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MedDream (version 8.8.1)

INSTALL MANUAL

of MedDream SendToPACS functionalities

version 3.4.0

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Table of Contents

Software Download **4**

MedDream SendToPACS system requirements **4**

Pre-installation information **5**

Installation **6**

Location and launching **8**

License registration and product information **9**

Configuration **12**

Main Settings 13

NON-DICOM Settings 14

DICOM Settings 17

Device Settings 19

Worklist Settings 20

Monitoring Settings 22

Installation verification **25**

Testing image converting and sending 25

Testing patient search in the Worklist test 26

Security considerations **27**

API restriction 27

Firewall 27

Other programs 28

Access files from the remote directory 28

Figures **29**

Index **30**

Software Download

WARNING

MedDream SendToPACS cannot guarantee the accuracy of calibration data received from the modality. Moreover, MedDream cannot guarantee that the manual calibration which is performed by users is done accurately.

MedDream SendToPACS user is responsible for all data usage, security, and virus threat for installed computer.

MedDream SendToPACS user is responsible for any third-party programs usage with MedDream SendToPACS on the same computer.

MedDream SendToPACS user must ensure that third-party programs are not interfering with MedDream SendToPACS functionality.

If third-party programs are interfering with MedDream SendToPACS functionality – the computer user must stop or remove third-party programs and do not use them until MedDream SendToPACS is in use.

If third-party programs are interfering with MedDream SendToPACS installation process – the computer user must stop or remove third-party programs.

Virus and other spyware programs must be removed before MedDream SendToPACS installation or further usage on the same computer.

MedDream SendToPACS software version can be downloaded from:

https://www.meddream.com/products/meddream-dicom-converter/

MedDream SendToPACS system requirements

The minimal System (PC) requirements to run MedDream SendToPACS:

- CPU: 1 GHz or faster with support for PAE, NX, and SSE2
- RAM: 1+ GB
- Storage space: 1+ GB.
- Operating system: Windows 10, Windows 11
- Windows Firewall must be configured to allow software communication with other systems (see MedDream SendToPACS Configuration).

Pre-installation information

SendToPACS software main function is to send DICOM files to the remote archive (PACS). This requires ensuring network access from your personal computer (PC) (where is software installed) and PACS server. Ensure, that PC has access to the software licensing server https://lic.meddream.com.

Recommended to consult or ask for network/PACS administrator to ensure secure (recommended VPN) network access to PACS server.

Common PACS requires registering DICOM device to accept incoming connection and files. It is recommended to consult with PACS administrator to include MedDream SendToPACS software as a device on PACS server. Software requirements to register as a new device on PACS:

- AE Title – device title. See MedDream SendToPACS Configuration main settings,
- Host/IP – device address. It will be PC host name or IP,
- Port – device port. Not in use by SendToPACS, because it only sends DICOM files – add random port.
- Enable other functionality: Modality Worklist C-FIND (if PACS server provides Modality Worklist and requires by doctor or institution workflow), Query/Retrieve C-FIND (if requires) information access.

MedDream SendToPACS software supports Modality Worklist (MWL) and Query/Retrieve (Q/R) information access. Consult with PACS administrator if MWL provider or Q/R provider is a separate server and requires registered software access as a new device.

Consult with PACS administrator about PACS server supported DICOM files: Transfer Syntax UID, SOP Class UID. This information is provided in MedDream SendToPACS software **DICOM Conformance statement document**.

Software can produce (convert NON-DICOM files) with transfer syntaxes:

- 1.2.840.10008.1.2.4.50 (JPEG Baseline (Process 1)),
- 1.2.840.10008.1.2.4.100 (MPEG2 Main Profile Main Level),
- 1.2.840.10008.1.2.4.101 (MPEG2 Main Profile @ High Level),
- 1.2.840.10008.1.2.4.102 (MPEG-4 AVC/H.264 High Profile / Level 4.1),
- 1.2.840.10008.1.2.4.103 (MPEG-4 AVC/H.264 BD-compatible High Profile / Level 4.1),
- 1.2.840.10008.1.2.1 (Explicit VR Little Endian),

Software can produce (convert NON-DICOM files) with SOP Class:

- 1.2.840.10008.5.1.4.1.1.7 (Secondary Capture Image Storage),
- 1.2.840.10008.5.1.4.1.1.104.1 (Encapsulated PDF Storage),
- Can set other SOP class UID, but DICOM file content will be Secondary Capture Image Storage or Encapsulated PDF Storage.

If using Q/R to find and get information about the patient – consult with PACS administrator about what information model and level to use (see MedDream SendToPACS software **DICOM Conformance statement document**).

Review MedDream SendToPACS software configuration settings for PACS, MWL, or Q/R devices and ask PACS administrator for detailed information. Basic information is required for the device: AE Title, host name, and port.

MedDream SendToPACS software provides default modality OT(Other), but requires asking PACS administrator to provide the Modality Code for the supported type of images. A full list of Modality types can be found at http://www.dicomlibrary.com/dicom/modality/.

Also, modality affects DICOM viewer software. Ensure, that produced DICOM files, with defined modality, can be displayed in DICOM viewer (make test).

MedDream SendToPACS software provides multiple character sets (review configuration settings) to query MWL or Q/R information and make DICOM file. It is recommended to consult with PACS administrator to set the correct character set encoding for PACS, MWL, and Q/R devices in the software configuration.

Also, character sets affect DICOM viewer software. Ensure, that produced DICOM files, with different character set encoding, will be displayed correctly in DICOM viewer (make test). Please see http://dicom.nema.org/medical/dicom/current/output/chtml/part02/sect_D.6.2.html.

Installation

To install MedDream SendToPACS software, login to windows. If you try to install software where the user does not have rights to perform new application installation – will ask for Administrator rights to access this functionality. Due to this, please contact the PC`s administrator or another person who has the Administrator rights to perform the installation.

To install MedDream SendToPACS software, execute “MedDreamSendToPACSSetup-[version].exe” setup file. MedDream SendToPACS Setup Wizard will be launched.

⚠ **NOTE**! If you want to use the provided License “SendToPACS.lic” or settings “settings.json”, place the files in the same folder as the setup executable file before launching the setup, and the system will be updated by license information.

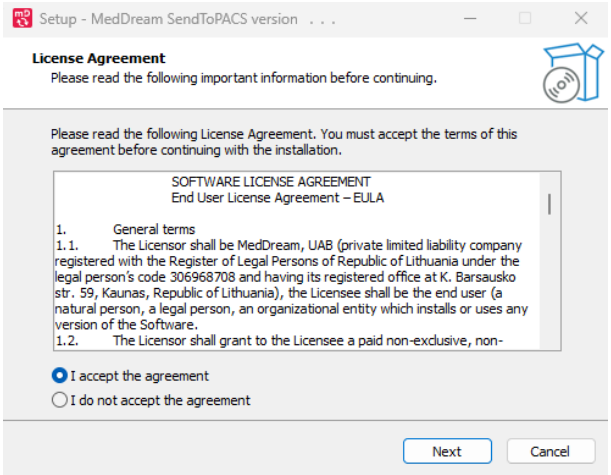


Figure 1. MedDream SendToPACS Setup Wizard: step 1

Follow Wizard instructions to install the software. Read and accept the License Agreement to proceed with the installation.

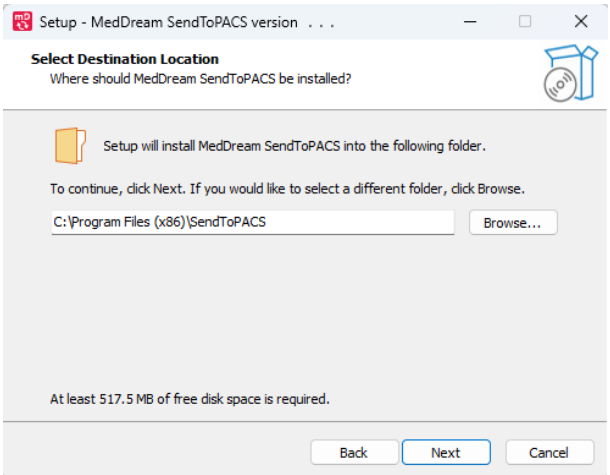


Figure 2. MedDream SendToPACS Setup Wizard: step 2

Specify the folder where you want to install the software. By default, setup suggests installing the software into ‘C:\Program Files (x86)\SendToPACS’ folder.

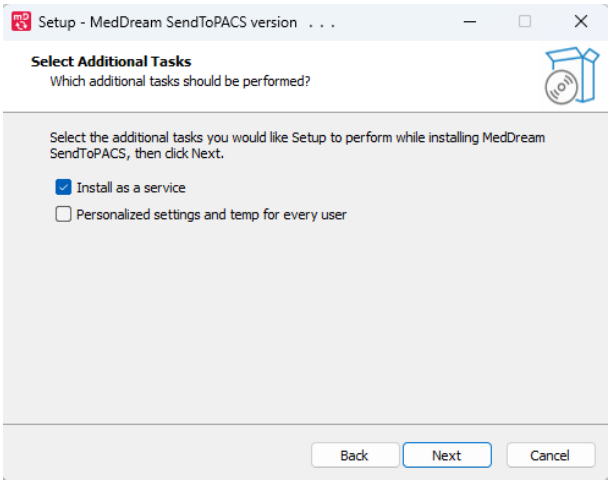


Figure 3. MedDream SendToPACS Setup Wizard: step 3

Specify properties for system launch and temporary storage:

- By default, setup suggests installing and running the system as windows service. Unmark the checkbox, if you want the system to run as a regular application.

⚠ **NOTE!** SendToPACS software opens quicker if installed as windows service.

- By default, setup stores the settings and temporary files in windows folder '*\ProgramData\SendToPACS'* folder. Mark the personalized settings checkbox, if you want the settings and temporary files be stored for each user in windows '*\Users\[user name]\SendToPACS'* folder.

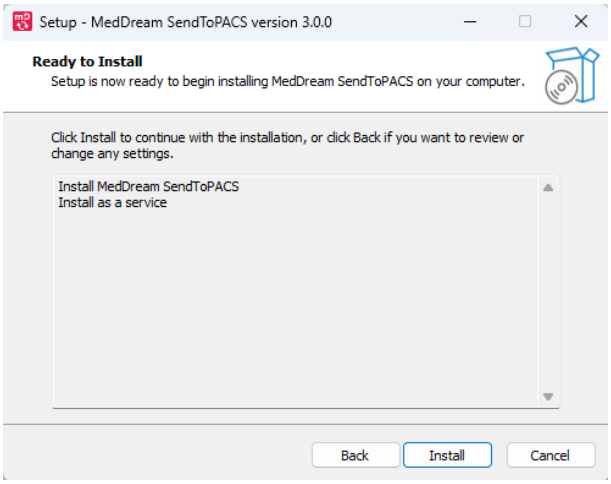


Figure 4. MedDream SendToPACS Setup Wizard: step 4

Confirm the selections and start the installation.

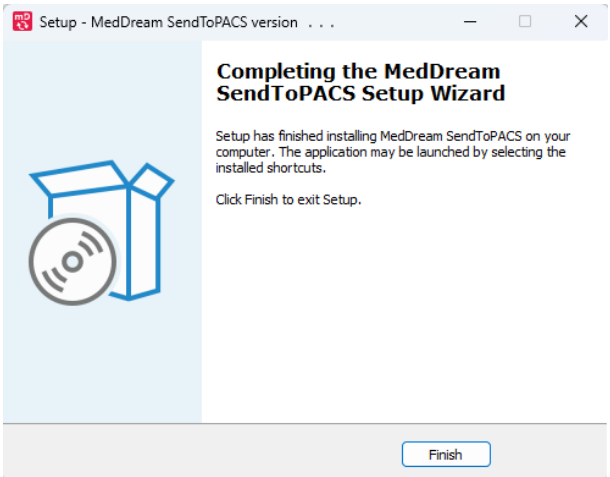


Figure 5. MedDream SendToPACS Setup Wizard: step 6

Finish the installation. By default, setup launches the application. Unmark the checkbox, if you do not want the software to be started.

Location and launching

You can locate and launch MedDream SendToPACS software from Windows Start Menu. Moreover, you can find MedDream SendToPACS by typing 'SendToPACS' in "Search programs" input box (Windows 7/8/10).

You can locate the SendToPACS shortcut on Desktop and double-click it to launch the software.

Usually MedDream SendToPACS is installed to *'C:\Program Files (x86)\SendToPACS'* folder. So, the Software can be opened by executing '*C:\Program Files (x86)\SendToPACS\SendToPACS.exe'* file.

⚠ **NOTE!** If the software is installed as a service, the SendToPACS service should be running when launching the application.

By default, setup installs the SendToPACS service with automatic startup. However, if the startup type is changed, or the service was stopped for another reason, you can start the SendToPACS service manually.

If the connection to the service cannot be established, the application will show an error message.

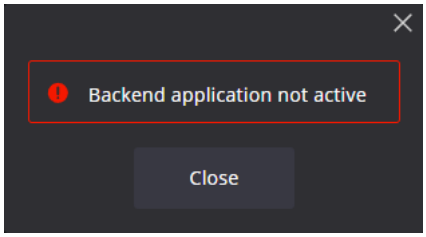


Figure 6. Error when the service cannot be established

Go to the windows services list by opening the windows services window or services tab in the task manager window, and locate the SendToPACS service.

Check the SendToPACS service status, and start it, if not running.

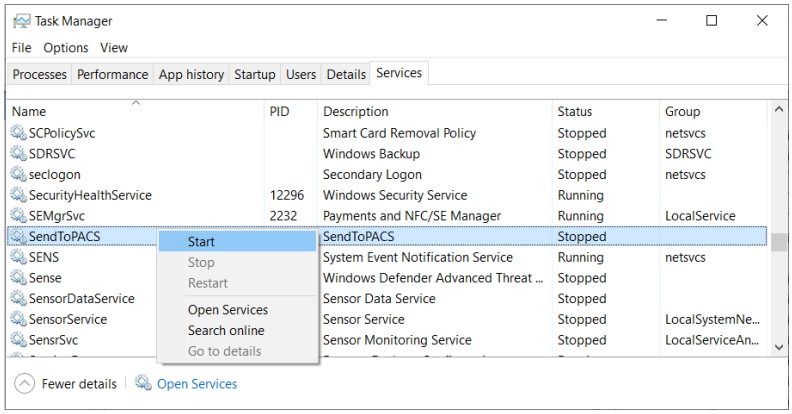


Figure 7. Error when the connection to SendToPACS service cannot be established

You can launch the MedDream SendToPACS software from the Context menu by selecting one or multiple files. Select files and open the file's context menu with the right mouse button. Select the SendToPACS menu:

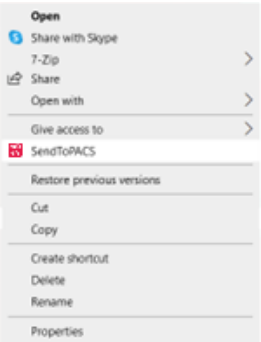


Figure 8. Launching SendToPACS program from Context menu

NOTE! Selected files are automatically added to MedDream SendToPACS file list.

After the software launching MedDream SendToPACS software must be opened in 1-10 seconds.

License registration and product information

After Installation, the users can use MedDream SendToPACS software in DEMO mode with DEMO restrictions. The demo notification window is displayed, if the system runs without a registered license (in demo mode):

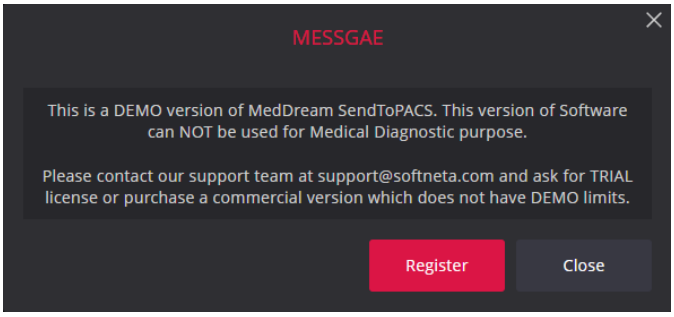


Figure 9. Demo version notification

The user can register products or "Close" information windows and use the software in DEMO mode.

NOTE! License registration is required for legal software use for Medical purposes.

To register a license:

- If you have a license file, place it near the installation .exe, and during the installation process licensing will be adjusted automatically.
- Or open the license registration window in one of the ways:
  - press the Register button in the demo notification window,
  - or open the About window and press the Register button in it.
- Enter the license number that you were given by the system administrator or system provider in the license registration window, and press the “Register” button:

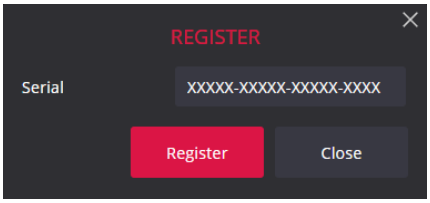


Figure 10. License registration window

- After the “Register” button is pressed, the system connects to the license server, verifies, and gets the license. The notification about successful license registration is displayed, and then the user can view the registered license data in “ABOUT” window.

⚠ **NOTE!** Ensure that personal computer have access to https://lic.meddream.com.

To view the MedDream product information, open About window by pressing the SendToPACS logo or info button in the header of the SendToPACS application window:

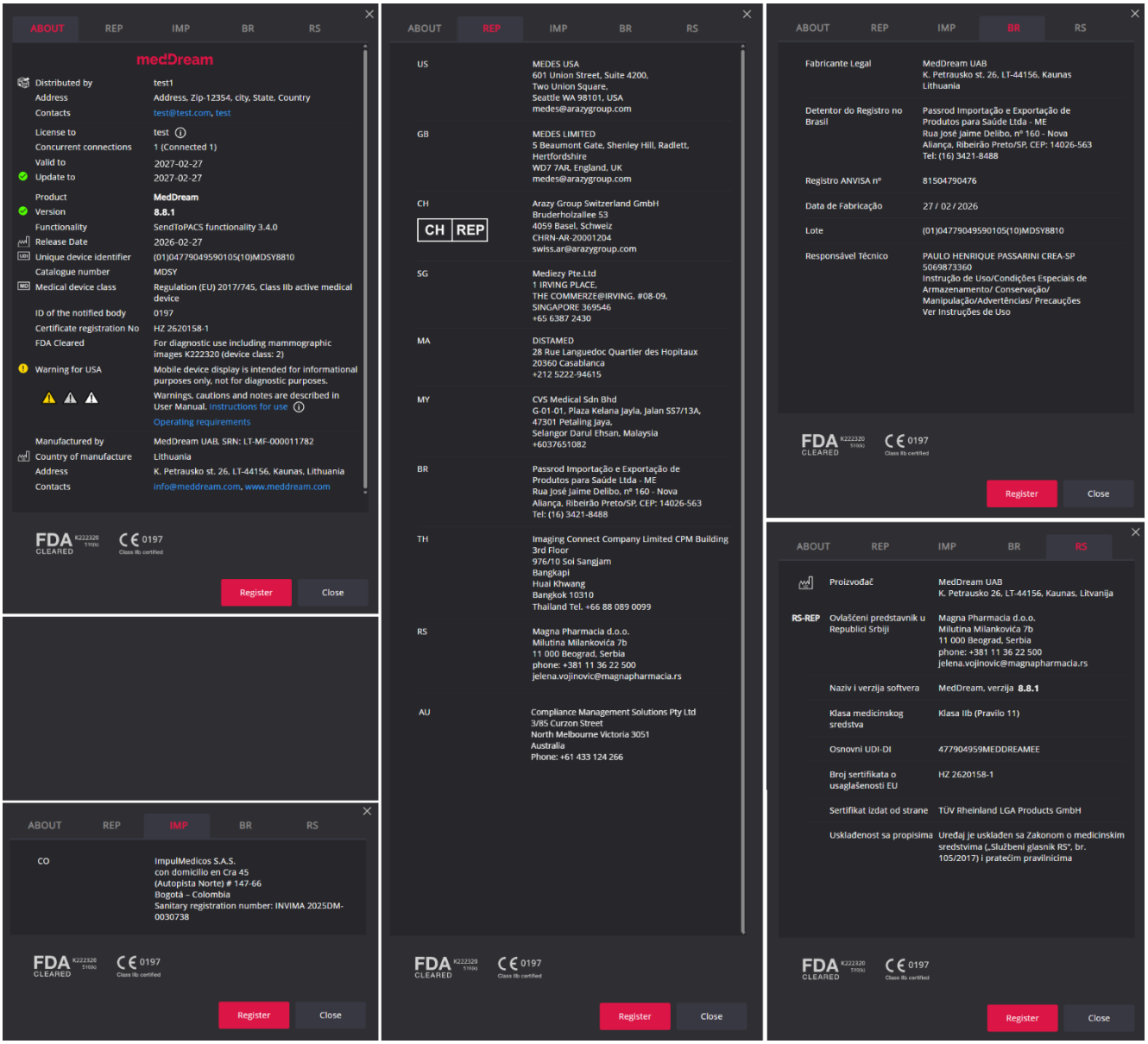


Figure 11. Product information in "ABOUT" window

The user can view the following information about the product:

- The "Product" provides the official product name.
- The "Functionality" field contains information about the SendToPACS functionality as well as the currently relevant version of this functionality.
- Fields "Version" and "Release date" hold information about the installed version.
- The "Unique Device Identifier" number is provided.
- Fields "Catalogue number", "Medical device class", "ID of the notified body", "Certificate registration No", and "FDA cleared" mark holds the product's certification data.
- The user manual of MedDream viewing functionalities is accessible by clicking the "Instructions for use" link.
- An explanation of safety signs with references to "Operating requirements".
- Fields "Valid to" and "Updates to" indicate the dates until the current license is valid and will receive updates.

- “License to” and “Concurrent connections” fields contain information about the license owner and the number of simultaneous connections allowed by the license for the current product installation.
- The “Distributed by” fields contain information about the organizations that own or distribute the license of the current product installation. The “Distributed by” section includes address and contact details, which are treated as contact information.

⚠ **NOTE!** *License to* and *Distributor* information is displayed only if the license is registered.

- The manufacturer group contains ”Manufactured by”, ”Country of manufacture”, ”Address”, and ”Contacts” fields, which show the name and contact details of the product manufacturer.
- Contacts of designated certification body agents are available in the **REP** (Representatives) tab.
- Importers’ contact details are available in the **IMP** (Importers) tab.
- Contacts for Brazil are available in the **BR** tab.
- Contacts for Serbia are available in the **RS** tab.

Configuration

⚠ **NOTE!** Even in DEMO mode, it is possible to do all the configuration and testing (after licensing all Configuration Settings will remain).

To view or edit the configuration open the “SETTINGS” window by pressing “Settings” button in the header of the SendToPACS application window. The “SETTINGS” window has the following seven tabs:

- ”MAIN” – MedDream SendToPACS main software settings;
- ”NON-DICOM” - MedDream SendToPACS software settings to define NON-DICOM functionality;
- “DICOM” - MedDream SendToPACS software settings to define DICOM functionality;
- ”DEVICES” – remote PACS storage device list settings;
- ”WORKLIST” – remote Modality worklist, Query/Retrieve information (C-FIND) or based HTTP request device list settings;
- ”MONITOR” – shared network or simple directories list to monitor for incoming files.

Main Settings

The tab "MAIN" is opened by default when the “SETTINGS” window opens, and the following properties may be viewed and configured as shown below:

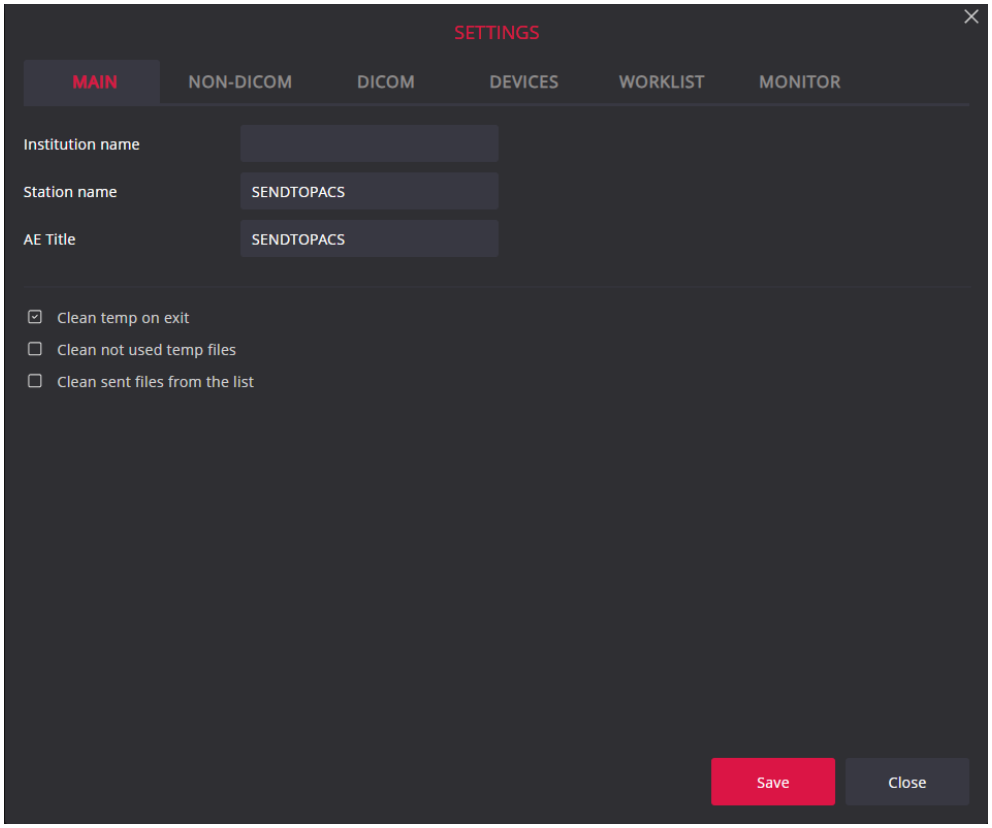


Figure 12. Main settings

Institution name

“**Institution name**” – by default is empty, but if filled – Tag (0008,0080) will be filled, and in created DICOM will remain the created DICOM Institution name.

Station name

“**Station name**” – by default is empty, but if filled – Tag (0008,1010) will be filled, and in created DICOM will remain the created DICOM Station name.

AE title

“**AE title**” - DICOM application Entity Title. The DICOM Application Entity Title uniquely identifies a service or application on a specific system in the network. It is required to identify sending software for the PACS server (or other DICOM receiving services). The default value is ‘SENDTOPACS’. The same AE title name must be registered into the PACS server (or other DICOM receiving services) AE List (as device).

Clean temp on exit; Clean not used temp files

“**Clean temp on exit**” and “**Clean not used temp files**” options configure the cleaning of the temporary storage. The application uses “temp” folder for storing the copies of the converted images of video files. Depending on the system setup, the temp folder may be located either in ‘\ProgramData\SendToPACS\temp’, or ‘\Users\[user name]\SendToPACS\temp’. Use the options to configure automatic cleaning of “temp” folder:

“Clean temp on exit” – the program cleans the content of temp folder when the application is closed. The option is switched on by default setup, and the user should press the checkbox to change the value.

“Clean not used temp files” – the program removes the temporary files as soon as they are no longer used by the program. The option is switched off by default setup, and the user should press the checkbox to change the value.

Clean sent files from list

"**Clean sent files from list**" option should be used for configuring the automatic removal of successfully sent files from the files list. The option is switched off by default setup, and the user should press the checkbox to change the value.

NON-DICOM Settings

The "NON-DICOM" tab properties may be viewed and configured as shown below:

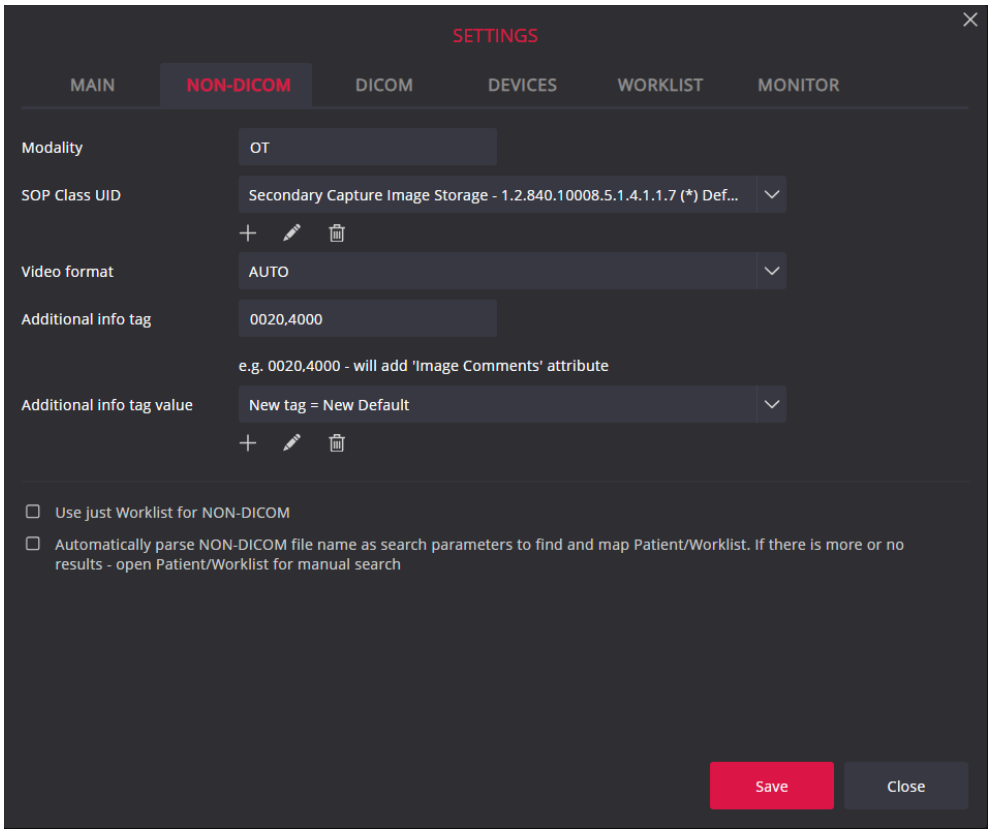
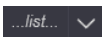


Figure 13. NON-DICOM settings

Modality

"**Modality**" – DICOM image type. It describes the source and purpose of the DICOM images. The Modality type can be specified freely, and it will be assigned to all images converted to DICOM. Several modalities, separated by commas, may be entered. The most common modalities are OT (Other), ES (Endoscopy), US (Ultrasound), XC (External-camera photography). The full list of Modality types can be found in http://www.dicomlibrary.com/dicom/modality/.

SOP Class UID



"**SOP Class UID**" – Storage Service Class identify the Composite IODs.

The user may change the SOP Class configuration. To set the other SOP class as default, expand the "SOP Class UID" list and press on the SOP Class that needs to be used as default SOP Class:

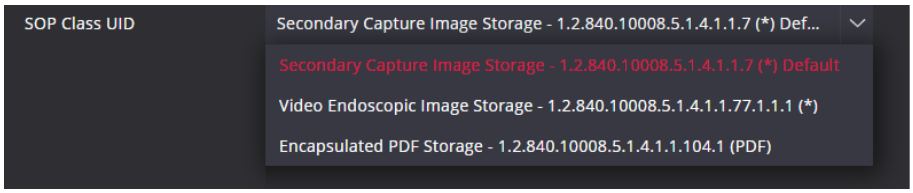


Figure 14. Changing the default SOP class in the main settings

System setup automatically adds three SOP Class UID values to the configuration:

- “Secondary Capture Image Storage SOP” class with UID ‘1.2.840.10008.5.1.4.1.1.7’ is configured for all files (*). This SOP Class is set as default by selecting it in SOP Class UID drop-down list.
- “Encapsulated PDF Storage SOP” class with UID ‘1.2.840.10008.5.1.4.1.1.104.1’ is configured for pdf files (PDF).
- “Video Endoscopic Image Storage SOP” class with UID ‘1.2.840.10008.5.1.4.1.1.77.1.1.1’ is configured for all files (*). By configuration, which is preset by setup, this SOP class is not used, as far as it is not assigned to a particular file extension, and is not set as default.

⚠ **NOTE!** The default SOP class is used for all the files, except the files for which the other SOP Class is explicitly defined, like PDF files with Encapsulated PDF Storage SOP class for files with (PDF) extension.

⚠ **NOTE!** Only the SOP class, that is configured for all files (with (*) or () marks at the end), may be set as the default SOP class.

To add SOP class to the configuration, press the add button on the right side of the SOP classes list and enter SOP class data in the opened “SOP CLASS” window:

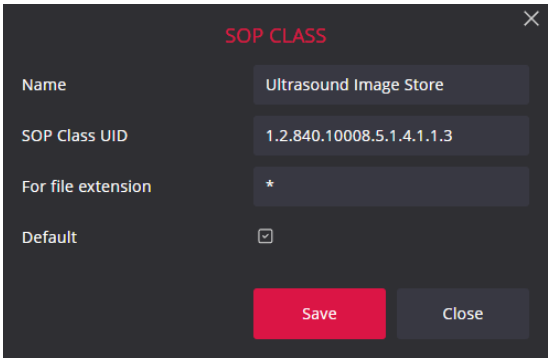


Figure 15. Adding a new SOP class in the main settings

Enter SOP class name and UID. See the list of valid “SOP Class UIDs” and “Names” in: https://www.dicomlibrary.com/dicom/sop/.

Enter file extensions, if the SOP class should be used only for particular file types. Several values, separated by commas, may be entered in “For file extension” field. The star symbol ‘*’ should be entered, if the SOP Class is going to be used for all NON-DICOM files. Check the “Default” check box to set the SOP Class as default.

Press the “Save” button in order to create a new SOP Class in the main configuration.

Because of the rules and restrictions for attributes of the information object (IOD) and DICOM service elements (DIMSE), that apply for each SOP Class, it is required to test, if a desired file type may be converted to the specified SOP Class and sent to the particular device.

⚠ **NOTE!** Other SOP Class UID can be used, but DICOM file content will be Secondary Capture Image Storage or Encapsulated PDF Storage

To delete SOP class from the configuration, select the not used SOP Class in Sop Classes list, and then press the remove button on the right side of the list.

Video format

...list... **“Video format”** – a type of possible video converting files. Select a particular type by pressing on the item in the expanded list of supported video formats:

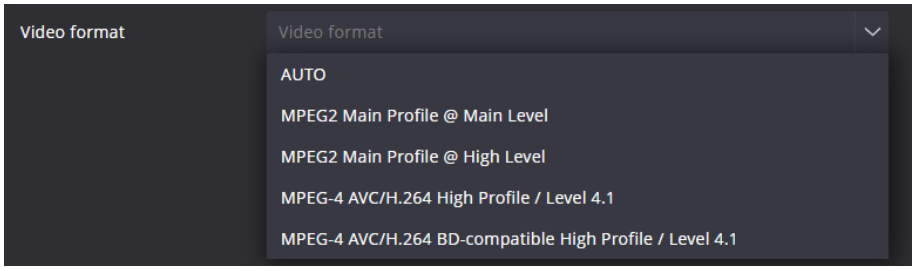


Figure 16. Changing video format in main settings

List of possible values:

- Auto – the default value, lets the system detect the video file type automatically,
- MPEG2 Main Profile Main Level 1.2.840.10008.1.2.4.100,
- MPEG2 Main Profile High Level 1.2.840.10008.1.2.4.101,
- MPEG-4 AVC/H.264 High Profile / Level 4.1 1.2.840.10008.1.2.4.102,
- MPEG-4 AVC/H.264 BD-compatible High Profile / Level 4.1 1.2.840.10008.1.2.4.103.

⚠ **NOTE!** See more detailed information and restriction (especially resolution) for video format according to transfer syntax:

http://dicom.nema.org/medical/dicom/current/output/chtml/part05/sect_8.2.5.html

http://dicom.nema.org/medical/dicom/current/output/chtml/part05/sect_8.2.6.html

http://dicom.nema.org/medical/dicom/current/output/chtml/part05/sect_8.2.7.html

http://dicom.nema.org/medical/dicom/current/output/chtml/part05/sect_8.2.8.html

Additional info tag

"**Additional info tag**" – by default is empty, if the user wants to add a comment in the Study list – the field must specify which tag will be filled, for example, TAG (0020,4000), in STUDY list extra column will be added with the possibility to add a comment.

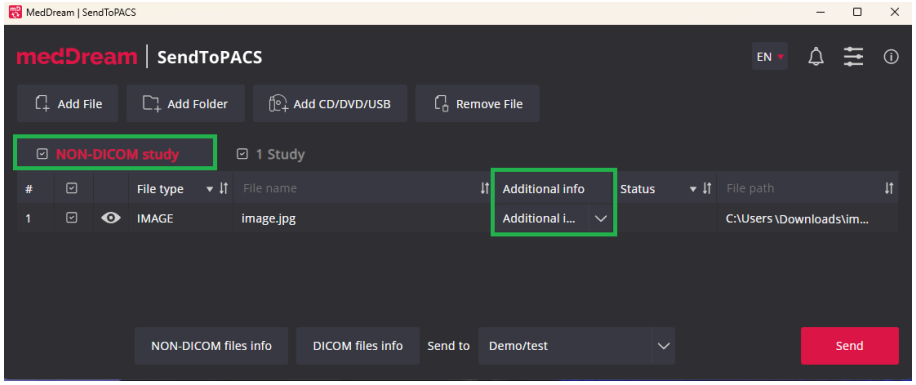


Figure 17. Extra field in Study list – additional info field for adding comments

Additional info tag value

"**Additional info tag value**"– list of additional information values for NON-DICOM files. To edit, select the edit icon . To add a value, select to delete . One of the values can be marked as Default.

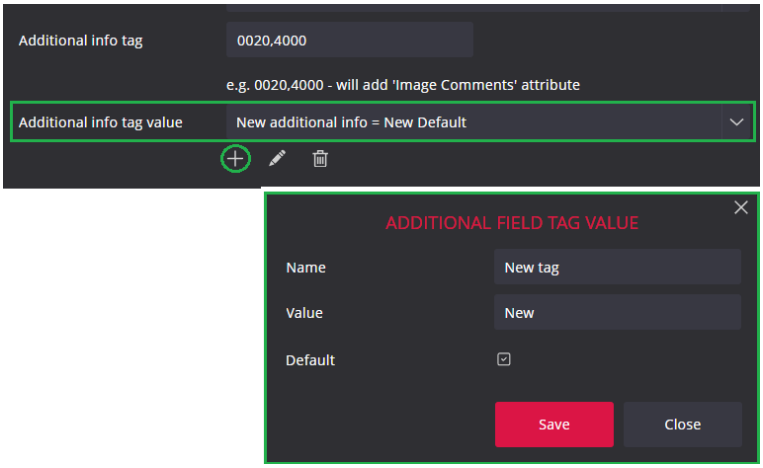


Figure 18. Additional info tag in settings

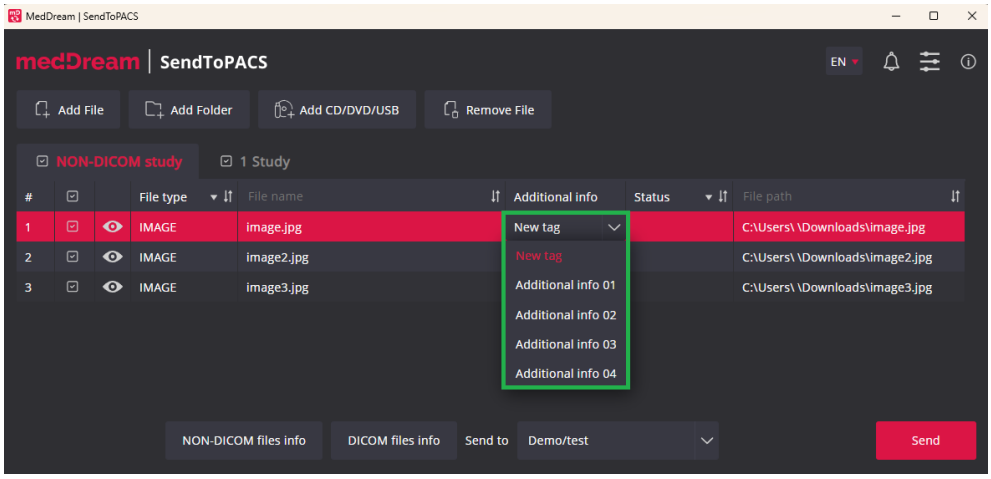


Figure 19. Additional info tag in settings

Use just Worklist for NON-DICOM

“**Use just WORKLIST for NON-DICOM**” files – by default is not selected, the user must select in case wants to use ONLY Worklist for NON-DICOM files, in this case user will not be able to change any patient data manually. User on pushing “Send” or “NON-DICOM files info” buttons will open “WORKLIST” window.

Automatically parse NON-DICOM file name

“**Automatically parse NON-DICOM file name as search parameters to find and map Patient/Worklist. If there is more or no results – open Patient/Worklist for manual search**” - an indication that Patient/Worklist will be automatically searched and if found, the information is mapped from the search result. If there is more or no results - a search window will open.

⚠ **NOTE!** For the automatic search result to be accurate, the “Default search parameters” must be properly configured in the WORKLIST DEVICE settings.

DICOM Settings

The "DICOM" tab properties may be viewed and configured as shown below:

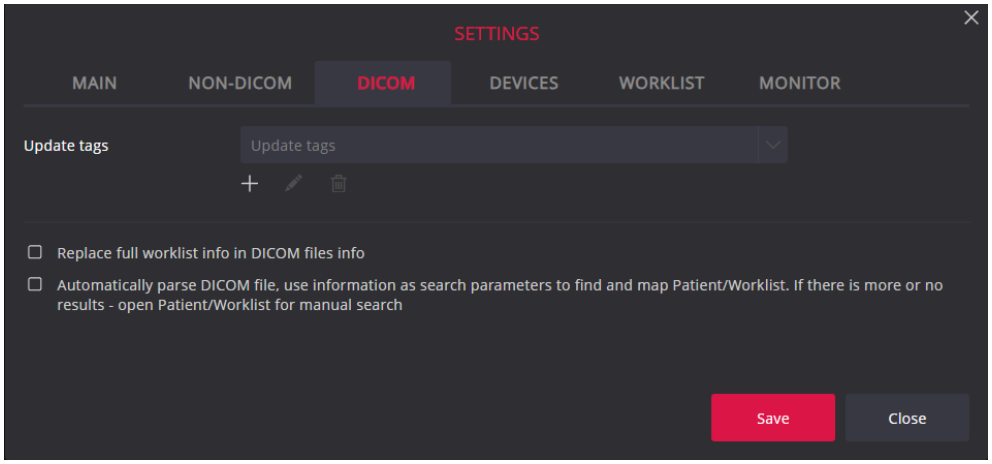


Figure 20. NON-DICOM settings

⚠ **NOTE!** For the automatic search to be accurate and to define what attributes to use, the 'Default search parameters' must be properly configured in the WORKLIST DEVICE settings.

Update tags

"**Update tags**" – define tags to update to DICOM file before sending it to PACS.

To add a pattern, choose . Opens the value completion dialogue

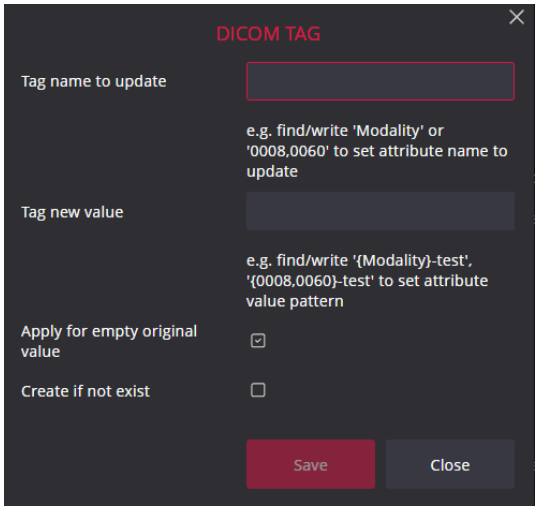


Figure 21. The configuration window for tag update

"**Tag name to update**" - type in a name (e.g. 'Modality') or tag number (e.g. '0008,0060') (search with a minimum of 4 characters), and select from a list.

"**Tag new value**" - type new value, for example '{Modality} - test' or '{0008,0060} – test'.

Update conditions can be marked:

- "Apply for empty original value";
- "Create if not exist".

Replace full worklist info in DICOM file info

☑/☐ “**Replace full worklist info in DICOM file info**” - an indication that the information will be fully replaced by worklist information.

If the setting has been applied, the WL info button will appear in the DICOM dialog.

Automatically parse DICOM file to search and map Patient/Worklist

☑/☐ “**Automatically parse DICOM file, use information as search parameters to find and map Patient/Worklist. If there is more or no results – open Patient/Worklist for manual search**” - an indication that automatically parse a DICOM file and use the extracted information as search parameters to find and map a Patient/Worklist. If there are multiple or no results, open the Patient/Worklist for manual search.

If the action is applied, what the mapping is based on is shown in the tooltip of the "Linked study" column in the search window.

Device Settings

The tab "DEVICES" is used to set the remote storage devices (PACS or other DICOM receiving service) that shall receive DICOM files.

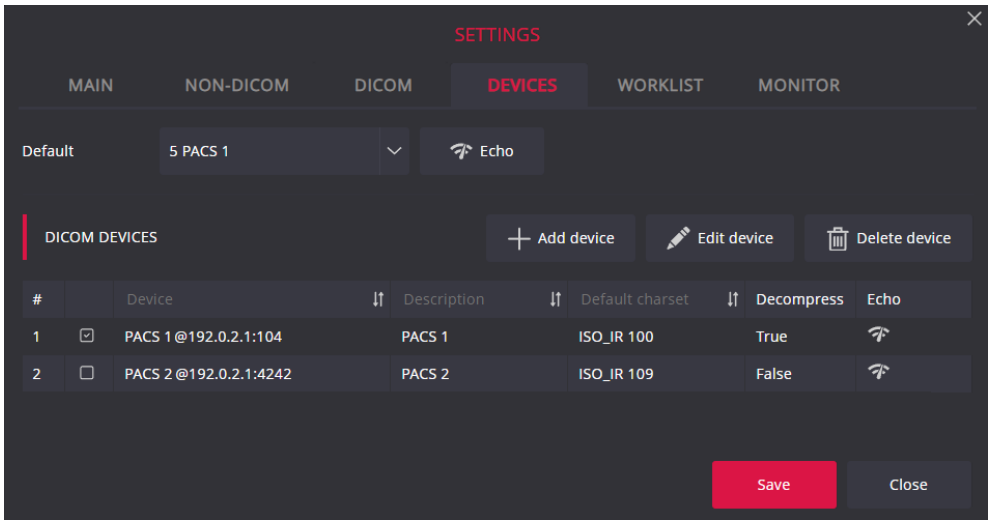


Figure 22. Device’s settings

To add a new PACS device, press the button "Add Device" and enter device data in the opened “DEVICE” window:

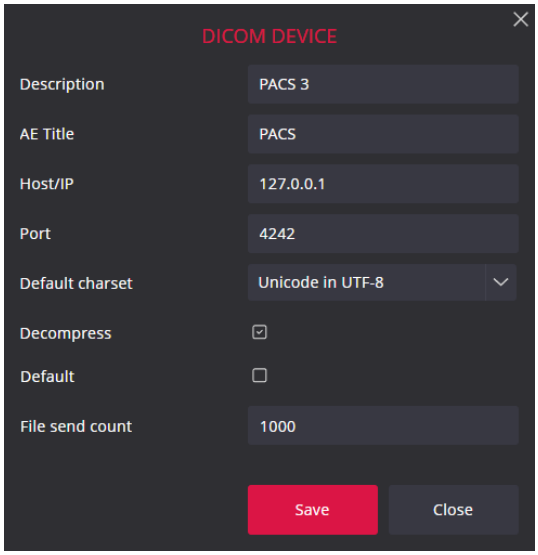


Figure 23. Window for adding or editing PACS device

- "**Description**" – the field "Description" is used to describe the PACS system so that the user can easily recognize which one of the PACS systems is used.
- "**AE Title**" – enter the AE title in the field. The AE title must be the same as the name of the PACS server (or other DICOM receiving service).
- "**Host/IP**" – the field is used to enter the network address for the PACS server. You can specify IP address if IP address is static for the PACS. If PACS server has dynamic IP, then specify Host name.
- "**Port**" – the field "Port" is used to set the communication port with the PACS system.
- "**Default charset**" – the DICOM character set for encoding the textual values (names and strings) in DICOM file. 'Default repertoire ()' is the default character set. Expand the character sets list and press the other value to select it. Please see *https://dicom.nema.org/medical/dicom/current/output/chtml/part03/sect_C.12.html#sect_C.12.1.1.2*.
- "**Decompress**" – mark the checkbox by pressing on it, if decompressed DICOM files should be sent to the device (basically try decompressing DICOM files pixel data – and change transfer syntax to 'Explicit VR Little Endian'). The Decompress checkbox is not checked by default.
- "**Default**" – mark the checkbox by pressing on it to set the device as default automatically on creation.
- "**File send count**" - specifies how many files to send per connection.

Press the "Save" button in order to add a new device. The device is displayed in the list.

To edit PACS device, select it in the devices list, press the button "Edit Device" and change device data (will open the same Device window, as described above).

To delete the selected PACS device, press the button "Delete Device".

To specify the default device, mark the "Default device" checkbox, and press the most common receiving device in "Default Device" drop-down list. The specified device will be set as default in the "MAIN" window device selection drop-down list.

To check the device status, press the Echo button

for the device – perform basic connection verification by DICOM protocol, and the message with connection status will be displayed.

⚠ **CAUTION!** Please make sure Windows Firewall, Antivirus, or other software does not block MedDream SendToPACS communication. It is recommended to turn off all blocking services in the Configuration and testing phase, to be sure that software will not be blocked. Also, it is important to make sure PACS server is not blocking DICOM communication by checking whether the communication is allowed on both sides – MedDream SendToPACS PC and Receiving PC.

Worklist Settings

The tab "WORKLIST" is used to set the Modality worklist or Query/Retrieve server devices.

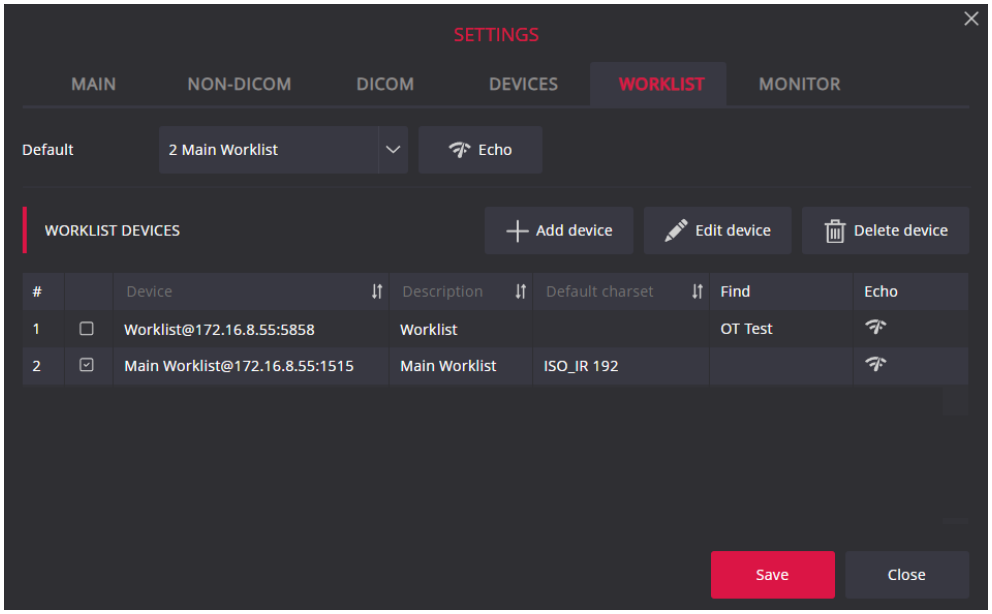


Figure 24. Worklist settings

To add a new “Worklist device”, press the button "Add Device" and enter device data in the opened “WORKLIST DEVICE” window:

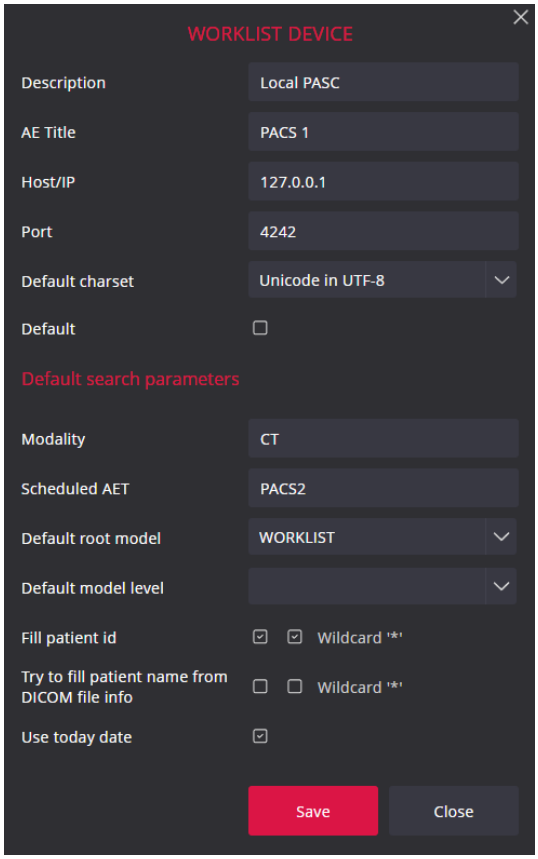


Figure 25. Window for adding or editing Worklist device

Enter device and device connection data in fields “**Description**”, “**AE Title**”, “**Host/IP**”, “**Port**”, “**Default charset**” – see Device window in “DEVICE” tab for a detailed description of the fields.

*“**Default**”* – mark the checkbox by pressing on it to set the device as default automatically on creation.

To specify the default device, mark the “**Default worklist**” checkbox, and press the most common receiving device in “Default Worklist” drop-down list. The specified device will be set as default in the “PATIENT/WORKLIST SEARCH” window worklist selection drop-down list.

Enter the **default search parameters** for the device in the fields “**Modality**”, “**Scheduled AE title**”, “**Default root model**”, and “**Default model level**”, “**Fill patient id**” (can be marked "Wildcard"), “**Try to fill patient name from DICOM file info**” (can be marked "Wildcard"), “**Use today date**” – the “PATIENT/WORKLIST SEARCH” window will be prefilled with these values.

“**Modality**” and “**Scheduled AET**” criteria apply only for Modality Worklist Information Model (“Default root model” value ‘WORKLIST’).

Press the “Save” button to create a new device. The device is displayed in the device list.

⚠ **NOTE!** The default model level applies only for Query/Retrieve Information Model (“Default root model” value is one-off: ‘STUDY’; ‘PATIENT’; ‘PATIENT_STUDY’).

⚠ **NOTE!** The system supports querying patient information from HIS using external API. Contact support for details on how to configure the external web service as a worklist device.

Use the buttons in “WORKLIST” tab to manage the worklist devices: check device status with “Echo”, change device data with “Edit device”, or delete the device with “Delete Device” buttons. See “DEVICE” tab for a detailed description of the operations.

Monitoring Settings

The tab "MONITOR" is used to manage the list of monitored directories (including network drives).

There are two different ways of monitoring directories:

- automatically include files into the main window list and proceed **manually to press the button** to convert and send to PACS (software application must be opened);
- automatically **forward DICOM files** to PACS (no need to open software, just ensure, that software service is running).

There are two different types of monitoring directories:

- manually – software will review, compare, and identify new files due to some logic (auto-forward) or software capability (network directory) to monitor new files; this method is slower and recommended not to monitor large directories;
- native – use native OS to monitor directory new files (local disk directory); this is based on the event, that OS triggers and informs about new files; this is a fast method to detect new files.

⚠ **NOTE!** This function is available for commercial license.

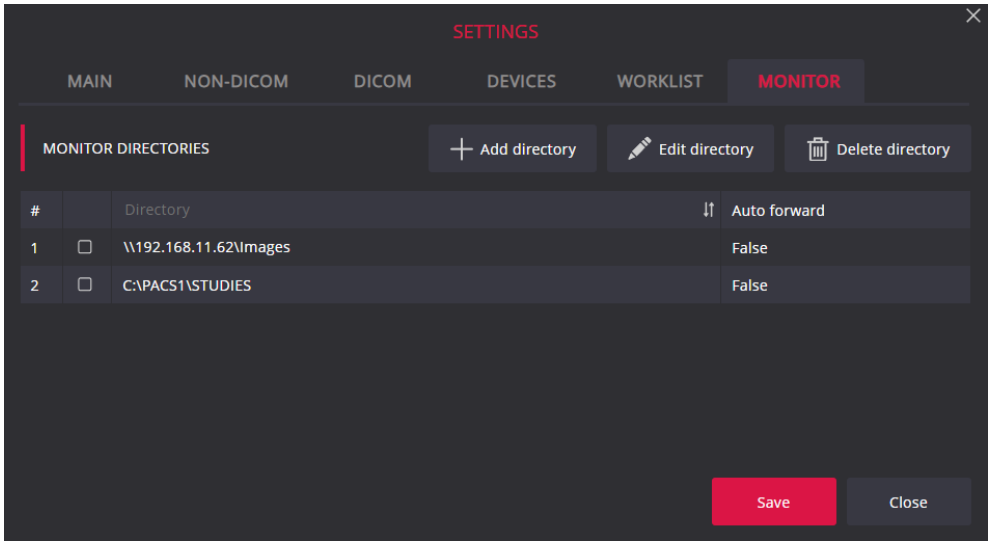


Figure 26. Monitored directories settings

To add a new directory to the monitored directories list, press the button "Add Directory", the system opens a configuration window.

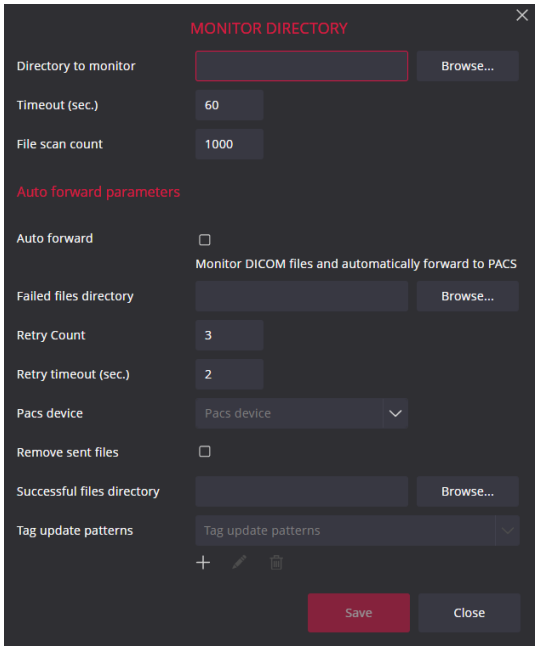


Figure 27. The configuration window for the monitored directory

To fill in “**Directory to monitor**”, select the local directory or mapped network directory in the opened Browse window:

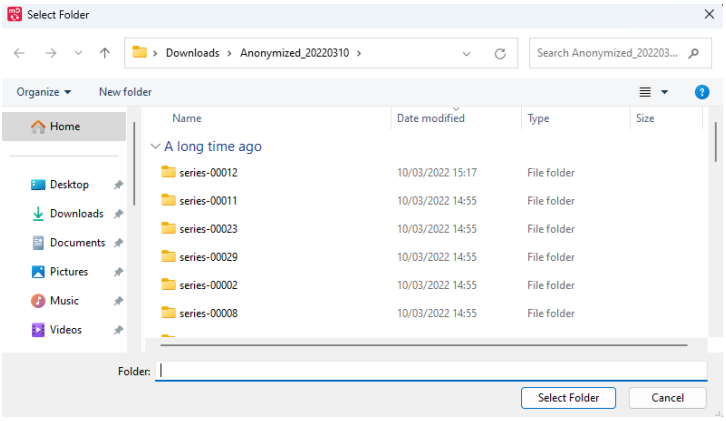


Figure 28. Browser window for selecting monitored directories

Manually monitoring the directory requires:

1. "**Timeout (sec.)**" – to clarify the frequency of scanning, reviewing, and finding new files. For example, if 60 seconds are filled in – will check every 60 seconds for new files in the directory (any deep). After finding and processing files, the next file scan will be executed after 60 seconds.

2. "**File scan count**" – defines, how many new files to take for processing after finding them.

"**Auto forward**" Auto forward – the system monitors DICOM files and automatically forwards them to PACS. In this case, it is mandatory to fill in:

1. "**Failed files directory**" – defines where source and reason (<source name>_reason.txt) files will be moved to if the upload to PASC fails (place files in a directory by date. For example, test.jpg will be moved into /YYYY-MM-DD/test.jpg).

2. "**Retry count**" – times to try to send DICOM files to PACS.

3. "**Retry timeout (sec.)**" – time to wait till next time to try to send DICOM files to PACS.

4. "**PACS device**" – select PACS where to send DICOM files (values are selected from the PASCs defined in the settings).

5. "**Remove sent files**" Remove sent files – successfully processed (sent) files will be deleted from the monitored directory; if unselected Remove sent files – must specify "**Successful files directory**", where to move processed files.

"**Tag update patterns**" – define tags to update to DICOM file before sending it to PACS. To add a pattern, choose . Opens the value completion dialogue.

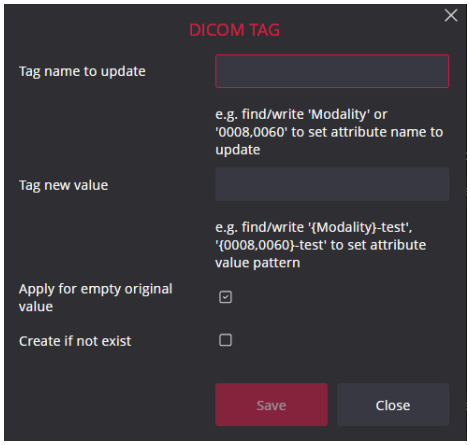


Figure 29. The configuration window for tag update patterns

“**Tag name to update**” - type in a name (e.g. 'Modality') or tag number (e.g. '0008,0060'), or select from a list.

“**Tag new value**” - type new value, for example ‘{Modality} - test’ or ‘{0008,0060} – test’.

Update conditions can be marked:

- “Apply for empty original value”;
- “Create if not exist”.

To change the existing monitor directory, mark the entry and select “Edit directory”.

To delete the selected directory, press the button "Delete Directory".

NOTE! If there are multiple files and the copy process is in progress – the software will try wait to finish update.

MedDream SendToPACS will not remove files from directories and it is recommended to clean files after send.

Installation verification

Testing image converting and sending

To send images to the PACS server, start MedDream SendToPACS software. Then proceed the following steps in the main window:

1. Press the “Add File” button and select any supported image file (you can create the file with Microsoft MSPAINT or take the image from any medical device);
2. Enter the required DICOM info for NON-DICOM file.
3. Press “NON-DICOM files info” button to open NON-DICOM files info window;
4. Enter Patient and Study Data in the opened window. It is necessary to enter at least Patient ID and Last name, Study Date, Time, and Modality;
5. Press the “Save” button, that closes the NON-DICOM files info window.
6. Select the DICOM device to which you will try to send the image in the Sent To dropdown list;
7. Press “Send” button;
8. Firstly, the software will convert the image to DICOM format. Then it will try to send the image to the selected DICOM device. The opened Process status displays ongoing status. If you are using the demo version, the sending is not performed automatically, and you will need to wait 30 seconds and press the “Send” button in the sending dialog;
9. If all steps are successfully passed, the Process status dialog automatically closes and the successfully sent files are marked Finished, or removed from the list if configured to be cleaned after sending. In case of an error, the Process status dialog is not closed and you will be able to view the process log and error description in it.

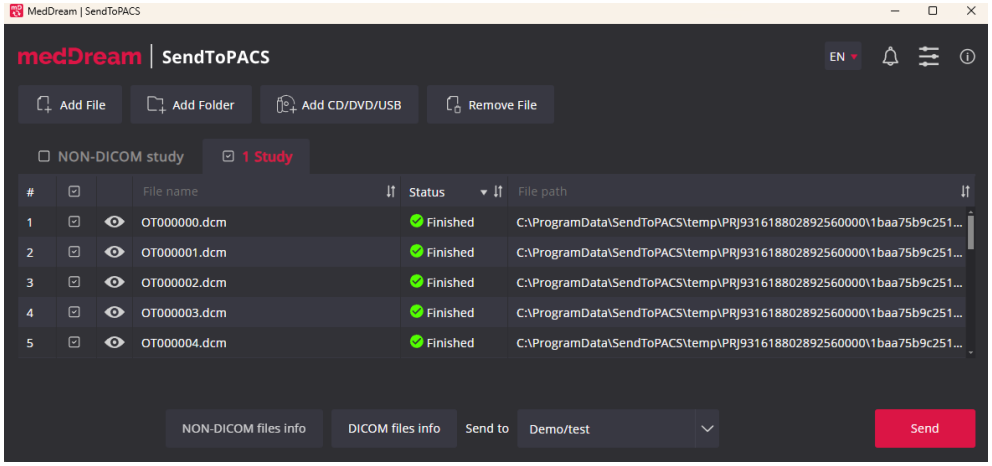


Figure 30. Image converting and sending test

Testing patient search in the Worklist test

To search for a patient in the Worklist, start MedDream SendToPACS software. Then proceed with the following steps:

1. Add an image, video, or PDF file,
2. Press “NON-DICOM files info” button in the main window to open ”NON-DICOM FILES INFO” window,

⚠ **NOTE!** If in Worklist settings are marked “Use just Worklist for NON-DICOM”, the user will get directly to Worklist window and Step 3 will passed.

3. Press the “Search” button which is located at the top left corner of the NON-DICOM files info window;
4. Select *Worklist* device from the drop-down list in the opened “Patient Search” Window;
5. Enter or modify the search criteria to search for specific patient. For testing purpose, use the least specific criteria to see all patients available, like checking ALL Modalities checkbox, unchecking Date checkbox, or searching only by date;
6. Press “Search” button to search in the Worklist server database;
7. Select the patient;
8. Select the patient from the results list, and press “Select” to close “PATIENT/WORKLIST SEARCH” window. Selected patient data will be inserted into corresponding Patient and Study information fields of the NON-DICOM files info window.

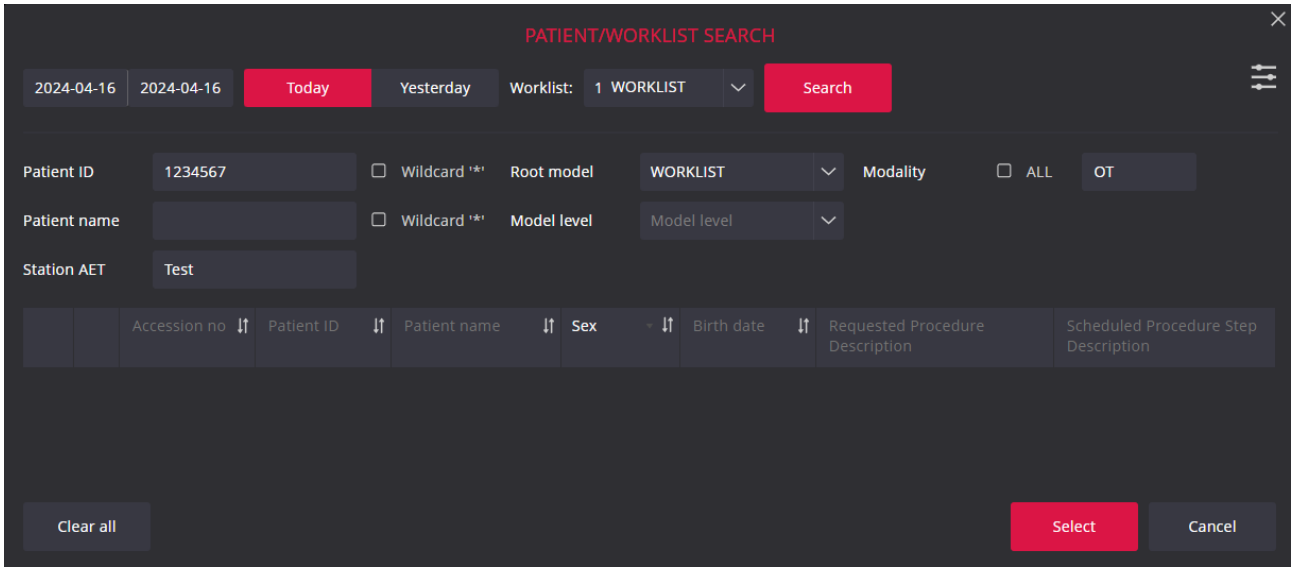


Figure 31. "PATIENT/WORKLIST SEARCH" in Worklist test

Security considerations

MedDream SendToPACS functionalities are the application and it is intended to communicate with background service via HTTP localhost. It ensures one application is running and one client can connect to the background service. On application close – ensures, that log file and temporary files will be deleted.

API restriction

MedDream SendToPACS functionalities background service offers separate functionality to search worklist (C-FIND), make C-ECHO to PACS device, convert (image, video, pdf) to DICOM, and send files to PACS. This functionality can be accessed by defining basic authentication in 'application.properties' file. Properties 'api.username' and 'api.password' should be generated: at least 12 characters with uppercase, lowercase, numbers, and special characters, and not listed in https://haveibeenpwned.com/Passwords.

Also allows to restrict access by IP address. In 'application.properties' file add the property 'api.allowIps' with the list of IP's. By default, it always allows just local IP – 127.0.0.1.

Firewall

MedDream SendToPACS functionalities installation allows to installation of already existing settings file (with configured PACS or Worklist devices). During installation, it must have access to a firewall to open the required ports for configured devices. The same thing goes to when the user changes settings via the main application – will try to review ports on the firewall.

If the background application is running not as a service (will start after opening the main application) and the current user does not have access to the firewall – the user must add ports to the firewall manually.

Licensing address https://lic.meddream.com/ might need to be whitelisted in a corporate firewall, to ensure the ability to register software.

When using API from a remote computer, must open the application port manually in the firewall.

Other programs

Must ensure, that other software (antivirus, firewall, or other network monitoring programs) does not interfere:

- access to user profile directory ‘<User directory>\SendToPACS or C:\ProgramData\SendToPACS’.
- allow to run command prompt (updating firewall, running external applications or commands).

Access files from the remote directory

The application can run background service as a service (with administrator rights) and as an application, which will start after opening the main application. Either way, there is a possibility, that background service will not see shared files via network drive, because of the user. The main application or background service may be running on different users and do not have access to files. User must ensure, that running application and background service have rights to access files.

Also, there is a built-in alternative way to access files – the main application will copy all files from the selected directory. The user must not select a large repository of files, that can bring “low space” or “no space” to the user's computer.

Figures

Figure 1. MedDream SendToPACS Setup Wizard: step 1 6
Figure 2. MedDream SendToPACS Setup Wizard: step 2 6
Figure 3. MedDream SendToPACS Setup Wizard: step 3 7
Figure 4. MedDream SendToPACS Setup Wizard: step 4 7
Figure 5. MedDream SendToPACS Setup Wizard: step 6 8
Figure 6. Error when the service cannot be established 8
Figure 7. Error when the connection to SendToPACS service cannot be established 9
Figure 8. Launching SendToPACS program from Context menu 9
Figure 9. Demo version notification 9
Figure 10. License registration window 10
Figure 11. Product information in “ABOUT” window 11
Figure 12. Main settings 13
Figure 13. NON-DICOM settings 14
Figure 14. Changing the default SOP class in the main settings 14
Figure 15. Adding a new SOP class in the main settings 15
Figure 16. Changing video format in main settings 16
Figure 17. Extra field in Study list – additional info field for adding comments 16
Figure 18. Additional info tag in settings 17
Figure 19. Additional info tag in settings 17
Figure 20. NON-DICOM settings 18
Figure 21. The configuration window for tag update 18
Figure 22. Device’s settings 19
Figure 23. Window for adding or editing PACS device 20
Figure 24. Worklist settings 21
Figure 25. Window for adding or editing Worklist device 21
Figure 26. Monitored directories settings 23
Figure 27. The configuration window for the monitored directory 23
Figure 28. Browser window for selecting monitored directories 24
Figure 29. The configuration window for tag update patterns 24
Figure 30. Image converting and sending test 26
Figure 31. “PATIENT/WORKLIST SEARCH” in Worklist test 27

Index

A

About window 9
Access files from the remote directory 27
Additional info tag 15
Additional info tag value 16
AE title 12
API restriction 26
Automatically parse DICOM file 18
Automatically parse NON-DICOM file name 16

C

Clean temp on exit 12
Clean sent files from list 13
Configuration 11

D

Demo message 9
Device Settings 18
DICOM Settings 16

F

Figures 28
Firewall 26

I

Installation 6
Installation verification 24
Institution name 12

L

License registration 9
Location and launching 8

M

Main Settings 12
MedDream SendToPACS system requirements 4
Modality 13
Monitoring Settings 21

N

NON-DICOM Settings 13

O

Other programs 27

P

Pre-installation information 5
Product information 9

R

Replace full worklist info in DICOM file info 18

S

Security considerations 26
Software Download 4
SOP Class UID 13
Station name 12

T

Testing image converting and sending 24
Testing patient search in the Worklist 25

U

Update tags 17
Use just Worklist for NON-DICOM 16

V

Video format 15

W

Worklist Settings 20

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