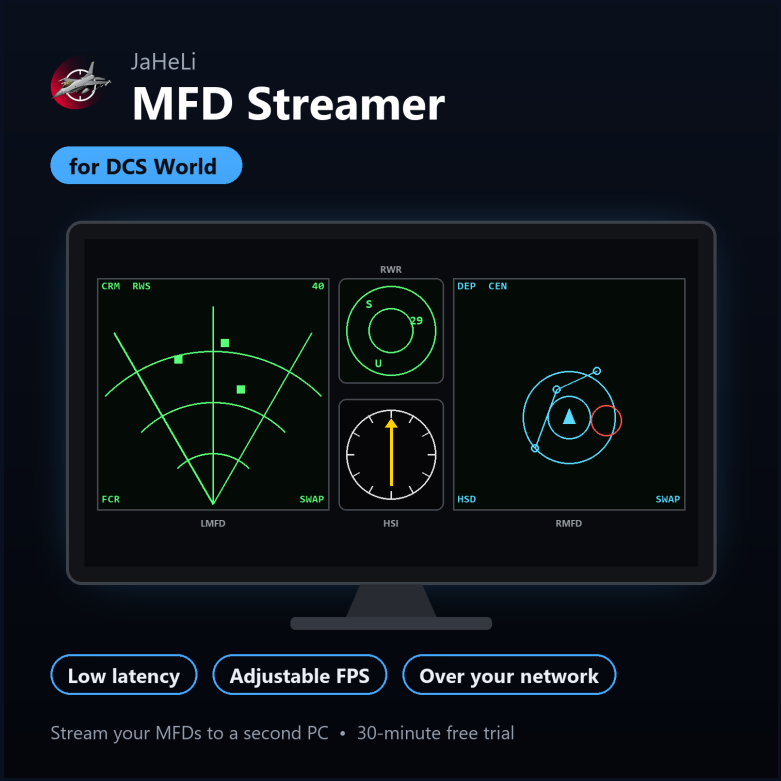
JaHeLi Simulator

MFD Streamer

User Manual

For DCS World • Version 1.1



Stream your DCS cockpit displays to a second PC.

MFD Server — runs on the PC with DCS World

MFD Client — runs on the second PC and shows the displays

www.jahelisimulator.com

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1. Introduction

The JaHeLi MFD Streamer shows the cockpit displays of DCS World — MFDs, RWR, HSI, DED and more — on a second PC on your network. The PC that runs DCS captures the display areas from its screen and sends them over the network; the second PC shows every display in its own borderless window. You can place and size those windows exactly where you want them, for example behind the bezels of your cockpit, on a touchscreen or on an old laptop.

1.1 The two programs

Program	Runs on	File
MFD Server	The sim PC (the PC with DCS World)	`MFD-Server.exe`
MFD Client	The second PC (shows the displays)	`MFD-Client.exe`

Only the MFD Server needs a license. The MFD Client is free to use on as many PCs as you like. You can try everything free for 7 days.

1.2 How it works

- DCS shows the exported displays (viewports) on a screen of the sim PC — preferably an extra screen, see section 4.1.
- The **MFD Server** captures up to **seven** areas of that screen, at the frame rate you set.
- Each area is compressed as a JPEG image. Only areas that have changed are sent, and the server always sends the newest frame, so the image does not fall behind on a busy network.
- The **MFD Client** connects to the server, receives the images and shows each one in its own window.

2. Requirements

- Two PCs with **Windows 10 or Windows 11**, on the same local network. A wired (Ethernet) connection gives the best results; Wi-Fi works but can add latency.
- DCS World, with the displays exported to a screen of the sim PC with a monitor configuration (section 4).
- Preferably an **extra screen** on the sim PC for the exported displays: an extra monitor, a free input of a TV or monitor, or a virtual screen (section 4.1).
- The display areas must be visible on that screen and not covered by other windows: the server captures what is shown there.
- A free network port on the sim PC: `5000` (can be changed).

3. Installation

The MFD Streamer comes with an installer that puts everything in the right place. Run it on each of the two PCs and choose what that PC gets: the **MFD Server** on the PC that runs DCS World (the sim PC), the **MFD Client** on the second PC. If you use only one PC, install both.

3.1 The installer (recommended)

1. Run `JaHeLi-MFD-Streamer-Setup-1.1.exe` on each PC. Windows asks for administrator permission; this is needed for the firewall rule.
2. The second page asks **Which PC is this?** and explains the difference. On the next page, choose the installation type (see the table).

3. Leave the extra tasks ticked: the desktop icons and, for the server, the firewall rule.
4. Click **Install** and start the program from the start menu or the desktop.

Installation type	Install it on	What it installs
MFD Server only	The PC that runs DCS World	MFD Server, start menu entry, desktop icon, manual and the firewall rule.
MFD Client only	The second PC that shows the displays	MFD Client, start menu entry, desktop icon and manual.
Server and Client	One PC that does both	Everything above.

Where everything goes. The programs and the manual are installed in `C:\Program Files\JaHeLi\MFD Streamer`. Your settings and the layout are saved in `%APPDATA%\JaHeLi\MFD Streamer` (section 8), so they survive an update. The start menu has an entry *JaHeLi Simulator › MFD Streamer* with the programs, the user manual and the uninstaller.

Uninstalling. Use **Settings › Apps › Installed apps**, or the uninstaller in the start menu. The programs and the firewall rule are removed. Your settings and your license are kept.

3.2 Windows SmartScreen

The first time you run the installer or a program, Windows may show *"Windows protected your PC"*. Click **More info** and then **Run anyway**. Windows only asks this once.

3.3 Windows Firewall

The installer adds a rule that allows the MFD Server on private and domain networks. Without this, the client cannot connect.

No rule, or you did not use the installer? When you start the server for the first time, Windows Defender Firewall asks whether the program may communicate on networks: tick **Private networks** and click **Allow access**. Missed the question? Open **Windows Security** › **Firewall & network protection** › **Allow an app through firewall** and allow the MFD Server there, or allow port `5000` (TCP).

3.4 Without the installer

Each program is a single .exe file that also runs without the installer.

1. Create a folder on the **sim PC**, for example `C:\MFD Streamer`, and put `MFD-Server.exe` in it.
2. Create a folder on the **second PC** and put `MFD-Client.exe` in it.
3. Start the programs by double-clicking them. You can create a shortcut on the desktop if you like.

> **Tip:** The programs save their settings in `%APPDATA%\JaHeLi\MFD Streamer`, also when you run them without the installer. If your antivirus blocks the .exe in the Downloads folder, move it to its own folder first.

4. Preparing DCS World

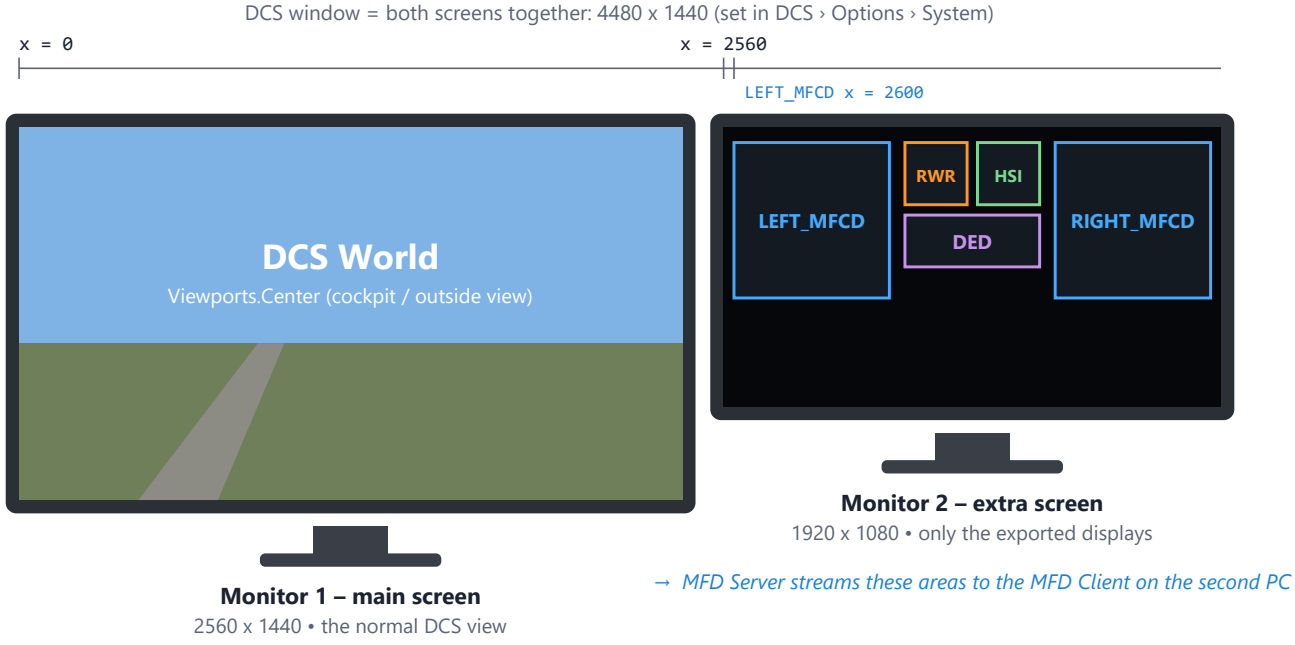
DCS can draw the cockpit displays (MFDs, RWR, HSI, ...) as separate **viewports** on the screen, next to the normal view. The server captures these viewports from the screen of the sim PC. First make sure DCS shows them there, each in its own area.

4.1 An extra screen for the displays

The viewports need a place on the sim PC where DCS can draw them and where nothing covers them. You do not have to look at this screen yourself: you see the displays on the second PC. The best place is a **separate screen** next to your main screen, so the viewports never cover your normal DCS view. There are three ways to get one:

Option	How	Good to know
Extra monitor	Connect any spare monitor to a free video output of the sim PC.	Simple and reliable. The monitor may be small and of low quality: it only has to show the viewports.
Second input of a TV or monitor	Connect a free video output of the sim PC to a free (HDMI) input of a TV or monitor you already have. The TV can keep showing something else.	Windows usually keeps the screen as long as the cable is connected. If the screen disappears from the Windows display settings when the TV is switched off or to another input, use a dummy plug or a virtual screen.
Virtual screen	A virtual display driver, or a small HDMI / DisplayPort **dummy plug** in a free video output. Windows then sees an extra screen that does not physically exist.	No monitor needed. Choose a resolution such as 1920 x 1080. Check with **Show areas** that the server can capture it.

In Windows, open **Settings › System › Display** and choose **Extend these displays**. Put the extra screen to the **right of** (or below) the main screen and keep their top edges level; this keeps the coordinates simple. The picture below shows the setup used in this manual.



Example: the DCS view on monitor 1, the exported displays on the extra monitor 2

Tip: Keep the extra screen small, for example 1920 x 1080. DCS renders one big window over both screens, so a larger extra screen costs more graphics power. The viewports only need to be about as large as the windows on the client (section 9).

4.2 The monitor configuration

DCS places the viewports with a **monitor configuration**: a .lua file in `Saved Games\DCS\Config\MonitorSetup`. It defines the position and size of the normal view (`Viewports.Center`) and of each display, for example `LEFT_MFCD` and `RIGHT_MFCD`. This is the file for the example above:

```
_ = function(p) return p end
name = _('MFD extra screen')
Viewports = { Center = { x = 0; y = 0; width = 2560; height = 1440; aspect = 2560/1440; } }
LEFT_MFCD  = { x = 2600; y = 60;  width = 600; height = 600; }   -- 2560 + 40
RWR        = { x = 3260; y = 60;  width = 240; height = 240; }
HSI        = { x = 3540; y = 60;  width = 240; height = 240; }
RIGHT_MFCD = { x = 3840; y = 60;  width = 600; height = 600; }
UIMainView = Viewports.Center
```

All positions count from the **top-left corner of all screens together**, so a viewport on the extra screen starts at the width of the main screen (here 2560). The names that DCS uses for the displays differ per aircraft; see the documentation of your module.

Many configurations calculate positions from the DCS resolution, for example `width = screen.width / 2` or `x = screen.width / 3`. The MFD Server understands this: it reads the resolution from `Saved Games\DCS\Config\options.lua` and works out the numbers, whatever you divide or multiply by.

4.3 Settings in DCS

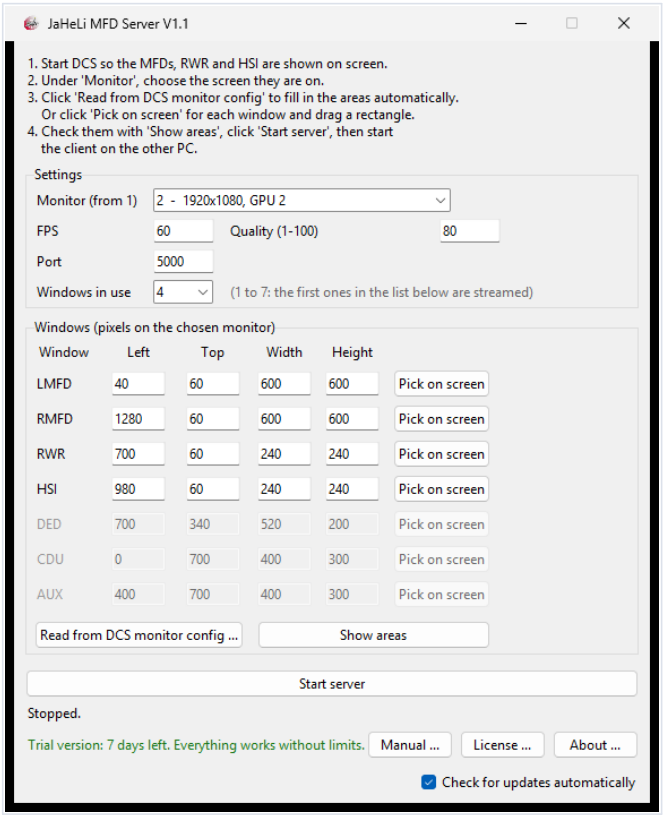
1. Save the monitor configuration in the MonitorSetup folder.
2. In DCS, open **Options** › **System**. Choose the configuration under **Monitors**, and set the **resolution** so it covers all screens together (in the example 4480 x 1440).
3. Start a mission and check that the displays are shown on the extra screen.

Important: Did you change the resolution of DCS or of a monitor, or move a screen in the Windows display settings? Then **read the monitor configuration again** in the MFD Server (**Read from DCS monitor config ...**, section 5.3) and check the result with **Show areas**. The areas are calculated once, when the file is read; they do not follow later changes by themselves.

5. MFD Server

Start the MFD Server on the sim PC. The window has four parts:

- **Instructions** at the top: the steps in short.
- **Settings**: monitor, frame rate, image quality, port and the number of windows in use.
- **Windows**: the areas that are streamed, each with its position and size.
- **Start server**, the status line and the license line at the bottom, with **License ...**, **Manual ...** and **About ...**, and the tick **Check for updates automatically** (section 11).



MFD Server: four displays on monitor 2

5.1 Settings

Setting	Meaning	Default
Monitor (from 1)	The screen on which DCS shows the displays (your extra screen). The list shows each screen with its resolution, so you can recognise it. If the list is empty, type the number (1, 2, ...).	1
FPS	Frames per second that are captured and sent (1–240). Higher is smoother but uses more CPU and network.	60
Quality (1-100)	JPEG image quality. Higher is sharper (especially small text) but uses more network bandwidth.	80
Port	Network port the client connects to. Only change it if the port is in use; set the same port in the client (IP:port).	5000
Windows in use	How many windows are streamed (1 to 7): the first ones in the list. The other rows are greyed out and are not sent.	4

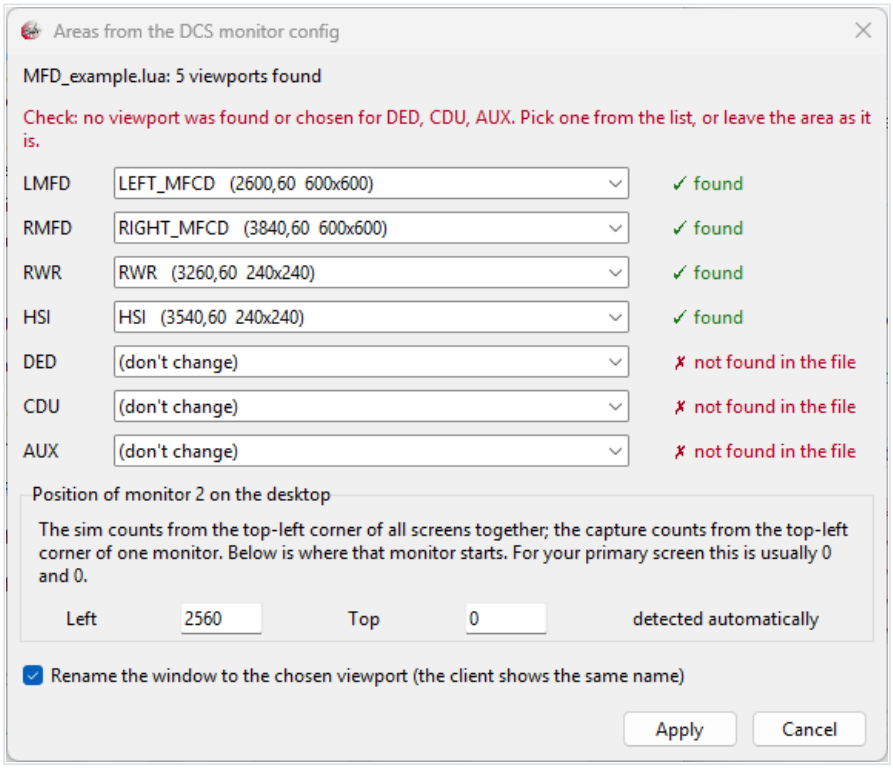
5.2 The display areas

The **Windows** part lists seven areas: LMFD, RMFD, RWR, HSI, DED, CDU and AUX. For each area you see **Left**, **Top**, **Width** and **Height** in pixels, measured from the **top-left corner of the chosen monitor**. Each area that is in use becomes one window on the client, with the same name.

You can type the numbers yourself, but it is easier to let the server read them from the DCS monitor configuration (5.3) or to drag them on screen (5.4). The areas can only be changed while the server is stopped.

5.3 Read the areas from the DCS monitor configuration

Choose the right monitor first, then click **Read from DCS monitor config ...** and choose your .lua file in `Saved Games\DCS\Config\MonitorSetup`. The file dialog opens in that folder when it can be found.



Linking the windows to the viewports in the file

The server lists the viewports it found and links them to the windows. Next to each window you see:

Status	Meaning
✓ found	A matching viewport was found automatically.
✓ chosen	You picked a viewport yourself from the list.
✗ not found in the file	No matching viewport. Pick one from the list, or leave it on "(don't change)" to keep the current area.
– not used	You set it to "(don't change)": the current area stays as it is.

Position of the monitor. DCS counts from the top-left corner of all screens together, the capture counts from the top-left corner of one monitor. The server detects where the chosen monitor starts and subtracts that — in the example 2560 and 0, so `LEFT_MFCD x = 2600` becomes Left 40 on monitor 2. This works for screens next to each other (Left) and below each other (Top). Only change these numbers if the areas end up in the wrong place.

screen.width and screen.height. If the file calculates with the DCS resolution, the dialog shows which resolution was used and where it came from (normally `options.lua`). If options.lua cannot be found, the size of the main monitor is used and the dialog says so.

Rename the window. If you pick a different display for a window, the window can take the name of that display. The client shows the new name and keeps the window in the same place.

Click **Apply** and check the result with **Show areas**.

5.4 Pick an area on screen

Click **Pick on screen** next to a window. The server takes a screenshot of the chosen monitor and shows it. The current area of this window is drawn in yellow, the other windows in blue. **Drag a rectangle** around the display; as soon as you release the mouse button the area is filled in. Press **Esc** or click **Cancel (Esc)** to stop without changes.

> **Tip:** If you get the message “No image received from monitor ...”, nothing changed on that screen during the capture. Move the mouse or a window on that screen and try again.

5.5 Check the areas

Click **Show areas** to see a screenshot of the chosen monitor with all areas drawn in colour and labelled with their name. Each coloured frame becomes one window on the client. Make sure each frame fits tightly around its display.

5.6 Another monitor, or areas outside the monitor

- **You choose another monitor.** The server offers to recalculate the areas, so they stay in the same place on the desktop. Answer **No** if you only corrected a wrong choice and the numbers were already right.
- **An area lies outside the monitor.** When you click **Start server**, the server checks that every area in use fits on the chosen monitor. If the numbers look like DCS coordinates (counted from all screens together), it offers to subtract the position of the monitor and start. Otherwise it tells you which window is outside the monitor and how large the monitor is.

5.7 Start and stop the server

Click **Start server**. The settings are saved and the status line shows what the server is doing. Click **Stop server** to stop it. While the server runs, the buttons for the areas are disabled.

Status line	Meaning
Waiting for client (port 5000) - windows: LMFD, ...	The server is running and waiting for the client to connect.
Client connected: 192.168.1.20	A client is connected and receives the displays.
Client disconnected, waiting for a new connection ...	The client was closed or the network dropped. The client reconnects by itself.
Port 5000 is already in use ...	Another server is still running (perhaps invisible). Close it, for example via Task Manager, and start again.
Server stopped.	The server was stopped.

One client can be connected at a time. When you close the server window, the settings are saved.

6. MFD Client

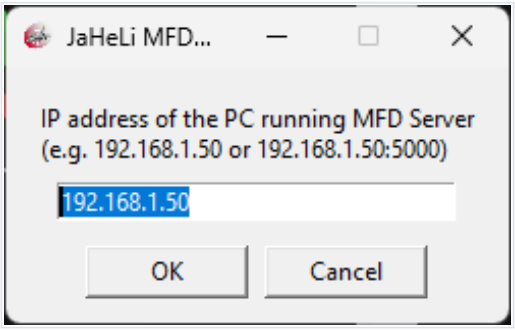
6.1 First start

The first time you start the client, it asks for the **IP address of the sim PC** (the PC running MFD Server).

To find it: on the sim PC, press Windows + R, type `cmd`, press Enter and type `ipconfig`. Use the **IPv4 Address** of the network adapter, for example `192.168.1.50`.

If you changed the port on the server, add it after a colon: `192.168.1.50:5002`.

The address is remembered. To change it later, use **Change server IP ...** in the menu.



Entering the IP address of the sim PC

6.2 The display windows

The client opens one window per display. The windows have no title bar and stay on top of other windows by default.

- **NO CONNECTION**: the client cannot reach the server. It keeps trying every second.
- **WAITING FOR IMAGE**: connected, the first image is on its way.
- **DEMO** across the image: the 7-day trial is over and the server runs in demo mode (section 7.1).

As soon as the first image arrives, the window height adapts to the shape of the display, so the image is never stretched.

The window names and the number of windows come from the server. If you rename a window on the server, the client follows and keeps the window in the same place.



A window without connection

6.3 Arranging the windows

Right-click a window and choose **Unlock layout**. Each window now gets an orange frame, an orange corner and a small panel with its name, size and position.

- **Move**: drag the window with the left mouse button.
- **Resize**: drag the orange corner at the bottom right. The window keeps the shape of the display.
- **Exact size and position**: type the width and height (**Size**) or the position on the screen (**Pos**) in pixels and click **OK** (or press Enter).
- **Arrow keys**: click a window (or choose **move with arrow keys** in the menu) and move it 1 pixel at a time with the arrow keys, or 10 pixels with Shift.

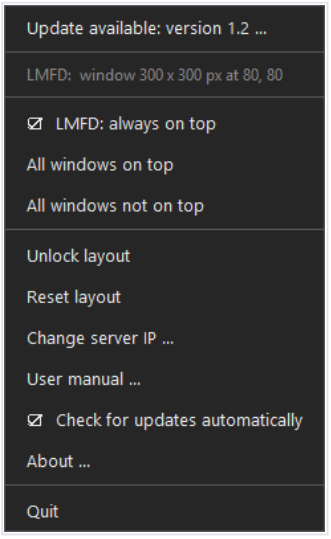
When everything is in place, right-click and choose **Lock layout**. The frames disappear and the windows can no longer be moved by accident.



Unlocked layout: frame, corner and panel

6.4 The right-click menu

Menu item	What it does
LMFD: window 300 x 300 px at 80, 80 (image ...)	Information: size and position of the window, and the size of the incoming image.
LMFD: move with arrow keys	Select this window for the arrow keys (only when the layout is unlocked).
LMFD: always on top	Keep this window above other windows (on/off).
All windows on top / not on top	Switch “always on top” for all windows at once.
Unlock layout / Lock layout	Allow or block moving and resizing.
Reset layout	Put all windows back in a row at the top left.
Change server IP ...	Enter another address for the sim PC.
User manual ...	Open this manual.
Check for updates automatically	Switch the update check on or off (section 11).
Update available: version ...	Only shown when there is a newer version: opens the download page.
About ...	Version and website.
Quit	Save the layout and close the client.



Right-click menu

6.5 Saved layout

The position, size and “always on top” setting of every window, and whether the layout is locked, are saved automatically. The next time you start the client, everything is back in place.

6.6 More than one client PC

You can put the MFD Client on as many PCs as you like, at no extra cost: the client is free. The server streams to **one client at a time**, so two clients cannot show the displays at the same time. A second client that connects while another one is connected has to wait until the first one is closed. If you want the same displays on two PCs at once, this is not possible with this version.

7. License

7.1 Trial version

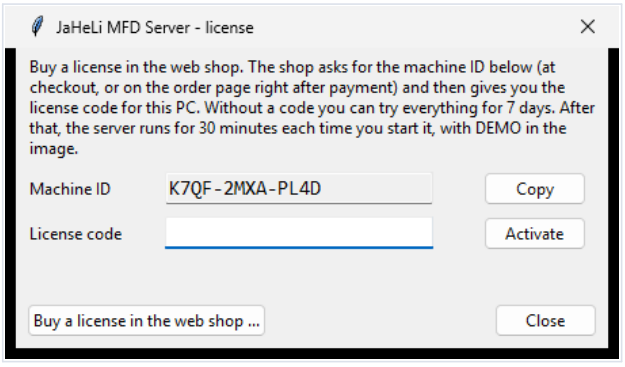
Without a license you can try the MFD Streamer for **7 days**. During these 7 days everything works without limits and there is no DEMO. The license line at the bottom of the server window shows how many days are left. The 7 days start the first time you start the MFD Server.

The trial cannot be restarted: reinstalling the program, using another Windows user or changing the clock does not give new days. If the Windows clock is set back, the program treats the trial as ended.

After the trial: demo mode. When the 7 days are over, the server keeps working as a demo: **30 minutes** of streaming each time you start the program, with the word **DEMO** across every image all the time. The 30 minutes start when you click **Start server** for the first time and keep running, even if you stop and start the server. When the time is up, the server stops and the license window opens. Close the server program and start it again for another 30 minutes, or enter a license code.

7.2 Buying a license

1. Start the MFD Server on the **sim PC** and click **License ...** at the bottom.
2. The **Machine ID** of this PC is shown, for example K7QF-2MXA-PL4D.
3. Click **Buy a license in the web shop ...**. The product page opens and your machine ID is copied automatically.
4. Order the license. The shop asks for the **machine ID** (at checkout, or on the order page right after payment): paste it there (Ctrl+V).
5. You receive the **license code** on the confirmation page and by email.



The license window

Important: The license code only works on the PC whose machine ID you entered. Always take the machine ID from the **sim PC** (the PC that runs MFD Server).

Tip: One machine ID per license. If you order the MFD Streamer together with JaHeLi F-16C Gauges, or more than one license of the same product, the shop asks for a machine ID for each license. Use the machine ID of the PC where that program will run: the MFD Server on the sim PC, the gauges on the PC with the extra screens. If both run on one PC, enter the same machine ID for both.

7.3 Activating

Click **License ...**, type or paste the code into **License code** and click **Activate**. The license line shows *"License: activated on this PC."*, the time limits and the DEMO watermark are gone. You only need to do this once. Upper or lower case and the dashes do not matter.

Activation works offline: no account and no internet connection are needed. The code is stored for your Windows user account; if you use another Windows account on the same PC, enter the same code there once.

7.4 New PC or reinstalled Windows

A new PC, or a fresh installation of Windows, gives a new machine ID, so your old code no longer works. You can request a new license code **once, free of charge**. Contact us via www.jahelisimulator.com with your order number and your new machine ID.

8. Settings files

All files are created in `%APPDATA%\JaHeLi\MFD Streamer`. Press Windows + R and type **%APPDATA%\JaHeLi\MFD Streamer** to open the folder.

File	Contents
`mfd_server.json`	Server settings: monitor, FPS, quality, port, windows in use and areas.
`mfd_client.json`	Client: the address of the sim PC.
`mfd_layout.json`	Client: position and size of the windows.
`mfd_server_error.log` `mfd_client_error.log`	Error log, only created after a crash.

> **Tip:** To start over with the client layout, close the client and delete mfd_layout.json. To use your settings on another PC, copy the .json files to the same folder there. Settings from an older version that were saved next to the .exe are copied over automatically at the first start.

9. Tips for the best image

- **Match the sizes.** The right-click menu shows the window size and the image size. The sharpest result is when the client window is about as large as the viewport in DCS.
- **Small text not sharp?** Raise the Quality setting (for example to 90) or make the viewport larger.
- **Smooth and responsive:** use a wired network. 60 FPS is plenty for cockpit displays; lower it if the sim PC needs the CPU power.
- **Capture tightly.** Let each area fit tightly around its display, without desktop or other windows.
- **Keep the areas visible.** Do not cover the viewports on the sim PC with other windows: the server streams whatever is on screen. An extra screen (section 4.1) avoids this.

10. Troubleshooting

Problem	Solution
The client shows NO CONNECTION	Check that the server is started and shows "Waiting for client". Check the IP address (**Change server IP ...**), that both PCs are on the same network, and that the firewall on the sim PC allows the server (section 3.3). If you changed the port, use IP:port in the client.
The client shows WAITING FOR IMAGE for a long time	The server is connected but sends no image. Check that the display areas are on the chosen monitor (**Show areas**) and that DCS shows the displays there.
"LMFD is outside monitor 2 (1920x1080)"	The area does not fit on the chosen monitor. Choose the monitor on which DCS shows the displays, let the server recalculate the areas, or read the monitor configuration again (section 5.6).

Problem	Solution
The wrong part of the screen is streamed, or everything is shifted	Check the Monitor setting and use **Show areas**. After a change of resolution or screen layout, read the monitor configuration again (section 4.3). In the import dialog, check the position of the monitor.
The extra screen is gone after switching the TV off or to another input	Windows removed the screen. Leave the TV on that input, or use a dummy plug or a virtual screen (section 4.1).
"Port 5000 is already in use"	An older server is still running, perhaps without a visible window. Open Task Manager (Ctrl+Shift+Esc), tab Details, end MFD-Server.exe, and start again.
"Monitor 3 does not exist"	Choose a monitor from the list. Numbering starts at 1.
Image is blurry	Raise Quality, and make the client window about as large as the viewport (see section 9).
Image lags behind	Use a wired network, lower FPS or Quality, and close programs that use a lot of network.
The demo stopped the server	The 30 minutes of the demo are over. Restart the server program for another 30 minutes, or enter a license code (section 7).
"This code does not belong to this PC"	The code was made for another machine ID. Compare the machine ID in the license window with the one in your order.
The program closes with an error	A message shows what went wrong, and the details are saved in the error log in the settings folder (section 8). Send that file along when you contact support.

11. Updates

When you start the MFD Server or the MFD Client, it looks (at most once a day, in the background) on the JaHeLi website to see whether a newer version exists. If there is one, the program shows a message once, and keeps a line in the window (server) or in the right-click menu (client). Click it to open the download page: **www.jahelisimulator.com/shop/download/**. Download the new installer there and run it over the old version; your settings and license are kept.

- Nothing is downloaded or installed by itself, and no personal data is sent: the program only reads a small file.
- Without an internet connection nothing happens and the program works as usual.
- To switch the check off, remove the tick at **Check for updates automatically** (in the server window, or in the right-click menu of the client).

12. Support

Questions, problems or a new license code? Visit **www.jahelisimulator.com**. When you contact us, please include:

- the version (**About ...** in the server or the client menu);
- your order number (for license questions) and the machine ID;
- the error log file, if there is one;
- a short description or a screenshot of the problem.