Primary View is a transition from and *disassociated* with the Coordinating Master of Record (CMOR) view of the MPI.
- Primary View removes the burden placed on sites to process the Patient Data Review (PDR) entries.
- Primary View allows for:
 - VistA sites to continue to edit their own patient data.
 - Patient data is sent to a central system (i.e., the Master Patient Index) to determine validity and quality

This is an enterprise view of the most current data for a patient based on authority scoring and the latest data rules. Edits to patient identity traits are evaluated based on the same. The highest score achieves the best quality of data updates to the Primary View.

Private Integration Agreement	Where only a single application is granted permission to use an attribute/function of another VistA package. These IAs are granted for special cases, transitional problems between versions, and release coordination. A Private IA is also created by the requesting package based on their examination of the custodian package's features. Example: one package distributes a patch from another package to ensure smooth installation.
Production Account	The UCI where users log on and carry out their work, as opposed to the manager, or library, account.
Programmer Access	The ability to use VistA features reserved for programmers. Having the programmer's at-sign, when <code>DUZ(0)=@</code> , enables programmer access.
Protocol	Entry in the PROTOCOL file (#101). Used by the Order Entry/Results Reporting (OE/RR) package to support the ordering of medical tests and other activities.
PS	Product Support, formerly named Enterprise Product Support (EPS).
PSIM	Person Service Identity Management
Queuing	Requesting that a job be processed in the background rather than in the foreground within the current session. Jobs are processed sequentially (first-in, first-out). Kernel's TaskMan module handles the queuing of tasks.
Queuing Required	Option attribute that specifies that the option must be processed by Task Manager (the option can only be queued). The option may be invoked and the job prepared for processing, but the output can only be generated during the specified times.
Read Access	A user's authorization to read information stored in a computer file.

Record	Set of related data treated as a unit. An entry in a VA FileMan file constitutes a record. A collection of data items that refer to a specific entity (e.g., in a name-address-phone number file, each record would contain a collection of data relating to one person).
Registration Process	During a registration, if a patient does not have an ICN, the patient is checked against the entries in the MPI to determine if the patient already is established or needs to be added. The MPI may return a list of patients who are possible matches. If the patient is truly new and there are no potential matches on the MPI, the MPI will assign an ICN and assigns the requesting site as the CMOR. If the patient is already known at the MPI, the ICN and CMOR is returned and a HL7 message is sent to the CMOR to add this new facility to the list of Treating Facilities for this patient. Registration for patients who already have an ICN at the Facility. At the CMOR site, ADT-A04 Registration HL7 messages are sent to the MPI and the MPI then sends updates to those sites where the patient is known. These messages update the date of last activity and any changes to descriptive data. At a non-CMOR site an ADT-A04 message is sent to the CMOR, via the MPI.
Remote Procedure Call (RPC)	Remote Procedure Call is a protocol that one program can use to request a service from a program located on another computer network. Essentially M code may take optional parameters to do some work and then return either a single value or an array back to the client application.
Resource	Sequential processing of tasks can be controlled through the use of resources. Resources are entries in the DEVICE file, which must be allocated to a process(es) before that process can continue.
Routine	Program or a sequence of instructions called by a program that may have some general or frequent use. M routines are groups of program lines, which are saved, loaded, and called as a single unit via a specific name.
Rubber Band Jump	A menu jump used to go out to an option and then return, in a bouncing motion. The syntax of the jump is two up-arrows followed by an option's menu text or synonym (e.g., ^^PRINT OPTION file). If the two up-arrows are not followed by an option specification, the user is returned to the primary menu (see Go-home Jump).
SAC	Standards and Conventions. Through a process of quality assurance, all VistA software is reviewed with respect to SAC guidelines as set forth by the Standards and Conventions Committee (SACC).
SACC	VistA's Standards and Conventions Committee. This Committee is responsible for maintaining the SAC.
Scheduling Options	The technique of requesting that Task Manager run an option at a given time, perhaps with a given rescheduling frequency.

Screen Editor	VA FileMan's Screen-oriented text editor. It can be used to enter data into any WORD-PROCESSING field using full-screen editing instead of line-by-line editing.
ScreenMan Forms	Screen-oriented display of fields, for editing or simply for reading. VA FileMan's Screen Manager is used to create forms that are stored in the FORM file (#.403) and exported with a software application. Forms are composed of blocks (stored in the BLOCK file [#.404]) and can be regular, full screen pages or smaller, "pop-up" pages.
Scrolling Mode	The presentation of the interactive dialog one line at a time. Compare to Screen-oriented.
SE&I	Software Engineering and Integration
Security Key	The purpose of Security Keys is to set a layer of protection on the range of computing capabilities available with a particular software package. The availability of options is based on the level of system access granted to each user.
Site Manger/IRM Chief	At each site, the individual who is responsible for managing computer systems, installing and maintaining new modules, and serving as a liaison to the CIO Field Offices.
Software (Package)	The set of programs, files, documentation, help prompts, and installation procedures required for a given application (e.g., Laboratory, Pharmacy, and PIMS). A VistA software environment is composed of elements specified via the PACKAGE file (#9.4). Elements include files, associated templates, namespaced routines, and namespaced file entries from the OPTION, HELP FRAME, BULLETIN, and FUNCTION files. As public domain software, VistA software can be requested through the Freedom of Information Act (FOIA).
Spacebar Return	You can answer a VA FileMan prompt by pressing the spacebar and then the Return key. This indicates to VA FileMan that you would like the last response you were working on at that prompt recalled.
Special Queuing	Option attribute indicating that Task Manager should automatically run the option whenever the system reboots.
Subscriber	A subscriber is an entity, which receives updates to a patient's descriptive data from other sites. All treating facilities are also made subscribers as part of the MPI/PD processes.
Subscript	A symbol that is associated with the name of a set to identify a particular subset or element. In M, a numeric or string value that: is enclosed in parentheses, is appended to the name of a local or global variable, and identifies a specific node within an array.
Supported Reference Integration	This applies where any VistA application may use the attributes/functions defined by the IA (these are also called "Public "). An example is an IA that describes a

Agreement	standard API such as DIE or VADPT. The package that creates/maintains the Supported Reference must ensure it is recorded as a Supported Reference in the IA database. There is no need for other VistA packages to request an IA to use these references; they are open to all by default.
Synonym	A field in the OPTION file. Options may be selected by their menu text or synonym (see Menu Text).
Task Manager	Kernel module that schedules and processes background tasks (also called TaskMan)
TCP/IP	Transaction Control Protocol/Internet Protocol. A set of protocols for Layers 3 (Network) and 4 (Transfer) of the OSI network model. TCP/IP has been developed over a period of 15 years under the auspices of the Department of Defense. It is a de facto standard, particularly as higher-level layers over Ethernet. Although it builds upon the OSI model, TCP/IP is not OSI-compliant.
Threshold, Auto-Link	The Auto-Link Threshold is the level at which an Identity Profile must score against a set of identity traits in order to be considered a match. For most enterprise applications the Auto-Link Threshold would be set at or near the Initiate-suggested Auto Link Threshold. Internal Identity Management Systems (MPI/PSIM) may use a lower score, perhaps the Task Threshold, as an Auto-Link Threshold for identity management decision processes.
Toolkit (KERNEL Toolkit)	<p>The Toolkit is a robust set of tools developed to aid the Veterans Health Information Systems and Technology Architecture (VistA) development community, and Information Resources Management (IRM), in writing, testing, and analysis of code. They are a set of generic tools that are used by developers, documenters, verifiers, and packages to support distinct tasks.</p> <p>The Toolkit provides utilities for the management and definition of development projects. Many of these utilities have been used by the CIO Field Office - San Francisco for internal management and have proven valuable. Toolkit also includes tools provided by other CIO Field Offices based on their proven utility.</p>
Trigger	A type of VA FileMan cross-reference. Often used to update values in the database given certain conditions (as specified in the trigger logic). For example, whenever an entry is made in a file, a trigger could automatically enter the current date into another field holding the creation date.
Trigger Event	The event that initiates an exchange of messages is called a trigger event. The HL7 Standard is written from the assumption that an event in the real world of health care creates the need for data to flow among systems. The real-world event is called the trigger event. For example, the trigger event "a patient is admitted" may cause the need for data about that patient to be sent to a number of other systems. There is a one-to-many relationship between message types and trigger event codes. The same trigger event code may not be associated with more than one message type.

UCI	User Class Identification, a computing area. The MGR UCI is typically the Manager's account, while VAH or ROU may be Production accounts.
Up-Arrow Jump	In the menu system, entering an up-arrow (^) followed by an option name accomplishes a jump to the target option without needing to take the usual steps through the menu pathway.
User Access	<p>This term is used to refer to a limited level of access, to a computer system, which is sufficient for using/operating a package, but does not allow programming, modification to data dictionaries, or other operations that require programmer access. Any option, for example, can be locked with the key XUPROGMODE, which means that invoking that option requires programmer access.</p> <p>The user's access level determines the degree of computer use and the types of computer programs available. The System Manager assigns the user an access level.</p>
VA	Department of Veterans Affairs
VA FileMan	VistA's Database Management System (DBMS). The central component that defines the way standard VistA files are structured and manipulated.
VAMC	Veterans Affairs Medical Center.
Variable	Character, or group of characters, that refer(s) to a value. M (previously referred to as MUMPS) recognizes 3 types of variables: local variables, global variables, and special variables. Local variables exist in a partition of main memory and disappear at sign-off. A global variable is stored on disk, potentially available to any user. Global variables usually exist as parts of global arrays. The term "global" may refer either to a global variable or a global array. A special variable is defined by systems operations (e.g., \$TEST).
Verify Code	The Kernel's Sign-on/Security system uses the Verify code to validate the user's identity. This is an additional security precaution used in conjunction with the Access code. Verify codes shall be at least eight characters in length and contain three of the following four kinds of characters: letters (lower- and uppercase), numbers, and, characters that are neither letters nor numbers (e.g., "#", "@" or "\$"). If entered incorrectly, the system does not allow the user to access the computer. To protect the user, both codes are invisible on the terminal screen.
VHA	Veterans Health Administration.
VISN	Veterans Integrated Service Network
VistA	Veterans Health Information Systems and Technology Architecture (VistA) of the Veterans Health Administration (VHA), Department of Veterans Affairs (VA). VistA software, developed by the VA, is used to support clinical and administrative functions at VHA sites nationwide. It is both roll-and-scroll- and GUI-based software that undergoes a quality assurance process to ensure

conformity with namespacing and other VistA standards and conventions (see SAC).

Server-side code is written in M, and, via Kernel, runs on all major M implementations regardless of vendor. Client-side code is written in Java or Borland Delphi and runs on the Microsoft operating system.

VPID

Veterans Administration Personal Identifier.

WAN

Wide Area Network.

Z st

All message type and trigger event codes beginning with Z are reserved for locally defined messages. No such codes will be defined within the HL7 Standard.



NOTE: For a comprehensive list of commonly used infrastructure- and security-related terms and definitions, please visit the Glossary Web page at the following Web address:

<http://vaww.vista.med.va.gov/iss/glossary.asp>

For a comprehensive list of acronyms, please visit the Acronyms Web site at the following Web address:

<http://vaww.vista.med.va.gov/iss/acronyms/index.asp>

Appendix A



NOTE: As of Patch XT*7.3*113, the identification of potential duplicate patients will no longer be controlled by the SEARCH option described in this appendix, but will instead be controlled by a new matching engine, Initiate, that will be called from Person Service Identity Management (PSIM). The information below applies to the Kernel Duplicate Record Merge application

Duplicate Tests and Scores: Technical Description

The following attributes from the PATIENT file (#2) are used in the identification of potential duplicate pairs. Shown below are the field names, field number, and the positive and negative weights currently assigned to these values in the determination of a numeric value for comparison with the potential total value.

Field Name	Field Number	Positive Weight (score)	Negative Weight (score)
Name	.01	100	-60
SSN	.09	100	-60
Claim Number	.313	80	-60
Date of Birth	.03	60	-40
Date of Death	.351	50	-50
Mother's Maiden Name	.2403	50	-90
Last Separation Date	.327	50	-40
Sex	.02	20	-90

Initial Screen for Potential Duplicates

The current file entry is tested against other entries in the file to determine records that might be potential duplicates. The initial screen for potential duplicates is a very broad test. It is based on Name, SSN, and Date of Birth data. Records that are identified are compared in further detail to determine whether they should be retained as potential duplicates. Other pertinent information applying to the initial screen:

- If the current file entry has an SSN value beginning with five zero digits, it is skipped as a test patient entry.
- Any entry in the file which has a name beginning with the same last name and first initial (as determined from the "B" cross-reference) is included.
- Any entry with the same last 4 digits of the social security number (as determined from the "BS" cross-reference) is included.

- Any entry with the same date of birth or with a date of birth in which the day of the month is transposed (as determined from the "ADOB" cross-reference) is included.

Further Testing of Potential Duplicates

After the initial screen, the current file entry is tested against each potential duplicate found with respect to each of the attributes listed on the previous page. If either one of the potential duplicate pair entries does not contain data for an attribute, that attribute is ignored and is not included within the final score.

Each test is associated with a positive score and a negative score. The positive score (or a fraction of it) is given, if the two entries match (or are considered a partial match). The negative score is assigned, if the two entries do not match. The scores assigned (positive or negative) for each attribute are totaled and compared to the total positive score possible for the attributes included. If the actual score is equal to or greater than a set percentage of the total possible, the pair of entries are added as a potential duplicate pair. Currently, the threshold percentage is set at 60.

Tests for Name

Each possible name for the entry being matched is used during the comparisons. The name that gives the highest score is used as the score for the pair. (Possible names include the primary name entry, any aliases assigned, and names which are generated if a ZZ string precedes a name.)

- Names which match exactly are given the full positive score.
- If first names match and last names match the pair is given 80% of the full score.
- If first names match by soundex and last names match by soundex the pair is given 60% of the full score.
- If last names and first initials match the pair is given 50% of the full score.
- If last names match the pair is given 40% of the full score.
- If first names match by soundex, the pair is given 20% of the full score.
- All other pairs are given the negative score.

Tests for Social Security Number

- If either entry in the pair has a pseudo-Social Security Number, the testing of SSNs is omitted.
- Any pair in which the SSNs differ only by a single digit, or only by the transposition of two adjacent digits, are given the full positive score.
- If the first initial of the last name and the last four digits of the SSN match, 80% of the full score is given.
- If the last four digits of the SSN match, 60% of the full score is given.
- If the first five digits of the SSN match, 40% of the full score is given.

- If the first three digits match and at least two of the last four digits match in value and position, 20% of the full score is given.
- If the middle two digits (digits 4 and 5) match between entries and at least two of the last four digits match in value and position, 20% of the full score is given.
- Pairs which do not meet any of the above criteria are given the full negative score.

Tests for Claim Number

- If the Veteran's Claim Numbers are identical, the full positive value is given.
- If the Veteran's Claim Numbers differ by only one digit or by transposition of two adjacent digits, 80% of the value is given.
- Any other pairs with claim numbers are assigned the full negative value.

Tests for Dates

The Date of Birth, Date of Death, and Last Separation Date are all processed in the same manner.

- If the pair of dates match exactly, the full positive value is given.
- If the pair of dates differ only in a single digit, or by transposition of an adjacent pair of digits, 80% of the value is given.
- If one or both of the dates is missing the day of the month, but they are otherwise identical, 80% of the value is given.
- If one or both of the dates is missing the month, but they are from the same year, 60% of the value is given.
- Other date pairs are given a negative value.

Tests for Mother's Maiden Name

The data in Mother's Maiden Name is processed in the same manner as the Name field, except initial processing is performed to attempt to isolate the actual maiden name. Since a number of entries including information such as '(Deceased)' or '(Living)' have been observed, only text prior to a parenthesis is taken. If there are commas included, then only the text preceding the comma is taken. If there are no commas, but a space in the name, the name after the space is taken (this might affect some multi-string names, but the last string should be the same, if they match).

Tests for Gender

The gender values (Sex field) are tested for being the same or different. The positive value is given, if they are the same, but this is a much smaller positive value than most scores. The negative value, however, for the sex of the two entries being different is much larger, since it basically separates the two entries from each other.