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MedDream (version 8.3.1)

INSTALL MANUAL

of MedDream video viewing and converting functionalities

version 4.6.6

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Explanation of symbols used

The symbols used in this daily workflow refer to important safety information which warn against possible health risks or fatal injuries and contain useful notes. Whenever you see these symbols, read the accompanying information carefully and observe all safety notes and information in the user manual, daily workflow and on the device labels.

WARNING! This indicates a hazardous situation which may cause patient death, potential injury or serious health impairment, requiring professional medical intervention.

CAUTION! This indicates a hazardous situation which may cause minor potential injury, not requiring professional medical intervention, or simply cause inconvenience to medical professionals using software without affecting patient health status or health changes.

NOTE! Information, hints and advice for a better understanding of the instructions to be observed in the operation of the instrument.

Warnings regarding residual risks

No	Hazard	Warning/ Caution
1	Incorrect configuration	**CAUTION!** VS software will try to scale medical device output signal to match settings. It is recommended to select close enough or the same resolution for medical device output signal to ensure best quality. Use WIDTH and HEIGHT entry controls to adjust the selected size or enter the custom size. **CAUTION!** VS software will try to scale medical device output signal to match settings. It is recommended to select close enough or the same resolution for medical device output signal to ensure best quality.

Introduction

⚠ **NOTE!** Further in text MedDream video viewing and converting functionalities will be referred to MedDream **VideoStation** or short name **VS**.

Intuitive user interface, simple, but very powerful software controllable by touchscreen Medical Panel PC. Storing locally more than 125 hours of HD videos and up to 100.000 of still images.

The core functions:

- High-quality video recording into DICOM by using MPEG2 and MPEG-4 AVC/H.264 compression;
- Record/take multiple low and high (full HD) quality video/snapshots during the surgery or other procedures;
- Live stream video during the procedure;
- Record, stream, play video and take snapshots at the same time;
- Record video/take images from multiple connected devices (special video card needed);
- Flexible patient data assignment: selecting already existing patient, manually entering the patient details or selecting from hospital DICOM worklist server;
- Possibility to start a new study recording, while other video/snapshots is in progress for saving to DICOM or sending to DICOM archive;
- Review medical images/video during the surgery or other procedures;
- Trim the recorded video;
- Recorded studies can be stored locally, sent to the hospital DICOM archive (PACS) or exported to other storage devices;
- View saved images/videos with integrated DICOM Viewer.

Customization possibilities:

- Custom video settings.
- Multi languages support: English, Lithuanian, other languages by request.
- Additional foot pedal support.

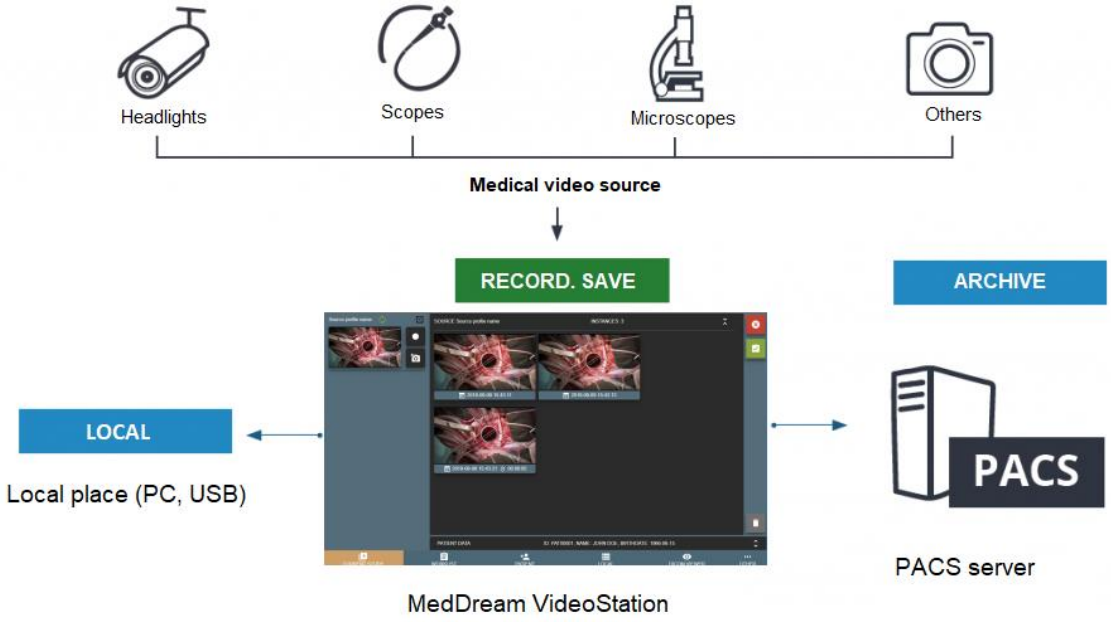


Figure 1. Connection diagram

Minimal Requirements

Minimal hardware and software requirements:

Parameter	Requirements
CPU	Intel® Core™ i5 or i7 When using FHD streaming, recording and playing at the same time: 4 threads, 4 GHz or 8 threads, 1.8 GHZ.
RAM	8+ GB
Storage space	Storage disk 500 GB (Storage disk speed directly affects application performance) depends on usage workflow, can be >=256 GB, ~7 days requires 56 GB
Network Bandwidth	100+ Mbit/s
Operating system	Windows 10 (64 bit only), Windows 11 (64 bit only)
Screen resolution	1920x1080 pixels (lower resolution not supported)

NOTE! We recommend upgrade PC or reduce video quality, if it does no match minimal requirements for recording, playing and streaming at the same time.

If you faced with such a problem, please contact Softneta UAB Customer support – e-mail support@softneta.com and we will help you resolve it.

General consideration

VS software based on JAVA, C/C++, ELECTRON (CSS/HTML/JavaScript) built applications, JAVA WEB server and MySql database. So, all data is stored into MySql database, program configurations are saved into files and studies are stored as image/video/DICOM in local PACS system.

Installation

Physical installation

VS is working with video devices or capture cards installed on the same PC and can record, make snapshots and stream one or more signals at the same time.

VS solution mostly used in operating room but also there are possible to use at doctor's room where need record action with patient (for example psychiatrist session). Therefore, physical installation depending on who will be recording and from what kind of equipment you need to take a video signal. We recommend to consult with us before buying and we will present two main scenarios bellow:

1. Video recording and snapshots without YUAN capture card.

To record and make snapshots need device who supports Microsoft DirectShow API. Most of devices, that can be installed on Windows OS, supports DirectShow API.

2. Video recording, snapshots and streaming with YUAN capture card.

To record, make snapshots and stream video, requires YUAN USB/PCIe capture card with **software compression**. Currently tested capture cards: SA7160 PCI, QP0203 PCI, FH8735 PCI, CY3014 USB.

VS supports YUAN capture card inputs: COMPOSITE, SVIDEO, HDMI, DVI_A, DVI_D, COMPONENTS, SDI.

NOTE! Please contact us for more details about required capture card for your business workflow.

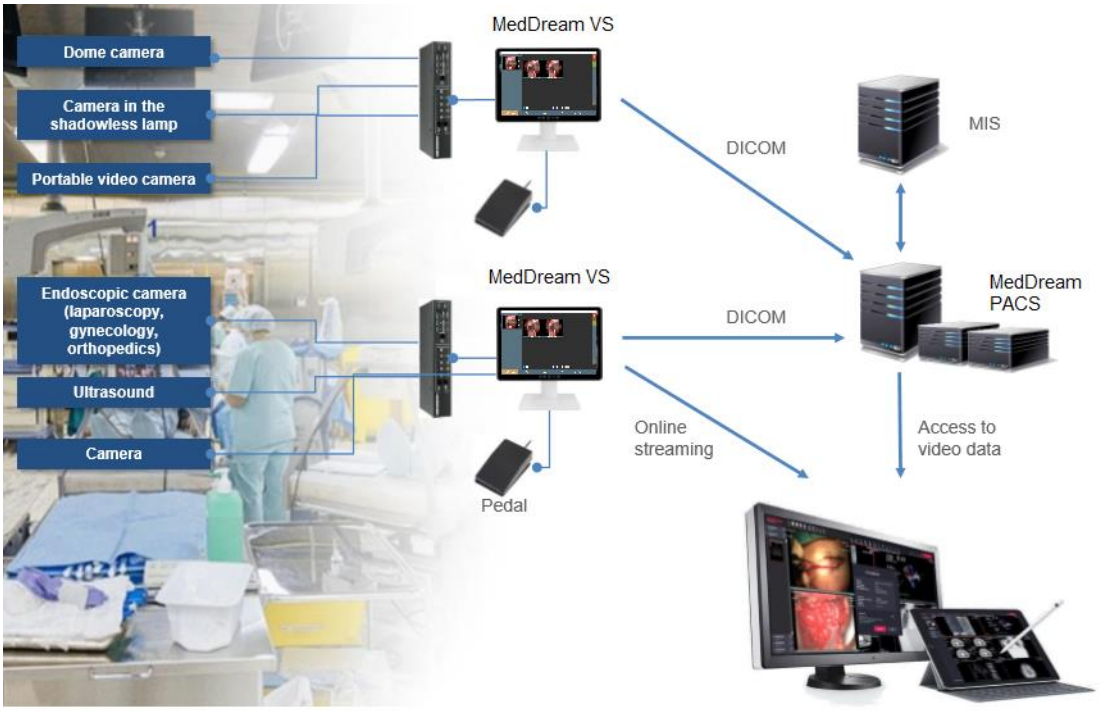


Figure 2. Physical installation scheme

Software installation / updates

Install software

VS software setup will install workstation files.

NOTE! All physically installation must be completed before software installation.

Intel media SDK restriction. Also, there more information about Intel Media SDK installation here: C:\MedDreamStation\software\README.md

To install software for the first time, follow steps bellow.

NOTE! VS use: 80, 3310, 8081, 4568 ports for main applications to work.
Other ports can be configured via VS application settings.

NOTE! If you use capture board - install drivers before VS setup.

---

1. Download VS setup file from Softneta webpage.
2. Run executable file MedDreamVideoStationSetup-x.x.x.exe to start installation.

Figure 3. Setup file

3. VS setup will display license agreement. Select “I accept the agreement” and click “Next”.

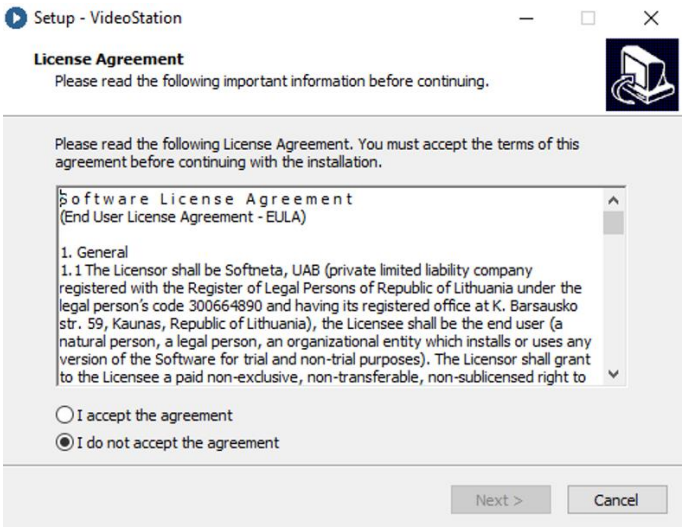


Figure 4. License Agreement page

4. Select the components you want to install: clear the components you do not want to install. Select Language which you want to install. And click next when you are ready to continue.

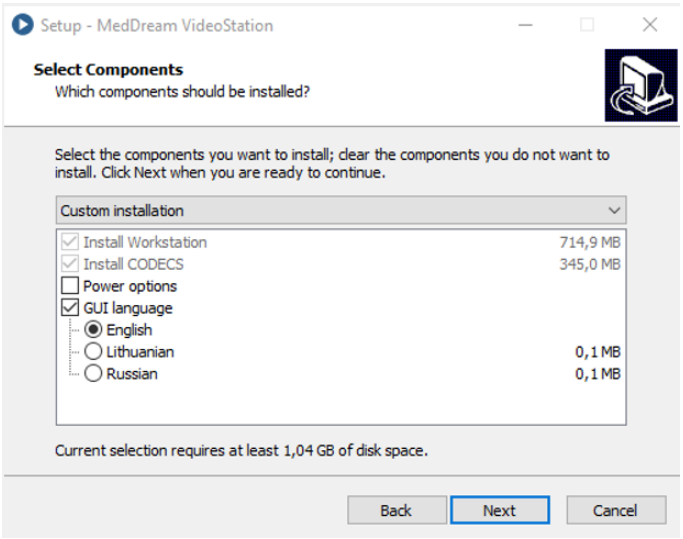


Figure 5. Select components you want to install

5. VS setup will generate passwords, but you can change and set your own known passwords. All data about passwords will be placed in C:\MedDreamStation\login.txt file.

   After change, click "*Next*".

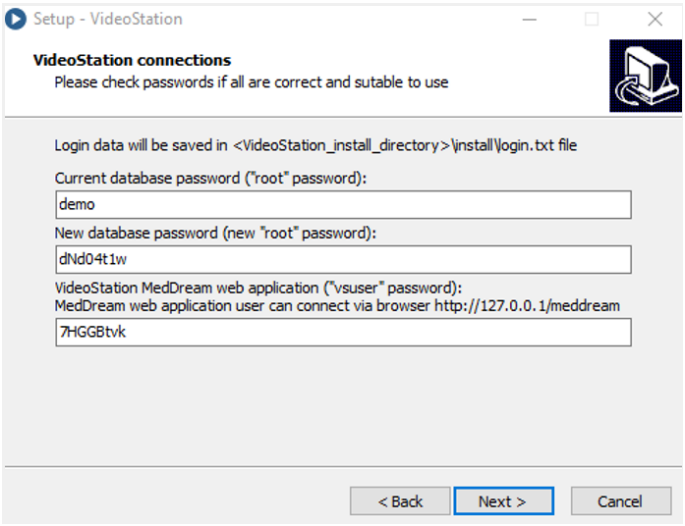


Figure 6. VS connections

6. VS setup display information about installing software. To start installation, click "*Install*".

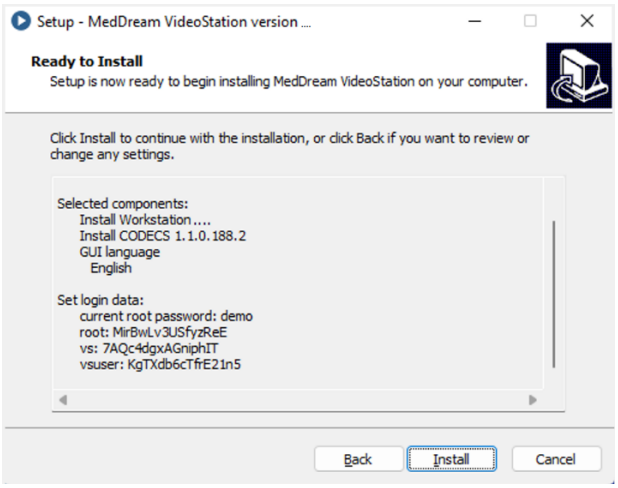


Figure 7. Ready to install page

7. Wait while setup installation complete (copy files, install and start application services).

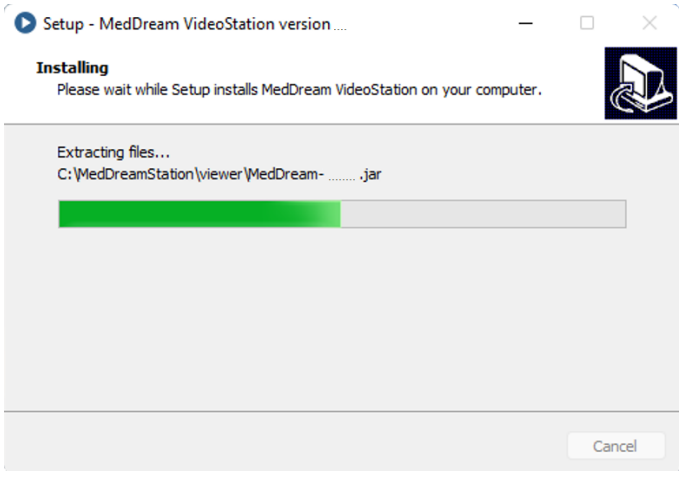


Figure 8. Progress page

8. Complete VS installation:

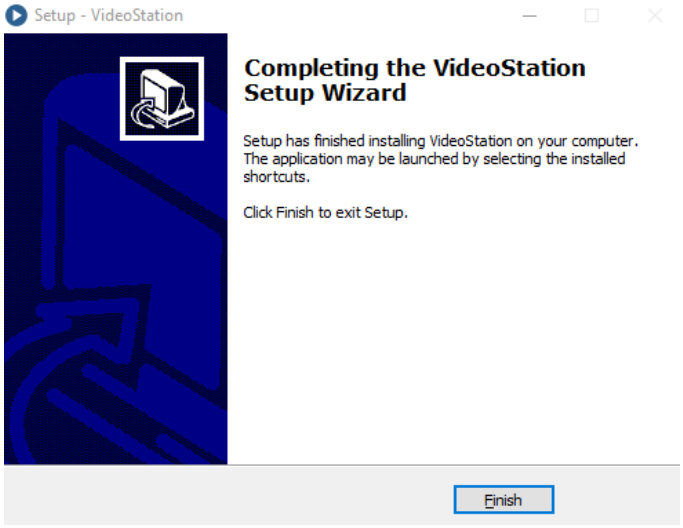


Figure 9. Finished VS installation

Installation will create shortcut to main application on the Desktop and Windows startup.

Update software

To update software, follow steps bellow.

1. Follow 1-3 steps from "*To install software for the first time* section".
2. Installation setup ask you select which components should be installed. We recommend leave all components checked. Click „Next".

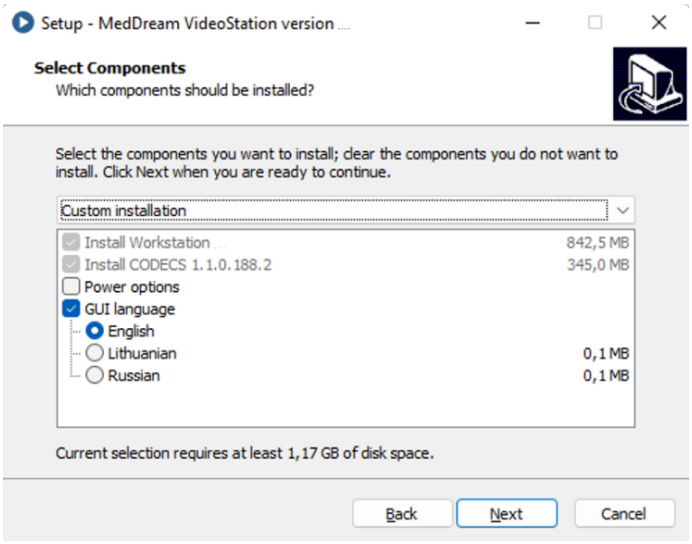


Figure 10. Select components

3. VS setup detect current passwords from files and test connection, but you can change and set your own known passwords. All data about passwords will be placed in C:\MedDreamStation\login.txt file.

   After change, click "*Next*".

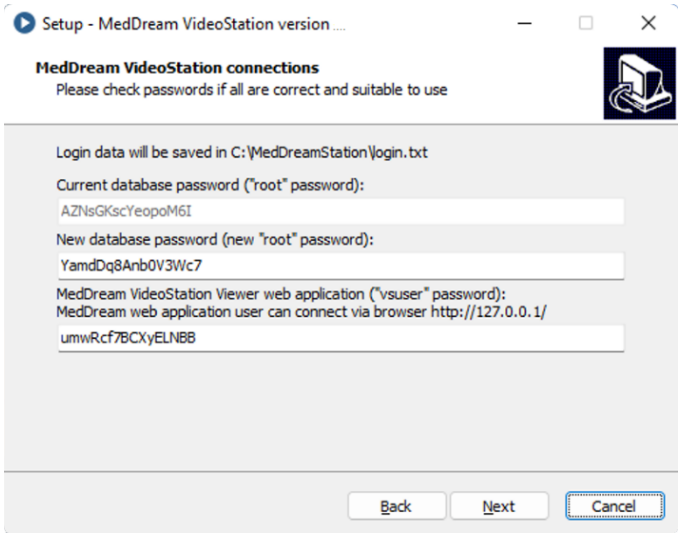


Figure 11. Connection test page

If for some reason setup can't detect correct passwords for current root user or services is not running – will display fallowing message and you must enter correct current root password (first field) or must start VS services.

If you really know, that the password is correct and can't run workstation services – press "Yes" button to continue installation.

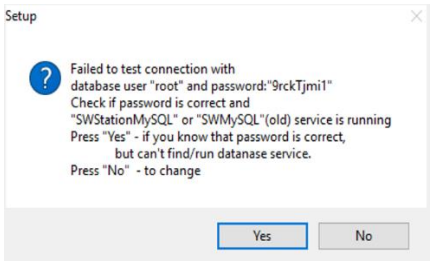


Figure 12. Bad root password

4. VS setup display information about installing software. To start installation, click "*Install*".

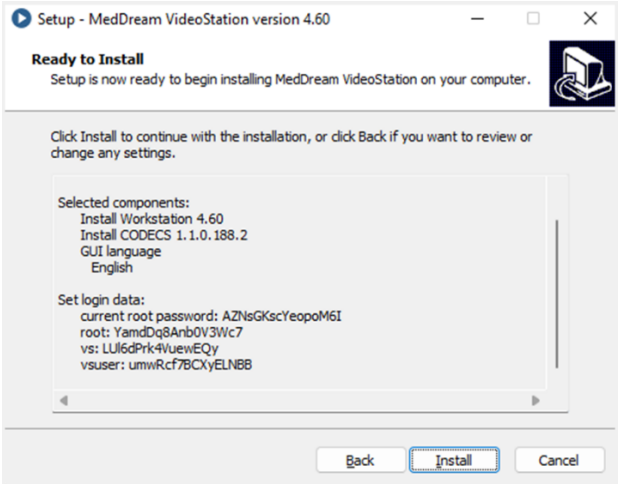


Figure 13. Ready to install page

5. Wait while setup installation complete workstation, first older version will be uninstalled and new installed.

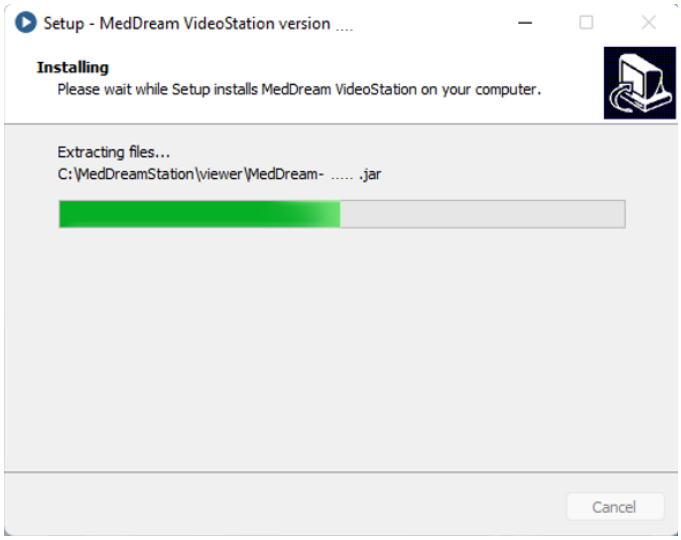


Figure 14. Progress page

6. Complete VS installation:

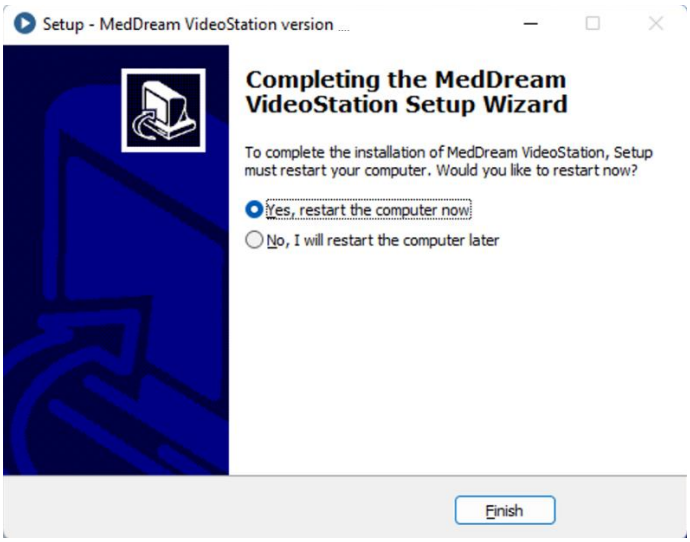


Figure 15. VS success installed

Software uninstalls

1. To uninstall software, go to Control or Settings and select Uninstall.

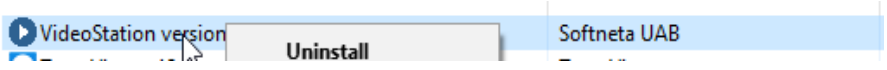


Figure 16. Programs and Features VS file for uninstalling.

Or go to installed VideoStation directory and select “unins00x.exe”.

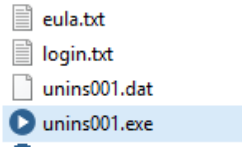


Figure 17. VS file for uninstalling

2. Windows ask permission to uninstall VS software. Select "*Yes*".

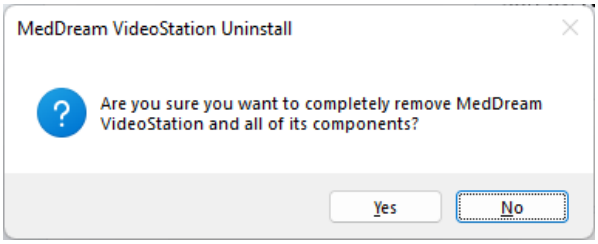


Figure 18. Uninstalling permission question

3. The Uninstall process begins. This will uninstall VS software.
4. Windows let you know when uninstall process complete. After uninstall remains these files and information: license, DICOM/image/video and settings files. They should be deleted manually.

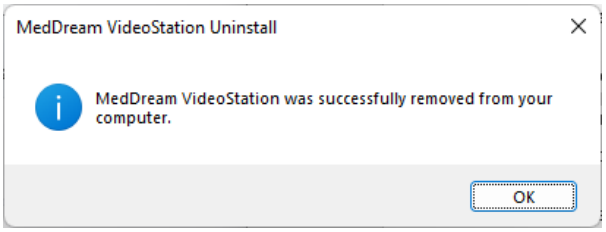


Figure 19. Uninstall process complete

VideoStation Setup

VS settings located in OTHER > SETTINGS of main menu.

⚠ **NOTE!** In order to ensure successful VS work, the settings must be modified only by the system administrator.

Figure 20. VS settings

Settings

Contains the following settings: GENERAL, NETWORK, RECORDING and STORAGE.

General settings

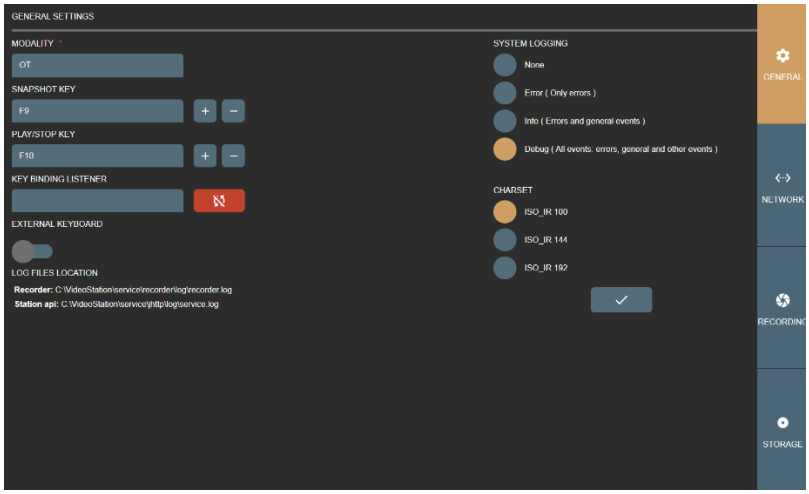


Figure 21. VS general settings

MODALITY – set DICOM modality attribute for studies without modality worklist. By default, after installation, recorded files modality will be set to OT. Can be changed according study type and we recommend choosing one of these modalities: http://www.dicomlibrary.com/dicom/modality/.

SNAPSHOT KEY – pedal signal keys combinations to make image.

PLAY/STOP KEY – pedal signal keys combinations to start or stop video recording.

KEY BINDING LISTENER – function for retrieving the pedal signal keys.

Default, SNAPSHOT KEY and PLAY/STOP KEY are set, but it is recommended to review and update key combinations for every pedal. Can add multiple key combinations (all pedals) for snapshot or video recording as long as they do not conflict with pressing habits.

⚠ **NOTE!** Some pedals producing different signal key combination on longer press. It is recommended to consult with active personal about pedal pressing habits (how long and how they press on snapshot or video recording buttons).

⚠ **NOTE!** When connecting pedal and keyboard, review SNAPSHOT or PLAY/STOP KEY settings and try to avoid pressing configured keys.

How to change or update key combinations:

- Press the button, and it will change to indicating, that started listening key press.
- Press the pedal button and will see KEY BINDING LISTENER will display key combination.
- Add key combination to SNAPSHOT or PLAY/STOP KEY by pressing button. To remove previous key combination - press .

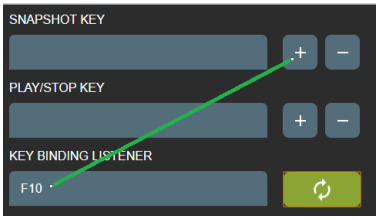


Figure 22. Shortcuts for recording and image making

- User can add several possible keyboard combinations.

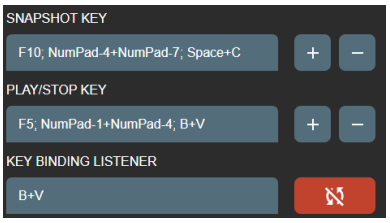


Figure 23. Shortcuts for recording and image making

- After complete press button to turn off key listener – will change to .

EXTERNAL KEYBOARD - use physical keyboard connected to PC or use windows keyboard on screen. Default is to use keyboard on screen due touch screen monitor, but sometimes monitor is hanged very high and cannot be controlled by hand. For this requires to connect mouse and keyboard.

SYSTEM LOGGING – set logging level to None, Error, Info or Debug of all actions. Recommended to turn on logs to Error level to identify system bugs or hazard situations. Log file locations can be found under LOG FILE LOCATION option and can be viewed with text editor.

CHARSET – set DICOM character set for studies to be encoded. For now, there is 3 common character sets: ISO_IR 100 (Latin1), ISO_IR 144 (Cyrillic) or ISO_IR 192 (UTF-8). To support most of the characters – use ISO_IR 192. But it is recommended to consult to your DICOM archive (PACS) administrator.

⚠ **NOTE!** Try to set the same character set for the patient studies, try open one the same study and look for DICOM tag “Specific Character Set “(0008, 0005). Some PACS, during study import, will update patient name from DICOM file with different encoding – may lead to display incorrect patient name in the DICOM viewer (this will not change/damage any DIOCM files – just database record).

Once all settings are set, double check and press save button

Network settings

Network settings let you manage LOCAL VS receiver, REMOTE hospital DICOM archive (PACS) and DICOM modality WORKLIST server connection settings.

⚠ Remote hospital DICOM archive and DICOM modality worklist server settings can be the same or not – depends on hospital infrastructure. Recommended to consult to your DICOM archive or worklist server administrator.

LOCAL – VS DICOM file receiver. This allows to send DICOM files (studies) to VS.

- AET TITLE – max 16 Latin1 characters. Requires to ask your administrator for this entity title to identify VS PC.

- HOST OR IP ADDRESS – VS PC host or IP address. It is recommended to set IP address for faster network lookup. For receiver it is recommended to leave 127.0.0.1 local IP address.
- PORT – max 65535 number. DICOM protocol common use is 104 or 11112 ports that should not be reserved by OS process. Recommended to consult administrator. For receiver it is recommended to leave 104 port as it is.
- DICOM RECEIVER SERVICE STATUS – will show receiver status (start/stop date and time). Also, you can turn off receiver and refresh the status.

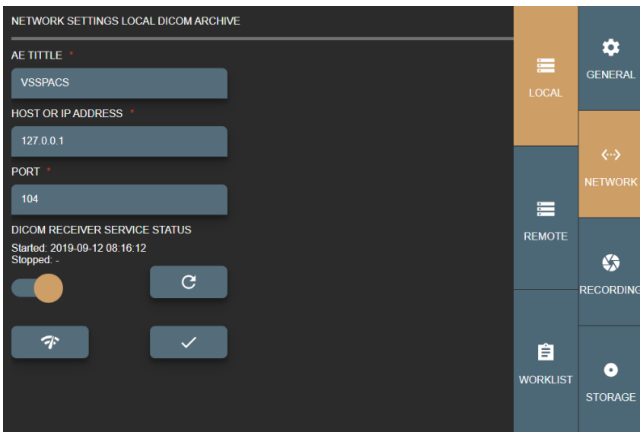


Figure 24. Local VS settings

Receiver can be checked by pressing button - will send DICOM C-ECHO to verify basic connectivity by DICOM protocol.

Once all settings are set, double check and press save button

REMOTE - hospital remote DICOM archive (PACS). This allows to send saved studies to hospital DICOM archive. Typically requires to ask your DICOM archive administrator to register VS DICOM file receiver (LOCAL window AET TITLE field) on DICOM archive as device (to allow send DICOM studies from VS to DICOM archive).

- AET TITLE – max 16 Latin1 characters. Requires to ask your administrator for this entity title to identify remote DICOM archive.
- HOST OR IP ADDRESS – DICOM archive host or IP address. It is recommended to set IP address for faster network lookup.
- PORT – max 65535 number. DICOM protocol common use is 104 or 11112 ports. Recommended to consult administrator.

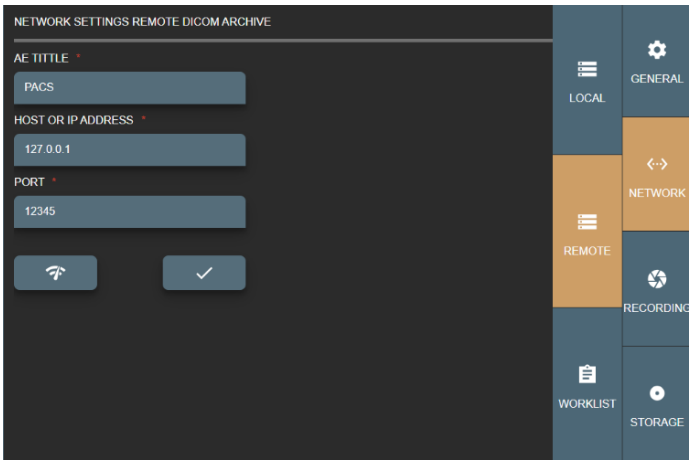


Figure 25. Remote DICOM archive settings

To check remote DICOM archive - requires LOCAL VS AET TITLE to be registered on remote DICOM archive. Press button to send DICOM C-ECHO and verify basic connectivity by DICOM protocol.

NOTE! Sending DICOM studies from VS to DICOM archive typically requires LOCAL VS AE TITLE to be registered on remote DICOM archive.

Once all settings are set, double check and press save button

WORKLIST – setup DICOM modality worklist server connection. This enables to search scheduled DICOM modality worklist (scheduled patient procedures).

- AET TITLE – max 16 Latin1 characters. Requires to ask your administrator for this entity title to identify DICOM modality worklist server.
- HOST OR IP ADDRESS – worklist server host or IP address. It is recommended to set IP address for faster network lookup.
- PORT – max 65535 number. DICOM protocol common use is 104 or 11112 ports. Recommended to consult administrator.
- CHARSET – setup encoding for worklist results. Result comes in DICOM standard and most results do not define encoding – need to be set and tested manually.
- WORKLIST WILDCARD – add wild card symbol “*” on search parameters. Some worklist servers do not support this for example on patient ID or accession number and requires to search exact patient ID or accession number. Recommended to consult with administrator (typically this information can be found in worklist server or DICOM archive conformance statement document).

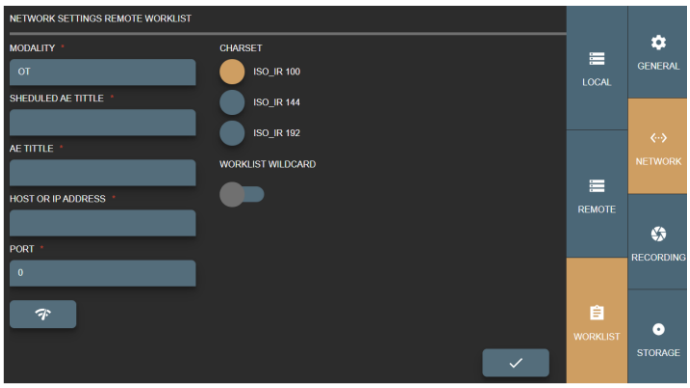


Figure 26. Worklist settings

To check worklist server - requires LOCAL VS AET TITLE to be registered on worklist server. Press button to send DICOM C-ECHO and verify basic connectivity by DICOM protocol.

NOTE! Receiving modalities worklist typically requires LOCAL VS AE TITLE to be registered on hospital's Worklist server.

Once all settings are set, double check and press save button

Recording settings

Recording settings let you manage video input sources. Allows to define multiple input source configurations – profiles.

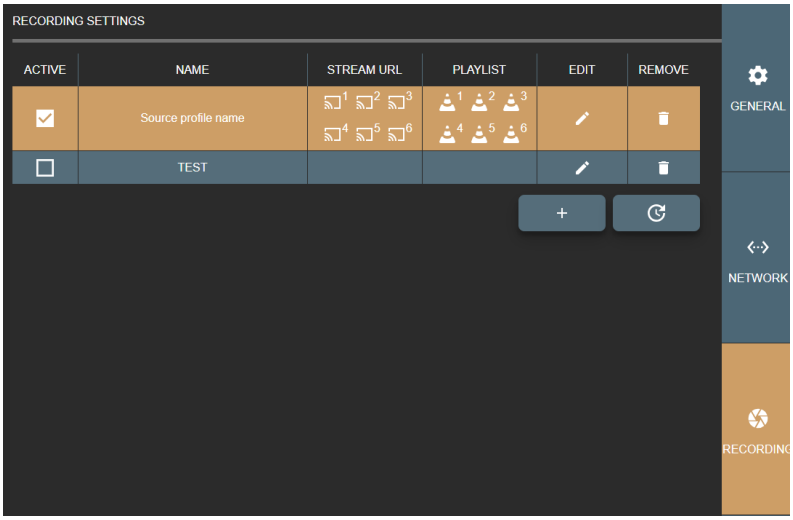


Figure 27. Recording settings

Activate source profile - display video input source streaming window in application include on startup.

Update or change source profile settings.

Delete source profile. If source is active – requires to stop source.

Reload all active sources.

Add new source profile.

Can copy full stream address.

Download VLC media player format playlist file, that contains the same stream address.

NOTE! Do not enable the same video input source from multiple profiles. For e.g. added camera to profile A and the same camera to profile B and enabled both of them, to be active in VS application. In this situation, just profile A will start and profile B will fail, because input signal will be taken.

There are possibility to play A and B profiles, but card must allow this (play input signal via windows direct show and other via capture card interface – if this exist). This possibility does not make any seance to have 2 the same signals recording and it can cause unstable input stream recording process.

Clicking the update or add new controls in the profiles list, opens the RECORDING PROFILE SETTINGS window to configure the recording profile.

Also, there is direct access to recording profile settings from near stream window - settings button:

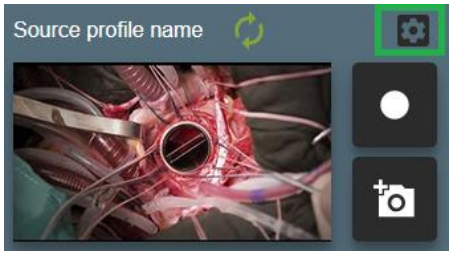


Figure 28. Fast entering into profile settings

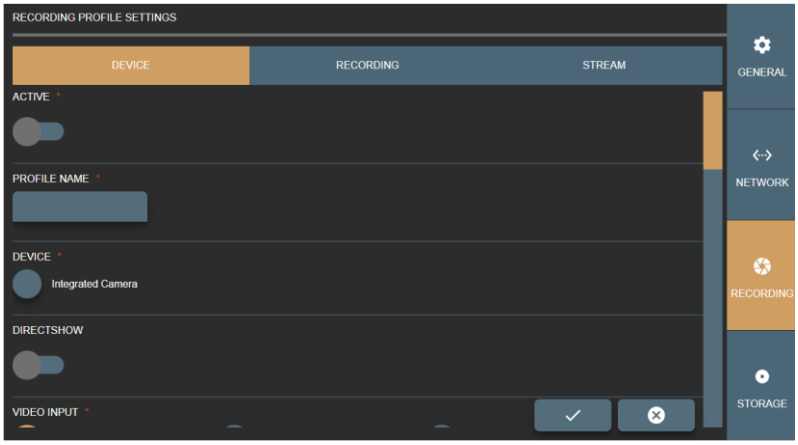


Figure 29. Device window of the Recording profile settings

Recording profile settings are grouped into three groups:

- DEVICE - contains input source options. Affects preview window, signal type.
- RECORDING - contains recording process setup and configuration options. For recording. Recommended select the same resolution and frame rate as in DEVICE options.
- STREAM - contains streaming set available when DIRECTSHOW disabled.

⚠ GUI validates and checks available recording device option **combination** by DICOM TRANSFER SYNTAX option. Requires to ensure, that PACS supports transfer syntax(ask PACS administrator or see PACS DICOM conformance statement document) and recorder DICOM files will be accepted by PACS
Some options can be updated in C:\MedDreamStation\recorder\configurationSettings.json, but during re-installation – will be overridden.

Device settings

In DEVICE window of the RECORDING PROFILE SETTINGS, you can view and modify options:

- ACTIVE – enable or disable recording device profile.
- PROFILE NAME – enter or edit name for the profile. Each input source profile is identified by profile name. If user enters the already existing profile name, the system will overwrite the existing input source profile data. In order to create a new profile, enter different unique profile name.
- DEVICE – select found video devices, like camera or video capture board.

⚠ **NOTE!** If cannot see any devices or some is missing – please check connection cables to the device. If problem persist - check Windows OS device list, if all drivers installed properly.

- DIRECTSHOW - enables getting input device signal through Windows OS DirectShow API. Disabled by default. VS application is using YUAN video capture board SDK API and can access capture board signal with lowest latency compared to DirectShow.

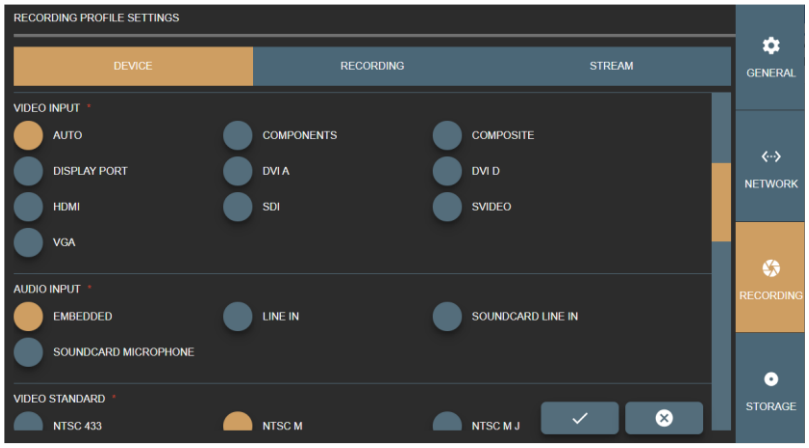


Figure 30. Specifying video and audio inputs in the Recording profile Device settings

- VIDEO INPUT – specify the type of video input. The default selection is AUTO, and system tries to find capture board signal. But it's recommended to consult with VS PC administrator about capture board input type and select the correct one.
- AUDIO INPUT – specify, how to get audio signal. This option depends on device input or device itself. For example, default selection EMBEDDED should work with simple USB camera with microphone array, or device with HDMI video input (audio should come by the same cable).

⚠ **NOTE!** With other audio capture boards or other audio input device signals, it is required to see and setup WINDOWS OS audio devices or redirect audio signal to capture board. This situation is a little bit tricky and requires testing to configure input signal environment properly.

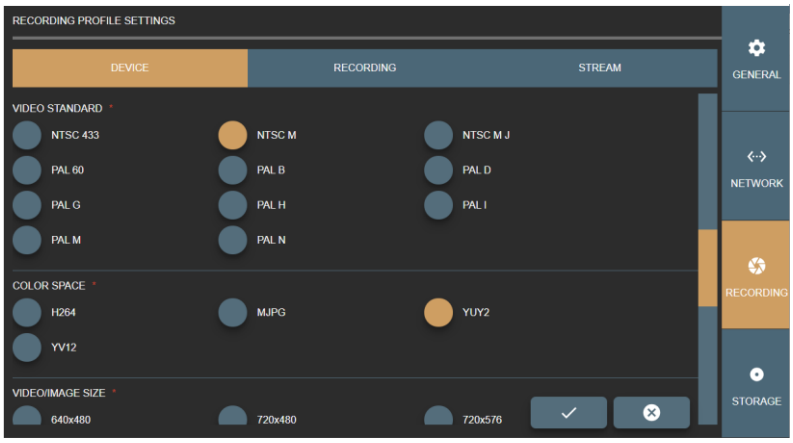


Figure 31. Specifying video standard and color space in the Recording profile Device settings

- VIDEO STANDARD – specify standard for the analog video signal, if creating profile for analog input device.

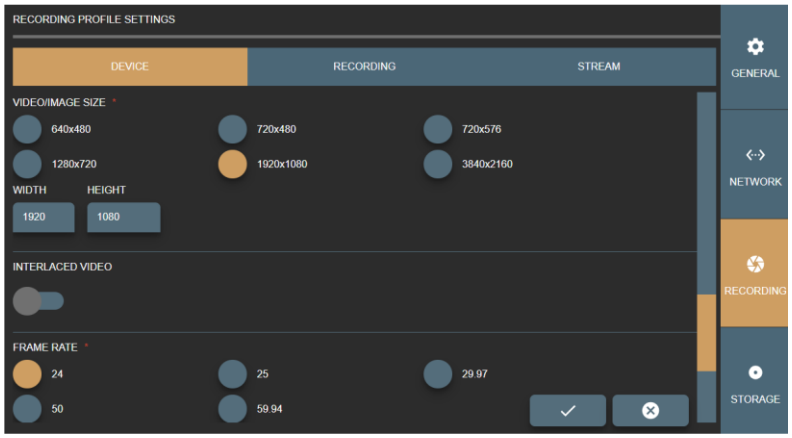


Figure 32. Specifying video and image attributes in the Recording profile Device settings

- Specify other attributes of the video output of the profile:

  - COLOR SPACE - select color space.
  - VIDEO/IMAGE SIZE – select or fill video or image resolution.

CAUTION! VS software will try to scale medical device output signal to match settings. It is recommended to select close enough or the same resolution for medical device output signal to ensure best quality. Use WIDTH and HEIGHT entry controls to adjust the selected size or enter the custom size.

  - INTERLACED VIDEO – set if video signal is interlaced.
  - FRAME RATE – set wanted frame rate.

Figure 33. Display calibration options in the Recording profile Device settings

- DISPLAY CALIBRATION – enhance video for better view.

Recording configuration, settings

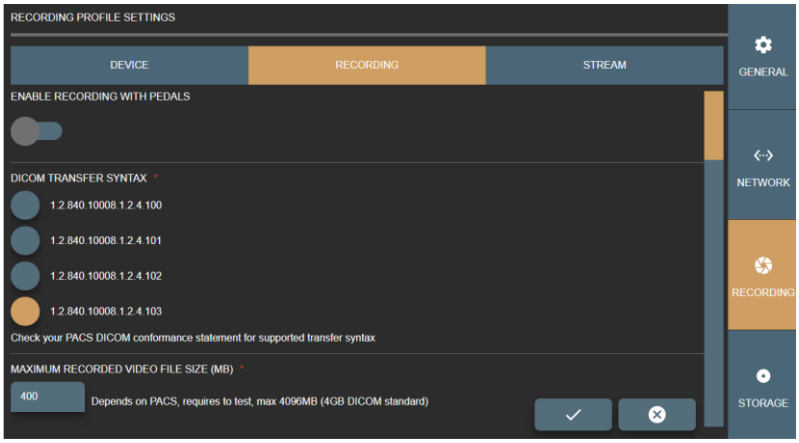


Figure 34. Recording and video output options in the Recording profile Recording settings

In RECORDING window of the RECORDING PROFILE SETTINGS, you can view and modify the following options:

- ENABLE RECORDING KEYS – enable to control profile source recording with pedals (see pedal setup description in General settings on page 17).
- DICOM TRANSFER SYNTAX – select the transfer syntax for DICOM file:
  - 1.2.840.10008.1.2.4.100 and 1.2.840.10008.1.2.4.100 - MPEG2 video with strict combination options for older medical devices.
  - 1.2.840.10008.1.2.4.102 and 1.2.840.10008.1.2.4.101 - MPEG2 video for older medical devices.
  - 1.2.840.10008.1.2.4.102 and 1.2.840.10008.1.2.4.102 - MPEG-4 video options for most of devices.
  - 1.2.840.10008.1.2.4.102 and 1.2.840.10008.1.2.4.103 - MPEG-4 video with strict combination options.

⚠ **NOTE!** It is important to select DICOM transfer syntax according hospital PACS. Some archives are very old and do not support some of transfer syntax. Recommend to consult with administrator (see DICOM archive conformance statement document).

- MAXIMUM RECORDED VIDEO FILE SIZE (MB) – enter the maximum allowed size for recorded video. The maximum value according to DICOM standard is 4096Mb, but it may depend on PACS (how big files can be accepted) and requires testing.
- VIDEO/IMAGE SIZE – select resolution.

⚠ **CAUTION!** VS software will try to scale medical device output signal to match settings. It is recommended to select close enough or the same resolution for medical device output signal to ensure best quality.

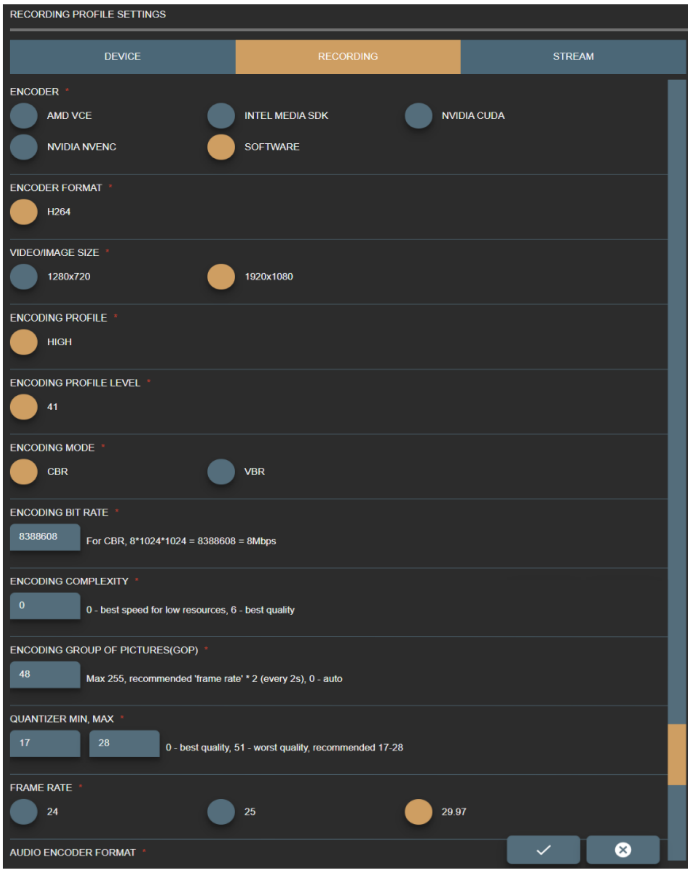


Figure 35. Video encoding options in the Recording profile Recording settings

- ASPECT RATIO X,Y – set aspect ratio by resolution or manually change values, that ensure square pixel aspect ratio.

- ALLOW DOWN SCALE – set restriction to re-scale image/video. Recommended leave as it is, but in some cases, it allows ensure original resolution as device signal resolution or expand to fit DICOM standard.
- ENCODER – define, what PC resources are used during video compression. The default option is SOFTWARE, and the CPU is used for video compression. If your system supports GPU video processing and is properly configured, select the other following option: ADM VCE, INTEL MEDIA SDK (requires install Intel media SDK), NVIDIA CUDA, NVIDIA ENVENC.
- Customize video compression by setting the parameters:
    - ENCODER FORMAT – set available encode format.
    - ENCODING PROFILE – set available encoding profile.
    - ENCODING PROFILE LEVEL – set available encoding profile level.
    - ENCODING MODE – set available encoding mode.
    - ENCODING QUALITY – enter the value from 0 for the worst quality to 10000 for the best quality encoding for VBR encoding mode. The default value is 8500.
    - ENCODING BIT RATE – enter bit rate value for CBR encoding mode. The higher bit rate means the higher quality. Default value is 8388608 (what equals to 8Mbps).
    - ENCODING COMPLEXITY – enter the values from 0 for the best speed to 6 for the best quality.
    - ENCODING GROUP OF FIGURES (GOP) – enter values from 0 up to 255. 0 is for auto selection. The recommended value is frame rate multiplied by 2.

- QUANTIZER – enter MIN and MAX values from 0 for the best quality to 51 for the worst quality. The default and recommended values are from MIN 17 to MAX 28.

Figure 36. Audio encoding options in the Recording profile Recording settings

- Customize audio encoding and compression by setting the parameters:
  - AUDIO ENCODER FORMAT – set available format.
  - AUDIO CHANNELS – set available channels.
  - AUDIO BITS – set available bits.
  - AUDIO FREQUENCY – set available frequency.
  - AUDIO BIT RATE – enter bit rate value. The higher bit rate means the higher quality.
  - AUDIO VOLUME – enter audio volume from 0 to 100 percent. The default value is 100 percent.

Stream settings

To view and edit the streaming settings for the profile, select the STREAM menu in RECORDING settings.

NOTE! If profile has DIRECTSHOW enabled in DEVICE settings, streaming is not possible and the STREAM settings menu is not available.

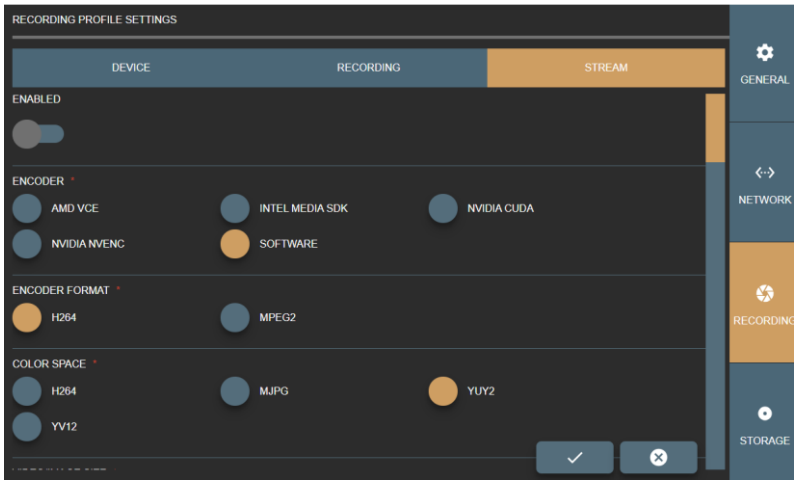


Figure 37. Video encoding options in the Recording profile Stream settings

In STREAM window of the RECORDING PROFILE SETTINGS, you can view and modify the following options:

- ENABLED – enable or disable input source signal to stream by RTSP protocol via network for the profile.
- ENCODER – define, what PC resources are used during stream compression. The default option is SOFTWARE, and the CPU is used for video compression. If your system supports GPU video processing and is properly configured, select the other option from following: ADM VCE, INTEL MEDIA SDK (requires install Intel media SDK), NVIDIA CUDA, NVIDIA ENVENC.
- ENCODER FORMAT – set available format for stream output.
- COLOR SPACE – set available color space for the stream output.

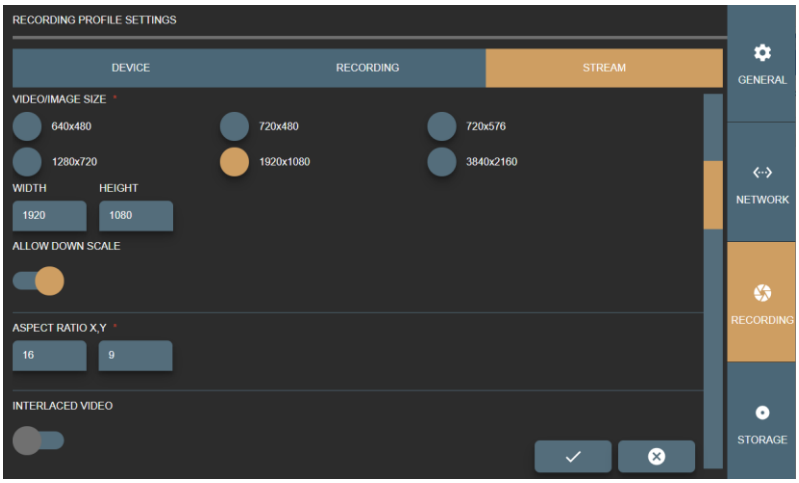


Figure 38. Stream output options in the Recording profile Stream settings

- VIDEO/IMAGE SIZE – set available video resolution.

⚠ **NOTE!** It is recommended to select close enough or the same resolution for medical device output signal to ensure best quality. Use WIDTH and HEIGHT entry controls to adjust the selected size or enter the custom size: the controls are automatically filled with values of the selected option.

- ALLOW DOWN SCALE – set restriction to re-scale image/video. Recommended leave as it is, but in some cases, it allows ensure original resolution as device signal resolution or expand to fit DICOM standard.
- ASPECT RATIO X,Y – set aspect ratio by resolution or manually change values.
- INTERLACED VIDEO – enables interlace. The default value is disabled.

Figure 39. Stream video compression options in the Recording profile Stream settings

- Customize stream video compression by setting the parameters:
  - ENCODING PROFILE – set available encoding profile.
  - ENCODING PROFILE LEVEL – set available encoding profile level.
  - ENCODING MODE – set available encoding mode.
  - ENCODING QUALITY – enter the value from 0 for the worst quality to 10000 for the best quality encoding for VBR encoding mode. The default value is 8500.
  - ENCODING BIT RATE – enter bit rate value for CBR encoding mode. The higher bit rate means the higher quality. Default value is 8388608 (what equals to 8Mbps).
  - ENCODING COMPLEXITY – enter the values from 0 for the best speed to 6 for the best quality.
  - ENCODING GROUP OF FIGURES (GOP) – enter values from 0 up to 255. 0 is for auto selection. The recommended value is frame rate multiplied by 2.
  - QUANTIZER – enter MIN and MAX values from 0 for the best quality to 51 for the worst quality. The default and recommended values are from MIN 17 to MAX 28.
  - FRAME RATE – set available frame rate.

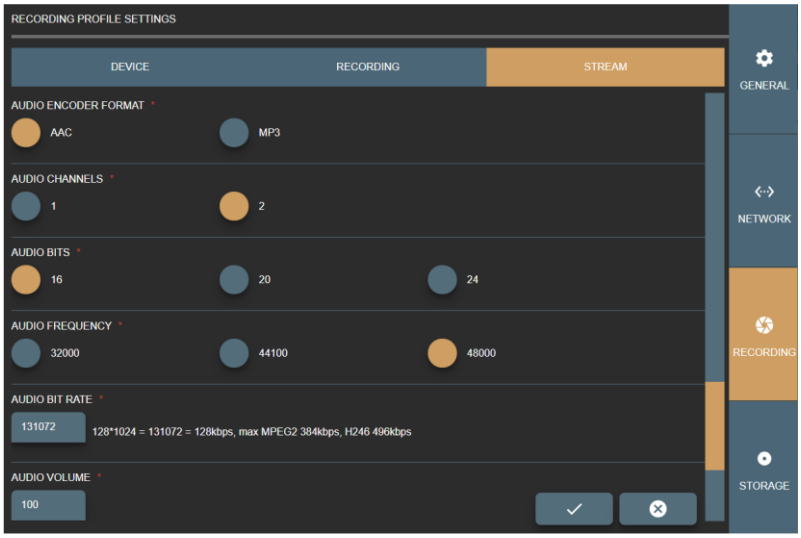


Figure 40. Stream audio options in the Recording profile Stream settings

- Customize stream audio encoding and compression by setting the parameters:
  - AUDIO ENCODER FORMAT – set available format.
  - AUDIO CHANNELS – set available channels.
  - AUDIO BITS – set available bits.
  - AUDIO FREQUENCY – set available audio frequency.
  - AUDIO BIT RATE – enter bit rate value. The higher bit rate means the higher quality. Default value is 131072.
  - AUDIO VOLUME – enter audio volume from 0 to 100 percent. The default value is 100 percent.

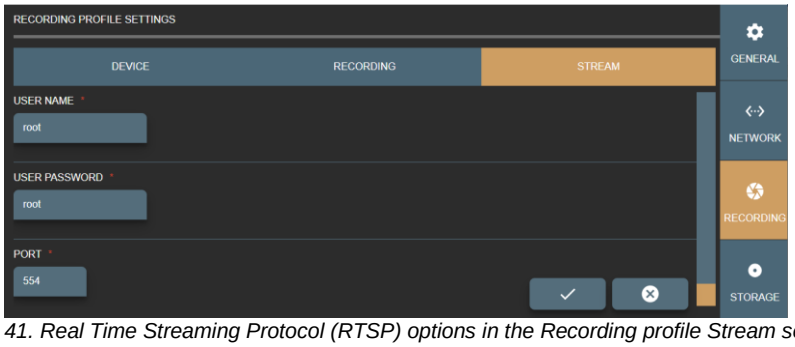


Figure 41. Real Time Streaming Protocol (RTSP) options in the Recording profile Stream settings

- STREAM USER NAME and PASSWORD – enter RTSP stream security option.
- STREAM PORT – enter free RTSP stream port number. For multiple profiles with stream enabled – set different port numbers. It is recommended to consult with network administrator for avoiding conflict with other streams.

Press save button to create or update profile.

Or press cancel button to discard the changes.

Storage - disc space and service management

Manage disc space and services. You can set auto-deletion or delete studies manually by study date.

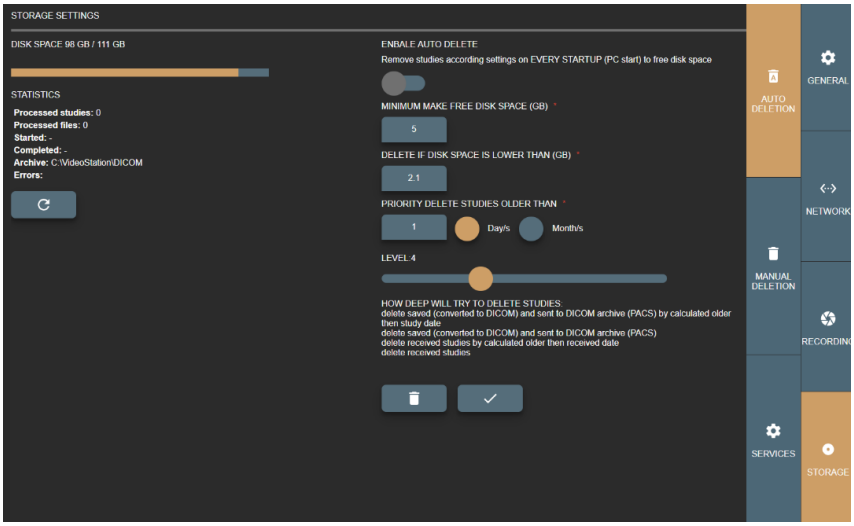


Figure 42. Storage settings

Auto delete

Auto delete main idea is to free space on VS application startup (on computer startup starting application).

⚠ **NOTE!** On Windows OS it is recommended to have at least more than 2GB free space to function properly.

ENABLE AUTO DELETE – turn on auto delete.

PRIORITY DELETE OLDER THAN – specify how old studies should be deleted from current date in days or months.

MINIMUM MAKE FREE DISK SPACE (GB) – specify how much space to make free.

DELETE IF DISK SPACE IF LOWER THAN (GB) – when to trigger auto delete function at VS application startup (on computer startup starting application).

⚠ **NOTE!** If parameter DELETE IF DISK SPACE IF LOWER THAN (GB) TO 5GB and MINIMUM MAKE FREE DISK SPACE (GB) value is 2.1GB – autodeletion expected result will be 7.1GB disk free space.

LEVEL – Auto delete process have number of steps to free space by finding studies and removing them to meet desired free space (MINIMUM MAKE FREE DISK SPACE (GB)):

1. oldest studies, older then calculated date from current date, saved and sent to DICOM archive,
2. oldest saved and sent to DICOM archive studies,
3. oldest received studies older then calculated date from current date,
4. oldest received studies,
5. oldest studies older then calculated date from current date, saved and not sent to DICOM archive,
6. oldest saved and not sent to DICOM archive,

7. oldest studies older then calculated date from current date and not saved,
8. oldest not saved studies,
9. oldest studies older then calculated date from current date,
10. the rest oldest studies.

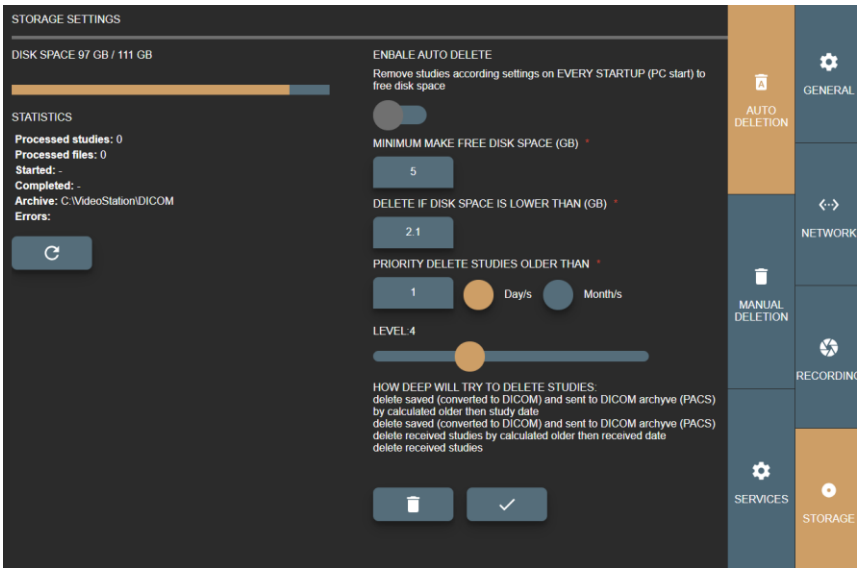


Figure 43. Auto deletion settings

Save changes by pressing button .

To start auto delete manually – press on button (requires to activate ENABLE AUTO DELETE).

Manual deleting

Manual deletion main idea to delete all studies that is created between date range. To delete the studies, apply the following steps:

− In DATE FROM field enter the start date, when studies were created.

− In DATE TO field enter the end date, when studies were created.

− When dates are entered, press delete button.

On the left side of the Manual Deleting page, you can see the information about disk space, and statistics of the manual deletion process. Statistics can be updated by pressing refresh button .

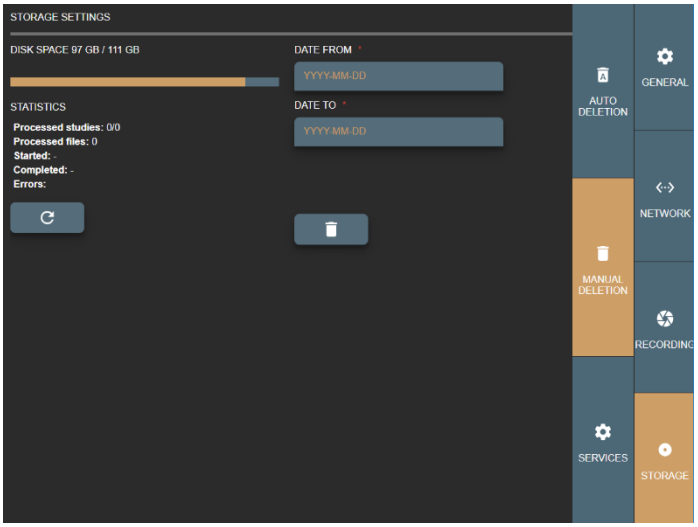


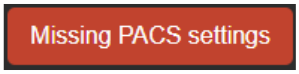
Figure 44. Manual deleting settings

Service

In Services page you can see the status of system services.

Figure 45. Services page in Storage settings

Service can be started/stopped by clicking on/off control . The service status is automatically updated, and the information message is displayed on the screen

. If the status cannot be changed, the error message is displayed on the screen 

. In such cases you should fix an error (for example, go to the network settings and enter the settings for DICOM archive), and then try to start the service.

Service status information can also be updated by pressing refresh button .

About VS and license

Displays about VS product and license information.

License can be registered by filling small form and pressing registration button .

- SERIALKEY – provided serial key from software provider.

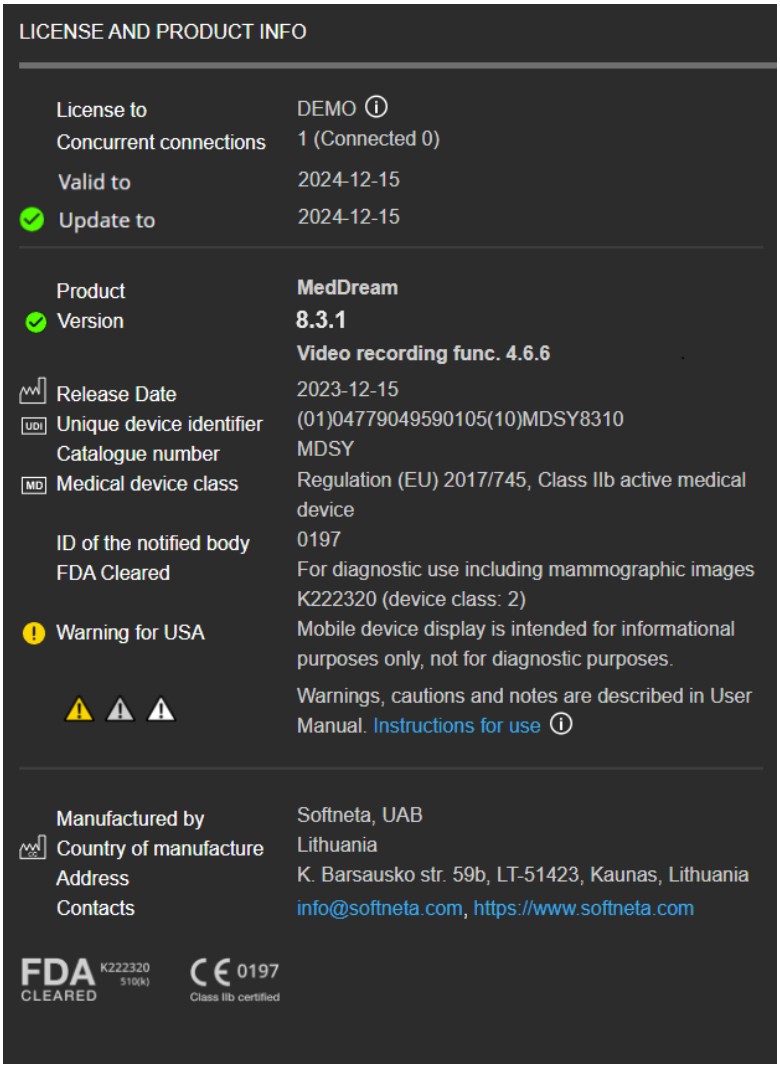


Figure 46. About windows, product registration

NOTE! Registration requires internet access to https://lic.softneta.com.

Image/Video access from hospital network

Using browser, login to MedDream DICOM Viewer on http://127.0.0.1/meddream, user and password are saved in C:\VideoStation\login.txt. Only one connection is allowed (depends on MedDream DICOM viewer license).

Functional test

When the physical and software installation is completely done, we recommend do some tests before start working. Making sure everything works smoothly.

Create new study

To create new study, follow steps from User manual, *Functionality description* paragraph.

Check connection with PACS

As soon as test study was captured, save test data. Captured video/snapshots will be converted to DICOM and sent to PACS via background jobs. If no error, VS is ready to be used.

To check connection with PACS, follow steps from User manual, *VideoStation settings* paragraph.

Technical specification

For more technical information we suggest read VS conformance statement.

Security considerations

MedDream VideoStation is stand-alone application and it is intended to communicate with background applications via HTTP or TCP/IP localhost. Background applications must run as administrator and have access to Windows API.

API restriction

MedDream VideoStation JAVA background application API restricted access just by IP address. In /jhttp/application.properties file add property “server.allowIps” with the list of IP’s. By default it always allows just local IP – 127.0.0.1.

Other restriction can be setup by defining properties:

- server.denyEndpoints - deny multiple end-points for all requests
- server.connect.strict=1 – forbid to connect multiple clients. If this option is absent - always allow connect (if already connected other clients - disconnect older client)

User can add more secure connection by defining properties:

- server.port =4444 – set specific port
- server.ssl.enabled=true - enable https
- server.ssl.key-store-type=PKCS12 – certificate type
- server.ssl.key-store=someCertificateFile.p12 – valid certificate file path
- server.ssl.key-store-password=someCertificateFilePassword – certificate password

WebSocket can be connected just with “clientId”, that will be received after connection to JAVA background application. This will ensure just one active client. WebSocket is also restricted by IP address.

Password

During MedDream VideoStation installation will offer to enter passwords for “root” user (have full access to database) and “vsuser” user (access to DICOM viewer web application). Passwords is randomized, but can be changed. Manually passwords should be generated at least 12 characters with uppercase, lowercase,numbers, special characters, and not listed in https://haveibeenpwned.com/Passwords

Every installation, database password (root user) will offer to change.

Database passwords is saved in “/database/users.ini” and it is used for reinstalling MedDream VideoStation – do not remove this file.

DICOM viewer login information is saved in “login.txt” file.

Password can be changed only during installation process. Manfully password change is not recommended, because it requires to update database and configuration files, to ensure working software and future updates.

Firewall

MedDream VideoStation background application will add/update firewall rules, to allow access application internet or open required ports (access PACS, Worklist server or DICOM web viewer 80 port).

Manually changing DICOM web viewer port – requires manually update firewall.

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

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

Other programs

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

- access to C:\MedDreamStation directory
- access background application via HTTP/HTTPS (default port 8081, 80), TCP/IP (default port 3310, 4568, 104)
- run command prompt (updating firewall, running external applications or commands)
- access Windows API (call keyboard or monitor client keyboard pressed keys – working with pedals).

By default, during installation, will add *.exe files and directories to windows defender exclusion list (increase PC performance). If using other antivirus or monitoring program – exclude from monitoring MedDream VideoStation applications and directories.

Access audio and video devices

Must ensure, that OS or other programs allows to access video and audio devices for MedDream VideoStation recorder application (recorder.exe).

Ensure, that audio and video devices drivers is up to date and no other programs is conflicting with them. Must ensure, that no other application is in use of the same device – must be free.

There is the case, that some modern cameras do not support standard Windows DirectShow API or requires device special/dedicated software to run the device (probably installed as a virtual devices). In this case, requires testing and see, if device can be accessed by MedDream VideoStation recorder.

Local archive

MedDream VideoStation do not offers to change file archive directory and default is C:\MedDreamStation\DICOM (to keep real study files). It is recommended to have large enough space to keep files. Application provides to delete files by date and this clean must be implemented periodically.

MedDream VideoStation recorder will stop working if there is low space (ensure that have more than 2GB) in C:\MedDreamStation\DICOM directory.

Manually file archive directory can be changed by defining “archiveDir” property in /jhttp/application.properties . If new directory is network drive – ensure, that PC administrator user has access to this drive (MedDream VideoStation background applications is running with administrator rights).

Installator

MedDream VideoStation allows manually install/uninstall/start/stop background applications without changing installed directory. Files(*.bat) in “/install” directory must run with administrator rights, to have full access PC running process, scheduler and firewall.

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MedDream is manufactured by Softneta UAB.
Medical device class: Regulation (EU) 2017/745
Class IIb medical device
FDA cleared K222320
ID of the notified body: 0197
Document version 1.0
Date of issue: 2023-12-15
Language: EN
Softneta UAB
K.Barsausko str. 59B
LT-51423 Kaunas, Lithuania

CE 0197
Class IIb certified

FDA K222320 510(k)
CLEARED