VistA Imaging System
VistA Imaging Technical Manual

MAG*3.0*120 Change Pages

Version 3.0

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VistA Imaging Technical Manual Change Pages for MAG*3.0*120
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Preface

This document details the *VistA Imaging Technical Manual* changes made to reflect MAG*3.0*120, the VistARad Maintenance VII patch. This document is based on `IMGtechman.doc`, January 2012 – Revision 36, MAG*3.0*121.

- New sections are indicated by "(new)" in the section heading. Revised sections are indicated by "(revised)" in the section heading.
- Chapter and section numbering is not necessarily sequential. Only those chapters and sections which are new or have been changed will appear in this document (although some unchanged section titles may appear in order to provide context for changed subsections).
- Revised text is indicated by change bars in the margins, or by yellow shading where change bars cannot be used.
- Deleted text is indicated by strikethrough formatting. ~~This is an example of deleted text~~.
- Supplementary information which will not be incorporated into the parent manual is included in a footnote.

The changes in this document will be incorporated into the *VistA Imaging Technical Manual* shortly after the release of this patch.

The following sections are affected:

Chapter 1. Introduction

1.2 VistARad Product Perspective and Features (new)

VistARad is a VistA Imaging software component that provides filmless radiology functionality for radiologists and non-radiology clinicians. This maintenance patch (Maintenance VII) addresses various user needs including routine maintenance items, as well as two items described in this document that affect low-level design of certain features already implemented. In addition, support for patient context management is added to the design to eliminate potential safety concerns for those clinicians that require access to VistARad functionality and concurrent use of the VA Computerized Patient Record System (CPRS) and other CCOW-enabled applications.

The following product features and/or design modifications are included in Patch 120 and described in this document:

- Patch 120 provides support for the Windows 7™ operating system. The client installation file included with this patch will execute on either Windows XP™ or Windows 7. Certain installation details differ according to the target installation environment. These differences are noted elsewhere in this document.

  Note: Some legacy display adapters for high-resolution screens may no longer be supported under Windows 7.

- Changes to the dictation system integration feature reduce potential mismatches between displayed exams and the accession number provided to the dictation system under certain usage scenarios.

- An added feature to the Teaching File interface allows the user to remove Personally Identifiable Information (PII) from images that have PII burned into the image pixel data. Previously, such "burned in" data could not be removed from images used for teaching purposes, raising a patient confidentiality issue. See the *VistARad User Guide*, **Teaching Files**.

- Patient Context Management Support is discussed (see **12.7 Context Management (revised)).**

1.12 Windows 7 Considerations (new)

VistARad runs successfully under Windows 7. The documentation will point out any differences when necessary, using notes like the following:

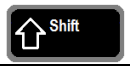
Note: Restrictions on access to root directories (including C:\) mean that ordinary users cannot create files in the root directory C:\.

Some “system” file pathnames (including those for the VistARad application itself) are different on Windows 7 systems. Please see 6.3.1 for details.

Chapter 2. Orientation

2.1 Documentation Conventions (revised)

The following conventions may be used in this and related documents.

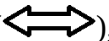
Convention	Description
`Regular Type`	System-generated menu, dialog, output, etc. (in VistA screenprints)
`Bold Type`	User Keyboard Entry (in VistA screenprints)
`[XTSUMBLD-CHECK`	Routines, VistA Menu options
<Enter>	 Enter (Return) key
<Shift>	 Shift key
<A>, **<2>**, **<F2>**	Alpha, numeric or function key
<Esc>	 Escape key
<Num Lock>	 Top left key on the numeric keypad (above the 7); may also be labeled **<Numeric Lock>**. It is equivalent to the **<Caps Lock>** used for alphabetic keys. If **<Num Lock>** is on, the keypad key will produce the number shown on its surface. If **<Num Lock>** is off, the keypad key moves the cursor as indicated by the label or symbol on the key; for example, the keypad **<6>** key will move the cursor to the right.

2.2 Special Workstation Procedures (revised)

Command	Action
Reboot	1. Push the RESET button on the front of the workstation. 2. If there is no RESET button, power the workstation off and then on; the workstation will reboot. 3. The workstation will perform a virus check and load all required software; this takes about 30-60 seconds. 4. When the reboot process is complete, you should be able to sign back into the workstation.

2.3 Mouse/Windows Controls (revised)

Control	Description
Mouse button click	• The mouse is a device used to point at positions on the screen. • The mouse may have one, two, or three buttons. • The mouse should be held at the end opposite the cord so the fingers can press the buttons. • The buttons are referred to as the "Right Mouse Button," the "Left Mouse Button", and the "Center Mouse Button." One kind of mouse, known as a "wheel mouse," has a wheel in the center instead of a button. The wheel is normally used for scrolling up and or left to right on a screen. When the mouse is rolled around on a flat surface, the arrow cursor on the screen will move correspondingly. • Pressing and releasing a button is called "clicking". You may position the arrow over a portion of the window, such as a button or scroll bar, and then click. This will cause the computer to do something such as display an image, depending on the window. • When the instructions tell you to "press the mouse button," you can assume that you are to press the left mouse button. • When it's necessary to use the right mouse button, you will be told to "right click." This is used, for example, to select items from a drop-down list or menu.
Select	You may also select a rectangular area on the window, by following these steps: 1. Position the arrow cursor so it is over the left upper corner of the area to be selected. 2. Press the left mouse button down and hold it down while you move the mouse to the right lower corner of the rectangle to be selected. 3. Release the mouse button. You will see a dotted rectangle on the window around the area selected.

Control	Description
Drag	If you want to move a window to another area of the window (e.g., to see something on a window that is underneath), follow these steps: 1. Position the cursor over the top colored title area of the window to be moved. 2. Press the left mouse button down, hold the mouse button down, and move the mouse until the window is where you want it. 3. Release the left mouse button. This is called "clicking and dragging" a window.
	You may adjust the size of the window by following these steps: 1. Place your mouse at the edge of the window that you would like to move. 2. When you see the cursor turn into a double headed arrow (), hold the left mouse button down, and move the mouse until the image is the width and/or height that you would like. 3. Release the left mouse button.

Chapter 3. Implementation and Maintenance

3.1 VistA Package Requirements

The VistA Imaging System is designed to be used in conjunction with the following VistA packages. Kernel, FileMan and RPC Broker are required packages. Other packages will depend on the site's implementation requirements.

3.1.1 Packages Used in Conjunction with VistARad (revised)

The VistA Imaging System is designed to be used in conjunction with the following VistA packages. Kernel, FileMan and RPC Broker are required packages. Other packages will depend on the site's implementation requirements.

Package Name and Version	Required For
`Kernel V. 8.0`	Kernel is a vendor-independent applications development environment, as well as a run-time environment providing standard vendor-independent services to applications software. It is not an operating system, but a set of utilities and associated files that are executed in an M environment.
`FileMan V. 22`	VA FileMan creates and maintains a database management system that includes features such as: • A report writer • A data dictionary manager • Scrolling and screen-oriented data entry • Text editors • Programming utilities • Tools for sending data to other systems • File archiving VA FileMan can be used as a standalone database, as a set of interactive or "silent" routines, or as a set of application utilities; in all modes, it is used to define, enter, and retrieve information from a set of computer-stored files, each of which is described by a data dictionary.
`RPC Broker 1.1`	Interfacing with the hospital database
`Consult/Request Tracking V. 3.0`	Capturing images to the Consult/Request Tracking package
`Medicine V. 2.3`	Capturing images to the Medicine package

Package Name and Version	Required For
Laboratory V. 5.2	Capturing images to the Laboratory package
Radiology V. 5.0	Capturing images to the Radiology package
Surgery V. 3.0	Capturing images to the Surgery package
TIU V. 1.0	Capturing images to the Text Integration Utility package
PIMS V 5.3	Displaying Patient Profile report and patient security lookup
Health Summary 2.7	Displaying Health Summary report

3.2 Hardware and Software Requirements (revised)

Contact your Implementation Manager for information about VistA Imaging equipment.

The VistA Imaging software requires that a network be present with sufficient capacity to transport image files in a reasonable amount of time. All network set-ups must be completed **before** VistA Imaging workstations can be installed.

3.3 Imaging Site Parameters (revised)

Within the VistA Imaging System, a number of sets of tunable parameters are used. The table below indicates which components use each parameter.

Name	Notes	Used By					
		Backend Process	DICOM G/W	Capture	Tele-Reader	Display	VistA Rad
IMAGING SITE PARAMETERS (#2006.1)	Stored on VistA Host; general site parameters for Imaging.	Yes	Yes	Yes	Yes	Yes	Yes
DICOM OBJECTS TO BE IMPORTED (#2006.5751)	Stored on VistA Gateway; contains a list of DICOM Objects that were transmitted to the Gateway and need to be imported.	-	Yes	-	-	-	-

Name	Notes	Used By					
		Backend Process	DICOM G/W	Capture	Tele-Reader	Display	VistA Rad
IMPORTABLE DICOM OBJECTS (#2006.5752)	Stored on VistA Host and contains a list of DICOM Objects that were transmitted to all the Gateways and need to be imported (superset of file #2006.5751).	-	Yes	-	-	-	-
DICOM RADIOLOGY PROCEDURE MODIFIIERS (#2006.5757)	Stored on VistA Gateway, contains a list of Radiology Procedures Modifiers on VistA.	-	Yes	-	-	-	-
DICOM RADIOLOGY PROCEDURES (#2006.5758)	Stored on VistA Gateway; contains a copy of the Radiology procedures on VistA along with their image type and outside imaging location.	-	Yes	-	-	-	-
OUTSIDE IMAGING LOCATION (#2006.5759)	Stored on VistA Host; general site parameters for Imaging.	-	Yes	-	-	-	-
APPLICATION ENTITY TITLE (#2006.588)	Stored on VistA Gateway, contains a list of the application entity titles, their aliases, and their description. Built from dictionary file AE_TITLE.DIC.	-	Yes	-	-	-	-
IMAGING USER PREFERENCE (#2006.18)	Stored on VistA Host; user- and site-specific parameters for Capture and Display workstations.	-	-	Yes	Yes	Yes	-
MAGJ USER DATA (#2006.68)	Stored on VistA Host; user-specific parameters for VistARad workstations.	-	-	-	-	-	Yes
MAG VISTARAD SITE PARAMETERS (#2006.69)	Stored on VistA Host; site-specific parameters for VistARad workstations.	-	-	-	-	-	Yes
MAG CT PARAMETER (#2006.621)	Stored on VistA Host; contains parameters for performing Hounsfield calculations or TGA-to-DICOM conversions of CT images processed before the installation of Patch 50.	-	-	-	-	-	Yes

Name	Notes	Used By					
		Backend Process	DICOM G/W	Capture	Tele-Reader	Display	VistA Rad
MAG CR PARAMETER (#2006.623)	Stored on VistA Host; contains correction parameters for older CR images processed by specific versions of the Fuji Flash IIP consoles.	-	-	-	-	-	Yes
DICOM GATEWAY PARAMETER (#2006.563)	Individual copies stored in ^MAGDICOM on each DICOM Gateway. Must be accessible even VistA is not accessible.	-	Yes	-	-	-	-
MAG308.INI	Individual copies stored on each Capture and Display workstation; contains workstation specific parameters.	-	-	Yes	Yes	Yes	-
MAGJ.INI	Individual copies stored on each VistARad workstation; contains workstation specific parameters.	-	-	-	-	-	Yes

Chapter 6. Routine Descriptions

6.3 Non-M Routines Distributed as Executable Files (revised)

Executable, DLL and other supporting files, which are distributed, include capture device-specific imaging software and executable imaging software. The routine listing below is by function.

6.3.1 Clinical Workstation Files (revised)

The tables in this section list files installed on a Clinical (Display or Capture) workstation.

Note: Under Windows 7, some "system" files (including executable program files) may be stored in different directories than under Windows XP. Table headings below indicate only the Windows XP pathnames. Windows 7 pathnames are similar, with these changes:

Windows XP	Windows 7
`C:\Program Files\...`	`C:\Program Files (x86)\...`
`C:\Windows\system32\...`	`C:\Windows\SystemWoW64` `C:\Windows\System32`

`C:\Windows\SystemWoW64` is used for 32-bit files. `C:\Windows\System32` is used for 64-bit files. This may sound backward, but it has to do with backward compatibility requirements. SysWoW64, standing for **W**indows 32-bit **o**n **W**indows **64**-bit, contains program files for 32-bit compatibility used on a 64-bit system. A Windows 7 emulator redirects calls for any "System32" files to the SysWoW64 folder.

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Chapter 8. Exported Options

8.12 Imaging Menu Options Documentation (revised)

A full description for all of the Imaging VistA menu options can be obtained by using the FileMan print menu option.

```
Select OPTION: print FILE ENTRIES
OUTPUT FROM WHAT FILE: OPTION//
SORT BY: NAME//
START WITH NAME: FIRST// MAG
GO TO NAME: LAST// MAGZ
                          WITHIN NAME,SORT BY:
FIRST PRINT FIELD: [CAPTIONED

Include COMPUTER fields: (N/Y/R/B): NO// - No record number (IEN),
no Computed Fields
DISPLAY AUDIT TRAIL? No//  NO
Heading (S/C): OPTION LIST//
START AT PAGE: 1//
DEVICE:
```

NOTE: The output displayed by the option, `Inquire VistARad CPT Matching Set [MAGJ INQUIRE CPT MATCHING SET]`, has been modified to display attributes defined for the entered CPT code, and also the matching CPT code values for its related "`Similar CPT`" and "`Modality/Body Part`" combinations.

NOTE: This change as implemented does not require any KIDS component, so no new or modified Menu options will be apparent in the KIDS definition or installation files.

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Chapter 12. External Relations

12.7 Context Management (revised)

Note: Revised section 12.7 replaces former **12.7, CCOW Communication**, and now includes information on both Context Management and CCOW. New section 12.8 adds information on new CPRS option to invoke VistARad.

This section includes:

- Context Management
- The Clinical Context Object Workgroup Protocol
- The Context Management Settings Tab
- Context Changes
- CPRS Tools Menu for VistARad

12.7.1 Context Management (new)

Context Management (CM) allows users to choose a subject once in one application, and have all applications containing information on that same subject "tune" to the data they contain. This eliminates the need for the user to redundantly select the subject in the varying applications. In the healthcare industry, for example, multiple applications operating "in context" through use of a context manager would allow a user to select a patient (*that is*, the subject) in one application. See the expanded discussion for end users in the *VistARad User Guide*, under **Context Management**.

Context Management is gaining in prominence in healthcare due to the creation of a standardized protocol, the Clinical Context Object Workgroup (CCOW) Protocol, enabling applications to function in a "context-aware" state.

12.7.2 The Clinical Context Object Workgroup Protocol (new)

CCOW is a Health Level 7 (HL7) standard protocol designed to enable dissimilar healthcare software applications to synchronize in real-time, and at the user-interface level. It is vendor independent and allows applications to present information at the desktop and/or portal level in a unified way.

CCOW is the primary standard protocol used in healthcare to facilitate the Context Management process. Although both CCOW and non-CCOW compliant applications can use CM, the CCOW standard helps facilitate a more robust and near "plug-and-play" interoperability across applications.

When CCOW is available, the VistARad client uses CCOW to synchronize patient and user context management with the Computerized Patient Record System (CPRS) and other CCOW-enabled applications. A new Settings tab, **Context Management**, is used to enable context management; the setting **Enable Context Management** must be checked to use the context management functionality.

The TeleReader application requires CCOW to synchronize patient and user context with other applications such as CPRS and VistA Imaging Display. TeleReader cannot work if CCOW is unavailable. TeleReader will close if CCOW is not functioning properly.

12.7.3 The Context Management Settings Tab (new)

The **Context Management** settings tab allows the user to manage how CM operates on the individual workstation. The user must check the **Enable Context Management** in order to use CM capability.

12.7.4 Context Changes (new)

A context indicator (icon) appears at the top of the various VistARad windows to the left of the **Patient Name** and demographics. A **Context** menu item appears on the **Manager** and **Viewer** menu bars for options to **Suspend/Resume context**, etc. The application also automatically changes the displayed icon to reflect the change in context. See the expanded discussion for end users in the *VistARad User Guide*, under **Context Management**.

Icon	Title	Meaning
	**Changing**	Displayed when the Clinical Link is changing. This icon may appear so briefly that the user may not see it. It is displayed when the common (linked) patient is changing. For example, if VistARad is linked with CPRS and CPRS changes from one patient to another, this icon will display during the change process.
		Patient Context is Changing
	**Broken**	Displayed when an application is not linked or the application is "out of patient context." For example, if CPRS is linked and displaying one patient and VistARad is displaying a different patient, then VistARad is said to be "out of patient context" and will display this icon.
		Patient Context is Broken
	**Linked**	Displayed when an application is utilizing CCOW to maintain patient context with the CCOW server. For example, if VistARad is open and displaying the same patient (as defined by the CCOW server) for all linked applications, then VistARad will display this icon.
		Patient Context is Joined

12.8 CPRS Tools Menu Option for VistARad (new)

Sites may also configure a new CPRS Tools menu option for launching VistARad from CPRS. Refer to the *VistA Imaging Installation Guide*, under **Associating Display and Capture with CPRS**, for background information on this configuration step. To configure for launching VistARad, add a Sequence, then enter this line of text exactly as shown (no line breaks, no extra spaces):

```
Name=Command:VistARad=”Mag_Vistarad.exe” d=%DFN h=%MREF s=%SRV p=%PORT
```

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