



**MASTER PATIENT INDEX/PATIENT  
DEMOGRAPHICS (MPI/PD) VISTA  
PROGRAMMER MANUAL**

Version 1.0

April 1999

Revised June 2004

Department of Veterans Affairs  
Health System Design & Development (HSD&D)  
Infrastructure and Security Services (ISS)



# Revision History

## Document Revision History

The following table displays the revision history for this document. Revisions to the documentation are based on a continuous dialogue with the Infrastructure and Security Services (ISS) Technical Writers and evolving industry standards and styles.

Date	Revision	Description	Author
04/1999	1.0	Initial MPI/PD and MPI VistA User Manuals were created for release with the MPI/PD V.1.0 software in April 1999.	Dianne Barker, Silver Spring OIFO, Susan Strack, Oakland OIFO
06/2003	2.0	MPI/PD VistA Version 1.0 Programmer Manual released in conjunction with patches DG*5.3*505, and MPIF*1.0*28 of the MPI Changes Iteration 1 project	Susan Strack, Oakland, OIFO
5/27/04	3.0	MPI/PD VistA Version 1.0 User Manual released in conjunction with patches MPIF*1.0*33, RG*1.0*35 and DG*5.3*589 to support the MPI Changes Iteration 2 project	Susan Strack, Oakland OIFO; Christine Chesney, Oakland OIFO; Christine Link, Birmingham OIFO; Paulette Davis, Birmingham OIFO
9/24/04	4.0	Implemented new conventions for displaying TEST data: <ul style="list-style-type: none"><li>• The first three digits (prefix) of any Social Security Numbers (SSN) will be in the "900" or "800" range.</li><li>• Patient or user names will be formatted as follows: PATIENTn,[first name] or USERn,[first name] respectively, where the digit ("n") in the last name increments with each new entry.</li></ul>	Susan Strack, Oakland OIFO

## 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

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# Orientation

This manual is intended for use in conjunction with the Master Patient Index/Patient Demographics Version 1.0 package. It uses several methods to highlight different aspects of the material. The following symbols are used in the manual to alert the reader about special information:

- Various symbols are used throughout the documentation to alert the reader to special information. The following table gives a description of each of these symbols:

Symbol	Description
	Used to inform the reader of general information including references to additional reading material
	<b>Used to caution the reader to take special notice of critical information</b>

**Figure i: Documentation Symbol Descriptions**

- Descriptive text is presented in a proportional font (as represented by this font). "Snapshots" of computer online displays (i.e., character-based screen captures/dialogs) and computer source code are shown in a *non*-proportional font.
- All uppercase is reserved for the representation of M code, variable names, or the formal name of options, field and file names, and security keys (e.g., the XUPROGMODE key).
- The Enter or Return Key is illustrated as **<Enter>** and is included in examples only when it might be unclear that such a keystroke must be entered.
- Conventions for displaying TEST data in this document are as follows:
  - The first three digits (prefix) of any Social Security Numbers (SSN) will be in the "900" or "800" range.
  - Patient or user names will be formatted as follows: PATIENTn,[first name] or USERn,[first name] respectively, where the digit ("n") in the last name increments with each new entry.

## Who Should Read this Manual?

This manual is written with the assumption that the reader is familiar with the VistA computing environment. If you need more information, we suggest you look at the various VHA OI - System Design & Development (SD&D) home web pages for a general orientation to VistA at this address: <http://vaww.vista.med.va.gov>.

## Reference Materials

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 on the following Web site:

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

In addition to the information provided in this documentation, readers who wish to learn more about the Master Patient Index (MPI) software should consult:

- VistA Documentation Library (VDL) at the following address:  
<http://www.va.gov/vdl/Infrastructure.asp?appID=16>
- MPI Data Quality Management team's website at: [http://vista.med.va.gov/mpi\\_dqmt/](http://vista.med.va.gov/mpi_dqmt/)
- MPI/PD web site at: [http://vista.med.va.gov/mpi\\_pd/index.html](http://vista.med.va.gov/mpi_pd/index.html)

The MPI/PD VistA product documentation, as found on the VDL, includes the following manuals:

- *Master Patient Index/Patient Demographics (MPI/PD) VistA HL7 Interface Specifications*
- *Master Patient Index/Patient Demographics (MPI/PD) VistA User Manual*
- *Master Patient Index (MPI) VistA Programmer Manual*
- *Master Patient Index/Patient Demographics (MPI/PD) VistA Technical Manual*
- *Master Patient Index/Patient Demographics VistA Exception Handling*
- *Master Patient Index (MPI) VistA Monograph*

One of the major pre-implementation tasks is the merging of duplicate patient records at a site. The *Duplicate Record Merge: Patient Merge (Patch XT\*7.3\*23) User Manual* is required for this task.



Patches XT\*7.3\*49, RG\*1\*6, and RG\*1\*10 allow sites with MPI/PD to resolve duplicate records.

Because of the close interaction of MPI/PD VistA with other packages, the user may find it helpful to review documentation for *VistA Health Level 7 (HL7) V. 1.6*, and updates to the *Patient Information Management System (PIMS) V. 5.3 Admission-Discharge-and Transfer (ADT) module documentation*.

Readers who wish to learn more about Infrastructure and Security Services (ISS) documentation should consult the following:

- ISS Documentation Home Page at the following web address

<http://www.va.gov/vdl/>

This site provides documentation links and software downloads for all ISS documentation.

- Health Systems Design and Development (HSD&D) VistA Documentation Library (VDL) Home Page at the following web address:

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

This site provides documentation links and software downloads for all VistA documentation.



For more information on the use of Adobe Acrobat Reader, please refer to the “Adobe Acrobat Quick Guide” at the following web address:  
<http://vista.med.va.gov/iis/acrobat/index.asp>



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# Chapter 1: Introduction

This is the Programmer Manual for the Master Patient Index/Patient Demographics (MPI/PD) VistA. It is designed to provide you, the Veterans Health Information Systems and Technology Architecture (VistA) developer, with information about the programming functions of MPI/PD. This manual covers the APIs (Application Programming Interfaces) involved with MPI/PD. It provides information on which call(s) to use to perform a particular task, how to use the call(s), and if applicable, which messages to subscribe to. Specifically, this manual provides information on APIs relating to Integration Control Numbers (ICN)s.

## Reference Material

In order to competently operate this package you must be familiar with the operations of the VistA computer system in general.

### The MPI/PD VistA Product Documentation

In addition to the information provided in this documentation, readers who wish to learn more about the Master Patient Index/Patient Demographics (MPI/PD) VistA software should consult the VistA Documentation Library (VDL) at the following address:

<http://www.va.gov/vdl/Infrastructure.asp?appID=16> .

The MPI/PD VistA product documentation, as found on the VDL, includes the following manuals:

- *Master Patient Index/Patient Demographics (MPI/PD) VistA HL7 Interface Specifications*
- *Master Patient Index/Patient Demographics (MPI/PD) VistA User Manual*
- *Master Patient Index (MPI) VistA Programmer Manual*
- *Master Patient Index/Patient Demographics (MPI/PD) VistA Technical Manual*
- *Master Patient Index/Patient Demographics VistA Exception Handling*
- *Master Patient Index (MPI) VistA Monograph*

## Installation Information and Procedures

All installation information and procedures involved with Master Patient Index/Patient Demographics (MPI/PD) VistA are included in the following MPI/PD documents:

- *CIRN Patient Demographics (CIRN-PD) Pre-Installation and Implementation Guide v.5*



One of the major pre-implementation tasks is the merging of duplicate patient records at a site. The “*Duplicate Record Merge: Patient Merge (Patch XT\*7.3\*23) User Manual*” is required for this task. Patches XT\*7.3\*49, RG\*1\*6, and RG\*1\*10 allow sites with MPI/PD to resolve duplicate records. If you do not have these patches installed, it is recommended that the option to merge patient records be placed out of order.

## **Interaction Between MPI/PD and Other Packages**

Because of the close interaction between MPI/PD and other packages, you may also find it helpful to review the documentation for the following VistA software:

- VistA *HL7 V. 1.6*
- *PIMS V. 5.3 Admission, Discharge and Transfer (ADT)*

# Chapter 2: MPI/PD Frequently Asked Questions (FAQ)

## What is the Master Patient Index (MPI)?

The Master Patient Index (MPI) is a central index of unique patients. Veterans Health Administration's (VHA) implementation includes assigning each patient an Integration Control Number (ICN) and a Coordinating Master of Record (CMOR) site. The ICN assignment enables the sharing of patient data between operationally diverse systems. Each record, or index entry, in the MPI contains a small amount of patient data used to identify individual entries. MPI data is maintained in a centralized, dynamic database located at the Austin Automation Center (AAC) that is available to meet multiple information needs across many systems. The MPI/PD software resides in VistA. The MPI/PD VistA software enables sites (i.e., Veterans Affairs Medical Centers) to:

- Query the MPI (Austin) for known data.
- Request the assignment of an ICN.
- Inactivate an ICN.
- Manage incoming and outgoing Change CMOR requests.

The MPI/PD functionality, among other things, updates the MPI with any changes made to the demographic fields of the patients the MPI has assigned an ICN. The MPI will only accept demographic data updates or treating facility list updates from the CMOR.



For more information see “Appendix A: Product Description—What is the Master Patient Index” of this manual.



The MPI/PD software (i.e., routines in the MPIF\* and RG\* namespace) SHOULD NOT reside/run on Legacy systems. Any VistA applications utilizing APIs in the MPIF and RG namespace on Legacy systems should check for the existence of these routine(s) before trying to access them.

## What Information is Stored on the MPI?

Several groups have expressed an interest in knowing what data (fields) are stored on the MPI in Austin. Currently, the MPI contains the following fields:

- Integration Control Number (ICN)
- Surname
- First Name
- Middle Name
- Name Prefix
- Name Suffix
- Mother's Maiden Name
- Date Of Birth
- Place of Birth City
- Place of Birth State
- Date Of Death
- Death Verification Status

- Gender
- Social Security Number
- SSN Verification Status
- Claim Number
- Coordinating Master of Record
- Sensitivity
- Primary ICN
- Date/Time of Original Creation
- Facility of Original Creation
- Created By
- Marital Status
- Street Address [Line 1]
- Street Address [Line 2]
- Street Address [Line 3]
- City [Residence]
- State [Residence]
- Zip+4 [Residence]
- Phone Number [Residence]
- POW Status Indicated?
- Multiple Birth Indicator
- Alias (multiple)
- Race Information (multiple)
- Ethnicity Information (multiple)
- Type of Client
- Other IDs (multiple)
- Date/Time Changed



The following fields are not populated on the MPI at this time:

- Death Verification Status
- Sensitivity
- SSN Verification Status
- Type of Client

## Is the MPI the Authoritative Source for this Information?

No. The MPI is only the authoritative source for the ICN and the correlated domains (treating facilities) that know that ICN.

## What is an Integration Control Number (ICN)?

An Integration Control Number (ICN) is a unique identifier assigned to each patient entry in the Master Patient Index linking patients to their records across VA systems. The ICN is a 10-digit number. It is simply a number used internally by VistA software. The ICN also has a 6-digit check sum associated with it. The ICN may have the checksum concatenated to it with a V separating the two. For example: 1000720100V271387.

The ICN follows the ASTM E1714-95 standard for a universal health identifier. There are two different categories of ICNs, which are described below.

### National ICNs

1. During the initialization of the MPI, each VA Medical Center sends batch HL7 messages to the index requesting ICNs for all of its patients whose records reflect activity in the past three fiscal years (i.e., patient records that contain CMOR Activity Scores). During this process, one of the following three scenarios can occur:
  - a. The MPI may find that the patient already exists in the index and return the ICN and CMOR.
  - b. The MPI may find one or more entries in the index for the patient, causing the need for human interaction to decide if either is correct. In this case, the MPI returns a flag for potential matches.
  - c. The MPI may NOT find the patient. In this case, the patient is added to the index and the site making the request becomes the CMOR. The ICN and CMOR are returned to the site.
2. During daily operations, a real-time TCP/IP connection (i.e., Direct Connect) is established to the MPI. Patient Information Management System (PIMS) options interact with the MPI making it possible for the immediate return of an ICN and CMOR designation for a patient that does not have one (a local or national ICN) assigned in the site's PATIENT file (#2).



For more information on PIMS Interaction with the MPI, see the section “PIMS Options – MPI Daily Operations” in the *Master Patient Index (MPI) VistA User Manual*

3. Any patient records that have received a local ICN or that were flagged as missing an ICN are sent up for assignment of a national ICN in the Local/Missing ICN Resolution background job. This job is scheduled to run nightly after hours.

### Local ICNs

ICNs are created for new patients locally at the site when the MPI is unavailable to assign an ICN in real-time (e.g., the Direct Connect could not be established). Local ICNs contain the same number of digits as a national ICN. The only difference is that the first three digits are the VAMCs station number.



It is not recommended that Local ICNs be sent to remote databases as they will only be known at the local facility that assigned them.

A background job named Local/Missing ICN Resolution will find all patients in the local PATIENT file (#2) with either a Local ICN or that have been flagged as missing an ICN and send these patients to the MPI for a national ICN assignment.

### Missing ICNs

Patient records get an ICN assignment from the MPI in real time if they are added to the PATIENT file (#2) using any one of the PIMS options: Load/Edit Patient Data, 10-10T Registration, Register a Patient, and Electronic 10-10EZ Processing.

Missing ICNs result from patient records added to the PATIENT file (#2) via means other than these PIMS options. As long as the DPT global was not hard set, these patients will be flagged and sent up in the nightly Local/Missing ICN Resolution background job for ICN assignment.

## What Does an ICN Look Like?

The ICN is a 10-digit number with 6-digit check sum at the end. The ICN may have the checksum concatenated to it with a character V separating the two. For example:

1000720100V271387

## How Does a Patient Get an ICN?

A patient record can get an ICN assignment by one of the following three ways:

1. During the preparation phase of MPI/PD, if a patient has been seen at a VAMC within the past three fiscal years, a CMOR Activity Score is assigned and stored in CMOR ACTIVITY SCORE field (#991.06) of their patient record in that site's PATIENT file (#2). During the implementation phase of the MPI/PD, patient records containing CMOR Activity Scores are sent to the MPI for ICN assignment.
2. Once the implementation phase has been completed, patients can also receive an ICN through a real-time connection (i.e. Direct Connect) via one of these four PIMS options:
  - 10-10T Registration
  - Register a Patient
  - Load/Edit Patient Data
  - Electronic 10-10EZ Processing

Through these PIMS options, the MPI will attempt to assign an ICN to any patient record that does not have one.

3. A patient may also receive an ICN via the MPI/PD VistA option Single Patient Initialization. This option will allow any patient that does not have a national ICN to be selected and a real-time connection made with the MPI to request an ICN. This option must be used to get ICN assignments for patients with exceptions (such as potential matches) requiring human interaction to make the decision whether or not they already exist on the MPI.

## Where is the ICN Stored?

Besides being stored on the MPI, the ICN is also stored in two fields in the PATIENT file (#2):

1. The Integration Control Number, field (#991.01).
2. The ICN Checksum, field (#991.02).

Both of these fields are stored on the "MPI" node, ^DPT(<DFN>,"MPI").

An ICN can also be stored in the ICN History multiple (#2.0992). ICNs found in the ICN History multiple are ones that have previously been assigned to the patient, but are not the current ICN. Stored in the ICN History multiple are the following fields: ICN (#.01), ICN checksum (#1), CMOR (#2) and Date/Time of Change (#3).

The ICN History multiple is stored in ^DPT(<DFN>,"MPIFHIS",<IEN>,0).

## What is a Local ICN?

A Local ICN is created by a local VistA system, and not the MPI. A Local ICN is assigned when:

- the site cannot connect to the MPI,
- a list of potential matches for the patient is returned from the MPI; this requires human intervention by the facility (MPI POC) to determine if the patient is any of the potential matches or is none of the potential matches.

Each facility is currently responsible for appropriately resolving their local exceptions on a daily basis; [VHA DIRECTIVE 2002-040](#) states the requirements.

All Local ICNs created in a given day are sent up to the MPI via the LOCAL/MISSING ICN RESOLUTION JOB that runs every 600 seconds. The result of this job will be either an exception or a National ICN. The Local ICN could have already generated an exception as in the case of a potential match exception, where the Local ICN is not sent up again in the night job.

## How Can I Retrieve a Patient's ICN as a VistA Developer/Package?

The ICN is a 10-digit number with a six-digit checksum at the end, often separated by the character V (e.g., 1000720100V271387). The API \$\$GETICN^MPIF001(DFN) will return a complete ICN. This function call is passed the IEN for the patient in the PATIENT file (#2). Returned is a -1^error message or the ICN, include the ICN Checksum. For example:

**Usage:** This function call: S ICN=\$\$GETICN^MPIF001(3404040)

**Output:** Returns this value: 1000720100V271387



This API returns the active ICN for the patient. If there was an ICN assigned, which is no longer active, no ICN will be returned.

Use the API \$\$GETDFN^MPIF001(ICN) if you have the ICN and need to find the patient's entry in the PATIENT file (#2). This function call is passed the ICN (without the Checksum or "V") of the patient you are looking for in the PATIENT file (#2). Returned is a -1^error message or the IEN for the patient in this site's PATIENT file (#2).

**Usage:** This function call: S DFN=\$\$GETDFN^MPIF001(1000720100)

**Output:** Returns this value: 3404040

## Why Would a Patient Record Not Have an ICN Assignment?

A patient record may not have an ICN assignment (national or local) for any one of the following reasons:

1. If they have not been seen at a VAMC in the last 3 fiscal years, their patient record would not have been sent up to the MPI for an ICN and CMOR assignment during the initial seeding of the index.
2. If they have not been processed into the system via any of the four PIMS options: Load/Edit, Register a Patient, 10-10T Registration, or Electronic 10-10EZ Processing since the initial seeding of the index.
3. If their patient record has been inactivated from the MPI. This may have happened for a number of reasons, such as a duplicate record in the site's PATIENT file (#2).



Patients are no longer inactivated from the MPI, as they have been in the past.

4. If their patient record had been merged with another.



As of Patch DG\*5.3\*589, the AMPIZZ and ATSSN cross-references have been removed from the PATIENT file (#2). These cross-references were used to automatically inactivate patient entries from the MPI if records were found to be ZZ'd and/or if the first five digits of patient Social Security Numbers were replaced with zeros.

## Can a Patient's ICN Change?

Yes. A patient's ICN can change in any of the following two ways:

1. An ICN can change as a result of inactivating it and then having another ICN assigned (though another ICN may not ever be assigned). With the release and implementation of the CIRN Aware Duplicate Record Merge patch, you may have seen ICNs change as a result of this process.
2. An ICN can also change as a result of sending a local assignment to the MPI for a national ICN assignment. All previously assigned ICNs are stored in the ICN History Multiple in the PATIENT file (#2). The GETDFN Application Programmer Interface will return the patient given a passed ICN.

## How Can I Tell if an ICN has Change?

Currently, there isn't a trigger event to tell anyone of a change to ICN. When an ICN is a local, there isn't anyone else that knows about this number so there wasn't a need to tell anyone. When an ICN is inactivated, only that site and the MPI know about the ICN (that's why it can be inactivated), so there was only a need to tell the MPI, which happens during the inactivation process. This is true since there weren't any other applications utilizing the ICN. The HEC has created their own cross-reference on the ICN field to tell them when the ICN value has changed. A generic function will be created to allow any one that needs to know of a change that one has happened. Since previous ICNs (including locals) are stored in the ICN History multiple of the PATIENT file (#2), these ICNs can be passed into the GETDFN^MPIF001 API and the patient found at the local site.

## Can a Vendor Use an ICN to Identify a Patient?

If a vendor application requires an ICN and would like to attempt to get one as part of the processing, a request needs to be sent to the MPI development team for evaluation. The development staff will review the request and if approved, provide the appropriate APIs and code to accomplish this task.

## What is a Coordinating Master of Record (CMOR)?

The function of the Coordinating Master of Record (CMOR) site is to advise other site(s) when demographic data has been changed for a shared patient (i.e., a patient who has been seen at more than one site) after that patient has been established in the MPI. The MPI will only accept changes to patient data from the CMOR site for that patient.



The CMOR is NOT analogous with the notion of Preferred Facility as it relates to PIMS. Additionally, CMOR sites do not receive endorsed funding that is NOT part of the regular course for patient care.

## Where is the CMOR Stored?

In addition to being stored at the MPI, the CMOR is stored on the "MPI" node, ^DPT(<DFN>,"MPI"), of the PATIENT file (#2). The CMOR field is called the Coordinating Master of Record and is field number #991.03.

Previously assigned CMORs are stored in the CMOR History Multiple (#993) of the PATIENT file (#2). Within this multiple, they are stored in the following fields: CMOR (#.01), CMOR Activity Score (#1), CMOR Score Calculation Date (#2) and CMOR Change Date (#3).

CMOR History multiple is stored in ^DPT(<DFN>,"MPICMOR",<IEN>,0).

## Do Patients with Local ICNs have CMORs?

Yes. Patients with local ICNs have the site that assigned the local ICN as the CMOR. Remember that this ICN is only known at this one facility (the CMOR facility).

## How Can I Retrieve a Patient's CMOR as a Vista Developer/Package?

There are a couple of support function calls that can return the CMOR for a given patient. They are listed below.

1. \$\$GETVCCI^MPIF001(DFN). This function call is passed the IEN for the patient in the PATIENT file (#2). Returned is a -1^error message or the Station Number of the CMOR site. For example:

**Usage:** This function call: S CMOR=\$\$GETVCCI^MPIF001(3404040)

**Output:** Returns this value: 516

2. \$\$CMOR2^MPIF001(DFN). This function call is also passed the IEN of the patient in the PATIENT file (#2). Returned is a -1^error message or the CMOR Facility Name. For example:

**Usage:** This function call: S CMOR=\$\$CMOR2^MPIF001(3404040)

**Output:** Returns this value: Bay Pines VAMC

## How Can My VistA Application Get an ICN Assignment for a Patient?

If your application requires an ICN and would like to attempt to get one as part of your processing, a request needs to be sent to the development team for evaluation. The development staff will review the request and if approved, provide the appropriate APIs and code to accomplish this task.

## What is the Communication Procedure with the MPI?

See the [MPI/PD HL7 Interface Specifications](#).

## How Do I Ensure Test Data is Not Sent to the MPI?

*“I remember there was some discussion among the MPI Development Team regarding mirroring the test account and implementing a special process to ensure that test data was not sent to the MPI. Do you know who I could contact about that?”*

The routine is the NVS Test Account Reset Utility (i.e., NVSTAR). NVSTAR is distributed via a KIDS build so it is platform independent. The software along with all the supporting documentation is available at all the CIOFO FTP servers in the test system directory (just below the root): e.g., fo-hines.med.va.gov/testsystem. Note, that HL7 cleanup is only one of the rather large lists of cleanup/reset procedures the software does now. If you have further questions about, or need help with getting and using the NVSTAR, contact Mark Wang at 208-422-1039.

## How Do I Block Automatic Calls to a Patient if CMOR Doesn't Use the Same Characters?

MUMPS Audio Fax allows you to place a site-specified non-numeric character in the phone number to block automatic calls to a patient. This value is overwritten if the patient's CMOR doesn't use the same character. Is there another way to block the calls?

Mumps AudioFax outbound calling applications will look for an identified character in the patient phone number and will also look for an entry in the VEXM APPOINTMENT CALLS EXCLUDED PATIENTS file as a basis for excluding the patient from calls. Use EXCLUDE PATIENT FROM CALLING option on the MAF APPOINTMENT SYSTEM MENU to correct this.

```

Select MAF APPOINTMENT SYSTEM MENU Option: 8 <Enter> EXCLUDE PATIENT FROM
CALLING

Select PATIENT NAME: DEMONSTRATION
 1 PATIENT1,ADAM 12-24-19 999008888 NO NSC VETERAN
 2 PATIENT2,ARCHIE 01-01-25 999001333 NO NON-VETERAN (OTHER)
 3 PATIENT3,BEAVAR 07-04-53 999006666 NO NSC VETERAN
 4 PATIENT4,BEN 02-14-01 999007777 YES SC VETERAN
 5 PATIENT5,BOBBY 06-06-60 999000606 NO NSC VETERAN

ENTER '^' TO STOP, OR CHOOSE 1-5: 2 <Enter> PATIENT2,ARCHIE 01-01-25
999001333 NO NON-VETERAN (OTHER)

Select PATIENT NAME: DEMONSTRATION <<<--- Need to enter the name again.
 1 PATIENT1,ADAM 12-24-19 999008888 NO NSC VETERAN
 2 PATIENT2,ARCHIE 01-01-25 999001333 NO NON-VETERAN (OTHER)
 3 PATIENT3,BEAVAR 07-04-53 999006666 NO NSC VETERAN
 4 PATIENT4,BEN 02-14-01 999007777 YES SC VETERAN
 5 PATIENT5,BOBBY 06-06-60 999000606 NO NSC VETERAN

ENTER '^' TO STOP, OR CHOOSE 1-5: 2 <Enter> PATIENT2,ARCHIE 01-01-25
999001333 NO NON-VETERAN (OTHER)

Warning : You have selected a test patient.
Enrollment Priority: Category: NOT ENROLLED End Date:

Select PATIENT NAME: DEMONSTRATION
 1 PATIENT1,ADAM 12-24-19 999008888 NO NSC VETERAN
 2 PATIENT2,ARCHIE 01-01-25 999001333 NO NON-VETERAN (OTHER)
 3 PATIENT3,BEAVAR 07-04-53 999006666 NO NSC VETERAN
 4 PATIENT4,BEN 02-14-01 999007777 YES SC VETERAN
 5 PATIENT5,BOBBY 06-06-60 999000606 NO NSC VETERAN

ENTER '^' TO STOP, OR CHOOSE 1-5: 5 <Enter> PATIENT5,BOBBY 06-06-60
999000606 NO NSC VETERAN

Warning : You have selected a test patient.
Enrollment Priority: GROUP 5 Category: IN PROCESS End Date:

Select PATIENT NAME: DEMONSTRATION <<<--- Need to enter the name again.
 1 PATIENT1,ADAM 12-24-19 999008888 NO NSC VETERAN
 2 PATIENT2,ARCHIE 01-01-25 999001333 NO NON-VETERAN (OTHER)
 3 PATIENT3,BEAVAR 07-04-53 999006666 NO NSC VETERAN
 4 PATIENT4,BEN 02-14-01 999007777 YES SC VETERAN
 5 PATIENT5,BOBBY 06-06-60 999000606 NO NSC VETERAN

ENTER '^' TO STOP, OR CHOOSE 1-5: 5 <Enter> PATIENT5,BOBBY 06-06-60
999000606 NO NSC VETERAN

Warning : You have selected a test patient.
Enrollment Priority: GROUP 5 Category: IN PROCESS End Date:

Select PATIENT NAME: <Enter>

Select MAF APPOINTMENT SYSTEM MENU Option: <Enter>
    
```

```
Select MAF APPOINTMENT SYSTEM MENU Option: FM <Enter> VA FileMan
VA FileMan Version 22.0

Select VA FileMan Option: Inquire to File Entries

OUTPUT FROM WHAT FILE: VA PHONE// VEX
  1 VEXM APPOINTMENT CALLS CLINIC IDENTIFIERS (0 entries)
  2 VEXM APPOINTMENT CALLS EXCLUDED PATIENTS (0 entries)
CHOOSE 1-2: 2 <Enter> VEXM APPOINTMENT CALLS EXCLUDED PATIENTS (0
entries)

Select VEXM APPOINTMENT CALLS EXCLUDED PATIENTS PATIENT NAME: ?

Answer with VEXM APPOINTMENT CALLS EXCLUDED PATIENTS PATIENT NAME
Choose from:
  PATIENT2,ARCHIE
  PATIENT5,BOBBY
```

**Figure 2-1: Exclude Patient From Calling Option Blocks Automatic Calls to a Patient**

There are two other "don't call" control parameters both on the client system located on the DHCP-Appointment Options screen. The first one, "Exclude Phone #s With", is on the VistA-Appointment Parameters screen. It allows the user to define the character. If that character is in the phone number string, the system will not make the call. The second one is named "Excluded #s." It allows the user to enter the exact telephone # for a patient and not be called by the system.

## **How/Where Do We Find the Correct Patient DFN Used in Exception Messages?**

*"We're having difficulty finding the correct patient with the DFN used in the exception messages? "*

Using FileMan Inquiry in your PATIENT file (#2), you can find the patient by entering the backwards apostrophe (') and the DFN at the "Select Patient" prompt.

## **Should Sensitive Patients be Shared Between Sites?**

*"If a patients is flagged as sensitive at another site, should we make them sensitive at our site? We received a Remote Sensitivity Indicated message stating that the patient was flagged as sensitive at another site but not at our site. Who in the receiving facility should act on this message?"*

This is an informational bulletin; the site can act or not. There are at least two schools of thought on the issue:

1. A patient that is sensitive at one site should be sensitive at all sites where seen.
2. The patient is sensitive at a site for a particular reason that may not be valid at another site.

Forward the message to the person at your facility that normally evaluates whether or not a patient is sensitive. That person may contact the other facility to determine why the patient is sensitive there and decide if the patient meets the criteria for sensitivity at your facility.

## Why Does the MPI Development Team Need Access Privileges to Our Site?

“The MPI Development Team had originally requested access through the end of September 2002 to allow us to develop and distribute tools that would facilitate the work that we must currently log on to sites to do. This work includes:

1. Monitoring HL7 settings, Institution file entries, Logical Link settings and error states, background job schedules, and validating the MPI data fields in the Patient file.
2. Retrieving CMOR, TF, and subscription data as well as certain demographic data needed to verify that correct matches have been made to the data on the MPI as well resolving data exceptions received on the MPI.
3. Retrieving audit data on patients when necessary for cases when messaging or local users have edited a data field and research is needed to fix a mismatched patient (which happens when a user selects the wrong patient while they are doing "Single Patient Initializations").

These tools are very close to completion but we have since been tasked with an additional enhancement (as described in the Master Patient Index/Patient Demographics Phase III Enhancements Software Design Document) that must be completed before we can be terminated as users from your systems.

This enhancement is a new messaging structure for the MPI/PD demographics that will greatly reduce the amount of site-to-site messaging. The implementation of this new messaging involves the development, testing, and distribution of a series of patches (3 phases of patches) as well as a "re-seeding" process that will be done by the MPI/PD development team.

A more detailed explanation can be found at [Site Monitoring](#) but the bottom line is that we need to ask that you extend access to the programmers listed below until all 3 phases are complete. At this point in time we're estimating that to be somewhere in the March-April 2003 timeframe. We greatly appreciate your cooperation in this manner as we all work toward this transition.

Team members:

-----

Danny Reed  
 Dan Ihlenfeld  
 Christine Link  
 Christine Chesney  
 April Snook (aka April Scott)”

# MPI/PD FAQ—HL7, Links, Background Jobs, Etc.

## Re-enable MPIVA DIR Link?

*“When I checked the HL7 links yesterday I noticed a link I don't remember seeing before - MPIVA DIR. It was in a "shutdown" state, supposedly shutdown on 12/20/00 (we installed MPI/PD last weekend). On the HL7 Monitor there is no "type of link" displayed; there are messages "received", none "processed", some "to send" and an equal number "sent". Should this link be re-enabled?”*

The MPIVA DIR is the MPI direct connect which is the interactive connection with the Austin MPI and it should always be in a shutdown state. The field values you reported are normal for this link. The differences in the messages To Send, Sent, To Be Processed, and Processed are normal and can be ignored.

## Are TCP/IP Links Managed Differently Than Other Links?

*“I've seen some links with "read errors" and "openfail." From reading the documentation, it appears that "openfail" would indicate some problem with the remote site's listener or UCX service; correct? What does a "read error" signify, and how can it be corrected? I tried shutting down and restarting the problem link. I was able to once; however it didn't correct the problem. When I tried to do it again, the HL7 Monitor reported that the link was already running and didn't offer a prompt to shut it down. Are TCP/IP links managed differently than other types of links?”*

The following info is copied from the HL7 URL:

([http://vista.med.va.gov/VistA\\_Lib/Infrastructure/Health\\_Level\\_7\\_\(HL7\)/hl71\\_6p56\\_p66.pdf](http://vista.med.va.gov/VistA_Lib/Infrastructure/Health_Level_7_(HL7)/hl71_6p56_p66.pdf)):

### 3.2.2 Operational Link States (Normal)

State	Explanation
<b>Bidding</b>	X3.28 links: Switching roles, server to sender
<b>Check Out</b>	Checking the "Out" queue for messages to send.
<b>Disconnect</b>	X3.28: Line is disconnected.
<b>Done</b>	HLLP: Message was validated.
<b>Enabled</b>	Non-persistent TCP links: Link has been started.
<b>Idle</b>	No messages are waiting to be sent or received. Idle cycle time is 3 seconds.

<b>Inactive</b>	Non-persistent TCP links: Link has been started and has delivered messages, but because there are no messages to deliver currently, the background job has been inactivated. The TCP Link Manager will reactivate it as needed.
<b>Open</b>	Link is attempting to open a connection.
<b>Polling</b>	X3.28: Link is checking if there is a message to send.
<b>Reading</b>	Link is reading a new message from the connected system.
<b>Retention</b>	Non-persistent TCP: Link has delivered messages, but has no more to send; the background process is waiting until either the retention time expires or new messages show up that need to be delivered.
<b>Send</b>	Link is transmitting a message.
<b>Validate</b>	HLLP: Link is calculating a checksum and verifying the value.
<b>Wait ACK</b>	X3.28: Link is waiting for an acknowledgment.
<b>Writing</b>	HLLP: Link is sending a message.

### 3.2.3 Abnormal or Non-Operational Link States

<b>State</b>	<b>Explanation</b>
<b>Error</b>	Link encountered an error.
<b>Halting</b>	Link has been asked to shut down.
<b>NAK</b>	HLLP: A negative acknowledgment has been sent.
<b>OpenFail</b>	Link could not open a connection to its associated device or target system.
<b>Send NAK</b>	X3.28: Link is sending a negative acknowledgment.
<b>Shutdown</b>	Link has been shut down.
<b>Timeout</b>	HLLP: When trying to read from the connected system, a timeout was encountered.

## How Do I Interpret a DNS Address?

*“Interpreting Ping of HL7 link: I tried to ping a site; the dialog stated “DNS returned: ...” with an IP address, tried that address, then failed with an error of “DNS lookup failed”. How could the DNS lookup fail when it said that DNS returned an address? Is the DNS address it referred to the one it found in File #870?”*

The ping first tries to make a successful connection to the TCP/IP address and Port number associated with that link in the HL LOGICAL LINK file (#870). If the ping is unsuccessful, the message "DNS returned" is returned from the KERNEL call \$\$ADDRESS^XLFNSLK("HL7.domain.MED.VA.GOV"). Next, it tries to make a successful connection to that address. If unsuccessful, the message "DNS lookup failed" is returned. I know this is somewhat confusing because it isn't the lookup that failed, but the value that was returned from the lookup that failed.

## How Do I Interpret the HL7 Systems Monitor?

*"Whenever I look at this in the HL7 Systems Monitor, the "messages sent" count is usually at least 250 behind the "messages to send". Is this normal, or does something need to be adjusted? We currently have 2 incoming and 1 outgoing filer running."*

Typically, the number of "messages sent" should equal the number of "messages to send.". If these numbers do not equal, this might be an indication that you've had too many retransmissions of the same message. Check the ^RGMUTUT98 call and see if there are any backlogged messages. If not, there isn't really a problem. You can always use the HL7 option, Clear a Queue of all Entries, to reset the numbers. If this situation continues, you can log an HL7 NOIS to resolve the issue.

```
VAWNY 44887 44887 44727 44467 MS 0 server
>D ^RGMUTUT98
<<Run - Jan 19, 2001@14:53:20>>
Outgoing messages:
VAMAN - 1 messages. STATE: Open
VALEB - 1 messages. STATE: Openfail
VACMO - 2 messages. STATE: Open
ZZDGRUBATH - 3 messages. STATE: Halting

Incoming messages:
VAWNY - 1 messages. STATE: 0 server
```

## How Do You Correctly Shutdown the UCX Service VAWNY?

*"Shutting down UCX service (VAWNY): How do you correctly shutdown this link? Do you only disable the UCX service, or do you also have to shutdown the link in the HL7 menu?"*

Disabling the service will stop the inbound message, so yes you only have to disable the service. Disabling the service won't stop a connection that has already been established and is sending messages. To be sure that the listener is shutdown, set the SHUTDOWN LLP? field to Yes via VA FileMan. Remember to set this field back to NO before you restart the UCX service.

## Resolve Links in ERROR or SHUTDOWN State?

These links (for sites that have installed), need to be restarted. For all sites up and running on MPI/PD, all the VA\* and MPIVA links need to be monitored and kept running. If you see that a link keeps going into ERROR and staying there, send out a message to the MPI team on FORUM, and we will look at the

other site to see if there is a problem on their side. Also, if you notice a link in OPENFAIL state, please send a message ASAP to the CIRN group on FORUM. That way we can contact the site and see what the problem is. They may be unaware that their listener is down.

HL7 Patch 49 will start up TaskMan jobs when the links have messages to send, but will not remove the link from an error state. It will also not start if the link has not been "enabled" via Patch 49.

If a link remains down for seven days or more, the messages waiting on that link may get purged by the HL7 purge, and will be lost. If possible, the MPI Team would like to avoid this happening.

## **Restart MPIVA DI if in Shutdown State?**

*“MPIVA DI is in a shutdown state. Should I restart the link? In addition, we have VABOS in a shutdown state until they come up. We are a LEDI site and VABOS link came up when we installed MPI/PD.”*

MPIVA DI - does not need to be started. This link is not like typical HL7 links. It is used for the real-time connections. If the shutdown state is confusing, you can change it via VA FileMan to something else.

## **VAWPB is in an Error State?**

*“We have VAWPB is in an error state, and also received an alert HL7 Message IEN 672808 exceeded retries for LL VAWPB. VADET is in an openfailed state.”*

Stop and restart VAWPB; this should take care of it. The excessive retries are to alert you to go check out the link. If restarting the link doesn't solve the problem and you can successfully PING via HL7 the VAWPB link, you should log a NOIS to the HL7 package for assistance. There maybe a message stuck at the top of the queue that needs to be manually removed from the queue.

## **What is the INACTIVE State?**

The Inactive state means that the link has been enabled under HL7 patch 49 and currently has no messages to send. It is just waiting for something to do. There isn't a TaskMan job until the link is actually sending messages (this is a good thing).

## **Lower Level Protocol Is Already ERROR. VADET is still in OPENFAIL**

*“We tried to stop LLP on VAWPB and got the following: The lower level protocol is already ERROR. VADET is still in OPENFAIL. We stopped and restarted this and the LLP is still in OPENFAIL.”*

You will just have to restart the link on the VAWPB. The wrong IP address is listed for VADET. Stop the VADET link via VA FileMan, Enter/edit, HL LOWER LEVEL PROTOCOL PARAMETER FILE, TCP/IP ADDRESS field. Select VADET TCP and correct the IP address. Then, restart the VADET link.

## Purging the LLP Nodes?

*“Can we begin to purge some of the LLP nodes? We installed phase II of CIRN on February 4th. On our SAGG report that was run on 1/28/2000 the HLMA global size was 16,033. The SAGG report run on 3/24/00, HLMA has grown to 165,530.”*

You should be running the HL7 purge on a weekly basis, at least. Be sure to schedule it to run via TaskMan and in the off hours. There are parameters that also can be set, at least take the default. That should give you back some disk space.



Be sure to keep successfully completed messages at least two days. Some messages require that the original message still be in the HLMA global in order to be processed successfully.





# Chapter 3: Callable Routines

This section documents four categories of supported calls as they relate to the Master Patient Index/Patient Demographics (MPI/PD) VistA package.

1. The first category is titled "Supported APIs." This section lists and describes the callable routines, which are supported for general use in interacting with the MPI.
2. The second category is titled "Supported APIs (IA Required)." This section lists and describes the MPI/PD VistA callable routines, for which you must obtain a Integration Agreement (IA) in to use.
3. The third category is titled "Supported APIs (IA Required) to which MPI/PD VistA Subscribes." This section documents all the supported APIs (IA required) to which the MPI/PD VistA package subscribes.
4. The forth category is the section titled "MPI Direct Connect." You must also obtain a IA for adding the MPI Direct Connect functionality to your VistA package.



The MPI/PD software (i.e., routines in the MPIF\* and RG\* namespace) SHOULD NOT reside/run on Legacy systems. Any VistA applications utilizing APIs in the MPIF and RG namespace on Legacy systems should check for the existence of these routine(s) before trying to access them.

## Supported APIs

This section documents all the supported APIs belonging to the MPI/PD VistA package for retrieving information from the MPI node in the PATIENT file (#2) or MPI related information. All APIs are listed in alphabetical order by routine name. The following information is provided for each API listed:

1. API name (highlighted in boldface) and description.
2. Required/optional input parameter(s), if applicable.
3. Output parameter(s), if applicable.
4. Associated IA.

API and Description	Input Parameter(s)	Output Parameter(s)	IA
<b>\$\$CMOR2^MPIF001(DFN)</b> This API returns the CMOR (Coordinating Master Of Record) Site Name for any given patient.	DFN (i.e., The DFN is the IEN entry of the patient from the PATIENT file [#2].)	CMOR Site Name or -1^error message	2701
<b>\$\$CMORNAME^MPIF001(CIEN)</b> This API returns the CMOR Site Name for any given Institution IEN.	CIEN (i.e., The CIEN is the IEN entry from the INSTITUTION file [#4].)	CMOR Site Name or -1^error message	2701

API and Description	Input Parameter(s)	Output Parameter(s)	IA
<p><b>\$\$GETDFN^MPIF001(ICN)</b></p> <p>This is the supported API for retrieving the IEN from the PATIENT file (#2) for any given ICN passed as the input parameter. The ICN should be passed without the V or its checksum. Returned is a -1^error message or the IEN for the patient in this site's PATIENT file (#2).</p> <p><b>Usage:</b> This function call: S DFN=\$\$GETDFN^MPIF001(1000720100)</p> <p><b>Output:</b> Returns this value: 3404040</p>	<p>ICN (i.e., Integration Control Number without the checksum or V separator.)</p>	<p>PATIENT file (#2) IEN (i.e., IEN of the patient found to have the passed ICN)</p>	<p>2701</p>
<p><b>\$\$GETICN^MPIF001(DFN)</b></p> <p>This API returns the ICN and ICN checksum for the patient passed.</p> <p>As ICN is a 10-digit number often followed by the capital letter V and a six-digit checksum. This API returns the complete ICN. It is passed the IEN for the patient in the PATIENT file (#2). Returned is a -1^error message or the ICN, include the ICN Checksum. For example:</p> <p><b>Usage:</b> This function call: S ICN=\$\$GETICN^MPIF001(3404040)</p> <p><b>Output:</b> Returns this value: 1000720100V271387</p> <p> This will return only the active ICN for the patient. If there was an ICN assigned, but is no longer active, NO ICN will be returned.</p>	<p>DFN (i.e., The DFN is the IEN entry of the patient from the PATIENT file [#2].)</p>	<p>ICNVICN CHECKSUM</p>	<p>2701</p>
<p><b>\$\$GETVCCI^MPIF001(DFN)</b></p> <p>This API returns the CMOR Station Number for the patient who was passed.</p>	<p>DFN (i.e., The DFN is the IEN entry of the patient from the PATIENT file [#2].)</p>	<p>Station Number of the CMOR for the given patient.</p>	<p>2701</p>

API and Description	Input Parameter(s)	Output Parameter(s)	IA
<p><b>\$\$HL7CMOR^MPIF001(DFN,SEP)</b>                      This API returns the CMORs Station Number and Institution Name for any given patient.</p>	<p>DFN (i.e., The DFN is the IEN entry of the patient from the PATIENT file [#2].)                       SEP is the delimiter used to separate Station Number and Name. This is not a required field. Default value is ^.</p>	<p>Station Number SEP                      Institution Name or -1^error message</p>	<p>2701</p>
<p><b>\$\$IFLOCAL^MPIF001(DFN)</b>                      This API is used to check if a patient has a Local ICN.</p>	<p>DFN (i.e., The DFN is the IEN entry of the patient from the PATIENT file [#2].)</p>	<p>0 (zero) or 1                       The returned value of 0 (zero) means that:</p> <ol style="list-style-type: none"> <li>1. the patient does not exist,</li> <li>2. the DFN (i.e., The DFN is the IEN entry from the PATIENT file [#2].) is not defined,</li> <li>3. the MPI node does not exist, or</li> <li>4. the patient does not have a local ICN.</li> </ol> <p>The returned value of 1 means that the patient has a Local ICN.</p>	<p>2701</p>
<p><b>\$\$IFVCCI^MPIF001(DFN)</b>                      This API is used to determine if your site is the CMOR for the given patient.</p>	<p>DFN (i.e., The DFN is the IEN entry of the patient from the PATIENT file [#2].)</p>	<p>If the number 1 is returned, your site is the CMOR for the given patient.                       If a minus number 1 (-1) is returned, your site is NOT the CMOR for the given patient.</p>	<p>2701</p>
<p><b>\$\$EN2^MPIFAPI()</b>                      This API creates and returns the next local ICN and ICN Checksum.</p>	<p>None</p>	<p>Local ICN V ICN                      Checksum</p>	<p>2702</p>
<p><b>GETADFN^MPIFAPI(ICN,DFN)</b>                      This API returns the DFN for a given ICN ONLY if the ICN is the active ICN for a patient.</p>	<p>ICN (i.e., Integration Control Number without the checksum or V separator.)</p>	<p>DFN (The IEN of the patient in the Patient (#2) file that currently has this ICN as the active ICN (stored in field 991.01). ICN is not found -1^error message is returned.)</p>	<p>2702</p>

API and Description	Input Parameter(s)	Output Parameter(s)	IA
<p><b>\$\$\$MPILINK^MPIFAPI()</b></p> <p>This API returns the name of the HL7 Logical Link that is used to send messages to the MPI. If you are sending a message to the MPI, this is the call to make to get the name of the link.</p>	none	HL7 Logical Link name	2702
<p><b>\$\$\$MPINODE^MPIFAPI(DFN)</b></p> <p>This API returns the MPI node for any given patient from the PATIENT file (#2).</p>	DFN (i.e., The DFN is the IEN entry of the patient from the PATIENT file [#2].)	MPI node or -1^error message.	2702
<p><b>\$\$\$SUBNUM^MPIFAPI(DFN)</b></p> <p>This API returns the Subscription Control Number from the MPI node for any given patient in the PATIENT file (#2).</p>	DFN (i.e., The DFN is the IEN entry of the patient from the PATIENT file [#2].)	Subscription Control Number or -1^error message	2702

Figure 3-1: MPI/PD VistA Supported APIs

 Patch MPIF\*1.0\*28 has removed references to the API: \$\$\$SEND^RGJUSITE from routines MPIFQ0 and MPIFSAQ. With the move to the 2.4 standard Health Level Seven (HL7), the check for 2.3 messaging is no longer needed.

## Supported APIs (IA Required)

This section documents all the supported APIs (IA required) belonging to the MPI/PD VistA package for retrieving information from the MPI node in the PATIENT file (#2), or MPI /PD related information. All APIs are listed in alphabetical order by routine name. The following information is provided for each API listed:

1. API name (highlighted in boldface) and description.
2. Associated IA.

API and Description	IA
<p><b>\$\$\$CHANGE^MPIF001(DFN,VCCI)</b></p> <p>This API updates the CIRN MASTER OF RECORD (#991.03) field in the PATIENT file (#2) on the MPI node.</p> <p> Patch RG*1.0*9 changed user visible references from CIRN to MPI/PD except in file names and most field names where it appears. CIRN Master of Record is now Coordinating Master of Record.</p>	2703
<p><b>\$\$\$ICNLC^MPIF001</b></p> <p>This API will return an ICN if one exists or create and return a Local ICN and will update the appropriate fields if a Local was created.</p>	3072

API and Description	IA
<p><b>MPIFQ^MPIFAPI(DFN)</b></p> <p>This API provides support for the Registration package to provide real-time queries to the MPI for assignment of an ICN and CMOR. If the MPI is not available, a local ICN will be assigned instead. If the MPI does not already know of this patient, the patient will be added and assigned an ICN. The DFN is the IEN of the patient in the PATIENT file (#2). This code is to be inserted after all of the required data has been collected on a new patient (new to the PATIENT file (#2)). If the patient is already known, this code should be inserted after the patient has been selected. Interaction will only occur with the MPI if the patient does not have an ICN assignment.</p> <p> The following fields will be updated in the PATIENT file (#2) when a successful interaction with the MPI has occurred: INTEGRATION CONTROL NUMBER (#991.01), ICN CHECKSUM (#991.02), and COORDINATING MASTER OF RECORD (#991.03). If the MPI is unavailable, in addition to the fields noted above, the LOCALLY ASSIGNED ICN (#991.04) will be set to yes.</p>	2748
<p><b>\$\$MPIQQ^MPIFAPI(DFN)</b></p> <p>This API tasks off the real-time connection to the MPI for an ICN request. This process is the same as the API: MPIQ^MPIFAPI(DFN), but will task the process off to the background.</p>	3300
<p><b>\$\$UPDATE^MPIFAPI(DFN,ARR)</b></p> <p>This API allows the calling package to update the MPI node fields (#991.01- #991.05) in the PATIENT file (#2).</p>	2706
<p><b>EXC^RGHLLOG(RGEXC,RGERR)</b></p> <p>This API will log the exception type of RGEXC with a textual message to include RGERR</p>	2796
<p><b>START^RGHLLOG(RGMSG,RGDC)</b></p> <p>This API allows the exceptions to be logged for a particular HL7 message that is being processed.</p>	2796
<p><b>STOP^RGHLLOG(RGQUIT)</b></p> <p>This API stops the specified (input variable- RGQUIT) exceptions being logged for an HL7 message.</p>	2796
<p><b>CALC^RGVCCMR2(RGDFN)</b></p> <p>This API calculates the CIRN CMOR Activity Score for an individual patient. This is being provided for the MPI developers to allow for re-calculating the CIRN CMOR activity score during the CMOR Batch comparison job.</p>	2710
<p><b>VTQ^MPISAQ(.MPIVAR)</b></p> <p>This API allows users to do a Display Only Query to the MPI through the MPI/PD Exception Handling Option.</p>	2941

**Table 3-1: Supported MPI/PD VistA APIs for which a IA is required**

## Supported APIs (IA Required) to which MPI/PD VistA Subscribes

This section documents all the supported APIs (IA required) to which the MPI/PD VistA package subscribes. All APIs are listed in alphabetical order by routine name. The following information is provided for each API listed:

1. API name (highlighted in boldface) and description.
2. Associated IA.

API and Description	IA
<p><b>\$\$EN^VAFCPID(DFN,VAFSTR,VAFNUM)</b></p> <p>This API creates a PID segment when a patient is: admitted, discharged, and/or checked out of a clinic. This segment is part of a HL7 message used by MPI/PD VistA to DATE LAST TREATED (#.03) and the ADT/HL7 EVENT REASON (#.07) fields in the TREATING FACILITY LIST file (#391.91). This is patient/facility specific information. The API is passed three input parameters: internal entry number of the PATIENT file (#2), string of fields requested separated by commas, and sequential number for SET ID (default=1).</p>	3015
<p><b>DELALLTF^VAFCTFU(PAT)</b></p> <p>This API is called to remove all associated treating facilities for a patient who's ICN has been inactivated.</p>	2988
<p><b>\$\$DELETETF^VAFCTFU(PAT,INST)</b></p> <p>This API is used to address the issue of duplicate treating facilities assigned to a patient; therefore the variable being passed is the IEN in TREATING FACILITY LIST file (#391.91), not the IEN for a site that the other calls are using.</p>	2988
<p><b>FILE^VAFCTFU(PDFN,FSTRG,TICN)</b></p> <p>This API is used to file data into the TREATING FACILITY LIST file (#391.91) (via the ADT/HL7 PIVOT file [#391.72]) under certain conditions.</p>	2988
<p><b>\$\$EVN^VAFHLEVN</b></p> <p>This API creates an EVN segment when a patient is admitted, discharged, and/or checked out of a clinic. This segment is part of a HL7 message used by MPI/PD VistA to DATE LAST TREATED (#.03) and the ADT/HL7 EVENT REASON (#.07) fields in the TREATING FACILITY LIST file (#391.91). This is patient/facility specific information. The API is passed two input parameters: the HL7 Event Type and the HL7 Event Reason Code.</p>	3016
<p><b>\$\$EN^VAFHLPD1</b></p> <p>This API creates a PD1 segment when a patient is admitted, discharge and/or checked out of a clinic. This segment is part of a HL7 message used by MPI/PD VistA to update DATE LAST TREATED (#.03) and the ADT/HL7 EVENT REASON (#.07) fields in the TREATING FACILITY LIST file (#391.91). This is patient/facility specific information. There are two input parameters for this call: IEN of the patient in the PATIENT file (#2) and a string of fields requested separated by commas.</p>	3017

API and Description	IA
<b>\$\$EN^VAFHLPV1</b> This API is called to set a PV1 segment when a patient is checked out of a clinic.	3018
<b>\$\$IN^VAFHLPV1</b> This API is called to set a PV1 segment when a patient is admitted or discharged through the Registration package.	3018
<b>DIRECT^XWB2HL7(RET,LOC,RPC,RPCVER,P1,P2,P3,P4,P5,P6,P7,P8,P9,P10)</b> This API is used to make a RPC to a remote facility. Users should be prepared to modify their calls to support strong authentication when made available by Infrastructure.  MPI/PD VistA is only to call its own RPCs!	3144
<b>RTNDATA^XWBDRPC(RET,HDL)</b> Contains APIs for deferred RPCs used by HL7 utilities.  MPI/PD VistA is only to call its own RPCs!	3149

**Table 3-2: Supported APIs to which MPI/PD VistA subscribes**

## MPI Direct Connect

The Direct Connect is a real-time Transmission Control Protocol/Internet Protocol (TCP/IP) connection to the Master Patient Index to allow for an immediate request for an ICN. It is activated during the Register A Patient, Load/Edit Patient Data, 10-10T Registration, and Electronic 10-10EZ Processing processes when:

1. A new patient is added to the system, or
2. When a patient exists but doesn't have an ICN

In addition, by utilizing the Single Patient Initialization to MPI option, the TCP/IP direct connection with the MPI will occur. This event causes creation of a VQQ-Q02 and is sent to the MPI to find out if the patient is known. If the MPI returns a message stating that the patient is not known, an ADT-A28 Add Person message is then sent to the MPI. If the patient was known or added via the ADT-A28 message, the MPI will return the known information and the patient's entry is updated.

The Display Only Query option, used to view the data the MPI knows about a patient, also utilizes the TCP/IP direct connect with the MPI. A VTQ query is sent to the MPI. If the MPI knows the patient or finds a list of potential matches, the data is displayed to the users. No data is updated at the site or the MPI. If the MPI does not know the patient, a message is displayed stating so.



## Chapter 4: Background Jobs

The following jobs need to be tasked to run in the background in support of MPI/PD.

### **Auto Change CMOR Night Job**

Background job: [MPIF CMOR REQUEST AUTO JOB]

This job will look at all pending CMOR requests that have been received and if they are older than 14 days, they will be processed as if the auto accept parameter was enabled.

### **Local/Missing ICN Resolution**

Background job: [MPIF LOC/MIS ICN RES]

#### **Local ICNs**

ICNs are created for new patients locally at the site when the MPI is unavailable to assign an ICN in real-time (e.g., the Direct Connect could not be established). Local ICNs contain the same number of digits as a national ICN. The only difference is that the first three digits are the VAMCs station number.



It is not recommended that Local ICNs be sent to remote databases as they will only be known at the local facility that assigned them.

#### **Missing ICNs**

Patient records get an ICN assignment from the MPI in real time if they are added to the PATIENT file (#2) using any one of the PIMS options Load/Edit Patient Data, 10-10T Registration, Register a Patient, and Electronic 10-10EZ Processing.

Missing ICNs result from patient records that are added to the PATIENT file (#2) via means other than through these PIMS options. These records will not get an ICN assignment from the MPI in real time and they will be flagged internally for resolution. As long as the DPT global was not hard set, these patients will be flagged and sent up in the nightly Local/Missing ICN Resolution background job for ICN assignment.

#### **Resolution of Local/Missing ICNs**

The Local/Missing ICN Resolution background job should be scheduled via TaskMan to run every 600 seconds (Patch MPIF\*1.0\*33). The Local/Missing ICN Resolution job will find all patients in the local PATIENT file (#2) with a Local ICN or that have been flagged as missing an ICN and send these patients to the MPI for a national ICN assignment. These patients are sent to the MPI requesting an ICN and CMOR, in batch HL7 messages (maximum of 100 patient entries each).



Patch MPIF\*1.0\*10 has placed a screen on this job to not send patients that have a Potential Match Exception as they need manual intervention to be resolved. Patch MPIF\*1.0\*15 has added a date/time stamp to the "AICNL" cross-reference so that the Local ICNs will only be sent to the MPI once for resolution.

In this background job, the MPI performs the following actions based of these possible scenarios:

1. If the patient is not already in the MPI:
  - a. The patient is added to the index.
  - b. The patient is assigned an ICN.
  - c. The site sending the message becomes the CMOR.
  - d. ICN and CMOR are returned to the site and the corresponding fields are updated.
2. If an exact match is found for the patient in the MPI:
  - a. ICN and CMOR are returned to the site.
  - b. The site is added to the list of treating facilities where the patient has been seen.
  - c. Messages are sent to the CMOR requesting that this new site be added to the list of treating facilities and subscribers.
3. If multiple patient entries are found in the MPI that closely match the patient's identifying information:
  - a. The HL7 message is sent back to the sending site and processed, instead of the ICN and CMOR normally returned. A new entry is made in the CIRN HL7 EXCEPTION LOG file (#991.1) indicating that a list of potential matches has been found for this patient.
  - b. The View Potential Match Patient option is available on the Message Exception Menu. It prints a list of patients, Figure 4-1, who have been identified as having multiple potential matches on the MPI and who haven't yet been resolved using the option Single Patient Initialization to MPI. Patient entries are listed by Name, Social Security Number, Date of Birth and DFN. The status of the patient is current as of the date/time the report is generated. This data is pulled from the CIRN HL7 EXCEPTION LOG file (#991.1). Prior to producing the report, duplicate POTENTIAL MATCH patients will be purged from the file.



People also use the MPI/PD Exception Handling option to produce a report with a list of exceptions that have not yet been processed. You can sort the list by date (default), by patient, or by exception type. You can also choose to view only those of a selected exception type. For information on how to use this option, refer to the Master Patient Index/Patient Demographics (MPI/PD) User Manual, Revised October 2001. See the topic titled "Message Exception Menu" in the section "MPI/PD Patient Admin User Menu."

```

Select Message Exception Menu Option: view <Enter> Potential Match
Patient

This report prints a list of patients who have been identified as having
multiple Potential Matches on the Master Patient Index (MPI) and who
haven't yet been resolved using the option "Single Patient Initialization
to MPI".
Status is current as of the date/time the report is generated.

This data is pulled from the MPI/PD HL7 EXCEPTION LOG file (#991.1).
Prior to producing the report, duplicate POTENTIAL MATCH patients will be
purged from the file.

...one moment please..

0 duplicate patient entries for POTENTIAL MATCH exceptions were
identified and deleted from the MPI/PD HL7 EXCEPTION LOG file (#991.1).

The right margin for this report is 80.

DEVICE: HOME// <Enter>

PATIENT LIST of Potential Matches to be Resolved                Page: 1
Printed at ALBANY, NY on Aug 08, 2000@17:09

Patient Name                SSN                DOB                DFN
-----
PATIENT6,JOHN R            99456789P            1940                279
PATIENT7,DEBBIE           999123123            1955                337
PATIENT8,HARRY P          999126126P            1952                381
PATIENT9,TILLIE           999111111P            1952                320
PATIENT10,FREDDY          999222222P            1952                319
TOTAL: 5

```

**Figure 4-1: Report listing patients identified as having multiple potential matches on the MPI**

- c. These patients must then be resolved using the MPI option, Single Patient Initialization to MPI. The MPI option Single Patient Initialization also establishes the TCP/IP direct connection with the MPI. It can also be used to initialize a patient record to the MPI that currently exists in the PATIENT file (#2) but that has no ICN and CMOR designation. It is recommended that this option be used when potential duplicate records have been found during the initialization phase or the Missing/Local ICN resolution job.

## Update Patient Information

Background job: [VAFC BATCH UPDATE]

The event of updating patient information can take place from several different options within VistA, including VA FileMan. Changes to any of the fields listed below are recorded and an entry created in the ADT/HL7 PIVOT file (#391.71). The entry is then marked as pending to be transmitted. Direct sets to the globals cannot be collected. This background job will periodically collect (via a scheduled job) these marked events and broadcast an ADT-A08 Update Patient Information message on FORUM. Because it is not possible to determine if the editing of this field is complete, this background job [VAFC BATCH

UPDATE] will periodically collect these marked events and broadcast an ADT A08 Message (i.e., Update Patient Information). This is a PIMS-generated HL7 message.

Field Number	Field Name
.01	NAME
.02	SEX
.03	DATE OF BIRTH
.05	MARITAL STATUS
.08	RELIGIOUS PREFERENCE
.09	SOCIAL SECURITY NUMBER
.111	STREET ADDRESS
.1112	ZIP+4
.112	STREET ADDRESS [LINE 2]
.114	CITY
.115	STATE
.116	ZIP CODE
.117	COUNTY
.131	PHONE NUMBER [RESIDENCE]
.132	PHONE NUMBER [WORK]
.211	K-NAME
.219	K-PHONE NUMBER
.2403	MOTHER'S MAIDEN NAME
.301	SERVICE CONNECTED
.302	SERVICE CONNECTED PERCENTAGE
.31115	EMPLOYMENT STATUS
.313	CLAIM NUMBER
.323	PERIOD OF SERVICE
.351	DATE OF DEATH
.361	PRIMARY ELIGIBILITY CODE
1	ALIAS (Patch DG*5.3*575)
2	RACE INFORMATION (Patch DG*5.3*575)
6	ETHNICITY INFORMATION (Patch DG*5.3*575)
391	TYPE
994	MULTIPLE BIRTH INDICATOR MPIMB
1901	VETERAN (Y/N)

**Figure 4-2: Data elements monitored in the PATIENT file (#2) for changes**

This background job also sends out Treating Facility "add me" messages and Treating Facility Update messages.

 For more information on the ADT A08 Message — Update Patient Information, see the *Master Patient Index (MPI) VistA HL7 Interface Specifications*.

 This background job was originally exported in patch DG\*5.3\*91.

## Background Jobs

## Chapter 5: Routines

The following routines distributed with MPI/PD VistA are broken down according to the namespace of the patch they were released with. Following each namespace, are the routines for MPIF, Table 3, and RG, Table 4, namespaces that were released prior to the initial release of the MPI/PD VistA V.1.0 software.



For more information on related DG routines and patches, please refer to the Patch User Menu on FORUM.

### Routines in the MPIF Namespace

MPIF Routine Name	Description
MPIF001	APIs for ICN, IEN, CMOR Information
MPIFA31I	Process ADT A31 message from API
MPIFAPI	APIs for local ICNs
MPIFAREQ	This routine will automatically process any CMOR Change Request still pending review as approved.
MPIFBT1	Batch query to MPI.
MPIFBT2	Batch response from MPI.
MPIFBT3	Batch response from MPI.
MPIFCMOR	Set and broadcast CMOR changes.
MPIFCMRP	Push CMOR for patient to another site.
MPIFDEL	Delete Patient from MPI.
MPIFEDIT	Request a CMOR for patient
MPIFHL7	Processing incoming HL7 messages
MPIFMER	Merge patient ICN
MPIFNEW	This routine adds a new request for change of CMOR to File #984.9.
MPIFNQ	Miscellaneous functions for CMOR.
MPIFPST	Post-initialization
MPIFQ0	CIRN Query Handler top level.
MPIFQ1	CIRN Query Handler
MPIFQED	Add patient returned in query.
MPIFQUE3	Generate Batch message for comparison of CMOR score.
MPIFQUE4	Process the CMOR COMPARISON request.
MPIFQUE5	Process the RESULT from CMOR COMPARISON request.

<b>MPIF Routine Name</b>	<b>Description</b>
MPIFREQ	Process a CMOR request from Event Queue
MPIFRES	Batch processing to the MPI of locally assigned ICNs and patients added to the PATIENT file (#2) by means other than PIMS options.
MPIFRESS	Process approve/disapprove CMOR change requests.
MPIFREVE	Review CMOR Request.
MPIFRTC	This routine is used during the real-time connection with the MPI to send an HL7 message to add a patient to the MPI.
MPIFSAQ	Stand-alone query.
MPIFSPC	This routine computes the checksum for a given ICN.
MPIFUTL	CMOR Utilities
MPIFVTQ	Build data to query MPI response process (ADDPAT)
MPIF121P	Installed and deleted after install of MPIF*1.0*21
MPIF002	Utility routine of APIs
MPIFDUPS	MPIF RPC APIs
MPIFEXT	Extended PDAT RPC
MPIFEXT2	Extended PDAT RPC
MPIFEXT3	Extended PDAT 3 RPC
MPIFRPC	MPIF RPC APIs
MPIFRPC2	MPIF RPC APIs
MPIFA24	A24 Processing Routine
MPIFA24B	Build A23 Add Me Messages
MPIFA28	Build A28 Add Me Messages
MPIFA31B	Build A31 Messages
MPIFA37	Utility for processing an AD-A37
MPIFA40	Unlink ID Build A40 Merge Message
MPIFA43	Utility for processing an ADT-A43
MPIFACHK	Unlink ID Acknowledgement check
MPIFSEED	Seeding of A31s to MPI and sub cleanup
MPIFQ3	Query List Manager Functions
MPIFSA2	Stand Alone Query Part 2

**Table 3: MPI/PD VistA routines (MPIF namespace)**

## Routines in the RG Namespace

RG Routine Name	Description
RGJCTS01	Subscription Control Startup Utility To CMOR
RGJUSITE	Routine to hold API for the CIRN PARAMETER file (#991.8)
RGMTAUD	CIRN Audit file Print for a Specified Patient
RGMTAUDP	CIRN Audit file Print of Patient Data
RGMTDPCT	Count Entries for ^DPT in Dup Record file
RGMTDPSC	Count duplicate record entries by CMOR score range
RGMTTFL	Treating Facility List Statistics
RGPDENV	Environment Check
RGDPDST	Post Init
RGPRSSN	CIRN Pseudo/Missing SSN Report
RGRSBULL	RGRSTEXT Bulletin routine
RGRSDYN	Build dynamic link list for a patient
RGRSDYN1	Build dynamic link list for a TFU
RGRSDYN2	Build dynamic link list for sensitivity
RGRSENS	Pt sensitivity parser/filer
RGRSM SH	Registration message parser for CIRN
RGRSPAR1	Registration message parser for CIRN TFU
RGRSPAR2	Sensitivity message parser for CIRN
RGRSPARM	Edit SEND/STOP/SUSPEND parameter
RGRSPARS	Registration message parser for CIRN
RGRSPT	High level routine for parsing and filing
RGRSUTIL	CIRN Utilities
RGRSUTL2	Utilities for CIRN
RGRSWPT	Active patient check
RGVCCMR1	CIRN CMOR activity score generator (part 1)
RGVCCMR2	CIRN CMOR activity score generator (part 2)
RGRSZZPT	Utility for CIRN
RGRSBUL1	RGRSTEXT Bulletin Routine (part 2)
RGEQ	Queue processor
RGEQDMN	Dequeue processor
RGEQDMN1	Dequeue processor continued
RGEQERR	Reprocess data class error. This routine was deleted in RG*1.0*19

Routines

<b>RG Routine Name</b>	<b>Description</b>
RGEQEXC	Error processor
RGEQRPT	Print CIRN queue statistics. This routine was deleted in RG*1.0*19
RGEQSTAT	Statistics
RGEQSUB	Dequeue processor
RGHLEXC	HL7 exception handling utilities. This routine was deleted in RG*1.0*18
RGHLEXC1	Generate exception statistics report
RGHLLOG	Log message processing info
RGHLPOST	CIRN Messaging Build Postinit
RGHLUT	HL7 message processing utilities
RGHOUT	HL7 message generation utilities
RGJCREC	CIRN Subscription Processor
RGJCSUB	CIRN Subscription Generator
RGMSENV	Environment Check
RGP2ENV	RG*1.0*2 Patch Environment Check Routine
RGEVPM	View Potential Match Patient List
RGP1ENV	RG*1.0*1 Patch Environment Check Routine
RGEX01	List Manager for CIRN Exceptions
RGEX03	List Manager for CIRN Exceptions
RGEXHND1	CIRN Exception Handling Utility
RGP3PST	RG*1.0*3 Patch Post-Init Routine
RGRAS	CIRN PRE-Seeding Report For Treating Facility
RG4POST	Post-Init Driver
RGADT	ADT Message Processing/Routing
RGADT1	Build ADT Messages
RGADT2	File Seeding Routine (PD-MPI Load)
RG7POST	RG*1.0*7 Patch Post-Init Routine
RGFIACK	Process Application Acknowledgement
RGFIBM	Send Facility Integration Message
RGFIPM	Process Facility Integration Message
RGFIPM1	Process Facility Integration Message
RGFIRM	Route Facility Integration Message
RGFIU	MPI/PD NDBI Merge Utility (Continued)
RGP5ENV	RG*1.0*5 Patch Environment Check
RGDRM01	MPI/PD Aware Duplicate Record Merge

<b>RG Routine Name</b>	<b>Description</b>
RGDRM02	MPI/PD Aware Duplicate Record Merge
RGDRM03	MPI/PD Aware Duplicate Record Merge
RGFICLN	MPI/PD NDBI Site Cleanup Utility
RGP9ENV	RG*1.0*9 Patch Environment Check
RGP9PST	RG*1.0*9 Patch Post Install Routine
RGI15PST	Post-Init for RG*1.0*15
RGSYSTAT	MPI/PD Status Display
RGHLLOG1	Send Exception to MPI Exception Handler
RGP13ENV	Routine deleted by installation of RG*1.0*13
RGP13PST	Routine deleted by installation of RG*1.0*13
RGP22	Pre Install and Post Install Routine
RGP22ENV	Environment Check Routine
RGMTHL2	Compile MPI/PD HL7 Data for bi-directional TCP
RGMTHLDB	MPI/PD HL7 Activity by Patient/Single Protocol
RGMTHLDP	MPI/PD HL7 Activity by Patient/All Protocols
RGMTHLPD	MPI/PD HL7 Message Status Report (Detailed)
RGPOC	Add/Edit Point of Contact Option
RGPOC1	Add/Edit Point of Contact Option (Continued)
RGEX04	List Manager Routine for MPI/PD Exception PDAT Query
RGEX05	List Manager Routine Remote PDAT in Exception Handler
RGRPDAT	Routine to call Remote PDAT
RGMTETOT	Compile totals for site exceptions
RGMTMONT	MPI/PD Monitor HL7 Messaging/Filers and Setups
RGMTUT01	Compile and Correct Data Validation for Local Sites
RGMTUT02	Compile and Correct Data Validation for Local Sites (con't)
RGMTUT03	Compile and Correct Data Validation for Local Sites (con't)
RGMTRUN	Scan TaskMan Running HL7 Tasks
RGADTP	ADT Processor to Retrigger A08 or A04 messages with AL/AL (COMMIT/APPLICATION) ACKNOWLEDGEMENTS
RGADTP2	ADT Processor to Retrigger A08 or A04 messages with AL/AL (COMMIT/APPLICATION) ACKNOWLEDGEMENTS (con't)
RGMTMONX	MPI/PD Monitor HL7 Messaging/Filers and Setups (con't)
RGMTSTAT	MPI/PD Maintenance Query
RGMTUT98	Misc. MPI Load COUNTER Utilities

**Table 4: MPI/PD VistA routines (RG namespace)**



# Chapter 6: File List

## Files and Globals

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

**984.1 MASTER PATIENT INDEX (LOCAL NUMBERS)** ^MPIF(984.1,  
Data Comes with File: Yes

This file is to be used to generate local ICNs when the MPI is down (unreachable).

**984.5 MPI CHECKDIGIT** ^MPIF(984.5,  
Data Comes with File: Yes

This file is used to calculate the check digit (check sum) for an ICN.

**984.8 MPI ICN BUILD MANAGEMENT** ^MPIF(984.8,  
Data Comes with File: Yes

This file is used to track the MPI Initialization process. It is utilized when stopping and restarting the initialization process.

**984.9, MPIF CMOR REQUEST** ^MPIF(984.9,  
Data Comes with File: No

This file holds all requests for change of a patient's Coordinating Master of Record. Requests being sent to remote locations and received from remote locations are stored in this file and updated as new requests are received.

**991.1 CIRN HL7 EXCEPTION LOG** ^RGHL7(991.1,  
Data Comes with File: Yes

This file is used for tracking MPI/PD HL7 exception information. It holds the MPI/PD HL7 exception types. It is pointed to by the TYPE field (#2) for the EXCEPTION subfield (#991.12) of the CIRN HL7 EXCEPTION LOG file (#991.1). It contains exception messages logged during the generation of outbound messages and the processing of inbound messages. Some fields apply only for entries logged by message generation routines, others only to message processing routines, and others to both.

This file should not be edited directly. Instead, use the exception management utilities to manage entries in this file.

**991.8 CIRN SITE PARAMETER****^RGSITE(991.8,**

Data Comes with File: No

This file stores generic site parameters for the MPI/PD package. Only one entry (entry number 1) should exist in this file for MPI/PD. MPI/PD VistA, however, utilizes eight fields in it. They are listed below by field number, field name, and brief description:

Field #	Field Name	Description
991.8,.02	CMOR REQUEST CHANGE	'0' FOR MANUAL; '1' FOR AUTOMATIC; Based on this field setting, any CMOR change request received from another station can be either manually reviewed or automatically approved.
991.8,.03	NEW REQUEST MAILGROUP	If the CMOR Request Change field (#991.8,.02) is set to manual, any new CMOR change requests received will notify the mail group entered in this field. This provides a means for prompting someone to review the new request.
991.8,30	CMOR COMP LAST PATIENT	This was the last patient processed in the CMOR comparison process.
991.8,31	CMOR COMP STARTED DATE/TIME	This is the date/time the CMOR comparison process began.
991.8,32	CMOR COMP STOPPED DATE/TIME	When the CMOR comparison has stopped, (either automatically or manually) the time is recorded in this field.
991.8,33	CMOR COMP STATUS	This is the status of the CMOR comparison process in your system.
991.8,34	CMOR COMP LAST TASK #	This is the last task number that the CMOR comparison ran on.
991.8,35	CMOR COMP FLAG	This flag allows the user to stop the CMOR comparison process.

**Figure 6-1: CIRN SITE PARAMETER file (#991.8)**

The Master Patient Index build exports the input template MPIF SITE PARAMETERS for the file CIRN SITE PARAMETER (#991.8). The template allows MPI to update the fields: CMOR Request Change and New Requests Mail Group.



For more information about the CIRN SITE PARAMETER file (#991.8) see the "Files" section of the *Master Patient Index/Patient Demographics (MPI/PD) Technical Manual*.

**991.11 CIRN HL7 EXCEPTION TYPE****^RGHL7(991.11,**

Data Comes with File: Yes

This file lists the types of exceptions that can be logged and additional information about the exceptions.

You may edit the Action (#2) and Mail Group (#6) fields in this file to suit your needs. No other fields should be modified.

### 995 CIRN EVENT ASSOCIATION

^RGEQASN(

Data Comes with File: Yes

This file holds definitions of MPI/PD events that occur. When an event occurs, an entry is placed into the MPI/PD EVENT QUEUE and the corresponding HL7 message is sent. The CIRN EVENT ASSOCIATION file entry determines how the event is processed, such as the routine to call to process event and related HL7 Protocol.

IA #2792 allows the Master Patient Index to add two new entries to this file [i.e., the CIRN EVENT ASSOCIATION file (#995)]. Those entries are MPIF CMOR RESULT and MPIF CMOR REQUEST. IA #2792 also allows these entries to be utilized via the API call EN^RGEQ.

### AMPIZZ and ATSSN Cross References Removed From PATIENT File (#2)



As of Patch DG\*5.3\*589, the AMPIZZ and ATSSN cross-references have been removed from the PATIENT file (#2). These cross-references were used to automatically inactivate patient entries from the MPI if records were found to be ZZ'd and/or if the first five digits of patient Social Security Numbers were replace with zeros.

## File List

# Chapter 7: Mail Groups

The following mail groups are exported in the MPI package. They are listed by Mail Group name, and a brief description is given:

Mail Group Name	Description
MPIF EXCEPTIONS	<p>If a server address is not populated in the CIRN HL7 EXCEPTION TYPE file (#991.11), MAIL GROUP field (#6), MPI exception e-mail messages (problems) that need to be addressed are sent to this mail group. These messages are all technical in nature, involving problems with HL7 messages or conflicts resulting from CMORs or ICNs not found. Any messages sent to the MPIF EXCEPTIONS mail group are automatically sent to the remote mail group G.CIRN EXCEPTION MGT@FORUM.VA.GOV. Normally there isn't anything a site can do to resolve these messages, which is why they are not sent to local members. If necessary, members of this remote mail group will contact site personnel for assistance.</p> <p> The remote member is populated automatically.</p>
MPIF CMOR REQUEST	<p>Any requests to change the CMOR will be sent to this Mail Group. Requests will then be processed (i.e., accepted/rejected) via the CMOR options. The messages serve as a heads-up that there are CMOR requests to process.</p> <p> This Mail Group is added to the MAIL GROUP file (#3.8) during the Post-Init of the installation.</p>
RG CIRN DEMOGRAPHIC ISSUES	<p>This mail group should contain person(s) responsible for ensuring the integrity of the Patient Information Management Systems (PIMS) data. The members of this group will be notified upon login that there are patients awaiting review.</p>
RG CIRN HL7 PROBLEMS	<p>This mail group receives notification of problems that CIRN (MPI/PD) has when interacting with the VistA HL7 package.</p>

**Figure 7-1: Mail groups exported in the MPI package**

 IRM personnel will be required to use MailMan utilities to add members to the following mail groups:

- MPIF CMOR REQUEST
- RG CIRN DEMOGRAPHIC ISSUES (Exported with MPI/PD. However, utilized by MPI.)

PIMS personnel will most likely be the ones processing CMOR Requests and reviewing MPI/PD HL7 Exception Messages addressing data issues. They should be added as members to the RG CIRN

DEMOGRAPHIC ISSUES mail groups. However, anyone participating in this should be added in these mail groups.

### **Exception Mail Groups: MPIF EXCEPTIONS and RG CIRN DEMOGRAPHIC ISSUES**

The mail groups MPIF EXCEPTIONS and RG CIRN DEMOGRAPHIC ISSUES are specifically used to receive MPI/PD HL7 Exception Messages. It is important to distinguish the difference between them.

1. Members of the MPIF EXCEPTIONS mail group are automatically notified of technical type problems (e.g., such as data update failures or problems with HL7 messages causing them not to be processed). Messages are sent to the remote mail group G.CIRN EXCEPTION MGT@FORUM.VA.GOV, which is the Exception Handler on the MPI in Austin. There shouldn't be any local members in this mail group.
2. The RG CIRN DEMOGRAPHIC ISSUES mail group is exported with MPI/PD. Members of this mail group are automatically notified of problems relating to data, such as:
  - Patients dates of death not being synchronized between your local PATIENT file (#2) and the MPI.
  - Potential matches were found during the initialization or during the Local/Missing ICN resolution job that need to be resolved manually in order to obtain an ICN.

It is recommended that PIMS personnel (i.e., ADPACs and/or Coordinators, etc.) be made members of this mail group.



For information on assigning members to mail groups, see the VA Electronic Mail System (MailMan) User Manual V. 7.1.

## **Remote Systems**

The MPI, located at the Austin Automation Center, maintains the actual patient index and a current list of facilities where the patient has been seen in order to enable sharing of patient data among operationally diverse systems. The MPI software that resides on the VistA side sends data to the MPI in Austin as well as any other VAMCs where that patient is known. Some patient data fields are transmitted to Austin during the initialization process as a resulting of daily operations at the VAMC.

The initialization process starts at a VAMC. HL7 messages go to the MPI requesting ICNs for all of the patients that have had activity in the past three years. Once this process has been completed, the MPI is kept up-to-date via existing VistA options.

# Glossary

10-10EZ	Form used to apply for health benefits.
AAC	<b>Austin Automation Center.</b>
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	Code that allows the computer to identify you as a user authorized to gain access to the computer. Your code is greater than six and less than twenty characters long; can be numeric, alphabetic, or a combination of both; and is usually assigned by a site manager or application coordinator.
ACTIVE PATIENTS	Patients who have been seen at a site within the past three years.
ADPAC	<b>Automated Data Processing Application Coordinator.</b>
ADT	<b>Admission Discharge and Transfer-</b> Part of the Patient Information Management System (PIMS).
ADT/HL7 PIVOT FILE	Changes to any of the fields of patient information will be recorded and an entry created in the ADT/HL7 PIVOT file (#391.71). When an update to a patient's treating facility occurs, this event is to be added to the ADT/HL7 PIVOT file (#391.71) and marked for transmission. A background job will collect these updates and broadcast the appropriate HL7 message (ADT-A08 Patient Update).
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	<b>American National Standards Institute.</b>
API	<b>Application Programming Interface.</b>
APPLICATION	VistA software and documentation that supports the automation of a service (e.g., Laboratory or Pharmacy) within the Veterans Health Administration (VHA).

APPLICATION COORDINATOR	Designated individuals responsible for user-level management and maintenance of an application package such as IFCAP, Lab, Pharmacy, Mental Health, etc.
APPLICATION PACKAGE	In VistA, software and documentation that support the automation of a service, such as Laboratory or Pharmacy, within VA medical centers. The Kernel is like and operating system relative to other VistA applications.
APPLICATION PROGRAMMER INTERFACE (API)	Programmer 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.
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.
BATCH ACKNOWLEDGEMENTS	The format of a HL7 batch acknowledgement message consists entirely of a group of ACK (acknowledgment) messages. In the case of MPI, batch acknowledgements are returned during the initialization process and during the Local/Missing ICN Resolution job. The background job files the ICN, ICN checksum and CMOR, updates the MPI, and then the associated treating facilities and systems. Data returned from this process constitute the acknowledgment of the batch message.
BATCH MESSAGES	There are instances when it is convenient to transfer a batch of HL7 messages. Common examples related to MPI are queries sent to the MPI for an ICN during the initialization process, the resolution of Local or Missing ICNs, and CMOR Batch Comparisons. Such a batch could be sent online using a common file transfer protocol. In the case of the MPI, the HL7 Batch Protocol uses the Batch Header Segment (BHS) and Batch Trailer Segment (BTS) message segments to delineate the batch.
BATCH PROTOCOL, HL7	Protocol utilized to transmit a batch of HL7 messages. The protocol generally uses File Header Segment (FHS), BHS, BTS, and File Trailer Segment (FTS) segments to delineate the batch. In the case of the MPI, the protocol only uses the BHS and BTS segments.
BULLETINS	Electronic mail messages that are automatically delivered by VistA MailMan under certain conditions. For example, a bulletin can be set up to "fire" when database changes occur, such as adding a new Institution in the INSTITUTION file (#4). Bulletins are fired by bulletin-type cross-references.
CALLABLE ENTRY POINT	Authorized programmer call that may be used in any VistA application software. The DBA maintains the list of DBIC-approved entry points.

CHUI	<b>CH</b> aracter-based <b>U</b> ser <b>I</b> nterface (i.e., roll-and-scroll).
CLINICAL PATIENT RECORD SYSTEM (CPRS)	<b>C</b> linical <b>P</b> atient <b>R</b> ecord <b>S</b> ystem provides a computer-based patient record and organizes and presents all relevant data on a patient in a way that directly supports clinical decision-making. CPRS integrates the extensive set of clinical and administrative applications available within VistA.
COMMON MENU	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.
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.
COORDINATING MASTER OF RECORD (CMOR)	The CMOR site is the designated "owner" of the patient's clinical and descriptive data. A patient only has one CMOR at a time, but the CMOR can change. Initially, the MPI assigns the CMOR based upon the first site at which the MPI encounters the patient. The designation of a site as the CMOR for a patient does not provide "workload credit" or any other distinction. The CMOR is a field that can be found in the PATIENT file (#2).
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.

## Glossary

DATA DICTIONARY (DD)	<p>The <b>Data Dictionary</b> is a global containing a description of what kind of data is stored in the global corresponding to a particular file. VA FileMan uses the data internally for interpreting and processing files.</p> <p>A Data Dictionary contains the definitions of a file's elements (fields or data attributes); relationship 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.</p>
DATA DICTIONARY ACCESS	<p>A user's authorization to write/update/edit the data definition for a computer file. Also known as DD Access.</p>
DATABASE	<p>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.</p>
DATABASE MANAGEMENT SYSTEM	<p>A collection of software that handles the storage, retrieval, and updating of records in a database. A <b>Database Management System (DBMS)</b> controls redundancy of records and provides the security, integrity, and data independence of a database.</p>
DBA	<p><b>Database Administrator</b>, 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.</p>
DBIA	<p><b>Database Integration Agreement</b>, see Integration Agreements.</p>
DEFAULT	<p>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.</p>
DELIMITER	<p>Special character used to separate a field, record, or string. VA FileMan uses the caret character ("^") as the delimiter within strings.</p>
DEMOGRAPHIC DATA	<p>Identifying descriptive data about a patient, such as: name, sex, date of birth, marital status, religious preference, SSN, address, etc.</p>
DEPARTMENT OF VETERANS AFFAIRS	<p>The Department of <b>Veterans Affairs</b>, formerly called the <b>Veterans Administration</b>.</p>

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	<b>D</b> ecentralized <b>H</b> ospital <b>C</b> omputer <b>P</b> rogram now known as Veterans Health Information Systems and Technology Architecture (VistA).
DIRECT CONNECT	The Direct Connect is a real-time TCP/IP connection to the MPI to allow for an immediate request for an ICN. Direct Connect is activated when using any of the following PIMS options: <ul style="list-style-type: none"> <li>• Register A Patient,</li> <li>• Load/Edit Patient Data,</li> <li>• 10-10T Registration</li> </ul> and when using the following MPI options: <ul style="list-style-type: none"> <li>• Single Patient Initialization to MPI</li> <li>• Display Only Query</li> </ul>
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 <i>cannot</i> be used in application software code.
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)). It consists of three steps: <ol style="list-style-type: none"> <li>1. Search for potential duplicate records pairs</li> <li>2. Review, verification, and approval of those pairs</li> <li>3. Merge process.</li> </ol>
DUZ	Local variable holding the user number that identifies the signed-on user.
ELECTRONIC SIGNATURE CODE	Secret password that some users may need to establish in order to sign documents via the computer.
ELIGIBILITY CODES	Codes representing the basis of a patient's eligibility for care.

## Glossary

ENCRYPTION	Scrambling data or messages with a cipher or code so that they are unreadable without a secret key. In some cases encryption algorithms are one directional, that is, they only encode and the resulting data cannot be unscrambled (e.g. access/verify codes).
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.
EXCEPTION MESSAGE	MPI/PD VistA generates messages and bulletins to alert the user to problems that occur in generating or processing HL7 messages. The MPI/PD Message Exception Menu contains options to manage the problems.
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 prompt 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	<b>Global Address List.</b>
GLOBAL VARIABLE	Variable that is stored on disk (M usage).

GUI	<b>Graphical User Interface.</b>
HEALTH LEVEL SEVEN (HL7)	National level standard for data exchange in all healthcare environments regardless of individual computer application systems.
HEALTH LEVEL SEVEN (HL7) VISTA	Messaging system developed as a VistA software that follows the HL7 Standard for data exchange.
HEC	<b>Health Eligibility Center.</b>
HINQ	<b>Hospital Inquiry-</b> The HINQ module provides the capability to request and obtain veteran eligibility data via the VA national telecommunications network. Individual or group requests are sent from a local computer to a remote Veterans Benefits Administration (VBA) computer where veteran information is stored. The VBA network that supports HINQ is composed of four computer systems located in regional VA payment centers.
HIPAA	<b>Health Insurance Portability and Accountability Act</b>
HSD&D (Formerly SD&D—System Design and Development)	Health Systems Design and Development
INPATIENT	Patient who has been admitted to a hospital in order to be treated for a particular condition.
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)	<b>Integration Agreements (IA)</b> define agreements between two or more VistA software applications to allow access to one development domain by another. 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. All IAs are recorded in the Integration Agreement database on FORUM. Content can be viewed using the DBA menu or the System Design & Development's web page.
INTEGRATION CONTROL NUMBER (ICN)	The <b>Integration Control Number</b> 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. ICNs link patients to their records across VA systems.

## Glossary

INTERNAL ENTRY NUMBER (IEN)	The number used to identify an entry within a file. Every record has a unique internal entry number.
IRA	<b>I</b> nitial <b>R</b> equ <sup>e</sup> st <b>A</b> nalysis.
IRM	<b>I</b> nformation <b>R</b> esource <b>M</b> anagement. A service at VA medical centers responsible for computer management and system security.
ISO	<b>I</b> nformation <b>S</b> ecurity <b>O</b> fficer.
ISS	<b>I</b> nfrastructure and <b>S</b> ecurity <b>S</b> ervices.
ITAC	<b>I</b> nformation <b>T</b> echnology <b>A</b> pproval <b>C</b> ommittee was established as an advisory committee to the Chief Information Officer to ensure that the Information Technology (IT) program supports VHA goals and to provide guidance concerning priorities for IT initiatives.
KERNEL	Kernel is VistA software that functions as an intermediary between the host operating system and other VistA software applications (e.g., Laboratory, Pharmacy, IFCAP, etc.). Kernel provides a standard and consistent user and programmer interface between software applications and the underlying M implementation.
KERNEL TOOLKIT	Kernel Toolkit is a robust set of tools developed to aid the 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.
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.
LAN	<b>L</b> ocal <b>A</b> rea <b>N</b> etwork.
LDAP	<b>L</b> ightweight <b>D</b> irectory <b>A</b> ccess <b>P</b> rotocol.
LINK	Non-specific term referring to ways in which files may be related (via pointer links). Files have links into other files.
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 <b>Master Patient Index</b> is the master index of all VHA patients. The MPI assigns and maintains unique national patient identifiers known as ICNs that link patients to their records across VA systems. The MPI also assigns the initial CMOR (first site to identify the patient to the MPI). It contains patient's identifying descriptive information (e.g., name, SSN, date of birth, mother's maiden name, place of birth state, place of birth city, home address etc.)
MASTER PATIENT INDEX/PATIENT DEMOGRAPHICS (MPI/PD) VistA	<p>This software resides in VistA and supports the Austin side of the MPI, as well as the CMOR change requests. MPI/PD VistA enables sites to query the MPI for the:</p> <ul style="list-style-type: none"> <li>• Assignment of ICN</li> <li>• Inactivation of an ICN for a patient</li> <li>• Known data on the MPI</li> </ul> <p>Any updates to patient data are sent to the MPI and then to the sites where the patient has been seen. MPI/PD VistA also manages incoming and outgoing Change CMOR requests.</p> <p>The Patient Demographics (PD) part of MPI/PD VistA, identifies descriptive information about a patient. With MPI/PD VistA, key demographic information for a patient should be the same at each of the treating facilities where that patient is seen.</p>
MENU	List of choices for computing activity. A menu is a type of option designed to identify a series of items (other options) for presentation to the user for selection. When displayed, menu-type options are preceded by the word "Select" and followed by the word "option" as in Select Menu Management option: (the menu's select prompt).
MENU SYSTEM	The overall Menu Manager logic as it functions within the Kernel framework.
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.
MESSAGE SEGMENTS	Each HL7 message is composed of segments. Segments contain logical groupings of data. Segments may be optional or repeatable. A [ ] indicates the segment is optional, the { } indicates the segment is repeatable. For each message category, there will be a list of HL7 standard segments and/or "Z" segments used for the message.

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.
NON CMOR SITES	Sites that are not the CMOR for a given patient but which nevertheless have an interest in the patient.
NUMERIC FIELD	Response that is limited to a restricted number of digits. It can be dollar valued or a decimal figure of specified precision.
NVS	National VistA Support.
OIFO	Office of Information Field Office.
OPTION	An entry in the OPTION file (#19). As an item on a menu, an option provides an opportunity for users to select it, thereby invoking the associated computing activity. Options may also be scheduled to run in the background, non-interactively, by TaskMan.
OPTION NAME	Name field in the OPTION file (e.g., XUMAINT for the option that has the menu text "Menu Management"). Options are namespaced according to VistA conventions monitored by the DBA.
PACKAGE	Please refer to the Glossary entry for "Software."
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.
PRIVATE INTEGRATION AGREEMENT	Where only a single application is granted permission to use an attribute/function of another VistA software application. These IAs are granted for special cases, transitional problems between versions, and release coordination. A Private IA is also created by the requesting software application based on their examination of the custodian software application's features. An example would be where one software application distributes a patch from another software application to ensure smooth installation.

PROMPT	The computer interacts with the user by issuing questions called prompts, to which the user issues a response.
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.
PSEUDO-SSNs	False Social Security Numbers that are calculated internally to VistA and cannot be mistaken for valid SSNs because they end in P.
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). The Kernel's Task Manager 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 specific time periods.
READ ACCESS	A user's authorization to read information stored in a computer file.
RECEIVING SITE	Receiving Site- As it relates to HL7 Messages, it is the site that the message was sent to.
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.
REQUESTING SITE	Requesting Site- As is relates to HL7 Messages, it is the site initiating a message to another site requesting some action be taken.
REQUIRED FIELD	A mandatory field, one that must not be left blank. The prompt for such a field will be repeated until the user enters a valid response.

## Glossary

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.
SAC	<b>Standards and Conventions.</b> 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 <b>Standards and Conventions Committee.</b> 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.
SCREEN-ORIENTED	A computer interface in which you see many lines of data at a time and in which you can move your cursor around the display screen using screen navigation commands. Compare to Scrolling Mode.
SCROLLING MODE	The presentation of the interactive dialog one line at a time. Compare to Screen-oriented.
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.
SENSITIVE PATIENT	Patient whose record contains certain information, which may be deemed sensitive by a facility, such as political figures, employees, patients with a particular eligibility or medical condition. If a shared patient is flagged as sensitive at one of the treating sites, a bulletin is sent to the DG SENSITIVITY mail group at each subscribing site telling where, when, and by whom the flag was set. Each site can then review whether the circumstances meet the local criteria for sensitivity flagging.
SHARED PATIENT	Patient who has been seen at more than one site. The CMOR keeps the Treating Facility list updated every time a new facility where the patient has been seen identifies itself to the MPI. The CMOR then broadcasts, through the MPI, the updated lists to all the other facilities that share this patient.

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	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.
SUPPORTED REFERENCE INTEGRATION AGREEMENT	This applies where any VistA application may use the attributes/functions defined by the IA (these are also called " <b>Public</b> "). An example is an IA that describes a standard API such as DIE or VADPT. The software 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 software applications to request an IA to use these references; they are open to all by default.
TASK MANAGER	Kernel module that schedules and processes background tasks (also called TaskMan)
TEMPLATE	Means of storing report formats, data entry formats, and sorted entry sequences. A template is a permanent place to store selected fields for use at a later time. Edit sequences are stored in the INPUT TEMPLATE file (#.402), print specifications are stored in the PRINT TEMPLATE file (#.4), and search or sort specifications are stored in the SORT TEMPLATE file (#.401).
TOOLKIT	<p>Toolkit (or Kernel Toolkit) is a robust set of tools developed to aid the 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, technical writers, software quality assurance (SQA) personnel, and software applications to support distinct tasks.</p> <p>Toolkit provides utilities for the management and definition of development projects. Many of these utilities have been used by the OI Field Office–Oakland for internal management and have proven valuable. Toolkit also includes tools provided by other OI Field Offices based on their proven utility.</p>

## Glossary

TREATING FACILITY	Any facility (VAMC) where a patient has applied for care, or has been added to the local PATIENT file (#2) (regardless of VISN) and has identified this patient to the MPI will be placed in the TREATING FACILITY LIST file (#391.91).
TREATING FACILITY LIST	Table of institutions at which the patient has received care. This list is used to create subscriptions for the delivery of patient clinical and demographic information between sites.
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 EVENTS	An activity in VistA that creates HL7 messages.
UCI	User Class Identification, a computing area. The MGR UCI is typically the manager's account, while VAH or ROU may be production accounts.
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	The Department of Veterans Affairs.
VA FILEMAN	Set of programs used to enter, maintain, access, and manipulate a database management system consisting of files. A software application of online computer routines written in the M language, which can be used as a standalone database system or as a set of application utilities. In either form, such routines can be used to define, enter, edit, and retrieve information from a set of computer-stored files.
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).
VDSI	VistA <b>D</b> ata <b>S</b> ystems & <b>I</b> ntegration.
VERIFY CODE	Additional security precaution used in conjunction with the Access Code. Like the Access Code, it is also 6 to 20 characters in length and, if entered incorrectly, will not allow the user to access the computer. To protect the user, both codes are invisible on the terminal screen.
VHA	Veterans <b>H</b> ealth <b>A</b> dministration.
VISN	Veterans <b>I</b> ntegrated <b>S</b> ervice <b>N</b> etwork.
VISTA	Veterans Health <b>I</b> nformation <b>S</b> ystems and <b>T</b> echnology <b>A</b> rchitecture (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. Server-side code is written in M, and, via Kernel, runs on all major M implementations regardless of vendor. VistA is composed of software that undergoes a quality assurance process to ensure conformity with namespacing and other VistA standards and conventions.
WAN	<b>W</b> ide <b>A</b> rea <b>N</b> etwork.



# Appendix A: Product Description—What is the Master Patient Index Composed Of?

## Master Patient Index (Austin)

The MPI located at the Austin Automation Center (AAC) is the actual index. It is composed of a unique list of patients and a current list of VAMCs (Veterans Affairs Medical Centers) where each patient has been seen. This enables the sharing of patient data between operationally diverse systems. Each record (or index entry) on the MPI contains a small amount of patient data used to identify individual entries.

When a patient is first seen at a site for care (the site has not previously treated the patient) or the patient did not get an ICN during the initialization phase, a real-time query is generated to the MPI when using the REGISTER A PATIENT, LOAD/EDIT PATIENT DATA or 10-10T REGISTRATION options on the Patient Information Management Systems (PIMS) menu. If the patient is not known to the MPI, the patient's identifying information: name, SSN (unless pseudo or not available), date of birth, and mother's maiden name are passed to the MPI. The MPI then assigns an integration control number (ICN) and assigns the requesting site as the CMOR. If, during registration, the patient is already known to the MPI, a message appears on the screen that says, "*Found patient Xxx,Vvvy in MPI, updating ICN and CMOR. . .*" and the MPI then displays the patient's CMOR on the screen. The requesting site sends a message to be added as a treating facility and the Treating Facility Update is sent by the MPI to all associated facilities.

Each site will have a block of local ICNs assigned for automatic use in the event that the MPI cannot be reached. When local ICNs are assigned to patients, background processing ensures that they are processed against the MPI as soon as possible. It will also process any missing ICNs for new patients added to the PATIENT file (#2) by means other than REGISTER A PATIENT, LOAD/EDIT PATIENT DATA or 10-10T REGISTRATION options. If the patient is not known to the MPI (new patient), the MPI will assign a new ICN and the site will be the CMOR. If the patient is already known to the MPI (exact match), the MPI will return the ICN, CMOR, and list of treating facilities. If the MPI finds more than one potential match, a local ICN is assigned and an exception is logged for human resolution using the MPI/PD Exception Handling option. The locally assigned ICN will be stored as part of the patient record in the ICN History.

Once a CMOR has been assigned to a patient, the MPI will only accept changes and/or updates to that patient's demographic data from the CMOR site. However, the CMOR can be changed at any time.

## Master Patient Index/Patient Demographics (VistA)

This software resides in VistA and sends patient data to the MPI (Austin) and to sites where a patient has been seen. MPI/PD VistA enables sites to query the MPI (Austin) for known data, to request the assignment of an ICN, to inactivate an ICN, and to manage incoming and outgoing Change CMOR requests.

During the initialization of the MPI database in Austin, each VA Medical Center sent batch HL7 messages to the MPI (Austin) requesting ICNs for all of its patients whose records reflected activity in the past three fiscal years (i.e., patient records that contain CMOR Activity Scores). Patients were checked against the MPI and one of the following scenarios occurred:

- If a patient is introduced to the MPI for the first time, it is added directly to the index, an ICN is assigned to that patient, and the current (sending) site becomes the CMOR.
- If an exact match is found for that patient (i.e., the patient had already been initialized to the MPI from another site), the current (sending) site was added to the list of treating facilities where the patient has been seen. The CMOR remains the same.
- If multiple patient entries are found in the MPI that closely match the patient's identifying information:
  - A notation is made in the CIRN HL7 EXCEPTION LOG file (#991.1) indicating that a list of potential matches has been found. The HL7 message is sent back to the sending site and processed, instead of the ICN and CMOR normally returned.
  - An option, View Potential Match Patient, is available on the Message Exception Menu. It prints a list of patients who have been identified as having multiple potential matches on the MPI and who haven't yet been resolved using the option Single Patient Initialization to MPI. Patient entries are listed by NAME, SOCIAL SECURITY NUMBER (SSN), DATE OF BIRTH (DOB), and DFN. The status of the patient entry is current as of the date/time the report is generated. This data is pulled from the CIRN HL7 EXCEPTION LOG file (#991.1).
  - If the correct patient entry is located on the report, it must then be resolved using the option Single Patient Initialization to MPI.

Once the initialization was completed, the data at the MPI (Austin) was (and currently is) kept up-to-date through Master Patient Index/Patient Demographics (MPI/PD) VistA, and Patient Information Management System (PIMS) menu options.

If you are using any one of the following PIMS options:

- LOAD/EDIT PATIENT DATA,
- REGISTER A PATIENT,
- 10-10T REGISTRATION,
- or ELECTRONIC 10-10EZ PROCESSING

to add a new patient to your local PATIENT file (#2), or if you select a patient who did not receive an ICN during initialization, a real-time request for an ICN and CMOR is sent to the MPI (Austin). This ensures that the MPI (Austin) will be kept up-to-date with active patients.

## Coordinating Master of Record (CMOR)

The Coordinating Master of Record (CMOR) is the designated "owner" of the patient's descriptive data. A patient will have only one CMOR at a time. The designation as the CMOR for a patient does not provide "workload credit" or any other distinction.

Several new fields having to do with the CMOR were added to the PATIENT file (#2): COORDINATING MASTER OF RECORD (#991.03), CMOR ACTIVITY SCORE (#991.06), and SCORE CALCULATION DATE (#991.07). These fields are populated by the system.

During the Pre-Implementation phase, a CMOR score based on activity (Current FY, FY-1, FY-2) was calculated for the active patients in your Patient file. The CMOR score indicates to the Master Patient Index (MPI) which patients in your Patient file are active. During initialization of your database with the MPI, the first site at which the MPI encounters a patient will be assigned as the CMOR. Following the initialization with the MPI, your site will run an option that identifies the shared patients for which you are **not** the CMOR, compares the CMOR scores, and reassigns the CMOR if that action is appropriate.

## Treating Facilities

A facility's relationship to the patient determines what information it receives and sends. MPI/PD VistA maintains this information to ensure proper routing of patient data.

Any facility where a patient registers for care (regardless of VISN) is placed on the Treating Facility List. This list is part of the patient descriptive data that is synchronized.

Changes to certain patient's descriptive data that are made at a treating facility trigger a message to the CMOR and are placed in a Patient Data Review. The CMOR manually accepts or rejects the changes and sends a message to the MPI. The MPI will then determine whether a Treating Facility Update should go out based on whether the data changed. If the message came from a non-CMOR site, the MPI will transmit the update(s) to the CMOR site. If the message came from the CMOR site, the MPI will transmit the update to all associated facilities.



**A series of patches were distributed to implement a new messaging structure for Master Patient Index/Patient Demographics (MPI/PD). Previously, the MPI/PD used the Coordinating Master of Record (CMOR) as the origination point for a number of update messages to other treating facilities. To reduce the amount of facility to facility messaging, the Master Patient Index (MPI) database is now the source for update messages. For those message types that require CMOR action, the CMOR will update the MPI, and the MPI will distribute updates to the appropriate treating facilities.**

Appendix A: Product Description—What is the Master Patient Index Composed Of?

## Appendix B: MPI/PD Business Rules

CMOR CHANGES	Receiving site must be a treating facility (patient must be registered there).
DATE OF DEATH	A patient may be entered as deceased at a treating facility. If a shared patient is flagged as deceased, a bulletin is sent to the RG CIRN DEMOGRAPHIC ISSUES mail group. The bulleting tells where the deceased date was entered and the date the patient died. Each site can then review whether the patient should be marked as deceased at their site.
DUPLICATE ICNs	More than one patient in a single PATIENT file (#2) cannot have the same ICN. For example, let's say that the MPI returned an ICN to your local PATIENT file (#2) for a patient who previously did not have one assigned. If that same ICN is currently assigned to a different patient in your PATIENT file (#2), an exception (problem) message is sent to the MPIF EXCEPTIONS mail group, and the ICN, CMOR, and treating facilities list is not updated for this new patient.
INITIAL CMOR	A patient's CMOR will be the first treating site that identifies the patient to the MPI.
INSTITUTION FILE	<p>A site can be in only one VISN at a time. A record in the INSTITUTION file (#4) cannot have two parents of the same type.</p> <p>A record in the INSTITUTION file (#4) cannot be a child and have children of its own.</p>
MPI (AUSTIN)	The MPI assigns a national ICN and the initial CMOR (i.e., the initial CMOR is the first site to identify the patient to the MPI). It accepts update messages only from the CMOR. The MPI maintains a copy of the treating facilities list, but not the subscription list. Subscriber messages are not sent to the MPI.
PATIENT SENSITIVITY	If a shared patient is flagged as sensitive at one of the treating sites, a bulletin is sent to the RG CIRN DEMOGRAPHIC ISSUES mail group at each subscribing site telling where, when, and by whom the flag was set. Each site can then review whether the circumstances meet the local criteria for sensitivity flagging. If the site chooses to change the patient to a sensitive status, the option to do so would be used and then a bulletin would be sent to the mail group established in the PIMS package for notifying users of a sensitive patient change.
TREATING FACILITIES	Broadcast messages to add a treating facility for a patient will come only from the Coordinating Master of Record (CMOR), via the MPI. Site requesting to be added sends message to MPI, the MPI then routes it to the CMOR and a complete treating facility list will go out to all sites via the MPI.
UPDATE MESSAGES	Descriptive data update messages are broadcast by the MPI Austin.

## Appendix B: MPI/PD Business Rules

## Appendix C: Data Stored at the MPI (Austin)

Several groups have expressed an interest in knowing what data (fields) are stored on the MPI in Austin. Currently, the MPI contains the following fields:

- Integration Control Number (ICN)
- Surname
- First Name
- Middle Name
- Name Prefix
- Name Suffix
- Mother's Maiden Name
- Date Of Birth
- Place of Birth City
- Place of Birth State
- Date Of Death
- Death Verification Status
- Gender
- Social Security Number
- SSN Verification Status
- Claim Number
- Coordinating Master of Record
- Sensitivity
- Primary ICN
- Date/Time of Original Creation
- Facility of Original Creation
- Created By
- Marital Status
- Street Address [Line 1]
- Street Address [Line 2]
- Street Address [Line 3]
- City [Residence]
- State [Residence]
- Zip+4 [Residence]
- Phone Number [Residence]
- POW Status Indicated?
- Multiple Birth Indicator
- Alias (multiple)
- Race Information (multiple)
- Ethnicity Information (multiple)
- Type of Client
- Other IDs (multiple)
- Date/Time Changed



The following fields are not populated on the MPI at this time:

- Death Verification Status
- Sensitivity
- SSN Verification Status
- Type of Client

Appendix C: Data Stored at the MPI (Austin)