Using MagUtility for Database Maintenance

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Introduction

MagUtility is a maintenance and validation tool used to:

- Report and resolve (where possible) problems with "orphan" files on RAID network locations
- Delete certain types of obsolete or incorrect entries from the NETWORK LOCATION file (#2005.2)
- Update VistA with information about images that are no longer available because a jukebox platter was removed
- Update VistA with information about images that are now available because a platter was restored
- Copy images and text files from one RAID share or jukebox network location to another

Requirements

For Administrators

MagUtility is intended for Imaging administrators responsible for maintaining Imaging RAID and jukebox storage resources. Familiarity with the following is assumed:

- Imaging storage concepts (Imaging shares, network locations, etc.)
- IMAGE file (#2005)
- Background Processor-related applications

For Servers

MagUtility can be installed on any server that has:

- Access to the VistA database
- Read/Write access to RAID and jukebox shares where Imaging files are stored
- Minimum of 600 megabytes of free disk space (More space may be needed if the default settings for log files are changed.)

Note: Ideally, MagUtility should be installed on one of the Imaging servers.

Installation instructions for MagUtility are documented in the Patch Description for MAG*3.0*98.

For VistA

- Imaging Patch MAG*3.0*98 must be installed in VistA.
  When MagUtility runs, it checks VistA to ensure that Patch 98 is installed. If Patch 98 is not installed, MagUtility exits automatically.

- The VistA user account used to run MagUtility must be assigned the MAG UTILITY secondary menu option.

How MagUtility Works

To maintain the VistA database, MagUtility performs several processes detailed in the following sections. The procedures for running these processes are explained later in this chapter.

Orphan Files Process

An orphan file is an image file that:

- Has no pointer to the IMAGE file (#2005) or IMAGE AUDIT file (#2005.1) in the VistA database (See *Pointers and Pointer Selection Logic*.)

- Has pointers to the IMAGE file (#2005) and IMAGE AUDIT file (#2005.1) in the VistA database

- Has the same name as a file on another share that has a valid pointer to the database

- Has a zero byte size due to a loss of all of its content

- Has an invalid file extension
  Note: Allowable file types are in the IMAGE FILE TYPES file (#2005.021).

When MagUtility processes orphan files, it verifies that files (such as *.tga, *.txt, *.abs) on RAID network locations in VistA Imaging are properly associated with entries in the IMAGE file (#2005). If the process finds problems, it addresses them, if possible, and logs them if you need to manually intervene or do additional research.

Note: For brevity, "#2005" hereafter refers to the IMAGE file (#2005) in the VistA database to avoid confusion with other Imaging files on RAID or jukebox network locations.

Pointers and Pointer Selection Logic

Throughout this section, the term *RAID pointer* is used generically to indicate the RAID storage location referenced in #2005. Depending on the extension of the file being scanned (*.abs, *.tga, *.big, etc.), the pointer in #2005 can be any one of the following fields:

- DISK & VOLUME, ABSTRACT (#2005,2.1) – used for .ABS files
- BIG MAGNETIC PATH (#2005,102) – used for .BIG files
- DISK & VOLUME, MAGNETIC (#2005,2) – used if the file is *not* ABS, BIG, or TXT

Note: TXT files are not directly referenced in #2005 the way other file types are. To infer the location of a *.txt file using an entry in #2005, the Orphan Files process checks the following fields in the applicable #2005 entry in the following order:

1. DISK & VOLUME, MAGNETIC (#2005,2)
2. DISK & VOLUME, ABSTRACT (#2005,2.1)
3. BIG MAGNETIC PATH (#2005,102)

The first field that has a pointer, such as (#2005,2), is immediately considered the "applicable RAID pointer", and no other fields in the sequence are checked.

Processing Logic Used in an Orphan Files Check

When the Orphan Files process runs on a selected share, MagUtility performs either of two operations:

- If you select the **Generate report only** option, MagUtility logs both types of problems (corrected and not corrected).
- If you select the **Clean up orphan files and generate report** option, MagUtility logs problems that are corrected and not corrected, listed as follows:

Problems that MagUtility Corrects
Deletes files with a zero length
If MagUtility can trace a zero-length file to an entry in #2005, and if that entry points back to the location of the zero-length file, MagUtility clears the RAID pointer in that entry and deletes the file.

Problems that MagUtility Corrects
Deletes duplicate files on the share being processed if: • MagUtility can trace a file to an entry in #2005, but that entry points to another file on a different share, and • The "other file" has the same properties as the file being traced.
Fixes incorrect RAID pointers in #2005 if: • MagUtility can trace a file on the share being processed to an entry in #2005, and • The RAID pointer in the applicable entry points to a share different from the one being processed, and • There is no file of the same name on the "different share".
Updates pointers in #2005 to reflect a storage location on the RAID if: • A file on the share being processed exists both on the RAID and on the jukebox, and • The applicable #2005 entry for that file references the jukebox copy only, and • The properties of the two files match.

Problems that MagUtility Does Not Correct
Note: If MagUtility finds any of these issues, you need to manually address them. See *Troubleshooting the Orphan Files Process*.
The file has an invalid file extension based on the allowable file types in the IMAGE FILE TYPES File (#2005.021).
MagUtility cannot associate the file with a #2005 entry because the "F" cross-reference is missing or invalid.
The file has a record in the #2005 and the #2005.1 files. (DUPE field (#2005,13.5) is set.)
The file has a data integrity problem. (The *Imaging System Verifier User Manual* has a listing of the possible integrity problems.) (IQ field (#2005,13) is set.)
The record in VistA for the file IEN points to a different file and the file is not on the jukebox.
The file has no valid RAID pointers, and the jukebox pointer points to a file with properties (date, size, etc.,) different from the one being scanned.

Problems that MagUtility Does Not Correct
Note: If MagUtility finds any of these issues, you need to manually address them. See *Troubleshooting the Orphan Files Process*.
The record in VistA points to a file on another share with different properties than the file being traced
The file is a text file that can be traced to an entry in #2005, but cannot be traced from #2005 to a text file. See *Pointers and Pointer Selection Logic*.

Offline Jukebox Images Process

The Offline Jukebox Images process should be used whenever platters are removed from or inserted back into the jukebox. Use MagUtility to update VistA with the appropriate status of the files on these platters.

Network Location Cleanup

MagUtility's Network Location Cleanup process deletes outdated or improperly defined entries from the NETWORK LOCATION file (#2005.2).

Storage Copy Process

MagUtility's Storage Copy process transfers Imaging files from one Imaging RAID or jukebox network location to another RAID or jukebox network location. This process can be used to repopulate a RAID from the jukebox after expanding or upgrading the RAID.

Additionally, the Storage Copy process checks for nonstandard file name formats (9 or 10-character names), and converts those names to the proper 14-character format on the source network location as part of the Copy operation. File name references in #2005 are updated automatically as well.

Starting and Exiting MagUtility

Starting MagUtility

1. On the server where MagUtility is installed, choose **VistA Imaging Programs | MagUtility** from the Windows Start | Programs menu.

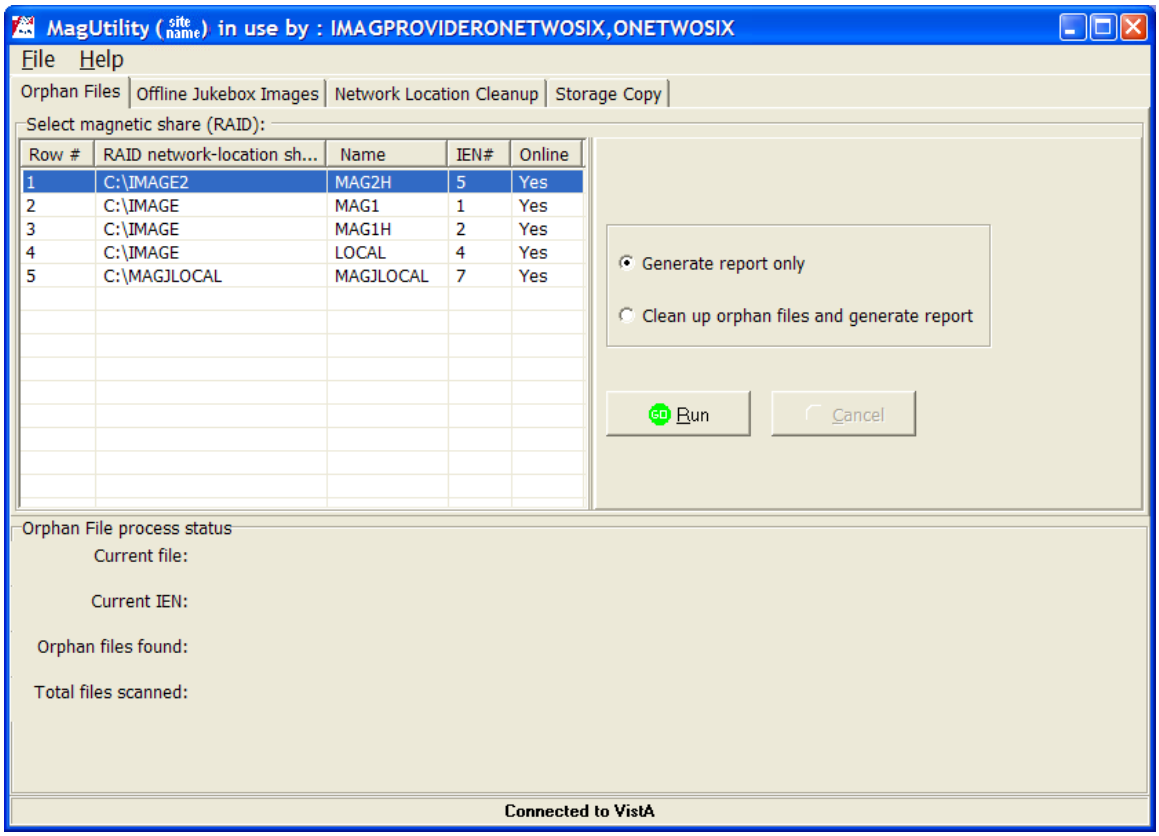
2. In the VistA Sign-on dialog box, enter your access and verify codes and then click **OK**.

3. If the Select Division dialog box opens, double-click the appropriate division and then click **OK**.

4. Wait until the MagUtility window opens.

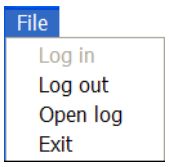
Description of the MagUtility Window

The title bar displays the site name and username, as shown in the example.



Menu Bar

The File menu enables you to log in and log out, open the Info and Debug log files from any tab, and exit the utility.



Tabs

Each tab indicates a process in MagUtility. The Orphan Files tab is displayed by default. For the procedures on running each process, see:

- *Running the Orphan Files*

- *Running the Offline Jukebox Images*
- *Running the Network Location Cleanup*
- *Running the Storage Copy*

Process Status Box

The Process Status box displays the results of processing.

Exiting MagUtility

1. Check each tab to ensure that no MagUtility processes are active.
2. Choose **File | Exit** from the menu bar.

Important: Whenever you exit MagUtility, any active MagUtility processing is aborted.

Running the Orphan Files Process

Processing orphan files can be lengthy depending on your server and network capacity. In general, plan for an hour of processing time for every 30,000 files scanned. However, because this process has a low impact on system response, you can run this process while the Imaging System is active.

Recommendation: Run this process on the same schedule that your site uses for Verifier processing. If your site runs the Verifier monthly, initially run the Orphan Files process every one to three months. Thereafter, you can increase this interval based on the results of initial Orphan Files scans.

Prerequisite for Running an Orphan Files Check

Before you run the Orphan Files process, run the Verifier for all IENs (internal entry numbers) in #2005.

Tip: Running the Verifier first reduces the number of potential problems that may occur during the Orphan Files process. For more information on the Verifier, refer to the *Imaging System Verifier User Manual*.

Running an Orphan Files Check

Important: Do not run MagUtility's Storage Copy process on the same RAID share where the Orphan Files process is running.

Recommendation: If MagUtility is installed on multiple servers, you should not run multiple Orphan Files processes at the same time.

1. Start MagUtility (if it is not already running).
   MagUtility opens on the Orphan Files tab.

2. Select the network location(s) to process.
   Only RAID (magnetic) network locations that are both online and non-routing are listed.

3. Select one of the following options on the right side of the Orphan Files tab:

   - **Generate report only** to have MagUtility log all issues but take no corrective action

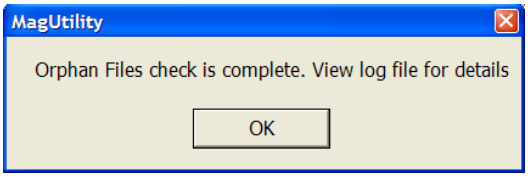
   - **Clean up orphan files and generate report** to have MagUtility remove confirmed orphan files and log all issues

     Note: If MagUtility detects but cannot correct an issue, it logs the issue but takes no corrective action.

4. Click **Run** to start the scan.

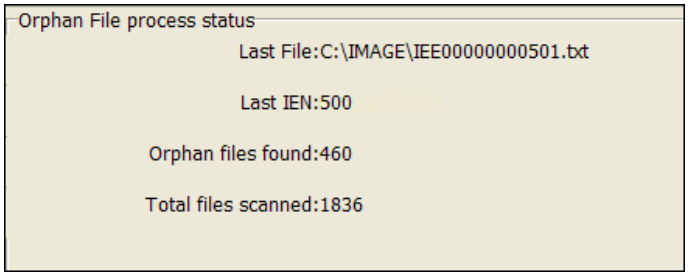
   Note: You can abort a scan by clicking Cancel but you cannot pause and resume a scan.

   The following successful run message is displayed.



5. Periodically monitor the scan as it progresses.

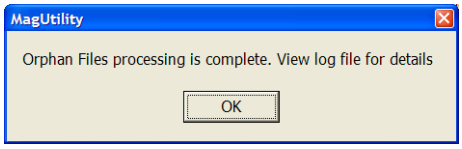
   - The Orphan File process box at the bottom of the Orphan Files window displays the last (scanned) file and last (scanned) IEN, as shown in this example.



   - If the share being scanned becomes unavailable for some reason, MagUtility pauses for one minute and then tries to reconnect to the share. If MagUtility

cannot access the share after three attempts, it aborts the process and logs the problem.

- When MagUtility finishes a scan, it displays the following message.



6. To review the results of a scan, check the log files by choosing **File | Open Log**.

   For details on the log files generated, see *Working with MagUtility Log Files*.

   Note: If MagUtility checks a file and finds no problems, it does not log anything about the file. A prompt is displayed that processing is complete. The log file indicates that zero orphan files were found.

Troubleshooting the Orphan Files Process

Log Message	Explanation	Action
file_extension is not an approved file extension	The current file extension is not listed in the IMAGE FILE TYPES (#2005.021).	Examine the file. Change the extension if it has a wrong extension. If not, copy the file to another location for later reference and delete it from the share.
missing file extension	The current file has no extension	Examine the file. If the proper extension can be determined, add the extension; If not, copy the file to another location for later reference and delete it from the share.
IQ or DUPE fields are set	One or both of these conditions exist: 1) There is a #2005 and a #2005.1 record in VistA. 2) There is a serious problem with the image records in VistA.	Log a Remedy ticket.

Log Message	Explanation	Action
There is no VistA #2005 IMAGE file entry	There is no record in VistA for the current file.	Log a Remedy ticket.
the share pointer in the 2005 file, does not match the share pointer selected for review	A text file was found at a location that does not match the Full file location in VistA.	Determine if there is a text file at the Full RAID pointer location in VistA. If so and the text files match, delete the text file. Otherwise, log a Remedy ticket.
Found two or more RAID pointers pointing to the same physical reference	There are two Network Locations that point to the same RAID share: the share that is being traversed and the one indicated in this message.	Run the Network Location File Cleanup utility. If the duplicates remain, Patch 39 post install processing will remove the duplicate.
no RAID or JB pointer	The current file has no references in VistA.	If the file exists on the jukebox, run the Verifier over this IEN to set the jukebox pointer. Log a Remedy ticket.
there are different size image files on RAID and Jukebox	The size of the current file on RAID is different from the one on the jukebox.	Log a Remedy ticket.
no IEN "F" x-ref for the filename	The current file record in VistA is missing a critical field - 'FileRef' cross-reference, or it can be just an orphan file miss-placed.	Log a Remedy ticket.
orphan file can not be deleted because no archive copy exists for *filename*	There are no jukebox files or no jukebox pointer.	Run the Verifier to copy the files to the jukebox. .
image file with different "Date Modified"	Found another file at the RAID location in VistA. The Windows modified date on the current file and the VISTA location RAID file do not match.	Compare the two files by viewing them, if possible, to see if they are the same. If no conclusion can be made, copy the file to another location for later reference and delete it from the share.

Log Message	Explanation	Action
zero length file deleted file	The file contents are empty. The file was deleted.	Take no action on this log message.
deleted file	Orphan file found. File was deleted	Take no action on this log message.
Error - cannot delete the file *filename.*	File was marked an orphan for deletion but could not be deleted.	Examine permissions or lock on the share/file itself.
Delete candidate	a file was found that was identified as an orphan. It is not deleted (Generate Report only option)	Take no action on this log message.
cleared or updated 2005 file pointer	The file contents are empty. The file was deleted. Its RAID pointer in VistA was cleared.	Take no action on this log message.
error clearing or updating 2005 file pointer with *RAID ptr, filename*	The file contents are empty. The file was deleted. But its RAID pointer in VistA database could not be cleared.	Log a Remedy ticket.
reset 2005 file pointer	File found with no VistA pointer set. It updated VistA record pointer.	Take no action on this log message.
file deleted since the same file was found on other RAID *name*	Same copy of file found on another share, deleted duplicate	Take no action on this log message.
file deleted - cannot find associated 2005 file IEN for *filename*	No IEN was found in VistA for the file name.	Take no action on this log message.
Cannot verify the off-line image file to process *filename*	The RAID or jukebox share at the VistA network location is OFFLINE. Cannot verify if it is an orphan.	Determine why the share is OFFLINE and set it back ONLINE for Orphan file checking.

Log Message	Explanation	Action
image file with different "Date Modified" *filename1 date1* vs *filename2 date2*	The file at the VistA RAID location had a modified date different from the current RAID file.	Compare the 2 files by viewing them, if possible, to see if they are the same image sets. If no conclusion can be made, copy the file to another location for later reference and delete it from the share.
file size variance between the two Network Locations	The file at the VistA RAID location had a size different from the current file.	Compare the two files by viewing them, if possible, to see if they are the same. If no conclusion can be made, copy the file to another location for later reference and delete it from the share.
pointer needs to be updated. IMAGE 2005 *IEN* referenced file does not exist, but found *filename*	The file referenced by Vista for this IEN does not exist. Change the pointer in Vista to this new location	Take no action on this log message
2005 file *IEN* referenced filename1 file size is 0, but found filename2	The pointer in VistA references a file of zero length. (Generate Report only)	Take no action on this log message
Orphan TXT file found and removed *filename*	A TXT file was found which matched another file of the same name/size. It was deleted	Take no action on this log message
Orphan TXT file found *filename*	A TXT file was found which matched another file of the same name/size. File was not deleted (Generate Report only)	Take no action on this log message
reset pointer with selected RAID reference *sharename, IEN,filename*	Found file with no VistA RAID pointer set or set to another empty RAID location. Change pointer.	Take no action on this log message

Log Message	Explanation	Action
pointer needs to be updated	Found file with no VistA RAID pointer set or set to another empty RAID location. VistA pointer is not changed.	Take no action on this log message

Running the Offline Jukebox Images Process

When you run out of room to add additional platters to your jukebox, you can remove platters to create free slots. Use the Offline Jukebox Images process to record the list of image files on these platters in VistA as offline. When these platters are re-inserted into the jukebox, use the utility to mark the images online.

Note: This operation duplicates the MAG JB OFFLINE menu option available in VistA.

Marking Images Offline

This operation updates the status of the files on the jukebox platters in the VistA database.

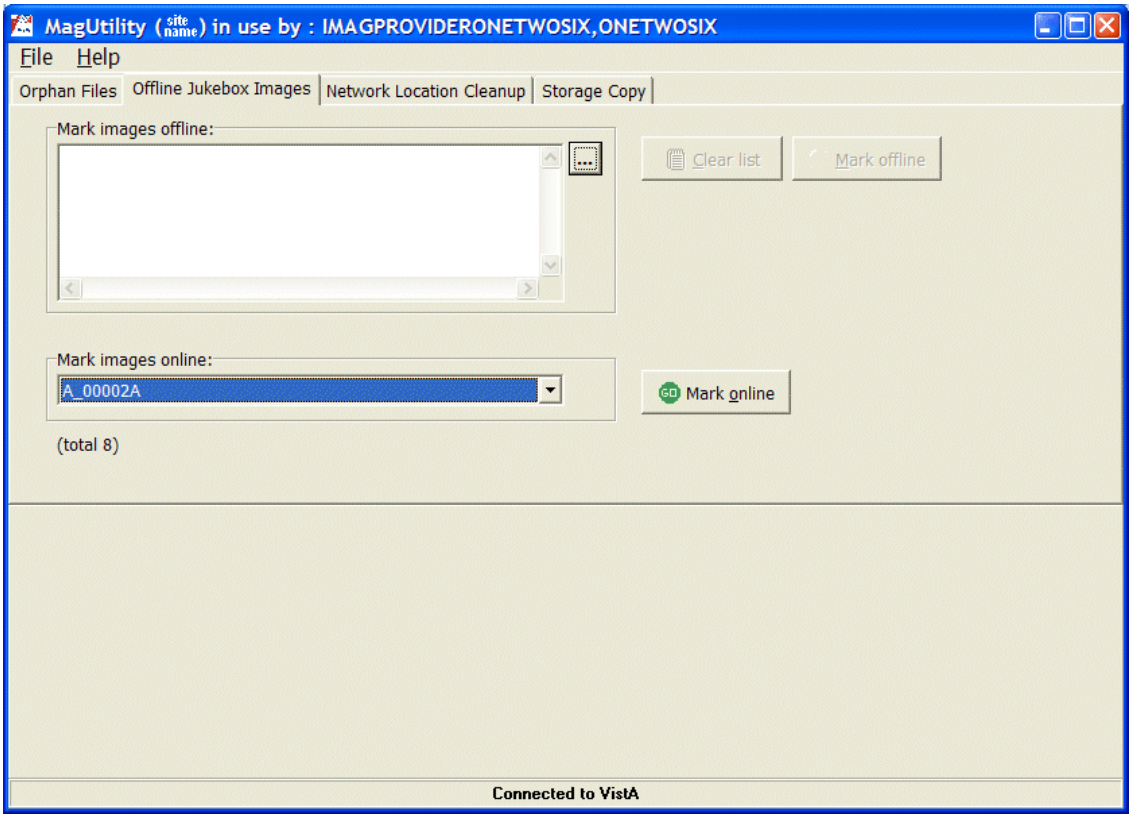
Note: You must use the third-party software, DiskXtender, to actually remove platters. This operation assumes that you are using DiskXtender for jukebox management. Other jukebox management systems are not supported.

1. Use the DiskXtender Administrator to generate a Media Files report for each side of each platter to be removed from the jukebox.

2. Save each media file report as a *.txt file (not an *.rtf file).

3. Copy each of the reports to a location accessible to MagUtility.

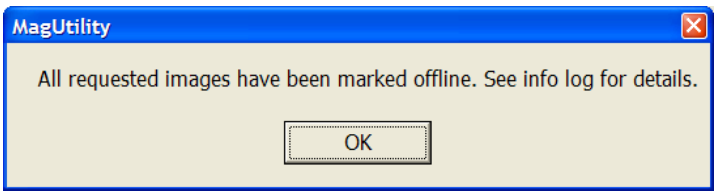
4. Start MagUtility (if not already running) and select the Offline Jukebox Images tab.



Note: You can start Offline Jukebox processing while the VistA system is active and while other MagUtility processes are running.

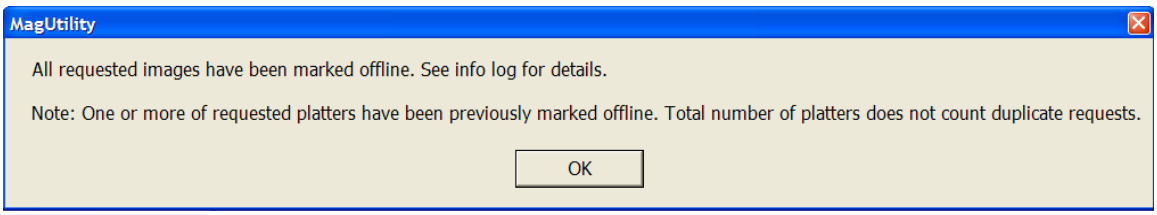
5. At the Mark images offline field, click the ellipsis [...], select one or more platter reports (*.txt files), and click **Open**.
   The Clear list button and Mark offline button become enabled.
   To change your selection, you can click the **Clear list** button and re-select different files.

6. Click the **Mark offline** button. [Mark offline].
   All the files are marked offline - you cannot select individual files. The following message is displayed.



The OFFLINE IMAGES file in the VistA database is updated based on the image file names in these reports.

Note: If you selected platter reports already marked offline, they will not be processed or recorded in the count of platter reports and the following message will be displayed.



7. Use DiskXtender Administrator to physically remove the files marked offline from the jukebox.

For details on the log files generated, see *Working with MagUtility Log Files*.

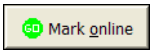
Marking Images Online

1. Use DiskXtender Administrator to insert the offline platters back into the jukebox.

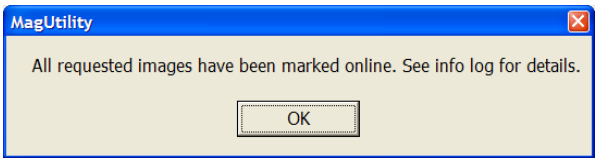
2. Start MagUtility (if it is not already running) and select the Offline Jukebox Images tab.

3. At the Mark images online field, click the drop-down list box to select a media file for a patient that you are bringing back online.

   Note: You can select only one file at a time. Be sure to process a file for each platter side.

4. Click the **Mark online** button. 

   The following message is displayed.



   Entries for images associated with each selected platter are removed from the OFFLINE IMAGES file, and the images become accessible to clinicians.

For details on the log files generated, see *Working with MagUtility Log Files*.

Troubleshooting the Offline Jukebox Images Process

Log Message	Explanation	Action
All requested images have been marked online	The image file names have been successfully removed from VistA indicating the images are now viewable.	No action is necessary.
Marked a total of *nnn* files offline from *number of platters* of platter report(s), where *number of platters* platter reports could not be read	Some of the selected platter reports could not be read	Examine the reports of the failed platters listed to determine if they are corrupted. Regenerate the reports, if necessary.
Selected *platter* is not in a correct platter report format and will be skipped.	The platter text file is corrupt.	Generate another platter report using DiskXtender.
n platter(s) out of *m* requested JB images have been marked offline by *user*	The count indicates how many platter reports had valid file names out of the total number selected.	Examine the platter reports that were not processed. Re-generate a new platter report, if necessary. **Note**: Platter reports with no file names listed will not show up in the processed count.
Marked platter: #*platter* offline by user:	Files on the platter have been marked offline successfully.	No action is necessary
Task has completed but there were no image files to process	None of the platters selected had any image files listed in their reports.	Examine the platter reports to verify there are no files listed in each report selected.

Running the Network Location Cleanup Process

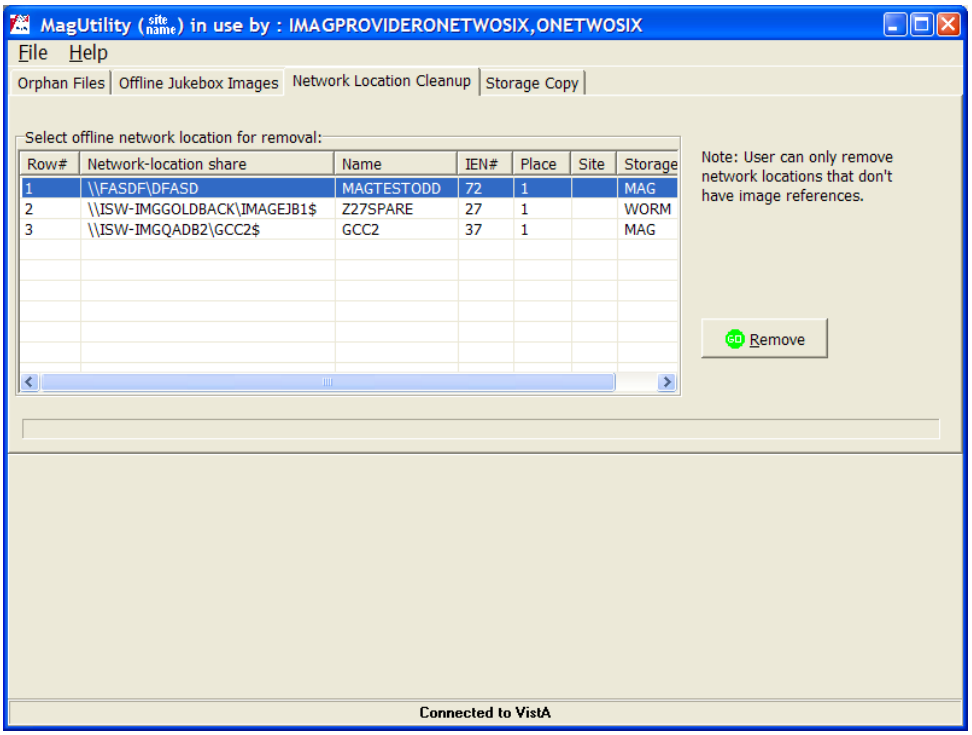
You can use MagUtility's Network Location Cleanup to delete outdated or improperly defined entries in the NETWORK LOCATION file (#2005.2).

To qualify for deletion, an entry must:

- Have a Storage Class of **MAGNETIC** (for RAID shares) or **WORM-OTG** (for jukebox shares
- Be set offline
- Not be referenced by any pointers in the IMAGE File (#2005) or IMAGE AUDIT File (#2005.1)

Deleting RAID or Jukebox Locations

1. Start MagUtility (if it is not already running) and select the Network Location Cleanup tab.



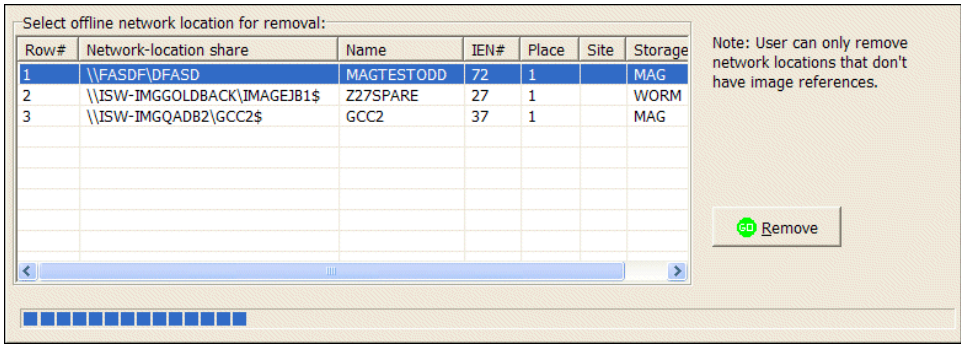
Tip: To refresh the list of network locations in the tab, you can select a different tab and then re-select the Network Location Cleanup tab.

Note: In running network location cleanup, the file reference(s) listed may not be all of the references. Additional work may need to be done to identify all references still active for the network location.

2. Select the network location that you want to delete.

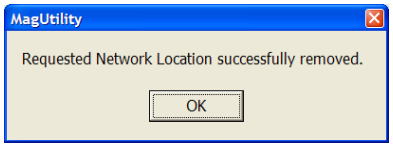
3. Click **Remove**.

   - The progress bar indicates that processing has begun.



   - MagUtility checks the IMAGE file (#2005) and IMAGE AUDIT file (#2005.1) to ensure that no entries contain pointers to the selected location.

   - If the check is successful, the network location is deleted and the following message is displayed.



   - If problems are found, they are displayed on the screen and logged. See the Troubleshooting section that follows.

   For details on the log files generated, see *Working with MagUtility Log Files*.

Troubleshooting the Network Location Cleanup Process

Log Message	Explanation	Action
cannot remove NETWORK LOCATION IEN as image files references were found.	There are image records in VistA that reference this Network Location.	Find the record(s) in VistA and move the file(s) that it references to another existing Network Location. Then change the RAID and/or jukebox pointers to the new location.

Network location *#IEN* has been removed.	The Network Location indicated has been deleted from VistA.	No action is necessary.

Running the Storage Copy Process

Do not use the Storage Copy process for general disk migration. The Storage Copy process copies only files that are referenced in the IMAGE file (#2005) in the VistA database. The Storage Copy process ignores non-referenced files.

If you copy a large number of images, running the Storage Copy process can be lengthy. For example:

- To copy files from the Jukebox, it takes on average 2 minutes per IEN (image set), which includes copying or moving files and updating the pointers to the VistA database.

- To copy files from the RAID, it takes on average 30 seconds per IEN (image set)

If this process is used to copy images from RAID to RAID, system impact is typically minor. However, if images are copied to or from a jukebox, other jukebox operations (such as media copy, backups, and restore) may be impacted based on the amount of space in the jukebox cache or on the availability of jukebox optical drives. You can optionally run the Storage Copy process only during after-hours to reduce system impact.

Preparing to Use Storage Copy

1. Use Windows Explorer to determine the amount of space used by the source files and ensure that the space is available on the destination network location.

2. Verify that the destination network location is defined as hashed (only hashed network locations can be selected as a destination in MagUtility).

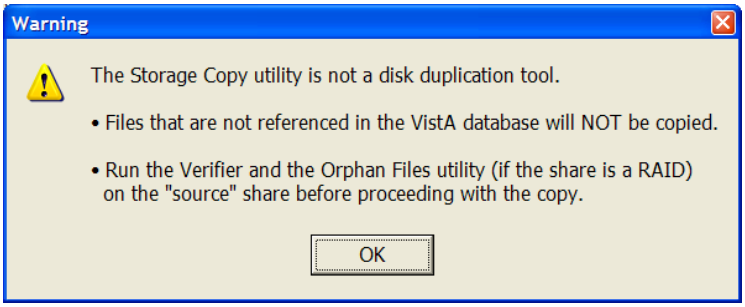
   Tip: You can use Background Processor's Network Location Manager to determine if a network location is hashed or unhashed. For details, see the *VistA Imaging Background Processor User Manual*.

3. Run the Verifier for the entire set of IENs in the IMAGE file and address any issues found.

4. Run the MagUtility Orphan Files process for the source network location and address any issues found.

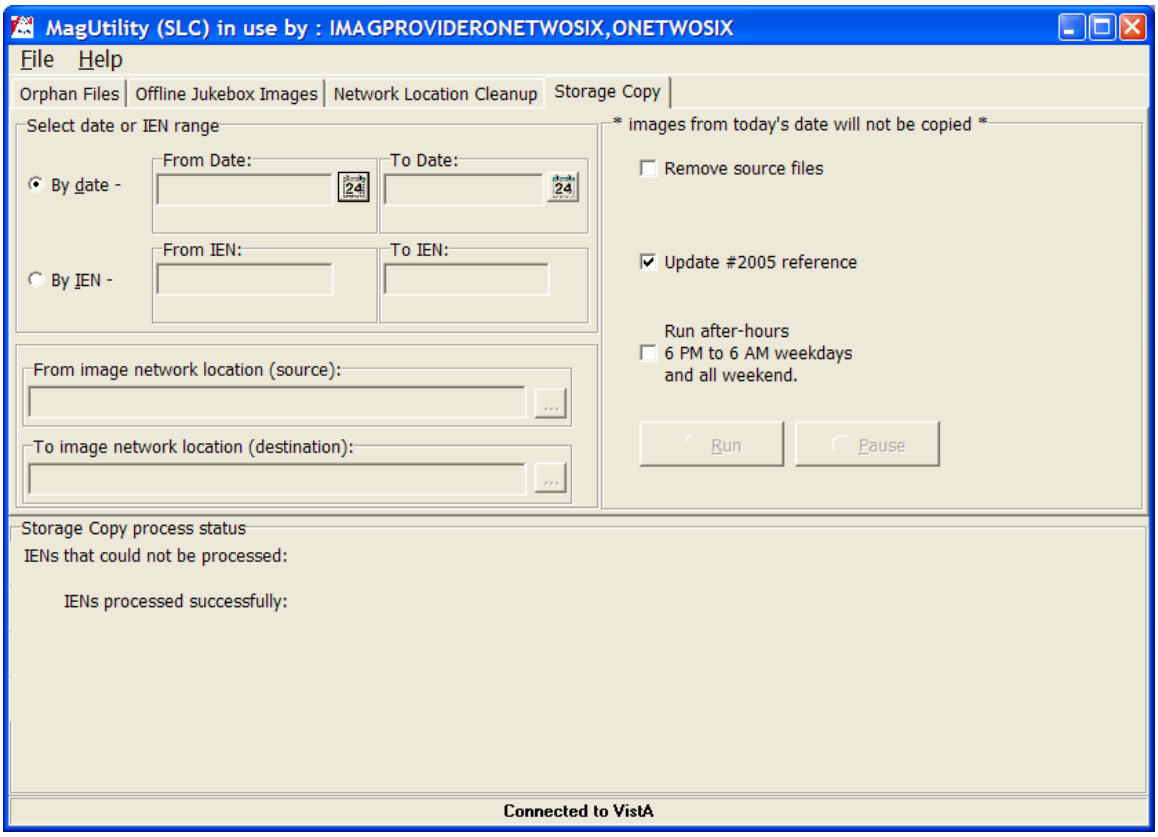
Starting the Storage Copy Process

1. Start MagUtility (if it is not already running) and select the Storage Copy tab. The following warning message is displayed on the proper use of this utility.

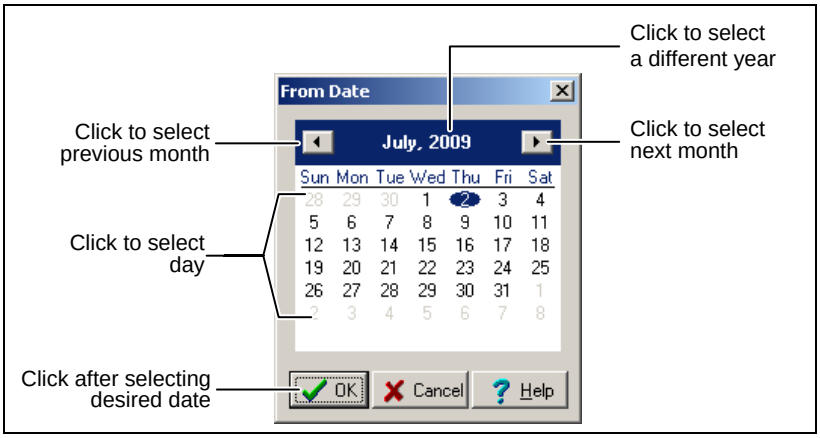


2. Click **OK** to close the window.

To prevent copies of partially acquired cases, Storage Copy does not copy images having today's date, even if they fall within a range that you specify.
Ranges are not sensitive to case or image group relationships. If part of a case falls inside a range and part of the case falls outside the range, only the images within the range are copied.



3. To copy IENs by date, select the **By date** option, click the calendar icon to specify the From Date field, and then click **OK** in the calendar window displayed.



Note: *Date* means the date/time when the file was acquired by the DICOM Gateway, Capture workstation, etc. set in the DATE/TIME IMAGE SAVED field (#2005,7).

4. Repeat the same step to specify the To Date field.
   The approximate IEN number is displayed below the To and From Date fields.

5. To copy by IEN number, click the **By IEN** option and perform any of the steps:

   - For a specific range, type the IEN number in the **From IEN** field and then the **To IEN** field and press <Enter> to specify the lowest and highest IENs in the range of images to copy.
     The approximate capture dates are displayed below the fields.

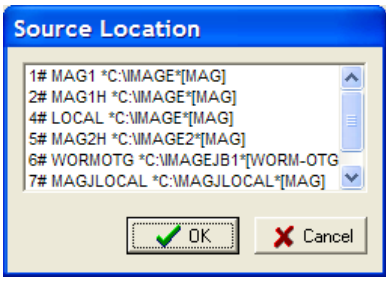
   - For all IENs on a network location, type an asterisk (*) in the **From** and **To** fields and press <Enter>.
     The IEN numbers are displayed in the fields, and approximate capture dates are displayed below the fields.

   - For a specific starting IEN through the end of the IENs, type an IEN number in the From field and an asterisk (*) in the To field and press <Enter>.
     The ending IEN number is displayed in the To field with the end date below the field.

   - For all IENs through a specific ending IEN, type an asterisk (*) in the From field and an IEN number in the To field and press <Enter>.
     The starting date is displayed below the From field.

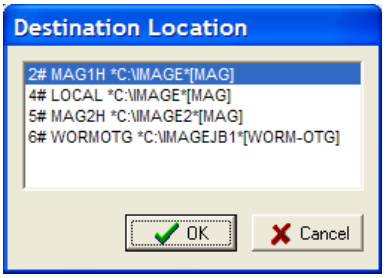
   Important: Some IENs in the range may not be copied. Only the IENs actually stored on the source network location are copied.

6. In the From network location (source) box (now enabled when you pressed <Enter> above), click the ellipsis [...], select the source to copy images from in the Source Location window, and click **OK**.



Note: When you click OK, if your selection is not available, an error message is displayed. You must resolve the issue and re-select the source. See *Troubleshooting the Storage Copy Process*.

7. In the To network location (destination) box, click the ellipsis [...], select the destination from the Destination Location window, and click **OK**.



Note: When files are copied to a destination network location, the destination is always populated with a hashed structure, even if the files were stored in a non-hashed (flat) structure on the source network location. The process involves:

- If hashing is used, files are maintained in a 5-level deep subdirectory structure where no directory will contain more than 100 unique filenames with their various extensions.
- If hashing is not used, files are placed and retrieved from the root directory of the share.

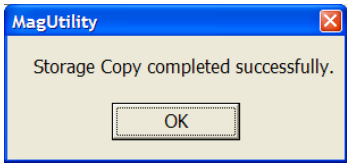
Important: If there are two references to hashed files (with H) and non-hashed files (without H), they are stored in different locations within the same physical location. Therefore, be careful in copying files.

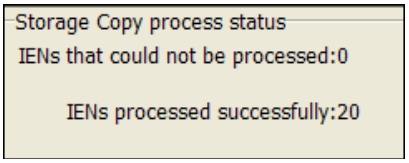
8. In the Storage Copy window, select any of the Storage Copy options that you want:

If you select	Then
Remove source files	**Update #2005 reference** is automatically selected and cannot be cleared. (#2005 storage (pointers) must be updated.) The process moves images and updates #2005 references. Source files and their associated directories (if all files in a directory are copied) are deleted from the source share as the Copy progresses. **Note**: This option is disabled if the source network is a jukebox.
Update #2005 reference	The process copies the images and updates #2005 references. When the Copy is finished, source images remain. However, they are "orphaned" because the references in #2005 point to the images' location on the destination network location.
Neither Remove source files nor Update #2005 reference	The process copies images to the destination but does not update the #2005 references. The #2005 references still point to the images on the source network location. The source files are not deleted.
Run after-hours 6 PM to 6 AM weekdays and all weekend	Running the storage copy during these specified hours limits the system impact. See *Running After Hours*.

9. To start the process, click **Run**.
The process status box at the bottom of the window displays a progress bar with the following results:

- **IENs processesed successfully** indicates the number of IENs that were copied successfully. The following message and sample process status are displayed.





- **IENs that could not be processed** indicates the number of IENs where some or all of the requested actions could not be completed.

  For possible causes, see *Troubleshooting the Storage Copy Process*. You can also open the MagUtilityInfo.log file (**File | Open log**) to view information about failed copies of images.

Note: For details on the log files generated, see *Working with MagUtility Log Files*.

Pausing, Resuming, or Canceling the Storage Copy Process

- To pause processing, click **Pause** and then click **OK** to confirm the operation. Processing remains paused until you resume or cancel it.

  Note: If the MagUtility window is closed when a Storage Copy process is paused, the copy process is cancelled.

- To resume the process, click **Resume**.

- To cancel the process, click the Pause button first and then click **Cancel**.

  Note: Canceling the process may create orphan files on the destination share.

Running After Hours

When you select the **Run after hours** option, the Storage Copy process runs only from 6PM to 6AM on weeknights and all day on weekends.

During other time periods, the process is suspended and the process status box at the bottom of the Storage Copy window indicates that the next phase of the process is scheduled to resume at a later time.

If a scheduled process takes longer than 12 hours or a weekend to finish, MagUtility suspends it from 6AM to 6PM on weekdays and resumes it according to the schedule described above.

Note: Exiting MagUtility cancels the Storage Copy process, even if it is scheduled to run at a future time.

Troubleshooting the Storage Copy Process

Log Message	Explanation	Action
The source file was not found - *FilePath*	There was no file on RAID for the pointer in VistA.	Run the Verifier to validate the pointers in VistA.
The task paused at *time* by *username*.	The Pause button was pressed. Processing has been suspended.	No action is required.
The task resumed at *time* by *username*	The Resume button was pressed. Processing has been restarted.	No action is required.
Image IEN *#IEN* image entry had been deleted, will be skipped	The pointer in VistA to the FULL file is empty.	No action is required.
Set image IEN *#IEN* with new *#IEN2* reference '	The file was copied and a 2005 VistA update was done to match the new location.	No action is required.
Cleared RAID pointer for image IEN *#IEN*	A RAID pointer in VistA was cleared. It contained the source location.	No action is required.
Error occurred, clearing RAID pointer for image IEN *#IEN*	The attempt to clear a RAID pointer in VistA failed. It contains the source location.	Log a Remedy ticket.
Copied all files found for image IEN *#IEN*	The Full/ABS/TXT/(BIG) files have been copied from the location specified to the destination.	No action is required.
The source file was not found *source_filename*	The source folder/file did not exist at the location specified in VistA.	No action is required.
destination_file same file already exist at destination, could not move the file	There was another file with the same name as the source at the destination location.	No action is required.
Source_dir directory was removed because it was empty	An empty directory was found and deleted.	No action is required.
Source_dir directory is empty, however it could not be removed	An empty directory was found and it could not be deleted.	Check permissions on the folder.

Working with MagUtility Log Files

MagUtility generates the following types of logs for all processes:

- MagUtilityInfo.log, which stores all information and error messages. Review this log after you run any of the four processes.

- MagUtilityDebug.log, which stores error messages of a technical nature to debug all of the MagUtility processes. The information in this log is typically for developer troubleshooting.

Each log is a running log, meaning that the results of each process run are appended to the end of the same log file. The fields are tab-delimited and the log files can be imported into Microsoft Excel.

Opening a Log File

1. To open a log file:

   - Within MagUtility, choose **File | Open Log**.

   - Outside MagUtility, navigate to C:\Program Files\VistA\Imaging \MagUtility\logs and then open a log file using a text editor or spreadsheet program.

2. Select an active (newest) or older file, as follows:

   - Active logs are named MagUtilityInfo.log and MagUtilityDebug.log.

     Note: You can open an active log file while a MagUtility process is running, but be aware that the file will not be updated with any new messages until the log file is closed (at which time, the updates will be made).

     Important: When an active log is close to its maximum configured size or retention limit, you may temporarily be prevented from opening the file until MagUtility generates new instances of the log. To re-configure its size or retention limit, see *Re-Configuring the Size and Retention Limit*.

   - Older logs have a number after the *.log extension. Lower numbers indicate newer logs, and higher numbers indicate older logs (for example, MagUtilityInfo.log.1, MagUtilityInfo.log.2, and MagUtilityInfo.log.3).

Log File Format

Note: Each MagUtility process that runs has a header and trailer in the log file so that you can easily locate entries for each process. For example:

[date/time] [INFO] **Offline Jukebox Selected** User:IMAGPROVIDERONETWOSIX,ONETWOSIX

The section for a particular process also ends with the name of the tab for that process. For example:

[date/time] [INFO] **Orphan Files** **Completed Orphan file processing.**

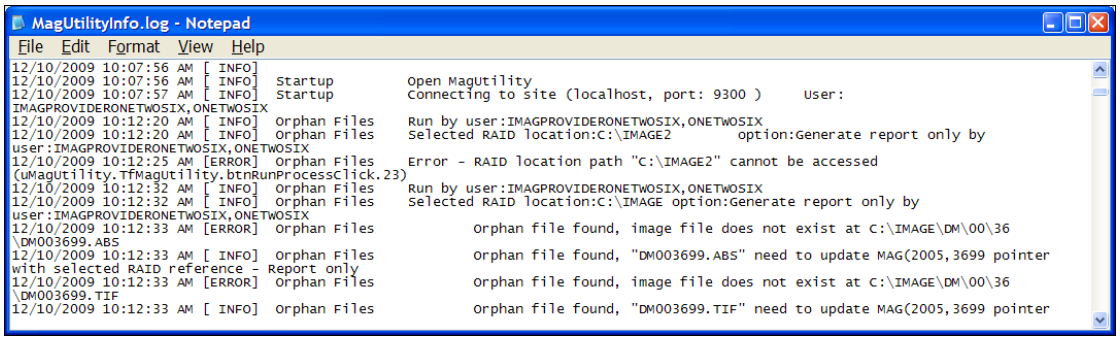
Each entry in MagUtilityInfo.log and MagUtilityDebug.log contains the following fields:

<date> <time> <level> <process> <condition/message>
6/16/2009 7:11:48 AM [INFO] Startup Open MagUtility

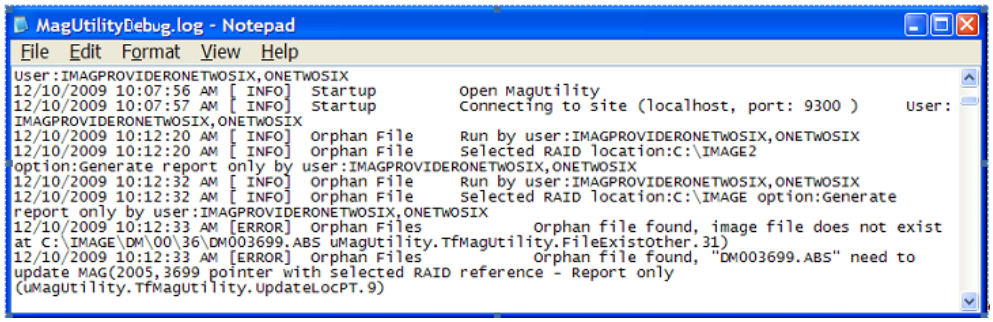
Note: If the message field is lengthy, you can widen the window to view the contents of the log file more easily.

Examples of an Info Log and Debug Log

The following section of the running Info log shows an example of the Orphan Files process.



The following section of the running Debug log shows an example of the Orphan Files process.



Retaining and Deleting Log Files

MagUtility writes messages to the most recently created Info and Debug log files. When a file reaches its maximum configured size, a new file is started and the existing file has "1" appended to the end of its name (for example, MagUtilityInfo.log.1). Any pre-existing logs are renamed as well, with the highest number in the filename indicating the oldest file.

The default maximum size of any log file is 10 megabytes. The default retention limit for each type of log file is 30 instances. If there are more than 30 instances of the Debug log or Info log, the oldest instance is deleted.

Re-Configuring the Size and Retention Limit

You can change the default maximum size or retention limit for Info logs and Debug logs as needed. To re-configure the default settings:

1. On the server where MagUtility is installed, navigate to C:\Program Files\VistA\Imaging\MagUtility.

2. Open the logging properties file with a text editor.

   - The `#MagUtility loggers` section stores settings for MagUtilityInfo.log.

   - The `#Error logger configuration` section stores settings for MagUtilityDebug.log.

3. To change the maximum number of files that are retained, locate the following field in the **#Maximum number of backup files** section, and set the number to the value that you want.

   log4delphi.appender.MagUtilityErrorAppender.MaxBackupIndex=**30**

4. To change the maximum size of a log file, locate the following field in the **#Maximum log file size** section, and set the size to the value that you want.

   log4delphi.appender.MagUtilityErrorAppender.MaxFileSize=**1M**

5. Save and close the file.