PUBLIC

iQ-WEB ADMINISTRATION GUIDE

Version 6.3.8 PUB INT EN 006R

Copyright © 2003-2014 IMAGE Information Systems Ltd.

Released:

2013-11-27

CE 0482



TABLE OF CONTENTS

1 INTRODUCTION	
2 SYSTEM REQUIREMENTS	7
2.1 Minimum server requirements	7
2.2 Minimum client requirements	
2.3 Recommended server requirements	8
2.4 Recommended client requirements	8
3 INTEGRATED MODULES AND INTERFACES	
3.1 iq-webx wado	10
3.2 iQ-X	10
3.3 iQ-WEB2GO	
3.4 iQ-VIEW CALL	
4 SPECIAL MODULES	
4.1 iq-webx wado hl7	
4.2 iQ-WEBX Report Converter	12
5 INSTALLING THE SOFTWARE	
5.1 Installation of the MySQL database server	14
5.2 Configuration of the MySQL database server	14
5.3 Installation of iQ-WEB	14
5.4 Configuration of iQ-WEB	14
5.4.1 DICOM specific configuration	
5.4.2 MySQL specific configuration	
5.4.3 Storage specific configuration	
5.4.4 HL7 message listener configuration	
5.5 Validate installation	17
6 UNINSTALLING THE SOFTWARE	
7 FOLDER STRUCTURE	
8 REGISTRY STRUCTURE	
9 CORE CONFIGURATION	
9.1 Apache HTTP server	
9.1.1 SSL integration	
9.2 PHP	
9.3 MySQL	
10 LICENSING	
10.1 Licensing system	
10.2 Activating the software	
10.3 License migration	
	29
	······································

12 VIEWS	
12.1 Jobs	
12.2 Journal	
12.2.1 Automatic monthly journal emails	33
13 TOOLS	
13.1 Automatic purge storage	34
13.1.1 General automatic purging rules	34
13.1.2 Automatic purging rules by DICOM data element filters	
13.2 Database maintenance	
13.2.1 Integrity check	
13.2.2 Delete all patient/image data	
13.2.3 Delete database jobs	
13.3 System	
13.3.1 Service maintenance	
13.3.2 Configure iQ-VIEW Call stations	41
13.4 Licensing	43
13.4.1 iQ-WEB	43
13.4.2 iQ-X, iQ-WEBX REPORT EDITOR, iQ-WEB LICENSE	44
13.4.3 iQ-WEB2GO	44
13.4.4 iQ-WEBX WADO	45
13.4.5 Order licenses/request support	45
13.5 Today's log	46
13.6 Live monitor	46
14 SETTINGS	
14.1 Users	47
14.1.1 Privacy attributes	47
14.1.2 User Accounts	47
14.1.3 User Group Accounts	50
14.1.4 Administrator Accounts	51
14.1.5 Failed Login Attempts	
14.1.6 Upgrade existing database user	52
14.1.7 Regenerate Existing iQ-WEB User	
14.2 System	53
14.2.1 Storage	53
14.2.2 Automatic aging	
14.2.3 Global settings	
14.2.4 Upload	
14.2.5 Auto-Scan import	
14.2.6 Worklist	60
14.2.7 HL7	60
14.3 Email	61
14.4.2 HL/ message routing	65
15 COMMUNICATIONS	
	6/

20 LIST OF FIGURES	103
19 ABBREVIATIONS AND ACRONYMS	102
18.9.2 IPv6 Compatibility	101
18.9.1 Hostname Resolution	
18.9 Network troubleshooting	
18.8.3 iQ-WEB2GO, iQ-WEBX WADO License	
18.8.2 iQ-X License	
18.8.1 Core license	
18.8 License troubleshooting	
18.7 Thumbnail & Image generation	96
18.6 Virtualization environment & Distributed systems	96
18.5.3 Network	
18.5.2 Data consistency	
18.5.1 Transcription	
18.5 Integration	
18.4 DICOM/HL7 debugging	
18.3 iQ-WEB debugging	
18.2 Database debugaina	
18.1 Webserver debugging	
18 TROUBLESHOOTING	
17.3 Translation workflow	
17.2 Translation projects	87
17.1 Translation toolset	86
17 TRANSLATION	86
I 6.7 Known issues	85
16.6 Virtualized environment	
16.5.2 DICOM access to previous PACS	
16.5.1 File access to previous PACS or storage system	
16.5 Any PACS to iQ-WEB migration	
16.4.2 Migration to new hardware including new storage volumes	
16.4.1 Migration to new hardware keeping existing storage volumes	
16.4 IQ-WEB to IQ-WEB server migration	
16.3.2 Storage migration and replacement	
16.3.1 Storage to be added to an existing storage device	
16.3 Change of storage volumes	80
16.2.1 MySQL syntax examples	79
16.2 MySQL database backup	79
16.1 Migration checklist	78
16 MIGRATION	
15.2.2 How to test HL7 communication	70
1521 Configure a HL7 application	
	75 76
15.1.2 Remove a DICOM node	
15.1.2 Perceya a DICOM node	0/ 75
15.1.1 Add or modify a DICOM pode	47

21 INDEX	4
----------	---

1 INTRODUCTION

iQ-WEB is a DICOM compliant Picture Archiving and Communication System (PACS) application which consists of the following components:

- DICOM protocol server for servicing requests for image storage, query and retrieve, forwarding, routing, printing images, and DICOM formatted media interchange through import and export functions.
- Apache HTTP server and PHP scripting engine for presenting a web-based user interface for browsing and managing database records.
- ImageMagick PHP module responsible for handling pixel data of DICOM images
- An optional HL7 Message Listener module for receiving and sending HL7 messages via Lower-Level Transport Protocol (LLTP).

Besides the general DICOM functionality, iQ-WEB comes with a lot of features to optimize working with image and patient data, such as:

- User account management including user privilege system and user groups
- Extensive routing functionality
- Importing and exporting without DICOM communication
- Checking and resolving duplicate patient ID conflicts
- Sending DICOM data by email

In addition, there are several modules provided for iQ-WEB:

- Online DICOM viewer module called iQ-X
- Integrated WADO module called iQ-WEBX WADO
- Viewing module for mobile devices called iQ-WEB2GO
- Interface module for integrating iQ-VIEW called iQ-VIEW Call

These modules are bundled together with iQ-WEB and form the product iQ-WEBX.

The User Manual and the Administration Guide of iQ-WEB describe all the features and how to use them and their functionalities.

This document focuses on functionalities used by the PACS administrators. It uses the iQ-WEB navigation menu as a guide line and provides special chapters for main administrative tasks and actions like migration and maintenance. For user specific actions please refer to the User Manual of iQ-WEB.

NOTE:

It is recommended to read iQ-WEB User Manual document first before reading this document.

2 SYSTEM REQUIREMENTS

2.1 MINIMUM SERVER REQUIREMENTS

SYSTEM	SPECIFICATION	REQUIREMENTS
Hardware	Processor	Intel Multi Core CPU@ > 1.50GHz
	Main memory	4 GB RAM
	Hard disk	1 GB free disk space for the iQ-WEB installation files, additional space is needed for image data
	Network	100 Mbit/s
Software	OS*	Windows XP Pro 32bit with SP3, Windows 7 Pro 32/64bit with SP1, Windows 8 Pro 32/64bit, Windows Server 2008 R2, Windows Server 2012
	Data Base Server	MySQL 5.5.x 32/64bit**

*Unsupported OS: Windows 2000, Windows XP Home, Windows VISTA, Windows 7 Home, Windows Server 2003, Windows Server 2008

** Systems with less than 100.000 studies can use 32Bit version of MySQL

2.2 MINIMUM CLIENT REQUIREMENTS

SYSTEM	SPECIFICATION	REQUIREMENTS
Hardware	Processor	Intel Multi Core CPU @ >1.00GHz
	Main memory	1 GB RAM
	Hard disk	100 MB free disk space for iQ-X files, additional space is needed for image data
	Network	128 Kbit/s for clinical reference 1 Mbit/s for diagnostic purposes
	Graphics card	Graphics card, resolution of ≥ 1024x768, True Color mode (24 bit) or at least 8 bit gray output, any NVidia or ATI graphics card with ≥ 256 MB RAM
Software	OS	Windows XP Pro 32bit with SP3, Windows 7 Pro 32/64bit with SP1, Windows 8 Pro 32/64bit,
	Internet Browser	Microsoft Internet Explorer ≥ 8 Activated JavaScript Accept and keep Cookies IE Compatibility View disabled iQ-X support: ActiveX plug-in support Microsoft Internet Explorer 8 (32bit) No iQ-X support:

	Other well-known browser
	e.g. Mozilla Firefox, Google Chrome
	iQ-VIEW Call support:
	iQ-VIEW 2.7
	Microsoft Internet Explorer ≥ 8
	Other well-known browser,
	e.g. Google Chrome, except Mozilla Firefox
	iQ-WEB2GO:
	Android ≥4.x or iOS ≥5.x device

2.3 RECOMMENDED SERVER REQUIREMENTS

SYSTEM	SPECIFICATION	REQUIREMENTS
Hardware	Processor	Intel Multi Core CPU@ 2.00GHz
	Main memory	16 GB RAM
	Hard disk	1 GB free disk space for the iQ-WEB installation files, additional space is needed for image data
	Network	1 Gbit/s
Software	OS	Windows Server 2008 R2, Windows Server 2012
	Data Base Server	MySQL 5.5.30 64bit

2.4 RECOMMENDED CLIENT REQUIREMENTS

SYSTEM	SPECIFICATION	REQUIREMENTS
Hardware	Processor	Intel Multi Core CPU @ 1.80GHz
	Main memory	4 GB RAM
	Hard disk	100 MB free disk space for iQ-X files, additional space is needed for image data
	Network	1 Gbit/s
	Graphics card	Graphics card, resolution of ≥ 1024x768, True Color mode (24 bit) or at least 8 bit gray output, any NVidia or ATI graphics card with ≥ 256 MB RAM
Software	OS	Windows 7 Pro 32/64bit with SP1, Windows 8 Pro 32/64bit
	Internet Browser	Microsoft Internet Explorer ≥10 (Desktop Edition) Activated JavaScript Accept and keep Cookies Compatibility View disabled iQ-X support: ActiveX plug-in support

Microsoft Internet Explorer 8, 9, 10,11(32bit)
No iQ-X support:
Other well-known browser,
e.g. Mozilla Firefox, Google Chrome
iQ-VIEW Call support:
iQ-View 2.7 or later
Microsoft Internet Explorer 8, 9, 10, 11(32bit)
Other well-known browser,
e.g. Google Chrome, except Mozilla Firefox
iQ-WEB2GO:
Android \geq 4.x or iOS \geq 6.x device

NOTE:

The actual amount of needed storage capacity depends on many factors. To determine the appropriate size of your PACS, you can visit http://www.pacscalculator.com

NOTE:

Please refer to the corresponding Administration Guide documents of iQ-WEB modules like iQ-X, iQ-WEB2GO, iQ-WEBX WADO, iQ-WEBX WADO HL7, iQ-WEBX REPORT CONVERTER for detailed requirements.

WARNING:

MySQL version greater the recommended version 5.5.30 might not be compatible to iQ-WEBX. Please contact support@image-systems.biz for additional information.

3 INTEGRATED MODULES AND INTERFACES

iQ-WEB 6.3.8 is bundled with several integrated modules and interfaces that may be activated separately by an additional license. This bundle is called iQ-WEBX. Please refer to the table below to learn about the versions and/or additional requirements.

MODULE/INTERFACE NAME	VERSION/SPECIAL REQUIREMENTS
iq-webx wado	3.1.0
iQ-X	2.2.0
iq-web2go	1.1.0
iQ-VIEW Call	Requires iQ-VIEW 2.7.0 or higher

3.1 IQ-WEBX WADO

iQ-WEBX WADO is a module of iQ-WEBX that provides a web-based interface for RIS/HIS applications to access DICOM objects in iQ-WEBX. For detailed information, please refer to the iQ-WEBX WADO Administration Guide.

The Administration Guide is also accessible via the web interface. To open it, go to the "SETTINGS" tab and navigate to the "WADO" menu item, then open the "HELP" tab and click on "Admin Guide (WADO)" in the menu bar. Currently, the use of iQ-WEBX WADO does only work with the desktop access of iQ-WEBX. Using a WADO link in iQ-WEB2GO is not supported. To ensure that iQ-WEBX WADO is able to work as expected, the Sourceguardian extension name "ixed.5.4ts.win" has to be in the extension folder of PHP. Please check whether this file exists in the extension folder. The default path can be found in chapter 7 "Folder structure".

3.2 IQ-X

iQ-X is a module of iQ-WEB that provides an Active-X based DICOM web-viewer with an optional REPORT EDITOR capability. For detailed information, please refer to the iQ-X Administration Guide.

The Administration Guide is also accessible via the web interface. To open iQ-X, select a patient/study and click on the "Show" button, then open the "HELP" tab and click on "Admin Guide (X)" in the menu bar.

3.3 IQ-WEB2GO

iQ-WEB2GO is a module for iQ-WEB that optimizes the web interface for mobile devices. For detailed information, please refer to the iQ-WEB2GO Administration Guide or User Manual. The documents can be accessed with the "Help" button in the user interface. To ensure that iQ-WEB2GO is able to work as expected, the Sourceguardian extension name "ixed.5.4ts.win" has to be in the extension folder of PHP. Please check whether this file exists in the extension folder. The default path can be found in chapter 7 "Folder structure".

3.4 IQ-VIEW CALL

The iQ-VIEW Call is an interface function of iQ-WEB that provides a direct access to iQ-VIEW out of iQ-WEB. For detailed information about iQ-VIEW, please refer to the iQ-VIEW Administration Guide and User Manual.

NOTE:

A licensed copy of the product iQ-VIEW is necessary on each client where iQ-VIEW CALL is intended to be used. The iQ-VIEW CALL interface itself is not licensed separately.

4 SPECIAL MODULES

Besides iQ-WEB 6.3.8 bundled modules there several special modules and interfaces available. Those have to be ordered and activated separately. These modules are not part of the bundle iQ-WEBX. Please refer to the table below to learn about the versions and/or additional requirements.

MODULE/INTERFACE NAME	VERSION/SPECIAL REQUIREMENTS
iQ-WEBX WADO HL7	1.2.0, Requires iQ-WEBX WADO 3.1.0
iQ-WEBX REPORT CONVERTER	1.1.0

4.1 IQ-WEBX WADO HL7

The module iQ-WEBX WADO HL7 is an interface for exchanging information between PACS and EMR/RIS/HIS. The main feature of this product is the transmission of a specific WADO link to external systems via a HL7 message. This enables the user to view and work easily with images stored in iQ-WEBX using an existing HL7 message system.

For detailed information and description of the product please refer to the iQ-WEBX WADO HL7 administration guide.

NOTE: iQ-WEBX WADO 3.1.0 requires at least the version 1.2.0 of iQ-WEBX WADO HL7 and vice versa.

4.2 IQ-WEBX REPORT CONVERTER

iQ-WEBX REPORT CONVERTER is a module for iQ-WEBX that uses a state-of-the-art algorithm to automatically convert and transmit DICOM Structured Reports and HL7 text reports between information systems and iQ-WEBX. This process applies to new reports as well as to corrections and additions to existing reports. The product has no graphical interface and contains a light HL7 server.

5 INSTALLING THE SOFTWARE

The iQ-WEB 6.3.8 server is shipped in a single installation routine including the iQ-X viewing plugin, the iQ-WEBX WADO module and the iQ-WEB2GO module. The modules also require a specific configuration and licensing procedure. (Please refer to 13.4 "Licensing")

iQ-WEB 6.3.8 requires the following 3rd-party components before the installation can be performed:

- MySQL database server (not part of the installation process)
- Microsoft C++ Redistributable Package 2005 SP1 32bit (part of the installation process)
- Microsoft C++ Redistributable Package 2008 SP1 32bit (part of the installation process)
- Microsoft C++ Redistributable Package 2010 SP1 32bit (part of the installation process)
- Microsoft .NET Framework 3.5 SP1 32bit (part of the installation process)

The installation package of iQ-WEB contains a copy of the above prerequisite packages to ensure easy installation procedure except MySQL database server because of MySQL license limitations.

NOTE:

It is mandatory to perform installation of iQ-WEB with full administrative privileges on the local destination machine.

NOTE:

In case you wish to use newer versions of the 3rd-party components, IMAGE Information Systems Ltd. does not give any warranty for a flawless usage with the iQ-WEB server. The installation steps described in this document may also differ in newer versions or even may cause errors in the installation process.

NOTE:

The MySQL setup is available at the following link http://www.mysql.com/. For bigger installations, it is recommended to use the 64bit version of the MySQL server to be able to handle fast growing databases.

NOTE:

It is not recommended to share machine iQ-WEB is installed on with other performance critical applications to avoid conflicts and performance reduction.

NOTE:

It is mandatory to restart the machine after installation procedure was performed to ensure full operation state of iQ-WEB and its components.

5.1 INSTALLATION OF THE MYSQL DATABASE SERVER

The iQ-WEB server requires at least the MySQL database server of the version 5.5 line. IMAGE Information Systems Ltd. has tested and verified a recommended MySQL community server release. Please refer to 2.3 "Recommended server requirements" for details.

In order to install the MySQL server, execute the installation file. Continue at the welcome screen; proceed with the "typical" setup type and follow the instructions.

5.2 CONFIGURATION OF THE MYSQL DATABASE SERVER

iQ-WEB 6.3.8 requires the InnoDB storage engine as well as the default character set Latin1 for new tables. In average use cases it is appropriate if the "Standard Configuration" mode is chosen in the configuration wizard. Confirm the installation as a service and setup a root password to finish the wizard. To ensure full compatibility with iQ-WEB please choose "MySQL" as windows service name during MySQL installation.

NOTE: iQ-WEB doesn't support changes in character-set handling of MySQL during operation.

NOTE:

The password for "root" user is important for several administrative tasks so it's important to ensure availability to administrative personal.

NOTE:

Users might experience a constant delay while accessing any web user interface in case of using iQ-WEB and its MySQL database on operating systems like Windows 8 and Windows Server 2012. To fix this issue it is mandatory to edit MySQL server configuration ("my.ini"). Please follow the following steps described in section 18.9.2 "IPv6 Compatibility".

5.3 INSTALLATION OF IQ-WEB

In order to install iQ-WEB 6.3.8, follow the instructions given by the installation wizard which will guide you through the installation. In case a migration from previous versions or from another vendor's PACS is planned, please refer to chapter 16 "Migration".

5.4 CONFIGURATION OF IQ-WEB

After completing the installation, iQ-WEB will automatically open a configuration screen which is divided into four sections. Each section will be described in the next chapters. Configurations done in the screen below are essential for a correct iQ-WEB operation and are stored in Windows registry. (For detailed information please refer to chapter 8 "Registry".)

🝳 iQ-WEBX Installer				
DICOM				
Application Entity Title:	%AE title%			
Server Port:	1234			
Log File Directory:	%log directory%			
Database				
Database Host:	%database host%			
Database Name:	%database name%			
Username:	username			
Password:	NEXAMINE			
Storage				
Default Archive Directory:	%archive directory%			
Archive Format:	DicomPart10 (Default)			
HL-7 Message Listener Option				
	Enable HL-7 Message Listner Option			
HL-7 Listener Port:	7777			
HL-7 Message Persistence:	90 Days			
Upgrade	stall Uninstall Cancel			

Figure 1 – iQ-WEB Configuration Setup

NOTE:

In case a new installation of iQ-WEB is set up, use the "Install" button to apply the configuration. For an upgrade of a previous version, use the "Upgrade" button in order to keep your existing database.

WARNING:

Contact the License team to get the required upgrade key, before starting an update process of previous iQ-WEB installations.

5.4.1 DICOM SPECIFIC CONFIGURATION

This section describes all relevant settings for the DICOM communication.

• "Application entity title" (AE-Title)

This is the application entity title used by iQ-WEB when requesting services from other DICOM compliant clients or application entities.

"Server port" Sets the TCP port number iQ-WEB listens on. To avoid conflicts, make sure there is no other application listening on the same port entered here and no firewall is blocking incoming and outgoing connections to the this port.

"Log file directory"
 Directory, where iQ-WEB stores its log files. Make sure that iQ-WEB has writing permissions to this location.

5.4.2 MYSQL SPECIFIC CONFIGURATION

This section describes all settings iQ-WEB needs to interact with the MySQL database.

"Database host"

This field specifies the hostname of the database server. In case the database server uses the same machine as iQ-WEB, enter "localhost" here.

"Database name"

This is the name of the database where iQ-WEB will store its data.

"Username"

This field specifies the username that is used for internal communication between database and services.

"Password"
 Sets the password for the user mentioned above.

NOTE:

It is important to have the passwords available at any time. They must not be forgotten. Passwords are necessary to have database access and access to iQ-WEB. It is not supported to leave this password empty.

NOTE:

The MySQL user (by default "dicom") is an internal account that is only used by iQ-WEB for database access. It cannot be used as a regular user account. If the specified user does not exist, the setup will prompt you for the password of the MySQL super-user "root" and creates the new MySQL user.

WARNING:

If the specified MySQL database table does exist, but the "Install" button is used, the database will be newly created replacing any existing database. The data will not be restorable!

5.4.3 STORAGE SPECIFIC CONFIGURATION

This section describes all settings iQ-WEB offers to store the raw DICOM data after registering them into the database.

"Default Archive Directory"

Defines the default directory where iQ-WEB will store all its received images in case there is no other definition for the specific application entity title of the requesting client.

"Archive Format"

There are two available formats for storing received images.

"DICOM Part 10"

This is the default and recommended format. iQ-WEB will store the data with the header as defined in DICOM Part 10.

 "Native" iQ-WEB will store the data without the DICOM header data.

5.4.4 HL7 MESSAGE LISTENER CONFIGURATION

Optionally, the HL7 Message Listener can be enabled to receive and send HL7 messages.

"HL7 listener port"

Defines the TCP port number the HL7 module uses for the HL7 communication. To avoid conflicts, make sure there is no other application listening on the same port entered here.

"HL7 message persistence"
 This is the purge interval for the received HL7 messages. All messages will be kept in the database for the specified time period and automatically deleted afterwards.

5.5 VALIDATE INSTALLATION

To validate successful installation it is recommended to perform the following steps to verify:

- Please check Windows service control if a service named "Apache" is present and running.
- Please check Windows service control if a service named "iQ-WEBX" is present and running.
- If MySQL database was installed on the same machine as iQ-WEB please check Windows service control if a service named "MySQL" is present and running.
- Please check Windows Event Viewer application log for any errors occurring with references to one of the three iQ-WEB relevant services.
- Please open Internet Explorer on the machine and open the URL [PROTOCOL]://localhost:[PORT]
 Where [PROTOCOL] equals "http" or "https" and [PORT] equals the corresponding network port chosen during installation. (e.g. http://localhost:80, https://localhost:443)
- Please follow the "Here" link to the iQ-WEB login area and login to the interface with the MySQL credentials of the user "root".
- Please navigate to the Tools →Today's Log tab page and check the content of the displayed log for any errors occurring.

6 UNINSTALLING THE SOFTWARE

To uninstall iQ-WEB, execute the setup again or use the "Programs and Features" menu of Windows and follow the instructions of the wizard.

NOTE:

All files that are created or changed during the runtime process of iQ-WEB will not be deleted. This includes image data, log files and license information as well as database tables. These data have to be deleted manually.

NOTE:

To uninstall MySQL follow the steps provided in the uninstallation package of MySQL.

7 FOLDER STRUCTURE

This chapter lists all folders created during the installation process of iQ-WEB that might be important to administrators.

FOLDER	DESCRIPTION					
\[iQ-WEB installation folder]	iQ-WEB application root folder (by default: iQ-WEBX)					
\iQ-WEBX\Apache\	Contains the Apache web server files					
\iQ-WEBX\Apache\conf	Contains the Apache web server configuration file "httpd.conf"					
\iQ-WEBX\Apache\htdocs	Contains the index.html and the login splash screen					
\iQ-WEBX\Apache\logs	Contains the Apache web server log files					
\iq-webx\pacs\	Contains the iQ-WEB binaries and the license files of iQ-WEB					
\iQ-WEBX\PACS\import	Default directory for imported studies					
\iQ-WEBX\PACS\export	Default directory for exported studies					
\iQ-WEBX\PACS\FailedLogin	Contains files that store information about failed login attempts					
\iQ-WEBX\PACS\php	Contains the iQ-WEB php files that are necessary to build up the web part and the license files of iQ-WEBX WADO, iQ-WEBX2GO					
\iQ-WEBX\PACS\php_css	Contains the CSS files for iQ-WEB					
\iQ-WEBX\PACS\php_img	Contains the images files used in iQ-WEB					
\iQ-WEBX\PAC\$\php\antispam	Contains the temporarily generated antispam-code images					
\iQ-WEBX\PAC\$\php\doc	Contains the user documentation					
\iQ-WEBX\PAC\$\php\download	Contains all generated download packages of iQ-WEB					
\iQ-WEBX\PACS\php\images Contains all full size images used iQ-WEB						
\iQ-WEBX\PACS\php\	Contains all generated registry files for configuring iQ-VIEW Call					
iqcallinstallations						
\iQ-WEBX\PAC\$\php\iQ-X	Contains all iQ-X related files					
\iQ-WEBX\PAC\$\php\thumbnails	Default directory for thumbnails of iQ-WEB used in iQ-X					
\iQ-WEBX\PAC\$\php\locale	Contains all translation files for iQ-WEB					
\iQ-WEBX\PAC\$\php\transcript	Contains all generated Word documents generated by					
	transcription feature					
\iQ-WEBX\PAC\$\php\upload	Contains all uploaded data of iQ-WEB					
\iQ-WEBX\PACS\log	Contains all log files created by iQ-WEB					
\iQ-WEBX\PHP	Contains binaries of the PHP extension and the configuration file					
	"php.ini"					
\iQ-WEBX\PHP\ext	Contains all extension files for the PHP module					
\iQ-WEBX\Language	Contains bundled and one custom translation projects					
\iQ-WEBX\WWW_TMP	Contains webserver sessions during runtime					

NOTE:

It is not recommended to store the archive or the database files in the same folder as iQ-WEB to avoid multiple folder accesses from the different applications.

8 REGISTRY STRUCTURE

This chapter lists all registry keys created during the installation process of iQ-WEB that might be important to administrators. The following list contains key paths in relation to the following base paths:

- [LM_SOFTWARE]
 "HKEY_LOCAL_MACHINE\SOFTWARE\[Wow6432Node]"
 (Wow6432Node is only present on 64bit systems)
- [LM_SYSTEM]
 "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet"

KEY	DESCRIPTION
[LM_SOFTWARE]	Basic registry configuration for iQ-WEB where [AE-Title]
\IMAGE Information Systems Ltd.\iQ-WEBX\[AE-Title]	is replaced by the current iQ-WEB AE-Title.
[LM_SOFTWARE]\ImageMagick	Configuration of module for image compression and
	decompression
[LM_SYSTEM]\services\Apache	Windows Service Configuration of Apache web
	server
[LM_SYSTEM]\services\iQ-WEBX	Windows Service Configuration of iQ-WEB DICOM
	and HL7 server

WARNING:

Manually changing the registry setting can cause severe damage to the iQ-WEB application and the operating system. It is strongly recommended to backup registry keys before making changes.

9 CORE CONFIGURATION

iQ-WEB comes with three components that are necessary to run properly: Apache HTTP Server, PHP and MySQL.

The next sections will describe some of their basic settings for these components. In addition to that basic settings for the database system will be described.

9.1 APACHE HTTP SERVER

Apache HTTP Server is a core component of iQ-WEB that is responsible for answering all HTTP requests from the web browsers used by clients. Its configuration file "httpd.conf" can be found under "[iQWEB installation folder]\Apache\conf\". The following basic settings are essential for iQ-WEB:

"Listen"

This parameter makes it possible to bind the service to a specific port. During the installation the value will be set to the default port 80 or to 443 if a connection via SSL is desired.

"LoadModule"

This parameter is needed to load modules to extend the default functionality of the web server. iQ-WEB comes with a set of loaded modules, the most important one is PHP using the "php5apache2_4.dll".

The configuration file has to be without syntax errors. Otherwise the service will be unable to start. For a detailed description of every setting, please check the documentation of the official site "http://httpd.apache.org/".

NOTE:

Apache HTTP Server has to be restarted in order to adopt changes made in the configuration. This can either be achieved via Windows Service-Control, Apache Monitor Software or iQ-WEB interface. (Chapter 13.3 "System")

WARNING:

Before adjusting the file "httpd.conf" it recommended to create a backup of the file to be able to undo changes.

All current HTTP connections to a server will be closed during the restart process. HTTP access will be unavailable until the restart process is finished.

9.1.1 SSL INTEGRATION

Due to growing security requirements to web based applications iQ-WEB provides a mechanism to protect communication between client browsers and server using SSL technology (Secure Sockets Layer). This is a common method to encrypt traffic of web application to avoid unintended access to data. To accomplish this capability iQ-WEB requires the OpenSSL module of the Apache web server. iQ-WEB is using the OpenSSL version 0.9.8y.

For detailed reference please refer to following sources:

- https://www.openssl.org/
- http://httpd.apache.org/docs/2.4/mod/mod_ssl.html.

To use SSL encryption a SSL certificate is mandatory. iQ-WEB offers the usage of two certificate types:

- Self-signed SSL certificates
- SSL certificates created by official certificate authorities (e.g. Verisign)

NOTE:

Self-signed SSL certificates only provide limited security in comparison to SSL certificates created by official certificate authorities.

This section explains general configuration process in order to be able to use SSL encryption.

9.1.1.1 CERTIFICATE GENERATION

In this section only the creation of self-signed is described because certificate authorities use different certification procedures.

iQ-WEB provides a batch script that helps generating a self-signed certificate. It is located at: "[iQWEB installation folder]\Apache\create_certificate.bat". Executing this script in this folder as a user with administrator access rights will guide the user through the generation process. The following user inputs are required during this procedure:

• Enter the PEM pass phrase twice (password for the private key for your server)

NOTE:	
At least 4 characters are required (at most 20 characters)!	

- Enter your Country Name, e.g. "US"
- Enter your State or Providence Name, e.g. "New York"
- Enter the Location Name, e.g. "New York City"
- Enter your Organization Name, e.g. "Your Company"
- Enter the Organizational Unit Name, e.g. "IT Department"
- Enter the Common Name, e.g. "PACS"

NOTE:

The "Common Name" must match with the computer's name that will be used for accessing the web interface of iQ-WEB, e.g. "PACS" or its IP address. If you are using a dynamic DNS service, like DynDNS, use the registered DNS name, e.g. "host.dyndns.org".

- Enter your email address
- Optional: Enter a challenge password
- Optional: Enter an optional company name
- Re-enter the PEM pass phrase you entered at the beginning
- Once the certificate creation process has been finished successfully, you will find all necessary files within the folder "[iQWEB installation folder]\Apache\conf\ssl\".

NOTE:

Self-signed certificates generated with this script are valid for 365 days. You may edit "create_certificate.bat" file in order to increase the number of days.

NOTE:

iQ-WEB installer provides an option to prepare SSL configuration and run the "create_certificate.bat" directly after installing iQ-WEB for the first time.

9.1.1.2 SSL CONFIGURATION

In order to apply the created or provided certificates as well as setting up the SSL support, some modifications in the Apache configuration file "httpd.conf" are necessary. Please open this file, which should be located at: "[iQWEB installation folder]\Apache\conf\". To configure SSL please proceed with the following checklist when editing the configuration file:

Locate string "Define USE_SSL" in file and remove all "#" characters in front of it.

Define USE_SSL #Define USE_SSL_ONLY

- If you intend to use SSL connection only then also locate string "Define USE_SSL_ONLY" in file and remove all "#" characters in front of it.
- Locate the following section and change the network port number which you intend to use for SSL connection to the web server. (Default port is 443)

```
<IfDefine USE_SSL>
Listen 443
</IfDefine>
```

WARNING:

Port is not allowed to be used by another application. Apache webserver does not start with such configuration.

Locate file section beginning with "#SSL Configuration" (e.g. see below)



- Edit the following bold marked strings to match your intended configuration:
 - "VirtualHost *:443"
 Please change the network port number which you intend to use for SSL same as done in "Listen" clause before.
 - "ServerName localhost"
 Please replace "localhost" with the name or IP address of your server according to the value used during the certificate creation ("Common Name").
 - "SSLCertificateFile" \${SRVROOT}/conf/ssl/iQ-WEB-certificate.crt"
 "SSLCertificateKeyFile" \${SRVROOT}/conf/ssl/iQ-WEB-certificate.key""
 Please verify correctness or replace full file path to generated certificate files.

9.1.1.3 ACCESS TO WEB INTERFACE

After restarting the Apache server has finished without error messages, you can use the SSL secured connection to the web interface of iQ-WEB with a client browser as follows:

https://{Common Name}:443

 Replace {Common Name} with the name you've entered during the certificate creation and the port you have configured before.

If you get a security warning that there is a problem with the certificate, then:

• You've created a self-signed certificate, which is possible but then it was not created by a trusted authority. Nevertheless, the connection will be secure.

• The server name/address in the URL does not match with the value of the "Common Name" that has been defined during the creation of the certificate.

Unless you change your certificate you will get this message every time you open the browser and access the web interface of iQ-WEB. But you can permanently install the certificate (on each client) in order to skip this security warning.

9.2 PHP

PHP extension is a core component of iQ-WEB and an extension of the Apache HTTP Server. It is responsible for generating the web interface of iQ-WEB which is then provided to the web browsers used by clients. Its configuration file php.ini can be found under "[iQWEB installation folder]\PHP\".

"max_execution_time"

This value defines the amount of time a script has, before its execution will be terminated. By default this is set to 120 seconds. In case iQ-WEB has to handle a large number of data, it is possible that a certain script may time out. Increasing this value might solve the issue.

"memory_limit"

This value defines how much memory can be allocated by a single script. By default, this is set to 512 MB. In case iQ-WEB has to handle a large amount of data, it is possible that a certain script may reach the memory limit. Increasing this value might solve the issue.

"upload_max_filesize"

This value defines the maximum size for uploaded files. In case large files have to be uploaded, this value has to be increased.

"post_max_size"

This value defines the maximum size for post data. It has to be equal to or larger than the upload_max_filesize value. In case large files have to be uploaded, this value has to be increased.

"extension"

This parameter is needed to load extensions into PHP. During the installation, all extensions needed by iQ-WEB are activated. Note that iQ-WEB requires the "php_mysqli.dll" extension that does not work with the "php_mysql.dll".

For a detailed description of the settings in PHP configuration, please refer the documentation of the official site "http://www.php.net/docs.php".

NOTE:

Apache HTTP Server has to be restarted in order to adopt changes in configuration. This can either be achieved via Windows Service-Control, Apache Monitor Software or iQ-WEB interface. (Refer to section 13.3 "System")

WARNING:

Before adjusting the file "php.ini" it recommended to create a backup of the file to be able to undo changes. All current HTTP connections to a server will be closed during the restart process. HTTP access will be unavailable until restart the process is finished.

9.3 MYSQL

In some use cases it might be necessary that the configuration of the MySQL database installation that iQ-WEB relies on has to be modified. This especially occurs in use cases where either a high volume of data or a high number of simultaneous user accesses are expected during operations. The configuration file "my.ini" can be usually found under "[MySQL installation folder]".

"max_connections"

This parameter specifies the maximum amount of concurrent sessions the MySQL server will allow. One of these connections will be reserved for a user with SUPER privileges to allow the administrator to login even if the connection limit has been reached.

"innodb_buffer_pool_size"

This parameter specifies the size of the buffer pool used by InnoDB to cache both indexes and row data. The higher you set this the fewer disk I/O is needed to access data in tables. Only on a dedicated database server you may set this parameter up to 80% of the machine's physical memory size. When running other applications like Apache HTTP Server and iQ-WEB, reserved memory should be shared equally. Do not set it too high, though, because competition of the physical memory may cause paging in the operating system. Note that on 32bit systems you might be limited to 2-3.5G of user level memory per process, so do not set it too high.

MySQL is a 3rd-party prerequisite for iQ-WEB. So the above adjustments have to be made manually for each installation and are not done automatically during iQ-WEB installation process. For a detailed description of the settings in the MySQL configuration, please refer to the documentation of the official site "http://dev.mysql.com/doc/#manual".

NOTE:

MySQL Server has to be restarted in order to adopt changes in configuration. This can either be achieved via Windows Service-Control or iQ-WEB interface. (Refer to Section 13.3 "System")

WARNING:

Before adjusting the file "my.ini" it recommended to create a backup of the file to be able to undo changes. All current MySQL connections to a server will be closed during the restart process. MySQL access will be unavailable until restart process is finished. No data can be registered in the database during this period.

10 LICENSING

10.1 LICENSING SYSTEM

iQ-WEB offers three different types of licenses:

- Time limited evaluation version (Trial license)
- Demonstration version (Demo license)
- Full license

The evaluation version of iQ-WEB is available as a free download at http://www.image-systems.biz for evaluation purposes. It is automatically generated after the installation, runs for 30 days. This version is limited to a maximum number of 5 connected DICOM stations and a maximum number of 1,000,000 images that can be stored in the database. The iQ-WEB application will not accept any DICOM communication when the license has expired or if the DICOM stations and/or image number has been exceeded. The evaluation version also includes a 30 days limited license of iQ-X viewer module and its REPORT EDITOR.

NOTE:

An evaluation (trial) license is limited to 1,000,000 images and 5 AE-Titles. The higher the number of images, the lower the performance might be. To avoid such performance issues, the amount of images a trial version holds should be kept low.

A demonstration version of iQ-WEB can be ordered. It is not for sale and is only handed out to distributors and resellers. The demonstration version is limited in time (1 year). The demonstration version also includes a 30 days limited license of iQ-X viewer module and its REPORT EDITOR.

The full license is available in several module configurations as shown in following table. This version is not limited in time.

LICENSE	MODULE/ FEATURES							
	iQ-WEB Core	i	Q-X	iq-web2go	iQ-WEBX			
		EASYWEB	iQ-X	iQ-X		WADO		
	(No. of AE-Titles)	(WEBLICENSE)		EDITOR				
iQ-WEB 2	2	\checkmark	x 1,2	x 1,2	x 1,3	x 1,3		
iQ-WEB 5	5	\checkmark	x 1,2	x 1,2	x 1,3	x 1,3		
iQ-WEB 10	10	\checkmark	x 1,2	x 1,2	x 1,3	x 1,3		
iQ-WEBX 2	2	✓	√2	x 1,2	x 1,3	x 1,3		
iQ-WEBX 5	5	\checkmark	√2	x 1,2	x 1,3	x ^{1,3}		
iQ-WEBX 10	10	\checkmark	√2	√2	√3	x 1,3		
iQ-WEBX 20	20	~	√2	√2	√3	x 1,3		
iQ-WEBX unlimited	unlimited	\checkmark	√2	√2	√3	x 1,3		

1 - Not included, but can be ordered separately, 2 - Concurrent licensing possible, 3 - No generated trial license

Evaluation licenses for the modules iQ-WEB2GO and iQ-WEBX WADO are not generated automatically. All licenses are limited to the machine where the product is installed on. Please contact your local distributor or license@image-systems.biz for ordering a license or further up-to-date license information.

10.2 ACTIVATING THE SOFTWARE

Please refer to section 13.4 "Licensing" to get information about how to activate iQ-WEB after receiving a license for iQ-WEB and/or its modules.

10.3 LICENSE MIGRATION

For a migration of the license a complete new installation is necessary. Before planning migration of iQ-WEB please contact your local distributor or license@image-systems.biz for generating a new license and further instructions.

NOTE: Generating a new license is NOT free of charge.

11 MAINTENANCE

Although iQ-WEB was designed to work as PACS with few manual interventions there a few maintenance task that administrative personal has to perform to ensure performance and reliability of the product and consistency of the data. These manual maintenance tasks are:

- Delete following temporary files that can be left during irregular operations of iQ-WEB
 - Antispam image files

Due to high number of simultaneous accesses to the iQ-WEB web interface it is possible that the iQ-WEB installation sub folder ...\iQ-WEBX\PACS\php\antispam contain "*.jpg" image files pile up as left overs. Deleting such files regularly in time periods where no users are logged in the system helps saving disk resources.

Temporary image & data files of iQ-WEB

Due to high number of simultaneous accesses to the iQ-WEB web interface it is possible that the iQ-WEB installation sub folder ...\iQ-WEBX\PACS\php\images contains image files matching the following name schema as left overs: "temp*.jpg", "temp*.gif". Deleting such files regularly in time periods where no users are logged in the system helps saving disk resources.

In addition, the iQ-WEB installation sub folder ...\iQ-WEBX\PACS\php\tmp may contain any files as left overs. Deleting such files regularly in time periods where no users are logged in the system helps saving disk resources.

Session files of web server

Due to the session management system of Apache webserver under rare circumstances it is possible that the iQ-WEB installation sub folder ...\iQ-WEBX\WWW_TMP contains any files that matches the name pattern "sess_*" as left overs. Deleting such files regularly in time periods where no users are logged in the system helps saving disk resources.

Windows temporary files

Due to corrupt DICOM data or insufficient machine resources it is possible that one of the machine temp folders (...\Windows\Temp or user based %TEMP%) contains files matching the name pattern "PacsOne*" as left overs. Deleting such files regularly in time periods where no users are logged in the system helps saving disk resources.

WARNING:

Before deleting any files mentioned in this section please ensure that no user or scheduled task is using them. This can be realized by switching off services before deleting.

 Delete failed jobs that reached the maximum number of retries and are not continued by the system. (Please refer to 13.2 "Database maintenance" for detailed instructions.) This reduces clutter in jobs view and makes recognizing faulty working state of current jobs much easier.

WARNING:

Before deleting any jobs please ensure that the tasks are not running and they are retriggered afterwards if necessary.

- Restart the server machine respecting a regular schedule. (A 48h schedule is recommended.) This ensures that maximum resources are available to handle higher workloads of iQ-WEB.
- Perform data consistency check provided by iQ-WEB on a regular basis.
 - Perform a full data integrity check.
 This ensures that the database and stored DICOM data are in a consistent state and no DICOM data is missing.
 - Resolve Duplicate patient ID conflicts.
 This ensures that demographic data of patients are consistent and makes integration with other systems much easier.
- Performing scheduled backups of DICOM data, MySQL database and file system on external storage systems.

This ensures that in case of a disaster or hardware failure most of the state of iQ-WEB can be restored and a minimum number of data are lost. In general the shorter the period of time the backups are scheduled in, the less data is lost.

WARNING:

Checking data consistency and performing scheduled backups of the data are important tasks to do to prevent data loss. Please check your local legal restriction for additional requirements. iQ-WEB is not managing database backup tasks automatically.

- Investigate the following application logs respecting a regular schedule to early recognize signs of failure.
 - Windows Event Viewer application log
 - iQ-WEB log files (Please refer to 18.3 "iQ-WEB debugging" for details.)
 - Apache log files (Please refer to 18.1 "Webserver debugging" for details.)
 - MySQL log files (Please refer to 18.2 "Database debugging" for details.)

12 VIEWS

This chapter describes all views that are especially provided for administrative purposes or that provide information of special administrative interest. These views can be accessed via the menu bar of iQ-WEB after successfully logging in. For detailed information about the log-in process, navigation and user accessible views please refer to the iQ-WEB user manual.

12.1 JOBS

Go to <u>Data</u>	ibas 	e Maintenan	<u>ce</u> page ti	o delete all jobs						
My Subm	itteo	a 10b(2):								
4 complet	ed j	ob(s). Comp	leted job((s) will be delete	ed after a perio	od of 24 hours.				
Displaying) 1-4	t of 4 Job(s)								
	ID	USERNAME	AETITLE	ТҮРЕ	CLASS	UUID	SCHEDULE	PRIORITY	SUBMITTIME	STARTTIME
Search	1									
	2	root	N/A	IntegrityCheck	Image	Patient Name: N/A Image Uid: 2013-02-08 14:12:00	Immediately	N/A	2013-02-08 14:12:00	2013-02-08 14
	3	root	N/A	import	study	2013-02-11 15:09:49	Immediately	Medium	2013-02-11 15:09:49	2013-02-11 15
	4	root	N/A	IntegrityCheck	ImageHeader	2013-03-13 10:45:28	Immediately	Low	2013-03-13 10:45:28	2013-03-13 10
	5	root	N/A	export	Study	test	Immediately	Low	2013-03-14 16:00:14	2013-03-14 16
Check /	AII -		Delet	e						
0 pending	or t	ailed job(s).	Failed jo	b(s) will be dele	ted after a per	riod of 24 hours.				
Other Ad	mini	istrator Job	(s):							
0 Comp	ete	d		0 Pen	dina	0 Failed	0	Scheduled	Immediately	
U COMP		u		UT Ch	ung	0 Funcu		Schedured		
0 comp	lete	d job(s). Cor	npleted jo	ob(s) will be del	eted after a pe	riod of 24 hours.				
Other Use	er's	Job(s):								
0 Comp	lete	d		0 Pen	ding	0 Failed	0 9	Scheduled	Immediately	
0 comp	lete	d job(s). Cor	npleted jo	ob(s) will be del	eted after a pe	riod of 24 hours.				

Figure 2 – Job View

The jobs view page in general displays the job status of the currently logged in user. For administrators, this page shows all jobs including other administrators' jobs as well. In contrast to normal users who only have access to jobs they triggered. Jobs can be deleted or retried by clicking the respective button.

The job table contains the following information:

- "ID" Job ID that is generated automatically by the MySQL database
- "User" The username that created the database job
- "AE-Title" AE-Title of the destination
- "Type" Job type, e.g., 'Forward', 'Print', etc.
- "Class" Hierarchy level, e.g., 'Patient', 'Study', 'Series', etc.
- "Unique Identifier" Unique ID in the hierarchy level, e.g., Patient ID, Study UID, Series UID, etc.
- "Schedule" Displays the scheduling of the job
- "Priority" Shows the priority level of the job
- "SubmitTime" Timestamp from when the database job is submitted
- "StartTime" Timestamp from when the database job starts processing
- "FinishTime" Timestamp from when the database job finishes processing
- "Status" Success, Failure or percentage value representing the jobs status

- "Retries" Displays the number of retries the job already has
- "Details" Any detailed errors if the database job has failed
- "Retry Interval" Displays the interval between the retries

12.2 JOURNAL

The journal view page in general displays the tracked activities performed in an iQ-WEB system. iQ-WEB automatically logs all user activities into the "Journal" database table in a way that meets the HIPAA auditing requirements.

Today's Activities	Yesterda	y's Activities	a This V	Week's Activities	This Month's Activities	Last Month	's Activities	All Activities
There is/are 384 even 1 2 3 4 5 6 7 8 9 10 N Display All Displaying	t(s) logged. l <u>ext</u> g 1-10 of 38	4 Event(s)						
DATE/TIME	USERNAME	OPERATION	<u>LEVEL</u>	IDENTIFIER			DETAILS	
2013-02-05 11:11:04	root	Import	_C:/images/	C:/archive/			From: C:/images/ To Folder: C:/arch	nive/
2013-02-05 11:12:20	root	Show	Study	1.3.51.0.7.633910020	.633920020425.6339112930		Patient Name: Tra Study Description	auma, Poly : Spine
2013-02-05 11:12:30	root	Show	Study	1.3.51.0.7.633910020	.633920020425.6339112930		Patient Name: Tra Study Description	auma, Poly : Spine
2013-02-05 11:25:08	root	Show	Study	1.3.51.0.7.633910020	.633920020425.6339112930		Patient Name: Tra Study Description	auma, Poly : Spine
2013-02-05 11:25:42	root	Show	Study	1.3.12.2.1107.5.8.3.4	85257.836649.80675156.20060	31315554969	Patient Name: Dr. Study ID: 14039 Study Description	ainus Rupius : Skull
2013-02-05 11:26:46	root	View	Patient	19571003			Patient Name: Tra	auma, Poly
2013-02-05 11:52:36	root	Show	Study	1.3.51.0.7.633910020	.633920020425.6339112930		Patient Name: Tra Study Description	auma, Poly : Spine
2013-02-05 11:53:05	root	Show	Study	999.19990517115655(0187000.25		Patient Name: Re Study ID: 000001 Study Description	ference Images : : TestStudy
2013-02-05 11:53:44	root	View	Patient	060314			Patient Name: Dra	ainus Rupius
2013-02-05 13:23:54	root	View	Patient	19571003			Patient Name: Tra	auma, Poly

Figure 3 – Journal View

The following information will be displayed:

- "Date/Time" The date and time when the activity happened
- "Username" The name of the user that performed the event
- "Operation"- The action that the user executed
- "Level" The subject level of this event, e.g. Patient, Study, Series, Image
- "Identifier" The unique ID of the item that was involved, e.g. Patient ID, Study UID
- "Details" Additional information about the activity

NOTE:

Journal entries are translated into the language that is configured when the operation happens. In case the language has changed, the journal entry will not be translated again.

The journal is structured in the following time-based views:

- "Today's Activities"
- "Yesterday's Activities"
- "This Week's Activities"
- "This Month's Activities"
- "Last Month's Activities"
- "All Activities"

On the first day of every month, iQ-WEB will purge events that are older than 60 days. To modify this value, please contact the support team.

12.2.1 AUTOMATIC MONTHLY JOURNAL EMAILS

In case a SMTP server is configured (Refer to section 14.3 "Email") and an email address for the administrator has been entered (Refer to section 14.2.3 "Global settings"), iQ-WEB will send an email on the first day of every month that contains all events of the previous month.

13 TOOLS

The tools menu item contains a lot of utilities that enhance working with iQ-WEB. They can be accessed via the menu bar of iQ-WEB after a successful log-in. For detailed information about the log-in process and navigation please refer to the iQ-WEB user manual. The following sub-sections describe the tools that are commonly used by administrators.

13.1 AUTOMATIC PURGE STORAGE

This feature allows the administrator to automatically purge older studies by a predefined set of rules or parameters. This feature is useful if the storage resources are limited on the server on which iQ-WEB is installed.

13.1.1 GENERAL AUTOMATIC PURGING RULES

Purge Criteria	
Purge By:	 Storage Capacity: Low Watermark percentage: 10 % High Watermark percentage: 30 % Study Received Date: Purge study received more than 30 days ago Study Acquisition Date: Purge study acquired more than 30 days ago All Studies Received From This Source AE:
Purge 24-Hour Schedu	le
Purging Each Day At:	12 V O AM O PM
Purge Operations	
Study Purge Operation:	Delete study files Please Note: Delete operation is not reversible. Please use this feature with caution to prevent unintended data loss. OMove study files to destination folder: Please Note: The entered path must be accessible by the iQ-WEB server system. A mapped drive or UNC path may be used here. Make
Patient Purge Operation:	☑ Delete patient record after all studies of the patient have been purged. Please Note: Delete operation is not reversible. Please use this feature with caution to prevent unintended data loss.
Add Automatic Purge Ru	le

Figure 4 – General Purging Rule Configuration

Every rule is triggered when a defined event occurs. The criteria that can initiate purging are described below:

- "Storage Capacity"
 - "Low Watermark"

This field is defined in terms of free disk space percentage ranging from 0 to 100. For each defined archive directory, iQ-WEB will examine the corresponding disk usage information for the disk where the archive directory is located. If the free disk space percentage is lower than this defined Low Water Mark, iQ-WEB will start purging older studies on this disk.

"High Watermark"

This field is defined in terms of free disk space percentage ranging from 0 to 100. The value has to be higher than the value defined for the Low Water Mark. When the free disk space percentage drops below the Low Water Mark, iQ-WEB will start to purge older studies stored in the corresponding archive directory. iQ-WEB will sort the list of studies stored in this archive directory by the date the studies were received, with the oldest study on top of the list. iQ-WEB will purge studies in the sorted list (removing the oldest study first) one at a time, until the disk free space percentage rises above the defined High Water Mark. At that point, the automatic purging operation is complete.

- "Date when study was received"
 iQ-WEB will purge all older studies that were received more than the defined "n" days ago.
- "Date when study was acquired"
- iQ-WEB will purge all studies that have a study date older than the defined "n" days ago.
- "Source AE"
 All studies that were received from the specified source AE-Title will be purged.

To customize the purging procedure iQ-WEB provides the following options:

"Scheduling"

iQ-WEB will perform automatic purging only on this scheduled hour of the day, and will not perform another purging for the same rule for the next 24 hours.

"Purge Operations"

Allows users to control purging behavior on the following 2 levels

"Purge Study Operations"

Permanently delete all purged studies from the database and archive storage. The user can choose to move DICOM data files from archive storage to another location before deletion. This option makes sure that study data are still accessible, but do not consume any more online storage resources. For Windows platforms, any shared network path has to be entered in the Windows UNC format like \\RemoteHost\RemotePath instead of the mapped drive path such as Z:\Path

"Purge Patient Operations"
 Permanently remove patient data from the iQ-WEB database after purging the last study of a patient. If disabled, patient data is left in database for further use.

WARNING:

Make sure to back up the data before using this feature, because it is not possible to recover the deleted data.

NOTE:

Using the "Move to destination folder" will create the following folder structure after the purging operation has processed: "[defined purge folder]/[AE-Title of the studies]/[StudyUID]/[SeriesUID]/images".

13.1.2 AUTOMATIC PURGING RULES BY DICOM DATA ELEMENT FILTERS

Description:	
Purge Criteria	
Data Element Tag:	Modality (0x00080060) V matches
	Please Note: Wild-Card character '*' is allowed.
Study Age:	Delete matching study(ies) if received 100 days before.
Purge 24-Hour Schedule	
Purging Each Day At:	12 V • AM O PM
Purge Operations	
Study Purge Operation:	Matching studies will be deleted. Please Note: Delete operation is not reversible. Please use this feature with caution to prevent unintended data loss.
Patient Purge Operation:	☑ Delete patient record after all studies of the patient have been purged. Please Note: Delete operation is not reversible. Please use this feature with caution to prevent unintended data loss.
Add Automatic Purge Rule	

Figure 5 – Purging Rules by Data Element Filters

In addition to the general purging procedure users can also define individual DICOM data element filters with wild card patterns, so that iQ-WEB will automatically purge the matching DICOM studies based on the user-defined aging period and schedule.

"Description"

This field contains a brief description of the defined filter pattern.

"Data Element Tag"

This field allows the user to choose from the following DICOM tags to build a purging rules logic on:

- Modality (0008,0060)
- Institution Name (0008,0080)
- Referring Physician's Name (0008,0090)
- Study Description (0008,1030)
- Reading Physician's Name (0008,1060)
- Patient Name (0010,0010)

The Filter Pattern should be entered in the field right next to the "Data Element Tag" field.

This value will be used to match against the DICOM studies stored in the iQ-WEB database. In case the DICOM element contains the "^"character, it has to be entered here as well. Wild card characters "*" and "?" are supported.

"Study Age"

This field contains the age of the study. The time period is given as a number of days. iQ-WEB will purge any matching DICOM study if the study has been received prior to the defined time period. The default value is 100 days.

- "24-Hour Schedule" The schedule when iQ-WEB should run the automatic purging by the defined DICOM data element filtering rule.
- "Patient Purge Operation"

If the checkbox is marked, the patient record in the database will be deleted in case all studies of a patient have been purged.

WARNING:

Using this purge feature will always delete images. This includes the image file and the database entry. The operation is non-reversible.
13.2 DATABASE MAINTENANCE

This menu contains features that help to maintain the database of iQ-WEB.

13.2.1 INTEGRITY CHECK

Integrity Check
This tool will check the Image table of the iQ-WEB database and verify that all raw DICOM images do exist and are not empty files under the archive directories.
● Check only the DICOM Part-10 File Header (consumes less time and resources)
○ Check the entire raw DICOM image file (consumes more time and resources)
Run integrity check using 5 threads simultaneously
(This will make the integrity check run faster but will require more memory resources.)
Integrity Check

Figure 6 – Integrity Check

With this feature iQ-WEB will run an internal database integrity check. It will scan the image table of the database to verify that for each record in the image table the corresponding raw DICOM image file exists and that it is not empty. iQ-WEB will report any missing, empty or corrupt raw DICOM image file found by the integrity check. This option might be useful to validate the DICOM data before and after a migration or an upgrade process.

The following options allow users to customize the check procedure:

- "Check only the DICOM Part-10 File Header" This option will only validate the header information of the DICOM files which makes the check less time consuming.
- "Check the entire raw DICOM image file"
 This option will check that the image files exist and are not empty or unreadable. This takes more time than just checking the header information
- "Using multiple threads"
 This option will increase the speed of the integrity check by using multiple threads simultaneously.

13.2.2 DELETE ALL PATIENT/IMAGE DATA

Using this feature will delete all patients in the archive and, as a result, all patient-related data and images will be lost.

WARNING:

Make sure to back up the data before using this feature, because it is not possible to recover the deleted data. The deletion of patient data can cause serious damage or death to patients.

13.2.3 DELETE DATABASE JOBS

This functionality allows the administrator to delete all completed, failed and pending job entries listed at the job page of iQ-WEB.

NOTE: All jobs that are deleted may not be triggered again and reoccur. The user may reschedule a job again manually.

13.3 SYSTEM

On this page, the services as well as service-related options can be managed. In addition, the station that should use the iQ-VIEW Call can be entered here.

13.3.1 SERVICE MAINTENANCE

In this section iQ-WEB provides status information and control options for all involved services of iQ-WEB.

13.3.1.1 APACHE

Apache 2.4.7 (32bit) is the web server that comes with the installation of iQ-WEB and is responsible for the presentation of iQ-WEB via the web. For the client/server communication, the PHP 5.4.23 module is used.

Apache {Apache/X.X.X (Win32) PHP/X.X.XX OpenSSL/X.X.XX} Restart

 Please Note: When restarting the Apache service the web interface will be unavailable for a few seconds. Additionally, you will need to log on manually again.

Figure 7 – Apache Service

Clicking on the link next to the service status will open a website that executes the "phpinfo()" function. This page contains a detailed overview about the current PHP settings, loaded extensions and their configuration.

"Restart"

Using this button will restart the Apache web service. This might be necessary in case the configuration in the "httpd.conf" or "php.ini" has been changed.

NOTE:

In case there are errors in the "httpd.conf" or "php.ini" file, the service will not be able to start. Then, configuration files have to be edited. Please check chapter 7 "Folder structure" for their location.

NOTE:

The web interface will be unavailable during the restart process. In addition, you might have to log in again manually.

13.3.1.2 IQ-WEB

iQ-WEB		Stop Restart
Please Not and HL7 co	te: When stopping or restarting mmunications will be interrupted	the iQ-WEB service, all DICOM I.
Please ma jobs are ir will automa	ke sure that no live connection progress. By changing the set tically trigger a restart of the se	ons are established or any tings in this section, iQ-WEB rvice.
Log Level:		
Log Level:	Debug 🗸	
		Change Log Level
Patient ID	Conflict Resolution:	
Ignore	duplicate patient ID conflicts.	
Please No will always entry.	te: If this enabled, iQ-WEB will in overwrite the existing patient	gnore patient ID conflicts and name with the newly received
Reject	duplicate patient ID conflicts.	
Please Note: If this is enabled, iQ-WEB will reject a newly received study if there is a Duplicate Patient ID conflict with an existing patient entry		
		Change PID Handling
Coercion:		
Respor DICOM tran	nd with a warning when a Coerd	cion was triggered during
		Change
Update Ex	isting Entries:	
✓ Update	existing images when received	again.
Please No data.	te: If this is enabled, iQ-WEB wi	always overwrite existing
Update again.	e Study Received Date when an e	existing study is received
Please No study rece	te: If this is enabled, iQ-WEB wil eived dates.	always overwrite existing
		Change
DICOM Ne	twork Configuration:	
AE-Title:	PACS	
Port Number:	1234]
		Change AE-Title/Port

Figure 8 – iQ-WEB Service Maintenance

The iQ-WEB core is responsible for the DICOM functionality and provides the files for the web interface.

"Restart"

Using this button will restart the iQ-WEB service.

"Start"/"Stop"

Using this button will start or stop the iQ-WEB service. This might be necessary in case one of the listed configuration options was changed manually or if there are performance issues.

WARNING:

During the restart process of the iQ-WEB service and while it is stopped, it is not possible to handle any DICOM connection or communication. Pending jobs will be continued after the restart.

"Log Level"

By default the log level is set to "Information". Changing it to "Debug" will increase the amount information that will be written into the log file.

WARNING:

Changing the log level will restart the iQ-WEB service with all its effects. Please refer to "Start/Stop" for more information.

NOTE:

It is recommended to set the log level to "debug" for trouble-shooting purposes only due to the fact that the log file will increase in size very fast.

"Patient ID Conflict Resolution"

By default, if a duplicate patient IDs is entered to the iQ-WEB database, it will be tagged with an additional string that contains the Source AE-Title and a date/time stamp when the study was received. It is also possible to either ignore the duplicate entry, so iQ-WEB will always overwrite the existing patient, or to reject the duplicate entry. In this case, iQ-WEB will reject a newly received study if there is already a study with this patient ID.

Standard duplicate patient ID resolution is described in iQ-WEB user manual.

"Coercion"

Enabling this option will make iQ-WEB respond with a warning if coercion was triggered. Coercion mechanism is described in iQ-WEB user manual.

NOTE:

Be aware that there might be DICOM applications that will abort the communication if there is a warning during the communication.

"Update Existing Entries"

In this section, overwriting existing studies can be configured in case the same study arrives again. Furthermore, updating the study receive date every time the same study is received can be enabled. This is a default behavior of iQ-WEB to ensure that report and post processing workflows are applicable.

"DICOM Network Configuration"
 In this section, the DICOM AE-Titles as well as the DICOM port of iQ-WEB can be altered.
 iQ-WEB also protocols changes to AE-Titles to be able to undo them.

13.3.1.3 MYSQL

The MySQL database server stores information for iQ-WEB, such as configurations, jobs, user settings, DICOM information, but not the DICOM files itself.

"Restart"

Using this button will restart the MySQL service. This might be necessary in case the configuration file "my.ini" has been changed.

NOTE:

iQ-WEB is able to obtain information and control one MySQL service instance only if it is installed on the same machine as the Apache and iQ-WEB service.

WARNING:

During the restart process of the MySQL service, it is not possible to handle any DICOM connection or communication. Pending jobs will be continued after the restart.

13.3.2 CONFIGURE IQ-VIEW CALL STATIONS

Add the followin	Ca Ig iQ-VIEW	onfigure iQ-VIEW-Call S Station:	Stations	
Full Hostname of Station:	iQ-VIEW	Hostname		
Full path to iQ-VI	EW:	C:/Program Files (x86)/iQ-VIEW/iQ-VIEW.exe		
Station description/comment:				
		Add Station		
All iQ-VIEW Stat	tions:			
Hostname	Description	Installation file	Delete configuration	

Figure 9 – Configure iQ-VIEW Call Stations

This section allows configuring stations that should make use of the iQ-VIEW Call feature. The following information about the station and its local iQ-VIEW installation have to be entered.

- The fully qualified hostname of the client machine (e.g. "myhostname.mydomain.local")
- The installation path of iQ-VIEW(including iQ-VIEW.exe) on the client machine (e.g. "C:/Program Files/iQ-VIEW/iQ-VIEW.exe")
- A description text (e.g. "Station 1")

By default iQ-WEB assists by filling this form with prefilled values that match the current configuration of the machine where the web page is being displayed on. So it is recommended to do this configuration directly at the client workstation and check the validity of the prefilled values.

If the station's hostname is not already configured to work with iQ-VIEW Call an "Add Station" button will appear.

Clicking on the "Add Station" button will add the station to the iQ-WEB configuration and create a registration file. This file has to be applied to the client workstation's registry once. On screen iQ-WEB will show an instruction how to do so.

In the lower part of the section, all configured stations are listed with the option to download their associated installation file again. To enable the iQ-VIEW Call feature globally and take the list of iQ-VIEW Call Stations into account, please refer to section 14.2.3 "Global settings".

NOTE:

The iQ-VIEW Call uses the accession number of the studies. In order to work properly, the accession number should not contain any spaces.

NOTE:

In order to work properly, all kinds of Popup-Blockers of the used web browser have to be disabled at least for the URL of iQ-WEB. iQ-VIEW Call is tested with Internet Explorer 8-10 and Google Chrome and iQ-VIEW Version 2.7 and later. Currently it is not possible to perform an iQ-VIEW Call with a Mozilla Firefox browser.

iQ-WEB 6.3.8 Administration Guide PUB INT EN - 006R

42

13.4 LICENSING

This page lists all modules and license-relevant information for the core and all the modules of iQ-WEB. In case there are questions about the different licenses, please contact the license department of IMAGE Information System Ltd.

13.4.1 IQ-WEB

iQ-WEB			
License Information:	Core Version:	x.x.x	
	Date of License Installation: Expiration Date:	XXXX.XX.XX	
	AE-Titles Limit:	Unlimited	
	Used AE-Titles:	3	
License Installation:			
	Select the 'license.zip' file to upload:		Browse

Figure 10 – License Overview iQ-WEB

This part contains the version of the iQ-WEB core and, if present, the license installation and expiration date. Furthermore, it is possible to install a license via the web interface in this section. Before installing a license, the iQ-WEBX service needs to be stopped and restarted afterwards. This is mandatory for the license to work properly. To install the license, just browse for the "license.zip" provided by IMAGE Information Systems Ltd., then use the respective button "Install License File" to upload and apply the license.

For a manual installation of the license, please unzip the "license.zip". Copy the "license.dat" and "license.aes" and paste them into "[iQ-WEB installation folder]\PACS\". After that process, the iQ-WEBX service has to be restarted. For more information, please refer to section 13.3.1 "Service maintenance".

For licenses with a limited validity period, an email reminder will be sent ten days before expiration to the administrator's email address. The email will inform the recipient about the expiration of the license.

NOTE:

An evaluation (trial) license is limited to 1,000,000 images and 5 AE-Titles. The higher the number of images, the lower the performance might be. To avoid such performance issues, the amount of images a trial version holds should be kept low.

In order to verify whether the license file has been installed correctly, please follow the steps listed below:

- Navigate to the Windows Event Viewer and check the section "Application of Windows Logs". There has to be an entry for iQ-WEB that states "Service started". In case there is an error entry stating "Invalid license information or license has expired", please do the license installation again or contact the Support team.
- 2. Visit the website of iQ-WEB and navigate to Tools \rightarrow Today's Log. In case there is no entry logged, please do the license installation again or contact the Support team.
- 3. Check the Task Manager and look for the process named "iQ-WEBX.exe". If there is no such entry, please run the license installation again or contact the Support team.

4. As a final step, send a test study to iQ-WEB via DICOM from another application, assuming both stations are configured correctly. In case there is an error during the connection, please do the license installation again or contact the Support team.

Module: iQ-X, iQ-WEB LICENS	Module: iQ-X, iQ-WEB LICENSE, iQ-WEBX REPORT EDITOR				
License Information:	Module Version: Hardware Fingerprint: Registered Name: License: License Key: Date of Key Creation: Days installed: Days left:	X.X.X.X XXXX-XXXX Hans Solo Pro AAAAAA-BBBBBBB-CCCCCCC-DDDDDD-EEEEEE-FFFFFF-GGGGGGG-HHHHHHH-IIIIII-JJJJJJJ XXXX,XX.XX 356			
License Installation:	Name to register: License Key: Install License				
License Uninstallation:	Uninstall License				

13.4.2 IQ-X, IQ-WEBX REPORT EDITOR, IQ-WEB LICENSE

Figure 11 – License Overview iQ-X, iQ-WEBX Report Editor, iQ-WEB License

This area displays the version of the iQ-X module and the current hardware fingerprint. In case there is a valid license installed, the registered name, license type, license key, date of key creation, installed days and days left until expiration will be shown here. Installing and resetting the license via the web interface is possible, too.

Enter the registration name and the license key provided by the License team of IMAGE Information Systems Ltd. and click "Install license". Licenses that unlock the features of the Report Editor or the EasyWEB page have to be entered here as well.

For a manual installation of an iQ-X license, the command line tool of Windows has to be used. Execute the "LicGen.exe" in the "php" folder with the "register" parameter.

For example:

C:\iQWEB\PACS\php\LicGen.exe register

Using this command will open a window where the hardware fingerprint can be found. In addition, the name and key given by the license department can be entered and applied.

13.4.3 IQ-WEB2GO

Module: iQ-WEB2GO			
License Information:	Module Version: License Version: Date of Key Creation:	X.X.X.X (Build: XXXXXXXX/XXX) X.X XXXX.XX.XX	
	Expiration Date:	Never	
License Installation:	Select the 'web2go.lic' file to upload:		Browse
	Install License File		

Figure 12 – License Overview iQ-WEB2GO

The installed module version number as well as the license version number of iQ-WEB2GO can be found in this section. Installing the license via web interface is possible. Browse for the license file and use the "Install License File" button to upload the license.

For a manual installation of the license, copy the "web2go.lic" and paste it into "[iQ-WEB installation folder]\iQWEB\PACS\php".

13.4.4 IQ-WEBX WADO

lodule: iQ-WEBX WADO			
icense Information:	Module Version: License Version: Date of Key Creation: Expiration Date:	X.X.X.X X.X XXXX.XX.XX Never	
icense Installation:	Select the 'wado.lic' file to upload:		Browse
	Install License File		

Figure 13 – License Overview iQ-WEBX WADO

The installed module version number, license version number, creation and expiration date of the license of iQ-WEBX WADO can be found in this section. Installing the license via web interface is possible. Browse for the license file and use the "Install License File" button to upload the license.

For a manual installation of the license, copy the "wado.lic" and paste it into "[iQ-WEB installation folder]\PACS\php".

13.4.5 ORDER LICENSES/REQUEST SUPPORT

Order Licenses/Request	Support
Step 1:	Collect and download the iQ-WEB license information in a ZIP file: Download license information
Step 2:	Send the license information ZIP file to your local distributor to obtain the valid license files, support, or product informati
Step 3:	Install the given license information and files received in return in the corresponding sections above.

Figure 14 – License Ordering

This area contains the steps that are necessary to get the information requested by the License department. It is needed to process license orders, migrations or updates. Click the button "Download license information" and send the resulting Zip file to your local distributor or the License department of IMAGE Information Systems Ltd.

13.5 TODAY'S LOG

This page displays the content of the current log file with the most recent event on top refreshing itself every 30 seconds. Using the download button will download the complete log file which is currently in use. Log entries are color coded to enhance readability.

- Black Information Log entries
- Blue Debug Log entries
- Orange Warning Log entries
- Red Error Log entries

The log level can be changed in the Tools System section (13.3.1.2 "iQ-WEB"). Changing the log level from standard level "Information" to "Debug" can help to find all kinds of issues that may occur during operations of iQ-WEB. The log files are stored in the folder that has been chosen during the configuration of iQ-WEB. By default the path is "[iQ-WEB installation folder]\PACS\log\{AET}".

Download complete log file
Last 2000 log entries. (Auto-refreshing display with newest entry in first line.)
Wed May 15 11:47:45 2013 DEBUG - Database Manager: Checking submitted jobs
Wed May 15 11:47:40 2013 DEBUG - Database Manager: Checking submitted jobs
Wed May 15 11:47:35 2013 DEBUG - Database Manager: Checking submitted jobs
Wed May 15 11:47:30 2013 DEBUG - Database Manager: Checking submitted jobs
Wed May 15 11:47:25 2013 DEBUG - Database Manager: Checking submitted jobs
Wed May 15 11:47:20 2013 DEBUG - Database Manager: Checking submitted jobs
Wed May 15 11:47:15 2013 DEBUG - Database Manager: Checking submitted jobs
Wed May 15 11:47:10 2013 DEBUG - Database Manager: Checking submitted jobs
Wed May 15 11 17:05 2012 DEBUG Detelant Menangy Charling submitted into

Figure 15 – Today's Log

13.6 LIVE MONITOR

This page displays all active DICOM connections, incoming as well as outgoing. If there are active connections, it is possible to interrupt. This will instantly cancel the action and close the connection.

The	There is/are currently 1 live connection(s):								
	SESSION ID	IP ADDRESS	PORT	SOURCE AE	DESTINATION AE	SESSION TYPE	PATIENT NAME	STUDY UID	STUDY ID
	4	127.0.0.1	50504	IQSERVER	PACS	Store	Hilda Stunt	1.3.12.2.1107.5.8.2.485257.836649.68674857.2005121821014039	N/A
(heck All	Delete]						

Figure 16 – Live Monitor

14 SETTINGS

14.1 USERS

iQ-WEB comes with an extensive user management system providing user privilege management, user groups and additional administrator user management.

After the successful installation of iQ-WEB, there are already two users in the user database.

The first one is the super-user 'root' which is the administrator account that was set up during the MySQL configuration. This account has every access privilege existing in iQ-WEB.

The other is the 'dicom' user that has been created during the initial configuration of iQ-WEB. This account is strictly for internal use, and therefore, it is not possible to use this account to get access to the web interface of iQ-WEB.

14.1.1 PRIVACY ATTRIBUTES

Medical images and reports are sensitive information that should not be accessed by unauthorized people. For that reason, iQ-WEB provides a privacy attribute mechanism to handle the access to patient/study data between different users of the system. For each patient/study the following states can be specified:

"Public"

If a patient or a study is marked as public, all images within the studies and the corresponding patient can be accessed by any iQ-WEB user account, without requiring any privileges.

"Private"

If a patient or a study is marked as private, all images within the studies are private as well. To get access to these images, a user has to have either the global 'View' permission, or the last name and first name of the user have to match with the Referring Physician's Name or the Reading Physician's Name of the patient/study. In addition, members of a user group have access to private patients/studies in case the group description matches with the predefined value set in the user group options. Please refer to 14.1.3 "User Group Accounts" for more details.

NOTE:

Privacy state can be defined on patient level which is inherited by all studies of the patient and on study level directly. It is represented by a lock icon in study and patient views. For detailed description please refer to User Manual document of iQ-WEB.

14.1.2 USER ACCOUNTS

This section of the "Users" page is used for actions managing user accounts such as searching for users, adding, deleting or modifying users.

14.1.2.1 SEARCH FOR USER ACCOUNTS

Users can be filtered to offer more clarity by searching for the following criteria:

- "Username"
- "First Name"
- "Last Name"
- "Middle Name"
- "Email"

When search is performed it will be checked whether the search string is contained in the used criterion. The search result will replace the user list. In case there is no result, the list will be empty. To show all existing users again, the "back" link can be used.

14.1.2.2 ADD/MODIFY USER ACCOUNTS

User accounts can be added or modified and deleted in the "User account" section by using the corresponding buttons. When adding or modifying user accounts the following information about the user can be specified:

- "User Information"
 - "Username"
 - The username that needs to get access to the web interface of iQ-WEB has to be entered here.
 - "Password"
 - This is the password for the username mentioned above.
 - "First Name"
 - First name of the user, limited up to 20 characters"Last Name"
 - Last name of the user, limited up to 20 characters
 - "Middle Name"
 - Middle name of the user, limited up to 20 characters
 - "User Email Address"

Enter the email address of the user with the option to send an email notification when a new study has arrived, with this user stated as referring physician.

"Group Membership"

This section defines the group membership of the user to a chosen user group. The user can be a member of more than one user group at the same time.

NOTE:

Only existing groups can be chosen for user group membership.

"General Privilege Settings"
 This section defines a list of privileges users have when using iQ-WEB and its modules.

With the permission levels described in the table below, there are three categories of users that can be defined for iQ-WEB:

CATEGORY	DESCRIPTION
Administrator Users	These are the user accounts created at "Administrator Accounts" in the Settings \rightarrow Users page in iQ-WEB. They have access to the same system-level configuration information as the user "root".
Power Users	These are the user accounts with the "Modify" and "View" permissions enabled. Such users have access to all public and private patients/studies in the database. They can also modify and delete existing database records.
Regular Users	These accounts are usually created for the referring physicians or reading physicians. They do not have the permission to "View" and have only access to the public patients/studies or the private patients/studies whose Referring/Reading Physician Name matches with the Last Name and First Name of the user profile.

For each user the following access privileges can be managed by an administrator account.

ACCESS PRIVILEGE	DESCRIPTION
View	Required to view private patients/studies
Modify	Required to change database attributes
Forward	Required to forward images stored in iQ-WEB to a remote AE
Query	Required to query remote Query/Retrieve SCP application entities
Move	Required to move images on remote Query/Retrieve SCP application entities
Download	Required to download iQ-WEB images from a web browser using the "Download Content" button
Print	Required to print images on DICOM printers
Export	Required to export images stored in local iQ-WEB database to DICOM Standard Part 10 formatted directory and files with DICOMDIR directory information
Import	Required to import external DICOM formatted directory and/or raw image files into iQ-WEB database
Upload	Required to upload text files, PDF/Word documents, audio/video clips, etc. into iQ-WEB database
Monitor	Required to access system monitoring activities such as system logs, live monitors, etc.
Mark	Required to mark a study as either Read or Unread
Change Storage Location	Required to change the storage location of DICOM studies
Structured Reports	Required to create DICOM Structured Reports in iQ-X

NOTE:

The super-user 'root' has all of the permissions mentioned in above table and is allowed to maintain MySQL installation.

"Advanced Privilege Settings"

In the Advanced Privilege Settings section it is also possible to specify more granular access rights to the users. This is accomplished with User Access Filters which allow user the access to patients/studies according to matching DICOM elements. This extends the standard matching mechanism of Referring- and Reading Physician Name. This mechanism also allows the combination of matching DICOM elements with a standard logical conjunction.

Advanced Privilege Settings				
User Access Filters:	Source AE-Title: Referring Physician's Name: Reading Physician's Name: Institution Name: The user will be granted acco	IQSERVER V HAMMERSCHLAG^BRU V N/A V IMAGE Information Sys V ess to all patients or studie	s matching the filters selected above.	
	If multiple filters are defined, then the logical AND (&&) operator will be applied for all defined filters.			

Figure 17 – Advanced User Privilege Settings

The following elements are supported as filtering attributes:

- "Source AE-Title"
- "Referring Physician's Name"
- "Reading Physicians Name"
- "Institution Name"

Using more than one filter will combine all criteria with a logical AND (&&).

NOTE: It is only possible to choose values for these elements, if they already exist in the database.

14.1.3 USER GROUP ACCOUNTS

User group accounts are an administrative mechanism to combine iQ-WEB user accounts and make it easier to specify view privileges for all of them at once. It can also be used as a shared user account. User group accounts can be set up like a normal user account, but there are three additional options: Group Description, Group Share and Sub-String Group Matching.

User Group Information	
Group User Name:	
	This is the group user name to login to the database.
Password:	
Confirm Password:	
	Password for the database group user name above.
Group Description:	Institution Name (0008,0080) 🗸 =
	Input the criterion to be matched for this group (up to 64 characters). Only studies with an exact match will be displayed
Group Email Address:	
	Email address of the group (up to 64 characters).
Group Share:	Enable
	If this privilege is enabled, the View access of any user of this group is shared by all other users of the same group. For
Sub-String Group Matching:	Enable
	If this option is enabled, iQ-WEB will check to see if the Group Description of this group is a sub-string of the chosen field

Figure 18 – User Group Settings

"Group Description"

This option allows choosing a DICOM attribute and defining a value. Every user in the group has access to patients or studies where the defined value matches exactly with the value of the DICOM attribute of the patient/study.

The currently supported DICOM attributes are

- "Institution Name (0008,0080)"
- "Other Patient ID (0010,1000)"
- "Patient Comments (0010,4000)"
- "Accession Number (0008,0050)"
- "Source AE (0002,0016)"
- "Study Description (0008,1030)"
- "Group Share"

If this option is enabled, the 'View' access of any user in this group is being shared with all other users of this group. iQ-WEB will check all members of the group to determine whether users of the group can access that private patient/study. If a user of this group has a matching last name/first name with either the Referring or the Reading Physician of a private patient/study, and Group Share is enabled for the group of that user, then all other users of this group will have access to the same private patient/study.

"Sub-String Group Matching"

In case this option is enabled, iQ-WEB will check whether the value entered in Group Description is a sub-string of the chosen DICOM attribute of the patient/study, instead of using an 'exact-matching' method to allow access to a private patient/study.

14.1.4 ADMINISTRATOR ACCOUNTS

Administrators have every access privilege that can be given for normal users. In addition, they have the ability to add or modify user accounts. Furthermore, there are functions in iQ-WEB that can only be used and set up by administrator accounts like "Automatic Purging" or the "DICOM" page.

14.1.5 FAILED LOGIN ATTEMPTS

iQ-WEB protocols all failed login attempts either caused by using a wrong username or a wrong password. The attempts will be listed in this section. Additionally, the amount of failed attempts will be shown as well as the option to reset/delete the login attempts. After a configured number of failed attempts in a specified time iQ-WEB will block the user from logging into iQ-WEB. (14.2.3 "Global settings") This is a security mechanism to prevent automated intrusion attempts.

Failed Login Attempts				
There is/are 3 user(s) with failed login attempts.				
USER	ATTEMPTS			
Chuck Morris	1			
Luke Groundwalker	1			
User1	1			
Check All Delete				



NOTE:

It is possible to reset the login attempts manually by deleting the respective files under "[iQ-WEB installation folder]\PACS\FailedLogin" (default installation path). To do so, access to the file system with appropriate permissions is needed.

14.1.6 UPGRADE EXISTING DATABASE USER

This feature allows administrators to take existing MySQL user accounts, which may exist because of a wrong performed upgrade or manipulation of the database, and make them available in iQ-WEB.

Upgrade Existing Database User				
There is/are 2 existing user(s) that can be upgraded.				
USERNAME				
Clark Sent				
Ronald McKing				
Check All Upgrade User Please Note: Upgrading user takes existing MySQL user accounts that are currently not available in iQ-WEB and gives them privileges to be used in iQ-WEB.				

Figure 20 – Upgrade User

14.1.7 REGENERATE EXISTING IQ-WEB USER

With this feature, administrators are able to update the database access privileges of existing iQ-WEB users. This might be necessary, because some users originate from old iQ-WEB installations. In that case, they have no access to new database tables or columns and will not be able to use the complete functionality of iQ-WEB.

Click on "Regenerate All Users Privileges" to get a list of all users of iQ-WEBX. Check a user whose privileges need to be regenerated and click on "Regenerate Privileges".

There is/are 3 existing user(s) that can be regnerated:				
	USERNAME	LAST NAME	MIDDLE NAME	FIRST NAME
	User1	Smith		Joe
	User2	Strong		Bob
	User3	Bauer		Robert
Check All Regenerate Privileges				



14.2 SYSTEM

This page contains global settings for iQ-WEB sorted by topic.

14.2.1 STORAGE

iQ-WEB stores DICOM data as received into folder structures and registers the data into the database. The following storage settings are global and can be overwritten by specific DICOM node configurations. For more details please refer to 15.1 "DICOM".

"Default Short-Term Archive Directory"
 This is the directory where all the received images will be stored, in case there is no specific short-term archive directory defined for a source AE.

NOTE:
Entered paths have to be accessible by the iQ-WEB server system. A mapped drive or UNC path may
be used here. Make sure that iQ-WEB has the required permissions.

- "Default Long-Term Archive Directory" This is the location where all images will be moved to if automatic aging is configured and executed in case there is no specific long-term archive directory defined for a source AE.
- "Default Archive Directory Format"

This option controls the hierarchy under the designated archive directory.

"Flat"

Received images are stored under %assigned directory%/YYYY-MM-DD-WEEKDAY/[sub-folders]

"Hierarchical"

Received images are stored under %assigned directory%/YYYY/MM/DD/WEEKDAY/[sub-folders] "By Study Instance UID"

Received images are stored under %assigned directory%/%StudyInstanceUID%/[sub-folders]

NOTE:

Using the Study Instance UID for the folder naming may exceed the 256 characters restriction for Windows filenames very fast, because a Study Instance UID already has 64 characters. The character limitation can be avoided by using UNC paths which can contain 32767 characters on a NTFS formatted system.

NOTE:

Please choose a storage system with appropriate capacity and read/write performance for the intended use case. The actual amount of needed storage capacity depends on many factors. To determine the appropriate size of your storage system, you can visit http://www.pacscalculator.com/

14.2.2 AUTOMATIC AGING

Automatic aging is a feature that is intended to help separating most recently stored DICOM data from data which is older. To achieve this automatic aging moves images form the short-term archive to the defined long-term archive. To enable this feature, enter the amount of days and setup a schedule by defining a weekday and a time. iQ-WEB will move images that were received more than the set days ago according to the schedule.

Setup: Age images received more than 0 days ago		
Automatic Aging moves data from the default Short-Term Archive directory to the default Long-Term Archive directory according to the schedule above.		
Run Automatic Aging weekly on every Sunday 💌 At this time of day: 12:00 AM 💌		

Figure 22 – Automatic Aging Setup

NOTE: iQ-WEB will use the hierarchical directory format for long term archive in case the archive directory format is set to Study Instance UID.

Examples:

"Flat"

On 01/25/2013 all images should be aged to the directory "C:/longterm". There are images that were received on 01/20/2013. During the automatic aging process the images will be moved to the directory "C:/longterm/2013-01-25/2013-01-20/[images]".

"Hierarchical"

On 01/25/2013 all images should be aged to the directory "C:/longterm". There are images that were received on 01/20/2013. During automatic aging process the images will be moved to the directory "C:/longterm/2013/01/25/2013/01/20/[images]".

"By Study Instance UID"

On 02/20/2013 all images should be aged to the directory "C:/longterm". There are images that were received on 01/20/2013. During automatic aging process the images will be moved to the directory "C:/longterm/2013/02/20/[Study Instance UID]/[images]".

NOTE:

iQ-WEB uses the "Date modified" value of the Windows file system as reference. This means that every modification of the study, like adding a SR or editing the patient name, will change the value and in result change the time when the study will be aged.

14.2.3 GLOBAL SETTINGS

This section accumulates the following global settings for topics like security, notification, workflow, date/time and language/character set.

"Browser Session Timeout"

This value defines the time which has to pass until an inactive browser session on a client machine should be logged out. This is a security feature to prevent unintended access to iQ-WEB and its data on a publically available client machine.

NOTE:	
A value of 0 deactivates this feature.	

"Anti-Spam Settings"

Administrators can configure following settings to prevent spamming the server with automated login attempts.

"Display Anti-Spam Code"

If this setting is enabled an anti-spam security code contained in an image will be generated for each user login. Users have to enter this anti-spam code as well as their password to log into the system.

(In previous versions, this function could be modified by using the "antispam.code" file in the "[iQ-WEB installation folder]/PACS/" subfolder of iQ-WEB.)

- "Maximum login attempts"
 Users will have a defined maximum number of login attempts until they have to wait a specified time for their next login.
- "Waiting time until next login"

Users that exceeded maximum number of failed login attempts will have to wait the specified number of hours until they are allowed to login again or an administrator resets their failed login attempts.

"Password Settings"

Administrators can configure the following settings related to the password security. Available options are:

- Automatically expire the user password after X days
- Minimum number of characters for the password
- Password must feature at least one uppercase letter
- Password must feature at least one lowercase letter
- Password must feature at least one number
- Password must feature at least one special character
- "Administrator's Email Address"

Administrators can specify the email address of the PACS administrator here. All system-generated emails, including reports, notifications etc. will be delivered to this email address.

NOTE:

As for all email related features, a SMTP server has to be configured to send emails. Please refer to section 14.3 "Email" to get information on how to set up an SMTP server.

• "Statistic Report Emails"

Administrators can enable the following automatically generated statistic reports to be delivered to the above defined administrator's address via email. Statistic reports contain statistic information about received studies in a period of time.

- "Daily statistical report emails"
- "Weekly statistical report emails"
- "Monthly statistical report emails"
- "Monthly journal report emails"
- "Notifications"

Administrators can enable an email notification system that sends an email to registered user's email address about any failed job submitted by that user.

"Date and Time Formats"

Administrators can switch between the global display format of the date and time:

- Unites States format (YYYY-MM-DD HH:MM:SS)
- European format (DD.MM.YYYY HH:MM:SS)
- "Workflow"

Administrators can configure the following global settings that will influence the user's workflow of iQ-WEB in this section.

- "Bypass series level and display all images of a study directly"
 This setting disables the series level view when navigating from study level view to the image level view.
- "Enable automatic conversion of received DICOM images into thumbnail/full-size JPEG/GIF images"

By default iQ-WEB is generating thumbnail/full-size JPEG/GIF images on demand if they are necessary for the web interface display. The setting switches this behavior so that iQ-WEB is generating thumbnails when receiving new DICOM data.

- "Use iQ-VIEW as the viewer instead of iQ-X"
 To replace the iQ-X viewer with an iQ-VIEW Call on the client stations administrators can enable this option. These stations have to be configured in section 13.3.2 "Configure iQ-VIEW Call stations" to work properly.
- "Automatically mark studies or patients as read when opening in iQ-X"
 iQ-WEB allows to setup a workflow where opening a study in iQ-X viewer or with iQ-VIEW Call will mark the study as read to track progress.
- "Display a blank version of EasyWEB page"

Users initially get a blank EasyWEB page and have to enter search criteria to get studies displayed

(In previous versions, this function could be modified by using the "easyWebpage.code" file in the "[iQ-WEB installation folder]/PACS/" subfolder of iQ-WEB.)

• "Specific Character Set"

This option changes the display of a specific character sets in the web interface. Especially when presenting patient names in the web interface. This option forces the client web browser to interpret web interface delivered by the web server using the codec selected. In case "Default" is selected, the browser tries to automatically detect the correct encoding. A correct display of the patient information depends on a consistent DICOM encoding. The following character sets are supported:

CHARACTER SET	STANDARD
Latin Alphabet Part 1	ISO-8859-1 / ISO_IR 100
Latin Alphabet Part 2	ISO-8859-2 / ISO_IR 101

Latin Alphabet Part 3	ISO-8859-3 / ISO_IR 109
Latin Alphabet Part 4	ISO-8859-4 / ISO_IR 110
Latin Alphabet Part 5	ISO-8859-9 / ISO_IR 148
Russian	ISO-8859-5 / ISO_IR 144
Arab	ISO-8859-6 / ISO_IR 127
Greek	ISO-8859-7 / ISO_IR 126
Hebrew Logical Order	ISO-8859-8 / ISO_IR 138
Thai	TIS-620 / ISO_IR 166
Japanese JIS X 0201 Katakana	ISO-2022-JP / ISO_IR 13
Japanese JIS X 0201 Romaji	ISO-2022-JP / ISO_IR 14
Latin Alphabet Part 1 with code extension	ISO-8859-1 / ISO 2022 IR 100
Latin Alphabet Part 2 with code extension	ISO-8859-2 / ISO 2022 IR 101
Latin Alphabet Part 3 with code extension	ISO-8859-3 / ISO 2022 IR 109
Latin Alphabet Part 4 with code extension	ISO-8859-4 / ISO 2022 IR 110
Latin Alphabet Part 5 with code extension	ISO-8859-9 / ISO 2022 IR 148
Russian with code extension	ISO-8859-5 / ISO 2022 IR 144
Arab with code extension	ISO-8859-6 / ISO 2022 IR 127
Greek with code extension	ISO-8859-7 / ISO 2022 IR 126
Hebrew Logical Order with code extension	ISO-8859-8 / ISO 2022 IR 138
Thai with code extension	TIS-620 / ISO 2022 IR 166
Japanese JIS X 0201 Katakana with code extension	ISO-2022-JP / ISO 2022 IR 13
Japanese JIS X 0208 Kanji with code extension	ISO-2022-JP / ISO 2022 IR 87
Japanese JIS X 0212 Supplementary Kanji with code extension	ISO-2022-JP / ISO 2022 IR 159
Korean with code extension	EUC-KR / ISO 2022 IR 149
Unicode	UTF-8 / ISO _IR 192
Simplified Chinese	GB2312 / GB 18030

Figure 23 - Character Sets

NOTE:

Due to browser limitations, it is not possible to use more than one character set at the same time. The language and regional settings of the used operating system also influence the correct display of character sets. The only way to display characters from different languages at once is using Unicode.

WARNING:

If a translation used for the iQ-WEB user interface it is mandatory that the character set used in the translation file have to match settings in iQ-WEB user interface to ensure correct display.

"Choose Language"

This setting will change the language of the web interface for all clients. If "Auto" is selected, the individual client browser settings will be taken into account. Most modern browsers allow specifying a priority list of preferred languages.

iQ-WEB provides a mechanism to translate into custom languages. By default only German, English, Spanish and Russian are included in the installation routines. Administrators can specify a custom language if the language is note included by default. For more details please refer to chapter 17 "Translation".

NOTE:

You may have to logout and login to fully apply the language settings. If iQ-WEB doesn't find the appropriate language files to match the setting it will switch back to the default English language.

- "PHP Runtime Executable"
 In this field, the full path of the PHP executable has to be entered.
 By default, the path is "[iQ-WEB installation folder]/PHP/php.exe".
- "Thumbnail Directory"
 This path defines the directory for storing converted thumbnail JPEG/GIF images. iQ-WEB will automatically add a "thumbnails" sub-folder to the entered directory.
 By default, the path is "[iQ-WEB installation folder]/PACS/php".
- "Web Images"

This path defines the directory for storing converted JPEG/GIF web images. iQ-WEB will automatically add an "images" sub-folder to the entered directory. By default, the path is "[iQ-WEB installation folder]/PACS/php".

NOTE:

Entered paths have to be accessible by the iQ-WEB server system. A mapped drive or UNC path may be used here. Make sure that iQ-WEB has the required permissions.

14.2.4 UPLOAD

"Maximum Upload File Size" This value defines the maximum amount of Mbytes that can be uploaded using actions like "Upload DICOM Image".

NOTE:

In order to apply this setting, the corresponding values in the php.ini also have to be configured. The values for "upload_max_filesize" and "post_max_size" need to be modified.

NOTE:

In case the option 'Upload Attachments' is set to 'Store uploaded attachment into database table directly', the my.ini of the database has to be edited. The value for "max_allowed_packet" needs to be modified.

"Upload Directory"

This is the directory for storing attachments and DICOM images uploaded by users.

"Storage Option"

This option defines how uploaded attachments should be stored. Either into the database table directly or under the above defined "Upload Directory".

14.2.5 AUTO-SCAN IMPORT

If this feature is enabled, it allows iQ-WEB to automatically scan a configured directory and import included files with the "*.dcm" filename extension into iQ-WEB.

"Source Directory"

The path to the directory that should be scanned has to be entered here.

"Destination Folder"

Automatically imported images will be stored in this folder.

"Scan Interval"

This value defines how often the "Source Directory" should be scanned for new images. The value is entered in seconds.

NOTE:

Entered paths have to be accessible by the iQ-WEB server system. A mapped drive or UNC path may be used here. Make sure that iQ-WEB has the required permissions.

NOTE:

To scan files without the extension "*.dcm" as well, administrators have to add the following registry key at the iQ-WEB system to the basic registry configuration:

"AutoScanAnyFile" of type REG_DWORD with the decimal value 1.

(Please refer to chapter 8 "Registry" for registry reference.)

14.2.6 WORKLIST

Besides the core feature of iQ-WEB to archive DICOM image data it can process DICOM modality worklist data. This section provides global settings for handling this worklist data.

• "Aging Period for Purging"

Worklist records that were received more than the here defined days ago will be purged automatically.

- "Reconciliation Feature"
 - "Patient Reconciliation"

If enabled, iQ-WEB will use demographic information of patients (Patient ID, Patient Name and Date of Birth) from the DICOM Modality Worklist data to match these with the same information of received DICOM studies. Patient names in the studies will be corrected automatically, if any discrepancy is found.

• "Study Reconciliation"

If enabled, iQ-WEB will use study-related information (Referring Physician's Name and Requesting Physician's Name) from the DICOM Modality Worklist data to match these with the same information of received DICOM studies. Referring physician's name and/or requesting physician's name in the studies will be corrected automatically, if any discrepancy is found.

• "Auto-Scan for Worklist Data"

If enabled, iQ-WEB will automatically observe a defined directory for DICOM Modality Worklist files and import the data into the database.

"Auto-Scan Source Directory"

iQ-WEB will scan any text file in this source directory and import the properly formatted worklist data into the database.

"Scan Interval"

This value defines how often the "Source Directory" should be scanned for new images. The value is entered in seconds.

14.2.7 HL7

In this section, the automatic conversions of incoming HL7 ORM messages to DICOM Modality Worklist records can be activated. How the HL7 segments match with the worklist fields is stated in the table below.

It is currently not possible to modify these matching mapping.

DICOM MODALITY WORKLIST DATA	HL7 ORM MESSAGE FIELD
Patient Name (0x00100010)	PID-5
Patient ID (0x00100020)	PID-3
Accession Number (0x00080050)	ORC-2
Scheduled AE Station Title (0x00400001)	ORC-4
Requested Procedure ID (0x00401001)	OBR-4
Scheduled Procedure Start Date (0x00400002)	OBR-36
Scheduled Procedure Start Time (0x00400003)	OBR-36
Modality (0x00080060)	OBR-44.2

14.3 EMAIL

This section allows an administrator to configure an SMTP server that iQ-WEB will use for sending outgoing emails.

Such emails are:

- "Statistic report emails"
- "Monthly system journal"
- "Notifications for referring physicians when a new study arrives"
- "Trial expiration notification"
- "Sending images in JPEG"

Clicking the "Add" button will open a configuration site that contains the following items.

"SMTP Server Hostname or IP Address"

In this field, the hostname or the IP address of the SMTP server has to be entered.

- "Port Number" Represents the TCP port number the SMTP server listens to. In general, this is 25.
- "Description"

Enter a short description of the STMP server. (Not required)

• "System Email Address"

This is the email iQ-WEB uses as sender and will be displayed in the "From" field in outgoing emails.

"Authentication Type"

The following authentication types are possible:

A. None

No other configuration is required.

B. LOGIN, PLAIN, CRAM-MD5

Enter a valid username and password.

C. NTLM

A valid username and password as well as a hostname of the NTLM workstation are required.

SMTP Configuration				
Hostname or IP Address of SMTP Server:	smtp.adress			
Port Number of SMTP Server:	25			
Description of SMTP Server:	This is a SMTP server			
System Email Address:	email@email.biz (This address will be us	ed in the se	nder field in all emails s	sent from iQ-WEB using this SMTP server.)
Authentication Type:	 None Type: Username: Password: NTLM Workstation: 	LOGIN username	✓ •••••	

Figure 24 – SMTP Configuration

Once a SMTP server is configured and applied, it is possible to send a test email to a self-determined address.

NOTE:

The level of safety depends on the configuration of your SMTP server. In case there is no special configuration, the emails will be sent unencrypted.

NOTE:

Currently, a connection via SSL/TLS to the SMTP server is not supported.

14.4 ROUTING

14.4.1 DICOM ROUTING

The	There is/are 2 DICOM Routing Entry(ies) defined:									
	SOURCE AE	KEY ATTRIBUTE	MATCH PATTERN	DESTINATION AE	HOURLY SCHEDULE	WEEKDAY SCHEDULE	PURGE AFTER ROUTING	MORE OPTIONS	EDIT	EN/DISABLE
	IQSERVER	N/A		IQSERVER_2	Immediately	Any Day	No	N/A	<u>Edit</u>	<u>Disable</u>
	IQSERVER	N/A		C:/archive	Immediately	Any Day	No	N/A	<u>Edit</u>	<u>Disable</u>
(Check All Add Delete Enable All Disable All									

Figure 25 – Routing Overview

In addition to forwarding patients, studies or series manually from the iQ-WEB web user interface, users can define automatic routing table entries to forward images automatically based on the following rules.

14.4.1.1 ROUTING CRITERIA

Routin	g Criteria				
Sou	rce AE-Title:		► (Wild-Card characters '	*' and '?' are supported)
🔿 Key	Attribute: Institution N	lame (0008,0080)	✓ =	(Wild-Card	d characters '*' and '?' are supported)
🔿 Арр	lying the logical AND op	erator (&&) to both cr	iteria above		
O App	lying the following adva	nced logical expressio	n:		
	Left Round Bracket - (Institution Name (0008	(Right Round Brack	ket -) AND - &&	OR -	Append
	Resulting advanced lo	ogical expression:			
					Reset
	For Example: (%00080	0080=Institution% AN	ID %00100020=Patient	:%)	
	To get the code shown i	in the example above	follow these steps:		
	 Click on the 'Left Choose 'Instituti Type 'Institution' Click on the 'App Click on the 'AML Choose 'Patient' Choose 'Patient' in Click on the 'App Click on the 'Rigl 	t Round Bracket (' b ion Name (00080,0 n' in the textbox on th pend' button. J (&&) Button. ID (00010,00020)' the textbox on the le pend' button. ht Round Bracket)'	utton, 0080)' from the dropdo le left. from the dropdown box ft. button.	own box below.	

Figure 26 – Routing Criteria

"Source AE-Title"

If this option is selected and iQ-WEB receives images from the matching source application entity, the received images will be automatically routed to the defined destination AE.

"Key Attribute Tag"

If this option is selected, users can define a matching pattern, including wild-card characters "*" and "?", to match against a DICOM attribute tag of a received image. In case the pattern string matches with the attribute, iQ-WEB will route the received image to the defined destination. Currently the following DICOM attributes are supported:

- "Institution Name (0008,0080)"
- "Referring Physician Name (0008,0090)"
- "Patient ID (0010,0020)"
- "Protocol Name (0018,1030)"
- "Performing Physician's Name (0008,1050)"
- "Reading Physician's Name (0008,1060)"
- "Operator's Name (0008,1070)"
- "Study Description (0008,1030)"
- "Series Description (0008,103E)"
- "Accession Number (0008,0050)"
- "Modality (0008 ,0060)"
- "Applying the logical AND operator (&&) to both criteria above"
 Selecting this criterion will only route images to their destination if both criteria above will match with their defined pattern.
- "Applying the advanced logical expression"
 Administrators can configure advanced logical expression as an automatic routing rule, which can consist of one or more key matching patterns as well as the logical operators AND (&&) and OR (| |).

14.4.1.2 DESTINATION

- "Forward to destination AE"
 Select your AE-Title where the images should be sent to. The combo box lists all application entities defined at the "DICOM" page.
- "Copy received images to destination folder" iQ-WEB will copy the received images into the specified destination folder instead of forwarding them to a destination AE.

NOTE:

The entered path must be accessible by the iQ-WEB server system. A mapped drive or UNC path may be used here. Make sure that iQ-WEB has the required permissions.

14.4.1.3 HOURLY SCHEDULE

Automatic routing schedules by the 24-hour clock with four different options to choose.

- "Immediately"
 - Images will be routed as soon as they were received.
- "From To"

Images matching the routing criteria and that will be received during the defined time window will be evenly distributed in chunks and then routed at every full hour (e.g. 9:00 am, 10:00 am etc.) during the time frame. Images received outside of the schedule window will not be routed. This is useful to avoid peaks in server performance and network usage.

"Precisely at"

All matching images will be routed during the defined hour. If there are too many images scheduled to forward during these 60 minutes, then the remaining routing jobs will stay in the "submitted" state and will be processed the next day on the same scheduled hour.

"Immediately, but only during the hourly window"
 Unlike the normal "From – To" schedule, this option will not distribute the routing evenly, instead it will route the images as soon as they are received.

14.4.1.4 WEEKLY SCHEDULE

The weekly schedule is combined with the hourly schedule above to determine when or if iQ-WEB should forward the received images. Every day in a 7 day week can be chosen.

14.4.1.5 PURGE AFTER ROUTING

Select whether or not the images should be deleted after the routing.

14.4.1.6 RETRY SETTINGS

This time interval in hours specifies the time delay iQ-WEB will wait before retrying a failed job again. By default, it is set to 0 which means that there will be no delay.

14.4.1.7 MISCELLANEOUS

- "Forward existing oldest studies to destination"
 If selected, iQ-WEB will forward the "n" existing oldest studies in addition to the newly received study. In case a negative number is entered, iQ-WEB will also route the "n" newest study.
- "Wait 'n' minutes for all instances of the study to be received, and forward the entire study instead of individual images"
 Selecting this checkbox lets iQ-WEB wait for the specified "n" minutes for all images of the study to be received, then forward the entire study via a single DICOM association to the destination.
- Do not use the AE-Title assigned to iQ-WEBX

You can chose to either use the AE-Title of the source AE or a user defined AE-Title when sending the images to the destination AE.

NOTE:

It might be necessary that the user defined AE-Title is known by the destination AE. Otherwise a connection attempt might be rejected.

14.4.1.8 EXAMPLE ROUTING RULES

- Route by source AE-Title
- Source AE-Title: Scanner
- Destination AE-Title: IQSERVER
- Hourly schedule: Immediately
- Weekly schedule: every day
- Auto purge: No

With the routing rule given above, all images received from the AE "Scanner" will be automatically routed to AE "IQSERVER" immediately after they are being received. The received images will be kept in the iQ-WEB database after they are routed to the destination AE.

- Route by key attribute
- Key Attribute Tag: Referring Physician's Name (0008, 0090)
- Matching Pattern: John D*
- Destination AE-Title: DCMTK
- Hourly Schedule: 1:00 A.M.
- Weekly Schedule: Tuesday
- Auto Purge: Yes

With the above routing rule, all images received with the referring physician names such as "John Doe" or "John David" will be automatically routed to AE "DCMTK" at 1:00 a.m. local time on Tuesdays. (However, received images with referring physician names such as "Dr. John Doe" or "Mr. John David" do not match with the defined routing pattern string and therefore will not be routed.) The received images will be purged after they have been routed successfully to the destination AE "DCMTK".

14.4.2 HL7 MESSAGE ROUTING

In case the HL7 message listener is installed, administrators can define automatic routing rules to forward HL7 messages based on certain criteria described below.

The	There is/are 2 HL7 Message Routing Entry(ies) defined:							
	SOURCE APPLICATION	KEY ATTRIBUTE	MATCH PATTERN	DESTINATION APPLICATION	SCHEDULE	EDIT	EN/DISABLE	
	Station1	N/A		Station2	Immediately	<u>Edit</u>	<u>Disable</u>	
	Any	Message Type	ADT^A04	Station2	From 12:00 AM To 11:00 PM	Edit	<u>Disable</u>	
C	Check All Add Delete Enable All Disable All							

Figure 27 – HL7 Routes

14.4.2.1 ROUTING CRITERIA

"Source application name"

If selected, the defined application name will be matched with the string in the "Sending Application" field in the MSH message header.

• "Key in message header"

If this is selected, the administrator can define a pattern that will be matched with a key in the message. In case it matches, iQ-WEB will forward the message. Currently, the following keys are supported:

- "Message type"
- "Receiving application"
- "Receiving facility"
- "Sending facility"

14.4.2.2 DESTINATION HL7 APPLICATION

This is the destination application where the messages should be routed to. The application has to be defined on the "HL7" page.

14.4.2.3 SCHEDULE

The HL7 routing can be scheduled with the following options:

"Immediately"

Messages will be forwarded to the destination HL7 application as soon as they are received.

"From – To"

Images matching the routing criteria and that will be received during the defined time window will be evenly distributed in chunks and then routed at every full hour (e.g. 9:00 am, 10:00 am etc.) during the time frame. Images received outside of the schedule window will not be routed.

"Precisely at"

All matching images will be routed during the defined hour. If there are too many images scheduled to forward during these 60 minutes, then the remaining routing jobs will stay in the "submitted" state and will be processed the next day on the same scheduled hour.

Routing Criteria				
Source Application Name:	(Wild-Card characters	s '*' and '?' are supported)		
○ This Key in Message: Message Type ✓ with M	1atching Pattern:	(Wild-Card characters '*' and '?' are supported;Case-Insensitive)		
Destination HL7 Application				
Forward to this destination HL7:				
Schedule				
 Immediately (As soon as received) 				
○ From: 12:00 AM ♥ To: 11:00 PM ♥				
○ Precisely At: 1 ♥ ● AM ○ PM				
Please Note: The process will start within the selected hour, not necessary in the first seconds.				
Add HL7 Auto Routing Rule				

Figure 28 – HL7 Route Setup

15 COMMUNICATIONS

15.1 DICOM

Curr	ent iQ-WEB • Applicatio • Hostname • TCP Port • Maximum re is/are 3 A	Configurations: n Entity Title: PA :: localhost Number: 1234 Number of AE Su opplication Entity(CS upported: Un ies) defined:	limited									
	AE-TITLE	DESCRIPTION	HOST	IP ADDRESS	PORT	DB ACCESS	ARCHIVE DIRECTORY	DICOM COMMANDS	MAX. CONNECT	PREF. TRANSFER SYNTAX	DISK	VERIFY	APPLICATION TYPE
	IQSERVER	Viewing Station	myviewer	N/A	104	v	N/A	C-STORE C-FIND C-MOVE WORKLIST-FIND	10	Send: N/A Receive: N/A	N/A	<u>Echo</u>	N/A
	PACSTWO	Other PACS	mypacstwo	N/A	4321	~	N/A	C-STORE C-FIND C-MOVE WORKLIST-FIND	10	Send: N/A Receive: N/A	N/A	Echo	<u>Query/Retrieve</u> Storage Commitment Report
	WORKLIST	Worklist	myworklist	N/A	102	~	N/A	C-STORE C-FIND C-MOVE WORKLIST-FIND	10	Send: N/A Receive: N/A	N/A	Echo	Query Worklist
(Check All	Delete	Add										

Figure 29 – DICOM Overview

On this page, the configuration of the DICOM nodes can be done. At the top of the page iQ-WEB's own DICOM information is listed consisting of the AE-Title, the port number and the hostname. In addition, the maximum number of supported application entity nodes, restricted by the license, is shown.

NOTE:

For security reasons iQ-WEB rejects DICOM traffic of source DICOM AEs which are not listed on this site.

In general iQ-WEB can act as STORE SCU/SCP, STORAGE COMMITMENT SCU/SCP, Q/R SCU/SCP, WORKLIST SCU/SCP and PRINT SCU in DICOM communication contexts. For a detailed overview about the supported DICOM transactions, please refer to the DICOM Conformance Statement of the current version of iQ-WEB.

15.1.1 ADD OR MODIFY A DICOM NODE

15.1.1.1 GLOBAL SETTINGS

For establishing a working DICOM network connection it is necessary to identify a station and specifying its network address parameters. This section allows specifying the basic parameters iQ-WEB need to address a station for a DICOM network connection.

"Description"

This field is for a short description of the DICOM node.

"Application Entity title"

The AE-Title of the remote application has to be entered here.

- "Hostname"
 The hostname of the remote AE has to be entered here in case no IP address is defined.
 "IP Address"
- This field is for the IP Address of the remote AE.
- "Port Number"
 TCP port number of the remote AE is defined here.

"Database Access"

In case the access is disabled, iQ-WEB will reject any association requests with the specified application entity title.

15.1.1.2 STORAGE

Beside the global storage settings, it is possible to configure the storage location of the incoming files for every single DICOM node.

- "Short-Term Archive Directory"
 This is the directory where all the received images of this DICOM AE will be stored.
- "Default Long-term Archive Directory"
 This is the location where all images of this DICOM AE will moved if automatic aging is configured and executed.
- "Default Archive Directory Format"

This option controls the hierarchy under the designated archive directory.

"Flat"

Received images are stored under %assigned directory%/YYYY-MM-DD-WEEKDAY/[sub-folders of the archive]

"Hierarchical"

Received images are stored under %assigned directory%/YYYY/MM/DD/WEEKDAY/[sub-folders of the archive]

"Study Instance UID"

Received images are stored under %assigned directory%/%StudyInstanceUID%/[sub-folders]

"Automatic Aging"

Automatic aging moves images from the short-term archive to the defined long-term archive. To enable this feature, enter the amount of days of how old an image could be. The scheduling of the aging is the same as defined on the "Configuration" page.

15.1.1.3 DICOM TRANSFER

DICOM Transfer		
Maximum Number of Simultaneous Connections:	10	
Preferred Transfer Syntax:	When iQ-WEB sends images to this AE, propose the following transfer syntax:	
	None - Use Original Transfer Syntax of Received Images	~
	Compression ratio for JPEG2000 Lossy: 5 20 (for 20:1), 10 (for 10:1), 5 (for 5:1), etc. Compressed image quality for JPEG Lossy or JPEG2000 Lossy: 90 90 (for 90%), 80 (for 80%), etc.	
	When iQ-WEB receives images from this AE propose the following transfer syntax:	
	None	\sim
	Please Note: The preferred transfer syntax for sending or receiving are only propose for DICOM network	k com
Separate DICOM Presentation Context:	\square Propose a separate DICOM Presentation Context for each Transfer Syntax.	

Figure 30 – DICOM Transfer Settings

 "Maximum Number of Simultaneous Connections"
 This value defines the maximum number of simultaneous outgoing connections the iQ-WEB server will establish to the remote AE.

"Preferred Transfer Syntax"

This section defines the preferred transfer syntax (TS) when iQ-WEB sends images to this AE or receives images. A compression ratio or compression quality value can be specified for lossy compression algorithms to specify data compression to a level where visual quality of image data is not influenced.

WARNING

Make sure using a data compression method and ratio which is compliant with all local rules and regulations. See the IMAGE Data Compression Guidelines for further details or contact your local dealer in case of any questions. The improper use of medical data compression might affect the diagnostic accuracy of medical images which can cause serious damage or death of patients!

There are three major differences between the transfer syntaxes. Some use no compression and handle images as they are. Some use Lossy compression, others use a lossless compression. Using a Lossless transfer syntax (TS) will most likely not alter the image quality, but could save time and disk space (faster transmission and smaller file size). Using a Lossy TS can influence image quality if the ratio or percentage is too high to be diagnostic.

Please refer to the DICOM Conformance Statement of iQ-WEB that comes with the installation for a detailed list of supported transfer syntaxes.

"Separate DICOM Presentation Context"
 If this option is activated, iQ-WEB uses a new presentation context for each transfer syntax. This context contains only one transfer syntax and the default transfer syntax "Little Endian Implicit".

15.1.1.4 DICOM COMMAND SETTINGS

It is possible to configure iQ-WEB, so that it allows defined DICOM actions of AEs only in case an attribute value matches the defined filter value. These filters can be set up for the DICOM actions C-MOVE, C-STORE, and C-FIND and, in addition, WORKLIST-FIND. Currently, the supported filters work differently on certain DICOM levels (patient, study, series, and image). Please see the following tables for a detailed list.

QUERY/RETRIEVE LEVEL: PATIENT						
Command	Institution Referring		Reading			
	Name	Physician	Physician			
C-STORE	✓	✓	✓			
C-FIND	~	×	×			
C-MOVE	\checkmark	×	×			

QUERY/RETRIEVE LEVEL: STUDY						
Command	Institution	Referring	Reading			
	Name	Physician	Physician			
C-STORE	~	~	✓			
C-FIND	✓	✓	~			
C-MOVE	\checkmark	~	~			

QUERY/RETRIEVE LEVEL: SERIES						
Command	Institution	Referring	Reading			
	Name	Physician	Physician			
C-STORE	\checkmark	\checkmark	\checkmark			
C-FIND	×	×	×			
C-MOVE	×	×	×			

QUERY/RETRIEVE LEVEL: IMAGE						
Command	Institution	Referring	Reading			
	Name	Physician	Physician			
C-STORE	~	✓	\checkmark			
C-FIND	*	×	×			
C-MOVE	×	×	×			

It is possible to enter multiple filter keywords for the DICOM attributes and it is possible to use multiple DICOM attributes as filter. The character "*" can be used for wildcard strings. Please see following filter examples:

C-FIND:

Institution Name: Springfield General ; Capital City Referring Physician: Schmidt^James^^^

In case the DICOM application using a C-FIND on iQ-WEB, iQ-WEB will only show studies that contain "Springfield General" or "Capital City" in their institution name and having "Schmidt, James" as referring physician.

15.1.1.5 APPLICATION TYPE

Application Type	
Query/Retrieve SCP Server	\Box Synchronize remote studies based on the following 24-hour schedule:
	12 am 1 am 2 am 3 am 4 am 5 am 6 am 7 am 8 am 9 am 10 am 11 am 12 pm 1 pm 2 pm 3 pm 4 pm 5 pm 6 pm 7 pm 8 pm 9 pm 10 pm 11 pm © Synchronize all remote studies
	O Synchronize remote studies performed in the last 1 day(s)
	□ Update existing studies if they already exist □ 2-Way Synchronization (push local studies to remote AE)
Modality Worklist SCP Server	
Print SCP Server	Printer Type: Default
Storage Commitment SCP Server	Request Storage Commitment Report for DICOM images sent to this SCP

Figure 31 – DICOM Application Type

"Query/Retrieve SCP Server"

If this option is checked, it is possible to query this AE directly from iQ-WEB.

"Synchronization"

If this option is enabled, iQ-WEB will synchronize itself with the AE at the defined schedule on a 24h base. There are the following detailed settings for synchronization:

- Synchronize all studies from the remote AE to iQ-WEB database.
- Synchronize only the studies performed during the last "n" days from the remote AE to iQ-WEB database.
- Update already existing studies in local iQ-WEB database to match remote ones. This might be useful in case they have been updated or edited on remote station.
- Push all iQ-WEB local studies to the remote AE during the synchronization process.

WARNING:

Synchronization feature of iQ-WEB may impact performance of used network structure and iQ-WEB system itself especially when scheduling synchronization very frequently and when both storage systems contain a huge amount of data. It is advised to carefully plan synchronization to timeframe used for synchronization. Good practice is to plan synchronization in time periods in which the workload is not so high or nearly zero.

NOTE:

Study notes as well as image notes will not be synchronized with other stations.

"Modality Worklist SCP Server"

This option defines whether the AE is a Modality Worklist SCP Server. If enabled, it is possible to the get worklist information from this AE. This can be done by using the "Query Worklist" link that will appear in the Application Type column on the DICOM page. iQ-WEB also tries to get worklist information automatically by polling the Modality Worklist SCP server every 10 minutes.

This polling interval can be configured by adding or change the following registry setting: "[LM_SOFTWARE]\IMAGE Information Systems Ltd.\iQ-WEBX\[AE-Title]\WorklistPollInterval" of type RegDWORD 32bit where the decimal number value represent the interval in minutes. Additionally, if iQ-WEB receives DICOM N-EVENT-REPORT Study Scheduled event notifications from remote Detached Study Management SCP applications, iQ-WEB will query any defined Modality Worklist SCP application entity(s) for the relevant study information contained in the Study Scheduled event report notification

By default, iQ-WEB queries the remote Worklist SCP with a Scheduled Procedure Start Date filter of today's Date. iQ-WEB can be configured to also query for procedures scheduled for the last N days as well by adding or changing the following registry setting:

"[LM_SOFTWARE]\IMAGE Information Systems Ltd.\iQ-WEBX\[AE-Title]\WorklistPollPeriod" of type RegDWORD 32bit where the decimal number value represents the last N days to query. Value of "-1" can be set to order iQ-WEB to query all scheduled worklist data.

When iQ-WEB retrieves worklist information for a scheduled patient, and the scheduled AE station is defined in the list of DICOM Application Entities, then iQ-WEB will automatically push any pre-existing studies of this patient of the same modality information to the scheduled AE station, so that the scheduled AE station won't have to fetch them manually from iQ-WEB if it wants to access prior studies of the scheduled patient. This Pre-Fetching feature is enabled by default. To disable it, the following registry setting has to be defined:

"[LM_SOFTWARE]\IMAGE Information Systems Ltd.\iQ-WEBX\[AE-Title]\PrefetchStudiesFromWorklist" of type RegDWORD 32bit where the decimal number value represents to states. "0" means disable prefetching and "1" means prefetching is enabled.

NOTE:

If network infrastructure is limited it is advised to disabled prefetching feature.

WARNING:

To apply changes to registry setting it is mandatory to restart iQ-WEB service. During the restart process of the iQ-WEB service and while it is stopped, it is not possible to handle any DICOM connection or communication. Pending jobs will be continued after the restart.

WARNING:

The Feature to use iQ-WEB as a DICOM Modality Worklist Server is a customer specific feature and is **not** intended for public use. Due to necessary advanced administrative tasks it is recommended to contact support@image-systems.biz for workflow analysis and administrative advices.

"Print SCP Server"

Activating this option, makes it possible to use this AE as a DICOM print server. It is mandatory that this machine acts as standard DICOM PRINT SCP in the network.

 "Storage Commitment SCP Server"
 If this option is enabled, iQ-WEB requests a Storage Commitment Reports for any image send to this AE.

NOTE:

iQ-WEB also is able to deliver a DICOM Storage Commitment Report if requested by a station which stores DICOM data in the iQ-WEB database. For detailed information about DICOM features of iQ-WEB please refer to the DICOM conformance statement document of current version of iQ-WEB.
15.1.1.6 RECEIVING OPTIONS

Receiving Options	
New Study Email Notifications:	🗹 Send Email notifications to the user(s) registered as the referring physician when new studies from this AE
IQ-X Compression: Select DICOM Compression Transfer Syntax: N/A	
	Compression ratio for JPEG2000 Lossy: 5 20 (for 20:1), 10 (for 10:1), 5 (for 5:1), etc. Compressed image quality for JPEG Lossy or JPEG2000 Lossy: 90 90 (for 90%), 80 (for 80%), etc.
	Please Note: Images received from this AE are only compressed if they are not already compressed when rec For detailed information about limitations please refer to the user manual.
Anonymization:	Use this template: 🔽 to anonymize studies received from this AE. Add Anonymization Template
Transcription:	Use this template: Nobody V for DICOM studies received from this AE. Add Transcription Template

Figure 32 – DICOM Receiving Options

"New Study Email Notification"

If this option is activated, iQ-WEB will send notification via email to users in case a study is being received with this user registered as the referring physician.

NOTE:
This feature requires that a SMTP server has to been set up before. (Please refer to 14.3 "Email" for
details.)

- "iQ-X Compression" When delivering DICOM images to a remote web browser for the iQ-X ActiveX plug-in, especially via a WAN connection, users often find the need for speeding up the image transfer between the iQ-WEB and the remote browsers. In this case, administrators can enable the iQ-X Compression of iQ-WEB for each source AE, by selecting one of the DICOM compression transfer syntaxes listed below:
- "JPEG Lossless Transfer Syntax"
 If this value is selected, iQ-WEB will compress any received image using the DICOM "JPEG Lossless Compression (Selection Value 1, Process 14)" transfer syntax (UID 1.2.840.10008.1.2.4.70), and will save the compression image with the ".ls" filename extension.
- "JPEG Lossy Transfer Syntax"

If this value is selected, iQ-WEB will compress any received image using the DICOM "JPEG Baseline Lossy Compression" transfer syntax (UID 1.2.840.10008.1.2.4.50) for 8-bit images, and the DICOM "JPEG Extended Lossy Compression" transfer syntax (UID 1.2.840.10008.1.2.4.51) for 12-bit images. Both types of compressed images will be saved with the ".ly" filename extension.

• "Runtime Length Encoding (RLE) Transfer Syntax"

If this value is selected, iQ-WEB will compress any received image using the DICOM "RLE compression" transfer syntax (UID 1.2.840.10008.1.2.5), and will save the compression image with the ".rle" filename extension.

- "JPEG2000 Part-1 Lossless Only Transfer Syntax"
 If this value is selected, iQ-WEB will compress any received image using the DICOM "JPEG2000 Part-1 Lossless Only" transfer syntax (UID 1.2.840.10008.1.2.4.90), and will save the compression image with the ".j2k" filename extension.
- "JPEG2000 Part-1 Lossless Or Lossy Transfer Syntax"
 If this value is selected, iQ-WEB will compress any received image using the DICOM "JPEG2000 Part-1 Lossless or Lossy" transfer syntax (UID 1.2.840.10008.1.2.4.91), and will save the compression image with the ".j2k" filename extension. The compression ratio or image quality of the JPEG2000 Lossy compression is controlled for each source AE if this transfer syntax is selected.

With the above iQ-X Compression feature enabled, iQ-WEB will first check if any of the compressed images is available when delivering DICOM images to the web browsers. It will prefer the compressed images over the original images when transferring the images to the remote browsers. In this section a compression ratio or compression quality value also can be specified for lossy compression algorithms to limit data compression to level where visual quality of image data is not influenced. For detailed information about best compression depending to the use cases please refer to the document Medical Image Data Compression Guide Flyer.

"Anonymization"

Studies received by this AE will be anonymized with the rules given by the selected anonymization template.

"Transcription"

If this option is enabled and a transcription template is selected, it is possible for users to download Microsoft Word templates with automatically filled-in DICOM information.

15.1.1.7 DELIVERY OPTIONS

• "Job Queue Priority"

This field defines the job queue priority when processing database jobs with this destination AE. Database jobs with a higher priority destination AE will be processed before those jobs with a lower priority.

15.1.1.8 MISCELLANEOUS

- "Mark Studies as Read" Activating this option lets iQ-WEB mark every study as read received from this AE.
- "Assign Received Studies to Web Users"

This option allows the administrator to select one or more iQ-WEB users, so that these assigned users can access all patients, studies, series or images received from this AE, even if the assigned users have no "View" permission to access private studies or their last and first name do not match with either the name of the "Referring Physician's Name" tag or the "Reading Physician's Name" tag of the received DICOM study.

15.1.2 REMOVE A DICOM NODE

DICOM nodes can be removed by marking them on the DICOM page and clicking the "Delete" button.

15.1.3 HOW TO TEST DICOM COMMUNICATION

There are three simple steps to ensure that iQ-WEB is able to communicate with a remote DICOM station.

1. Network ping to the remote station

To ensure there is a network connection between the stations that is needed to have a DICOM communication, the followings steps can be performed:

- Open a command line console of your Windows OS
- Enter the command "ping [IPADRESS/HOSTNAME]" where "IPADRESS" is the IP address and "HOSTNAME" is the hostname of the remote station.
- Execute the command

In case there is no reply from the station, please check the network setup of both stations, redo the step after the changes. In case of success, continue with step 2.

2. C-ECHO to the remote station

If the remote station is entered in the DICOM list of iQ-WEB, it is possible using the "Echo" link to perform a DICOM C-ECHO. In case of failure, please check the correctness of the entered AE-Title, IP address/hostname, port. In addition, check the firewalls of both stations whether the ports are open. After changing, redo the step. After success, continue with step 3.

3. Send a Study via DICOM

The last step is to send a study from the remote station to iQ-WEB and vice versa. In case of failure, please check the logs on the highest available level for any hints.

15.2 HL7

There is/are 2 HL7 Application(s) defined:								
	APPLICATION	FACILITY	DESCRIPTION	ноят	IP ADDRESS	PORT NUMBER	MAXIMUM CONNECTIONS	EDIT
	HL7Station	Facility42	N/A	N/A	192.168.0.6	5574	10	<u>Edit</u>
	Station2	Facility	Description	Hostname	N/A	546	10	<u>Edit</u>
С	heck All Delete	Add						

	~~		or 1.	~ ·
Figure	33 –	HL/	Station	Overview

This page is only visible in case the HL7 message listener is installed. Administrators can add, modify or delete defined HL7 applications.

For detailed information about the supported HL7 message types and their structure, please refer to the HL7 Conformance Statement of the current version of iQ-WEB.

15.2.1 CONFIGURE A HL7 APPLICATION

To configure a HL7 application, several values have to be entered.

- Application name
 - Represents the name of the HL7 application that sends or receives the HL7 messages
- Facility
 Institution where the HL7 message comes from or is sent to
- Description
 A short description of the HL7 application
- Hostname
 Hostname of the HL7 application
- IP Address
 IP address of the HL7 application
- Port Number
 - TCP port number of the HL7 application
- Maximum Number of Simultaneous Connections
 Defines the maximum number of allowed connection to this HL7 application
- ORU Report Message for Newly Received DICOM Studies
 If enabled, iQ-WEB will send an HL7 ORU^R01 message to this HL7 station each time a new study is received by iQ-WEB. This message contains a link to the received study in the "Observation Value" field.

15.2.2 HOW TO TEST HL7 COMMUNICATION

To ensure a working communication between the stations, please follow the steps below:

1. Network ping to the remote station

To ensure there is a network connection between the stations that is needed to have a DICOM communication, the followings steps can be performed:

- Open a command line console of your Windows OS
- Enter the command "ping [IPADRESS/HOSTNAME]" where "IPADRESS" is the IP address and "HOSTNAME" is the hostname of the remote station.
- Execute the command

In case there is no reply from the station, please check the network setup of both stations and redo the step after changes. In case of success, continue with step 2.

2. Send a message via HL7

The last step is to send a message from the remote station to iQ-WEB and route it back. In case of failure, please check the logs on the highest information level for any hints.

16 MIGRATION

The following chapter helps to understand the different options of migrating hardware, software and DICOM data to iQ-WEB.

Before starting, please consider that iQ-WEB registers the path to DICOM images and other Meta data in a MySQL database. An image can only be displayed properly if the database storage path and the physical file location match.

It is mandatory that the person performing the migration is in possession of all usernames and passwords, e.g. a Windows administrative account, access data to the source PACS, iQ-WEB "root" and "dicom" user password.

16.1 MIGRATION CHECKLIST

Make sure that the following list is complete prior to the beginning of the migration process. Keep in mind that the compilation of information is a recommendation only. Nevertheless, it will be helpful to collect all the data.

- Installation executable (MySQL and iQ-WEBX setup files)
- All mandatory usernames and passwords to access the source and target systems
 Operation system account to access the server(s), e.g. Windows Administrator account
 PACS account to access and, if necessary, configure the applications, e.g. iQ-WEB/MySQL "root"
 account
- Remote access (e.g. Team Viewer), if applicable
- All mandatory license information for a new iQ-WEB server and, if applicable, the previous iQ-WEB installation

License information downloaded from the iQ-WEB ("Tools" \rightarrow "Licensing")

NOTE:

The License team will send detailed steps on how to migrate a license once a new license is ordered for the new system.

NOTE:

Study notes and image notes have to be migrated manually. The study/image note itself is stored in the database and can be migrated with a MySQL database backup. Attachments within study/image notes have to be copied manually. These are stored in the upload folder that is by default located at "{iQ-WEB installation}\PACS\php\upload".

Please contact the Support team at any time in case of doubts or questions about the migration.

16.2 MYSQL DATABASE BACKUP

MySQL Community Server is a free downloadable open source database that is supported by an active community of developers and enthusiasts. Even though we do not provide in-depth support for MySQL, we will help with console commands and resolve arising issues related to MySQL in association with iQ-WEB.

16.2.1 MYSQL SYNTAX EXAMPLES

By using special MySQL commands, it is possible to backup MySQL databases. For a general iQ-WEBX installation, two databases are used, one for MySQL itself and one for iQ-WEBX.

The backup of both databases is recommended in order to keep all iQ-WEBX settings and image records as well as the MySQL settings and created user accounts. The generated backup files can be used to simply re-import settings and configuration into the new iQ-WEBX installation.

The following examples show the basic MySQL commands needed to back up the databases.

Please use "cmd" to open the command prompt and navigate to the MySQL installation folder (default: "C:\Program Files\MySQL\MySQL Server x.x\bin"). After doing that, execute the command "mysqldump" to export the databases as shown in the following examples:

"mysqldump -u root -p yourpassword DATABASENAME > C:\backup.sql" (DATABASENAME is your PACS' database like "iqweb" or "pacs")

For iQ-WEBX 6.2.3f, the following command has to be used:

```
`mysqldump -u root - p yourpassword --all-databases --routines --triggers >
C:\backup.sql
```

Running this command with the proper values creates a backup of the specified database and stores it as "backup.sql" on your "C:\" drive.

In order to back up the correct databases, double check the database names by using the following commands (executed from the same path mentioned above):

First, connect to MySQL using: "mysql -u root -p" (enter your password), then execute:

"show databases;"

The documentation about the "mysqldump" command can be found in the link below.

MySQL Server (version 5.5.x) http://dev.mysql.com/doc/refman/5.5/en/mysqldump.html

Once the MySQL backups have been created, the two files can be imported by using the MySQL command "mysql" together with the following parameter:

"mysql -u root -p DATABASENAME < C:\backup.sql"

In case all databases were dumped, as it has to be done for iQ-WEBX 6.2.3f, the following command has to be used:

"mysql -u root -p yourpassword < C:\backup.sql"

Running this command will restore the content of the specified file ("C:\backup.sql") into the mentioned database ("DATABASENAME").

WARNING:

Please make sure that the same MySQL version is used when importing the backup. Otherwise, a correct function cannot be guaranteed due to changes in MySQL itself.

16.3 CHANGE OF STORAGE VOLUMES

16.3.1 STORAGE TO BE ADDED TO AN EXISTING STORAGE DEVICE

A. Extending the space of a storage device

While the archive gets bigger, the currently available disk space probably should be extended. Please follow the instructions of the storage system manufacturer to add new hard disks or to exchange hard disks with larger ones. Once the space of the storage system has been extended, iQ-WEB will automatically use this extended storage as long as the path to the main archive directory is kept as it was.

Please make sure that the previously stored images are still accessible after extending the storage system. The manufacturer of the storage system may offer instructions on how to keep the previous content.

B. Using an additional storage device

On the other hand, an additional storage device could be added to the server. Assuming the initial storage device has already exceeded its disk space, the path of the short term archive can simply be changed to the newly attached storage device.

Please consider that from now on all new images will be saved to the new storage device. However, examining images stored on the old storage is still possible as long as the path does not change.

Another option is to use the new storage device as the long term archive. Using this feature, iQ-WEB will automatically move images from the short term to the long term archive according to the date the images were received.

C. Using different storage devices/partitions for different modalities

It is also possible to add a new storage device or to use a new partition for the purpose of storing images of only one specified modality. In this case, a custom path will have to be entered for the modality on the "DICOM" page. From this time on, all images coming from this modality will be stored on the new storage device/partition, while images from all other modalities are stored on the initial storage device/partition which is configured for the whole PACS.

16.3.2 STORAGE MIGRATION AND REPLACEMENT

The following scenario assumes that the DICOM images are stored on a different physical drive or storage system than the iQ-WEB or MySQL installation.

Please transfer all DICOM data to the new storage device before shutting down the old one. Make sure to preserve the directory structure during this process.

One possible transfer option is the simple file-based transfer, where the archive (including subfolders) can be copied to the new storage system, e.g. by using Windows and its integrated "Explorer". If necessary, access restrictions that have been changed during the copy process can be re-applied afterwards.

Another option is the creation of an image of the current archive which will be restored afterwards on the new storage device.

Most important, the mounted drive letter of the new storage device has to be mounted to the value of the old one. If a NAS is used that can be accessed via TCP/IP, it should be assigned to the old storage system's IP address in order to keep the migration as simple as possible.

Once this procedure has been finished, iQ-WEB will automatically use the new storage system as long as the configured paths match the old ones.

In order to keep the downtime of iQ-WEB as low as possible, the following steps should be kept in mind:

- 1. Start a database integrity check to ensure all entries in database link to an image file.
- 2. Stop the iQ-WEBX service in order to prevent receiving new images.
- 3. Attach the new storage device and configure it to be accessible like the previous device.
- 4. Once the storage device is configured properly, start the iQ-WEBX service again.
- 5. Start the migration process and transfer the images from the previous device.
- 6. Start a database integrity check when migration process is finished to ensure all entries in database link to an image file.

This procedure has the advantage that the server is able to receive images after a short downtime. The drawback is that old images are not accessible as long as they are not physically available on the new system.

16.4 IQ-WEB TO IQ-WEB SERVER MIGRATION

16.4.1 MIGRATION TO NEW HARDWARE KEEPING EXISTING STORAGE VOLUMES

The best way to migrate iQ-WEB to new server hardware depends on where the images are stored. Using separate storage devices for the software itself and the images is the easiest way and may significantly speed up the process of migration. Simply remove the devices where the images are stored from the old hardware and attach it to the new hardware.

The first step in the process is to set up the operating system on the new hardware followed by MySQL and iQ-WEB.

NOTE:
The License team will send detailed steps on how to migrate a license once a new license is ordered for
the new system.

The next migration steps depend on whether a backup of the MySQL database is available or not.

D. Having a backup of a MySQL database

In case there is a backup of a previous MySQL database, this can simply be re-imported into the newly installed database system.

NOTE:

Please make sure that the same MySQL version is used for the import that has been used for the export.

Once the import is done, iQ-WEB will operate exactly like on the old server. This includes server settings, access to DICOM images, as well as previously created user accounts.

Please note that this method will only work by using the exact same paths on the target machine. Especially the DICOM images have to be available at the same location as they were on the previous server. For example, a different path to the images will be overwritten by a re-import of the MySQL database backup and the images are not accessible by the PACS and connected client.

E. No backup of a MySQL database

If there is no backup of the previous MySQL database system, all iQ-WEB settings as well as all user accounts have to be set up manually. Additionally, in order to rebuild the image database, all DICOM files need to be re-imported. This is done via the import feature of the "Tools" tab in the main web interface menu.

NOTE:

Please consider that re-importing all images can consume a significant amount of time depending on the total number of images that are re-imported.

16.4.2 MIGRATION TO NEW HARDWARE INCLUDING NEW STORAGE VOLUMES

A. MySQL migration

Having a backup of the MySQL database

In case there is a backup of a MySQL database, it can be simply re-imported to the newly installed database system. Once the import is done, iQ-WEB will operate exactly like on the old server. This includes server settings as well as previously created user accounts.

If it is planned to transfer the DICOM data from the old storage device to the new one via a file based operation, the option of restoring the MySQL databases will also give instant access to the transferred images. Therefore, if a NAS is used, please remember to keep the previous folder structure and drive letter or IP address.

No backup of the MySQL database

In case there is no backup of the MySQL database, all settings of iQ-WEB as well as all user accounts have to be set up manually. Furthermore, the DICOM images will have to be re-imported as well in order to completely re-build the database. Please see the following section for more details about the import possibilities.

B. DICOM data migration

The file-based migration option requires transferring all DICOM mages manually from the old server to the new installation before the restore process can be started.

File based operation with a MySQL backup

In order to use the benefits of the MySQL backup, please make sure that the path to the images remains the same on the new server after restoring the MySQL backup. If a NAS is used, the folder structure as well as the drive letter or IP address must match the previous configuration. Once the file transfer has been completed and the database has been restored, instant access to

File based operation without a MySQL backup

If no MySQL backup is available, all DICOM images have to be re-imported from the new storage device. This is done via the import feature of the "Tools" tab in the main web interface menu. Please consider that a re-import can consume a significant amount of time depending on the total number of images that are re-imported.

DICOM based operation

the images is possible.

In order to use the DICOM based transfer, simply connect both iQ-WEB servers properly and proceed with the required option mentioned below. Please note that this procedure may take a significant amount of time depending on the number of images and the bandwidth of the network.

Using C-STORE

In order to transfer the DICOM images using the C-STORE, please select all available studies and forward them to the new PACS. This procedure transfers the images to the new storage device and registers the images in the database of the new iQ-WEB server.

Using C-MOVE

In case the C-MOVE should be used, please configure the old iQ-WEB to act as a "Query/Retrieve SCP Server" within the new iQ-WEB installation at the "DICOM" page. Now the old PACS can be queried from the new one and studies can be pulled over. This procedure transfers the images to the new storage device and registers the images in the database of the new iQ-WEB server.

Using synchronization

Similar to the C-MOVE configuration, please setup the old iQ-WEB server as a "Query/Retrieve SCP Server" within the new iQ-WEB installation and activate the synchronization feature at the "DICOM" page. Afterwards, the new installation will initiate the synchronization with the old iQ-WEB and will start to pull the images automatically.

16.5 ANY PACS TO IQ-WEB MIGRATION

In case it is planned to migrate images from a PACS of a different vendor, there are different options which are described below. Please note that some options might be unavailable. The file based migration would be fastest because there is no overhead of the DICOM communication during the process. The images are either copied and imported or just imported into iQ-WEB, but the import might not work if the images are stored in a proprietary format. Even though the DICOM based migration is slower, it might solve such incompatibilities. Please note that additional limitations might apply to the DICOM based migration such as a limited number of studies that can be transferred at once.

16.5.1 FILE ACCESS TO PREVIOUS PACS OR STORAGE SYSTEM

If there is access to the images that have been stored by the previous PACS server, the images can simply be copied to the new iQ-WEB server or kept in the current storage system and registered to the iQ-WEB.

Afterwards, start an import job in iQ-WEB in order to import all images from their new or previous location. This is done via the import feature of the "Tools" tab in the main web interface menu. Please consider that the import can consume a significant amount of time depending on the total number of images that are imported.

16.5.2 DICOM ACCESS TO PREVIOUS PACS

If there is (DICOM) access to the PACS itself, the usual DICOM communication possibilities can be used in order to transfer the images to iQ-WEB. Depending on the access possibilities and the general options, different ways can be used. For example, if it is not possible to add iQ-WEB into the configuration of the previous PACS in order to allow the communication, the details of another, already configured, station can be used temporarily.

For more information about the possible functions, please consult the DICOM Conformance Statement and compare it to iQ-WEB.

C-STORE

If it is possible to add iQ-WEB as a new DICOM node within the previous PACS, all images can be simply transferred to iQ-WEB using C-STORE. Depending on the possibilities that are offered, studies may be transferred all at once or in smaller portions.

C-FIND and C-MOVE

iQ-WEB can be used to manually search (C-FIND) for the studies that are stored on the previous PACS and transfer them (C-MOVE) to iQ-WEB. To enable this possibility in iQ-WEB, configure the PACS as a "Query/Retrieve SCP Server".

Synchronization

Similar to "C-FIND and C-MOVE" is the approach to use the synchronization feature offered by iQ-WEB. Instead of manually searching for studies, the synchronization automatically queries the remote station and retrieves studies.

16.6 VIRTUALIZED ENVIRONMENT

Using a virtualized environment probably represents the most sophisticated solution of all. A virtual machine containing iQ-WEB and the MySQL database is stored as a single file on a storage system together with the DICOM files. The virtual machine technology makes it possible to run this virtual machine in any server hardware. There is no need to reinstall any software or to reconnect to the data as long as Windows points to the DICOM files directly those either are stored within the virtual environment or on external storage devices. For general advices about using iQ-WEB in virtualized environment, please refer to section 18.6 "Virtualization environment & Distributed systems".

The migration of another PACS installation to iQ-WEB on a virtual machine works in the same way as the migration to a dedicated physical server. Please refer to the respective section within this document.

16.7 KNOWN ISSUES

- Import job is shown in the "Job Status" page, but it does not start
 The iQ-WEB license is eventually expired or is not valid anymore. Please check the log files of iQ-WEB for more information.
- Moving images stops at a certain amount of images
 The newly installed iQ-WEB is still running as a trial license, thus it has a limit of 1,000,000 images. To proceed with the migration, please order a full license for the new server and continue the import after the full license has been applied.
- Import job is not showing progress percentage
 The amount of DICOM images is probably very big. Therefore, importing such an amount will take a very long time. Simply refresh the job status page after several hours passed. Also, the big import job should be split in several smaller jobs by importing single directory only. Additionally, check the log of iQ-WEB in order to check the progress. Please access the log files directly from the file system, because several files may have been created.

17 TRANSLATION

The default language of iQ-WEB is English. As mentioned in paragraph 14.2.3 "Global settings" the administrator can customize translation of iQ-WEB. If the bundled languages English, German, Spanish and Russian are not appropriate for the use case, administrators can specify a custom language. This chapter will describe the customization procedure and the toolsets for the 2 following scenarios.

- A. Adopt the existing bundled language files and change some entries.
- B. Create a completely new language file to support a not bundled language.

17.1 TRANSLATION TOOLSET

The translation mechanism of iQ-WEB is based on the PHP extension named "getText". All translatable strings of iQ-WEB will be extracted out of the source by this extension. A translation project file with "*.po" file extension will be created which a translator can use to translate. Please find more details about translation projects in the following section.

To start a translation you need the following prerequisite software to open and edit translation projects and create translations for iQ-WEB:

PHP extension "getText"

This extension has to be enabled in the PHP configuration to make iQ-WEB translation possible. This is done by default installation process.

Poedit
 Tool for editing "*.po" translation project files and generating "*.mo" translation files for iQ-WEB.

NOTE:

Poedit is 3rd-party software which is freeware and is not included in the installation package of iQ-WEB. To install please download it at: http://www.poedit.net/

The Figure 34 shows an overview of the Poedit GUI to explain terms used in the following sections. The GUI consists of 5 parts

- 1. Menu bar
- 2. Toolbar
- 3. Overview table
- 4. Translation input
- 5. Status bar

📴 en_en.po - Poedit		
File Edit Catalogue Go View Help 1		
Open Save Validate W Update Fuzzy	Comment 2	
Source text Tran	nslation	Line 🔺
%d Day(s)		4132
%d failed job(s). Failed job(s) will be deleted after a period of 2		10042
%d matche(s) found		9361
%d most recently received accessible study(ies):%s		5278
%d Note(s) and %d Attachment(s)		3031
%d pending job(s).		10037
%d pending or failed job(s). Failed job(s) will be deleted after a		10021
%d records imported from file: %s on %s	3	5622
%d submitted job(s) to run at a later time.		10048
%d submitted job(s) to run immediately.		10032
%d worklist record(s) imported from %d files		5627
%s (ID: %s)		5337
%s - Image Note Information		5370
%s - Image Notes		5384
Sec. J. Mate Information		10005
Source text:		Notes for translators:
%d Day(s)		× .
		r
Translation:	4	Comment:
		L .
		r
0 % translated, 2433 strings (2433 not translated) 5		

Figure 34 – Poedit GUI Overview

17.2 TRANSLATION PROJECTS

iQ-WEB is bundled with a set of translation projects to give the administrator the opportunity to customize the translation. These translation projects are containing all translatable strings of iQ-WEB, iQ-WEB2GO, iQ-WEBX WADO. iQ-X provides no translation options and is limited to an English user interface. (Please refer to iQ-X Administration Guide for details.)

iQ-WEB translation projects with the file extension "*.po" are located in iQ-WEB installation folder. The subfolder is named "Language" and contains the following translation projects:

"Custom"

This translation project is for realizing custom translations which are not bundled with iQ-WEB.

"Empty"

This translation project is a reference project with no translation for backup purpose.

- "German"
 This translation project is for customization of bundled German translation.
- "Russian"
 - This translation project is for customization of bundled Russian translation.
- "Spanish"

This translation project is for customization of bundled Spanish translation.

NOTE:

Translation projects of iQ-WEBX version 6.3.8 include all translatable strings of iQ-WEB2GO version 1.1.0 and iQ-WEBX WADO version 3.1.0 and are not fully compatible with prior versions. If you apply translation files not compatible with the targeted version, the translation might not be complete.

17.3 TRANSLATION WORKFLOW

This section explains creating a custom translation for iQ-WEB. Starting point of the example workflow is the bundled "Custom" translation project. The same procedure can be applied when customizing one of the other bundled translation projects to modify bundled translations.

- Choose a language iQ-WEBX shall be translated to. (E.g. French)
- 2. Open the "Custom" translation project in Poedit.
- 3. Setup Catalog properties to values matching the chosen language.

You can enter this setting in Poedit via the menu bar entry called "Catalogue".

As shown in Figure 35 the following values can be changed where the numbered ones are essential for a correct and working iQ-WEB translation:

• "Project name and version"

This value can be changed but it's recommended to choose appropriate value to identify version and project of the translation.

"Team"

This value can be changed and is intended to identify translation team.

"Team's e-mail address"

This value can be changed and is intended to identify translation team contact.

"Language"

Value has to be of following structure:

[2 digit language code according to ISO 639]–[2 digit country code according to ISO 3166] (E.g. fr-fr, po-br)

"Charset"

Value has to be a charset which is capable of representing chosen language. It also has to match charset configuration of iQ-WEB. (Please refer to: 14.2.3 "Global settings")

"Source code charset"
 Value has to be always UTF-8.

Catalogue properties	X
Translation properties Sour	rces paths Sources keywords
Project name and version:	iQ-WEBX 6.3.x
Team:	IIS
Team's e-mail address:	info@image-systems.biz
1 Language:	fr-fr
2 Charset:	iso-8859-1 🔹
3 Source code charset:	UTF-8 (recommended)
Plural Forms:	
	Learn about plural forms
	OK Cancel

Figure 35 – Poedit catalogue properties

4. Translate all phrases listed in the overview table by selecting each of them and enter a translation for the current selected source text in the translation input. The status bar will provide an overall status of the translation. Translating personal can also provide explaining comments for each entry if needed.

NOTE:

The following special symbols in source text have to be preserved in translation: %s, %d, %08x, $\', ', <math>\$

Position of special symbols can be changed but order of multiple occurrences has to be preserved.

NOTE:

Translations that are marked as fuzzy are not included in generated translation file and will remain in original English language.

NOTE:

Empty translation entries will remain in original English language.

WARNING:

Please do not use the update translation project function in toolbar and menu bar of Poedit. Because some parts of the PHP files of iQ-WEB are encrypted, Poedit is not able to find all translatable texts. Some translatable text might be lost when this action is performed.

- 5. Save translation project with the translation. To save please use the corresponding menu bar or toolbar entry of Poedit. Poedit is configured by default to generate language files with "*.mo" file extension automatically when saving project files. These are located in the same folder where the project files are stored in.
- 6. Copy the generated language file to the corresponding location in the iQ-WEB installation folder.
 - "custom.mo" to [iQ-WEB installation]\PACS\php\locale\custom\LC_MESSAGES
 - "de_de.mo" to [iQ-WEB installation]\PACS\php\locale\de_de\LC_MESSAGES
 - "ru_ru.mo" to [iQ-WEB installation]\PAC\$\php\locale\ru_ru\LC_MES\$AGE\$
 - "es_es.mo" to [iQ-WEB installation]\PACS\php\locale\es_es\LC_MESSAGES
 - "en_en.mo" to [iQ-WEB installation]\PAC\$\php\locale\en_en\LC_MES\$AGE\$
- 7. Configure the corresponding language in iQ-WEB web interface logged in as administrator account. (Please refer to 14.2.3 "Global settings")
- 8. Verify completeness and correctness of the translation by using a user account.

18 TROUBLESHOOTING

This chapter explains administrative tasks that might be necessary to resolve issues during normal operations of iQ-WEB.

WARNING:

The following tasks and procedures are only permitted to be performed by qualified administrative personal. If there are any questions or uncertainties please contact your local distributor or info@image-systems.biz

18.1 WEBSERVER DEBUGGING

During operation or configuration of iQ-WEB it might necessary to resolve the following issues with the Apache webserver with its PHP extension:

- Invalid configuration results in non-starting Apache service
- Web interface is not accessible for client browsers

The following actions may help locating the origin of the issue and creating specific support request.

- 1. Increase the level of log output
 - Locate the "LogLevel" string in the httpd.conf and set to a higher level of error reporting Possible values include: "debug", "info", "notice", "warn", "error", "crit", "alert", "emerg" where "debug" represents the maximum level of output into log file.
 - Locate the "error_reporting" string in the php.ini and set to a higher level of error reporting
 Possible values are explained in the comments section of the file where "E_ALL | E_STRICT"
 represents the maximum level of output into log file.
- 2. Restart the Apache webserver after saving the changes to Apache and PHP configurations.
- 3. Try to reproduce the issue to ensure that the issue is documented in log files.
- 4. Locate and investigate the following log files:
 - Apache Accesslog Documents all requests to the webserver and its result state.
 It's located at: [iQ-WEB installation folder]\Apache\logs\access.YYYY-MM-DD.log
 - Apache ErrorLog Documents all operation status information of the webserver and its modules according to configured log level.
 - It's located at: [iQ-WEB installation folder]\Apache\logs\errors.YYYY-MM-DD.log
 - PHP ErrorLog Documents all occurring errors of the PHP runtime according to configured log level.

It's located at: [iQ-WEB installation folder]\Apache\logs\php_errors.log

NOTE:

Apache Log-Files are configured to contain daily content.

WARNING:

Logging data can result in a large amount of data especially when logging is enabled a long period of time. So it's strongly recommended decreasing log level or to disable logging after the trouble shooting process.

18.2 DATABASE DEBUGGING

During operation or configuration of iQ-WEB it might possible to resolve the following issue with the Apache webserver with its PHP extension:

- Invalid configuration results in non-starting MySQL service
- iQ-WEB is notifying that a connection to the MySQL database cannot be established
- MySQL service consumes a lot of resources and processing time during operations
- iQ-WEB is slowing down due to long MySQL response times

The following actions may help locating the origin of the issue and creating specific support request.

- 1. Enable the different logging stages of MySQL
 - Locate the following strings in the my.ini and set its.

```
log-output=FILE
log-error=" MySQL_error.log "
general_log=1
general_log_file="MySQL.log"
slow-query-log=1
slow_query_log_file="MySQL_slow.log"
long_query_time=10
```

- The section "Error Logging" allows specifying a filename where MySQL logs status messages about error, warning and notices.
- The section starting "general-log" allows enabling the general query log of MySQL by setting its value to 1 and specifying a filename for "general_log_file". The resulting log contains all query made in all database connections to the server.
- The section starting "slow-query-log" allows enabling the slow query log of MySQL by setting its value to 1 and specifying a filename for "slow_query_log_file". The resulting log contains all slow query made in all database connections to the server if the response time of the system exceeds the "long_query_time" value (seconds).
- 2. Restart the MySQL service after saving the changes to MySQL configuration.
- 3. Try to reproduce the issue to ensure that the issue is documented in log files.
 - Locate and investigate the log files named like configured in the MySQL configuration located at the MySQL data directory.

For a detailed description of the logging settings in the MySQL configuration, please refer to the documentation of the official site "http://dev.mysql.com/doc/#manual".

WARNING:

Detailed logging of MySQL operations can result in a large amount of data especially when logging is enabled a long period of time and decreases the overall performance per operation. So it's strongly recommended decreasing log level or disable logging after the trouble shooting process.

18.3 IQ-WEB DEBUGGING

During operation or configuration of iQ-WEB it might necessary to resolve the following issues:

- Invalid configuration results in non-starting iQ-WEB
- DICOM/HL7 communication is interrupted of fails
- General Application errors occur
- License errors of the iQ-WEB license occur.

The following actions may help locating the origin of the issue and creating specific support request.

- 1. Increase the level of log output
 - Log into iQ-WEB as administrator or "root" user.
 - Go to the "Tools" tab page and locate the section "System" in the iQ-WEB web interface and switch log level to "Debug" as shown in section 13.3.1.2 "iQ-WEB".
- 2. Try to reproduce the issue to ensure that the issue is documented in log files.
- 3. View the interactive general log in the iQ-WEB web interface or locate and investigate the log files of the current day at the configured log path in a subfolder named like the AE-Title configured for iQ-WEB. (5.4.1 "DICOM specific configuration"). This log contains operation state information and information about DICOM communication on a daily basis and is named to match the following pattern: iQ-WEBX-[Weekday].log. The log folder also contains several other extra log files for special purposes like HL7, Email notifications, purging and auto convert information.

NOTE:

iQ-WEB Log-Files are configured to contain daily content and are spitted if they exceed a default size limit of 100MB. If the log exceeds this limit new numbered files will be created to continue log in.

WARNING:

Logging data can result in a large amount of data especially when logging is enabled a long period of time. So it's strongly recommended decreasing log level or to disable logging after the trouble shooting process.

18.4 DICOM/HL7 DEBUGGING

This section contains a checklist which is recommended to perform to track DICOM and HL7 connection issues with iQ-WEB as a participant.

- 1. To exclude any general network issue as the origin of a DICOM and HL7 issue please follow advices in section 18.5.3 "Network".
- 2. Verify a valid license is installed for iQ-WEB.
- 3. Verify all network adaptors used for communication are running and correctly installed. In case of wired connections verify correct connection of cables.
- 4. Verify correctness of all AE-Title and port configurations of all participant nodes that are used and send a DICOM ECHO in all communication directions.

For details about DICOM or HL7 compliance of iQ-WEB please refer to the documents named DICOM Conformance Statement and HL7 Conformance Statement contained in the iQ-WEB installation.

18.5 INTEGRATION

18.5.1 TRANSCRIPTION

Setup transcription feature of iQ-WEB requires a few prerequisite steps to take to ensure full functionality.

- 1. A licensed copy of Microsoft Word Version 2003 or above have to be installed on the machine iQ-WEB is installed on with COM/OLE automation feature enabled.
- 2. The PHP extension "com_dotnet" has to be enabled in PHP configuration. To achieve that please follow the following steps:
 - Open the "php.ini" configuration file an locate the last call similar to the pattern "extension=".
 - Add line "extension=php_com_dotnet.dll" below the last entry, if not already exists. By default iQ-WEB already adds this line.
 - Add following lines to configure the extension correctly, if not already exists.

```
[COM]
...
com.allow_dcom = true
...
com.autoregister typelib = true
```

Due to the fact that the iQ-WEB server is using Microsoft Word by default in "System" user context and the user rights management some machines may show up the following issue:

• If the transcription feature is used by clients several Word processes are started and left open.

To solve this issue it is necessary to log into the Windows server machine as an administrator and create a "Desktop" named folder in the following Microsoft Windows system folders:

- %WINDOWS%\System32\config\systemprofile
- %WINDOWS%\SysWOW64\config\systemprofile

18.5.2 DATA CONSISTENCY

To ensure data consistency of DICOM data delivered to iQ-WEB from various source there are the following options to perform several correction task:

NOTE:

A general advice to effectively achieve data consistency in a PACS like iQ-WEB is to configure DICOM modalities and other DICOM application entities in a consistent manner and test configuration with sample data of the intended use case.

- Receiving DICOM data that does not contain or contain an empty tag Patient ID (0010,0020) can lead to some empty views in iQ-WEB. To solve this issue iQ-WEB offers an advanced configuration. Please add the following registry key to iQ-WEB registry structure. [LM_SOFTWARE]\IMAGE Information Systems Ltd.\iQ-WEBX\[AE-Title] "ReplaceNullPatientId" with value 1 (Type: RegDWORD 32bit) This replaces the empty or missing tag with the value of the tag Study Instance UID (0020,000D) which is mandatory according to the DICOM standard. Please refer to section 8 "Registry structure" for more details about iQ-WEB registry structure.
- iQ-WEB also offers the coercion feature to correct DICOM data according to configured rules. For detailed information about how to use the coercion feature please refer to the user manual document of iQ-WEB.
- 3. Another way of correcting patient and study metadata is the Patient- and Study-reconciliation feature. It corrects the data in comparison to a DICOM modality worklist. For detailed information please refer to section 14.2.6 "Worklist" and the user manual document of iQ-WEB.
- 4. The most flexible and performant way to correct DICOM data according to configured rules is the product iQ-ROUTER which can be set up to act as an intermediate link between sending DICOM station and iQ-WEB.

NOTE:

iQ-WEB also offers a tool to investigate raw header data of DICOM data sets. User can navigate to the images view in the web interface and inspect an overview or detailed header dump of the selected DICOM dataset. This a powerful tool to verify consistency of DICOM data.

18.5.3 NETWORK

This section contains advices for integrating iQ-WEB into a network environment and help debugging occurring issues.

- To identify any network issue please refer to logs of all participant DICOM/HL7 software. For iQ-WEBX log usage please refer to sections 18.1 "Webserver debugging", 18.2 "Database debugging", 18.3 "iQ-WEB debugging". Please check the logs on the highest available level for any hints.
- 2. To check the network configuration of all participant machines it is possible to use the Windows command line tool "ipconfig". There hostname and IP and subnet configurations can be validated to match iQ-WEB configuration.
- 3. It is recommended to use the Windows command line tools "ping" and "telnet" to check if IP, hostname and Port configuration is valid and no intermediate network node is interrupting network communication.

WARNING:

A fully reliable and stable network infrastructure is essential to get all benefits of the product iQ-WEB.

- 4. It is recommended to check the server machines firewall configuration to ensure working network communication. The following rules are recommended to be set up on the iQ-WEB server machine:
 - Allow incoming and outgoing TCP connection for the configured DICOM Port (default: 1234)
 - Allow incoming and outgoing TCP connection for the configured HL7 Port (default: 7777)
 - Allow incoming and outgoing TCP connection for the configured web interface Port (default http: 80 or default https: 443)
 - Allow incoming and outgoing TCP connection for the MySQL Port This is only necessary if database is installed on a separate machine. (default: 3306)

NOTE:

The only allowed incoming and outgoing TCP connection on client machines should be the web interface Port.

- 5. If hostnames are used instead of fixed IP addresses throughout the iQ-WEB configuration. Please ensure DNS server response times are low and response is always accurate. Otherwise iQ-WEB maximum performance cannot be guaranteed.
- 6. If you are using IPv4 or hybrid IPv6/IPv4 networks there might be delays when accessing web interface directly at the server machine iQ-WEB is installed on. If this issue occurs it may be solved by changing the Windows host file configuration of the server machine to directly map IP address 127.0.0.1 to hostname "localhost".

WARNING

An insufficient wide area or local network speed can cause serious delays. It is strongly recommended using the appropriate network or an optional product called iQ-ROUTER to compress data . Please refer to the document Medical Image Data Compression Guide for details. Improper medical data compression might affect the diagnostic accuracy of data which could cause serious damage or death of patients!.

For detailed instruction please contact your local IT administrative personal.

18.6 VIRTUALIZATION ENVIRONMENT & DISTRIBUTED SYSTEMS

Modern operating systems offer the capability to run them in virtualized environment. This can help to make maintenance and backup tasks more reliable and easy to achieve. iQ-WEB itself also offers the opportunity to spate several parts of its own onto multiple machines. (e.g. Put iQ-WEB installation and DICOM storage on two separate machines.) In this section this topic and its advantages and disadvantages are discussed to derive some general advices.

The main advantage of virtual machines is the independence of the physical environment. Even Linux may run on the host system together with the virtual environment, but Windows is required as the virtual machine for iQ-WEB. Working with a cluster of servers as the host, the virtual environment is even more reliable and hardware changes are possible almost without any PACS downtime. With the possibility of creating snapshots of virtual machines, those systems offer integrated backup solutions.

Please keep in mind that the host system for the virtual machine has to be more powerful than a dedicated server, because at least two operating systems are running on the same hardware. They are sharing resources like disk-space and IO times, RAM, CPU time and network capacity. This becomes even more critical in cases where multiple virtual machines are sharing the same physical hardware. It is also important to keep in mind that if components like database, storage and iQ-WEB installation are distributed over multiple machines, there will be an additional high work load on the network infrastructure in-between them in addition to the normal traffic on this network to serve the clients.

Because of this hardware sharing, the use of virtual machines may not be recommended for an installation with lots of DICOM traffic, unless the host is powerful enough to serve all storage and retrieve requests within a reasonable time.

18.7 THUMBNAIL & IMAGE GENERATION

iQ-WEB modules is extracting thumbnails and full resolution images out of the raw DICOM files in a format convenient for web interfaces. These data is used in the following places:

- iQ-WEB image view, online image processing view, image matrix view
- (Refer to iQ-WEB User Manual Document)
- iQ-X thumbnail bar (Refer to iQ-X User Manual Document)
- iQ-WEB2GO series page, image page (Refer to iQ-WEB2GO User Manual Document)

Due to a large variety of DICOM image data compressed in different formats, it might occur that iQ-WEB is not able to extract the data due to compatibly issues with used data storage algorithms. The following steps show how to identify this issue and help to debug for the reason.

Navigate to the mentioned image view an error sign should appear instead of a preview image. To get information about generation error a text appears if you move the mouse cursor over the image that displays an error description.

NOTE:

This method of identifying the issue also works in case iQ-X module doesn't show correct images in thumbnail bar and iQ-WEB2GO module doesn't show images on its pages.

If the error is related to the image and compression format please refer to the document Medical Image Data Compression Guide Flyer for detailed information.

18.8 LICENSE TROUBLESHOOTING

This sections describes how identify issue with licenses of iQ-WEB and its module.

18.8.1 CORE LICENSE

An invalid iQ-WEB core license can be recognized by the following occurring events and states:

- Windows Event Viewer for applications contains an error message when (re)starting iQ-WEBX service. "Invalid license information or license has expired"
- Windows process manager contains fewer processes containing the name "iQ-WEBX" as expected.
 In case of a valid license the following process should be visible:
 - "iQ-WEBXSrv.exe"
 - "iQ-WEBX.exe"
 - "iQ-WEBXHL7.exe" (if HL7 feature of iQ-WEB is enabled)
- No DICOM connection can be established from or to iQ-WEB (except C-ECHO).
- iQ-WEB interface footer contains an expiration warning.

NOTE:

If an administrative Email address and a SMTP server are set up correctly, iQ-WEB will send license expiration warnings. (Please refer to 14.2.3 "Global settings" and 14.3 "Email" for configuration.)

Reasons for invalidated iQ-WEB core licenses could be the following ones:

- License exceeds its limitations
 - Time limitation (if Trial or Demo)
 - Number of images (if Trial)
 - Number of AE-Titles
 - Number of installed instances (default: 1)
- License file was not installed correctly
- Wrong type of license was ordered
- To many hardware components of the machine changed
- Network configuration of the machine changed
- Time or date of the machine was changed

For detailed instructions or help on licensing issues please contact your local distributor or license@image-systems.biz.

18.8.2 IQ-X LICENSE

An invalid iQ-X license can be recognized by the following occurring events and states:

- After log into iQ-WEB web interface the "EasyWEB" page is not opened. In addition to that it is not possible to access the "EasyWEB" page at all.
- "EasyWEB" page and other "Views" do not show up with an enabled button labeled "Show"
- "EasyWEB" page do not show up with the "^{*} icon for each study.

- iQ-X REPORT EDITOR cannot be opened in iQ-X
- After navigating the iQ-WEB web interface to page "Tools" explained section 13.4 "Licensing", the corresponding UI section contains information about license expiration.

NOTE:

In case iQ-X is used with concurrent licensing. Users might not be able to log in if the number of current active users exceeds the number of concurrent users in the license. This does not invalidate the license! As soon as the number of active users drops below the limit login will be possible again. For extending the number of concurrent users, please contact your distributor or license@image-systems.biz

Reasons for invalidated iQ-X licenses could be the following ones:

- Licenses exceeds their limitations
 - Time limitation (if Trial or Demo)
- License file was not installed correctly
- Wrong type of license was ordered
- To many hardware components of the machine changed
- Time or date of the machine was changed

For detailed instruction or help on licensing issue please contact your local distributor or license@imagesystems.biz.

18.8.3 IQ-WEB2GO, IQ-WEBX WADO LICENSE

The iQ-WEB modules iQ-WEB2GO and iQ-WEBX WADO rely on the same license mechanism. An invalid license for these modules can be recognized by the following occurring events and states:

- If user tries to access the following feature pages of the module a white page or error message appear.
 - WADO link generator of iQ-WEBX WADO is not accessible
 - WADO calls to iQ-WEB lead to above described behavior
 - The login to iQ-WEB2GO is working
- After navigating the iQ-WEB web interface to page "Tools" explained section 13.4 "Licensing", the corresponding UI section contains information about license expiration.

Reasons for invalidated iQ-WEB2GO and iQ-WEBX WADO licenses could be the following ones:

- Licenses exceeds their limitations
 - Time limitation (if Trial or Demo)
- License file was not installed correctly
- PHP configuration doesn't contain the required Sourceguardian extension

NOTE:

To proof that Sourceguardian configuration is working correctly please navigate to the "Tools" → "System" subsection of the GUI and access the link next to the Apache status display. (Please refer to 13.3.1.1 "Apache" for details.)

- To many hardware components of the machine changed
- Network configuration of the machine changed
- Time or date of the machine was changed

For detailed instruction or help on licensing issue please contact your local distributor or license@imagesystems.biz.

18.9 NETWORK TROUBLESHOOTING

iQ-WEB and it's components strongly rely on provided network infrastructure. So inconsistently configured or undersized network configurations may lead to delays when using iQ-WEB and its components and modules. This section will mark technics to identify and fix common issues with network architectures.

18.9.1 HOSTNAME RESOLUTION

iQ-WEB strongly relies on a fully hostname resolution in the network it is working in. This applies to the server and client and is especially important in hostname based features like the iQ-VIEW call. Inconsistent DNS configuration can result in delays when using iQ-WEB. To identify such issues please follow the below instructions and contact the local IT administrators.

- Please open a windows command line interface on a client machine which is experiencing delays.
- Get the hostname by executing the following command: "hostname"
- Resolve the IP address of this host by the following command and measure the time: "nslookup MY_CLIENT_HOSTNAME"
 If the delay equals the same delay of iQ-WEB there is a timeout issue with your local DNS service.
- Please repeat command with the hostname of the server machine and measure time.
 "nslookup MY_SERVER_HOSTNAME"
 If the delay equals the same delay of iQ-WEB there is a timeout issue with your local DNS service.
- Compare response time when executing the ping command to the iQ-WEB server once using Hostname and once using IP address.

"ping MY_SERVER_HOSTNAME"

"ping MY_SERVER_IP"

If there is a time difference between both ping response times in the order of magnitude of the experienced delay there is a timeout issue with your local DNS service

18.9.2 IPV6 COMPATIBILITY

Currently iQ-WEB and its components are not fully IPv6 compliant. So a working IPv4 configuration is mandatory to use iQ-WEB. Due to the fact that modern operating systems like Windows 8 and Windows Server 2012 and above prepare IPv6 as primary network interface iQ-WEB instances installed on such systems may experience delays accessing web interfaces in browser.

To solve this delay issues on the mentioned operating systems please follow the following steps on the iQ-WEB server machine where MySQL is installed on:

- Please stop the Apache, iQ-WEBX and MySQL services in this order.
- Please locate the MySQL configuration file.
 The default location of "my.ini" in 32bit MySQL is: C:\Program Files (X86)\MySQL\MySQL Server 5.5)
 The default location of "my.ini" in 64bit MySQL is: C:\Program Files\MySQL\MySQL Server 5.5)
- Please open the file in a text editor and locate the "Server Section" marked with the following string: "[mysqld]"
- Below this section please add the following option in a new line: "bind-address=::"
- Please save and close the file.
- Please start the MySQL, iQ-WEBX and Apache services in this order.
- Please verify working state of iQ-WEB by log into the web interface and check current log display.

19 ABBREVIATIONS AND ACRONYMS

ABBREVIATION	MEANING
AE	Application Entity
AET	Application Entity Title
C-ECHO	DICOM command for verifying the DICOM connection between
	devices
C-FIND	DICOM command for search of studies
C-MOVE	DICOM command for move of studies
СОМ	Component Object Model, is a binary-interface standard for software
	by Microsoft
CPU	Central Processing Unit
DHCP	Dynamic Host Configuration Protocol
DICOM	Digital Imaging and Communication in Medicine
DNS	Domain Name System
GUI	Graphical User Interface
HIPAA	Health Insurance Portability and Accountability Act
HIS	Hospital Information System
HTML	Hyper-Text Mark-up Language
HTTP	Hyper Text Transfer Protocol
ID	Identifier
IO	Input-Output
IP	Internet Protocol
IPv4	Internet Protocol version 4
lpv6	Internet Protocol version 6
MOVESCU	C-Move as Service Class User
NEMA	National Electrical Manufacturers Association
OLE	Is an inter-process communication mechanism created by Microsoft
PACS	Picture Archiving and Communication System
РНР	PHP: Hypertext Preprocessor
Q/R SCP	Query/Retrieve as Service Class Provider
Q/R SCU	Query/Retrieve as Service Class User
RAM	Random Access Memory
RIS	Radiology Information System
SCP	Service Class Provider
SCU	Service Class User
SSL	Secure Sockets Layer
STORE SCP	DICOM store as Service Class Provider
STORE SCU	DICOM store as Service Class User
STORAGE COMMITMENT SCP	DICOM store as Service Class Provider
STORE COMMITMENT SCU	DICOM store as Service Class User
TCP	Transmission Control Protocol
UI	Graphical User Interface
UID	Unique identifier

20 LIST OF FIGURES

Figure 1 – iQ-WEB Configuration Setup	15
Figure 2 – Job View	
Figure 3 – Journal View	32
Figure 4 – General Purging Rule Configuration	
Figure 5 – Purging Rules by Data Element Filters	
Figure 6 – Integrity Check	
Figure 7 – Apache Service	
Figure 8 – iQ-WEB Service Maintenance	
Figure 9 – Configure iQ-VIEW Call Stations	41
Figure 10 – License Overview iQ-WEB	43
Figure 11 – License Overview iQ-X, iQ-WEBX Report Editor, iQ-WEB License	44
Figure 12 – License Overview iQ-WEB2GO	44
Figure 13 – License Overview iQ-WEBX WADO	45
Figure 14 – License Ordering	45
Figure 15 – Today's Log	46
Figure 16 – Live Monitor	46
Figure 17 – Advanced User Privilege Settings	50
Figure 18 – User Group Settings	51
Figure 19 – Failed Login Attempts	52
Figure 20 – Upgrade User	52
Figure 21 – Regenerate User	53
Figure 22 – Automatic Aging Setup	54
Figure 23 - Character Sets	57
Figure 24 – SMTP Configuration	61
Figure 25 – Routing Overview	62
Figure 26 – Routing Criteria	62
Figure 27 – HL7 Routes	65
Figure 28 – HL7 Route Setup	66
Figure 29 – DICOM Overview	67
Figure 30 – DICOM Transfer Settings	68
Figure 31 – DICOM Application Type	71
Figure 32 – DICOM Receiving Options	73
Figure 33 – HL7 Station Overview	76
Figure 34 – Poedit GUI Overview	87
Figure 35 – Poedit catalogue properties	

21 INDEX

Α

Automatic purge storage	34
Filters	36
Rules	34

С

Communication

DICOM	67
HL7	76
Core configuration	21
Apache HTTP Server	21
MySQL	26
PHP	25

D

Data consistency	93
Database maintenance	
Debugging	
Database	91
DICOM/HL7	92
iQ-WEB	92
Webserver	90

F

Folder structure	 9

I

Installation of iQ-WEB14
Configuration14
DICOM Config15
HL7 Config17
MySQL Config16
Storage Config16
Installation Prerequisites13
Installing the software13
Integration93
Integrity check
Introduction6
iQ-VIEW CALL
Configuration41
Enable/Disable
J
Jobs
Journal
L

Activation	
Interface	43
System	27
Troubleshooting	98

М

Maintenance	
Migration	
Data	78
License	
Modules/interfaces	
iQ-VIEW CALL	
iQ-WEB2GO	
iq-webx wado	10
iQ-X	

Ν

etwork94

R

20
62
65

S

Settings	47
Email	61
Storage	53
Users	47
Special modules	
iQ-WEBX REPORT CONVERTER	12
iq-webx wado hl7	12
SSL Integration	22
Apache configuration	23
Certificate generation	22
System requirements	7
Client Minimum	7
Client Recommended	8
Server Minimum	7
Server Recommended	8

Т

Tools	34
Transcription	93
Translation	86
Projects	87
Toolset	86

Licensing27

Workflow	88
Troubleshooting	90
U	
Uninstalling the software	

V

Validate installation	17
Views	31
Virtualization	
Advices	96
Migration	85

IMAGE INFORMATION SYSTEMS LTD. 3RD FLOOR | 207 REGENT STREET | LONDON W1B 3HH | UNITED KINGDOM TEL. UK: +44 207 193 06 20 | TEL. GER: +49 381 496 58 20 | TEL. US: +1 704 323 66 63 FAX UK: +44 207 976 48 97 | FAX GER: +49 381 496 58 299 | FAX US: +1 704 945 71 01 WWW.IMAGE-SYSTEMS.BIZ | INFO@IMAGE-SYSTEMS.BIZ