

VistA Lab Enhancements – Microbiology

**Release: Lab Micro Interface Release 1.0
(combined build for LA*5.2*90 and LR*5.2*474)**

Technical Manual And Security Guide



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Artifact Rational

A Technical Manual is a required end-user document for all OI&T software releases. The intended audience for this document is local IT support, management, and development personnel for nationally released software. It provides sufficient technical information about the software for developers and technical personnel to operate and maintain the software with only minimal assistance from Product Support staff.

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1. Introduction

The Veterans Health Information Systems Technology Architecture (VistA) Laboratory Enhancement for Microbiology shall provide enhancements which will support the electronic bidirectional communication of automated identification and susceptibility testing instruments with the VistA Laboratory Universal Interface (UI) through middleware or a generic instrument manager. The enhancements will provide standardization across the VA resulting in improved efficiency and enhanced security of patients' information. The Lab Micro Interface Release 1.0 Kernel Installation and Distribution System (KIDS) combined build that contains the patches LA*5.2*90 and LR*5.2*474 support the initiative.

The transfer of electronic order and result lab data is achieved via the Health Level Seven International (HL7) standard. This standard focuses on the application layer, or the seventh layer of the Open Systems Interconnection model (OSI model). Additional information regarding HL7 is included in section 10.4, HL7 messaging.

1.1. Purpose

The purpose of the guide is to familiarize users with the important features and navigational elements of the Lab Micro Interface Release 1.0 build.

1.2. System Overview

Patch LR*5.2*474 will provide new functionality to the Enter/Verify Data option of the Lab UI package. Three new release actions will now be available to the Technologist with the authority to release results. Results will be available to the applicable authorized clinicians and providers. In addition, the patch will allow a VA Medical Center the option of setting release defaults at the Package or User level.

Patch LA*5.2*90 will provide the constructs necessary to allow Microbiology or MI subscribed tests to be added to an Auto Instrument entry. An enhancement is also included for antibiotic susceptibility result processing which will now allow laboratories the ability to report susceptibilities to antimicrobial agents by utilizing SNOMED CT codes such as Positive and Negative. The handling of variations is also included in the build, such as the reporting of extended-spectrum beta-lactamases or ESBL enzymes that are resistant to most beta-lactam antibiotics. Locally mapped codes using an "L" for code set ID will now be processed for antibiotic susceptibilities.

All of the following SNOMED CT codes shall be supported with the release of patch LA*5.2*90:

- 131196009 Susceptible
- 260357007 Moderately susceptible
- 264841006 Intermediately susceptible
- 30714006 Resistant
- 10828004 Positive
- 260385009 Negative

1.3. Document Orientation

The intended audience for the Technical Manual and Security Guide are the following:

- Laboratory Information Managers (LIMs)
- Microbiology Technologists
- Automated Data Processing Application Coordinators (ADPACs)
- Information Resources Management (IRM) staff

Installation and auto-instrumentation setup for the Lab Micro Interface Release 1.0 build requires interactive participation between IRM staff and LIM or ADPAC personnel.

1.4. Text Conventions

Throughout this document, the following fonts and other text conventions are used:

Table 1: Text Conventions

Font	Use	Example
Blue text, underlined	Hyperlink to another document or URL	For further instructions, refer to the link: http://www.va.gov/vdl
Courier New	Menu options	MDRO Tools Parameter Setup
	Screen prompts	Want KIDS to INHIBIT LOGONs during the install? YES//
	VistA filenames	XYZ file #798.1
	VistA field names	“In the Indicator field, enter the logic that is to be used to determine if the test was positive for the selected MDRO.”
Courier New, bold	User responses to screen prompts	NO
Courier New, bold	Keyboard keys	< F1 >, < Alt >, < L >, <Tab>, <Enter>
Courier New	Report names	Procedures report
Times New Roman	Body text (Normal text)	“There are no changes in the performance of the system once the installation process is complete.”
Times New Roman Bold	Emphasis	Note: You can also type the access code, followed by a semicolon, followed by the verify code.

1.4.1. Disclaimers

1.4.1.1. Software Disclaimer

This software was developed at the Department of Veterans Affairs (VA) by employees of the Federal Government in the course of their official duties. Pursuant to title 17 Section 105 of the United States Code this software is not subject to copyright protection and is in the public domain. VA assumes no responsibility whatsoever for its use by other parties, and makes no guarantees, expressed or implied, about its quality, reliability, or any other characteristic. We would appreciate acknowledgement if the software is used. This software can be redistributed and/or modified freely provided that any derivative works bear some notice that they are derived from it, and any modified versions bear some notice that they have been modified.

1.4.1.2. Documentation Disclaimer

The appearance of external hyperlink references in this manual does not constitute endorsement by the Department of Veterans Affairs (VA) of this Web site or the information, products, or services contained therein. The VA does not exercise any editorial control over the information you may find at these locations. Such links are provided and are consistent with the stated purpose of the VA.

1.4.2. References

Documentation is also available on the VistA Document Library (VDL) The online versions will be updated as needed. Please look for the latest version on the VDL: <http://www.va.gov/vdl/>

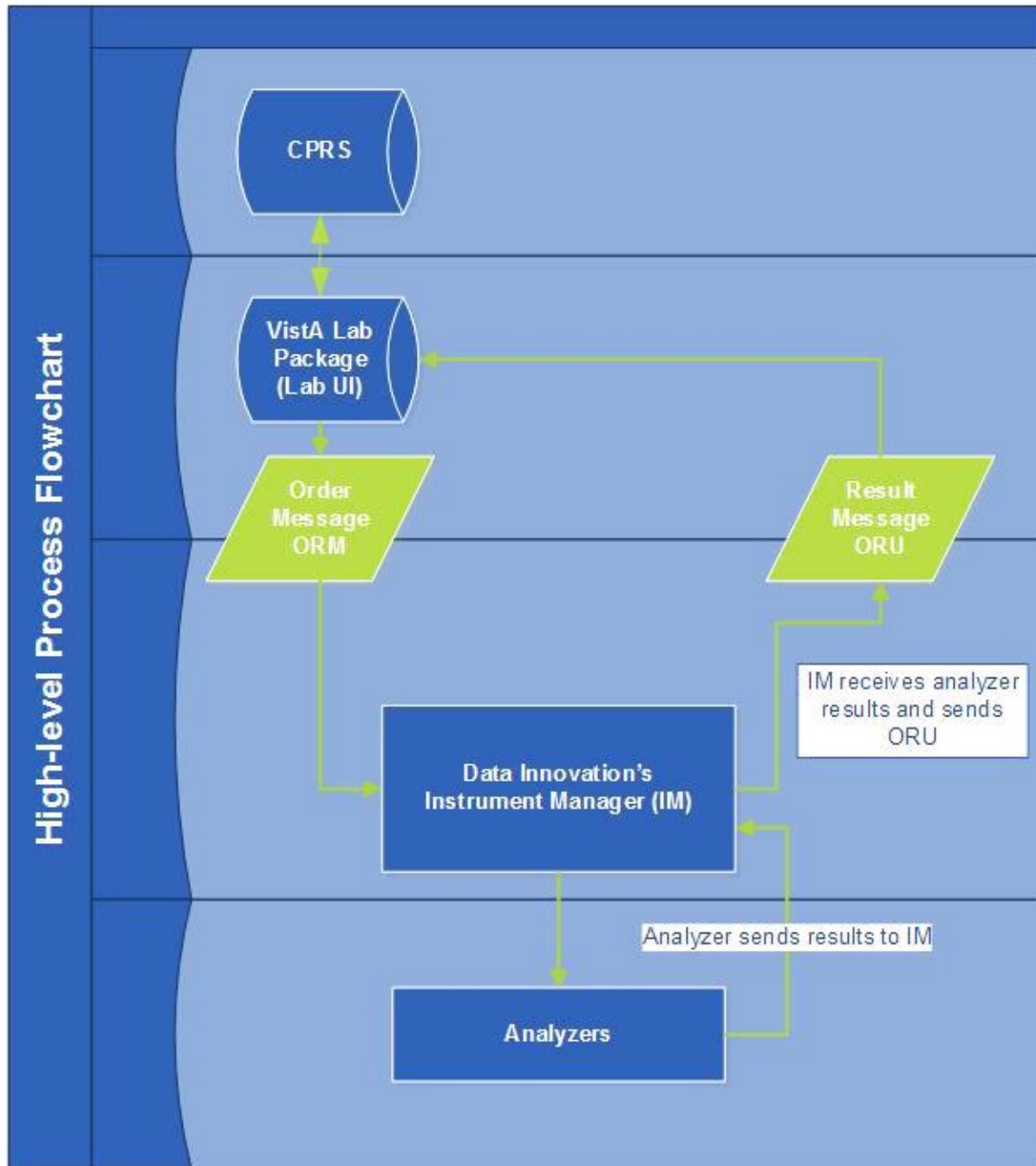
The following documents were used in preparation of this guide:

- Laboratory Universal Interface (UI) Version 1.6 Health Level 7 (HL7) Version 2.5.1 Interface Specifications Document for Lab Micro Interface Release 1.0. November 2016, version 2.0.
- Deployment, Installation, Back-out, Rollback Guide for release Lab Micro Interface Release 1.0. September 2016, version 1.7.
- LA*5.2*90 Patch Description. November 2016. **Note:** this document is available via Forum only.
- LR*5.2*474 Patch Description. November 2016. **Note:** this document is available via Forum only.
- Systems Design Document for the VistA Laboratory Enhancement Microbiology, initiative, May 2016, version .9. **Note:** this document is not available.

2. Implementation and Maintenance

The following diagram depicts the data flows between the VistA Lab package, the Data Innovation (DI) Instrument Manager (IM), and the analyzers. Examples of analyzers utilized at sites include: BD Bactec™, Dade MicroScan™, and bioMérieux Vitek™ systems.

Figure 1: High-level Process Flowchart



2.1. System Requirements

The VistA software is a Kernel Installation and Distribution System (KIDS) software release. The table below describes the software and documentation available for download.

Table 2: Software Files to Download

Host File	File Name	FTP Protocol
KIDS Distribution	The Lab_Micro_Interface_Release 1_0.KID file contains 2 patches: <ul style="list-style-type: none">• LR*5.2*474• LA*5.2*90	ASCII
ZIP	The Lab_Micro_Interface_Release 1_0.DOCS.ZIP contains both PDF and DOC formatted files of the following documents: VLE Micro_Lab_Micro_Interface_Release_1.0_Technical_Manual VLE Micro_Lab_Micro_Interface_Release_1.0_User_Guide VLE Micro_Deployment_Installation_Roll Back_Back Out_Guide	BINARY

2.1.1. Hardware Requirements

The Lab Micro Interface Release 1.0 build will operate on the current VA computer hardware systems.

2.1.2. Software Requirements

The Lab Micro Interface Release 1.0 build will operate on the current VA computer systems, which includes Kernel 8.0 and FileMan 22.

Lab Micro Interface Release 1.0 will work in conjunction with the functionality in the Auto Release 1.0 (LR*5.2*458 and LA*5.2*88) software build and Data Innovation's enhanced IM driver software. Thus, the prerequisites for the utilization of the full functionality in the Lab Micro Interface Release 1.0 build includes the following:

- **Auto Release 1.0 (LR*5.2*458 and LA*5.2*88)**
- **Data Innovation's IM version 18 or greater.**

2.1.3. Database Requirements

VA FileMan 22 is the only database requirement for the Lab Micro Interface Release 1.0 build.

2.2. System Setup and Configuration

Installation and auto-instrumentation setup for the Lab Micro Interface Release 1.0 build requires interactive participation between IRM staff and LIM or ADPAC personnel.

The Lab Micro Interface Release 1.0 build may be loaded with users on the system if the Lab Interface related activities have been halted. Halting of activities include, but are not limited to, the following:

- Editing of an Auto Instrument file entry.
- Turn off the Auto Downloading process to prevent the building and downloading of a Load/Worklist to the Instrument Manager.

- Shut down all LA7UI logical links and any other HL7 process (HLZTCP or HLLP processes) to prevent the processing of result messages from the IM.

In addition, you may wish to install the patches during non-peak hours.

3. Files

This section covers Kernel patches and Global Growth considerations.

3.1. Kernel Patches

Kernel patches must be current on the target system to avoid problems loading and/or installing the patches.

3.2. Global Growth

There is no significant change to global growth.

4. Routines

The following list of routines applies to the Lab Micro Interface Release 1.0 build:

Table 2: List of Routines

Routine	Release	Brief Description
LRMIEDZ2	LR*5.2*474	Microbiology edited routine.
LRVR0	LR*5.2*474	Pertains to LEDI MI/AP Auto-instrument verification
LRVRMI2	LR*5.2*474	Continuation of LRVRMI4 and is used for extracting results from the LAH global and storing it into LAB DATA FILE (#63).
LRVRMI2A	LR*5.2*474	Continuation of LRVRMI4 and is used for extracting results from the LAH global and storing it into LAB DATA FILE (#63).
LRVRMI3	LR*5.2*474	Continuation of LRVRMI4 and is used for extracting results from the LAH global and storing it into LAB DATA FILE (#63).
LRVRMI4	LR*5.2*474	Extracts the information in the ^TMP ("LRMI", \$J) global and stores it into the Lab Data micro sub-file.

Routine	Release	Brief Description
LRVRMI4A	LR*5.2*474	Extracts the information in the ^TMP ("LRMI", \$J) global and stores it into the Lab Data micro sub-file.
LA7VHLU6	LA*5.2*90	HL7 Code Sets utility.
LA7VIN7A	LA*5.2*90	Process ORU's OBX for Micro (BACTERIA).
LA7VIN7B	LA*5.2*90	Process ORU's OBX for Micro (FUNGAL and MYCOBACTERIA).
LA7VIN7	LA*5.2*90	Process OBX segment data for Micro ORU messages.
LA7VIN2A	LA*5.2*90	Continuation of LA7VIN2 and supports the performing lab functionality by processing incoming Universal Interface messages.
LA90A	LA*5.2*90	Environment check routine.

5. Templates

The following new templates are associated with patch LR*5.2*474 that is a part of the Lab Micro Interface Release 1.0 build:

Table 3: List of Templates

Template Name	File Name and Number
LR USER	PARAMETER TEMPLATE FILE #8989.52
LR PKG	PARAMETER TEMPLATE FILE #8989.52

The two parameter templates are shown in the figures below. If desired, perform a FileMan inquiry of the PARAMETER TEMPLATE file (#8989.52).

Figure 2: LR USER

NAME: LR USER	DISPLAY TEXT: Lab User Level Parameters
USE ENTITY FROM: NEW PERSON	
SEQUENCE: 100	PARAMETER: LR VER DISPLAY PREV COMMENT
SEQUENCE: 200	PARAMETER: LA7UTILA PARSE
SEQUENCE: 210	PARAMETER: LA7UTILA USE BROWSER

SEQUENCE: 50	PARAMETER: LR LABEL PRINTER DEFAULT
SEQUENCE: 220	PARAMETER: LA7UTILA SHOIDS
SEQUENCE: 125	PARAMETER: LRAPRES1 AP ALERT
SEQUENCE: 120	PARAMETER: LR AP REPORT SELECTION
SEQUENCE: 300	PARAMETER: LR CH GUI REPORT RIGHT MARGIN
SEQUENCE: 305	PARAMETER: LR MI GUI REPORT RIGHT MARGIN
SEQUENCE: 310	PARAMETER: LR AP GUI REPORT RIGHT MARGIN
SEQUENCE: 110	PARAMETER: LR MI VERIFY DISPLAY PROVIDER
SEQUENCE: 130.1	PARAMETER: LR ACCESSION DEFAULT SPECIMEN
SEQUENCE: 130.2	PARAMETER: LR ACCESSION DEFAULT COL SAMP
SEQUENCE: 130.3	PARAMETER: LR ACCESSION DEFAULT LAB TEST
SEQUENCE: 150.1	PARAMETER: LR MANIFEST EXC PREV TEST
SEQUENCE: 102	PARAMETER: LR VER DEFAULT PERFORMING LAB
SEQUENCE: 112.6	PARAMETER: LR MI VERIFY CPRS ALERT
SEQUENCE: 112.3	PARAMETER: LR CH VERIFY CPRS ALERT
SEQUENCE: 150.2	PARAMETER: LR MANIFEST DEFLT ACCESSION
SEQUENCE: 900	PARAMETER: LR MAPPING DEFAULT DIRECTORY
SEQUENCE: 900.1	PARAMETER: LR MAPPING DEFAULT FILESPEC
SEQUENCE: 104	PARAMETER: LR ASK PERFORMING LAB AP
SEQUENCE: 105	PARAMETER: LR ASK PERFORMING LAB MICRO
SEQUENCE: 113	PARAMETER: LR MI UI RELEASE DEFAULT

Figure 3: LR PKG

NAME: LR PKG	
DISPLAY TEXT: Lab Package Level Parameters	
USE ENTITY FROM: PACKAGE	
SEQUENCE: 1	PARAMETER: LR COLLECT MONDAY
SEQUENCE: 2	PARAMETER: LR COLLECT TUESDAY
SEQUENCE: 3	PARAMETER: LR COLLECT WEDNESDAY
SEQUENCE: 4	PARAMETER: LR COLLECT THURSDAY
SEQUENCE: 5	PARAMETER: LR COLLECT FRIDAY
SEQUENCE: 6	PARAMETER: LR COLLECT SATURDAY
SEQUENCE: 7	PARAMETER: LR COLLECT SUNDAY
SEQUENCE: 8	PARAMETER: LR IGNORE HOLIDAYS
SEQUENCE: 11	PARAMETER: LR EGFR METHOD
SEQUENCE: 12	PARAMETER: LR EGFR AGE CUTOFF

SEQUENCE: 13	PARAMETER: LR EGFR RESULT SUPPRESS
SEQUENCE: 9.2	PARAMETER: LR VER EA VERIFY BY UID
SEQUENCE: 9.1	PARAMETER: LR VER EM VERIFY BY UID
SEQUENCE: 20	PARAMETER: LRAPRES1 AP ALERT
SEQUENCE: 21	PARAMETER: LR AP REPORT SELECTION
SEQUENCE: 24	PARAMETER: LR AP SNOMED SYSTEM PRINT
SEQUENCE: 50	PARAMETER: LR CH GUI REPORT RIGHT MARGIN
SEQUENCE: 52	PARAMETER: LR MI GUI REPORT RIGHT MARGIN
SEQUENCE: 54	PARAMETER: LR AP GUI REPORT RIGHT MARGIN
SEQUENCE: 9.3	PARAMETER: LR MI VERIFY DISPLAY PROVIDER
SEQUENCE: 130.1	PARAMETER: LR ACCESSION DEFAULT SPECIMEN
SEQUENCE: 130.2	PARAMETER: LR ACCESSION DEFAULT COL SAMP
SEQUENCE: 130.3	PARAMETER: LR ACCESSION DEFAULT LAB TEST
SEQUENCE: 25	PARAMETER: LR AP SURGERY REFERENCE
SEQUENCE: 9.35	PARAMETER: LR MI VERIFY CPRS ALERT
SEQUENCE: 9.36	PARAMETER: LR CH VERIFY CPRS ALERT
SEQUENCE: 8.1	PARAMETER: LR LAB COLLECT FUTURE
SEQUENCE: 8.11	PARAMETER: LR MAX DAYS CONTINUOUS
SEQUENCE: 200	PARAMETER: LR REPORTS FACILITY PRINT
SEQUENCE: 900	PARAMETER: LR MAPPING DEFAULT DIRECTORY
SEQUENCE: 900.1	PARAMETER: LR MAPPING DEFAULT FILESPEC
SEQUENCE: 22	PARAMETER: LR ASK PERFORMING LAB AP
SEQUENCE: 23	PARAMETER: LR ASK PERFORMING LAB MICRO
SEQUENCE: 150.1	PARAMETER: LR MANIFEST EXC PREV TEST
SEQUENCE: 150.2	PARAMETER: LR MANIFEST DEFLT ACCESSION
SEQUENCE: 120	PARAMETER: LR AP DEFAULT ACCESSION NUMBER
SEQUENCE: 210	PARAMETER: LR WORKLIST DATA CLEANUP
SEQUENCE: 9.305	PARAMETER: LR MI UI RELEASE DEFAULT

6. Parameters

A new parameter LR MI UI RELEASE DEFAULT will be included which will provide the Veterans Affairs Medical Center (VAMC) site the ability to set the release default at the package and/or user levels.

A display of the parameter is shown in the figure below. If desired, perform a FileMan inquiry of the PARAMETER DEFINITION file (#8989.51).

Figure 4: LR MI UI RELEASE DEFAULT Parameter

NAME: LR MI UI RELEASE DEFAULT

DISPLAY TEXT: Default Micro Instrument Release Action

MULTIPLE VALUED: Yes INSTANCE TERM: Load/Work List

VALUE TERM: Default load/work list verify method

PROHIBIT EDITING: No VALUE DATA TYPE: set of codes

VALUE DOMAIN: 0:Quit;1:Release;2:Comments/Release;3>Edit (full)

VALUE HELP: Specify the default result release action presented to user.

KEYWORD: MICRO UI

INSTANCE DATA TYPE: pointer INSTANCE DOMAIN: 68.2

DESCRIPTION:

Used to designate the default release action presented to the user when verifying automated microbiology results in the "MI" subscript via options that use a load/work list. Parameter is associated with the load/worklist selected by the user.

Parameter can be set at the package or user level.

User level takes precedence over package level.

PRECEDENCE: 1 ENTITY FILE: USER

PRECEDENCE: 2 ENTITY FILE: PACKAGE

7. Data Dictionary (DD)

The DD #62.41, LABORATORY TESTS sub-file is modified with the installation of patch LA*5.2*90 that is a part of the Lab Micro Interface Release 1.0 build.

The trigger for the ROUTINE STORAGE field has been rewritten as a "NEW STYLE" cross reference and will only be set when for Chemistry (CH) subscripted tests.

LABORATORY TESTS (#30) was changed from CHEM TESTS and the screen modified to allow for MI subscripted tests to be selected.

Figure 5: DD #62.41

STANDARD DATA DICTIONARY #62.41 -- LABORATORY TESTS SUB-FILE

JUN 8,2016@12:37:17 PAGE 1

STORED IN ^LAB(62.4,D0,3, SITE: TEST.CHEYENNE.MED.VA.GOV UCI:

VISTA,ROU

DATA	NAME	GLOBAL	DATA
------	------	--------	------

ELEMENT	TITLE	LOCATION	TYPE
62.41,.01	TEST	0;1 POINTER TO LABORATORY TEST FILE (
		#60) (Required) (Multiply asked)	
	INPUT TRANSFORM: S DIC("S")="I \$D(^LAB(60,Y,.2))!("'"MI"'["\$P (^LAB(60,Y,0),U,4))" D ^DIC K DIC S DIC=DI E,X=+Y K:Y<0 X		
	LAST EDITED: JUN 07, 2016		
	HELP-PROMPT: Enter the name of a test for which the instrument will send data.		
	DESCRIPTION: This contains the test names for this instrument.		
	SCREEN: S DIC("S")="I \$D(^LAB(60,Y,.2))!("'"MI"'["\$P (^LAB(60,Y,0),U,4))"		
	EXPLANATION: Allow CH atomic test or Microbiology subsc ript test		
	FIELD INDEX: AD (#867) MUMPS IR ACTION Short Descr: Set "ROUTINE STORAGE" field with CH subscribed test data name number Description: This trigger cross reference will only populate the "ROUTINE STORAGE" field with 63.04 data location file number for CH (Chemistry) atomic subscribed test having data name field populated. See example below. MI (Microbiology) subscribed test have no data name, therefore the "AUTO INSTRUMENT" file # 62.4, "TEST" field #30, (#62.41), subfile #62.41, "ROUTINE STORAGE" file #11 will NOT be set.		
	EXAMPLE: CH subscribed test having DATA NAME will populate the ROUTINE STORAGE field with: TV(#,1) MI subscribed test		

will NOT set the ROUTINE STORAGE field.	
Set Logic: S \$P(^LAB(62.4,DA(1),3,DA,1),U)="TV("_X2(3)_",1)"	
Set Cond: S X=(X2(2)="CH")&(X2(3)'="")	
Kill Logic: S \$P(^LAB(62.4,DA(1),3,DA,1),U)=""	
X(1): TEST (62.41,.01) (Subscr 1) (Len 10)	
(forwards)	
Transform (Display):	
X(2): Computed Code: S X=\$P(\$G(^LAB(60,X(1),0)),	
U,4)	
(Subscr 2)	
X(3): Computed Code: S X=\$P(\$G(^LAB(60,X(1),.2))	
,U)	
(Subscr 3)	
FILES POINTED TO	FIELDS
LABORATORY TEST (#60)	TEST (#.01)

8. Exported Options

The Lab Micro Interface Release 1.0 build does not contain any associated exported options or protocols.

9. Mail Groups, Alerts, and Bulletins

Mail groups, alerts, and bulletins are not created, required, or used by the software.

10. Public Interfaces

Associated documentation will be available on the VistA Document Library (VDL). The online versions will be updated as needed. Please look for the latest version on the VDL if more information is required:

- Laboratory Universal Interface (UI) Version 1.6 Health Level 7 (HL7) Version 2.5.1 Interface Specifications Document for Lab Micro Interface Release 1.0 available via <http://www.va.gov/vdl>
- LDSI/LEDI IV Update HL7 Interface Specification document available via <http://www.va.gov/vdl>

10.1. Integration Control Registrations

Integration Control Registrations (ICRs) were not created and/or used.

10.2. Application Programming Interfaces

API's are not applicable.

10.3. Remote Procedure Calls

RPC's are not applicable.

10.4. HL7 Messaging

The VistA Laboratory Universal Interface (UI) implements an interface to the HL7 Standard for use by the VistA Laboratory application in communicating with non-VistA systems to exchange healthcare information. The interface strictly adheres to the HL7 Standard and avoids using "Z" type extensions to the Standard.

The following HL7 message types are used to support the exchange of Laboratory information:

- ACK General Acknowledgment
- ORM Order
- ORR General Order Response Message response to any ORM
- ORU Observational Results Unsolicited

The following HL7 segments are used to support the exchange of Laboratory information:

- ERR Error
- MSA Message Acknowledgment
- MSH Message Header
- NTE Notes and Comment
- OBR Observation Request
- OBX Observation
- ORC Common Order
- PID Patient Identification
- PV1 Patient Visit

For additional information, please refer to the Laboratory Universal Interface (UI) Version 1.6 Health Level 7 (HL7) Version 2.5.1 Interface Specifications Document for the Lab Micro Interface Release 1.0 build is available at: <http://www.va.gov/vdl>.

10.5. Web Services

Web services were not created and/or used.

11. Standards and Conventions Exemptions

SAC exemptions for this software were not required.

11.1. Internal Relationships

All related routines are listed in Section 4, Routines.

11.2. Software-wide Variables

SAC exemptions for this software were not required.

12. Security

Privacy represents information that must be protected and covers the collection, use, and disclosure of personal information. Security represents how information must be protected and encompasses the methods for accessing and protecting the information. A Security Guide aids in controlling the release of sensitive information related to nationally released software. The Lab Micro Interface Release 1.0 build does not contain any highly sensitive information. Information may be obtained through the Freedom of Information Act (FOIA) requests. There are no unique/atypical features or other information that would be of interest to security personnel or other support groups.

12.1. Security Menus and Options

Security menus and options are not distributed with the build.

12.2. Security Keys and Roles

Software security keys are not required for the build.

12.3. File Security

Any additional file security for the software is not required.

12.4. Electronic Signatures

Electronic signatures are not applicable.

12.5. Secure Data Transmission

The software does not provide any secure data transmission capabilities.

The following websites address encryption of data exchanged over any facility connection:

- Federal Information Security Management Act (FISMA):
<http://csrc.nist.gov/groups/SMA/fisma/index.html>

13. Archiving

The software does not provide any data archiving capabilities.

14. Non-Standard Cross-References

Non-standard or special cross-references are not applicable.

15. Troubleshooting

This section provides examples of interface application errors, back up procedures, and contact information.

15.1. HL7 ERR Segment

The ERR segment is used to add error comments to acknowledgment messages when receiving ORU Result Messages. The fields supported are listed below and can be utilized in troubleshooting issues.

ERR-3 HL7 Error Code

- If MSA-1 Acknowledgment Code is AA then ERR-3 will contain value 0 from HL7 Table 0357.
- If MSA-1 Acknowledgment Code is AE then ERR-3 will contain an error code/message from HL7 Table 0357.

ERR-4 Severity

- If MSA-1 Acknowledgment Code is AA then ERR-4 will be blank.
- If MSA-1 Acknowledgment Code is AE then ERR-4 will contain an error code/message from HL7 Table 0357

ERR-5 Application Error Code

- If MSA-1 Acknowledgment Code is AA then ERR-5 will be blank.
- If MSA-1 Acknowledgment Code is AE then ERR-5 will contain an error code/message from VistA Laboratory LA7 MESSAGE LOG BULLETINS FILE (#62.485)

ERR-8 User Message

- If MSA-1 Acknowledgment Code is AA then ERR-8 will be blank.
- If MSA-1 Acknowledgment Code is AE then ERR-8 will contain text message from ERR-5.

ERR-9 Inform Person Indicator

- If MSA-1 Acknowledgment Code is AA then ERR-9 will be blank.
- If MSA-1 Acknowledgment Code is AE then ERR-9 will contain "USR".

An example of an AE application error is shown below.

Figure 6: Example Message with an AE application error.

```
DATE/TIME ENTERED: NOV 19, 2016@07:37:36
TRANSMISSION TYPE: OUTGOING
RELATED EVENT PROTOCOL: LA7UI1 ORU-R01 EVENT
MESSAGE TEXT:
  MSA|AE|AITC001|Msg # 469, specimen source HL7 MAR in message does
  not match accession's UID 3716000013 related topography code. See
  file #61, TOPOGRAPHY entry # 70.

  ERR|||207^Application internal error^HL70357|E|49^Msg # 469,
  specimen source HL7 MAR in message does not match accession's UID
  3716000013 related topography code. See file #61, TOPOGRAPHY entry
  # 70.^99VA62.485||
  |Msg # 469, specimen source HL7 MAR in message does not match
  accession's UID 3
  716000013 related topography code. See file #61, TOPOGRAPHY entry #
  70.|USR

  NO. OF CHARACTERS IN MESSAGE: 530    NO. OF EVENTS IN MESSAGE: 1
```

15.2. Special Instructions for Error Correction

During installation, if the option to back up routines was run as directed, 'Backup a Transport Global', then routines have the ability to be restored from the "backup" MailMan message that was generated. However, the KIDS installation process does not perform a restore of other VistA components, such as data dictionary, cross-reference, and template changes, etc.

15.3. National Service Desk and Organizational Contacts

The four tiers of support documented herein are intended to restore normal service operation as quickly as possible and minimize the adverse impact on business operations, ensuring that the best possible levels of service quality and availability are maintained.

Table 3 lists organizational contacts needed by site users for troubleshooting purposes. Support contacts are listed by name of service responsible to fix the problem, description of the incident escalation, associated tier level, and contact information.

Table 4: Tier Support Contact Information

Name	Role	Org	Contact Info
Clinical Application Coordinator	Tier 0 Support	VHA	Local to each facility.

Name	Role	Org	Contact Info
OI&T National Service Desk	Tier 1 Support	OI&T	Nationalservicedeskanr@va.gov 1-855-673-4357
OI&T Local Support	Tier 2 Support	OI&T	OI&T Local Helpdesk
Health Product Support	Tier 2 Support	VHA	Nationalservicedeskanr@va.gov 1-855-673-4357
OI&T System Admin/Field Operation Support	Tier 2 & 3 support	OI&T	Nationalservicedeskanr@va.gov 1-855-673-4357
VistA Patch Maintenance	Tier 3 Application Support	OI&T	Nationalservicedeskanr@va.gov 1-855-673-4357
Enterprise Operations	Tier 3 & 4 Support	OI&T	OI&T Enterprise Operations Helpdesk

Table 5: Tier Support Contact Information for COTS Software

Name	Role	Organization	Contact Information
LIM	Tier 0 Support	VHA	Local to each facility
Commercial off-the-shelf (COTS) Vendor	Tier 2 Support	Vendor	Data Innovations http://www.datainnovations.com/

16. RACI Chart

- **Responsible (R):** The persons or groups who execute the task are responsible for the correct execution of the process and activities.
- **Accountable (A):** For each activity, only one role (person or group) should be answerable for owning the end result and process quality.
- **Consulted (C):** A person or group that provides additional knowledge and information.
- **Informed (I):** A person or group that only receives process execution and quality information (per activity or in summary form).

Table 6: RACI Chart

Functional Roles	Requirements	Design	Development	Test	Documentation	Training	Deployment
Program Manager	I, C	I, C	I, C	I, C	I, C	I, C	I, C
Project Manager	R	R	R	R, I, C	R	R	R
Project Planner	I	I	I	I	I	I	I
Technical Architect	I, C	A, R	A, R	R, C	I, C	I, C	R, I, C
Functional Analyst	R, I, C	R, C	R, C	R, C	R, I, C	R, I, C	I, C
Requirements Manager	A, R	R, I, C	I, C	I, C	R, I, C	R, I, C	I, C
Configuration Manager	I	I	I, C	I, C	I, C	I	A, R
Test Manager	I	I	I, C	A, R	R, I, C	I	I, C
Test Analyst	I	I	I	R, C	I, C	I	I
Lead Developer	I, C	I, C	R, C	R, C	R, I, C	I, C	R, I, C
Developer	I, C	I, C	R, C	I, C	I, C	I, C	I, C
Training Manager	I	I, C	I, C	I, C	R, I, C	A, R	I
Technical Writer	I	I	I	I	A, R	I	I

Glossary

Glossary of Terms	Definitions
Access Code	A 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.
ADPAC	Automated Data Processing Coordinator. The ADPAC is the person responsible for planning and implementing new work methods and technology for employees throughout a medical center. ADPACs train employees and assist users when they run into difficulties, and needs to know how all components of the system work. ADPACs maintain open communication with their supervisors and Service Chiefs, as well as their counterparts in Fiscal and Acquisitions and Materiel Management (A&MM), or Information Resource Management (IRM). Also, the designated individual responsible for user-level management and maintenance of an application package (<i>e.g.</i> , Laboratory).
Auto Instruments	Automated instruments used in the Lab that identify and measure tissue or other specimens.
Bactec™	An automated instrument used for analyzing blood cultures within the Microbiology module.
COTS	Commercial off-the-shelf. Software or hardware that can be purchased as a packaged solution.
Driver	Computer program which transports electronic information such as data or

Glossary of Terms	Definitions
	<p>commands going between two computers or devices.</p>
FileMan	<p>FileMan is a set of M utilities written in the late 1970s and early 1980s which allow the definition of data structures, menus and security, reports, and forms.</p> <p>Its first use was in the development of medical applications for the Veterans Administration (now the Department of Veterans Affairs). Since it was a work created by the government, the source code cannot be copyrighted, placing that code in the public domain. For this reason, it has been used for rapid development of applications across a number of organizations, including commercial products.</p>
FORUM	<p>FORUM is the VA's national-scale email system. FORUM uses the VistA mail software and provides an excellent interface for threaded messages that can take the form on ongoing discussions. The National Patch Module is a VistA application that helps developers to manage the numbering, inventory, and release of patches. Patches are developed in response to request submissions and an error reporting request system known as National Online Information Sharing. A process called the Kernel Installation Distribution System (KIDS) is used to roll up patches into text messages that can be sent to sites along with installation instructions. The patch builds are sent as text messages via email, and the recipient (e.g., a site administrator) can run a PackMan function to unpack the KIDS build and install the selected routines.</p>
File Transfer Protocol (FTP)	<p>A client-server protocol which allows a user on one computer to transfer files to and from another computer over a TCP/IP network. Also the client program the user executes to</p>

Glossary of Terms	Definitions
	transfer files. It is defined in Internet Standard 9, Request for Comments 959.
Generic Instrument Manager (GIM)	Vendor system communicating with VistA is called a Generic Interface Manager (GIM).
Globals	<p>M uses globals: variables which are intrinsically stored in files and which persist beyond the program or process completion. Globals appear as normal variables with the caret character in front of the name. For example, the M statement...</p> <pre>SET ^A("first_name")="Craig"</pre> <p>...will result in a new record being created and inserted in the persistent just as a file persists in an operating system. Globals are stored, naturally, in highly structured data files by the language and accessed only as M globals. Huge databases grow randomly rather than in a forced serial order, and the strength and efficiency of M is based on its ability to handle all this flawlessly and invisibly to the programmer.</p> <p>For all of these reasons, one of the most common M programs is a database management system. FileMan is one such example. M allows the programmer much wider control of the data; there is no requirement to fit the data into square boxes of rows and columns.</p>
Kernel	The VistA software that enables VistA applications to coexist in a standard operating system independent computing environment.
Kernel Installation and Distribution System (KIDS)	KIDS provides a mechanism to create a distribution of packages and patches; allows distribution via a MailMan message or a host file; and allows queuing the installation of a distribution for off-hours.
LIM	Laboratory Information Manager.

Glossary of Terms	Definitions
	<p>The LIM manages the laboratory files in VistA. Additional duties include creation of new tests, interface set-up and maintenance of instruments, coordination with staff outside of lab to create quick orders, order sets and other Computerized Patient Record System (CPRS) functions.</p>
M	<p>M is a procedural, interpreted, multi-user, general-purpose programming language designed to build and control massive databases. It provides a simple abstraction that all data values are strings of characters, and that all data can be structured as multiple dimensional arrays. M data structures are sparse, using strings of characters as subscripts.</p> <p>M was formerly (and is still commonly) called MUMPS, for Massachusetts General Hospital Utility Multiprogramming System.</p>
Massachusetts General Hospital Utility Multi-Programming System (MUMPS)	See M
MailMan	<p>MailMan is an electronic messaging system that transmits messages, computer programs, data dictionaries, and data between users and applications located at the same or at different facilities. Network MailMan disseminates information across any communications medium.</p>
Mass Spec TM	<p>An automated instrument used for organism identification within the Microbiology module.</p>
MUMPS	See M
Namespace	<p>A logical partition on a physical device that contains all the artifacts for a complete M system, including globals, routines, and libraries. Each namespace is unique, but data can be shared between namespaces with proper addressing within the routines. In VistA, namespaces are usually dedicated to a</p>

Glossary of Terms	Definitions
	particular function. The MMMS namespace, for example, is designed for use by MRSA-PT.
PackMan	A specific type of MailMan message used to distribute KIDS builds.
SNOMED CT	Systematized Nomenclature of Medicine Clinical Terms was developed to standardize the coding of information regarding specific diseases.
VAMC	Department of Veterans Affairs Medical Center.
Vitek™	An automated instrument used for measuring antibiotic susceptibility within the Microbiology module.