

AquariusAPS™ User Guide

Version 4.4.14

Revision C



Symbols used in the label:

Symbol	Meaning
	Consult Instructions for Use. www.terarecon.com/user-manuals
	The CE mark applies to AquariusAPS™ software. The CE mark is affixed onto the AquariusAPS™ software.
	Manufacturer The name and address of the manufacturer are listed next to this symbol.
	Date of Manufacture The year of manufacture is listed next to this symbol.
	Prescription Only Caution: Federal law restricts this device to sale by or on the order of a licensed healthcare practitioner.
	Authorized Representative in the European Community The name and address of TeraRecon's authorized representative in the European Community are listed next to this symbol.



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Notices

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Note: Any beta features extended are not to be used clinically, and can **only** be authorized, obtained or accessed through an appropriate beta agreement.

1. TeraRecon, Intuition™ Client, Intuition™ Thin Client, Intuition™ Server, AquariusAPS™, Intuition™ Web, Intuition™ Gate, Intuition EMV (iEMV), Intuition Review (iReview), Eureka™ AI Interoperability Platform, Eureka™ AI Liaison, Eureka™ AI Inference, and Eureka™ AI Results Explorer are either registered trademarks or trademarks of TeraRecon, Inc. in the United States and/or other countries. Copyright© 2011-2021 TeraRecon, Inc. All rights reserved.

General Description

Intuition™ Client is a medical device comprised of two stand-alone software components: a server software backend (Intuition Server) which performs complex image post processing, and client viewer software (Intuition Client Viewers) that provides a user interface, enabling the user to view medical image data and associated derived metadata.

The Intuition Client is one of the Intuition Client viewers with 2D/3D/4D (4D is 3D with dimension of time) image processing and advanced visualization capabilities to assist physician review of medical images. The base functionality of Intuition Client includes, but is not limited to, various tools for visualization and analysis, customizable workflow templates to deliver structured workflow, and support for the physician to write and store the report.

A fully-configured Intuition Client system is capable of a comprehensive suite of image processing and visualization functions, including full-color Volume Rendering, Calcium Scoring, Time-Dependent Analysis (TDA), Time Volume Analysis (TVA), Segmentation Analysis and Tracking (SAT), Vessel Analysis, Flythrough, Multi-phase review, CT/CTA Subtraction, Lobular Decomposition (LD), iGENTLE, Maxillo-Facial, Volumetric Histogram, Findings Workflow, Fusion CT/MR/PET/SPECT, MultiKV. Results from the Intuition Client Server module may be displayed in the viewer. Each of these features may vary by client viewer and offered as an independent upgrade option to the basic configuration.

Important! Based on published literature and TeraRecon's analysis, any derived value results, while using Intuition Client, have approximately 3% of uncertainties, depending upon the noises in the data, image acquisition and reconstruction techniques, and human interventions.

AquariusAPS™ Indications for Use

The AquariusAPS sever receives medical images from medical imaging acquisition devices adhering to the DICOM protocol for image transfer such as EBT, CT, MRI, and other volumetric or planar medical imaging modalities, and performs digital image processing to derive certain information or new images from these image sets. The information or new images thus derived is transmitted using the DICOM protocol to other devices supporting this standard protocol.

Lossy compressed mammographic images and digitized film screen images must not be reviewed for primary image interpretations. Mammographic images may only be interpreted using an FDA approved monitor that offers at least 5Mpixel resolution and meets other technical specifications reviewed and accepted by FDA.

Safety Notifications

The AquariusAPS is part of a Class II medical device regulated by the Food and Drug Administration.

Warning! Not intended for diagnostic use when used via a mobile device.

CAUTION! U.S. Federal Law restricts use of this device to trained physicians, or other suitably qualified and trained personnel on the order of a physician.

If you require training, please contact TeraRecon or a suitably qualified trainer. Please always keep this documentation readily available near the AquariusAPS, and please keep it updated with all corrections/addenda that may be released by TeraRecon.

Patient information is restricted, private, and extremely confidential, and subject to stringent legal regulations. You should control access to AquariusAPS, and any patient data contained in AquariusAPS should be protected accordingly. Devices integrated to this product must comply with their own applicable safety standards.

Precautions Relating to General Use

Please review the *AquariusAPS User Guide* for all warning messages, notices, and precautions prior to using the software.

Rx Only

Caution: Federal law (USA) restricts this device to sale only by or on the order of a physician.

AquariusAPS software may allow images to be generated in which parts of the original scan data are obscured, removed (including but not limited to, through use of lossy compression), hidden, or modified. Similarly, output images and reports can be produced, saved, and annotated, with elements of the original acquisition omitted, obscured, modified, or hidden. Careful and responsible use of the equipment and its output images requires that the user be aware of, and effectively communicate these important facts to, untrained or uninformed observers or recipients of the processed information.

Please ensure that all processing has completed (including completion of any final stage after an intermediate stage of processing) before formulating a final interpretative decision.

In certain situations, you may experience a delay in certain display processing. Please ensure that all processing has completed (including, for example, completion of any final stage after an intermediate stage of processing) before seeking to validate, or validating, a final interpretative decision.

Precautions Relating to Magnetic Resonance Imaging Machines

Components of AquariusAPS, including this document and its packaging or binding, may contain metallic or ferromagnetic components. Please ensure that no such component is introduced into the influence of magnetic fields from devices such as Magnetic Resonance Imaging Scanners, since injury or damage to equipment or property could occur.

Precautions Relating to Computer Software and Hardware

Note that the installation and use of any additional software or hardware component without the specific direction and approval of TeraRecon may impair the safety and effectiveness of the product. No additional software or hardware component should be added to AQNet Server, which hosts the AquariusAPS software, nor should the configuration be changed in any way, except under the express direction of TeraRecon personnel. Do not use the software if it is damaged, compromised, or if you in any way suspect that its safety may have been compromised; in such case, contact your customer service representative immediately.

Important! All results should be validated by qualified physicians trained in the subject matter.

Microsoft Windows Operating System Updates

AquariusAPS software relies on the integrity of the Microsoft Windows operating system to perform as documented by Microsoft. If a Microsoft Knowledge Base article is released that exposes a bug or defect adversely affecting specific hardware platforms documented for use with Intuition Client or Intuition Thin Client software, it is the

customer's responsibility to remedy those defects using the steps outlined by Microsoft in its Knowledge Base Articles.

AquariusAPS is not accessible without a network, including LAN and WAN. The availability of a network is the customer's responsibility. This includes accessibility to other devices on the network including but not limited to authentication servers and storage locations.

Precautions Related to Image Output Option

Intuition Client allows for output of selected images and series to various computer standard file types. This technique does not maintain full image fidelity and may affect image quality. JPG, PNG, BMP and AVI files are not intended for diagnostic purposes.

Captured images for output may contain patient information and use and distribution must be controlled to ensure that secure access to PHI is maintained pursuant to all applicable U.S. and International Laws, including but not limited to, the Health Insurance Portability and Accountability Act ("HIPAA") and the Health Information Technology for Economic and Clinical Health Act ("HITECH Act").

Patent Information

U.S. patents apply to this product. For details, see <http://www.terarecon.com/patents>.

Cybersecurity

TeraRecon is committed to produce and distribute reliable image processing medical device software through capable processes. At every stage of development, from software qualified requirements through design and development, validation, verification and final deployment, the process has been tailored to effect quality and security considerations into the product. Information security is integrated into the company's software development life-cycle from system inception.

Scope

To demonstrate compliance to the requirements as stated in the FDA guidance document titled "Guidance for Industry and Food and Drug Administration Staff Document," issued on October 2, 2014.

Cybersecurity Functions

As part of the company's devices' basic functionality, appropriate cybersecurity controls are developed to assure medical device cybersecurity and maintain medical device functionality and safety. These controls are provided within the device with the intention to create a robust, reliable and efficient medical device; with the understanding that it is a shared responsibility between stakeholders, including health care facilities, cloud infrastructure providers and manufacturers of medical devices.

Identify and Protect

TeraRecon's software devices such as Intuition Client, AquariusAPS, and standalone algorithms is are a prescription only medical device software intended to be used by medical practitioners who are trained in the software's function, capabilities and limitations. Appropriate supporting documentation with information related to functionality and security requirements are provided to the users; these include but are not limited to the Instructions for Use (IFU) and Customer Release Notes.

Limit Access to Trusted Users Only

This is achieved collaboratively between the manufacturer of the device and healthcare facilities or cloud infrastructure providers. Firewalls, anti-virus and other control measures are provided by the facility or infrastructure providers.

Notice: (If applicable) Standalone algorithms in a Docker container are deployed on a facility's authorized compute infrastructure with user controls or granted access with IP white-listing in the cloud deployment.

Shelf life and Software Lifecycle

Shelf-life is not applicable for software-only devices because there is a low likelihood of time-dependent product degradation. Hence, performance data is not needed to establish maintenance of device performance characteristics over a shelf-life period. However, obsolescence or retirement can occur during the end-of-life phase of a software's life cycle. The software life cycle refers to all the phases of a software product throughout its planning, development, and use, all the way through to its eventual obsolescence or retirement. In order to support obsolescence or retirement efforts, life cycle records retention is defined as 15 years from the last deployment of a retired software.

How to Use this Guide

It is recommended that you read all chapters to gain a complete understanding of the AquariusAPS application. Use the table of contents to navigate to the desired information.

Pay special attention to all *NOTES*, *IMPORTANT*, *WARNING*, and *CAUTION* notifications, whether presented on-screen, or contained in this manual, including all precautionary statements and advisories in the Notice section, as these are essential to the effective and authorized use of the AquariusAPS application.

Conventions used in this Manual

This manual uses the following conventions:

- The text that appears on buttons, menu items, dialog boxes, and other elements of the application are printed in a bold font. For example, "Select the **Save** button."
- Screen names are capitalized. For example, Patient List, Viewer.
- The chapters are arranged based on the functions in the application.

A NOTE contains supplementary and important information about a topic. *Please do not ignore NOTES, IMPORTANT, TIP, WARNING, and CAUTION notifications. Read each one carefully.*

Page Numbering Conventions

Page numbers are formatted for ease of use at the bottom of each page in a position based on left and right pages. They contain the Chapter number and page number in this format:

AQ-APS-USER-4.4.14	Chapter Page → 3-1 ←
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This style indicates Chapter 3, page 1.

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Chapter 1 Introduction to AquariusAPS

AquariusAPS™ Overview

This manual provides information necessary to properly configure and make the best use of the AquariusAPS system.

The AquariusAPS system automatically performs various kinds of data processing on incoming DICOM data sets, according to configured processing rules and schedules. The processed images are then routed to the appropriate destination ready for workflow. This eliminates the number of steps the medical professional needs to perform for each image and could substantially increase the efficiency of medical professionals.

The following diagram shows the data flow among nodes in the AquariusAPS system. The data flow begins with the modality. Data sets are pushed to the Intuition Server, where advanced processing is performed on the data. AquariusAPS then routes the original data, along with any derived series produced by advanced processing, to the Intuition Server or to a PACS system.

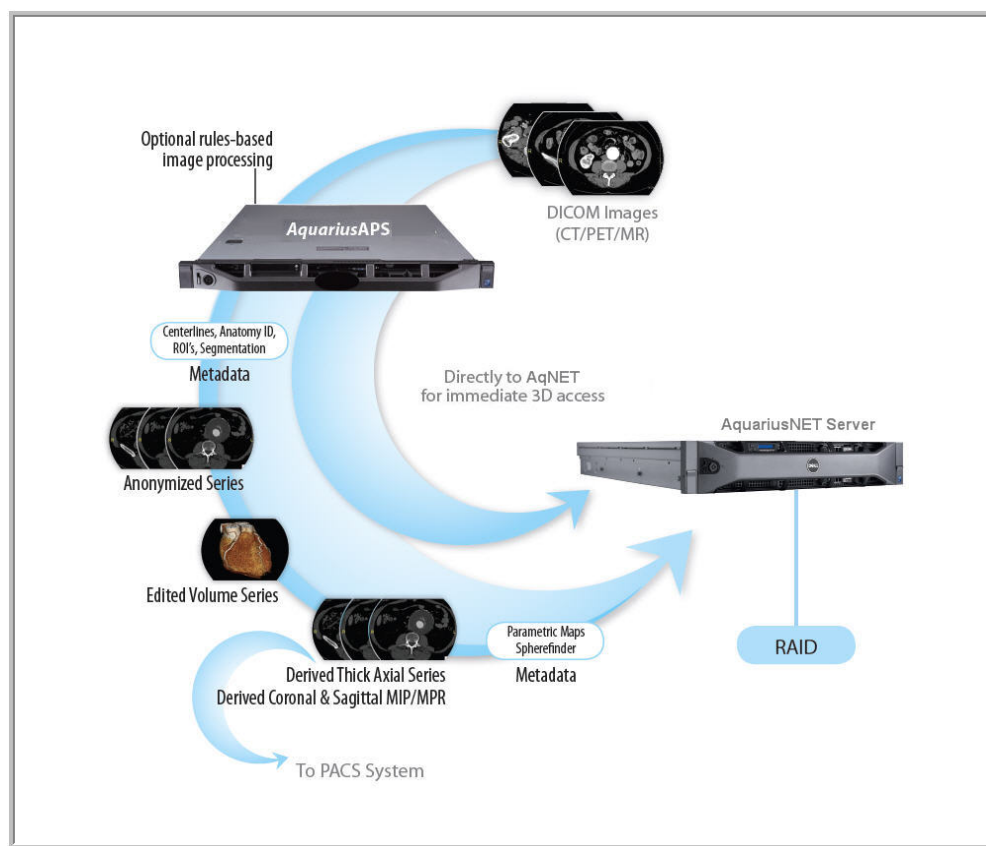


Figure 1-1 Data Flow Diagram

Web Interface Functions

The Intuition Server interface provides these functions:

- Manage local and remote AEs
- Manage DICOM tags and tag filters
- Manage Clinical Protocols, associating tag filters, processing engines (PEs) and routing nodes
- Manage Auto Prefetch, Basic and Advanced Auto Routing, Auto Batch and Auto Anonymizer
- Add, modify and delete SphereFinderL, Subtraction and Volume Filter engines
- Manage Studies and Series - Push, Delete, and Anonymize
- Trigger the AquariusAPS workflow on a study or series
- Manage Advanced Processing Jobs, Routing Jobs, and Prefetch Jobs
- Manage the Log Display page
- Manage auto deletion
- Configure email
- Configure the AquariusAPS, DICOM, and Web servers
- Configure the high watermark for disk storage
- Start and stop the DICOM server and Job Manager
- Reboot the Server
- Change the password
- View information about the PE modules installed on AquariusAPS
- Take a server snapshot
- Log out

Implementations of AquariusAPS

There are two implementations of AquariusAPS:

- **The AquariusAPS Stand-alone server**

The stand-alone server is a separate physical machine, with its own DICOM server, for receiving and pushing data from/to local and remote AEs. ([Figure 1-1](#)) The stand-alone AquariusAPS requires its own Web interface for managing all server processes.

- **AquariusAPS on the Intuition Server**

AquariusAPS on the Intuition Server functions in a similar way, except that the post-processed data might be stored on the Intuition Server rather than automatically routed to another DICOM server. In addition, the Web administration functions for AquariusAPS must be accessed through the Intuition Server page.

The AquariusAPS Pre-processor Engines

The AquariusAPS processor engines perform image preprocessing based on processing rules defined by the user. The effectiveness of this preprocessing engine depends on the quality and nature of the incoming image acquisition. The modules are intended for use with images that were obtained without the use of CT or MR contrast agents obtained with the use of FDA cleared CT or MR contrast agents. The available modules depend on the available licensed engines.

Engines

These modules are available for AquariusAPS, depending on the available purchased licenses:

- Auto-De-anonymizer
- Bone Label
 - Bone Label Legs
 - Bone Label Ribs
- Bone Masking (CT/CTA)
- Bone Removal
 - Bone Removal Body
 - Bone Removal- Body (Adult)
 - Bone Removal – Body (Pediatric)
 - Bone Removal – Head Neck
 - Bone Removal – Rib Cage
 - Bone Removal- Rib Cage – Liver Not Removed
 - Bone Removal – Urogram
- Bone Subtraction
- Centerline
 - Centerline – Body –primary and secondary vessels
 - Centerline – Coronary – main and branching vessels

- Centerline – Head Neck – carotid and vertebral series
- Colon Data Convertor
 - VP1000 - Improves image quality for VP1000 board
 - VP2000 - Improves image quality for VP2000 board
- Colon Segmentation (segmentation of supine, prone and decubitus data)
- CT-PET Filter - denoising filter
- CT-PET Fusion – automatic fusion of data, will create a new series
- CT-PET Resize – automatic rescaling of data, will create a new series
- CTA/MRA Generator –generation of arterial and venous max phase data as two new series .
- EP Lab – Segmentation of left atrium and left atrial appendage.
- Expose Coronary 4D – visualization of coronary vessels on 4 data. Removes left atrial appendage for better coronary visualization
- Liver Segmentation – Automatic segmentation of liver (total 8 segments) and portal vein
- Lung Segmentation – Automatic lung lobe segmentation 5 lobes)
- Mount Removal - CT Table
- Mount Removal – Head (removes head holder)
- Parametric Map – for MultiPhase MR studies
- Registration Deformable
 - Large Deformation
 - Small Deformation
- Registration
 - Rigid
 - Rigid – Derived volume
- Sphrefinder
 - C – colon
 - L – lung
- Subtraction – creation of a series labeled “Arterial” from two series (CT and CTA)
- TAVR

- Time Series Generator – designed to sort 320 data for TDA workflow consumption
- Time Series Generator
 - Phase sort
 - Slab mode
- Vertebral Segmentation – spine labeling
- Vessel Label
 - Abdomen
 - Head Neck
 - Heart
 - Upper legs
- Virtual Energy
 - Blender
 - Bone Removal
 - Extractor
 - Virtual Non-Contrast
- Volume Filter (note – different strengths may be applied)
 - Median
 - Gaussian
 - Blur
 - Sharpen
 - iGentle
 - iGentle TotV

Auto-Anonymizer

Automates anonymization of clinical studies based on rules, to comply with privacy regulations and clinical trial criteria. The auto-anonymizer is important for clinical research trials, medical journal publications and patient data used for teaching.

Autobatch

AutoBatch generates reformatted images on scan data that has been pushed to Intuition Server. Without Autobatch, the reformatted images need to be generated at the CT console, taking scanner time. The Autobatch PE provides the equivalent functionality previously performed by scanners. In addition, AutoBatch provides automatic batch functions similar to the Batch 2D functions performed manually on

the Intuition Client or Intuition Thin Client, using a user-specified range, angle, rendering mode and other parameters.

Bone Removal

The Bone Removal processing modules analyze the incoming CT study for the presence of bone-like structures. If such structures are found, a *mask volume* is created in which the pixel locations corresponding to those occupied by these structures in the scan image are set to zero. All other locations in the mask are set to one. The mask volume is used by the processing module to hide the bones from view. It can also be used as a starting point for further post-processing by the user.

Bone removal engines include:

- Body
- Head Neck
- Rib Cage
- Rib cage to Aorta
- Rib Cage - Liver Not Removed

Centerline Extraction

This feature includes the following processing engines:

- Body
This module analyzes a CT study for the presence of a structure similar to the abdominal area or pelvis area. If a structure is found that is highly likely to be the Abdominal Aorta and Iliacs, a set of centerlines is created.
- Head Neck
This module analyzes a CT study for results of the Vessel Label Head Neck processor engine. If these results are found, a centerline and a mask are created.
- Coronary
This module analyzes a CT study for the presence of a structure similar to the heart. If a structure is found that is highly likely to be one of the major coronary arteries, a mask volume and a centerline are created for each artery.

Note: When using this processor engine, the intended use is for CT data from ECG-gated and contrast-enhanced to get a meaningful result.

- Auto Coronary Consolidate
This module analyzes the results of the **Extract Coronary** module on a 4D CT study, and makes a better judgment of the quality of the centerline extraction.

Note: The result of some phases might be discarded.

CTA Generator (Arterial)

The CTA Generator detects the maximal arterial phase in 320 brain perfusion data and creates a new derived volume for the maximal phase.

CTA Generator (Venous)

The CTA Generator detects the maximal venous phase in 320 brain perfusion data and creates a new derived volume for the maximal phase.

EP Lab

This processing module analyzes a CT study and automatically identifies vessel names and approximate locations in the heart. Some of the supported vessels are: Left/Right superior Pulmonary Vein, Left/Right inferior Pulmonary Vein. If a structure is found that is highly likely to be one of the Pulmonary Veins, a centerline is created for each vein. A mask volume is also created for the Left Atrium and all Pulmonary Veins. This module is included in the **Vessel Analysis** option.

Labeling

The Labeling feature includes the following processing engines:

- **Abdominal Vessel**
This module analyzes a CT study and automatically identifies vessel names and approximate locations in the abdominal area. Some of the supported vessels are: Abdominal Aorta, Celiac Artery, Superior Mesenteric Artery, and Left/Right Renal Artery.
- **Head Neck**
This module analyzes a CT study and automatically identifies vessel names and approximate locations in the head/neck area. Some of the supported vessels are: Left/Right Common Carotid Artery, Left/Right Internal Carotid Artery, Left/Right Middle Cerebral Artery, Left/Right Vertebral Artery, Basilar Artery.
- **Heart Vessel**
This processing module analyzes a CT study and automatically identifies vessel names and approximate locations in the heart. Some of the supported vessels are: Left Main (LM), Left Anterior Descending (LAD), Left Circumflex (LCX), and Right Coronary Artery (RCA).

Note: When using the processor engine, the CT data needs to be ECG-gated and contrast-enhanced to get a meaningful result.

- Upper Leg Vessel

This module analyzes a CT study and automatically identifies vessel names and approximate locations in the pelvis area. Some of the supported vessels are: Left/Right Common Iliac Artery, Left/Right External Iliac Artery, Left/Right Femoral Artery, and Left/Right Deep Femoral Artery.

Note: When using this processor engine, the CT data needs to be ECG-gated and contrast-enhanced to get a meaningful result.

- Bone Label Legs

This module analyzes a CT study and automatically identifies lower leg bone names and approximate locations in the lower leg area. Supported bones include left/right femur, left/right femur head, left/right knee, left/right fibula, left/right tibia and left/right ankle.

Mount Removal

This module analyzes a CT study for the presence of a CT table or head mount. If a structure is found that is highly likely to be the CT table or head mount, a mask volume is created. The pixel locations in the mask corresponding to those occupied by the table/head mount in the scan image are set to zero. All other locations in the mask are set to one. The mask volume is used by the processing module to hide the CT table or head mount from view.

The Mount Removal module includes the following processing engines:

- CT Table
- Head Mount

MultiKV

The MultiKV feature includes the following processing engines:

- Bone Removal

This processing module analyzes the incoming CT studies (high-energy, such as 140 kV tube voltage, and low-energy, such as 80 kV tube voltage datasets) for the presence of bone-like structures. If such structures are found, a mask volume is created in which the pixel locations corresponding to those occupied by these structures in the scan image are set. The mask volume is used by the processing module to hide the bones from view.

- MultiKV Virtual Non-Contrast

This processing module analyzes the incoming CT studies (high-energy, such as 140 kV tube voltage, and low-energy, such as 80 kV tube voltage datasets for Siemens and the single Gemstone Spectral Imaging dataset for GE) for the presence of contrast agent. If such agent is found, it is replaced by a new virtual value representing non-contrasted tissue.

- Blender

The MultiKV Blender generates a new derived series that is one of the following:

- A blending of the 2 original series (80 kV, 140 kV), using the percentage setting from the web configuration (Siemens).

- Monochromatic images using the keV setting input by administrator (Gemstone Spectral Imaging (GE)).
- Extractor
The MultiKV Extractor extracts proprietary information from DICOM headers and stores them for later use in the dual energy workflow.

Parametric Map

The Parametric Map module calculates a parametric color overlay map for a time-dependent MR scan. This module analyzes a set of images, each of which represents the same location over a certain period of time. A color is assigned to each location according to the shape of the time density curve at this location. Three colors (red, blue and green) are used to represent three types of time density curve, respectively: washout, plateau and enhancing. These borders can be changed, as can the colors themselves.

The Parametric Map module provides an option to perform rigid registration among all phases. However, this might not compensate for internal organ movements that may have occurred during the scan.

Therefore, artifact may be present in the scan if there was any large organ movement among phases. This option also includes the **Deformable Registration** processing engine.

Registration - Deformable - Small Deformation

Registration - Deformable - Large Deformation

Deformable Registration (large deformation, small deformation): This processing module analyzes the two incoming studies to align them. Once the result is loaded in the viewer, we can synchronize the different views between the two studies. This module tries to compensate for internal organ movements that may have occurred during the scan.

Registration - Rigid

Registration - Rigid - Derived Volume

This processing module analyzes the two incoming studies to align them. Once the result is loaded in the viewer, we can synchronize the different views between the two studies. This module only calculates a simple rotation and pan of the volume, it does not compensate for internal organ movements that may have occurred during the scan.

Segmentation

The Segmentation modules analyze the incoming CT study for the presence of lung-like, colon-like, or heart-like structures.

- Lung Segmentation
If lung-like structures are found, mask volumes are created for the left lung, right lung and trachea. The mask volumes are used by the processing module to display the lung in SAT.
- Colon Segmentation

This processing module analyzes the incoming CT study for the presence of colon-like structures. If such structures are found, a mask volume is created in which the pixel locations corresponding to those occupied by these structures in the scan image are set to one. All other locations in the mask are set to zero. The mask volume is used by the processing module to display the colon in Flythrough.

- Expose Coronary 4D

This module analyzes a CT study for the presence of structure similar to the heart. If such structures are found, multiple mask volumes are created, which hide the overlying structures from view and reveal the coronary arteries.

- Liver Segmentation

If a liver-like structure is found, a mask volume is created for the liver. The mask volume is used by the processing module to display the liver in LD2.

These results can also be used as a starting point for further post-processing by the user.

Spherefinder

Spherefinder identifies sphere-like structures in a CT scan and generates a list of the locations. The current engine is specifically designed for spherical objects with a certain degree of sphericity. Other structures, such as those attached to the organ wall, tubular structures, similar objects, or those that have inhomogeneous density distribution, may or may not be detected. It may also produce inaccurate results for objects whose diameters are smaller than twice the slice thickness, or objects whose HU values are lower than -600, due to the Partial Volume Effect (PVE).

This feature includes these processing engines:

- SpherefinderC
- SpherefinderL
- Auto Annotation

Auto Annotation marks the positions of candidates found by SphereFinderL or SphereFinderC. An additional series is created that contains circles embedded in the images, indicating the position of each candidate. Users will then be able to review the candidates on any DICOM viewer.

Stitch Series

Stitch Series stitches multiple series or sub-series together to create a single series. The component series can have different slice spacing, pixel spacing or image positions, but they must share the same frame reference UID and orientation.

For example, stitching is used to remove duplicate table positions in a single series. The processing module analyzes incoming data and generates a derived volume in which the duplicate positions have been removed.

Subtraction

This module requires two datasets: an initial scan (Volume A), and another scan of the same area, after the patient has been injected with contrast dye (Volume B). It removes everything in Volume B that is also contained in Volume A, so that the result consists completely of the area having contrast.

TAVR

This processing module analyzes the single or multiphase cardiac data. Processor results include the following:

- Heart segmentation
- Heart and Aorta anatomy labels
- Heart Aorta centerline

TDA Map

The TDA Map processor calculates TDA color maps for the BF, BV, MTT, TOT, RT and TTP functions. Color captures of the maps are saved to DICOM. These results can be reviewed directly from the Patient List Preview, or from any DICOM viewer.

Time Series Generator

The Time Series Generator reformats MR TVA data. Each generated series consists of one phase containing multiple levels.

Volume Filter/iGentle

This module generates a copy of the original images and applies a filter to them. This can be used to remove noise in the original images, such as with low dose acquisition data. Both the filtered and the original images are sent to the destination.

Chapter 2 Logging In

Getting Started

Accessing the AquariusAPS™

To access the AquariusAPS log in page:

1. Enter the URL `https://<serverName>` in the address bar of Internet Explorer.

Note: The `<serverName>` is the host name or IP address of the computer running the AquariusAPS software.

2. This opens the AquariusAPS log in page (see [Figure 2-1](#)).

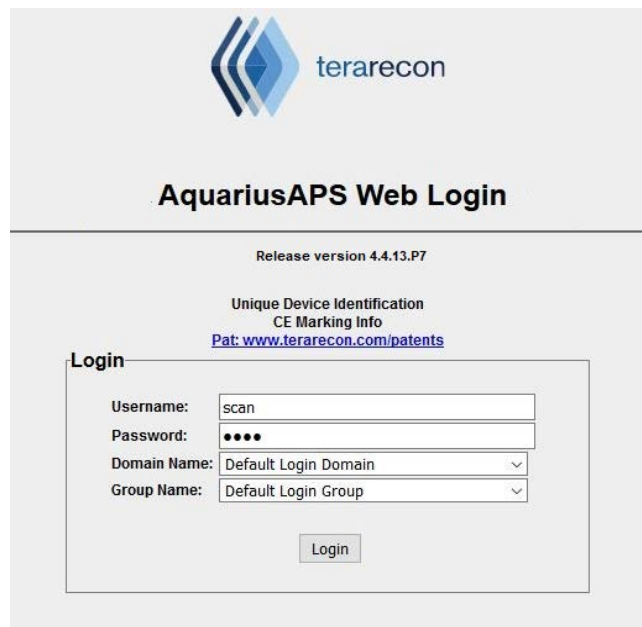


Figure 2-1 The AquariusAPS Log in Page

Logging In

To log into AquariusAPS:

1. Enter the user name and password and click the **Login** button. ([Figure 2-1](#))

Note: The default administrative user name and password ('scan') can be used to login. However, it is important to change the password right away, once accessing the Web page using the default administrative user name and password

2. The AquariusAPS Welcome page opens.

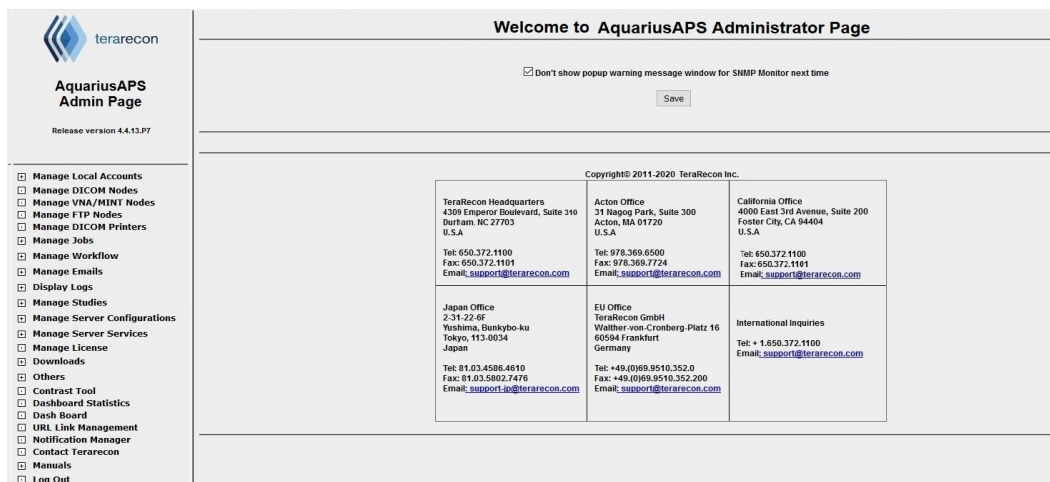


Figure 2-2 AquariusAPS

The Navigation Panel

The left side of the page contains the navigation panel. Clicking on the links in this list will display various administrative screens in the right panel of the page. See [Figure 2-3 on page 2-2](#) for a detailed list of the links in the navigation panel.

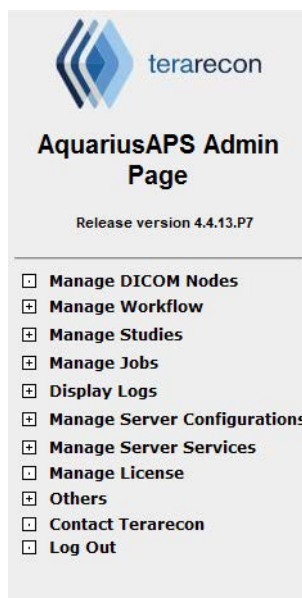


Figure 2-3 Navigation Panel

When the user logs in, a new session is created by the system. The new session is valid until the user logs out, or unless the login is idle for a configurable length of time (the default is 20 minutes).

Note: To prevent unauthorized users from accessing management functions, it is recommended that you log out when you are finished using the AquariusAPS page.

Chapter 3 Managing DICOM Nodes

Topics in this chapter:

[Managing Remote DICOM Nodes 3-1](#)

[Managing Local DICOM Nodes..... 3-4](#)

AquariusAPS™ must be connected to a DICOM device in order to receive data. This is referenced from within AquariusAPS by the local DICOM node (which may also be referred to as an Application Entity or AE). AquariusAPS must also be connected to an *remote* DICOM node to communicate with other devices. This section explains how to set up the DICOM nodes.

Note: It is also necessary to configure the scanner or other modality where the data originates, so that the device has the correct network information for the destination device.

Managing Remote DICOM Nodes

Remote DICOM nodes configured on this server are listed in the middle of the **DICOM Node Manager** page.

AquariusAPS requires this information to identify a DICOM node:

- AE (DICOM Node) Title
- Hostname
- IP address
- Port number

The AE Title and Port number are necessary to distinguish between multiple DICOM-aware applications that may be running on the same physical machine.

To add, modify or delete a local DICOM node, click on the **Manage DICOM Nodes** link from the Navigation bar. (Figure 3-1) The **DICOM Node Manager** is displayed in the right panel. (Figure 3-1)

DICOM Nodes

Default Local Node Specifications

	Use this node to configure a remote device to push studies to this server or Q/R from this server	Use this node on a remote device to give this server permission to Q/R
AE Title	AQNETSERVER_AE	aqnetserver-AQNE
Host Name	AqNET Server	AqNET Server
IP Address	172.16.51.69	172.16.51.69
Port	105	N/A (same as remote node port)

Remote DICOM Nodes

Logical Name	AE Title	Host Name	IP Address	Port	Priority	Can Push From	Can Push To	QR Source	C-Move target	QR Allowed	AE Type	Description
AqNET remote AE	AUTOVOX	aqnetserver4.4	172.16.50.42	105	Normal	Y	Y	N	N	Y	AQUARIUSNET	
AUTOVOXT5400LAN1	AUTOVOX	T5400LAN1	172.16.51.92	105	Normal	Y	N	N	N	N	AQUARIUSNET	
AQNETSQA3	AQNETSQA3_AE	aqnetsqa3	172.16.50.146	105	Normal	Y	Y	Y	N	N	AQUARIUSNET	
FromPrimary	AE_FromPrimary	AqNET_Primary	172.16.51.113	105	Normal	Y	Y	N	N	N	AQUARIUSAPS	Remote Sync AE
aqnetserver-AQNE	aqnetserver-AQNE	AqNET Server	172.16.51.69	104	Normal	Y	N	N	Y	Y	UNKNOWN	local image server AE
AQGATE_AElocal	AQGATE_AE	AQGATE	172.16.51.92	105	Normal	Y	Y	N	N	N	AQUARIUSAPS	Default host AE

Add New Remote Node
Edit Remote Node
Delete Remote Node

Local DICOM Nodes

Logical Name	AE Title	Host Name	IP Address	Port	Priority	Use iUploader	Description
AQNETSERVER AqAPS local import AE	AqAPS_Local_00	AqNET Server	172.16.51.69	105	High	N	Default APS local import AE
AQNETSERVER AqNET local import AE	AqNET_Local_00	AqNET Server	172.16.51.69	105	Normal	N	Default local import AE
AQNETSERVER AqPE result import AE	AqPE_Local_00	AqNET Server	172.16.51.69	105	Normal	N	Default PE result import AE
AQNETSERVER_AElocal	AqNETServer_AE	AqNET Server	172.16.51.69	105	Normal	N	Default host AE
AUTOVOXAQNETSERVER	AUTOVOX	AqNET Server	172.16.51.69	105	Normal	N	Default local AE
FromAqNET_Backup	AE_FromAqBackup	AqNET Server	172.16.51.69	105	Normal	N	Synchronization AE

Add New Local Node
Edit Local Node
Delete Local Node

Figure 3-1: The DICOM Node Manager

To add a new Remote AE:

1. Click the **Add New Remote Node** button located just below the list of remote nodes. The **DICOM Node Manager's** screen for adding a new remote node is displayed on the right.

2. Add New Remote Node screen:
 - a. Enter the DICOM node information in the relevant fields. Please remember the following:
 - Entries marked with “*” indicate a required field.
 - The **Logical Name** (AE name), and the combination of the **AE Title**, **Port**, **Host Name** and **IP Address** must be unique.
 - b. When finished, click the **Save** button.

To modify a Remote AE:

1. Select a single node from the list to be modified.
2. Click the **Edit Remote Node** button located just below the list of remote nodes. The DICOM Node Manager’s screen for editing a remote node will be displayed on the right (see number 2 above), with that node’s values displayed in the fields.
3. Edit the appropriate fields.
4. When finished, click the **Save** button.

Note: The name of an existing AE cannot be changed. To change the AE name, delete the AE and create a new AE with the desired name.

To delete a Remote AE:

1. Select the node or nodes from the list to be deleted.
2. Click on the **Delete Remote Node** button just below the list.
3. Click **OK** to confirm deletion or **Cancel** to cancel.

Managing Local DICOM Nodes

The Local DICOM node of the AquariusAPS stand-alone server is inbound only.

Local DICOM nodes have multiple roles on the AquariusAPS system. They are used not only by PACS or modality to push data to AquariusAPS but are also used to compose tag filters. Local node-based tag filters can be integrated into a routing pattern, see ["Basic Auto Routing" on page 4-17](#) for details, Prefetch pattern, see ["Managing the Prefetch Pattern" on page 4-15](#), or advanced processing, see ["Clinical Protocols" on page 4-7](#).

AquariusAPS has two reserved local nodes (AEs):

- AUTOVOX (this is a reserved name, and is not for general use)
- `HOSTNAME_AE`

HOSTNAME is the AquariusAPS hostname in upper case. If no other local nodes are created, images can always be sent to the reserved local node.

To add, modify or delete a local DICOM node, click on the **Manage DICOM Nodes** link from the Navigation bar, see [Chapter 2: "The Navigation Panel"](#). The **DICOM Node Manager** is displayed in the right panel. ([Figure 3-1](#)) Local nodes are listed in the lower half of the page.

Note: Entries marked with "*" are required fields.

To add a new local DICOM node:

1. Click the **Add New Local Node** button located just below the list of local nodes. The DICOM Node Manager's screen for adding a new local node will be displayed on the right (see the following figure).

The screenshot shows a web form titled "DICOM Nodes" with a "Back" link. The form contains the following fields and options:

- DICOM Nodes** (Section Header)
- Logical Name***: Text input field.
- AE Title***: Text input field.
- Port***: Text input field with the value "105".
- Host Name***: Text input field with the value "AqNETServer".
- IP Address***: Text input field with the value "172.16.51.147".
- Priority***: Radio button group with options: 0 - Now, 1 - Emergency, 2 - High, 3 - Normal (selected), 4 - Low.
- Description**: Text input field.
- ☐ Auto routing by iUploader
- Save** button.

2. Enter the DICOM node information in the relevant fields. Please remember the following:

- Entries marked with “*” indicate a required field.
- Both the **Logical Name** and **AE Title** fields should be unique names.
- The **Port** and **Hostname** fields are read-only and cannot be changed here.

Note: The *Port* value can be changed by modifying the DICOM server configuration. See for details.

3. When finished, click the **Save** button.

To modify a local AE:

1. Select a single node from the list to be modified.
2. Click the **Edit Local Node** button located just below the list of local nodes. The DICOM Node Manager’s screen for editing a local node will be displayed on the right with that node’s values displayed in the fields.
3. Change the information in either the **AE Title** or **Description** fields. The other fields cannot be changed here.
4. Click the **Save** button when finished.

To delete a Local AE:

1. Select the node or nodes from the list to be deleted.
2. Click on the **Delete Local Node** button just below the list.
3. Click **OK** to confirm deletion or **Cancel** to cancel.

Note: All local DICOM nodes displayed here are bound to the DICOM server’s listen port. It is possible to manage completely separate lists of local nodes for each possible listen port.

Chapter 4 Workflow Management

Topics in this chapter:

Managing DICOM Tags	4-1
Managing Tag Filters.....	4-4
Clinical Protocols	4-7
Auto Prefetch	4-14
Auto Routing	4-17
Advanced Auto Routing.....	4-20
Auto Routing Schedule	4-23
Processors	4-30

Using Tag Filters

Tag filters in AquariusAPS™ are used to identify incoming data in order to decide which processing module (or modules) should be performed (if any) on that data set. AquariusAPS examines the DICOM header of a data set, checking for matches between what is in the header and what has been configured in various tag filters. When a match is found, AquariusAPS performs the processing that has been associated with that tag filter.

Managing DICOM Tags

The **DICOM Tag** screen allows the user to define, add, modify and delete DICOM tags to be used with tag filters.

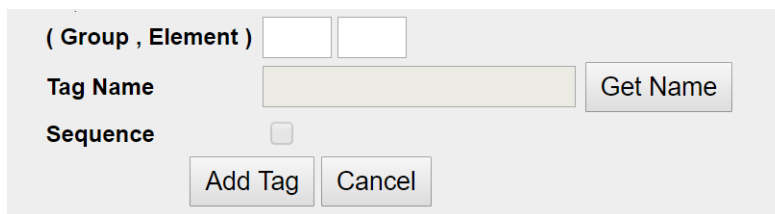
Tags		
DICOM Tags		
(Group , Element)	Tag Name	Creator Code
(0002 , 0016)	Source Application Entity Title	
(0008 , 0090)	Referring Physician's Name	
(0008 , 1060)	Name of Physician(s) Reading Study	
(0008 , 103E)	Series Description	
(0008 , 1030)	Study Description	
(0018 , 0015)	Body Part Examined	
(0018 , 1100)	Reconstruction Diameter	
(0077 , 1098)	ClinicalProtocolName	
(0077 , 1099)	AnonymizerEventID	
(0008 , 0060)	Modality	
(0018 , 0060)	KVP	
(0018 , 0010)	ContrastBolus Agent	
(0077 , 0020)	Aquarius Binary Data Name	TERARECON AQUARIUS
(0077 , 0028)	Aquarius Binary Data Type	TERARECON AQUARIUS
(0077 , 0032)	Aquarius Binary Data Subtype	TERARECON AQUARIUS
(0077 , 0040)	Aquarius Binary Additional Information	TERARECON AQUARIUS

Note: Make sure that DICOM tags are available before managing the tag filter. Tag filters are composed of tag rules, which in turn are based on DICOM tags, comparators and tag values.

Adding a New DICOM Tag

To add a DICOM tag to the AquariusAPS server:

1. Click the **Add New Tag** button.
2. Enter the **Group** and **Element** IDs into the text input boxes.
3. Click the Get Name button. If the group and element IDs are both valid, the DICOM tag name is displayed in the Tag Name box. Otherwise, an error message is displayed at the top of the screen.
4. If the tag name is correct, click the **Add Tag** button to finish.



The screenshot shows a dialog box with a light gray background. At the top, there are two adjacent text input boxes labeled "(Group , Element)". Below these, on the left, is the label "Tag Name" followed by a single-line text input box. To the right of this box is a button labeled "Get Name". Below the "Tag Name" label is the label "Sequence" followed by a small square checkbox. At the bottom of the dialog, there are two buttons: "Add Tag" on the left and "Cancel" on the right.

Adding a Tag under a DICOM Sequence

AquariusAPS supports adding tags that are configured based on DICOM sequence parameters and work with tag filters. The user can add up to two nested levels of tags and can add a rule for this tag on the Tag Filter page. The tag filter works the same as standard tag filters. For more information on Tag Filters, see ["Managing Tag Filters" on page 4-4](#) and ["Tag Filter Driven Tasks" on page 4-57](#).

To add a tag under a DICOM sequence:

1. Click the **Add New Tag** button.
2. Enter the **Group** and **Element** IDs into the text input boxes.
3. Click the Get Name button. If the group and element IDs are both valid, the DICOM tag name is displayed in the Tag Name box. Otherwise, an error message is displayed at the top of the screen.

4. Check the **Sequence** option. An additional add tag field opens. Fill the fields following steps 1 through 3.

(Group , Element) 0018 , 0014

Tag Name Contrast/Bolus Administration Get Name

Sequence ☒

Tag

(Group , Element)

Tag Name Get Name

Sequence

Add Tag Cancel

Figure 4-1 Adding a Sequence of DICOM Tags

Adding a New Private DICOM Tag

A private tag has a creator code associated with it. To acquire the creator code information, consult the DICOM conformance statement from the vendor that generated the tag.

1. Click the **Add New Private Tag** button.
2. Enter the **Group** and **Element** in the text input boxes.
3. Enter the **Tag Name** and **Creator Code** in the text input boxes.
4. Click the **Add Tag** button to finish.

(Group , Element) , 00

Tag Name

Creator Code

Add Tag

Figure 4-2 Adding a Private DICOM Tag

Deleting an Existing Tag

1. Select a single tag or multiple tags.

Note: Use Shift+Left-click to select contiguous multiple tags. Use Ctrl+Left-click to select multiple tags one at a time (not necessarily contiguous).

2. Click the **Delete Tag** button.

3. Click **OK** in the confirmation dialog to confirm deletion or **Cancel** to cancel the deletion.

Managing Tag Filters

AquariusAPS uses a DICOM tag-based filter to sort incoming DICOM data. The *tag filter* can be used to control auto routing, auto prefetch and advanced processing of the incoming data. For example, one can set up a tag filter with a rule specifying that if the modality tag in the image data is "CT", that data should have table-removal performed automatically.

The tag filter contains a tag name, tag rules, and a description. A tag rule includes the DICOM tag, a comparison term, and the tag value. There are six comparison terms:

- is
- is not
- contains
- does not contain
- larger than
- less than

A DICOM tag can be added if it is not already displayed in the tag list. The tag input value is case sensitive. AquariusAPS defines logical operator AND among rules within the filter, and logical operator OR among filters.

To display the **Tag Filter** page, do the following:

1. Click the **Manage Workflow** link in the Navigation Bar.

- Click on **Tag Filters**. The **Tag Filter** page opens in the main window. ([Figure 4-3](#))

Tag Filters

Tag Filters

Filter Name	Number of Rules	Description
320_VOLUME_TDA	3	TagFilter for Clinical Protocol 320_VOLUME_PERFUSION
AUTO_ROUTING_TagFilter_For_Cardiac	1	Do not delete please
COLON	3	TagFilter for Clinical Protocol COLON
COLON_VP1000	3	TagFilter for Clinical Protocol COLON_VP1000
CT_CTA_SUBTRACTION	3	TagFilter for Clinical Protocol CT_CTA_SUBTRACTION
CTA_ABD_PELVIS	3	TagFilter for Clinical Protocol CTA_ABD_PELVIS
CTA_CARDIAC	3	TagFilter for Clinical Protocol CTA_CARDIAC
CTA_CHEST	3	TagFilter for Clinical Protocol CTA_CHEST
CTA_HEAD_NECK	3	TagFilter for Clinical Protocol CTA_HEAD_NECK
DUAL_ENERGY	3	TagFilter for Clinical Protocol DUAL_ENERGY
EP_LAB	3	TagFilter for Clinical Protocol EP_LAB
JW	1	Tag filter for Clinical protocol JW
LOW-DOSE_COLON	3	TagFilter for Clinical Protocol LOW-DOSE_COLON
LOW-DOSE_CTA_ABD_PELVIS	3	TagFilter for Clinical Protocol LOW-DOSE_CTA_ABD_PELVIS
LUNG	3	TagFilter for Clinical Protocol LUNG
MULTIPHASE_MR	3	TagFilter for Clinical Protocol MULTIPHASE_MR
SecondaryCaptures	1	
TagFilter_AbdomenLike	4	TagFilter_AbdomenLike
TagFilter_AdbomenLike	4	TagFilter AdbomenLike
TagFilter_AdbomenLike_42	3	TagFilter AdbomenLike
TagFilter_AdbomenLike_42_1	3	TagFilter AdbomenLike
TagFilter_AdbomenLike_42_2	3	TagFilter AdbomenLike
TagFilter_AdbomenLike_445	4	TagFilter AdbomenLike
TagFilter_AdbomenLike_446	4	TagFilter AdbomenLike
TagFilter_Colon	3	TagFilter Colon - Study description has colon

<< First < Prev 1 of 3 Next > Last >>

Add New Tag Filter
Edit
Delete

Figure 4-3 The Tag Filter page

This page allows the user to add, modify, and to delete tag filters and tag filter rules.

Adding a new tag filter

To add a new tag filter, do the following:

- Click the **Add New Tag Filter** button. This opens the form for creating new tag filters in the main window. ([Figure 4-4](#))

Figure 4-4 Add Tag Filter Page

2. Enter a tag filter name in the **Tag Filter** field (required). Optionally, enter a description in the **Description** field.
3. To add rules to the tag filter:
 - a. Click the **Add Rule** button. A new line of entry fields opens in the window. ([Figure 4-5](#))

Figure 4-5 Add Tag Filter Rule Page

- b. Select the DICOM tag from the Tag drop-down menu and the comparator from the middle drop-down menu. Then enter the value you want to test for in the Value box.
 - c. Continue to add rules until the tag filter specifies all the necessary conditions
4. When you are finished, click the **Save Tag Filter** button.

Modifying an Existing Tag Filter

1. Select a single tag filter name in the list and click the **Edit** button. (Alternatively, double-click the tag filter name in the list.) This opens the tag filter detail page. ([Figure 4-6](#))

Tag Filters

[Back](#)

Tag Filter

Filter Name:

Description:

Rules

	Tag		Value	
☐	BodyPart---TerareconTag	contains	Abdomen	AND
☐	ECG Gated---TerareconTag	is	No	AND
☐	Data Length (mm)---TerareconTag	larger than	100	AND
☐	Modality	is	CT	AND

Figure 4-6: Edit Tag Filter Page

2. Edit rules as needed.
3. Click the **Save** button.

Deleting a Tag Filter

1. Select a single tag filter or multiple tag filters.

Note: Use Shift+Left-click to select contiguous multiple tag filters. Use Ctrl+Left-click to select multiple tag filters one at a time (not necessarily contiguous).

2. Click the **Delete** button.
3. Click **OK** in the confirmation dialog to confirm deletion or **Cancel** to cancel the deletion.

Note: Deleting or modifying a tag filter may affect workflows such as auto routing, auto prefetch and advanced processing.

Clinical Protocols

Overview

A *clinical protocol*, as used in the context of the AquariusAPS administrative interface, is an association of tag filters, Processing Engines (PEs), and the automatic routing of datasets to their end destination. When

a dataset is pushed to AquariusAPS, the software examines the DICOM tags in the dataset, and, according to rules defined in the tag filters, decides which PEs (if any) to run on the dataset, and where to send the post-processed data files. The clinical protocol is designed to streamline the workflow by keeping the functions related to tag filters, PEs, and auto-routing together on a single page of the administrative interface.

The **Clinical Protocols** page allows the user to configure these associations. (Figure 4-7) The page consists of a list of all currently defined clinical protocols, as well as the tools for adding new protocols and modifying existing ones.

To display the **Clinical Protocols** page, do the following:

1. Click **Manage Workflow** in the Navigation Bar.
2. Click on the **Clinical Protocols** link. The Clinical Protocols page will appear in the main window.

Enabled	Priority	Clinical Protocol	Tag Filters	Processors	Routing Destination Nodes	Description
☒	Yes	Normal	AAA	- Mount Removal - CT Table - Bone Removal - Body	AQNETSQA3	
☐	Yes	Normal	COLON	- SphereFinder C - Colon Segmentation	AQNETSQA3	Segments colon and finds spherical objects; finds centerline for fly-through
☐	Yes	Normal	LOW-DOSE_CTA_ABD_PELVIS	- Volume Filter - Mount Removal - CT Table - Bone Removal - Body - Vessel Label - Abdomen - Vessel Label - Upper Legs - Centerline - Body	AQNETSQA3	Noise reduction; removes bone and CT table; finds centerlines for vessels; labels anatomy
☐	Yes	Normal	LUNG	- SphereFinder L - Lung Segmentation	AQNETSQA3	Segments lung and finds spherical objects
☐	Yes	Normal	WJ_Trigger	TagFilter_TDA	AqNET remote AE	Trigger TDA Map Processor

Protocol Name:

Description:

Priority:

Add New Protocol

Edit Associated Tag Filters Edit Associated Processors Edit Auto Routing Nodes

Figure 4-7 The Clinical Protocols Main Page

Enabling a Clinical Protocol

AquariusAPS is equipped with a set of default clinical protocols, which follow common workflows for various types of clinical studies. By default, these protocols are not enabled. This means that when a dataset is pushed to AquariusAPS, the workflow will not make use of them. To make a protocol available to incoming data, you must enable it.

To enable a clinical protocol:

1. Find the desired protocol in the **Clinical Protocols** list. If it is not visible, make sure the **Show Enabled Only** checkbox, located just above the list, is *unchecked*. (Circled, Figure 4-8) When this box is unchecked, all clinical protocols defined on the server are shown.

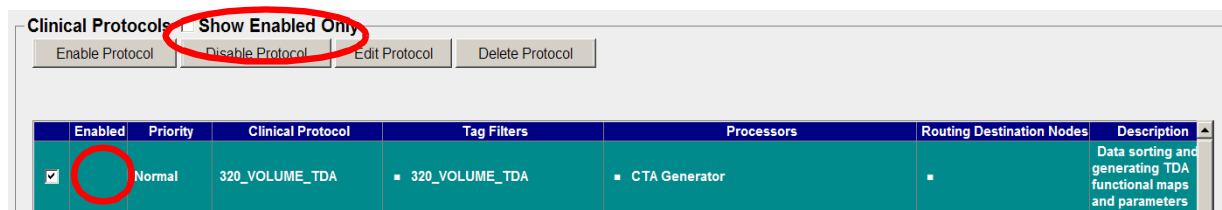
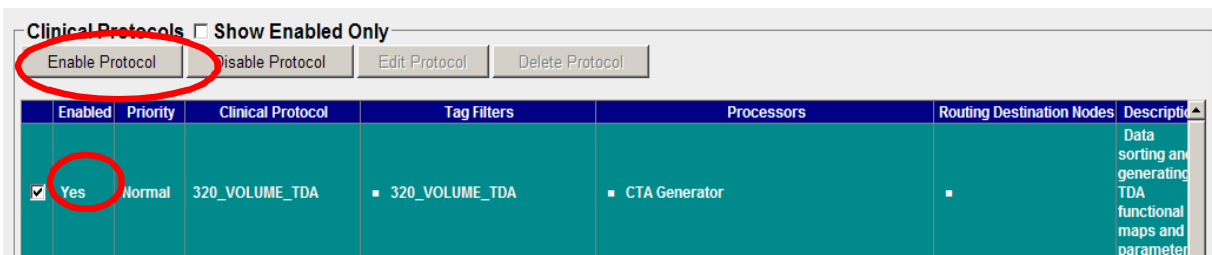


Figure 4-8 Enabling a Clinical Protocol

2. Select the protocol you want to enable. Note that the **Enabled** column for this protocol is blank.
3. Click the **Enable Protocol** button, at either the top or the bottom of the list. The **Enabled** column for this protocol changes to **Yes**.



To disable the protocol, select it and then click the **Disable Protocol** button.

Adding a New Clinical Protocol

You can add your own clinical protocols and design them to meet the requirements of your specific workflows. When you first add a new protocol, it is empty until you associate tag filters, processing engines, and routing nodes with it.

To add a clinical protocol:

1. Type in a name in the **Name** field at the top of the list. Optionally, type in a description of the protocol in the **Description** field.
2. From the drop-down menu, select the priority for triggering this clinical protocol. The priority controls the triggering of one clinical protocol over others. The values are Now, Emergency, High, Normal and Low. (See the following figure.)
3. Click **Add New Protocol**.

Clinical Protocols

Clinical Protocols ☐ Show Enabled Only

Enable Protocol Disable Protocol Edit Protocol Delete Protocol

Enabled	Priority	Clinical Protocol	Tag Filters	Processors	Routing Destination Nodes
☒	Normal	AAA		- Mount Removal - CT Table - Bone Removal - Body	AQNETSQA3
☐	Normal	COLON		- SphereFinder C - Colon Segmentation	AQNETSQA3
☐	Normal	LOW-DOSE-CTA-ABD-PELVIS	LOW-DOSE-CTA-ABD-PELVIS	- Volume Filter - Mount Removal - CT Table - Bone Removal - Body - Vessel Label - Abdomen - Vessel Label - Upper Legs - Centerline - Body - SphereFinder L - Lung Segmentation	AQNETSQA3
☐	Normal	LUNG		- SphereFinder L - Lung Segmentation	AQNETSQA3
☐	Normal	RU_Trigger	TagFilter_TDA	- AdiNET remote AIE - Trigger TDA	Processor

Enable Protocol Disable Protocol Edit Protocol Delete Protocol

Edit Associated Tag Filters Edit Associated Processors Edit Auto Routing Nodes

Protocol Name:

Description:

Priority: Normal

Add New Protocol

To add tag filters, processors and routing nodes, follow the instructions in the [Modifying an Existing Clinical Protocol](#) section.

Note: Once a clinical protocol is created, you cannot change its name. If you want to change the protocol name, create a new protocol with the new name, and assign it the same settings as the old protocol. You can then delete the old protocol.

Modifying an Existing Clinical Protocol

The editing tools for clinical protocols allow you to change the tag filters, processing engines, auto-routing, priority and description of a clinical protocol.

Edit Protocol Mode

In Edit mode, you can change the protocol's priority, description and enabled/disabled status.

Save Cancel

☒ Enable Normal AAA

- Mount Removal - CT Table
- Bone Removal - Body

- AQNETSQA3

To enter Edit mode, click the **Edit Protocol** button, located just above and just below the clinical protocols list.

Clinical Protocols

☒ Show Enabled Only

Enable Protocol Disable Protocol Edit Protocol Delete Protocol

Yes	Normal	AAA	Processors	Routing Destination Nodes	Description
☒	Yes	Normal	COLON	- Mount Removal - CT Table - Bone Removal - Body - AQNETSQA3	Segments colon and finds spherical objects. Finds centerline for by-diagnosis.
☒	Yes	Normal	LOW DOSE_CTA_ABD_PELVIS	- Volume Filter - Mount Removal - CT Table - Bone Removal - Body - Vessel Label - Abdomen - Vessel Label - Upper Legs - Centerline - Body - AQNETSQA3	Noise reduction: removes bone and CT table. Finds centerlines for vessels. Labels anatomy.
☒	Yes	Normal	LUNG	- Mount Removal - CT Table - Bone Removal - Body - Vessel Label - Abdomen - Vessel Label - Upper Legs - Centerline - Body - AQNETSQA3	Segments lung and finds spherical objects.
☒	Yes	Normal	VA_Trigger	Filter_TDA	Trigger TDA Map Processor

Protocol Name:

Description:

Priority:

Enable Protocol Disable Protocol Edit Protocol Delete Protocol

Add New Protocol

Clinical Protocols ☒ Show Enabled Only

Enable Protocol

Disable Protocol

Edit Protocol

Delete Protocol

- Change Priority

To change the priority, use the drop-down menu to select a different value.

Save

Cancel

☒ Enable Normal

AAA

Mount Removal - CT Table

Bone Removal - Body

AQNETSQA3

Priority:

Normal

Now

Emergency

High

Normal

Low

- Modify Description

Enter a new description in the Description text box.

Save

Cancel

☒ Enable Normal

AAA

Mount Removal - CT Table

Bone Removal - Body

AQNETSQA3

- Enable/Disable Protocol

Check or uncheck the box labeled **Enable** to enable or disable the clinical protocol.

Note: It is not necessary to enter Edit mode to enable or disable the protocol. You can simply select a protocol and use the Enable Protocol or Disable Protocol button to enable or disable the protocol, respectively. See ["Enabling a Clinical Protocol" on page 4-8](#) for more information.

Edit Associated Tag Filters

To change the associated tag filters in a clinical protocol, do the following:

1. Select the protocol you want to modify by clicking on it. The protocol is highlighted in green to indicate selection.
2. Click the **Edit Associated Tag Filters** button at the bottom of the screen. The list of currently defined tag filters on AquariusAPS is displayed below the edit buttons. Tag filters that are associated with the currently selected clinical protocol are highlighted. ([Figure 4-9](#))

Filter Name	Number of Rules	Description
TagFilter_Runoff	3	TagFilter for Runoff Clinical Protocol
TagFilter_MultiModalityRegistration	1	TagFilter for MultiModalityRegistration Clinical Protocol
TagFilter_Followup	1	TagFilter for Followup Clinical Protocol
TagFilter_MultiPhaseMR	1	TagFilter for MultiPhaseMR Clinical Protocol
TagFilter_DualEnergyBoneRemoval	0	TagFilter DualEnergyBoneRemoval
TagFilter_ECGGated	2	TagFilter ECGGated
TagFilter_HeartLike	4	TagFilter HeartLike
TagFilter_Runoff_42	3	TagFilter for Runoff Clinical Protocol
TagFilter_MultiPhaseMR_42	1	TagFilter for MultiPhaseMR Clinical Protocol
TagFilter_AbdomenLike	4	TagFilter AbdomenLike
TagFilter_RunoffLike	1	TagFilter RunoffLike
MULTIPHASE_MR	3	TagFilter for Clinical Protocol MULTIPHASE_MR
LUNG	3	TagFilter for Clinical Protocol LUNG
COLON	3	TagFilter for Clinical Protocol COLON
CT_CTA_SUBTRACTION	3	TagFilter for Clinical Protocol CT_CTA_SUBTRACTION
320_VOLUME_TDA	3	TagFilter for Clinical Protocol 320_VOLUME_PERFUSION
COLON_VP1000	3	TagFilter for Clinical Protocol COLON_VP1000
LOW-DOSE_COLON	3	TagFilter for Clinical Protocol LOW-DOSE_COLON
LOW-DOSE_CTA_ABD_PELVIS	3	TagFilter for Clinical Protocol LOW-DOSE_CTA_ABD_PELVIS
TagFilter_AbdomenLike	4	TagFilter AbdomenLike
DUAL_ENERGY	3	TagFilter for Clinical Protocol DUAL_ENERGY
JW	1	Tag filter for Clinical protocol JW

Figure 4-9 Edit Associated Tag Filters Page

3. Click the tag filters you want to add to the clinical protocol. When you click on a new tag filter, that one is highlighted in green to indicate selection. Previously selected tag filters are deselected at this time. To prevent this from happening, or to select more than one tag filter, hold down the **Ctrl** key while clicking on the new tag filters.
4. When all tag filters you want to associate with this protocol are selected, click the **Save** button.

Note: The modified protocol will contain only those tag filters that are selected at the time you click Save. That means that any tag filters previously associated with the protocol *will no longer be associated* if they are not selected when you click Save.

To create new tag filters or modify the rules of an existing tag filter, see ["Managing Tag Filters" on page 4-4](#).

Edit Associated Processors

1. Select the protocol you want to modify by clicking on it. The protocol is highlighted in green to indicate selection.
2. Click the **Edit Associated Processors** button at the bottom of the screen. A window containing two display panels opens. ([Figure 4-10](#)) The left panel contains the list of all available processors on AquariusAPS, and the right panel contains the list of processors currently associated with the clinical protocol.

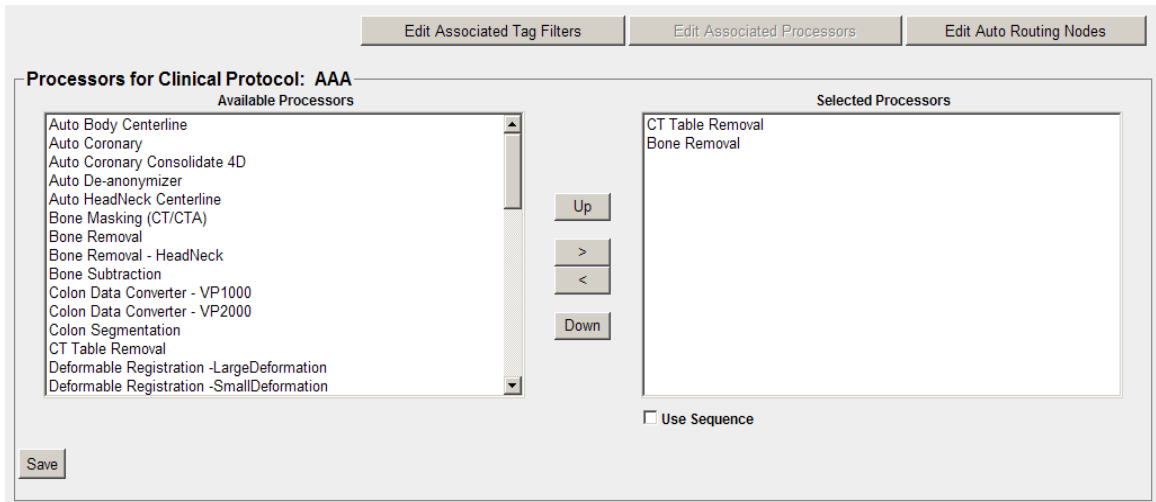


Figure 4-10 Edit Associated Processors Page

3. To add a processor, select its name from the list in the Available Data Processors (left) panel.
4. Click the right arrow button (located between the two panels), or simply double-click the processor name, to move that processor to the Selected Processors panel on the right. Any number of processors may be chosen from the Available Data Processors window and added to the right panel.
5. To remove a processor from this protocol, select its name from the list in the right panel, and click the left arrow to move it back to the left panel.
6. If the sequence in which the processing engines are applied to the data is *not* important, you can now skip down to Step 2.

When configuring two or more processing engines associated with one clinical protocol, you can determine the order in which these processes are performed, by checking the **Use Sequence** checkbox. This means that the **output** of one process engine in the sequence will be used as the **input** of the next process engine.

Important! This feature should be used **ONLY** with the MultiPhaseMR protocol. If you are processing any other protocol, this check box should **NOT** be checked.

To associate processing engines with the protocol in a specified order:

1. If the processors in the Selected Processors list are not already in the correct order, you can reorder them by selecting a processor name in the list and changing its location in the list, using the **Up** and **Down** buttons located between the two panels.
 - a. Check the **Use Sequence** box that appears just below the Selected Processors window.
2. When you are ready, click the **Save** button. The modified list of associated processors will appear in the Processors column of the clinical protocol.

Edit Associated Routing Nodes

To change the associated routing nodes in a clinical protocol, do the following:

1. Select the protocol you want to modify by clicking on it. The protocol is highlighted in green to indicate selection.
2. Click the **Edit Associated Routing Nodes** button at the bottom of the screen. The list of currently defined routing nodes (AEs) on AquariusAPS is displayed below the edit buttons. Routing nodes that are associated with the currently selected clinical protocol are highlighted in green. ([Figure 4-11](#))
3. Click the routing nodes you want to add to the clinical protocol. When you click on a new routing node, that one is highlighted in green to indicate selection. Previously selected routing nodes are deselected at this time. To prevent this from happening, or to select more than one routing node, hold down the **Ctrl** key while clicking on the new routing nodes.
4. When all routing nodes you want to associate with this protocol are selected, click the **Save** button.

Note: The modified protocol will contain only those routing nodes that are selected at the time you click Save. That means that any routing nodes previously associated with the protocol *will no longer be associated* if they are not selected when you click Save.

Logical Name	AE Title	Host Name	IP Address	Port	Description
AQGATE_AElocal	AQGATE_AE	AQGATE	172.16.51.92	105	Default host AE
AqNET remote AE	AUTOVOX	aqnetserver4.4	172.16.50.42	105	
AQNETSQA3	AQNETSQA3_AE	aqnetsqa3	172.16.50.146	105	
FromPrimary	AE_FromPrimary	AqNET_Primary	172.16.51.113	105	Remote Sync AE

Figure 4-11 Edit Associated Routing Nodes

Deleting a Clinical Protocol

To delete a clinical protocol from the list, select the protocol and then click the **Delete Protocol** button at the bottom of the list. ([Figure 4-7](#)) Confirm deletion by clicking **OK** in the confirmation dialog or click **Cancel** to cancel the deletion.

Auto Prefetch

Auto Prefetch is used to locate and retrieve prior studies automatically. AquariusAPS can be configured so that additional studies for the same patient (based on the Patient ID) are retrieved automatically after a study is received.

Prefetch patterns are rules that govern how much data to retrieve, from where, and under which conditions. Each prefetch pattern is shown on the web display as a single entry (row), and has three main parts:

- **The Tag Filter**
The tag filter applies specific DICOM tag-based criteria to the incoming data. Only data that pass the tag filter will generate a prefetch request. The tag filter is chosen from a list of previously defined tag filters.
- **The Query/Retrieve (QR) source DICOM node**
The QR Source DICOM node list specifies from which DICOM servers to attempt to locate and retrieve the additional studies. The node is chosen from a list of previously defined DICOM nodes.
- **Post Filter Options**
The post filter options dictate how much (and what kind) of data to retrieve. They can be used to limit the modality, age and number of studies retrieved.

Managing the Prefetch Pattern

To bring up the **Auto Prefetch** page, do the following:

1. Click on the **Manage Workflow** link.
 - a. Click on the **Auto Prefetch** link. The **Auto Prefetch** page displays as shown in [Figure 4-12](#).
 - b. Prefetch patterns can be added, modified and deleted.

The screenshot shows the 'Auto Prefetch' page. At the top, there are 'Add' and 'Clear' buttons. Below them is a table titled 'Prefetch Rules'. The table has columns for Tag Filter, QR Source DICOM Node, C-Move Target AE Title, Modalities to Fetch, Fetch Studies Not Older than (with sub-columns for # and Unit Type), Max Study Results, and Patient Match Options (with sub-columns for Type and Birth Date). A single rule is listed with a delete icon (X) in the first column. Below the table are 'Add Rule' and 'Clear All' buttons. At the bottom of the page is a 'Save' button.

Tag Filter	QR Source DICOM Node	C-Move Target AE Title	Modalities to Fetch	Fetch Studies Not Older than		Max Study Results	Patient Match Options			
				#	Unit Type		Type	Birth Date		
✕ TagFilter_Colon	AQNETSQA3	Edit	SAME_AS_INCOMING	ALL	Edit	3	Months	3	Patient ID	No

Buttons: Add Rule, Clear All, Save

Figure 4-12 The Auto Prefetch Page

Adding a new prefetch pattern rule

1. Click the **Add Rule** Button. This opens the popup dialog for adding a prefetch rule. ([Figure 4-13](#))

Filter Name	Number of Rules	Description
320_VOLUME_TDA	3	TagFilter for Clinical Protocol 320_VOLUME_PERFUSION
AUTO_ROUTING_TagFilter_For_Cardiac	1	Do not delete please
COLON	3	TagFilter for Clinical Protocol COLON
COLON_VP1000	3	TagFilter for Clinical Protocol COLON_VP1000
CT_CTA_SUBTRACTION	3	TagFilter for Clinical Protocol CT_CTA_SUBTRACTION
CTA_ABD_PELVIS	3	TagFilter for Clinical Protocol CTA_ABD_PELVIS
CTA_CARDIAC	3	TagFilter for Clinical Protocol CTA_CARDIAC
CTA_CHEST	3	TagFilter for Clinical Protocol CTA_CHEST
CTA_HEAD_NECK	3	TagFilter for Clinical Protocol CTA_HEAD_NECK
DUAL_ENERGY	3	TagFilter for Clinical Protocol DUAL_ENERGY
EP_LAB	3	TagFilter for Clinical Protocol EP_LAB
JW	1	Tag filter for Clinical protocol JW
LOW-DOSE_COLON	3	TagFilter for Clinical Protocol LOW-DOSE_COLON
LOW-DOSE_CTA_ABD_PELVIS	3	TagFilter for Clinical Protocol LOW-DOSE_CTA_ABD_PELVIS
LUNG	3	TagFilter for Clinical Protocol LUNG
MULTIPHASE_MR	3	TagFilter for Clinical Protocol MULTIPHASE_MR
SecondaryCaptures	1	
TagFilter_AbdomenLike	4	TagFilter_AbdomenLike
TagFilter_AdbomenLike	4	TagFilter_AdbomenLike
TagFilter_AdbomenLike_42	3	TagFilter_AdbomenLike
TagFilter_AdbomenLike_42_1	3	TagFilter_AdbomenLike
TagFilter_AdbomenLike_42_2	3	TagFilter_AdbomenLike
TagFilter_AdbomenLike_445	4	TagFilter_AdbomenLike
TagFilter_AdbomenLike_446	4	TagFilter_AdbomenLike
TagFilter_Colon	3	TagFilter_Colon - Study description has colon

<< First < Prev 1 of 3 Next > Last >>

Logical Name	AE Title	Host Name	IP Address	Port	AE Type	Description
AQNETSQA3	AQNETSQA3_AE	aqnetsqa3	172.16.50.146	105	AQUARIUSNET	

Ok Cancel

Figure 4-13 Add Prefetch Rule Page

2. Select one tag filter and one or more QR source DICOM nodes in the dialog.
3. Click OK.

Modifying an existing prefetch pattern rule

1. To modify the QR source node specification, click the **Edit** button next to it, select one or more QR sources nodes from the popup dialog, and click **OK**.
2. To modify the modalities, click the **Edit** button, select the desired modality in the popup dialog and click **OK**. (Figure 4-14)

Modalities	
☐	Same as from incoming study
☒	All
☐	Others

Ok Cancel

Figure 4-14 Prefetch Edit Modality

3. Modify the other options as desired.
4. Click the **Save** button.

Deleting an existing prefetch pattern rule

1. To remove one row from the list, click the "X" image button on that row.
2. To remove all rows from the list, click the **Clear All** button.
3. Click **Save** when done.

Auto Routing

Auto Routing is used optionally in the stand-alone AquariusAPS system, to push *raw* data to the destination AE. Auto Routing can be configured to push raw data in the case of processing failure, or because the user needs to see both raw and post-processed data.

A routing pattern is a collection of individual routes, each of which links a tag filter and a remote AE with specific compression parameters. AquariusAPS supports three types of compression methods: **As Is**, **Uncompressed**, **LosslessJ2K**, and **LossyJ2K**. Expect approximately a 4:1 compression ratio for losslessJ2K with a typical CT image. When lossyJ2K is used, the desired compression ratio can be specified.

Note: Before getting to this point, all of the desired local AEs, tag filters, and remote AEs must have already been defined (see above for instructions).

A routing schedule is used to specify what times during the week each routing pattern is in effect. A schedule covers the entire week. Within each day, multiple time slots can be assigned, based on start time and end time. Time input format is **hh:mm**. An hour is represented by an integer from 0 to 23.

IntuitionThinClient_Default_7x24 is the default schedule and will be associated with a new pattern by default.

Basic Auto Routing

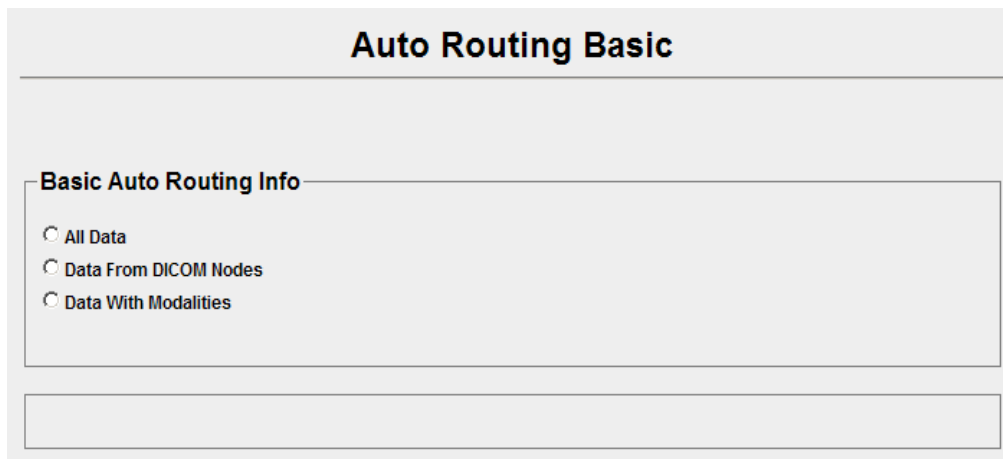


Figure 4-15 The Auto Routing Page

Click on the **Auto Routing Basic** link in the Navigation Bar. The **Auto Routing Basic** page is displayed in the main window. ([Figure 4-15](#))

AquariusAPS offers three options for basic auto routing: **All Data**, **Data from DICOM Nodes**, and **Data with Modalities**. These can be selected by clicking the corresponding radio button.

Note: The list of remote DICOM nodes that are allowed to push to the AquariusAPS host, as well as destination nodes that can receive data from AquariusAPS, are specified in the DICOM Node page. See [Chapter 3 "Managing DICOM Nodes"](#) for more information.

Routing All Data

Selecting **All Data** directs the AquariusAPS system to push all data to the selected DICOM nodes.

The All Data screen is displayed. The **Routing Destination Nodes** list contains all current routing destination nodes. (Figure 4-16)

Auto Routing Basic

Basic Auto Routing Info

☒ All Data
☐ Data from DICOM Nodes
☐ Data with Modalities

Click row below to edit

Routing Destination Node
■ AQNET25_AE

Figure 4-16 Auto Routing All Data

To edit the All Data basic auto-routing, do the following:

1. Click on one or more nodes in the **Routing Destination Node** list. A second list (the **Destination Nodes** list), containing all DICOM nodes available to the server, is displayed in [Figure 4-17](#).

Basic Auto Routing Info

☒ All Data
☐ Data From DICOM Nodes
☐ Data With Modalities

Click row below to edit

Routing Destination Node
■ FromPrimary

Destination Nodes

Logical Name	AE Title	Host Name	IP Address	Port	AE Type	Description
AQGATE_AElocal	AQGATE_AE	AQGATE	172.16.51.92	105	AQUARIUSAPS	Default host AE
AqNET remote AE	AUTOVOX	AqNET Server	172.16.51.147	105	AQUARIUSAPS	
AQNETSQA3	AQNETSQA3_AE	aqnetsqa3	172.16.50.146	105	AQUARIUSNET	
FromPrimary	AE_FromPrimary	AqNET_Primary	172.16.51.147	105	AQUARIUSAPS	Remote Sync AE

Save

Figure 4-17 Edit All Data

2. Select one or more nodes from the **Destination Nodes** grid.
Use **Shift+Left-click** to select multiple contiguous nodes.

Use **Ctrl+Left-click** to select multiple nodes that are not contiguous.
3. Click **Save**. The modified nodes will be reflected in the **Routing Destination Nodes** list.

Routing Data According to the DICOM Node

Routing from DICOM nodes allows you to specify auto-routing according to which DICOM nodes the data comes from.

Selecting the **Data from DICOM Nodes** radio button brings up the list of all available DICOM nodes. (Figure 4-18)

Basic Auto Routing Info

☐ All Data
☒ Data From DICOM Nodes
☐ Data With Modalities

Click row below to edit

Logical Name	AE Title	Host Name	IP Address	Port	AE Type	Description	Routing Destination Node
AqNET remote AE	AUTOVOX	aqnetserver4.4	177.16.50.47	105	AQUARIUSNET		■
aqnet01-AQNET	aqnet01-AQNET	AqNET01	177.16.51.37	104	AQUARIUSNET	Default SCU AE	■
AQNETSQA3	AQNETSQA3_AE	aqnetsqa3	177.16.50.146	105	AQUARIUSNET		■
AUTOVOXT5400LAN1	AUTOVOX	T5400LAN1	177.16.51.97	105	AQUARIUSNET		■
Intuition481	INTUITION481_AE	Intuition481	177.16.51.71	105	AQUARIUSNET		■
intuition81-1-AQ	intuition81-1-AQ	Intuition81-1	177.16.51.36	104	AQUARIUSNET	Default SCU AE	■
SQAAPS	SQAAPS_AE	SQAAPS	177.16.51.81	105	AQUARIUSAPS		■

Figure 4-18 Routing from DICOM Nodes

To edit the data from DICOM nodes, do the following:

1. Select a single row from the list of nodes. All possible destination nodes are displayed in a second list below it.
2. Select one or more rows from the **Destination Nodes** list.
Use **Shift+Left-click** to select multiple contiguous nodes.

Use **Ctrl+Left-click** to select multiple nodes that are not contiguous.

3. Click the **Save** button.

Routing Data According to the Modality

Routing with Modalities allows you to specify auto-routing according to the modality of the data. Incoming data matching that modality will be pushed to the destination specified.

Selecting the **Data with Modalities** radio button brings up the list of all supported modalities. (Figure 4-19)

Basic Auto Routing Info

☐ All Data
☐ Data From DICOM Nodes
☒ Data With Modalities

Click row below to edit

Modality	Routing Destination Node
CT	AQNETSQA3
DX	
MG	
MR	
NM	
PT	
OT	
RF	
SC	
US	
XA	
XF	

Destination Nodes

Logical Name	AE Title	Host Name	IP Address	Port	AE Type	Description
AQGATE_AElocal	AQGATE_AE	AQGATE	172.16.51.92	105	AQUARIUSAPS	Default host AE
AqNET remote AE	AUTOVOX	aqnetserver4.4	172.16.50.42	105	AQUARIUSNET	
AQNETSQA3	AQNETSQA3_AE	aqnetsqa3	172.16.50.146	105	AQUARIUSNET	
FromPrimary	AE_FromPrimary	AqNET_Primary	172.16.51.113	105	AQUARIUSAPS	Remote Sync AE

Save

Figure 4-19 Routing with Modalities

1. Select a single modality from the list. All possible destination nodes are displayed in a second list below it.
2. Select single/multiple rows from the Destination Nodes list.
Use **Shift+Left-click** to select multiple contiguous nodes.

Use **Ctrl+Left-click** to select multiple nodes that are not contiguous.
3. Click the **Save** button. The selected destination nodes will be listed in the Destination Nodes column for that modality.

Advanced Auto Routing

An advanced auto routing pattern is a set of rules that governs which studies, destinations, and compression methods to use when routing studies. Advanced auto-routing automatically pushes studies which pass specified tag filters to specified Remote DICOM Nodes, using the compression method and factor specified in the routing pattern rules.

Each routing pattern contains a unique pattern name and one or more rules. Each rule contains one tag filter, one remote DICOM node, a compression method and a compression factor (when appropriate). The *combination* of the tag filter and routing destination node must unique among rules within the same routing pattern.

To access advanced auto routing, click the **Auto Routing Advanced** link in the Navigation Bar. The **Advanced Auto Routing** page is displayed. ([Figure 4-20](#))

Auto Routing Advanced

Routing Pattern

Pattern Name	Number of Rules
	1
cardiac	1
cta	0
Flythrough	1
Runoff	1
SecondaryCaptures	1

Figure 4-20 Auto Routing Advanced Page

Add a New Pattern

1. Click the **Add New Pattern** button. An empty new pattern form is displayed. ([Figure 4-21](#))

Auto Routing Advanced

[Back](#)

Routing Pattern

Pattern Name			
Rules			

Figure 4-21 Auto Routing Advanced - Add New Pattern

2. Enter a unique pattern name.
3. Add the desired rules to the pattern, by doing the following for each rule:
 - a. Click **Add Rule**. The **Routing Rule** screen is displayed. ([Figure 4-22](#))

Routing Rule

Tag Filter*

	AE Title or AE Group Name	Type
☐	AE_FromPrimary	
☐	AQGATE_AE	
☐	AQNETSQA3_AE	
☐	AUTOVOX	

Routing Destination Node

Compression Method

Compression Factor

☐ Send Group Info

Figure 4-22 Add New Pattern Entry

- b. Select a tag filter from the drop-down menu.
 - c. Click one or more destination nodes by checking the desired check boxes.
 - d. If applicable, select a compression method from the drop-down menu.
 - e. Enter the compression factor in the field. (This field is relevant for **LossyJ2K** compression only.)
 - f. Check **Send Group Info** to include user group information with the data.
 - g. Click **Save** when pattern rule is complete.
 - h. Continue creating patterns until all requirements are satisfied.
4. When all pattern entries are completed, click **Save** to save the pattern.

Modify an Existing Pattern

To modify an existing auto-routing pattern, select a single pattern from the list and click the **Edit** button. The complete pattern with all rules is displayed. These can be modified using the same steps used to create new patterns. Fields marked with "*" are required. Click **Save** when finished.

Delete an Existing Pattern

1. Select one or more routing patterns.
2. Click the **Delete** button.
3. Click **OK** button to confirm deletion or **Cancel** to cancel deletion.

Auto Routing Schedule

Auto Routing Schedule allows you to link auto routing to a schedule, so that data will be pushed at pre-defined times.

Click the **Auto Routing Schedule** link in the Navigation Bar to display the sub-menu beneath it:

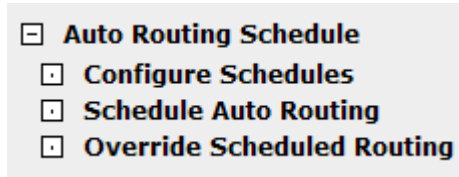


Figure 4-23 Auto Routing Schedule Sub-Menu

Configuring Schedules

To configure schedules, click the **Configure Schedules** item in the **Auto Routing Schedule** sub-menu. This opens the **Routing Schedules** page in the main window. ([Figure 4-24](#))

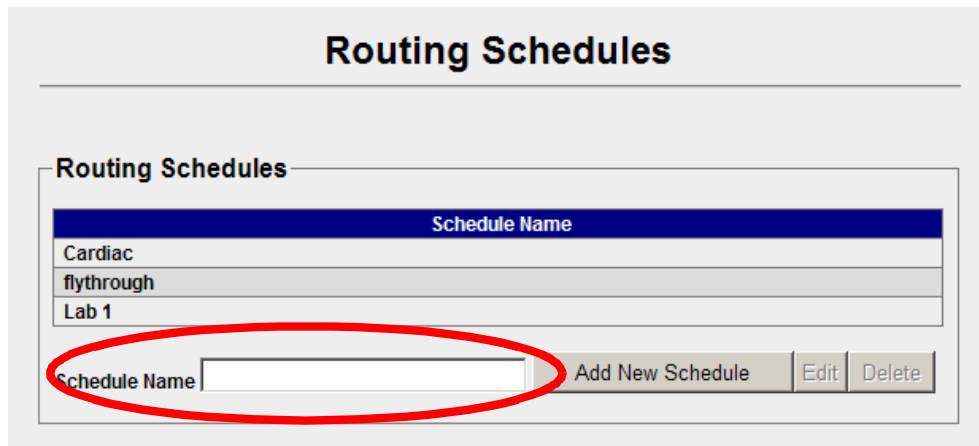


Figure 4-24 The Routing Schedules Page

Add a New Routing Schedule

1. Enter a schedule name in the **Schedule Name** field. (Circled, [Figure 4-24](#))
2. Click the **Add New Schedule** button. The newly created schedule name appears in the **Routing Schedules** list.
3. Click on the new schedule name and then click the **Edit** button. ([Figure 4-25](#))

Routing Schedules

Schedule Name
Cardiac
flythrough
Lab 1

Schedule Name

Figure 4-25 New Schedule Added

4. An empty schedule appears below the **Routing Schedules** list. You can now add time ranges to each day to configure the schedule. See the next section, [Time Ranges](#), for instructions.

Routing Schedules

Routing Schedules

Schedule Name
Cardiac
flythrough
Lab 1

Schedule Name

Time Ranges: Cardiac

SUN	MON	TUE	WED	THU	FRI	SAT
Start - End	Start - End	Start - End	Start - End	Start - End	Start - End	Start - End
Add Clear	Add Clear	Add Clear	Add Clear	Add Clear	Add Clear	Add Clear

Time Range: -

Figure 4-26 New Schedule

Time Ranges

- To add a time range, click the **Add** button under the desired day. A blank time range is added to that day. ([Figure 4-27](#)) Then enter the desired start and end times for that range, using a 24-hour format (00:00 - 23:59).

Figure 4-27 Time Range Input Boxes

- To remove a time range, click the **X** button next to the time range.
- To clear the schedule for a particular day, click the **Clear** button for the applicable day. To clear the entire schedule, click the **Clear All** button located in the bottom-right corner of the screen.
- To add the same time range to all days, enter the desired time range into the two text boxes at the bottom of the **Routing Schedule** page, and then click the **Add to All** button. ([Figure 4-28](#))

Figure 4-28 Add to All Text Input Boxes

Deleting a Schedule

1. Select the desired schedule to be deleted from the Routing Schedules list.
2. Click the **Delete** button located just below the list.
3. Click **OK** to confirm deletion, or **Cancel** to cancel the deletion.

Click the **Save** button (located at the bottom of the screen) when you are finished configuring the schedule.

Schedule Routing

A *routing schedule* associates a schedule (or schedules) with a routing pattern. The *routing time frame* of a routing schedule refers to the dates on which the routing schedule is active.

Attributes of a routing schedule include a start date, an end date, and a repeat option (once or weekly).

To create a routing schedule, click the **Schedule Routing** link in the Navigation Bar. The Auto Routing Schedule Manage page is displayed. ([Figure 4-29](#))

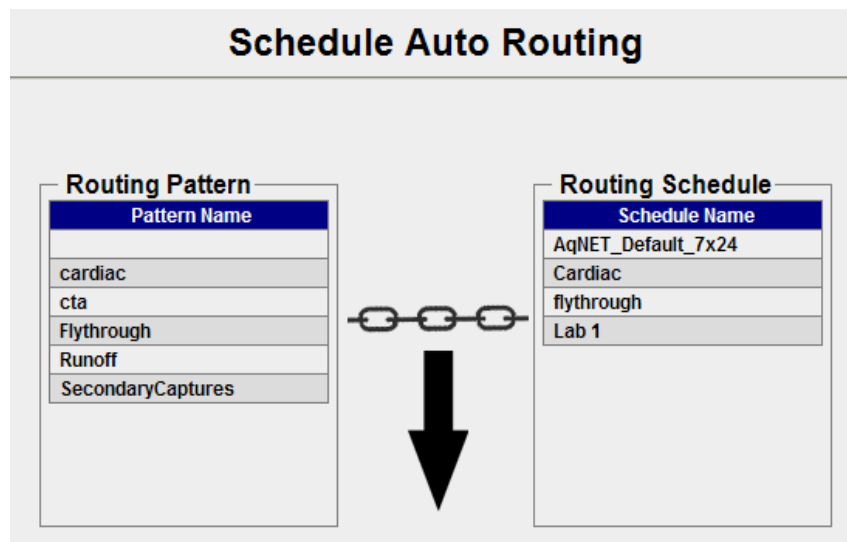


Figure 4-29 Auto Routing Link Schedule To Pattern

To link a routing pattern to a schedule:

1. Select a pattern from the Routing Pattern list.
2. Select a schedule from the Routing Schedule list. The **Create a Routing Time Frame** window is displayed. ([Figure 4-30](#))

Schedule Auto Routing

Routing Pattern

Pattern Name
cardiac
cta
Flythrough
Runoff
SecondaryCaptures




Routing Schedule

Schedule Name
AqNET_Default_7x24
Cardiac
flythrough
Lab 1

Active Routing Date Range [cta] and [AqNET_Default_7x24]

Repeat	Start Date	End Date
There are no defined active date range rules.		

Add Rule
Clear All

Save

Figure 4-30 Create a Routing Time Frame Window

To create a routing time frame for the two selected items:

1. Click the **Add Rule** button to add a time frame entry to the grid.

Active Routing Date Range [cta] and [AqNET_Default_7x24]

Repeat	Start Date	End Date
☒ X ☐ Once ☒ Weekly		

Add Rule
Clear All

Save

2. If a starting and ending dates are desired, enter the start date and end date into the corresponding boxes. To create an ongoing routing schedule, leave the start and end dates blank. You can click the calendar icon to the right of each date input box for a convenient way to enter the date.

Active Routing Date Range [cardiac] and [Cardiac]

Repeat	Start Date	End Date	
☒ Once ☐ Weekly			Clear

March, 2013

Su	Mo	Tu	We	Th	Fr	Sa
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Today: March 8, 2013

Clear All

Note: If you entered a date in error, click the *Clear* link at the right end of the row (circled in the previous image).

3. Select a **Repeat** option (**Once** or **Weekly**).
4. Click the **Save** button when done.

Notes

- The start date entered must not be later than the end date.
- A schedule can be associated with one or more routing patterns, or none.
- A routing pattern is treated as inactive if it has no associated schedule.
- A routing schedule can be overridden.

Auto Routing Schedule Override

The **Auto Routing Schedule Override** page allows you to suspend the scheduled auto routings temporarily, without requiring any other modifications.

Click **Override Scheduled Routing** in the Navigation Bar to open the **Auto Routing Schedule Override** page. ([Figure 4-31](#))

Override Scheduled Routing

Routing Patterns

Pattern Name	Status	End Date
All Data Based auto routing pattern		
APS outputs routing pattern		
cardiac		
cta		
Flythrough		
Modality Based auto routing pattern		
Runoff		
SecondaryCaptures		

End Date: 

Figure 4-31 Auto Routing Schedule Override Page

Overriding Scheduled Auto Routing Patterns

1. Select one or more routing schedules from the list.
2. Input the end date into the text box; auto routing suspension begins on the current date. Leaving the end date blank suspends the auto routing schedule indefinitely.

Note: If you need to suspend most of your routing schedules, you can select those schedules you wish to remain active and mark the Suspend All Routing Patterns Except Selected checkbox.

3. Click the **Save** button.

Note: Suspended routing schedules will become valid again after the end of the specified day, if they were suspended here.

Processors

Topics in this section:

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Auto Annotation Manager 4-34

Auto Anonymizer 4-37

Bone Masking 4-44

Dual Energy Blender 4-44

SphereFinderL 4-46

Subtraction 4-47

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The Processors list allows you to configure settings for specific processor engines. You can configure or modify settings for the processors listed below.

Auto Batch

The AutoBatch function is used to generate reformatted images automatically, when scan data is pushed to AquariusAPS. This way, time is not wasted at a scanner generating these reformatted images.

Auto Batch also provides automatic batch functions on AquariusAPS that are similar to the Batch 2D functions provided by the Intuition Thin Client or Intuition Client 3D Viewer. You can specify the range, angle, rendering mode and other parameters, as you would in the 3D viewers.

An Auto Batch processor is treated by AquariusAPS like any other processor engine. It can be associated with tag filters and used in Clinical Protocols.

Auto Batch

Auto Batch Processor

Processor Name	Direction	Image Order	Interval (mm)	Thickness (mm)	Rendering Mode	Size	Isotropic	First Slice	End Slice	Trim Empty	Skip Start	Skip End	Series #	Series Number Increment	Series Description	Auto Batch Description
JW Bone	Coronal	A -> P	0	1	MPR	Original	Yes	0%	100%	Yes	10%	10%	300	Yes		

Add

Edit

Delete

Figure 4-32 Auto Batch Screen

Creating an AutoBatch Processor

To create a new Auto Batch processor, click the **Add** button. The Auto Batch Processor screen is displayed.

Auto Batch Processor

[Back](#)

Auto Batch Processor

Name	JW Bone
Auto Batch Description	
Processor Mode	☒ Auto Batch ☐ Auto Average
Direction	☒ Coronal ☐ Sagittal ☐ Axial
Image Order	☒ A → P ☐ P → A
Distance Between Images (mm)	0
Thickness (mm)	1
Rendering Mode	☒ MPR ☐ MIP ☐ MiniP ☐ Average
Size	☒ Original Size ☐ Custom Size 512
Isotropic	☒ Yes ☐ No
First Slice (% of total)	0
Last Slice (% of total)	100
Trim Empty	☒
Skip Start (% of total reformat images)	10
Skip End (% of total reformat images)	10
Series #	300
Series Number Increment	☒
Series Description	

Save

Figure 4-33 Add New Auto Batch Processor

1. Enter the parameters according to the descriptions in the following table.

Table 4.1 Parameters and Descriptions

Parameter	Description	Default Value
Name	The name of the batch processor	N/A
Description	Optional. Add a description of this processor, if desired.	N/A
Processor Mode	Auto Batch or Auto Average. If Auto Batch is selected, the input screen appears as shown in Figure 4-33 . If Auto Average is selected, the input screen appears as shown in x. See "Auto Average Mode" on page 4-33 for a description of that screen.	AutoBatch
Direction	The direction of the reformatted image (Coronal, Sagittal or Axial).	Coronal
Image Order	The order of the slices, which depends on the Direction. Coronal - batch slices go in A->P or P->A order. Sagittal - batch slices go in R->L or L->R order. Axial reformat - batch slices go in F->H or H->F order.	A->P if Coronal; R->L if Sagittal; F->H if Axial
Distance Between Images	The distance (in mm) between the centers of two reformatted images.	0 mm
Thickness	The coverage (in mm) of the reformatted image.	1 mm
Rendering Mode	MPR, MIP, MinIP or Average.	MPR
Size	The size of each reformatted image. Original size - The size of each image is decided by the smaller resolution in the reformatted image. Custom size - The size of each image is decided by the larger coverage in the reformatted image. Enter the desired size in the text box.	Original Size
Isotropic (Yes/No)	If yes, the image has the same pixel resolution in both the x and y directions.	Yes
First Slice (% of total)	The start position on the original axial scan. For example, if the axial scan has 400 images and the first slice is 20%, then the starting slice in the reformatted image is 80.	0%
Last Slice (% of total)	The final position on the original axial scan.	100%
Trim Empty Slices	If checked, slices that contain no data are not reformatted.	Enabled (checked)
Skip Start	Defines the start of the reformatted data (percentage of total).	0%
Skip End	Defines the end of the reformatted data (percentage of total).	0%
Series Number	Defines which series number will be used for the batch series generated by the Auto Batch processor.	300

Parameter	Description	Default Value
Series Number Increment	When checked, the generated series number is set to the number entered in the Series Number field above, added to the series number from the original scan of the dataset. When not checked, the generated series number is defined as the Series Number entered above.	Enabled (checked)
Series Description	Optional description of the series generated by the Auto Batch processor.	N/A

2. When you are finished, click the **Save** button.

The AutoBatch processor you have created is added to the available processors. You can then associate this engine to any Clinical Protocol.

Auto Average Mode

The Auto Batch processor has a separate mode called Auto Average. Select Auto Average mode by checking the appropriate radio button (circled below).

The screenshot shows the 'Auto Batch Processor' configuration window. At the top, there is a 'Back' link. Below it, the title 'Auto Batch Processor' is displayed. The form contains several input fields: 'Name', 'Auto Batch Description', 'Processor Mode', 'Slice Limit', 'Series #', 'Series Number Increment', and 'Series Description'. The 'Processor Mode' section has two radio buttons: 'Auto Batch' and 'Auto Average'. The 'Auto Average' radio button is selected and circled in red. The 'Slice Limit' field is set to 100, and the 'Series #' field is set to 300. The 'Series Number Increment' checkbox is checked. A 'Save' button is located at the bottom right of the form.

Figure 4-34 Auto Average Input Screen

Input Parameters are shown in Table 4.2.

Table 4.2 Auto Average Mode Input Parameters

Parameter	Description	Default Value
Slice Limit	The limit to the number of images allowed in the output series.	100
Series Number	Defines which series number will be used for the batch series generated by the Auto Batch processor.	300
Series Number Increment	When checked, the generated series number is set to the number entered in the Series Number field above, added to the series number from the original scan of the dataset. When not checked, the generated series number is defined as the Series Number entered above.	Checked
Series Description	Optional description of the series generated by the Auto Batch processor.	N/A

Auto Annotation Manager

Auto Annotation marks the positions of candidates found by other PEs such as iCAD Colon, MedicSight Lung, MedicSight Colon, SphereFinderL or SphereFinderC. The processor creates an additional series that contains circles embedded in the images, indicating the position of each candidate.

Auto Annotation

Auto Annotation

Processor Name	Marker	Sensitivity Rules	Description
spherefinderL	Solid Line, 15mm radius	Sensitivity[0] Series#[3000] Increment:[0] SeriesDescription:[]	

Adding an Auto Annotation Processor

Click the **Add** button on the main page. The add processor page is displayed. ([Figure 4-35](#))

Figure 4-35 Auto Annotation - Add Button

3. Select a processor whose candidates this processor will search for. The options are listed in the drop-down menu:

4. Enter a name for the new processor in the **Processor Name** input box.
5. If desired, enter a description in the **Description** input box.
6. Select the appearance of the candidate marker (Solid Line or Dotted Line) from the **Marker Type** options.
7. Enter the size (radius) of the marker. The default value is 15 mm.
8. Click the **Add Sensitivity Rule** button to add one or more sensitivity rules. You can add as many rules as needed. For a description of each field in a sensitivity rule, see ["Sensitivity Rules" on page 4-36](#).
9. Click **Save** when finished.

In the example presented here, the Auto Annotation processor named "icad" will scan the output of the iCAD Colon processor and will embed its own markers in locations where iCAD Colon found candidates. (See the following image.)

Auto Annotation

[Back](#)

Auto Annotation

Processor to Use: iCAD Colon

Processor Name:

Description:

Marker Type: ☒ Solid Line ☐ Dotted Line

Marker Radius (mm):

	Sensitivity	Series Number	Series Description	Increment Series
Delete	0	3000		☐

Sensitivity Rules

The following is a description of each value in a sensitivity rule.

	Sensitivity	Series Number	Series Description	Increment Series
Delete	0	3000		☐

Sensitivity - Refers to how easily a candidate is included by the PE, as well as the confidence level that any of the candidates will be considered a finding. A low sensitivity value means that more candidates are included, but for each candidate, the confidence is lower that the candidate will be determined to be a finding. A high sensitivity value means that fewer candidates are included, but for each candidate, confidence is higher. Values range from 0 to 1. A value of 0 tells the PE that all candidates should be included.

Series Number - Auto Annotation creates a new series containing its findings. This number is displayed in the **Series #** column of the Series List in an Intuition Client or Intuition Thin Client viewer.

Series Description - This is an optional field. The description will appear in the Series List in the **Description** column. If you leave this field empty, a default description containing sensitivity information will be entered automatically.

Increment Series - When this is enabled, the series number of the new series is obtained by adding the original scan series number to the **Series Number** entered in this rule. This eliminates potential conflict when multiple auto annotation series are created for the same study which share the same series number.

For example, suppose a study contains two series, series #10 and series #11. Each original series generates an auto annotation series. If you enter 400 in the **Series Number** field and also enable the **Increment Series** feature, the generated series will be assigned the numbers 410 and 411, respectively.

Auto Anonymizer

The AquariusAPS Auto-Anonymizer processing engine automates the anonymization of clinical studies. The processor's algorithms are based on user-defined rules governing the naming, numbering, time-stamping and assigning of other attributes to the anonymized data. The auto-anonymizer algorithms comply with privacy regulations and clinical trial criteria. They adhere to the DICOM standard and support de-anonymization.

AquariusAPS keeps a permanent report of all anonymized cases. The report can be reviewed, searched and downloaded using this interface.

Figure 4-36 Auto Anonymizer Main Page

The Auto Anonymizer Processor List

This list is displayed in the top half of the screen. It shows all auto-anonymizer processors that have been created on this AquariusAPS server.

The Anonymized List

This list is displayed in the bottom half of the Auto Anonymizer page. It displays every anonymization (and de-anonymization) event that has occurred on this AquariusAPS server.

From this interface, you can:

- Switch between displaying the anonymized event list or de-anonymized event list.
- Sort by anonymized patient ID, name, original patient ID, name, study date, study description, series number and series description.
- Perform a search based on any of the above fields.
- Download either the entire event list or only certain events based on searching criteria.

- Mark events as obsolete. If you need to anonymize the same data more than once (for example, if an error occurred the first time), the event for data anonymized earlier is not removed and will be obsolete. To mark that event as obsolete, first select the desired event from the event list:
 - Exclude Obsolete Events - Obsolete events are not displayed.
 - Just Obsolete Events - Only obsolete events are displayed.
 - Show all events.

Then click the **Mark Obsolete** button.

- Unmark events as obsolete - When displaying events that have been marked obsolete (when either Just Obsolete Events or Show All Events is selected), a button is shown (Unmark Obsolete), which allows you to unmark the event so that it is no longer obsolete.

Adding a New Auto Anonymizer Processor

From the main page, click the **Add** button. The Add screen is displayed. This screen allows you to create and add a new Auto-Anonymizer Processor Engine.

Description of Fields

Name

Name of the auto anonymizer processing engine (PE). This field is required.

Description

Description of the auto anonymizer PE.

Use New Patient Name/ID

Use a new patient name and ID.

Use New Patient ID

Use a new patient ID and keep the original patient name from the scan data.

Use New Patient Name

Use a new patient name and keep the original patient ID from the scan data.

Use File

Use the patient name or ID specified in an imported file. To see detailed instructions for using this feature, see ["File-Based Anonymizer" on page 4-41](#).

Values of Tags Used as New Patient ID Prefix

Specify DICOM tags whose values will be used as a prefix for the new Patient ID.

Values of Tags Used as New Patient Name Prefix

Specify DICOM tags whose values will be used as a prefix for the Patient Name.

New Patient ID Prefix

Specify a prefix for the anonymized patient ID by entering the prefix in the input box.

New Patient Name Prefix

Specify a prefix for the anonymized patient name by entering the prefix in the input box.

Start at

Specify an ordinal number, which will be appended to the anonymized patient ID and anonymized patient name. This number will increment automatically for each dataset that goes through the same anonymization processor. Each time you log onto this page, this field will display the current ordinal number. You can reset the ordinal number.

Pad with leading zeros to achieve N digits

Allows you to specify how many digits the ordinal number will have. If the number itself has fewer digits than N, then it will be padded with leading zeros. (For example, if N is 5, then ordinal number 67 will be shown as 00067 in the anonymized patient name or ID.)

Append original scan Date/Time to Patient Name

If checked, the original scan date and time will be appended to the anonymized patient name.

Use Separator before Appending Date/Time or Ordinal

If checked, you can specify a separator to be placed between the date, time and ordinal number.

New Study/Series/SOP Instance UUIDs

If checked, then the auto-anonymizer generates UUIDs for the study, series and SOP instances, rather than using the UUIDs from the scan data.

New Study/Series Date

Allows you to specify the study/series date for the anonymized results.

Shift Original Date by Value

This value specifies the number of days to add or subtract to the scan date. For example, suppose the original scan date is 20110510 (May 10, 2011). If the shift date value is 5, then the anonymized date would be 20110515. If the shift date value is -5, then the anonymized date would be 20110505.

New Study Description

When this box is checked, a text input box is displayed, where you can enter a new description for the anonymized study.

New Series Description

Click this button to select a series description for anonymization. Two text boxes are opened. In the first box, you can enter any part of the description text for a series that is included in the study. In the second box, enter the replacement description name. You can add as many series description replacements as needed.

Use the same anonymized Name/ID as before when a new scan with the same patient name and ID as previously processed scan

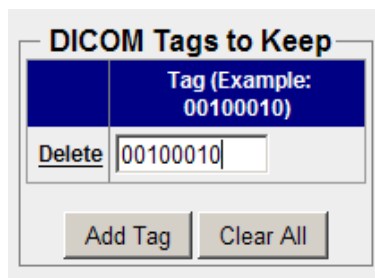
If checked, all new data belonging to the same patient will be given the same anonymized patient name and ID that was generated the first time. ("Same patient" is defined as having the same patient name and ID.) This option is allowed only when new data is processed by same anonymization processor. If a new dataset belonging to the same patient is processed by a different anonymization processor, the anonymized patient name and ID will be different.

DICOM Tags to Keep

Allows you to specify DICOM tags that will not be anonymized and will appear in their original form.

Add Tag

1. To add a new tag, click the Add Tag button at the bottom of the screen, then enter the tag value in the input text box (see the following figure).



DICOM Tags to Keep	
	Tag (Example: 00100010)
Delete	00100010
Add Tag Clear All	

2. To add multiple tags, continue to click the Add Tag button for each tag value until all have been added.
3. Click Save to save the edits.

Delete Tag

To remove a tag, click the Delete link to the left of the input box.

Clear All

Click this button to clear all DICOM tags that have been added to this anonymizer.

Private Tags/Blocks to Delete**Delete All Private Tags (except ones listed below)**

Check this box to delete all private tags used in the data except for those listed in the text boxes.

Add Tag

1. To add a new tag, click the **Add Tag** button and then enter the DICOM group, creator code and group element in the input text boxes (see the following figure).

Private Tags/Blocks to Delete

☐ Delete All Private Tags (except ones listed below)

	Group (Example: 0011)	Creator Code (Example: SIEMENS CM VA0 CMS)	Element (Example: 14)
Delete			

2. To add multiple tags, continue to click the **Add Tag** button for each tag value until all have been added.

Delete Tag

To remove a tag, click the **Delete** link to the left of the input box.

Clear All

Click this button to clear all DICOM tags that have been added to this anonymizer.

When you are finished, click the **Save** button to create and save the new auto-anonymizer processor.

The new processor will be displayed on the Auto Anonymize Processors list, located in the top half of the Auto Anonymizer page. You can edit any processor at any time. User-configured auto anonymizer processors will also be displayed in the **Processors** column and in the **Available Processors** list on the Clinical Protocols page. ([Figure 4-7](#), [Figure 4-10](#))

File-Based Anonymizer

You can specify auto-anonymization values using an input file, rather than entering original and anonymized patient names, IDs or other attributes on the Add Anonymizer screen. To create the file, you first need to download the file template provided by TeraRecon.

Downloading and Creating the Anonymizer File

1. At the top of the main page, click the **Download File Based Anonymizer Template** link. ([Figure 4-37](#))

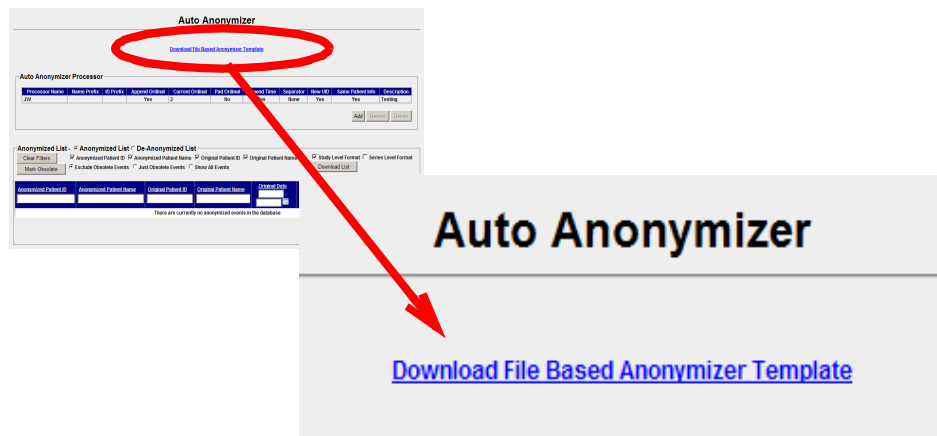
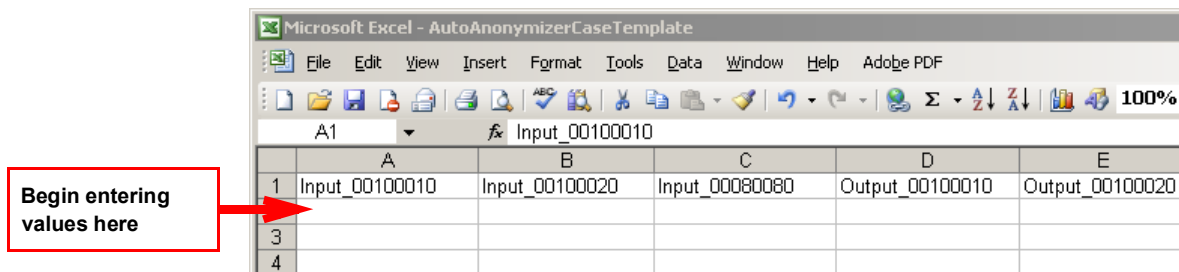


Figure 4-37 Download Anonymizer Template

- Click **Open** to display the template file, **AutoAnonymizerCaseTemplate.csv**:



The top row contains the column headings for each original DICOM value (the headings having an **Input_** prefix) and for a corresponding anonymized value (headings prefixed by **Output_**).

For example, 00100010 is the DICOM tag for the patient name. If you want the anonymizer to search incoming data for a specified patient name, enter that name in the column headed by **Input_00100010**. To search for a specific patient ID, enter that ID in the **Input_00100020** column.

- Enter the desired (anonymized) output under the appropriate **Output_** headings. For example, if you entered an original patient name in the **Input_00100010** column, enter the anonymized name in the **Output_00100010** column.
- When you are finished entering the specifications, save the file in any folder you wish on your hard drive.

Creating an Auto-Anonymizer Processor

- From the add anonymizer screen, select **Use File** in the **Patient ID/Name Options** section.

Patient ID/Name Options

☐ Use New Patient Name/ID
 ☐ Use New Patient ID
 ☐ Use New Patient Name
 ☒ Use File

Patient ID Preview: [File]
 Patient Name Preview: [File Based]

- Click the **Browse** button to navigate to the folder containing the anonymizer file. Be sure to select the file name before clicking **Open**.
- Click the **Upload** button. The input and output values in this anonymizer are displayed on the screen:

Patient ID/Name Options

☐ Use New Patient Name/ID
 ☐ Use New Patient ID
 ☐ Use New Patient Name
 ☐ Use File

input_00100010	input_00100020	input_00080080	Output_00100010	Output_00100020
Jane Smith	12345		4D Cardiac	67890

Patient ID Preview: [File]
 Patient Name Preview: [File Based]

- Check other settings as needed, and click **Save** when you are finished, to save the processor.

De-anonymization

De-anonymization restores the original scan data header for anonymized data. When anonymized data is pushed back to the AquariusAPS server for de-anonymization, the system searches the anonymization database for an anonymized SOP instance that had been anonymized using the same processing engine on the same AquariusAPS server. If found, the image header is restored from the anonymizer database.

During anonymization, the following information is saved:

- The anonymization event ID
- The original patient name, patient ID, birth date, sex, age, study instance UID, accession number, study date, study time, study description, study ID, series instance UID, series number, series date, series time, modality, characterset and series description
- The anonymization processor ID
- The anonymization processor modified time (or creation time, if it has not been modified)

This information is used to recreate the original data from anonymized data.

Bone Masking

The Bone Masking processor removes bones from a CTA scan, given a co-registered CT scan.

Bone Masking

Bone Masking Processor

Processor Name	Min (HU)	Max (HU)	Mask Value (HU)	Description
There are currently no Bone Masking Processors defined				

Adding a Bone Masking Processor

1. Click the **Add** button in the main page. The **Bone Masking Processor** page is opened.

Bone Masking Processor

[Back](#)

Bone Masking Processor

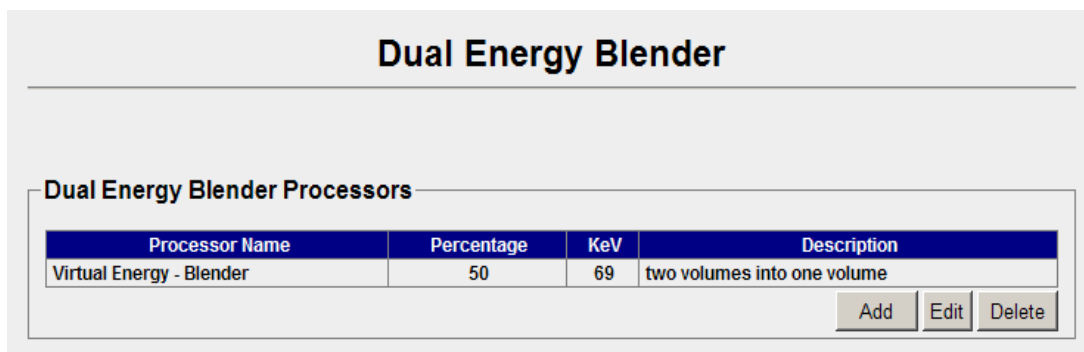
Name	Bone Masking (CT/CTA)
Description	
Min (HU)	200
Max (HU)	3071
Mask Value (HU)	40

2. Enter the name of the new processor in the **Name** input box.
3. Enter a description in the **Description** input box (optional).
4. Enter the **Min HU** and **Max HU** values in their respective input boxes. These numbers define the range of HU values within the scan that will be interpreted as bone.
5. Enter the mask value in the **Mask Value (HU)** input box. This is the HU value that will replace the bone in the mask.
6. Click **Save** when finished.

Dual Energy Blender

The Dual Energy Blender generates a new derived series that is one of the following:

- A blending of 2 original series (80 kV, 140 kV), using the percent setting from the web configuration (Siemens).
- Monochromatic images using the keV setting input by administrator (Gemstone Spectral Imaging (GE)).



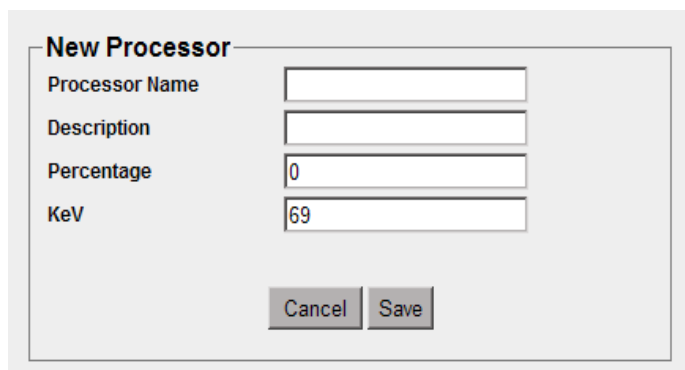
The screenshot shows a web interface titled "Dual Energy Blender". Below the title is a section labeled "Dual Energy Blender Processors" containing a table with the following data:

Processor Name	Percentage	KeV	Description
Virtual Energy - Blender	50	69	two volumes into one volume

Below the table are three buttons: "Add", "Edit", and "Delete".

Adding a New Processor

From the main page, click the **Add** button to open the New Processor page (see the following image).



The screenshot shows a form titled "New Processor" with the following fields and buttons:

- Processor Name:
- Description:
- Percentage:
- KeV:
- Buttons: "Cancel" and "Save"

1. Enter a name for the processor in the **Processor Name** input box.
2. Enter a description in the **Description** input box (optional).
3. If the processor will be working with Siemens data, enter the percent setting in the **Percentage** input box. If the data is from a GE scanner, enter the KeV value in the **KeV** input box.
4. Click **Save** to add the processor.

Editing an Existing Processor

Select the processor to be edited, and then click the **Edit** button. The add processor screen is opened, showing the parameters for the selected processor. (see the following image).

Dual Energy Blender

Dual Energy Blender Processors

Processor Name	Percentage	KeV	Description
Virtual Energy - Blender	50	69	two volumes into one volume

Add Edit Delete

Edit Processor: Dual Energy Blender

Processor Name:

Description:

Percentage:

KeV:

Cancel Save

You can edit any of the fields except the **Processor Name**. If you want to change the name of the processor, create a new processor with the desired name, and enter the other fields as needed. Then delete the processor having the old name.

SphereFinderL

This screen manages the SphereFinderL processor engines. The main screen displays the SphereFinderL processors that are currently installed. ([Figure 4-38](#))

SphereFinderL

SphereFinderL Processor

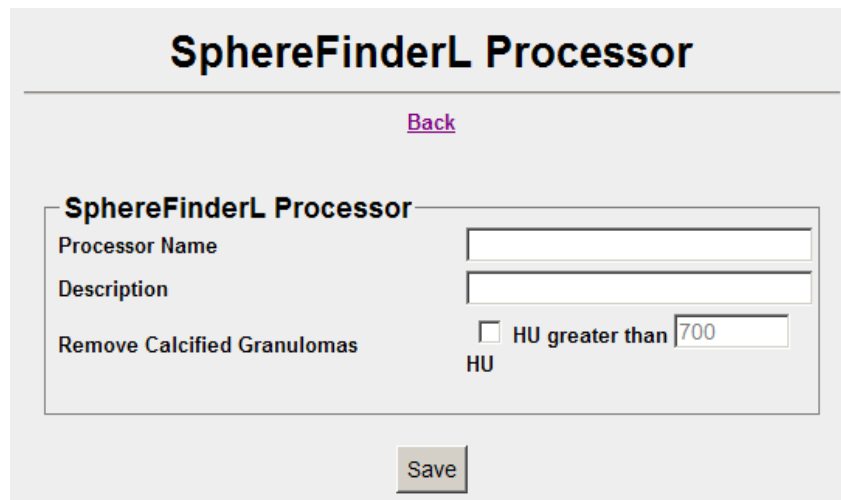
Processor Name	Remove Calcified Granulomas	Description
SphereFinder L	No	Finds spherical structures (L)
spherefinderL		

Add Edit Delete

Figure 4-38 SphereFinderL Main Screen

Adding a New SphereFinderL Processor

Click the **Add** button to add a new processor. The SphereFinderL Processor screen is displayed, as shown in [Figure 4-39 on page 4-47](#):



The screenshot shows a web form titled "SphereFinderL Processor". At the top, there is a "Back" link. Below it, the form has a title "SphereFinderL Processor" and three input fields: "Processor Name", "Description", and "Remove Calcified Granulomas". The "Remove Calcified Granulomas" field is a checkbox. To its right, there is a label "HU greater than" followed by a text input box containing the value "700". Below the checkbox, the label "HU" is visible. At the bottom of the form, there is a "Save" button.

Figure 4-39 Add New SphereFinderL Processor

1. Enter the processor name in the **Processor Name** field (required).
2. Optionally, enter a description in the **Description** field.
3. If you want this processor to remove calcified granulomas, check the checkbox and enter a HU lower threshold in the text input box.
4. Click **Save** to add the processor to the SphereFinderL processor list.

Subtraction

The **Subtraction** page allows you to set the following options for each Subtraction processor on the AquariusAPS server:

- Perform normal subtraction or bone subtraction.
- Define bone subtraction range.
- Clamp or remap of negative value.

Note: The normal/bone subtraction option applies to CT datasets only. The remap option does *not* apply to CT datasets.

Subtraction

Subtraction Processor

Processor Name	Bone Subtraction	Min (HU)	Max (HU)	Negative Value	Description
Bone Subtraction	Yes	150	3071	Clamp	Bone Subtraction
Subtraction	No			Clamp	Volume subtraction

Figure 4-40 Subtraction Main Page

Add New Subtraction Processor

To add a new Subtraction processor, click the **Add** button on the main page. The Add Subtraction Processor screen is displayed, as shown in [Figure 4-41 on page 4-48](#):

Subtraction Processor

[Back](#)

Subtraction Processor

Name

Description

Bone Subtraction ☐

Min (HU)

Max (HU)

Negative Value: ☒ Clamp ☐ Remap

Figure 4-41 Add New Subtraction Processor Screen

1. Enter the name of the new processor in the **Name** field.
2. Optionally, enter a description in the **Description** field.
3. If this processor will be used for bone subtraction, check the **Bone Subtraction** checkbox (CT datasets only).
4. Enter the low and high HU thresholds in the Min (HU) and Max (HU) fields, respectively.
5. Select whether to clamp or remap negative values. The clamp option causes any data falling outside the value range to be discarded. The remap option causes all values to be re-scaled so that they fit within the range proportionally (not applied to CT datasets).

Volume Filter

This module generates reformatted images where a filter is applied to them. This can be used to remove noise in the original image, such as with low dose acquisition data.

Volume Filter

Volume Filter Processor

Processor Name	Method	Strength	Description
Colon Data Converter - VP2000	Gaussian	2	Colon data noise reduction for VolumePro 2000
Volume Filter	Gaussian	1	Generate a processed volume

Adding a New Volume Filter

To add a new volume filter processor, do the following:

1. Click the **Add** button. The following input screen is displayed:

Volume Filter Processor

[Back](#)

Volume Filter Processor

Processor Name

Description

Method

Strength

2. Enter a **Processor Name** (required) in the text input box, and a description of the processor (optional).
3. The filtering method removes noise from the image, resulting in a clearer image. Select the method that is most appropriate for the type of scan being processed.
4. Select a strength from the **Strength** drop-down menu. A value of 1 is the lightest and a value of 5 is the strongest.
5. Click **Save** when finished.

This processor can now be added to clinical protocols.

- Gaussian
- Median
- Gaussian**
- Blur
- Sharpen
- iGENTLE
- iGENTLE TotV

TAVR

The **TAVR** processor analyzes the single or multiphase cardiac data. Once the result is loaded in the viewer, the software is able to display the pre-processed results and labels. The labels may be utilized by the Automatic Measurement rules for landmark detection.

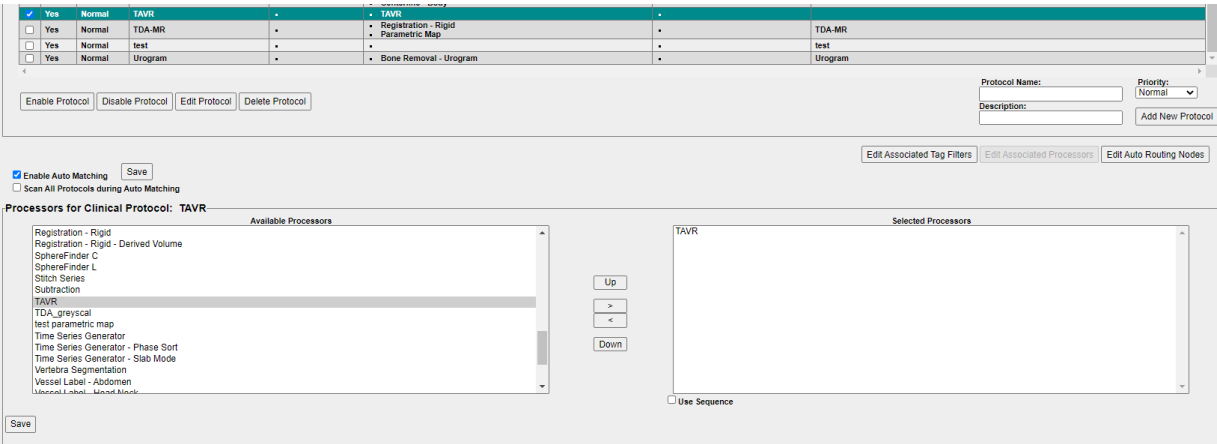
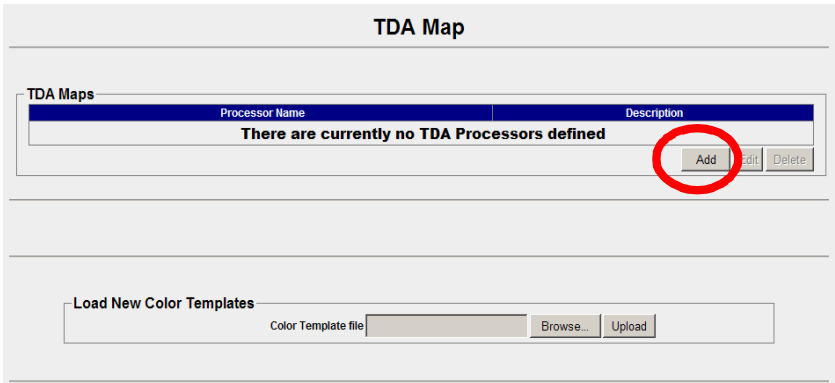


Figure 4-42 The TAVR Processor is Selected

TDA Map

The **TDA Map** page allows you to create and modify processors that generate TDA color maps for any or all of the following functions: BF, BV, MTT, TOT, RT and TTP.

Note: You are obligated to define the parameter ranges that are used in this procedure. When first accessed, the user interface for setting these parameters contains generic default values having no particular significance. You must acknowledge this by dismissing a warning message to this effect.



Adding a New Processor

To create a new TDA Map processor, click the **Add** button (circled in the previous image). The **New Processor** input block is displayed, as shown in the following image.

Figure 4-43 New Processor Block

1. Enter a name for the processor.
2. Optionally, enter a description.
3. By default, maps are enabled for all functions. Uncheck any function for which you do not want a color map generated.
4. Initially, the display **Min** and **Max** values for each function are set to their default values. To change a Min or Max value, use the mouse to highlight the number currently displayed in the input box to be changed, and then enter the new value.

Figure 4-44 Min and Max Display Values

Note: User configuration is currently NOT available for the output classification map (enabled through the “Map” checkbox shown in [Figure 4-43 on page 4-51](#)). You must acknowledge this limitation when this option is enabled. The settings used are listed below. These are the same defaults used in the Intuition Intuition Client.

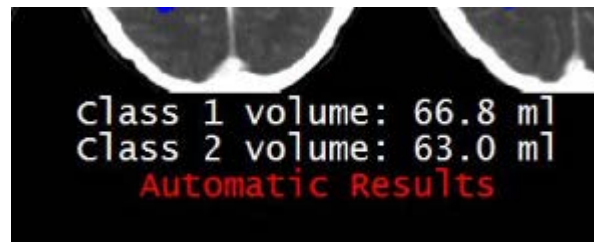
Table 4.3 Classification Map Default Values

Class	Threshold	Min	Max
Normal Class	BF [ml/100g/min]	25.00	120.00
Normal Class	MTT [sec]	1.00	8.00
Class 1	BF [ml/100g/min]	0	10.00
Class 2	BF [ml/100g/min]	10.00	25.00
Class 2	MTT [sec]	8.00	300.00

Volume Measurement of Classification Maps

Volume measurement of classification maps is optionally available.

When classification map output is selected, the volume measurement of each class in the map is annotated. When the volume measurement has been generated by AquariusAPS, the results will show an annotation on the image (see image below) to indicate that these are automatic results. To enable this option, please contact customer support.



(For a brief description of each function, see ["Color Template" on page 4-54.](#))

5. Select a color template from the drop-down menu. There are three default templates on the server.

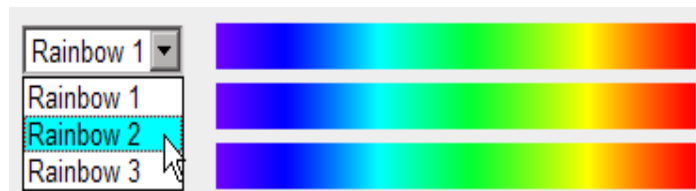
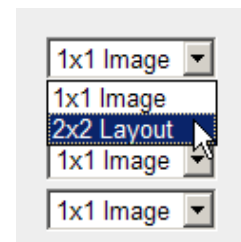
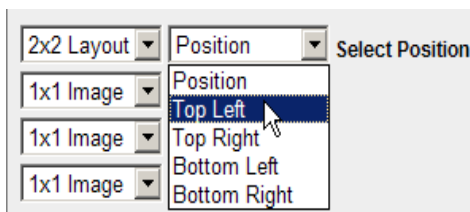


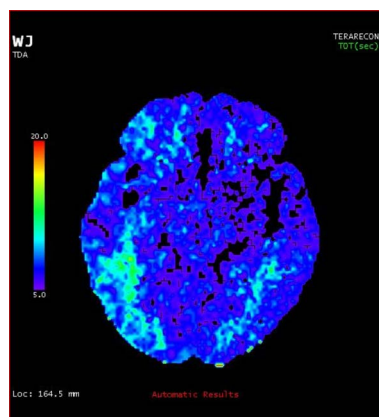
Figure 4-45 Default Color Templates

6. Select a layout (**1x1** or **2x2**) for the color map display (see image at right). If you select **2x2**, you will be asked to select one of the four quadrants as the position for this image (see image below).

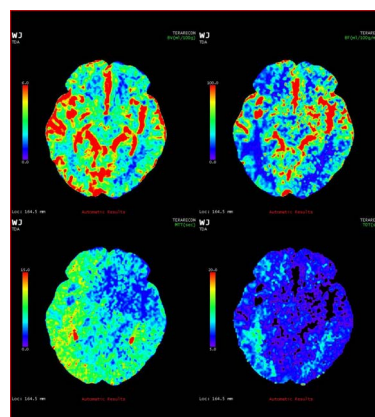


- Click **Save** when done.

When the AquariusAPS results are viewed in the Intuition Thin Client, a single-map image appears as shown on the left in the following figure. A 4-in-1 map image appears as shown on the right.



Single-Image Map



4-in-1 Map

Figure 4-46 Map Images

Loading New Color Templates

If you have TDA color templates available locally, you can upload them to the AquariusAPS server. The **Load New Color Templates** block is located at the bottom of the **TDA Map** page.

Load New Color Templates

Color Template file

- Click the **Browse** button to open a Windows navigation dialog.
- Navigate to the folder where the templates are stored.
- Select and open the XML file. The full pathname for the file is shown in the **Color Template file** box.

Color Template file

- Click **Upload**.

To verify that the new templates have been successfully loaded, click the **Add** button to show the **New Processor** block, and then click any of the drop-down menus for the color templates. Compare to [Figure 4-45 on page 4-52](#), where only three templates are shown.

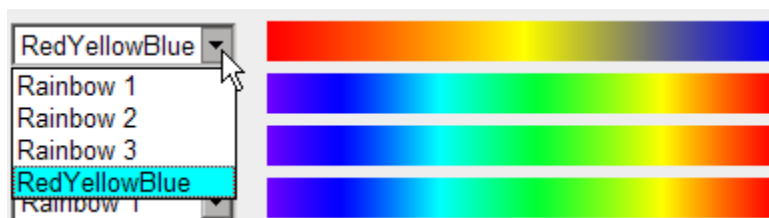


Figure 4-47 Color Template

Table 4.4 Description of TDA Functions

Map	Description
BV(ml/100g)	The amount or fraction of blood in a given volume of the structure under analysis.
BF(ml/100g/min)	The volume of blood flowing through the specified ROI per unit time.
MTT(sec)	The average time taken by the contrast to reside in a volume of the ROI.
TOT(sec)	The time at which the contrast begins to flow into the system.
RT(sec)	The time taken by the contrast to recirculate to the structure.
TTP(sec)	The time taken for the intensity to peak.

Parametric Map

The Parametric Map screen allows you to create a parametric map processor, for which you can configure the uptake phase.

Parametric Map

Parametric Map Processors

Processor Name	Uptake Phase	Description
There are currently no Parametric Map Processors defined		

Adding a Parametric Map Processor

1. Click the **Add** button. The following input screen is displayed:

Parametric Map

Parametric Map Processors

Processor Name	Uptake Phase	Scanner Subtracted Data	Description
Breast MR PM	3	True	Parametric Map for Breast

Add Edit Delete

New Processor

Processor Name

Description

Uptake Phase

Scanner Subtracted Data ☐

Cancel Save

2. Enter a name in the **Processor Name** text box (required), and a description of the processor in the **Description** text box (optional).
3. Enter the appropriate uptake phase in the **Uptake Phase** text box.
4. If scanner subtracted series are available, check the **Scanner Subtracted Data** box, and do not include the Subtraction PE in the Clinical Protocol. This could save considerable running time of the Clinical Protocol.

If you do not have scanner subtracted series, there are two options:

- Include the Subtraction PE in the Clinical Protocol. In this case, subtraction is performed by the Subtraction PE.

Note: The Subtraction PE must be run prior to the Parametric Map PE.

- Do not include the Subtraction PE in the Clinical Protocol, and do not check the **Scanner Subtracted Data** box. In this case, the Parametric Map PE will perform the subtraction.

Note: The Parametric Map PE does not generate subtraction series. If you require subtraction series and do not have previously generated subtraction series from the scan, include the Subtraction PE in your Clinical Protocol.

5. Click **Save** when finished.

Editing a Parametric Map Processor

1. Select a processor to be edited.

Parametric Map			
Parametric Map Processors			
Processor Name	Uptake Phase	Scanner Subtracted Data	Description
Breast MR PM	3	True	Parametric Map for Breast
Prostate PM	10	False	Parametric Map for Prostate
			Add Edit Delete

Figure 4-48 Processor Selected (highlighted)

- Click the **Edit** button. The Edit screen is displayed:

Edit Processor: Breast MR PM

Processor Name

Description

Uptake Phase

Scanner Subtracted Data ☒

You can change the uptake phase and the description. If you want a different name, you must create a new processor.

Deleting a Processor

- Select one or more processors to be deleted.
- Click the **Delete** button to remove the selected processor (or processors).

Conversion Before Routing

This processor is a template based DICOM tag converter.

Conversion Before Routing

Conversion Before Routing

Processor Name	Executable Name	Executable Options	Description
No Conversion Processor Defined			

New Processor

Processor Name

Description

Executable

Template:

```
# Aquarius Dicom Tag Converter Template
#
# The purpose of this file is to define how to convert dicom tags.
#
# The format of this file is key value pair.
# The key defines a dicom tag.
# The value defines the action and the value which needs to be applied to the particular tag.
#
# To specify a public dicom tag, it should follow the format listed below.
# Tag:TagValue
# Tag value should be eight hex number starts with 0x
# For example, Tag:0x00181000
#
# Each tag could have one of following possible actions.
# NewValue: Set a new value to a dicom tag. For example
# Tag:0x00080080 @ NewValue:[New Institution]
#
# Prefix:      Add a prefix to a dicom tag. For example
# Tag:0x00100010 @ Prefix:[HI]
#
# Suffix:      Add a suffix to a dicom tag. For example
# Tag:0x00100020 @ Suffix:[PI]
#
# Replace:      Set dicom tag to a certain value if original value contains certain
# string. For example
# Tag:0x0008103E @ Replace:[AX|MMX] (Set series description to "MMX" if original series
# description contains "AX")
# Tag:0x0008103E @ Replace:[BX|DDX] (Set series description to "DDX" if original series
# description contains "BX")
#
# ReplacePartial: Replace a substring in original dicom tag to a new substring. For example
# Tag:0x0008103E @ ReplacePartial:[AX|MMX] (replace "AX" in series description with "MMX")
# Tag:0x0008103E @ ReplacePartial:[BX|DDX] (replace "BX" in series description with "DDX")
#
# Following UIDs are optional to change
Tag:0x0020000D @ ChangeUID
```

Tag Filter Driven Tasks

Tag Filter Driven Tasks tool is included within the application to provide end users/administrators a mechanism to automatically trigger a TeraRecon provided or custom-created processor using Tag Filter.

This workflow has two steps:

1. Task Manager — This processor workflow allows a user to create and configure automatically executable and customized tasks. Once created, the user does not have to manually execute these tasks. See ["Setting up Tasks for Data Retention" on page 4-57](#).
2. Workflow Manager — See ["Workflow Manager" on page 4-59](#).

Setting up Tasks for Data Retention

To add a tag filter driven task for a customized length of retention:

1. From the Navigation bar, open the Task Manager: **Manage Workflow>Processors>Tag Filter Driven Tasks>Task Manager**.
2. On the **Task Filter Driven Tasks** page, select **Add**. The **New Processor** window opens on the page.

The screenshot shows the 'Tag Filter Driven Tasks' page with a table containing one task: 'Delete in 15 days'. Below the table, the 'New Processor' dialog box is open. The dialog box has the following fields: Processor Name (Delete Secondary Capture), Description (Delete SC in 100 days), Effect Level (Series Level), Executable (Series Data Retention), and Days to Keep (100). There are 'Cancel' and 'Save' buttons at the bottom. A note at the bottom of the dialog box states: 'Note: Auto Deletion needs to be configured in Receive Time mode'.

Figure 4-49 Adding a new Task

3. Enter a Processor Name, Description, and select Effect Level (if enabled).
4. Select the **Executable** drop-down and then select **Series Data Retention**. The window expands to include a **Days to Keep** entry field. (This is the only available task at this time.)
5. Fill in the number of days for the series to be retained and select **Save**.

Note: Auto Deletion needs to be configured in Receive Time mode.

6. The new task is listed in the **Tag Filter Driven Tasks** table.

The screenshot shows the 'Tag Filter Driven Tasks' page with a table containing two tasks. The first task is 'Delete in 15 days' and the second task is 'Delete Secondary Capture'. The table has columns for Processor Name, Effect Level, Executable Name, Executable Options, and Description. The 'Delete Secondary Capture' task is highlighted with a red border.

Processor Name	Effect Level	Executable Name	Executable Options	Description
Delete in 15 days	Series	Series Data Retention	-daysToKeep 15	15 days
Delete Secondary Capture	Series	Series Data Retention	-daysToKeep 100	Delete SC in 100 days

Figure 4-50 New Task Listed

Workflow Manager

This page allows users to Edit Associated Tag Filters, Edit Associated Tasks, and add a new workflow, enable, disable, and delete workflows.

The screenshot shows the 'Workflow Manager' interface. At the top is a table titled 'Tag Filter Driven Task Workflows' with columns: Enabled, Name, Tag Filters, Tasks, Priority, and Description. It contains two rows of workflow data. Below the table are buttons for 'Enable Workflow', 'Disable Workflow', and 'Delete'. To the right are input fields for 'Workflow:' and 'Description:', a 'Priority:' dropdown menu, and an 'Add New Workflow' button. At the bottom right, two buttons are highlighted with red boxes: 'Edit Associated Tag Filters' and 'Edit Associated Tasks'. Below these buttons is a section titled 'Tasks: Delete Secondary Capture' which contains two sub-tables: 'Available Tasks' and 'Selected Tasks'. The 'Available Tasks' table has columns 'Name' and 'Task' and contains one row: 'Delete in 15 days' with 'Series Data Retention'. The 'Selected Tasks' table also has columns 'Name' and 'Task' and contains one row: 'Delete Secondary Capture' with 'Series Data Retention'. Between these two tables are buttons for 'Add >', '< Remove', and 'Save'.

Figure 4-51 Edit Associated Tasks Table

To associate the new tag filter driven task's auto-deletion settings:

1. Select the **Edit Associated Tasks** button. A table of available tasks opens on the page.
2. Your new, customized auto-deletion task is listed. Check the box next to this task and then select the **Add>** button to add the task to a **Selected Tasks** table.
3. Create a new workflow filling in the name and description fields.
4. Select **Add New Workflow**.
5. Highlight the new workflow in the **Tag Filter Driven Task Workflow** table and select **Save** under the **Selected Tasks** table.

This screenshot shows the 'Workflow Manager' interface after the workflow has been added. The 'Tag Filter Driven Task Workflows' table now contains one row: 'Delete Secondary Capture' with 'SecondaryCapture Tag Filter' in the 'Tag Filters' column, 'Delete Secondary Capture' in the 'Tasks' column, and 'Normal' in the 'Priority' column. The 'Description' column shows 'Delete SC in 100 days'. The 'Available Tasks' and 'Selected Tasks' tables are no longer visible, indicating the task has been successfully associated with the workflow.

6. The task and the workflow are now associated and activated.

You can follow this same procedure to add a Tag Filter and associate it to the new workflow or any of the listed workflows. See ["Managing Tag Filters" on page 4-4](#) for further instructions.

Chapter 5 Study Management

The Study Manager screens allow you to do the following:

- Push studies or series manually to other DICOM nodes.
- Delete studies or series.
- Anonymize studies or series.
- Trigger advanced processing workflow on a study or series that is already on the AquariusAPS server.

Elements of the Screen

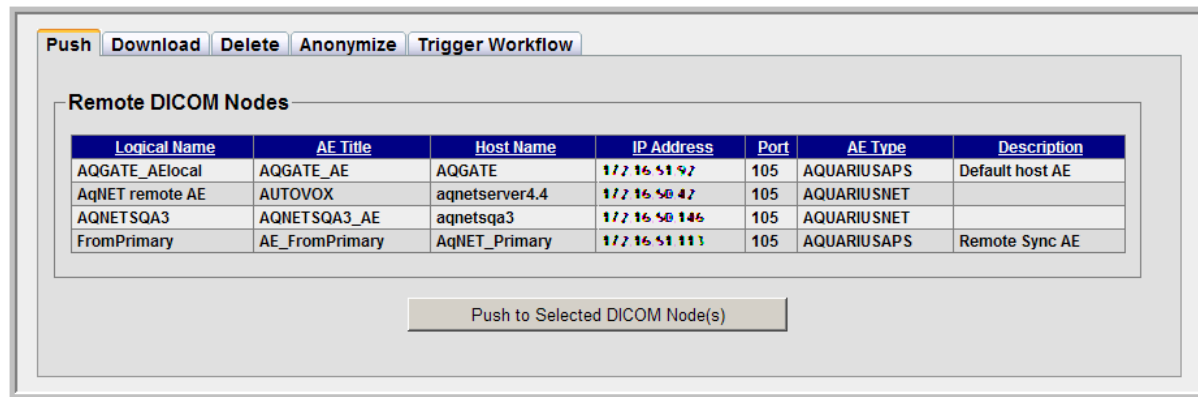
Study List											
Clear Filters		☐ Show Series									
Gender	Patient ID	Patient Name	Birth Date	Accession #	Study ID	Date / Time	Modality	Study Description	Series	Images	
O	31	*CARDIAC*NORMAL	02/04/1935		5292	11/13/2003 - 09:41:40	CT		57	320	
M	024	4D Cardiac	01/01/1931		4625	09/29/2003 - 11:26:18	CT		117	959	
M	0257803 1	Abdominal AO		0000001	1	10/01/2002 - 17:40:00	MR	Abdominal	5	218	
M	100097204	Cardiac MR 003	05/06/1941	128324	199367031	04/27/2006 - 12:08:21	MR	CARDIAC/MRI/GAD	34	1259	
F	TDA	WJ	10/15/1958	20021029150644	12819	10/29/2002 - 15:06:44	CT		19	257	
M	05506931128998	TAA 3 POST Endograft Planning		14034586	13022950	07/09/2005 - 09:06:53	CT	Specials*03_CAP_POST_STENT_	15	846	
M	05506931128998	TAA 3 PRE Endograft Planning		13737265	12657163	05/05/2005 - 13:37:31	CT	Specials*03_CAP_POST_STENT_	11	798	
F	AW699287053.942.1116596229	STANFORD 2005*LUNG			1	05/12/2002 - 06:44:03	CT	Abdomen*1ANGIO_ROUTINE	5	284	
F	AW896558243.867.1116596283	STANFORD 2005*LUNG			19528	05/19/2005 - 08:49:50	CT	CT ANGIO CH ABD	5	347	
	Med C1	Medicsight Colon 2007				02/21/2003 - 07:19:54	CT		17	904	
M	Med1	Medicsight Lung 1			61	12/04/2002 - 11:58:14	CT		10	234	
F	Med2	Medicsight Lung 2			180	02/12/2003 - 13:19:09	CT	HEART/LUNG	10	236	
F	MDC_T_4	AAA			318	05/04/1998 - 09:40:11	CT	AAA PROTOCOL	64	387	
M	0455833121	AAA 2006 007		B6110566	B6110566	02/10/2006 - 13:41:34	CT	Abdomen*01_AAA_PRE_OP_STENT (Adult)	8	665	
F	CARDIAC	64-SLICE CCTA, CFA, CACS	07/06/1957	001096140102	17106	05/03/2006 - 11:20:52	CT		24	543	
M	C-001	16 Fusion PET WBS	03/22/1943		1	07/16/2003 - 17:17:10	CT/PT	Specials*PETCT_WholeBody	9	541	
F	5350413111	16 PE Study			2	03/07/2002 - 09:44:40	CT	Thorax	5	444	
M	055783515224	320 Dynamic Abdomen				11/16/2007 - 15:17:38	CT		167	7202	
M	0554203518819	320 Multi phase cardiac				01/16/2008 - 11:53:32	CT		272	4606	
F	0350563119	Aq64_CarotidStent		916	916	03/15/2006 - 11:34:25	CT		6	535	
F	V95A683112732006.344	Aq64 Neck Mass				01/01/2007 - 09:26:36	CT		3	580	
F	A45q29361-Sure Sub-57	Aq64 CT-CTA Subtraction				08/15/2007 - 10:37:12	CT		25	1638	
F	A556103-1ND	Aq64 Colon				01/25/2007 - 12:28:37	CT	Abdomen and Pelvis	22	952	
F	AW532536126.839.1208238937	S2008-2CTT3		4118902	12450	11/16/2007 - 09:10:22	CT	CT Chest, Abdomen	27	709	
F	AW1415295857.425.1208239037	S2008-2CTT4		4204116	4122284	01/18/2008 - 08:04:38	CT	Thorax*01_NONCONCHEST (Adult)	24	385	

The Study Manager screen is laid out similarly to the Patient List screens in the Intuition client viewers, such as the Intuition Client or the Intuition Thin Client. The columns contain information about the patient data currently on the AquariusAPS server.

Display Filters

The top line of the study list contains a display filter allowing you to display only the study data that matches the values you enter in one or more of the filter's fields.

Push Studies/Series



Pushing Studies

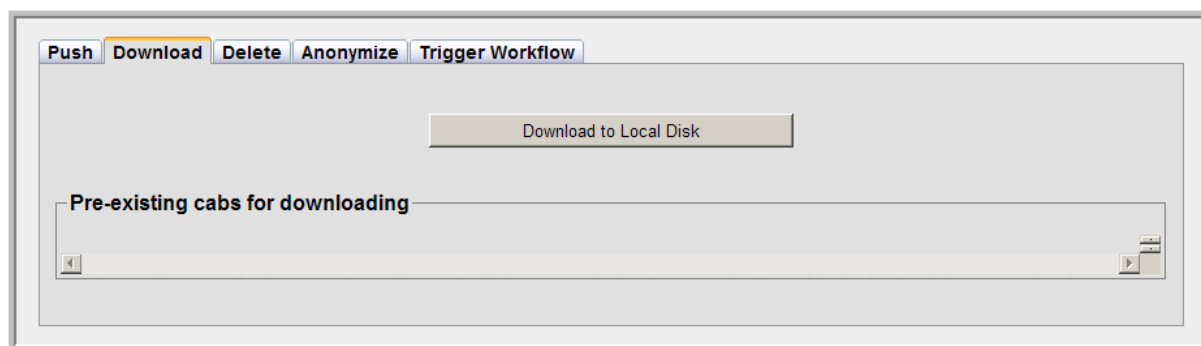
1. Select one or more studies from the study list.
2. Select one or more node from the **Remote DICOM Nodes** list.
3. Click the **Push to Selected DICOM Node(s)** button.

Pushing Series

1. Select one or more studies from the study list to populate the series list.
2. If the series list is not visible, click the **Show Series** checkbox located just above the study list. The series list is displayed below the study list, showing the series associated with the selected study.
3. Select one or more series from the series list.
4. Select one more nodes from the **Remote DICOM Nodes** List
5. Click the **Push to Selected DICOM Node(s)** button.

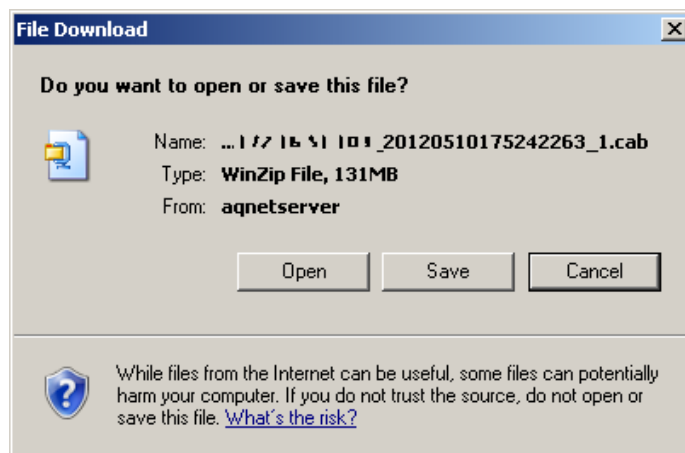
Download Studies/Series

This tab allows you to select a study or series and download it to your local computer.



1. To begin the download, select a study or series and click the **Download to Local Disk** button.

A .cab file for the selected data is created for downloading. A Windows dialog is then posted, asking what you would like to do with the .cab file.



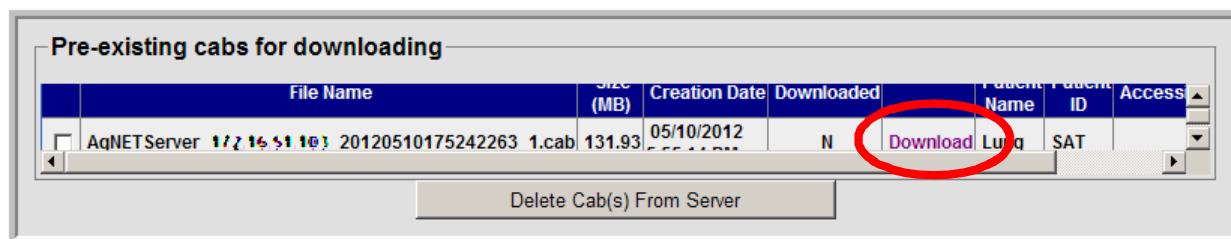
2. Choose one of the following:

- Open - Downloads a compressed file that contains the study data. You can then extract the data to a folder on your PC.
- Save - Saves the .cab file in a specified folder.
- Cancel - Cancels the download.

The .cab file is saved on the server whether or not the download was successful. The name of the cab file is derived from a combination of the server name, the current time, and the modality of the data set.

Pre-existing Cabs For Downloading

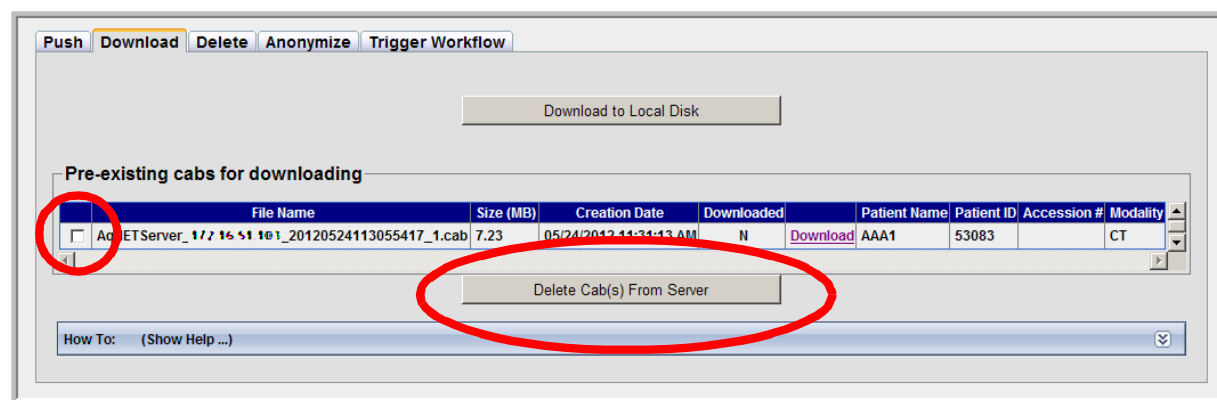
If a .cab file has been created, it will remain on the server for a preconfigured period of time, the default of which is three hours. You can access the file in this list:



To download a .cab file from this list, click the download *link* in the same row (circled in red, in the previous image).

Note: Do not confuse this link with the **Download to Local Disk** button on the same screen. That button is used to download selected data in the Study or Series List and does not download pre-existing .cab files.

It is recommended that you delete .cab files from the server when they are no longer needed. To delete a .cab file, click the checkbox at the far left of the row (circled in green, in the following image). Then click **Delete Cab(s) From Server**.



Delete Studies/Series

If you are not using AquariusAPS as the primary long-term image repository, you may need to periodically delete images from the server to make space for new images. You can set up file deletion automatically according to file age or you can delete files manually. Refer to ["Chapter 8 Auto Deletion" on page 8-1](#).

To delete studies, click the **Delete** tab. ([Figure 5-1](#))

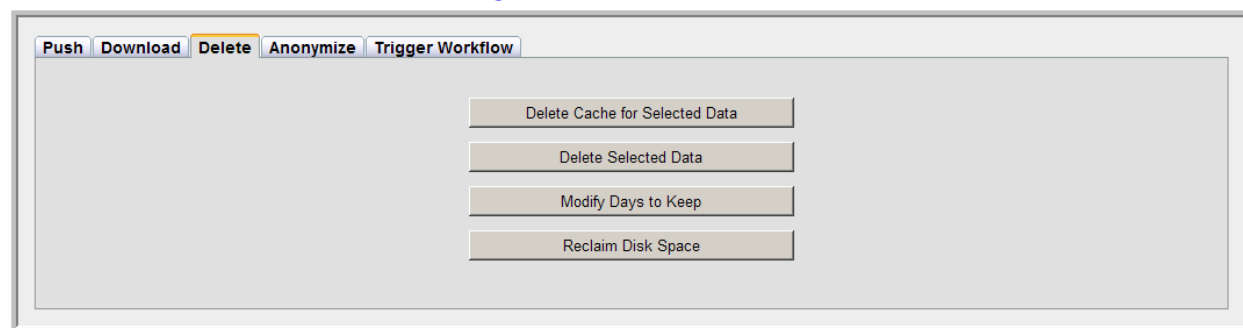


Figure 5-1 Delete Studies

The **Delete** tab provides three functions: Modify Days to Keep, Delete Selected Data, and Delete Cache for Selected Data.

Delete Cache for Selected Data

Frees space on the server without deleting the actual data.

1. Select one or more studies from the study list.
 - a. Click **Delete Cache for Selected Data**.
 - b. Click **OK** in the popup dialog to confirm deletion or click **Cancel** to cancel deletion.

Delete Selected Data

Delete selected studies.

1. Select one or more studies from the study list.

2. Click **Delete Selected Data**.
3. Click **OK** in the popup dialog to confirm deletion or click **Cancel** to cancel deletion.

Modify Days to Keep

Configure the length of time (in days) to keep studies on the server before they are deleted automatically.

Note: This feature applies to Auto Deletion only.

1. Select one or more studies from the study list.
2. Click **Modify Days to Keep**. A popup dialog is displayed. ([Figure 5-2](#))

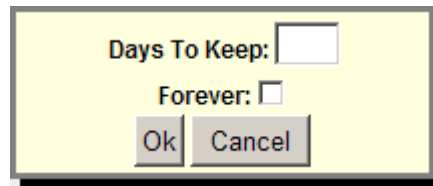


Figure 5-2 Days to Keep Dialog

3. Enter the number of days, starting from today, that you want the studies to remain on the server. If you do not want these studies to be deleted at all, click the **Forever** checkbox.
4. Click **OK** in the popup dialog to confirm deletion or click **Cancel** to cancel deletion.

Reclaim disk space

When a **Delete Selected Data** is performed, that data's entry in the main database table is moved to the deleted database table. However, the data itself is not removed from the disk. **Reclaim disk space** removes the data associated with all entries in the deleted data table, and also removes those entries from the table. This is a permanent deletion.

To perform this deletion, click the **Reclaim disk space** button. This function does not require any data selection.

Anonymize

DICOM images contain private identifying information such as a patient's name, date of birth, etc. Anyone who wishes to publicly transmit or make available a patient's images for any purpose must take responsibility for removing the identifying information from the images to protect the privacy of the patient.

The screenshot shows a software interface with a top navigation bar containing buttons: Push, Download, Delete, Anonymize (highlighted), and Trigger Workflow. Below this, the 'Anonymize' section contains a radio button for 'Download to Local Disk'. To the right, there are three input fields: 'New Patient Name' (containing 'Randomly Generated'), 'New Patient ID' (checked and containing 'Randomly Generated'), and 'New Study/Series/SOP Instance UUIDs' (checked). A central 'Anonymize' button is located below these fields. At the bottom, a section titled 'Pre-existing cabs for downloading' features a large, empty list box with scrollbars.

To anonymize and distribute images:

1. Select the study or series to be anonymized by clicking on it in the study or series list.
2. Enter the new Patient Name. If you do not enter anything in this field, a name will be randomly generated.
3. If you want to enter a new Patient ID, check the New Patient ID checkbox. A field is then displayed for you to type in a Patient ID of your choosing.
4. Check **New Study/Series/SOP Instance UUIDs** if you want new UUIDs to be generated.
5. Click Download to Local Disk to save the anonymized data on the AquariusAPS Server's local hard drive.

A **.cab** (compressed archive) file for each series will be created on the hard drive. The name of the **.cab** file is a concatenation of the server name, the current time, and the modality of the data set. To open a **.cab** file, double-click on it.

Please wait for the "File download" dialog to appear. It may take a few minutes for the server to create the **.cab** files, depending on the number and size of data sets you selected. You might miss the chance to download this **.cab** file if you send another request before this dialog is displayed.

Note: The total size of the original images cannot exceed 3 GB.

Pre-existing Cabs for Downloading

If a **.cab** file has been created, it is stored on the server. For more information, see ["Pre-existing Cabs For Downloading" on page 5-3](#).

Note: It is recommended that you do not select too many data sets in each operation. The more data sets you select, the more resources (CPU and disk space) will be needed from the server.

Trigger Workflow

Trigger Workflow allows you to trigger clinical protocols on selected data residing on the AquariusAPS server, without the necessity of pushing that data to the AquariusAPS server additional times.

For example, if a clinical protocol was a misconfiguration and the wrong workflow was triggered, or if you simply would like to run the data through additional or different processing engines, you can reconfigure the clinical protocol on the AquariusAPS server and then trigger the workflow, without pushing the data to the AquariusAPS server.

To trigger a workflow, select one or more study or series and then click **Trigger Workflow for Selected Data**.

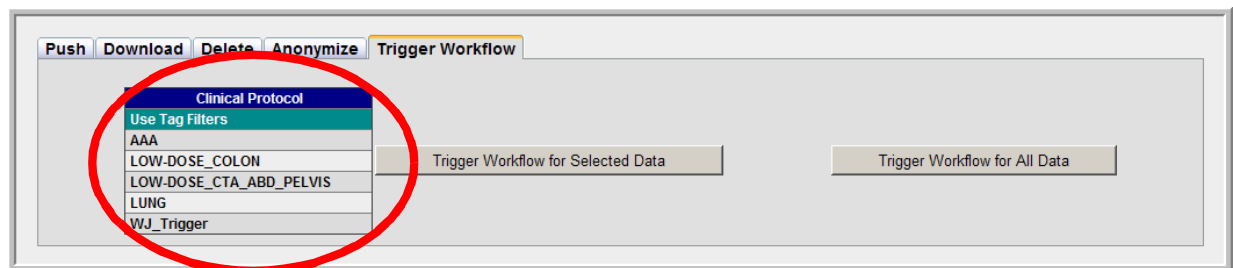
To trigger workflows for all data on the AquariusAPS server, click **Trigger Workflow for All Data**.

Clinical Protocols List

It is possible to trigger any clinical protocol on selected data, regardless of tag filters. When workflow is triggered in this way, AquariusAPS does not check the data's DICOM tags against the tag filters associated with the clinical protocol. Instead, the protocol proceeds as though the data had successfully passed all the tag filters. If you are triggering workflow on specific data:

1. Select one or more study or series as desired.
2. Select the clinical protocol to trigger from the **Clinical Protocols** list (see the following figure).
3. Click the **Trigger Workflow for Selected Data** button.

To trigger workflow on all data, select the desired clinical protocol from the list and then click **Trigger Workflow for All Data**.



To trigger workflow normally, using tag filters to determine which clinical protocols to use, the first item in the **Clinical Protocols** list, **Use Tag Filters**, should be selected.

Progress of the data through the system can be monitored on the same job, routing and workflow queues that are used for pushed data.

Chapter 6 Job Management

Topics in this chapter:

[Data Processing Status 6-1](#)

[Managing Advanced Processing Jobs 6-4](#)

[Managing Auto Routing Jobs..... 6-6](#)

[Managing Prefetch Jobs 6-7](#)

Data Processing Status

The Data Processing Status page shows the status of processing engines that have been triggered for a particular study or series on AquariusAPS™.

When a study is pushed to AquariusAPS and passes the requirements for a currently active Clinical Protocol, processing jobs are created for that study. The status of these jobs can be viewed here as they are processed as well as after they have been completed.

The status information is stored and displayed in a hierarchical structure, starting at the top with the study level. You can expand each study to display all the series associated with it. You can then expand each series to display the clinical protocols performed on that series and expand each protocol to display the processing jobs associated with that protocol. ([Figure 6-1](#))

Each processing job contains a time stamp, priority level, number of sub-series, and success/fail status. If any processing engine within a protocol fails, the entire protocol fails.

All processing jobs, whether they have passed or failed, remain on the Data Processing Status page for 10 days.

Data Processing Status

Patient ID	Patient Name	Accession #	
			Apply Filter Clear Filters Refresh Now

Patient ID	Patient Name	Accession #	Study Description	Date / Time
☒ 0554203518747	320 1 phase cardiac			Jan 16 2008 11:09:05
☒ Series #: 3	Desc: S75%SCESCardiacS0.5SCTASCTA		Date: Jan 16 2008 11:22:39	
☒ Protocol: Cardiac_44	Submit Time: Dec 08 2009 18:16:39		Status: Success	
Processors	Submit Date	Priority	Subseries #	Status
1590 - Vessel Label - Heart	12/8/2009 6:16:39 PM	300	0	Success
1591 - Auto Coronary	12/8/2009 6:16:39 PM	300	0	Success
1592 - Auto Coronary Consolidate 4D	12/8/2009 6:16:39 PM	300	0	Success
1593 - Expose Coronary 4D	12/8/2009 6:16:39 PM	300	0	Success
1594 - Rib Cage Removal	12/8/2009 6:16:39 PM	300	0	Success

☒ 31	*CARDIAC*NORMAL			Nov 13 2003 09:41:40
☒ AW563821299.566.1126808187	^CT Urogram		CT UROGRAM	Apr 11 2005 17:58:30
☒ MDCT_4	AAA		AAA PROTOCOL	May 04 1998 09:40:11
☒ 2458623015-7	S2008-4CTCARD.2		Cardiac^01_CASCORING_CORONARY_CTA (Adult)	Mar 28 2008 09:10:46
☒ B64_hhc_001	Heart_LAD_Plaque		Cardiac CTA	Feb 03 2006 10:04:20
☒ TRI_3DWSTP_4	HEART^d		Specials^00_Coronary	Jan 27 2003 13:44:37
☒ TRIDEMO_3D_CVASC_01	HEART LAD_Plaque		Cardiac CTA	Feb 03 2006 10:04:20
☒ C6555381311C	Aq64 CCTA			May 03 2006 11:20:52

Refresh this page every 30 | 60 | 90 seconds or [Never](#) | Refresh in: 9

Figure 6-1 Data Processing Status Screen

Filtering the Data Processing Status Page

To display only studies having a specified Patient ID, Patient Name and/or Accession number, type the desired criteria into the appropriate text boxes (located at the top of the Data Processing Status page), and then click the **Apply Filter** button.

Note: The filters applied on this page are automatically applied to the study list displayed on the Manage Studies page. Similarly, filters applied on the Manage Studies page are automatically applied to the Data Processing Status page, when appropriate. The Data Processing Status page uses fewer filters than the Manage Studies page.

Managing Jobs Using Filter Options

The Job Management buttons located just below the list of data items allow you to manage Advanced Processing jobs:



The **Data Processing Status** screen allows you to show only the data you are concerned with by using patient data filters at the top of the screen.

1. Before using the job management functions, display only the desired patient data by entering identifiers in any combination of the **Patient ID**, **Patient Name** or **Accession #** filters. (Top circle, [Figure 6-2](#))

Patient ID	Patient Name	Accession #		Apply Filter	Clear Filters	Refresh Now
MDCT_4						

☐	Patient ID	Patient Name	Accession #	Study Description	Date / Time
☒	MDCT_4	AAA		AAA PROTOCOL	05/04/1998 9:40:11 AM
☐	MDCT_4	Newname2_NoID		AAA PROTOCOL	05/04/1998 9:40:11 AM

Refresh this page every [30](#) | [60](#) | 90 seconds or [Never](#) | Refresh in: 70

Figure 6-2 Data Processing Status Window

2. To select specific jobs for a job management function, check the checkbox located to the left of the listed job. (Bottom circle, [Figure 6-2](#))

Apply job functions as follows:

Cancel Job

1. Hover the mouse over the **Cancel Job** button. The menu is displayed as follows:

Cancel Selected Jobs

2. Select **Cancel Selected Jobs** from the Cancel Job menu to cancel the selected jobs in the list.

Change Job Priority

1. Hover the mouse over the **Change Priority** button. The menu is displayed as follows:

0 - Now
1 - Emergency
2 - High
3 - Normal
4 - Low

2. Select the priority level from the menu.

Suspend Job

1. Hover the mouse over the **Suspend Job** button. The menu is displayed.
2. Select **Suspend Selected Jobs** from the Suspend Job menu to suspend the selected jobs in the list.

Resume Job

1. Hover the mouse over the **Resume Job** button. The menu is displayed.
2. Select **Resume Selected Jobs** from the Resume Job menu to resume the selected jobs in the list.

Managing Advanced Processing Jobs

This screen allows you to view all jobs currently in the queue that are associated with a specific data processor. When an item in the **Data Processor** drop-down menu is selected, only the jobs associated with that processor are displayed.

To manage the Advanced Processing Job Queue:

1. Click on the **Manage Jobs** link from the Navigation bar.
2. Click on the **Advanced Processing** link. The **Advanced Processing Job Manager** page is displayed. ([Figure 6-3](#))
3. Click on the **Jobs for Data Processor** drop-down menu to select a processor.
4. Check the checkboxes next to the job queues you want to view.

All jobs associated with the selected processor, which are currently in the chosen queues, will be displayed on the page.

Advanced Processing

Job for Data Processor: Parametric Map

Hide Job Queue Filter

☒ "Working" Queue ☐ "Canceling" Queue
☐ "Pending" Queue ☐ "Cancelled" Queue
☐ "Requesting" Queue ☐ "Not Applicable" Queue
☐ "Retry" Queue ☐ "Expired" Queue
☐ "Suspended" Queue ☒ "Failed" Queue
☒ "Succeeded" Queue

☐ Check All

#	Job ID	Submit Date	End Date	Patient ID	Patient Name	Modality	Series #	Sub Series	Accession #	Priority	Status	Progress
5201	03/04/13 18:18:36	03/04/13 18:25:15	18000	Breast Lobular CA	MR	10;1081;1082;1083;1084;1085	0;0;0;0;0;0	1237015	Now	Succeeded		
5177	02/27/13 14:13:27	02/27/13 14:18:41	18000	Breast Lobular CA	MR	10;951;952;953;954;955	0;0;0;0;0;0	1237015	Now	Succeeded		
5164	02/27/13 14:02:58	02/27/13 14:04:29	18000	Breast Lobular CA	MR	10;1081;1082;1083;1084;1085	0;0;0;0;0;0	1237015	Now	Succeeded		
5146	02/27/13 13:56:10	02/27/13 14:01:21	18000	Breast Lobular CA	MR	10;951;952;953;954;955	0;0;0;0;0;0	1237015	Now	Succeeded		
5128	02/27/13 13:13:10	02/27/13 13:16:14	18000	Breast Lobular CA	MR	10;1081;1082;1083;1084;1085	0;0;0;0;0;0	1237015	Now	Succeeded		
5104	02/25/13 11:29:40	02/25/13 11:36:12	18000	Breast Lobular CA	MR	5;1081;1082;1083;1084;1085	0;0;0;0;0;0	1237015	Now	Succeeded		

Figure 6-3 Advanced Processing Job Queue Manager

Queues

The job queue filter allows you to select which queues to display. Below is a brief description of each queue.

Table 6.1 Job Queues

Queue	Description
Working	When a slot is available, the job is executed and is moved to this queue.
Pending	The job is waiting to be executed.
Requesting	The job has just been created.
Retry	If the job fails, it is moved to this queue, where it will be executed again.
Suspended	The user has suspended the job.
Succeeded	The job has been completed successfully.
Canceling	The job has been cancelled by the user and the job manager is in the process of canceling it.
Cancelled	The job has been cancelled by the Job Manager.
Not Applicable	Jobs can be rejected as “not applicable” in two ways. One is that when the job is dependent on another job that has failed, this job is automatically marked as “not applicable” without execution. The second is when the input data is not applicable to a particular processor.
Expired	For Prefetch and Retrieve jobs. If they were never run, they will expire after a certain amount of time.
Failed	If the job has been retried a certain number of times and has not succeeded, it is moved to this queue.

Managing Jobs

Jobs are grouped together based on the types of job queues. Limited jobs can be listed, based on the job queue filter. To modify the Job Display filter, do the following:

1. If the Job Queue filter is not visible, click on the **Show Job Queue Filter** button. ([Figure 6-3](#))
2. Check all desired queues and click **Apply Filter**.
3. To uncheck a filter, click on the checkbox and the check will toggle to *unchecked*.
4. Click **Hide Job Queue Filter** to hide the job queue filter from view.

Cancel Job

1. Select the job by marking the checkbox on the right side.
2. Click on the **Cancel Job** button.

Change Job Priority

1. Select the job by marking the checkbox on the right.
2. Select the priority level from its option list.
3. Click on the **Change Priority** button.

Suspend Job

1. Select the job by marking the checkbox on the right.
2. Click on the **Suspend** button.

Resume Job

1. Select the job by marking the checkbox on the right.
2. Click on the **Resume** button.

Note: For a given job, the checkbox to the left may be disabled depending on its status. For example, the checkbox for working jobs is disabled since AquariusAPS does not allow the user to alter a job that is already in progress.

Refreshing the Queue

Refresh options are just below the Job Manager function buttons described above. You can choose to have the screen updated every 5, 10, or 20 seconds, or never to be updated.

Managing Auto Routing Jobs

To manage auto routing jobs, do the following:

1. Click on the **Manage Jobs** link from the **Admin** page.
2. Click on the **Auto Routing** link. The Auto Routing Job Manager page is displayed.

Auto Routing jobs are managed in the same way as they are for Advanced Processing jobs. Please see ["Managing Advanced Processing Jobs" on page 6-4](#) for detailed instructions on how to display queues and perform job management functions.

Job Management Based Upon Destination

Both the Auto Routing and Auto Prefetch job management pages allow you to apply job functions to large groups of jobs that have the same server destination. This section is located in the lower half of the page.

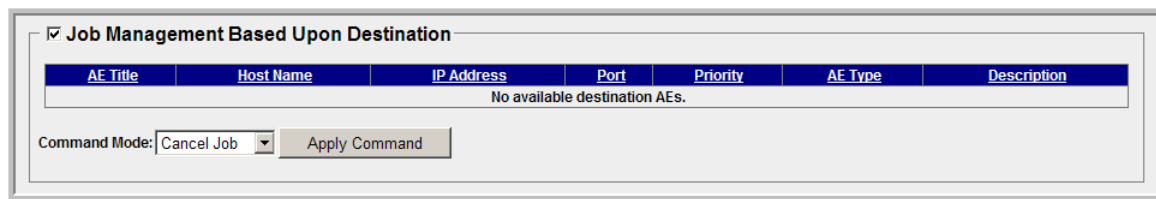


Figure 6-4 Job Management Based Upon Destination

To manage jobs based on the destination:

1. Check the box next to **Job Management Based Upon Destination**. The list of available DICOM nodes is displayed.
2. Click the destination node in the DICOM server.
3. Use the **Command Mode** drop-down menu to select the job function.

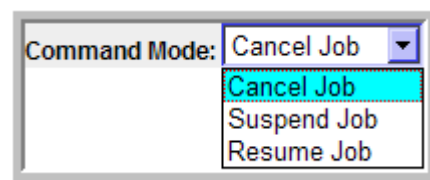


Figure 6-5 Command Modes

4. Click the **Apply Command** button.

Note: You cannot change the priority of jobs based on the destination.

Managing Prefetch Jobs

AquariusAPS can automatically locate and retrieve prior exams based on a pre-defined configuration, which is called the *prefetch pattern*, refer to ["Chapter 4 Managing the Prefetch Pattern" on page 4-15](#). AquariusAPS manages image transmission using a job queue. A pre-fetch job is created and entered into the pre-fetch job queue. Jobs can be re-prioritized, suspended, resumed, or canceled before being executed in this page.

To go to the pre-fetch job queue manager page:

1. Click on the **Manage Jobs** link from the Admin page.
2. Click on the **Prefetch** link. The Prefetch Job Manager page will be displayed.

Prefetch job managing functions operate exactly as they do for Advanced Processing job management. See ["Managing Jobs" on page 6-5](#) for more information.

Chapter 7 Log Display

System log files can be searched and displayed from the 'Log Display' page. Log display can be helpful when troubleshooting configuration, networking, and interoperability issues.

The **Display Logs** link is located on the Navigation Bar.

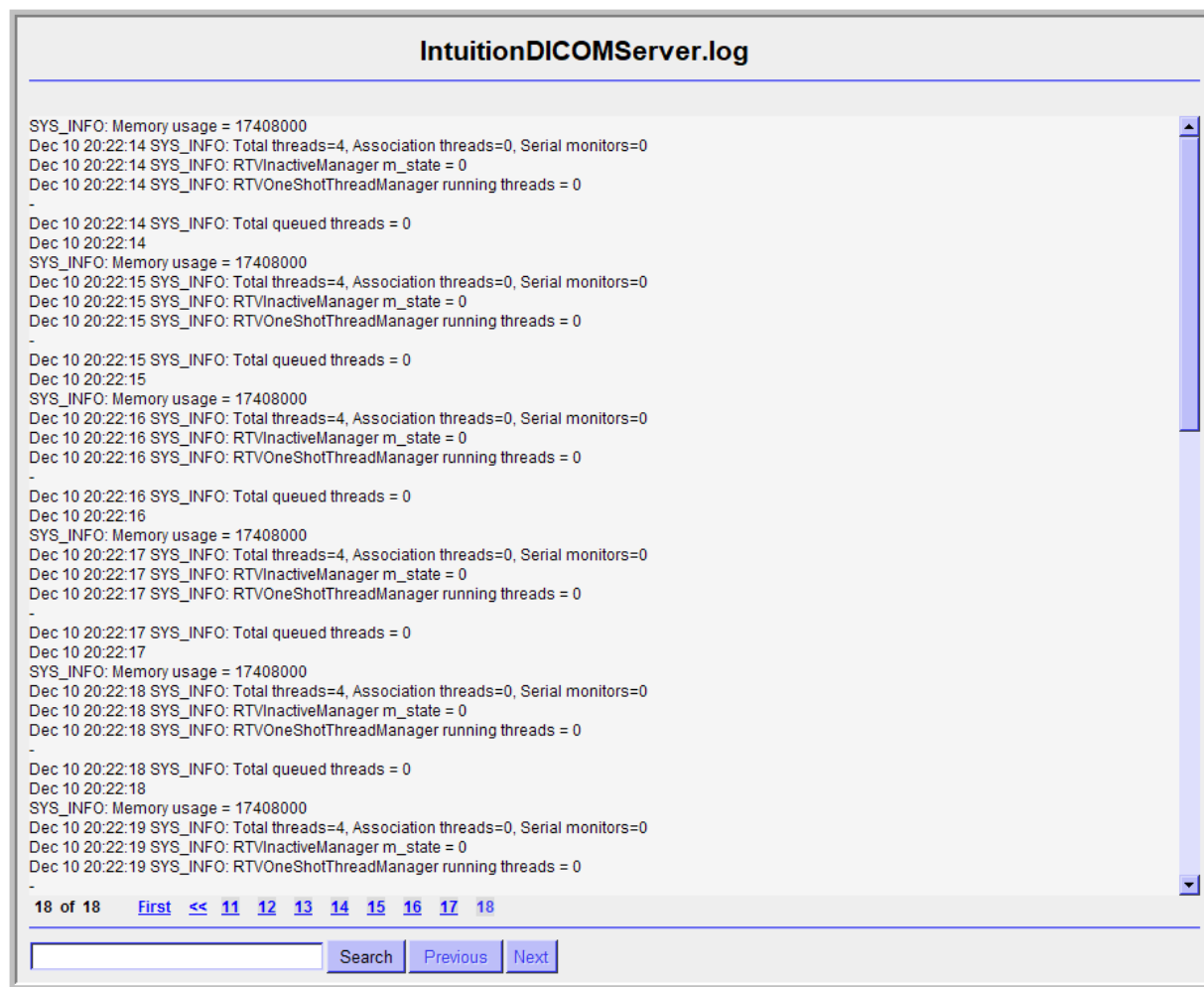


Figure 7-1 The AquariusAPS Log Display Page

Navigating the Log Pages

At the bottom of the page, the following navigation and search buttons can help you view log data:

- Click on the numbered links at the bottom of the screen to navigate to different pages.
- Enter a search string in the **Search** field and click the **Search** button to search the page for that string. After the search is complete, navigate through the page using the **Previous** and **Next** buttons:
 - **Previous** - Finds the last page to contain an occurrence of the string.

- **Next** - Finds the next page to contain an occurrence of the string.

Note: Searches are case-sensitive.

Chapter 8 Server Configuration

Topics in this chapter:

Auto Deletion	8-1
DICOM Server Configuration	8-2
Email Configuration	8-5
Notification Emails	8-6
Media Watermark	8-6
Server Option	8-7
Web Server Configuration	8-8

Auto Deletion

Note: AquariusAPS™ automatically deletes raw files after they have been processed and/or pushed to the destination DICOM node (AE). However, it does not automatically delete COF files, the output of the AquariusAPS modules. Auto Deletion must be set up in order for COF files to be deleted automatically.

Auto Deletion will start automatically, based on task scheduler. It will try to delete all aged data sets on the server based on the configuration parameters: **Age in days (Receive Time and Access Time)** and **High Watermark**.

Age of the data set is determined by the difference between today's date and the date when the data set was received or accessed (via DICOM). For example, if the configuration parameter age is set to 10 days, Auto Deletion will delete all data sets older than 10 days when it starts, if the high watermark option is unselected. If the high watermark option is selected, aged data sets will be deleted only if free disk space on RAID devices is lower than high watermark.

A default task scheduler will be created when AquariusAPS is installed for the first time. Upgrading AquariusAPS will not overwrite the existing task scheduler. The age value in the default task scheduler is 1. The default task scheduler will wake up daily at 4 am with the high watermark option unselected.

To manage the 'Auto Deletion' page:

1. Click on the link **Manage Server Configuration** from the Admin page.
2. Click on the **Auto Deletion** link. The 'Auto Deletion Manager' page will be displayed with the **Schedule Auto Deletion** link active. ([Figure 8-1](#))

Figure 8-1: The Auto Deletion Manager page

Scheduling auto deletion task:

1. Click on the **Schedule Auto Deletion Task** tab, if it is not active.
 - a. Modify fields as necessary.
 - b. Click **Save** to save all modifications.

Running auto deletion now:

1. Click on the **Run Auto Deletion Now** tab.
 - a. To continue, click **OK** in the confirmation dialog.

CAUTION! Please use caution when setting up the “Age” parameter and the high watermark option. Data sets cannot be recovered after being deleted by Auto Deletion.

DICOM Server Configuration

To view or update DICOM server configuration, do the following:

1. Click on the **Server Configuration** link from the Admin page.
2. Click on the **DICOM Server Configuration** link. The DICOM Server Configuration page is displayed. ([Figure 8-2](#))

3. Update configuration parameters. See ["DICOM Server Configuration Parameters" on page 8-4.](#)

Tip: New keys and values can be added using this page. Keys that are not recognized by the DICOM server at restart time will be ignored.

4. Click on the **Save Modification** button when done.

DICOM Server		
Current configuraton		
Configuration		
DICOM listen port (1 - 99999 except for 104)	105	☐
Debug verbose (0 - 4)	0	☐
DICOM Server merge log level (0 - 4)	0	☐
Location for log message (0 - 2)	2	☐
Maximum size of log file allowed (10 - 51200 KB)	4096	☐
Maximum number of associations (1 - 50)	10	☐
Time limit for inactivity (0 - 36000 sec.)	3600	☐
Timeout for series completion (5 - 300 sec.)	20	☐
Timeout for writing message (0 - 600 sec.)	300	☐
Timeout for reading message (0 - 60 sec.)	30	☐
Maximum number of threads allowed (25 - 1000)	180	☐
Change duplicate UID to new UID (0 or 1)	0	☐
Option to force transfer syntax (0 - 3)	0	☐
Create cache (0 or 1)	1	☐

New Key New Value

Figure 8-2 The DICOM Server Configuration page

Invalid entries will be indicated with a red border around the field entered in error. They must be reentered before the configuration can be saved. Entries that fall outside the accepted range may be clamped. If this happens, such values will be indicated with a yellow border around the field.

Note: DICOM server configuration changes do not take effect until the DICOM server is restarted.

DICOM Server Configuration Parameters

These describe the function, default value and acceptable range of values for the DICOM Server Configuration:

DICOM Listen Port (1 - 99999): --- Port (default 105) on which the AquariusAPS DICOM Server listens for all DICOM requests.

Debug Verbose (0 - 4): --- This controls the verbosity of the DICOM Server log. Allowable values are:

- 0 → Errors (default)
- 1 → Errors + Warnings
- 2 → Errors + Warnings + Info
- 3 → Errors + Warnings + Info + Trans
- 4 → Errors + Warnings + Info + Trans + Debug

DICOM Server Merger Log Level (0 - 4): --- This controls the verbosity of the merge log. Allowable values are:

- 0 → Errors (default)
- 1 → Errors + Warnings
- 2 → Errors + Warnings + Info
- 3 → Errors + Warnings + Info + Trans
- 4 → Errors + Warnings + Info + Trans + Debug

logLocation (0 - 2):

- 0 → Message goes to screen
- 1 → Message goes to log file
- 2 → Message goes to screen + log file

The default value is 1

Max. Size of Log File Allowed (10 – 1048576): If the log file size grows beyond this value, it will be copied to a backup file and cleared. The default value is 4096 KB.

Max. Number of Associations (1 – 25): The maximum number of simultaneous inbound associations that the AquariusAPS DICOM Server will accept. The default value is 10.

Time Limit for Inactivity (0 – 36000): Number of seconds of inactivity over an open association before the DICOM Server closes the association. A value of zero (0) means the server does not wait at all before closing the association. The default value is 3600 sec.

Time Out for Series Completion (0 - 36000 sec.): When the AquariusAPS DICOM server receives images, it builds a cache of the series for optimizing load time. This value controls how long the DICOM server waits before it assumes that all of the images in a series have been transmitted. On a very busy PACS network, this value may need to increase so as to avoid frequent timeouts on image sends. However, long wait will be excepted if it is set too high. A value of zero (0) means the server does not wait at all before closing the association. The default value is 20 sec.

Time Out for Writing Message (0 - 36000 sec.): Time to wait when writing a message out of an open association before moving on. A value of zero (0) means the server does not wait at all before closing the association. The default value is 300 sec.

Time Out for Reading Message (0 – 36000 sec.): Time to wait when reading a message out of an open association. This is used to tune DICOM messaging performance on busy networks. If the value is set too high, users can experience long waits; if it is too low, requests may timeout. A value of zero (0) means the server does not wait at all before closing the association. The default value is 30 sec.

Max. Number of Threads Allowed (5 - 300): Total number of threads allowed during program execution. Each open association may consume multiple threads. If pushing many series at the same time, this value may need to be set to a higher number. The default value is 180.

Change Duplicate UID changed to New Unique UID (0 or 1):

1 → Accept instances where the SOPInstanceUID has already been stored by changing it to a new unique UID

0 → Reject duplicates
The default value is 0.

Option to Force Transfer Syntax (0 -3)?: Force MR, CT, SC to use a specific transfer syntax

- 0 → Do NOT force transfer syntax
- 1 → Implicit Little Endian

2 → Explicit Little Endian

3 → Explicit Big Endian

The default value is 0.

Create Cache(0, 1): Use cache on local hard disk.

1 → Use cache.

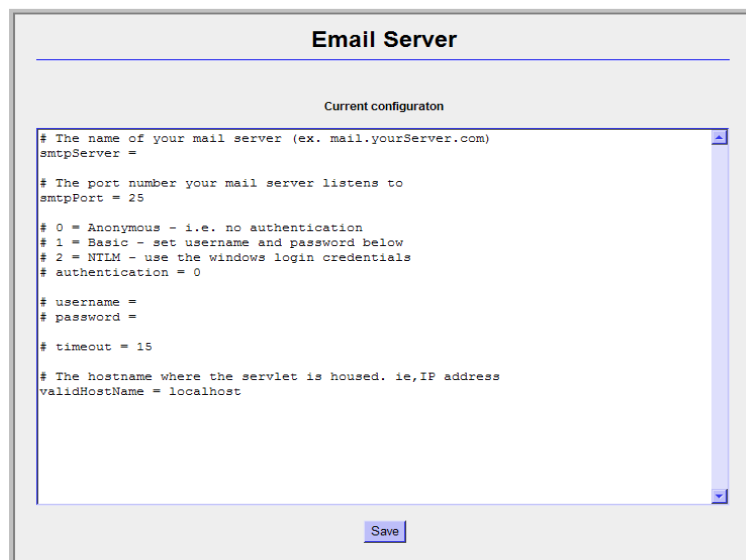
0 → Do not use cache.

The default value is 1.

Email Configuration

To update the email configuration:

1. Click on the **Manage Emails** link from the Admin page.
2. Click on the **Email Configuration** link. The Email Configuration page will be displayed as shown in the figure below.
3. Update as needed and click **Save**.



Email Server

Current configuraton

```
# The name of your mail server (ex. mail.yourServer.com)
smtpServer =

# The port number your mail server listens to
smtpPort = 25

# 0 = Anonymous - i.e. no authentication
# 1 = Basic - set username and password below
# 2 = NTLM - use the windows login credentials
# authentication = 0

# username =
# password =

# timeout = 15

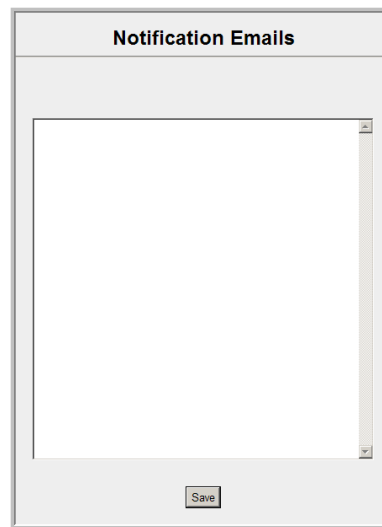
# The hostname where the servlet is housed. ie, IP address
validHostName = localhost
```

Save

Note: Please provide the connection information for the email server on your network. Refer to the above figure for an example.

Notification Emails

Notification Emails is a collection of email addresses that will be used to send notification emails when the AquariusAPS server detects that free disk space has reached the watermark.

A screenshot of a web-based configuration window titled "Notification Emails". The window has a light gray border and a title bar. Inside, there is a large, empty text input area with a vertical scrollbar on the right side. At the bottom right of the window, there is a small button labeled "Save".

Modifying the Address List

- Add or delete email addresses in the text input box.
- Only one email address per line is allowed, but you can insert empty lines between addresses.
- Begin a comment line with the '#' character.
- A valid email address is a string that contains the following:
 - Only one at-sign ('@') character is allowed per email address.
 - Some non-white space characters must appear immediately before and after the at-sign.
 - The dot('.') character must appear after, but not immediately after, the at-sign. The dot character may not appear at the end of the string.

Click **Save** when done.

Media Watermark

Low and high watermarks are two configuration parameters to control the server's disk space manager. When the amount of disk space available goes down to the "High Watermark", the server software starts to delete the cached files to make space whenever it receives new data. When the disk space available reaches the "Low Watermark" then the server stops accepting any new data.

To view or change watermark configuration:

1. Click on the **Media Watermark** link. The **Media Watermark** page displays. ([Figure 8-3](#))

2. Modify the values as needed. The value of high watermark must be larger or equal to the value of low watermark.
3. Click **Save** when done.

Media Point	Media Label	High Watermark (MB)	Low Watermark (MB)
E:\	AQWSSOLDATA	10000	500

Save

Figure 8-3 Media Watermark Page

Server Option

To view or change the AquariusAPS Server configuration, click on the **Server Option** link.

Options

Enable dynamic service list (0 - 1)

PE base series number

PE debug verbose (0 - 4)

Save

Enable dynamic service list (0 - 1) - Allows the AquariusAPS Server to route any type of DICOM data, rather than restricting routing to data types defined in a fixed service list.

PE base series number - Sets the start number for series that are created by a processing engine.

PE Log Level (0 - 4): --- This controls the verbosity of the PE log.

Allowable values are:

- 0 ➔ Errors (default)
- 1 ➔ Errors + Warnings
- 2 ➔ Errors + Warnings + Info
- 3 ➔ Errors + Warnings + Info + Trans
- 4 ➔ Errors + Warnings + Info + Trans + Debug

Web Server Configuration

Web Server

Configuration

Interval to check Hasp license (1 - 24 hours)

2

Lock out time (minutes)

30

Maximum number of series or job items per page

25

Maximum number of unsuccessful login attempts

5

Strong password option

Strong

Session timeout (minutes)

20

Web service user authentication master server

Web service user authentication backup server

Data share backup server

Force use data share backup server

0

Save

Figure 8-4: The Web Server Configuration page

Table 8.1 lists the Web Server Configuration page entries descriptions.

Table 8.1 Web Server Configuration Entries

Entry	Default Value	Description
Interval to check Hasp license (1-24 hours)	2 hours	The Hasp license is verified as current at the frequency specified.
Lock Time Out	10 minutes	The user will be denied login access for the specified amount of time (in minutes) after multiple failed login attempts.
Maximum Number of Series or Job Items Per Page	25	The maximum number of series or job items to be displayed on the Job Manager or Manage Series page.
Maximum Number of Unsuccessful Login Attempts	5	The user will be locked out after trying and failing to log in more than the number of times specified.
Strong Password Option	Strong	No Constraint: You may select anything as a new password. Medium Strong: The new password should not be the same as the previous password or username. The new password must have at least six (6) characters and contain a combination of alpha [a-z,A-Z,_] and numeric [0-9] characters. Strong: The new password should not be the same as the previous password, or the username. The new password cannot be one used as any of the last 10 passwords. The new password must have at least eight (8) characters and contain at least one of upper-case letters, lower case letters, numbers, and special characters.
Session Time Out	20 minutes	The user will be logged off if the session is inactive for the specified amount of time.
Web service user authentication master server	N/A	The AquariusAPS server does not usually provide regular user accounts. But if a user needs an account, for example, to upload a file to the server, an account is set up on the Intuition Server , as a master server, for the purposes of authentication only. This field contains the IP address of the Intuition Server.
Web service user authentication backup server	A backup server for the Web service user authentication master server.	N/A
Data share backup server	N/A	Intuition Client Uploader checks this setting to determine whether a data sharing backup server is configured. If so, the IP address for the backup server is cached on the client side. When the primary server is not available, Intuition Client Uploader will try to connect to the backup server at this address.

Entry	Default Value	Description
Force use data share backup server	0	Force Intuition Client Uploader to connect to a backup server rather than the AquariusAPS server.

Chapter 9 Server Services

Topics in this chapter:

DICOM Server Service	9-1
Job Manager Service	9-1
Rebooting the Server	9-2

DICOM Server Service

To stop/start the DICOM server:

1. Click on the **Manage Server Services** link in the Navigation Bar.
2. Click on the **DICOM Server** link. The DICOM Server Service page will be displayed on the right.
3. Click on the **Stop** button if it is not disabled and click on the **OK** button in the popup window to stop the DICOM server.
4. Click on the **Start** button if it is not disabled and click on the **OK** button in popup window to start the DICOM server.

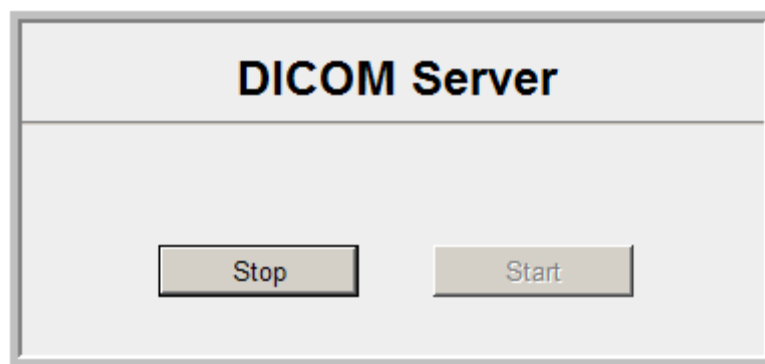


Figure 9-1 The DICOM Server page

Note: The Stop button will be disabled if the DICOM server is not running, and the Start button will be disabled if the DICOM server is running.

Job Manager Service

The Job Manager Service page allows you to start or stop the Job Manager service.

To access the Job Manager service:

1. From the navigation bar in the left panel, click on the **Manage Server Services** link.
2. Click on the **Job Manager** link. The Job Manager service page will be displayed in the right panel.

3. To stop the Job Manager service, click on the **Stop** button if it is not disabled, and click the **OK** button in the popup window.
4. To start the Job Manager service, click on the **Start** button if it is not disabled, and click on the **OK** button in popup window.

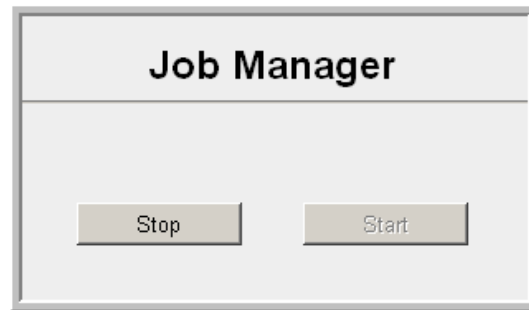


Figure 9-2 Job Manager

Rebooting the Server

Note: This feature is not available on servers running Windows 7 or Windows Server 2008.

To reboot the server:

1. From the navigation bar in the left panel, click on the **Manage Server Services** link.
2. Click on the **Reboot Server** link. The Reboot Server page will be displayed on the right.
3. Click on the **Yes** button to confirm.
4. Click on the **No** button to cancel.

Note: Rebooting the server machine will also start the DICOM server and the Web Server.

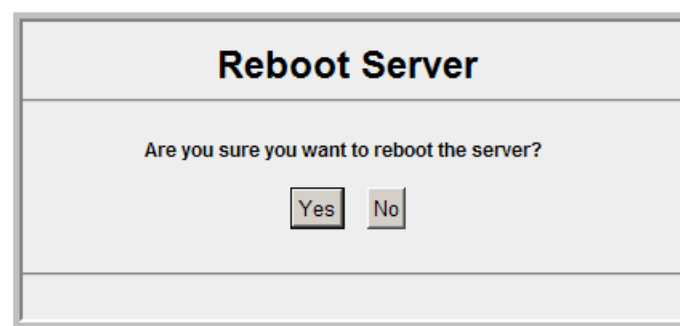


Figure 9-3 The Reboot Server Page

Chapter 10 License Management

The **License** screen allows you to update the AquariusAPS™ Server's HASP key. A license file from TeraRecon, Inc. is required before you can update a license using this screen.

License

Apply new license

New license file

Browse...
Apply new license

Current license info

Hasp Name
 Hasp ID
 Time

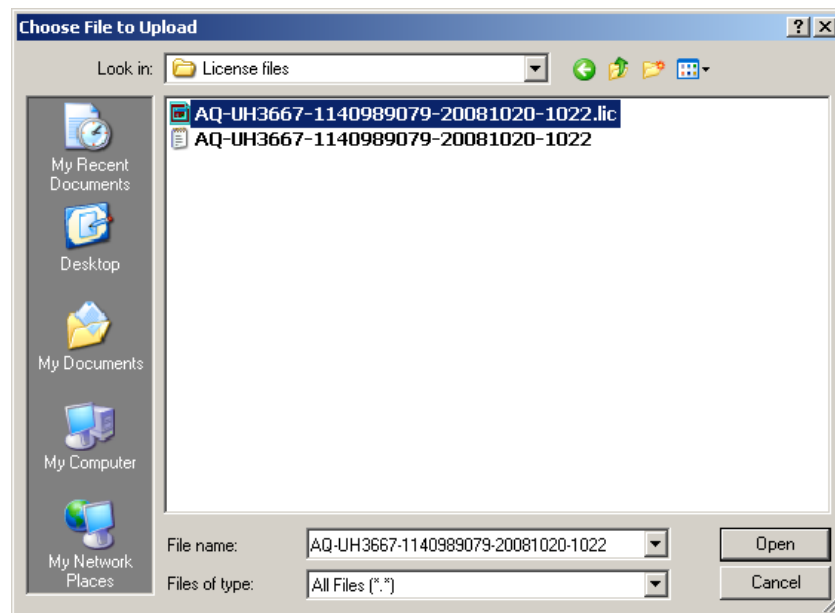
HASP TIME
 0x4398F640 (1134097984)
 12/21/2011 18:01:11

Feature	Status	Number Of Licenses	Expiry Date	Local Only
AQNet Dicom Server Full	Temporary	unlimited	06/ 01/ 12	0
Aquarius APS	Temporary	unlimited	06/ 01/ 12	0
CT Table Removal PE	Temporary	unlimited	06/ 01/ 12	0
Rib Cage Removal PE	Temporary	unlimited	06/ 01/ 12	0
Body Bone Removal PE	Temporary	unlimited	06/ 01/ 12	0
Parametric Map PE	Temporary	unlimited	06/ 01/ 12	0
Rigid Registration PE	Temporary	unlimited	06/ 01/ 12	0
SphereFinderL PE	Temporary	unlimited	06/ 01/ 12	0
SphereFinderC PE	Temporary	unlimited	06/ 01/ 12	0
DeformableRegistration PE	Temporary	unlimited	06/ 01/ 12	0
Abdominal Labeling PE	Temporary	unlimited	06/ 01/ 12	0
UpperLeg Labeling PE	Temporary	unlimited	06/ 01/ 12	0
Heart Atlas PE	Temporary	unlimited	06/ 01/ 12	0
Auto Coronary PE	Temporary	unlimited	06/ 01/ 12	0
Auto Body Vessel Extraction PE	Temporary	unlimited	06/ 01/ 12	0
Expose Coronary PE	Temporary	unlimited	06/ 01/ 12	0
EP Lab PE	Temporary	unlimited	06/ 01/ 12	0
Head/Neck Labeling PE	Temporary	unlimited	06/ 01/ 12	0
Colon Segmentation PE	Temporary	unlimited	06/ 01/ 12	0
Lung Segmentation PE	Temporary	unlimited	06/ 01/ 12	0
Colon Stool Removal PE	Temporary	unlimited	06/ 01/ 12	0
Rib Labeling PE	Temporary	unlimited	06/ 01/ 12	0
Auto Batch PE	Temporary	unlimited	06/ 01/ 12	0
Subtraction PE	Temporary	unlimited	06/ 01/ 12	0
Bone Labeling PE	Temporary	unlimited	06/ 01/ 12	0
Rigid Registration PE - Derived Volume Option	Temporary	unlimited	06/ 01/ 12	0
Auto Annotation PE Option	Temporary	unlimited	06/ 01/ 12	0

Sorry, no other features found

To update the HASP key with a new license:

1. You first must have already received a license file via an email from TeraRecon. The license file must be saved on the *local* hard drive.
2. If you know the name of the license file, type the name into the text box labeled **New license file**. If you are not sure of the name, click the **Browse** button, and navigate to the folder where the license file is saved. Select the desired **.lic** file and click **Open**.



3. Click **Apply new license** to update the HASP key.

Chapter 11 Other Controls

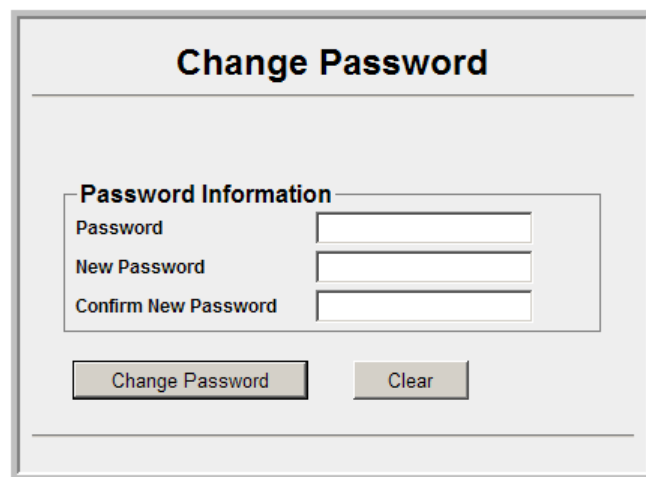
Topics in this chapter:

Change Password	11-1
View Module Info	11-2
Server Snapshot	11-3
Contacting TeraRecon	11-4
Logging Out	11-5

Change Password

To change the password:

1. From the Navigation Bar, click the **Others** link.
2. Click the **Change Password** link. The Change Password page will be displayed on the right. ([Figure 11-1](#))
3. Enter old and new passwords and confirm the new password.
4. Click on the **Change** button when done.



The screenshot shows a web form titled "Change Password". Inside the form, there is a sub-section titled "Password Information" which contains three text input fields labeled "Password", "New Password", and "Confirm New Password". Below these fields are two buttons: "Change Password" and "Clear".

Figure 11-1 The Change Password Page

New Password Rules

The new password:

- May not be the same as the old password or username.
- Must have at least six (6) characters.

- Must contain a combination of alpha [a-z,A-Z,_] and numeric [0-9] characters.

View Module Info

To view the information about which modules are installed on the AquariusAPS™ server, click the **View Module Info** link in the Navigation Bar. The View Module screen is displayed. ([Figure 11-2](#))

Intuition Server Modules

The Intuition Server screen displays the list of server modules installed on the AquariusAPS server. These modules run various aspects of the server itself, such as the Job Manager, Auto Deletion, the DICOM server, etc. The version of each module, as well as the folder where each is stored, is also displayed.

Module Info			
AqNET PES Plugin PES			
Name	Version	Description	Folder
Anonymizer.exe	0.0.0.0		C:\Program Files\AQAPS\Bin
AnonymizerUpgrade.exe	1.0.0.1	Anonymization database and data upgrade tool.	C:\Program Files\AQAPS\Bin
AnonymizeWithTemplate.exe	0.0.0.0		C:\Program Files\AQAPS\Bin
AqHASP.exe	4.4.7.1	AqHASP	C:\Program Files\AQAPS\Bin
AqJobManager.exe	4.4.7.23	AqNET Job Manager	C:\Program Files\AQAPS\Bin
AQNetAutoDeletion.exe	4.4.7.23	AQNet Auto Deletion	C:\Program Files\AQAPS\Bin
AqNetDataDelete.exe	0.0.0.0		C:\Program Files\AQAPS\Bin
AQNetDICOMServer.exe	4.4.7.23	AQNet DICOM Server	C:\Program Files\AQAPS\Bin
AQNetImport.exe	4.4.7.23	AQNetImport	C:\Program Files\AQAPS\Bin
AqNETMPPS.exe	1.0.0.0	AqNETMPPS	C:\Program Files\AQAPS\Bin
AqNETPrefetch.exe	4.4.7.23	AqNETPrefetch	C:\Program Files\AQAPS\Bin
AQNetPrint.exe	4.4.7.23	Submits DICOM Filming jobs	C:\Program Files\AQAPS\Bin
AqNETRetrieve.exe	4.4.7.23	AqNETRetrieve	C:\Program Files\AQAPS\Bin
AQNetSendImage.exe	4.4.7.23	AQNetSendImage	C:\Program Files\AQAPS\Bin
AqNETStorageCommitment.exe	2.0.0.0	AqNETStorageCommitment	C:\Program Files\AQAPS\Bin
DetachOldAqNETDB.exe	0.0.0.0		C:\Program Files\AQAPS\Bin
dicom_echo.exe	0.0.0.0		C:\Program Files\AQAPS\Bin
HandleCreatePEJobs.exe	4.4.7.23	HandleCr Application	C:\Program Files\AQAPS\Bin
HandleSeriesComplete.exe	0.0.0.0		C:\Program Files\AQAPS\Bin
hasp_windows.dll	1.10.0.0	Aladdin HASP HL Windows DLL	C:\Program Files\AQAPS\Bin
haspds_windows.dll	5.11.78.1	Aladdin Hasp HL Driver Installer	C:\Program Files\AQAPS\Bin
ijl20em64t.dll	2.0.18.50	Intel® JPEG Library - Retail Version	C:\Program Files\AQAPS\Bin
Interpreter.exe	4.4.7.23	APS Interpreter	C:\Program Files\AQAPS\Bin
MC3ADV.DLL	3.7.0.5	mc3adv.dll	C:\Program Files\AQAPS\Bin
MC3ADV64.DLL	3.8.0.2	mc3adv64.dll	C:\Program Files\AQAPS\Bin
nvr.dll	4.4.7.23	AQNet ClientAPI	C:\Program Files\AQAPS\Bin
PICX20.DLL	2.0.0.167	Pegasus Dispatcher for Win64	C:\Program Files\AQAPS\Bin
TRDBuild.exe	4.4.7.23	TRDBuild Application	C:\Program Files\AQAPS\Bin
UIDEncode.dll	0.0.0.0		C:\Program Files\AQAPS\Bin
UpdateHostname.exe	1.0.0.1	UpdateHostname Application	C:\Program Files\AQAPS\Bin
waterMarkEmail.exe	0.0.0.0		C:\Program Files\AQAPS\Bin

Figure 11-2 Intuition Server Modules Installed

PE Modules

The PE tab shows all the Processing Engines currently installed on the server. The version of each module, as well as the folder where each is stored, is also displayed.

Module Info			
AqNET PEs Plugin PEs			
Name	Version	Description	Folder
AqMedic SightColon.exe	4.4.6.74	Medic SightColon.exe	C:\Program Files\AQAP\SIPE
AqMedic SightLung.exe	4.4.6.74	Medic SightLung.exe	C:\Program Files\AQAP\SIPE
AutoAnonymizer.exe	4.4.6.74	AutoAnonymizer	C:\Program Files\AQAP\SIPE
AutoBatch.exe	4.4.6.74	AutoBatch	C:\Program Files\AQAP\SIPE
AutoBodyCenterline.exe	4.4.6.74	AutoBody	C:\Program Files\AQAP\SIPE
AutoBodyVesselContour.exe	4.5.0.4	AutoContour	C:\Program Files\AQAP\SIPE
AutoCoronary.exe	4.4.6.74	AutoCoronary	C:\Program Files\AQAP\SIPE
AutoCoronaryConsolidate4D.exe	4.4.6.74	AutoCoronary4DConsolidation	C:\Program Files\AQAP\SIPE
BoneLabelLegs.exe	4.4.6.74	BoneLabelLegs Application	C:\Program Files\AQAP\SIPE
BoneMasking.exe	4.4.6.74	BoneMasking	C:\Program Files\AQAP\SIPE
BoneRemoveHeadNeck.exe	4.4.6.74	BoneRemoveHeadNeck	C:\Program Files\AQAP\SIPE
BoneRemoveSlabMode.exe	4.4.6.74	BoneRemoval	C:\Program Files\AQAP\SIPE
CleanAuxData.exe	0.0.0.0		C:\Program Files\AQAP\SIPE
ColonDataConverter.exe	4.4.6.74	ColonDataConverter	C:\Program Files\AQAP\SIPE
DeformableRegistration.exe	4.4.6.74	DeformableRegistration	C:\Program Files\AQAP\SIPE
DualEnergyBlender.exe	4.4.6.74	DualEnergyBlender	C:\Program Files\AQAP\SIPE
DualEnergyBoneRemoval.exe	4.4.6.74	Dual Energy Bone Removal	C:\Program Files\AQAP\SIPE
DualEnergyExtractor.exe	4.4.6.74	DualEnergyExtractor	C:\Program Files\AQAP\SIPE
EPLab.exe	4.4.6.74	EPLab	C:\Program Files\AQAP\SIPE
ExposeCoronary4D.exe	4.4.6.74	ExposeCoronary4D	C:\Program Files\AQAP\SIPE
ExtractHeadNeckTree.exe	4.4.6.74	ExtractHeadNeckTree	C:\Program Files\AQAP\SIPE
Fusion.exe	4.4.6.74	Fusion	C:\Program Files\AQAP\SIPE
HandleCreatePEJobs.exe	4.4.6.74	HandleCr Application	C:\Program Files\AQAP\SIPE
ICAD.exe	4.4.6.74	ICAD Colon	C:\Program Files\AQAP\SIPE
icad_cad_system.dll	0.1.0.0	ICAD CTC System Interface DLL	C:\Program Files\AQAP\SIPE
Interpreter.exe	4.4.6.74	APS Interpreter	C:\Program Files\AQAP\SIPE
libguide40.dll	4.0.2005.902	Guide Runtime Library	C:\Program Files\AQAP\SIPE
SphereFinderC.exe	4.4.6.74	SphereFinderC	C:\Program Files\AQAP\SIPE
SphereFinderL.exe	4.4.6.74	SphereFinderL	C:\Program Files\AQAP\SIPE
Subtraction.exe	4.4.6.74	Subtraction	C:\Program Files\AQAP\SIPE
TableRemover.exe	4.4.6.74	CTTableRemoval	C:\Program Files\AQAP\SIPE
TDA.exe	4.4.6.74	TDA	C:\Program Files\AQAP\SIPE
TimeSeriesGenerator.exe	4.4.6.74	TimeSeriesGenerator	C:\Program Files\AQAP\SIPE
TriggerWorkflow.exe	0.0.0.0		C:\Program Files\AQAP\SIPE
VesselLabelAbdomen.exe	4.4.6.74	VesselLabelAbdomen	C:\Program Files\AQAP\SIPE
VesselLabelHeadNeck.exe	4.4.6.74	VesselLabelHeadNeck	C:\Program Files\AQAP\SIPE
VesselLabelHeart.exe	4.4.6.74	VesselLabelHeart	C:\Program Files\AQAP\SIPE
VesselLabelUpperLegs.exe	4.4.6.74	VesselLabelUpperLegs	C:\Program Files\AQAP\SIPE
VirtualNonContrastedDualEnergy.exe	4.4.4.1	Dual Energy Bone Removal	C:\Program Files\AQAP\SIPE
VolumeFilter.exe	4.4.6.74	VolumeFilter	C:\Program Files\AQAP\SIPE

Figure 11-3 Processor Engine Modules Installed

Upgrade Info

The Upgrade Info display is located at the bottom of the Module Info screen and contains the version number of the AquariusAPS server software installed. This information is generally hidden. To view it, click the blue bar that says **(Show)**.

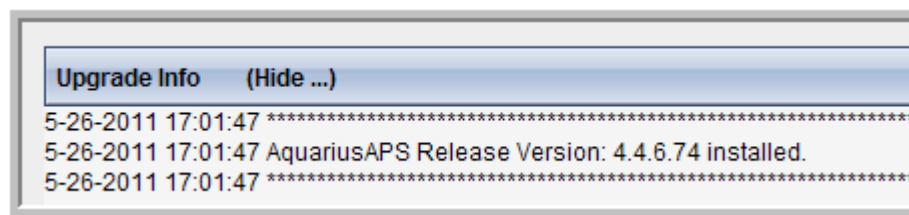


Figure 11-4 Upgrade Information

Server Snapshot

When communicating with TeraRecon customer support, it can be helpful to supply information regarding the state of AquariusAPS. The Server Snapshot feature automatically collects all relevant state information into a single file called a *.cab* file (which is like a *.zip* file). The file name will be a combination

of the server machine's hostname and the time at which the snapshot was taken. The cab file can be sent via ftp to TeraRecon, Inc., or it can be downloaded to a local machine.

To send a server snapshot:

5. From the Navigation bar, click the **Others** link.
6. Click the **Server Snapshot** link. The Server Snapshot page will be displayed on the right. ([Figure 11-5](#))

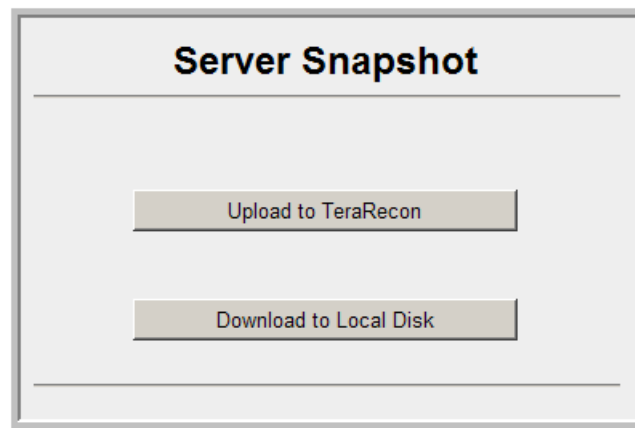


Figure 11-5 The Server Snapshot Page

To upload the server snapshot to TeraRecon:

1. Click on the **Upload to TeraRecon** button. A dialog pops up to ask whether to continue.
2. If you click **Yes**, a second dialog pops up to ask whether you also want to send a notification email to support@terarecon.com.
3. Click on the **OK** button in the above pop up dialog to send the email. A progress bar will show up and finally the 'Snapshot Notification Email' page will be displayed.
4. Compose your email message and send it by clicking on the **Send Email** button.

To download a server snapshot to a local disk:

1. Click on the link **Download to Local Disk**. A progress bar will show up and finally the **File Download** dialog will pop up.
2. Save the snapshot file to a local machine.

Contacting TeraRecon

Click the **Contact TeraRecon** link in the navigation panel to display the contact information for TeraRecon's corporate offices worldwide.

Logging Out

To log out from the current session:

1. Click on the **Log Out** link in the Navigation Bar. The screen in the right panel will go back to the 'AquariusAPS Login' page.

Note: Please remember to log out after using the system to avoid unauthorized access to the server's management functions.

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