

Server Update

**For eRAD RIS
Version 1.0
Build 39
Update 39.001**

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1. New Features

This server update has 4 new features added. This section will describe each feature in detail

Multiple Signature Workflow

Multiple signature workflow has 3 signing levels. They are Contribute B, Contribute A and Final. Contribute B and Contribute A signatures will change or leave the status (depending on current status) of the study to / at transcribed. Only users with Final signature rights can move the study to Signed status.

Multi Signature Workflow allows for multiple radiologists to work a study by having a radiologist dictate/contribute B a study, then having another radiologist review/contribute A and finally a radiologist review/Final sign the study. Only the Final Sign is a required step in this workflow, assuming proper configuration/permissions.

If a study is modified by an MT or Radiologist and is sent back to dictated, report drafted or transcribed status, contributing signatures will be removed from the latest interpretation. Suspending at any level will not reset contributing signatures, unless it is resumed with one of the above actions. Only the final signature is permanent.

Contributed A and B studies can be directed to a “Supervising Radiologist”. The Supervising Dictation WL is used to monitor the studies he/she is marked as the supervising radiologist.

A user will get their highest level signature defaulted when opening a study, unless they override it using the button default functionality. If they do override them, and the overridden signature level isn't available for some reason (it's already contributed at that level or it's been disabled at a system level) then his highest level will be defaulted.

The pending signature work list will show the studies that the radiologist can sign based on his default signature level, and his overrides per modality types. If he can't sign it, it won't show. There are no separate work lists for contribution signatures.

QA workflow does not change with this feature; QA workflow applies only to Final Signatures, Verifying the study will not reset the contributing signatures neither will rejecting.

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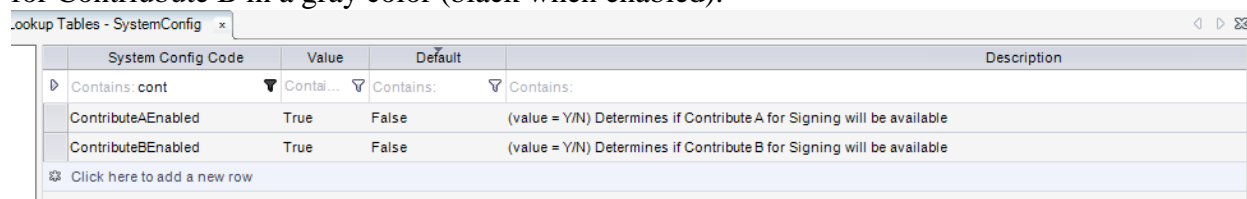
Setup and Configuration

In order to support multi-signature workflow the following items must be set up...

System config settings:

ContributeAEnabled - Determines if contribute A is available to use on the system. If this system config setting is disabled (=false), the sign level field in personnel editor will display the value for Contribute A in a gray color (black when enabled).

ContributeBEnabled - Determines if contribute B is available to use on the system. If this system config setting is disabled (=false), the sign level field in personnel editor will display the value for Contribute B in a gray color (black when enabled).



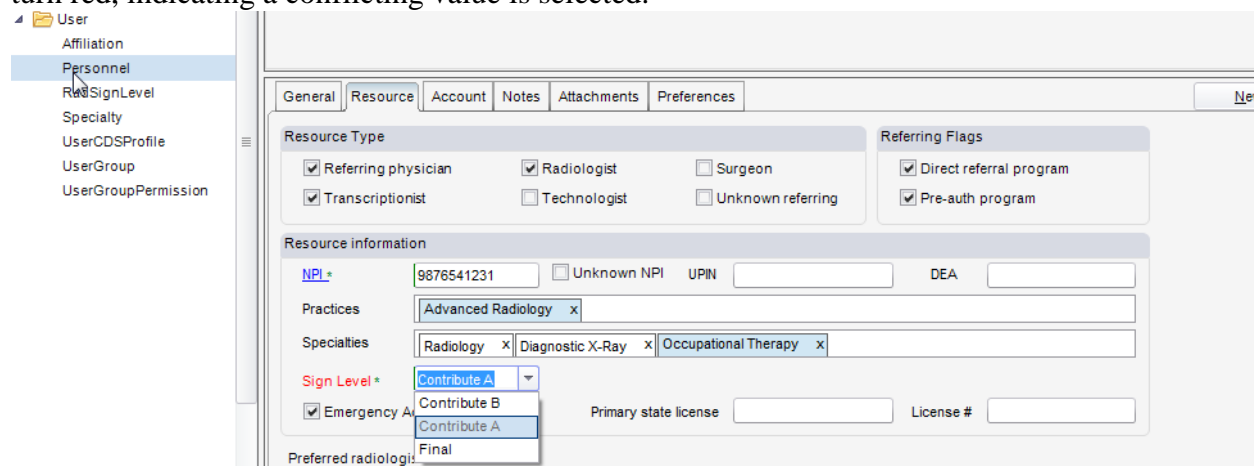
System Config Code	Value	Default	Description
Contains: cont	Contai...	Contains:	Contains:
ContributeAEnabled	True	False	(value = Y/N) Determines if Contribute A for Signing will be available
ContributeBEnabled	True	False	(value = Y/N) Determines if Contribute B for Signing will be available

[Click here to add a new row](#)

Figure 1.1 – SystemConfig tables displaying new system config setting for multiple signature

Personnel Editor -Radiologist Level Sign:

In the personnel editor on the “Resource” tab there is a drop down to identify the radiologist’s sign level. This is only enabled when the “Resource Type” of “Radiologist” is checked. Items shown in light gray in the drop down identify that it is disabled at the system level, based on system config settings above. When one of these items is selected, the label for “Sign Level” will turn red, indicating a conflicting value is selected.



Personnel Editor - Resource Tab

Resource Type

- ☒ Referring physician
- ☒ Radiologist
- ☐ Surgeon
- ☒ Transcriptionist
- ☐ Technologist
- ☐ Unknown referring

Referring Flags

- ☒ Direct referral program
- ☒ Pre-auth program

Resource information

NPI: 9876541231 ☐ Unknown NPI UPIN: DEA:

Practices: Advanced Radiology x

Specialties: Radiology x Diagnostic X-Ray x Occupational Therapy x

Sign Level (Red text): Contribute A (Selected), Contribute B, Final

☒ Emergency A Primary state license: License #: Preferred radiologist:

Figure 1.2 – Personnel editor displaying new list box to assign signature level at user level

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Radiologist Sign Level Overrides:

In the Lookup table editor, under “User” you will see a new lookup table titled “RadSignLevel”. This table contains the modality level overrides for radiologist’s sign level. If a radiologist has “Final Sign” privileges set in the personnel editor, that users sign level can be overridden at the modality level in this table. For instance, perhaps this radiologist should not be signing off on MRs studies. In this table you would see an entry for that radiologist, MR modality type, and a lesser sign level, either contribute A or B. There can be an unlimited number of overrides, but limited to 1 per modality type/user.

The screenshot shows the eRAD RIS application interface. The top menu bar includes File, Administration, Scheduling, Front Desk, Technologist, Radiologist, Mammo, Transcription, and Help. The user is logged in as 'denis'. The left sidebar shows a tree view with folders: General, Insurance, Mammography, Procedure, Scheduling, System, and User. The 'User' folder is expanded, showing sub-items: Affiliation, Personnel, RadSignLevel (selected), Specialty, UserCDSPProfile, UserGroup, and UserGroupPermissions. The main window displays the 'RadSignLevel' lookup table. The table has three columns: 'Rad Person Key', 'Modality Type Code', and 'Sign Level Code'. A row is visible with 'denis' in the first column, 'MR (MRI)' in the second, and 'Contribute_A' in the third. There is a search bar above the table with filters for 'No filter:', 'Contains:', and 'Contains:'.

Figure 1.3 – RadSignLevel lookup table showing user override sign level for MR modality

Radiologist user preferences:

In user preferences under the “Reporting” tab you will see in the “Signing” section 5 new user preferences.

The screenshot shows the 'Signing' section of the Radiologist user preferences. It includes the following options:

- ☐ Enable lower level signing
- ☒ Include supervising radiologist's pending dictations
- Supervising radiologist: Clifton Harding (with an edit icon)
- ☐ Use supervising radiologist's templates
- ☐ Use supervising radiologist's macros
- Allowed to sign for Darcy Noye:
 - Yeo, Dale E x
 - Test User, Radiologist x
- Darcy Noye can sign for:
 - Yeo, Dale E
 - Test User, Radiologist

Figure 1.4 – New user preferences

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- 1.) Enable signing at lesser values** (Default OFF): This allows the user to be able to sign at less than his specified maximum level for the current study. What this mean is if this user is allowed final signature on a study, he would still have the options to contribute A or B. Disabling this option will clean up the gui by removing these items from his drop down “Sign” button.
- 2.) Show supervising radiologist’s pending dictation** (Default OFF): This allows the user to decide if items assigned to the supervising radiologist will appear in his Pending Dictation WL. If this is false, items assigned to the supervising radiologist would then have to be assigned to his RPA/fellow radiologist to be worked. If this is on then the RPA/fellow radiologist would see them in his work list automatically.
- 3.) Supervising Radiologist:** This identifies who the user will normally be working for when logging into eRad Ris. This value will not be affected by the picker in the main screen.
- 4.) Default to Supervising Radiologist’s Templates** (Default OFF): This determines what user will be used to filter the “Template” browser when a study is opened. If this is off the the current user will be used, as normal. If this is on the supervising radiologist assigned will be used.
- 5.) Default to Supervising Radiologist’s Macros** (Default OFF): This determines what user will be used to filter the “Macro” browser when a study is opened. If this is off the current user will be used, as normal. If this is on the supervising radiologist assigned will be used.

Supervising Radiologist Control:

This refers to the control in the status area of eRad Ris which shows the currently assigned Supervising Radiologist. It also allows changing this value for the session. Clicking on this item will show the “Supervising Radiologist Picker”.

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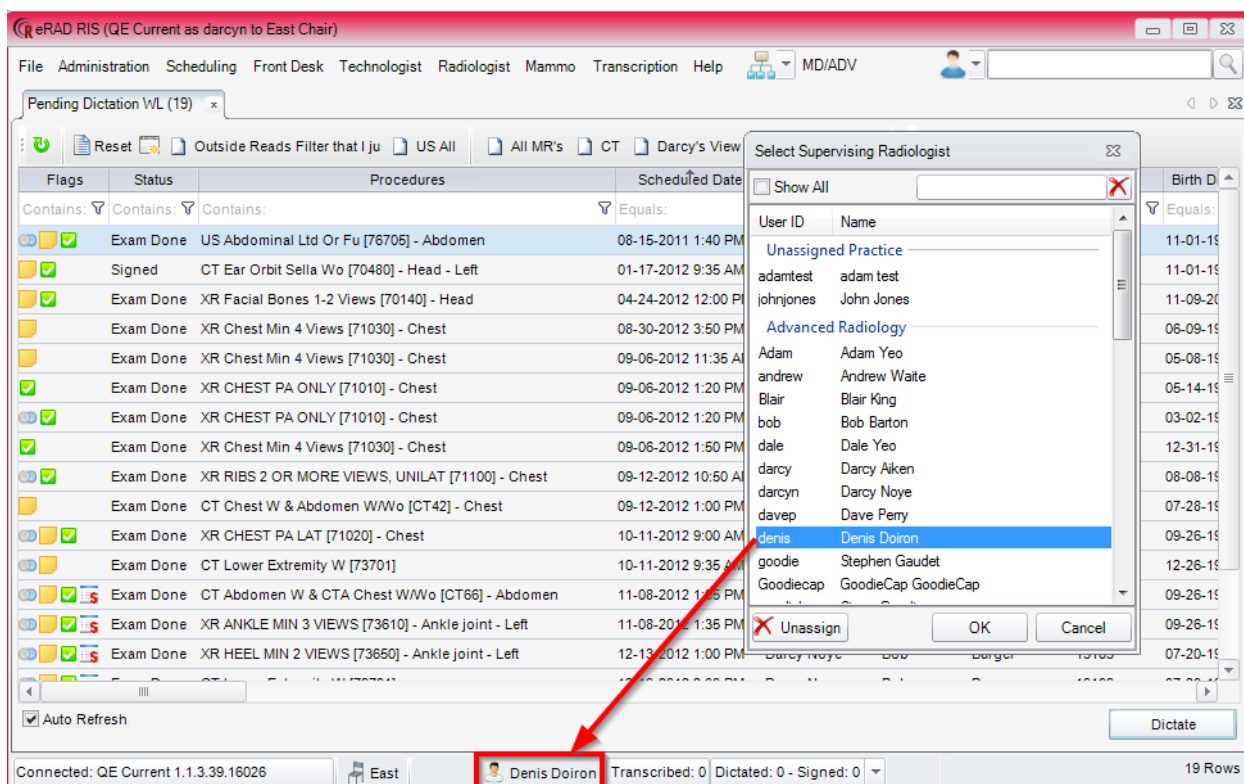


Figure 1.5 – Select Supervising Radiologist window opened from the control on status bar

The value here identifies which Radiologist the user is working for, and will insert this value into every report the user dictates, assuming the study didn't already contain a different value. This will only be used on NEW dictations. Previously dictated studies will keep the value they were created with unless it is manually changed using the work list's context menu. If the user has "Show supervising radiologist's pending dictation" turned on, when he changes the value in this Supervising Radiologist control, it will refresh the work list with this new value.

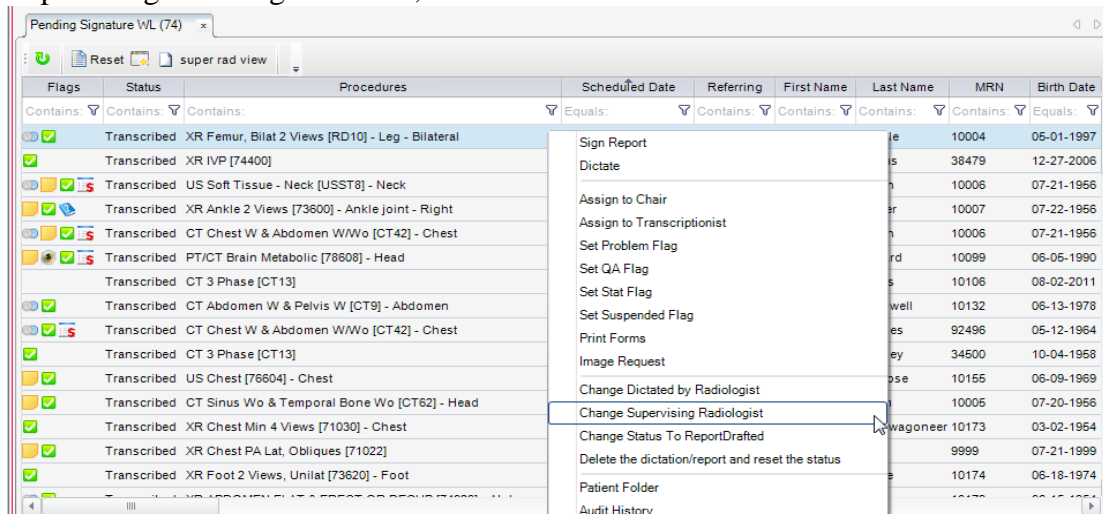


Figure 1.6 – Context menu option to change supervising radiologist

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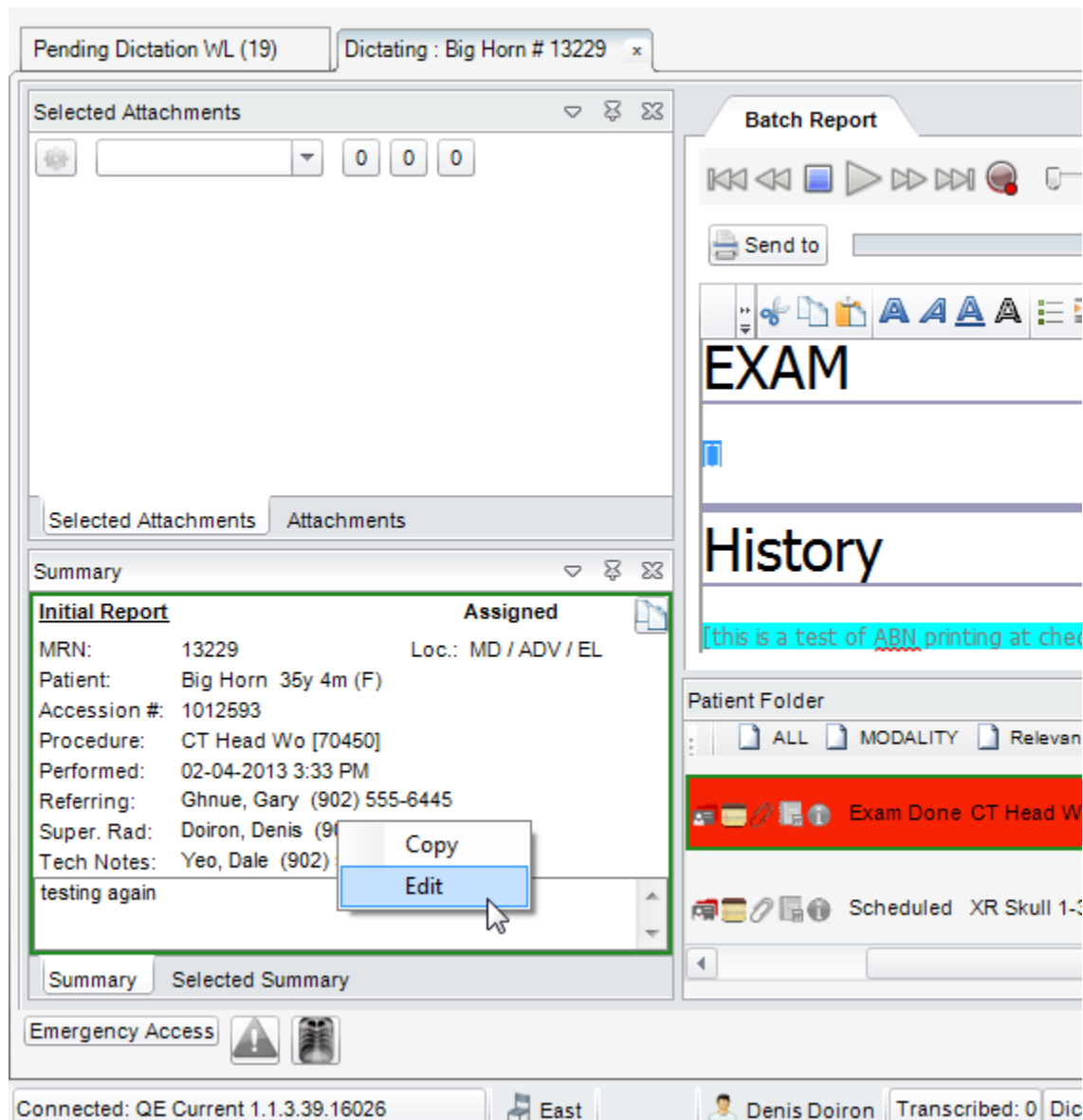
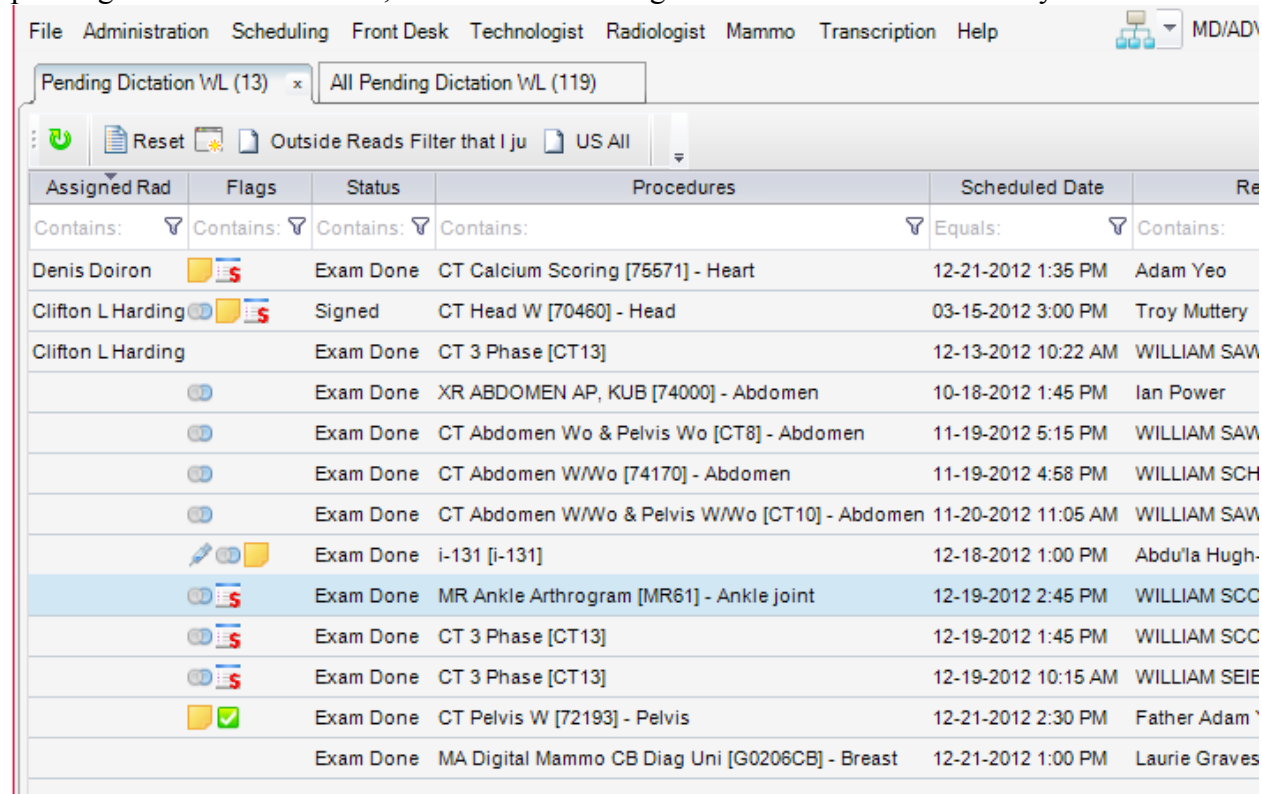


Figure 1.7 – Context menu from Summary allows changing supervising radiologist

The radiologist can also change the supervising radiologist from within the reporting window. From within the summary pane, hover the mouse pointer over Super. Rad: and from a right click select Edit. This will also open the Select Supervising Radiologist window.

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I am currently set up to see my supervising radiologists assigned pending dictation items. Here is a screen capture of my pending dictation worklist. If I had “Show supervising radiologist’s pending dictation” turned off, then Clifton Harding’s items wouldn’t show on my worklist.



Assigned Rad	Flags	Status	Procedures	Scheduled Date	Re
Contains: ▼	Contains: ▼	Contains: ▼	Contains: ▼	Equals: ▼	Contains: ▼
Denis Doiron		Exam Done	CT Calcium Scoring [75571] - Heart	12-21-2012 1:35 PM	Adam Yeo
Clifton L Harding		Signed	CT Head W [70460] - Head	03-15-2012 3:00 PM	Troy Muttery
Clifton L Harding		Exam Done	CT 3 Phase [CT13]	12-13-2012 10:22 AM	WILLIAM SAV
		Exam Done	XR ABDOMEN AP, KUB [74000] - Abdomen	10-18-2012 1:45 PM	Ian Power
		Exam Done	CT Abdomen Wo & Pelvis Wo [CT8] - Abdomen	11-19-2012 5:15 PM	WILLIAM SAV
		Exam Done	CT Abdomen W/Wo [74170] - Abdomen	11-19-2012 4:58 PM	WILLIAM SCH
		Exam Done	CT Abdomen W/Wo & Pelvis W/Wo [CT10] - Abdomen	11-20-2012 11:05 AM	WILLIAM SAV
		Exam Done	i-131 [i-131]	12-18-2012 1:00 PM	Abdu'la Hugh-
		Exam Done	MR Ankle Arthrogram [MR61] - Ankle joint	12-19-2012 2:45 PM	WILLIAM SCC
		Exam Done	CT 3 Phase [CT13]	12-19-2012 1:45 PM	WILLIAM SCC
		Exam Done	CT 3 Phase [CT13]	12-19-2012 10:15 AM	WILLIAM SEIE
		Exam Done	CT Pelvis W [72193] - Pelvis	12-21-2012 2:30 PM	Father Adam '
		Exam Done	MA Digital Mammo CB Diag Uni [G0206CB] - Breast	12-21-2012 1:00 PM	Laurie Graves

Figure 1.8 – Assigned Rad’s studies appear in my pending dictation work list when that Rad is my supervising radiologist

Since I am not working for Clifton today, I will click on the “Assigned Radiologist” control and change my supervising radiologist to “Darcy Noye”. This automatically refreshes my worklist and will show items assigned to “Darcy Noye”.

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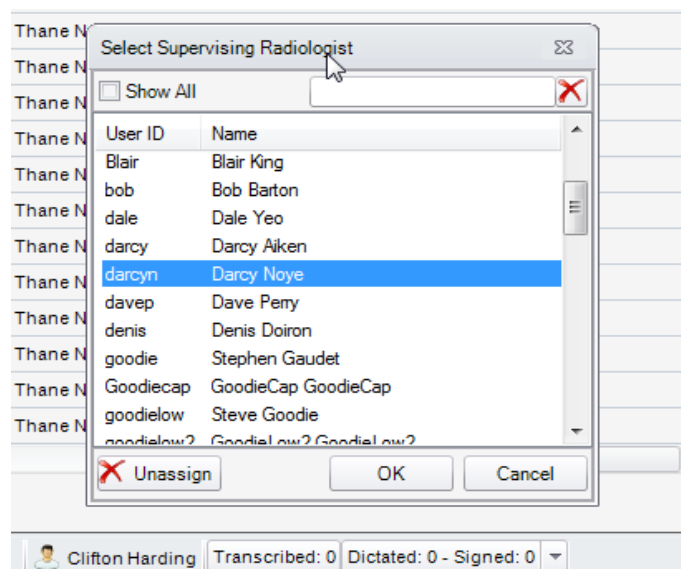


Figure 1.9 – Assign a different Supervising Radiologist

I now select to “Dictate” a study. Things to notice on this new screen are the Supervising Radiologist listed in the Summary panel, and the Sign button, which shows what level signature I am on. This is indicated like so: Contribute B Level will show a “Sign – B”, Contribute A will show “Sign – A” and Final will show “Sign” as it always has before.

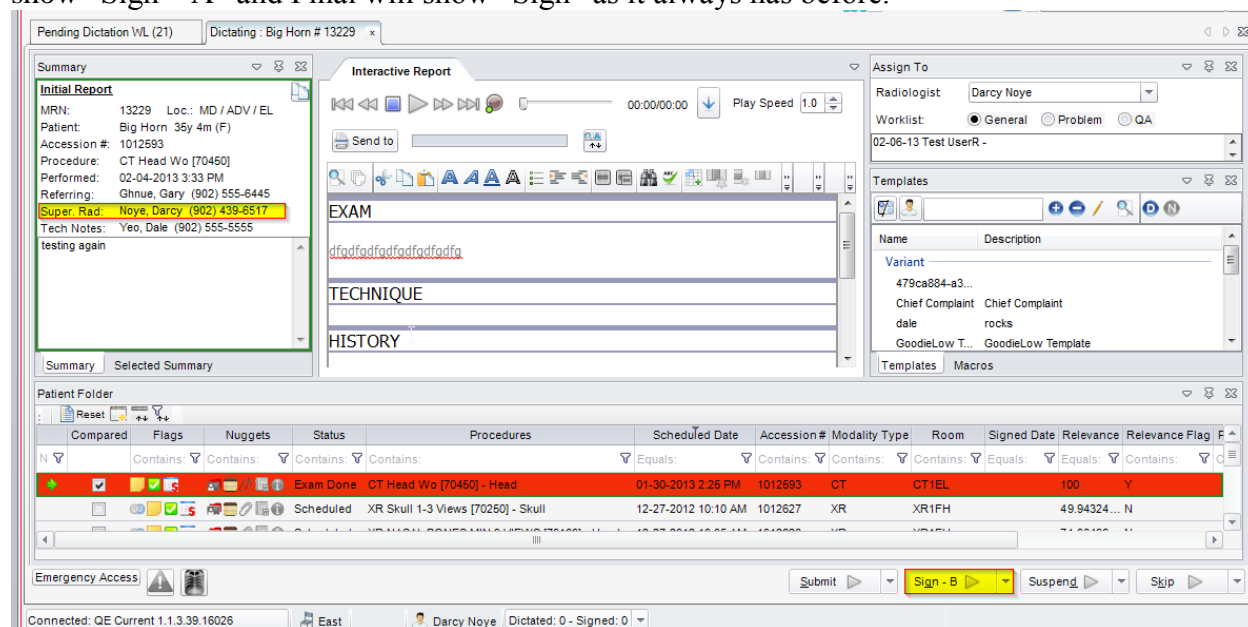


Figure 1.10 – Dictate window displaying my Supervising Radiologist and my signing level

I dictate the study. I select Sign B. The study is transcribed. It will now appear in the Pending Signature work list and the Supervising Dictation work list of the user who I have assigned as my Supervising Radiologist. It will also appear on the All Pending Signature worklist.

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It is possible to have it go through 2 different Supervising Radiologists. If I read for Rad A, who read for Rad X then when I signed it (level B) it would go to Rad A for signature, then when Rad A signs it, it will then go to Rad X for final signature.

When I open a screen to dictate, my templates / macros will load based on my “Default to Supervising Radiologist’s Templates” and “Default to Supervising Radiologist’s Macros” settings. If it is on it will show my supervising rads, and if it’s off it will show mine.

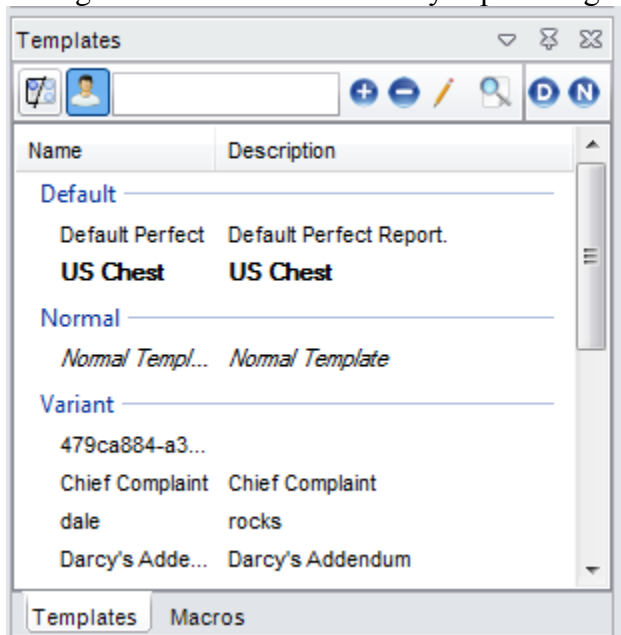


Figure 1.11 – Templates loaded as my Supervising Radiologist

This initial load will determine which default template gets inserted automatically in the report. Once the screen is loaded I can toggle between mine and his using the toggle button shown in the image on the right.

The button to the left of the supervising radiologist will toggle the “Show All” functionality. This was a check box control, now for real estate issues it is a toggle button as well. This show all option simply removed the procedure code from the equation, and will show templates for a procedure code that are accessible to me.

Based on what template I used to populate the report, the related user id will be saved to the interpretation row so that the system can then reopen the study using this user id as a filter for the templates. This allows future edits to display a template list that actually contains the template used to dictate. This is important for MT workflow.

Although macros work the same way, we don't save anything to the database for these, only the templates we track. We will still open the Macro filtered based on the template though.

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**If a study is Signed A or Signed B and the signing radiologist did not have a supervising radiologist assigned or if the supervising radiologist does not have the appropriate signing level for that study, the study moves to transcribed status, it won't appear on a Pending Signature Worklist nor the Supervising Dictation work list. The study then must be accessed from the All Pending Signature wl by an admin and from here a supervising radiologist can be assigned. The who signed A or B will also be able to access the study from their Dictated by Date work list. This could happen if a supervising rad didn't have the required signature level for the study type. Or if a rad dictates studies without having a supervising radiologist selected.

Reporting - Keyboard Shortcuts for Reporting Window

The right and left arrow keys on the keyboard can now be mapped as functional keys within the reporting window. These are configured as user preferences under the Input Device tab.

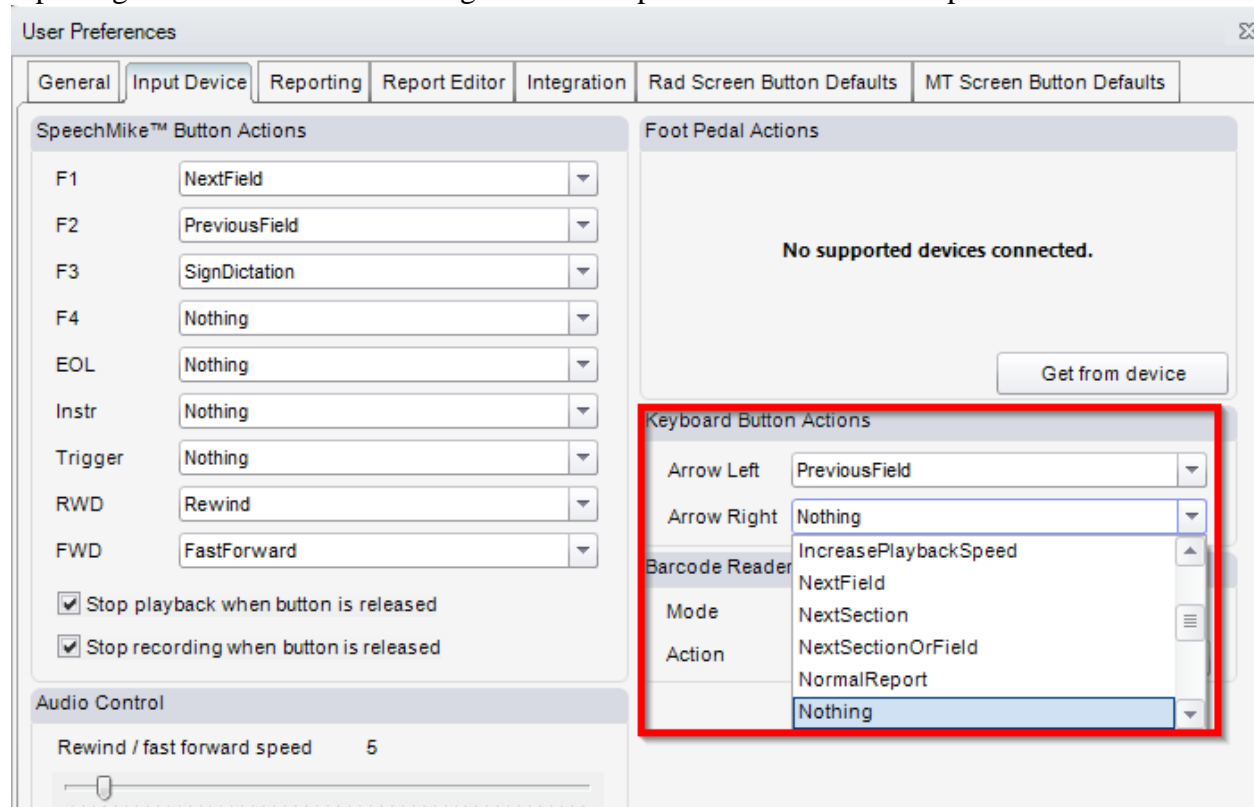


Figure 1.12 – Keyboard arrow button actions as user preferences

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Reporting – Additional buttons for mapping on SpeechMike

The rewind and fast forward buttons can now be mapped to serve a different purpose in the reporting window. Also the options for “Rewind” and “FastForward” can be mapped to the other SpeechMike buttons.

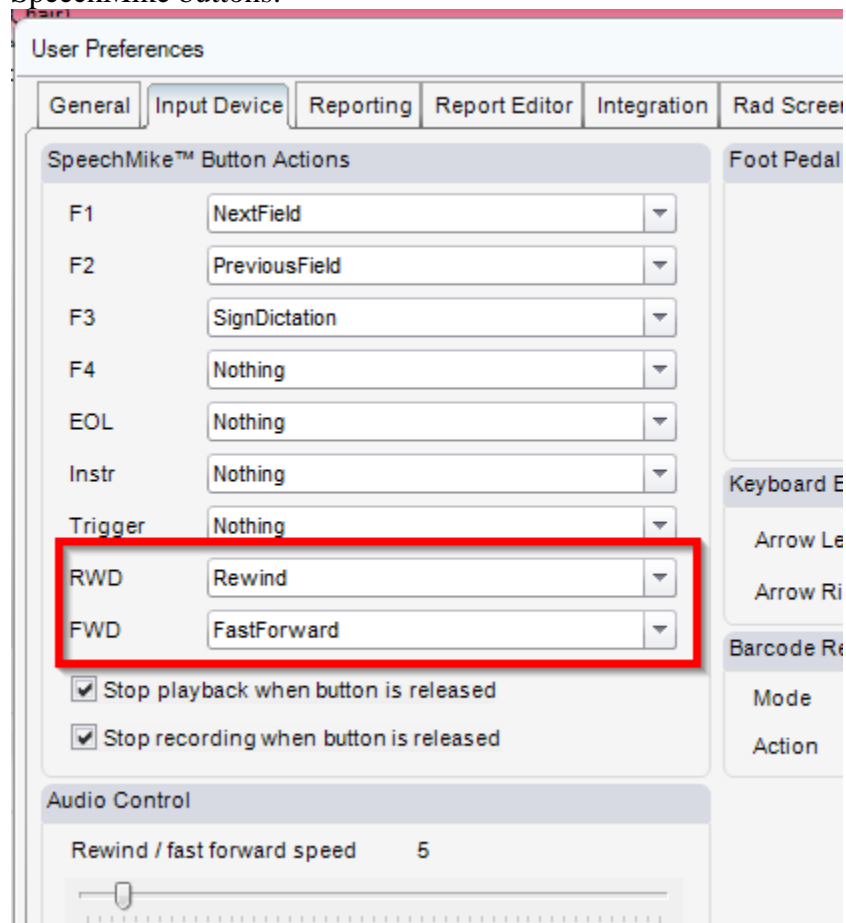


Figure 1.13 – New SpeechMike buttons to allow mappings

Side by Side registration – Eliminate Core Install Requirement

The elimination of the core install is desirable because of the time consuming task of completing an upgrade when every work station needs personnel action. Also, administrators who are managing different practices with different versions would not need to constantly run the core install for the different versions.

Going forward from Build 39, users will be able to switch between versions simply by selecting the environment from the eRAD RIS login window.



Figure 1.14 – eRAD RIS login displaying the ability to switch between versions without core install

NOTE: because of the core version number associated with Build 38 and 39 are different this feature will not allow going back to earlier versions before 39. The users will still need to run the core install to change between Build 39 and earlier versions.

Below is the explanation of how this was achieved.

To resolve we introduced side-by-side registration of the libraries requiring registration in the application. This document isn't going to explain what side-by-side registration is fully. In short most application that require a registered dll will look to windows for the registered version

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which could be located anywhere on the file system and re-registering would/could change the version everyone points to. Side-by-side will simply use the library located next to executable. So in our application we will use the libraries in the same folder as the ris.exe program.

To make this happen we first have to tell the ris.exe application that it should look in the same directory and use this type of reference instead of the previous method. To do this need to include a manifest file and tell the application to use this manifest file when running.

To create a side-by-side manifest file you need to include a reference to the library file. You then must set the isolated property to true so the manifest gets created properly. In our case that would be the SpMikeCtrl.dll, AnyModalEditCtrl2.dll, and AnyModalCaptureCtrl.dll file. This posed a couple problems as our application references the interop versions of these files and doing so would create some crazy reference compilation issues.

So we cleverly created a sample windows application, added the library references (3), set the isolated property to true and built the application. The build created a manifest file called “WindowsFormsApplication1.exe.manifest”. If we inspect this file we can see the three libraries and a bunch of stuff. We rename this file to “ris.exe.manifest” and included it in our MainApp project as a file reference.

So at this point we have created our manifest file and placed it in root directory of our MainApp project. Ensure the application uses the manifest file by altering the properties of the project application manifest drop down to point appropriately.

Now we have setup our application to use the manifest created in the other application. We previously had file references in the MainApp project to include AnyModalEditCtrl2.dll and AnyModalCaptureCtrl.dll so we had to add SpMikeCtrl.dll as a file reference also that copies to the build directory.

To complete the task we need to change how we deploy the application. Currently we only put a limited number of files in the zip folder for deployment. These files in the zip can be updated and will automatically be copied to the client PC when changing builds or upgrading. So as we previously relied on the core setup to include the libraries and the supporting files for the libraries we now need to include these in the zip file also.

This will create a much larger zip file and include many more files. Not great but it will allow us to switch from one version to another without installing which is worth it. We also had to consider that this larger zip file is only downloaded once per version or hotfix not everytime we switch. As long as the local copy is up-to-date we will not download it again.

2. New Access Stings and Configuration Settings

Setting Placeholder	Setting	Default	Controls Access to
SystemConfig lookup	ContributeAEnabled	False	Determines in contribute A is available to use on the system.
SystemConfig lookup	ContributeBEnabled	False	Determines in contribute B is available to use on the system.
SystemConfig lookup	BypassSignedQAWorkflow AfterCorrection	False	Determines if a Signed QA study is rejected, it is excluded from the QA workflow when corrected and signed again
AccessString lookup and UserGroupPermission Lookup	Config.LookupEditor.RadSignLevel	None	Controls access to the Lookup table RadSignLevel
AccessString lookup and UserGroupPermission Lookup	WL.Rad.SupervisingDictation	None	Controls access to the Supervising Dictation menu option under Radiologist menu

3. Defects resolved

Redmine #	Subject	Priority
2963	Resend for recognition not resetting template applied to draft variable	Immediate
2959	River Ranch - when multiple MR Arthrogram and FL Arthrogram procedures exist for a patient, the 'Exam Information' show all FL Arthrogram Shoulder studies	Urgent
2929	River Ranch - New & Cloned radiologists are not appearing in the 'Assigned Radiologist' dropdown	Urgent
2904	HL7 messages are changing study status back in the workflow post-ExamDone	Urgent
2958	Templates loading for wrong user when dictating in batch mode.	High
2957	Apply template to draft firing when it shouldn't	High
2950	Multiple signature - can't sign a report that was dictated by another rad	High
2923	Error attempting to view locked study in read-only mode	High
2910	Template/Macro editor, NewField inserts.	High
2898	Verify and continue does not work.	High
2846	Reporting - radiologist pending release worklist not showing reports in QA status	High
2824	Reporting - rejected reports should never go back to QA after signing again	High
2978	Date worklists where criteria looks at USERID	Normal
2955	Reporting - Status counts including action pending and action complete for radiologists	Normal
2928	River Ranch - HL7 Translation into RIS	Normal
2925	Dictated by user id and date not getting updated	Normal
2924	Transcribed by user id populated with Rad user	Normal
2911	BI-RADS control not defaulting recommendations properly and has some display issues	Normal
2895	QA Workflow - All Signed Pending QA worklist tab not consistent with menu	Normal
2888	Mammo Reporting - BI-RAD picker text does not display properly	Normal
2887	Mammo Reporting - Default recommendation not selected if study had previous birad / recommendation selected	Normal
2886	Reporting - Volume meter missing	Normal
2881	Reporting - User preference Bring RIS To Front not working	Normal
2879	Reporting - Delete dictation and report exception if quality review table has an entry	Normal

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2870	MU - electronic access to health information measure	Normal
2866	Minimized dictation mode hiding Sign message box	Normal
2849	xKeys integration broken	Normal
2744	null exception when attempting to show/hide titlebars on report document	Normal
2730	Change dictating radiologist loading assigned rad as initial value.	Normal
2686	no prompt for no screen actions when multiple rows were selected and the action is only a single row action	Normal
1714	CDSInteractive hanging when multiple hyphens are inserted.	Normal

4. Package Contents

Files included for this server update:

1. GUI ZIP Updates folder contains
 - a. rRIS_1.3.39.15943.zip
2. rRISCore folder contains:
 - a. rRisSetup.msi
 - b. setup.exe
3. RIS Service Updates folder contains
 - a. CDSJobManager.pdb
 - b. CDSJobManager.dll
 - c. CommonLib.pdb
 - d. CommonLib.dll
 - e. DDEngine.pdb
 - f. DDEngine.dll
 - g. rRISServices.pdb
 - h. rRISServices.exe
 - i. rRISServices.vshost.exe
 - j. ScheduledTaskManager.pdb
 - k. ScheduledTaskManager.dll
 - l. SignatureApprovalService.pdb
 - m. SignatureApprovalService.exe
 - n. WCFService.pdb
 - o. WCFService.dll
 - p. WebApi.pdb
 - q. WebApi.dll
 - r. Wedge.pdb
 - s. Wedge.exe
4. SQL folder contains:
 - a) B39_001.sql
5. MirthMappings folder contains:
 - a. Inbound\eRAD\08_c_interpretation_html.js
 - b. Inbound\ORDPLC\06_c_order.js

5. Intended Audience

This document is created by the RIS Development team for the RadNet RIS Implementation team.

6. Who is affected

Build 39 installs. This server update must be applied directly to the build 39 core install.

7. eRAD RIS Release Version Numbers

Build	Patch	UI Version	Core Version	WS Version	DB Version	Notes
37	-	1.2.37.12843	1.2.37.12782	1.2.37.12843	1.2.37.12843	Full version release
37	1	1.2.37.13040	1.2.37.13040	1.2.37.13039	1.2.37.13003	Core install, GUI.zip, web service and database updates
37	2	1.2.37.13069	1.2.37.13040	1.2.37.13069	1.2.37.13003	GUI.zip and Web service updates
37	3	1.2.37.13069	1.2.37.13040	1.2.37.13069	1.2.37.13003	WebAPI updated, no version changes
37	4	1.2.37.13171	1.2.37.13040	1.2.37.13165	1.2.37.13171	GUI.zip, web service, and database updates
37	5	1.2.37.13347	1.2.37.13040	1.2.37.12979	1.2.37.12979	Bug was discovered with version numbers, this is why it appears we went backwards in the version number but we did not.
37	6	1.2.37.13665	1.2.37.13040	1.2.37.13580	1.2.37.12979	GUI.zip and Web service updates
37	7	1.2.37.13807	1.2.37.13040	1.2.37.13799	1.2.37.13807	GUI.zip and Web service updates. Also MIRTH mapping changes
37	8	1.2.37.13807	1.2.37.13040	1.2.37.13827	1.2.37.13807	Web service update
37	9	1.2.37.13807	1.2.37.13040	1.2.37.13839	1.2.37.13807	Web service update
37	10	1.2.37.13895	1.2.37.13040	1.2.37.13895	1.2.37.13895	GUI.zip, Web service and database updates
37	11	1.2.37.14161	1.2.37.13040	1.2.37.14161	1.2.37.14161	GUI.zip, Web service, database updates and SQL Management reporting
37	12	1.2.37.14267	1.2.37.13040	1.2.37.14161	1.2.37.14267	GUI.zip, Web service and database updates
37	13	1.2.37.14326	1.2.37.13040	1.2.37.14326	1.2.37.14326	GUI.zip, Web service and database updates
38	-	1.2.38.14486	1.2.38.14486	1.2.38.14486	1.2.38.14486	Full version release
38	1	1.2.38.14748	1.2.38.14748	1.2.38.14748	1.2.38.14748	Core install required
38	2	1.2.38.15182	1.2.38.14748	1.2.38.14748	1.2.38.14748	GUI.zip update only
38	3	1.2.38.15251	1.2.38.14748	1.2.38.14748	1.2.38.14748	GUI.zip update only
38	4	1.2.38.15327	1.2.38.14748	1.2.38.15290	1.2.38.14748	GUI.zip and Web service updates
38	5	1.2.38.15513	1.2.38.14748	1.2.38.15513	1.2.38.15451	GUI.zip, Web service and database updates
38	6	1.2.38.15618	1.2.38.14748	1.2.38.15513	1.2.38.15618	GUI.zip and database updates
38	7	1.2.38.15768	1.2.38.14748	1.2.38.15768	1.2.38.15618	GUI.zip and Web Service updates
39	-	1.3.39.15389	1.3.39.15389	1.3.39.15377	1.3.39.15355	Full version release
39	1	1.3.39.16026	1.3.39.15943	1.3.39.15943	1.3.39.15957	Requires Core Install. GUI.zip, Web Service, and Database updates

8. Installing

- 1) Copy and replace the current rRIS...zip file with the rRIS_1.2.39.16026.zip file provided with this release. The previous GUI.zip should have been renamed to rRIS_1.2.39.15389. Be sure to make a backup of the ris.exe.config file contained within the .zip folder.
- 2) Copy and replace the setup.exe file and the rRisSetup.msi files from the _setup folder to the Build\core_setup folder.
- 3) Stop each service listed below. Copy the files from the RIS Service Updates folder to the directory for each rRISService. Be sure to make backup of all files, but especially the rRISServices.exe.config and rRISServices.vshost.exe.config files.
rRISService directories include:
 - a) *rRISService*
 - b) *CDS rRISService*
 - c) *Wedge rRISService*
 - d) *DDE rRISService*

Restart each service.

- 3) Run the B39_001.sql file against the eRAD RIS database instance.
- 4) MirthMappings:

The sites current MirthMapping files may already have custom configurations applied. Replacing with the files supplied with this server update may overwrite any custom configurations.

Please contact eRAD RIS Development before copying or making changes to the MirthMapping files.