Radiology/Nuclear Medicine
Release Notes

Patch RA*5.0*84
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Department of Veterans Affairs
Health Systems Design & Development
Provider Systems

Release Notes for Patch RA*5*84

Patch RA*5*84 is an enhancement patch in support of the VHA National Radiology Program office initiative to integrate teleradiology (remote-read) reports into VistA.

Overview

A new National Teleradiology Program (NTP) reading center is established in California and staffed by VHA radiologists. VA medical centers may contract with the NTP to provide daytime or after-hours interpretation of imaging studies.

- For this patch, **teleradiology** refers only to the services provided by the NTP.

- This patch does not affect VA medical centers with existing local remote-read or teleradiology arrangements.

- This patch is solely a solution for implementing the NTP pilot program.

- Sites not using the NTP, are not affected by the code modifications made for this project.

- The login to the ScImage application is the identity verification process. Each individual physician's credentials (NPI) are part of the ScImage user profile. This identity is what is passed when reporting a case.

> **Note:** Associated patches RA*5*74, RA*5*80, and RA*5*87 must be installed before you install RA*5*84.

> **Note: XINDEX** will generate errors and warnings when run for this build.

> The errors reflect the reference to three routines that are part of an unreleased patch (RA*5.0*47). RA*5.0*47 will not be released in the near term (within three months). The references to those routines are simply checking if the routines exist in the environment, and if they **do not**, the code is not executed. XINDEX is unable to differentiate that the code is simply checking for the existence of those routines.

> The warnings of **Routine exceeds SACC maximum size of 10000** are due to the current version XINDEX following the previous Standards and Conventions (SAC) approved by the Standards and Conventions Committee (SACC). The new SAC allows routines to grow to a maximum size of 20,000 bytes (15,000 code and 5,000 comments). When the XINDEX routines are updated to follow the new SAC, the routine size warnings will not be generated. The new XINDEX routines are due to be released in a VA Kernel patch (XU*8.0*491).

Information on the new SAC standards can be found by following the hyperlink: http://vista.med.va.gov/sacc/

The aforementioned XINDEX issues were reviewed and approved by our VistA Software Quality Assurance professionals.

Anomaly with Patch RA*5*84

Remedy Ticket #251440/Resolve in Patch RA*5.0*78
Description: There may be extra carriage returns in the display of Radiology 5.0 reports

We made active sites aware of this anomaly and suggested to the sites that the reports be fully examined.

Patch RA*5*84 Features

Patch RA*5*84 provides nine new features to Radiology/Nuclear Medicine 5.0.

Proxy User Account

This patch creates an application proxy user account called **RADIOLOGY,OUTSIDE SERVICE** in the NEW PERSON (#200) file. This account represents the nationally-credentialed radiologists at the NTP, so that they do not need to be credentialed and privileged at each participating VAMC. You cannot use the proxy account to log into local VistA applications and it does not require the use of Access/Verify codes.

> **Note:** Do not modify the **RADIOLOGY,OUTSIDE SERVICE** proxy user account.
> A security policy is in place that strictly defines the attributes of this record. For more information, refer to VA Directive 6504.

The pre-install process updates the **RADIOLOGY,OUTSIDE SERVICE** record by assigning the NEW PERSON record a **STAFF** Radiology/Nuclear Medicine classification. Without the **STAFF** classification, exams verified by teleradiologists will not advance to an examination status of **COMPLETE**.

The post-install process associates **RADIOLOGY,OUTSIDE SERVICE** with all the active imaging locations in the IMAGING LOCATIONS (#79.1) file. Each imaging location has its own set of parameters defining location-specific criteria, such as, label/header/footer formats, printer devices for flash cards, jacket labels requests and reports, as well as how many labels to print.

IENs in Diagnostic Codes File

This patch creates five new entries with correct internal entry numbers in the *local* DIAGNOSTIC CODES file, if a facility does not have the following entries with the exact internal entry numbers (IENs) in the DIAGNOSTIC CODES (#78.3) file.

- 999   TELERADIOLOGY, NOT YET DICTATED
- 1000   NO ALERT REQUIRED
- 1001   SIGNIFICANT ABNORMALITY, ATTN NEEDED
- 1002   CRITICAL ABNORMALITY
- 1003   POSSIBLE MALIGNANCY

When a facility has a diagnostic code record in the DIAGNOSTIC CODES file within the reserved IEN range, none of the aforementioned records are added to the local DIAGNOSTIC CODES file and an email message is sent to the VHA Radiology Informatics Committee mail group in Outlook, identifying the facility with this issue.

Note: Do not modify or delete these DIAGNOSTIC CODES. These codes were established as standard diagnostic codes for communication between the teleradiology reading centers and the local VAMC sites. Codes 1001, 1002, and 1003 trigger an **Abnormal Imaging Results** notification to the requesting physician, and add the report to the **Abnormal Exam Results** management report.

New Fields in RAD/NUC MED REPORTS File

This patch creates three new fields in the RAD/NUC MED REPORTS (#74) file.

- TELERADIOLOGY PHYSICIAN NAME (#9.1)
- TELERADIOLOGY PHYSICIAN NPI (#9.2)
- REPORT VERIFIED BY COTS APP (#9.3)

New Fields in RAD/NUC MED HL7 APPLICATION EXCEPTION File

This patch creates two new fields in the RAD/NUC MED HL7 APPLICATION EXCEPTION (#79.7) file.

- DEFAULT DX FOR 'R' REPORT (#2.1)
- DEFAULT DX FOR 'F' REPORT (#2.2)

New Parameter in RAD/NUC MED HL7 APPLICATION EXCEPTION File

This patch adds **RA-SCIMAGE-TCP** (a record in the HL7 APPLICATION PARAMETER (#771) file) to the RAD/NUC MED HL7 APPLICATION EXCEPTION (#79.7) file and defines data attributes for this record.

HL7 ORU Messages

This patch makes it possible for VistA to accept HL7 report messages (ORU) from the teleradiology center and to automatically store the messages in VistA as verified reports, without requiring further intervention from the local medical center staff.

Primary Dx Code Data

Patch RA*5.0*84 revealed an issue with the data generated by the **Abnormal Report** option. Because of the way the cross-reference was created on the PRIMARY DIAGNOSTIC CODE (Node: 'P'; data dictionary: 70.03; fld: 13) field, some exams expected to display on the Abnormal Report did not. The old, traditional cross-reference is replaced with a new style cross-reference. The pre-install routine exported with this patch utilizes the correct VA FileMan utility to insure that this business rule-change is carried through to completion.

> **Note:** The primary Diagnostic Code data is found in the DIAGNOSTIC CODES (#78.3) file.

RAHLO1

This patch updates and centralizes the report and exam lock logic. The locking and unlocking of both reports and exams happen in **RAHLO1**.

- LOCKX^RAHLTCPU handles exams.

- LOCKR^RAHLTCPU handles reports.

OBR-7 Field for ORM HL7 V2.3

The data in the OBR-7 (Observation Date/Time) field for ORM (Order) HL7 V2.3 messages has changed. Prior to this patch, the date/time value placed in this field was the current date/time of execution or in VA FileMan NOW. This logic was correct because the message was generated immediately after the date/time the exam was registered.

With the advent of the **[RA HL7 RESEND BY DATE RANGE] Resend Radiology HL7 Messages By Date Range** option, HL7 messages are generated and broadcast long after the exam is registered. The NOW value raises an issue because the timestamp in OBR-7 is the time at which the **[RA HL7 RESEND BY DATE RANGE]** option is executed, as opposed to the date/time the exam is registered.

After this patch is installed, the date/time value placed in OBR-7 is the date/time the exam is registered. The date/time of registration is a far more accurate timestamp than the time of the actual patient encounter.

Support for NTP Items

The support plan for the release of patch RA*5*84 includes the addition of two new items in the Remedy software. The new NTP items are supported by Enterprise Product Support (EPS), Clinical Product Support (CPS), and Clinical 3 Team.
We are implementing the following Remedy **Category-Type-Item** for NTP:

Category	Applications - VistA (existing)
Type	Radiology
Item	NTP (new)
Category	Applications - VistA (existing)
Type	Imaging 3.0
Item	NTP (new)

After Installation

Patch RA*5.0*84 exports the HL7 Application Parameter: RA-SCIMAGE-TCP.
The data in the **Mail Group** field is mandatory and must have a definition of: RAD HL7
MESSAGES.

Example of how to set the entry

```
Name: RA-SCIMAGE-TCP              Active/Inactive: ACTIVE
Facility Name: <your facility id here>      Mail Group: RAD HL7 MESSAGES
Country Code: USA                 HL7 Encoding Characters: ^~\&
HL7 Field Separator: |
```

> **Note:** Populate the **Facility Name** field. The **Facility Name** field is a free text
> field. Traditionally sites enter the facility name or station number when
> editing this field.

Patch RA*5.0*84 exports the following protocols:

- RA SCIMAGE ORM   Type: Subscriber

- RA SCIMAGE ORU   Type: Subscriber

- RA SCIMAGE TCP REPORT   Type: Subscriber

- RA SCIMAGE TCP SERVER RPT   Type: Event Driver

> **Note:** Do not associate the RA SCIMAGE subscriber protocols to the
> Radiology/Nuclear Medicine event driver protocols, if your facility is not
> participating in the National Teleradiology Project initiative.

Unnecessary HL7 messaging adds data to a facility's database, as well as to network traffic.
Therefore, leave the task of linking the subscriber protocols to respective event drivers as your
last step.

- **Subscriber Protocol:** RA SCIMAGE TCP REPORT is associated with the Receiving
  Application: RA-VOICE-SERVER

- **Event Driver Protocol:** RA SCIMAGE TCP SERVER RPT is associated with the Sending
  Application: RA-SCIMAGE-TCP

> **Note:** HL7 messaging commences when the designated subscriber protocols are
> associated with respective event driver protocols.

Patch RA*5.0*84 exports the HL LOGICAL LINK component: RA-SCIMAGE.
RA*5.0*84 exports RA-SCIMAGE with predetermined data attributes defined: LLP Type,
TCP/IP Service Type, and so on. Do not edit these fields.

The TCP/IP Address and TCP/IP Port fields for RA-SCIMAGE differ from site to site. Because
of this condition, these two fields are to be configured by the appropriate parties in the facility at
which the patch is installed.

Step 1
Example of how to edit the TCP/IP Address and TCP/IP Port fields

Identify the correct menu to use, in order to edit the TCP/IP Address and TCP/IP Port fields:

```
Select OPTION NAME: HL7 MAIN MENU  HL MAIN MENU     HL7 Main Menu

Event monitoring menu ...
Systems Link Monitor
Filer and Link Management Options ...
Message Management Options ...
Interface Developer Options ...
Site Parameter Edit
HLO HL7 (Optimized) MAIN MENU ...

Select HL7 Main Menu Option: Interface Developer Options

EA   Application Edit
EP   Protocol Edit
EL   Link Edit ← this is the option to use
VI   Validate Interfaces
     Reports ...

Select Interface Developer Options Option: EL  Link Edit


                        HL7 LOGICAL LINK
--------------------------------------------------------------------------------
NODE: RA-SCIMAGE                            DESCRIPTION:


INSTITUTION:


MAILMAN DOMAIN:


AUTOSTART: Enabled


QUEUE SIZE: 10


LLP TYPE: TCP ← select 'TCP'; this action will bring you to a new screen


DNS DOMAIN:
--------------------------------------------------------------------------------


                        HL7 LOGICAL LINK
--------------------------------------------------------------------------------
 -----------------------------TCP LOWER LEVEL PARAMETERS------------------------
                              RA-SCIMAGE

TCP/IP SERVICE TYPE: CLIENT (SENDER)
TCP/IP ADDRESS: ← edit this field
TCP/IP PORT: ← edit this field
TCP/IP PORT (OPTIMIZED):

ACK TIMEOUT: 300               RE-TRANSMISION ATTEMPTS: 5
READ TIMEOUT: 60               EXCEED RE-TRANSMIT ACTION: shutdown
BLOCK SIZE:                    SAY HELO:
                               DIRECT CONNECT OPEN TIMEOUT:
STARTUP NODE:                  PERSISTENT: NO
RETENTION:                     UNI-DIRECTIONAL WAIT:
--------------------------------------------------------------------------------
```

Step 2
RA-SCIMAGE must be associated with following subscriber protocols:
* RA SCIMAGE ORM
* RA SCIMAGE ORU

VAxxx must be associated with the * RA SCIMAGE TCP REPORT subscriber protocol.

To accomplish this action, use the **Protocol Edit** option under the Select Interface Developer Options menu.

The RA-SCIMAGE logical link is exported as a non-persistent client.

Processes for non-persistent links hibernate when there are no more messages to exchange over the link. When there are additional messages to broadcast over this link the TCP Link Manager process *wakes up* the logical link.

To start the TCP Link Manager, use the **TCP Link Manager Start/Stop** option under the HL Main Menu and HL Menu Filer Link Mgt menus.

```
Name: RA SCIMAGE TCP REPORT           Type: subscriber
    Creator:                          Receiving Application: RA-VOICE-SERVER
    Event Type: R01                   Logical Link: VAxxx
    Version ID: 2.3                   Response Message Type: ACK
    Processing Routine: D ^RAHLTCPB   Sending Facility Required?: NO
    Receiving Facility Required?: NO  Security Required?: NO
```

VAxxx is the name of the multi-threaded listener running at each VAMC in the system. Each multi-threaded listener has a unique IP address, and all multi-threaded listeners have a port definition of 5000.
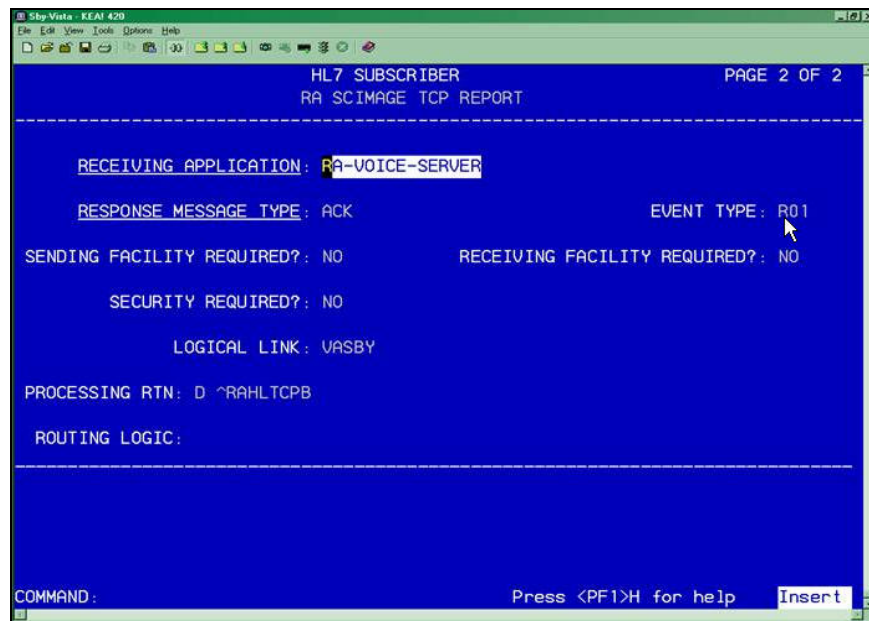
How do you identify the proper name of the multi-threaded listener at your facility?

The best way is through the use of the VA FileMan SEARCH function.

```
Select OPTION: ?
   Answer with OPTION NUMBER, or NAME
   Choose from:
   1          ENTER OR EDIT FILE ENTRIES
   2          PRINT FILE ENTRIES
   3          SEARCH FILE ENTRIES <-- this is the option to use
   4          MODIFY FILE ATTRIBUTES
   5          INQUIRE TO FILE ENTRIES
   6          UTILITY FUNCTIONS
   7          OTHER OPTIONS
   8          DATA DICTIONARY UTILITIES
   9          TRANSFER ENTRIES


Select OPTION: SEARCH FILE ENTRIES

OUTPUT FROM WHAT FILE: HL LOGICAL LINK//

  -A- SEARCH FOR HL LOGICAL LINK FIELD: INSTITUTION
  -A- CONDITION: EQUALS
  -A- EQUALS INSTITUTION: <enter the name of your institution>

  -B- SEARCH FOR HL LOGICAL LINK FIELD: TCP
     1   TCP/IP ADDRESS
     2   TCP/IP OPENFAIL TIMEOUT
     3   TCP/IP PORT  n
     4   TCP/IP PORT (OPTIMIZED)
     5   TCP/IP SERVICE TYPE
CHOOSE 1-5: 3  TCP/IP PORT
  -B- CONDITION: EQUALS
  -B- EQUALS: 5000
  -C- SEARCH FOR HL LOGICAL LINK FIELD:

IF: A&B    INSTITUTION EQUALS <your institution>
             and TCP/IP PORT EQUALS "5000"
OR:

STORE RESULTS OF SEARCH IN TEMPLATE:

SORT BY: NODE//
START WITH NODE: FIRST//
FIRST PRINT FIELD: .01  NODE
THEN PRINT FIELD:
Heading (S/C): HL LOGICAL LINK SEARCH  Replace
DEVICE:  HOME    Right Margin: 80//
HL LOGICAL LINK SEARCH                MAR 11,2008  11:26    PAGE 1
NODE
----------------------------------------------------------------------
VAxxx

                    1 MATCH FOUND.
```

Example of RA SCIMAGE ORM
The procedure does not change based on the subscriber being edited. You edit the **Logical Link** field.

```
Select HL7 Main Menu Option: INterface Developer Options

EA      Application Edit
EP      Protocol Edit <-- this is the option to use
EL      Link Edit
VI      Validate Interfaces
        Reports ...
```

Example of the first screen

```
                        HL7 INTERFACE SETUP                    PAGE 1 OF 2
------------------------------------------------------------------------------


          NAME: RA SCIMAGE ORM
DESCRIPTION (wp):   (empty)


ENTRY ACTION:

 EXIT ACTION:


        TYPE: subscriber <--hit the RETURN/ENTER key when this field is
                         highlighted.
------------------------------------------------------------------------------



                        HL7 SUBSCRIBER                       PAGE 2 OF 2
                        RA SCIMAGE ORM
------------------------------------------------------------------------------

   RECEIVING APPLICATION: RA-SCIMAGE-TCP

     RESPONSE MESSAGE TYPE: ACK                        EVENT TYPE: O01

  SENDING FACILITY REQUIRED?: NO      RECEIVING FACILITY REQUIRED?: NO

         SECURITY REQUIRED?: NO

           LOGICAL LINK: <-- enter RA-SCIMAGE here.

  PROCESSING RTN:

     ROUTING LOGIC:
------------------------------------------------------------------------------
```

Step 3
Associate the subscriber protocols with the event driver protocols.

> **Note:** HL7 messaging commences when the designated subscriber protocols are associated with respective event driver protocols.

Use the **Protocol Edit** option under the Interface Developer Options and HL7 Main Menu menus to associate the subscriber protocols with the event driver protocols.

- **Subscriber Protocol:** Associate RA SCIMAGE ORM with the event driver protocols: RA REG 2.3, RA EXAMINED 2.3, and RA CANCEL 2.3.

- **Subscriber Protocol:** Associate RA SCIMAGE ORU with the event driver protocol: RA RPT 2.3

> **Note:** Edit only the **Subscribers** field; editing any other field may compromise the integrity of the event driver protocol.

Example of associating a subscriber protocol with an event driver protocol

With RA REG 2.3 as the example, RA SCIMAGE ORM is a subscriber to RA REG 2.3, RA EXAMINED 2.3, and RA CANCEL 2.3; RA SCIMAGE ORU is a subscriber to RA RPT 2.3.

> **Note:** The process of adding a subscriber is the same, regardless of the message type.

```
Select HL7 Main Menu Option: INterface Developer Options


EA      Application Edit
EP      Protocol Edit <-- this is the option to use
EL      Link Edit
VI      Validate Interfaces
        Reports ...
```

Example of the first screen

```
                            HL7 INTERFACE SETUP              PAGE 1 OF 2
-------------------------------------------------------------------------

   NAME: RA REG 2.3

DESCRIPTION (wp):   This protocol is triggered whenever a Radiology…
ENTRY ACTION:

 EXIT ACTION:

       TYPE: event driver <--hit the RETURN/ENTER key when this field is
                        highlighted.
-------------------------------------------------------------------------

                        0HL7 EVENT DRIVER               PAGE 2 OF 2
                          RA REG 2.3
-------------------------------------------------------------------------
     SENDING APPLICATION: RA-VOICE-SERVER
TRANSACTION MESSAGE TYPE: ORM                        EVENT TYPE: O01
     MESSAGE STRUCTURE:
          PROCESSING ID:                            VERSION ID: 2.3
         ACCEPT ACK CODE:                  APPLICATION ACK TYPE:

 RESPONSE PROCESSING RTN:
                        SUBSCRIBERS <-- this is the field that you
                                    want to edit. Enter RA SCIMAGE
                                    ORM here.
```