

OpusFSX

Flight Simulator Interface for FSX & Prepar3D Getting Started - Networked PCs



Live View Multi-Screen Display with CPFlight MCP and EFIS Panels

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Software Installation

The first stage is to install and set up the OpusFSX software on your server PC in accordance with the OpusFSX_Getting_Started_Single_PC guide. When you have tested out the single PC standalone operation then you are ready to set up the OpusFSX network with your client PCs. If you are using the client only for **Live Weather Assistant** and/or **Client Side LWE Control** then ensure SimConnect is installed on your clients (you will find a SimConnect.msi in the OpusFSX folder). You don't need to install FSX or FSUIPC4 on the clients unless you are using Live View.

Installing the Demo version of OpusFSX

The OpusFSX software must be installed on your server and each of your client FSX/P3D systems. Simply copy the OpusFSX.msi installation file onto your client systems and double-click on the file. Alternatively you can create an OpusFSX folder on each of your client PCs and simply copy the files and sub-folders across from the server's OpusFSX folder. You only need to copy the DLL and EXE files across from the main folder, along with all sub-folders (e.g. the Themes sub-folder). You may install the software onto any drive and subfolder provided its folder name is OpusFSX with the exception that you must not install OpusFSX in the **Opus Software, FSX or Program Files** folders, and don't install in more than one folder on your PC.

Purchased OpusFSX

The client systems are unlicensed and do not require license or key files. Do NOT unwrap the purchased 'exe' file on your client systems, it is not required. Neither do you need to create, or copy, the **c:\Opus Software** folder onto your client systems. This folder contains the license and key files which are ONLY needed on the server system.

The OpusFSX software must be installed on each of your client FSX systems. You may install the software onto any drive and subfolder provided its folder name is OpusFSX with the exception that you must not install OpusFSX in the **Opus Software, FSX or Program Files** folders, and don't install in more than one folder on your PC.

Simply copy the OpusFSX.msi installation file onto your client systems and double-click on the file, but you must uninstall the old software first via Control Panel, Uninstall a program, do not delete your OpusFSX folder containing your camera and system configuration files. Alternatively you can create a OpusFSX folder on each of your client PCs and copy the files and sub-folders across from the server's OpusFSX folder. You only need to copy the DLL and EXE files across from the main folder, along with all sub-folders (e.g. the Themes sub-folder).

Upgrading OpusFSX

Upgrade to latest Release

Download the upgrade **OpusFSX.msi** installation file onto your server system. Uninstall the existing version on your server prior to upgrading via Control Panel, Uninstall a Program, do not delete your OpusFSX folder containing your camera and system configuration files. Double click on the OpusFSX.msi file and follow the instructions to install the software. All your original configuration

(DAT and CMD) and camera definition (CAM, LIM and CDF) files will remain intact (in your OpusFSX folder) but it is a good idea to take a backup of your camera files anyway in case they get corrupted (this may happen when you revert to a previous version with a different CAM format).

If you wish you can copy new **OpusFSX.msi** installation file onto your client systems and double-click on the file to install the software, but you must uninstall the old software first via Control Panel, Uninstall a program , do not delete your OpusFSX folder containing your camera and system configuration files.

Alternatively you can simply create a c:\OpusFSX folder on each of your client PCs and copy the files and sub-folders across from the server's c:\OpusFSX folder. You only need to copy the DLL and EXE files across from the main folder, along with all sub-folders (e.g. the Themes sub-folder). *Take care not to corrupt your DAT and camera files on the client PCs which contain your client's current configuration and operational data.*

Upgrade to latest Beta

Click on the Beta button and download the **OpusFSX.msi** file and follow the upgrade procedure above.

Create Desktop Shortcuts

After installing the software we recommend you create shortcuts on your client desktops for the client programs. These shortcuts will allow you to manually start your networked FSX system without too much fuss.

On each of your client systems ...

In Windows Explorer, navigate to your installation folder (c:\OpusFSX) and right-click on the FSXCLIENT.EXE program. Select the **Send to - Desktop (create shortcut)** option. Right-click on the new desktop icon, select Properties, rename to **OpusFSX CLIENT** and check the program is configured to **Start In:** your installation folder (c:\OpusFSX). Select the compatibility tab (if available) and "Run as Administrator".

Automatically Selecting the Simulator Type

The FSXSERVER and FSXCLIENT programs will accept an optional FSX or P3D argument to automatically select the simulator type when they are run. The FSXCLIENT program will also accept a NONE argument to select 'No Connection To The Simulator' mode.

FSXSERVER FSX ... will select the Microsoft FSX simulator type on the server.

FSXSERVER P3D ... will select the Lockheed Martin Prepar3D simulator type on the server.

FSXCLIENT FSX ... will select the Microsoft FSX simulator type on the client.

FSXCLIENT P3D ... will select the Lockheed Martin Prepar3D simulator type on the client.

FSXCLIENT NONE ... will select the 'No Connection To The Simulator' mode of operation on the client.

So if you have both FSX and P3D on the server you can create two desktop shortcuts, one running 'c:\OpusFSX\FSXSERVER.EXE FSX' for Microsoft FSX, the other running 'c:\OpusFSX\FSXSERVER.EXE P3D' for Lockheed Martin Prepar3D.

On the client you can have c:\OpusFSX\FSXCLIENT.EXE FSX' for Microsoft FSX, 'c:\OpusFSX\FSXCLIENT.EXE P3D' for Lockheed Martin Prepar3D, and c:\OpusFSX\FSXCLIENT.EXE NONE' for no simulator when using just the Live Weather Assistant or Client Side LWE Control.

Specifying the View Mode

FSXSERVER program arguments allow you to specify the number of available view modes in the simulator (default 5). Running the program with a VM3, VM4, or a VM6 argument (e.g. FSXSERVER VM4) will set the number of available view modes available within the simulator to 3, 4, or 6 respectively. The default number is 5. The number of available view modes can be determined simply by pressing the 'S' key and counting the total number of view modes that can be cycled. The normal sequence in the simulator is,

VC - Spot - Tower - Aircraft - External

Giving a total of five (5) different view modes. If you for example have the Tower view disabled, the VM4 argument can be used to reduce the available view modes and allow the correct selection of the external aircraft cameras.

Setting up the Network

If you are using Live View you will need to install the simulator and scenery onto your client systems, although some users share their scenery over the network successfully.

The OpusFSX network is created by running the FSXSERVER program on the main (host) Microsoft Flight Simulator X PC, and running the FSXCLIENT program on each of the client PCs.

There is no need to run FSX to carry out the initial set up and configuration of your FSXSERVER and FSXCLIENT programs. We recommend you start off by running both the FSXSERVER and FSXCLIENT programs together on your main 'flying' computer. This will check that they both work fine on the server and that there are no missing library files etc. However on the final system setup you will just run FSXSERVER on your main 'flying' computer.

Next try to copy a file onto your first client computer via your LAN. If you can do this then there should be no problem in getting the system operational. You may need to set up your network first, see below.

Finally, run the FSXSERVER program on your main 'flying' server and run the FSXCLIENT program on your client computer.

Network Set Up ...

These set up requirements and guidelines apply to your main 'flying' server and each client computer you intend to connect. Make sure you set the advanced sharing settings on the server and all client machines!

The **OpusFSX** software uses IPC (**Inter Process Communications**). Multiple IPC connections provide the fastest possible links because they allow process-to-process communications without all the usual networking and routing overheads. In order to allow IPC between your Win 7 computer systems your Advanced Sharing and Windows Firewall settings must be set in accordance with the following.

Control Panel - Network and Internet - Network Sharing Center - Advanced sharing settings,

- Turn on network discovery
- Turn on file and printer sharing
- Turn on sharing so anyone with network access can read and write ...
- Use 128-bit encryption ...
- Turn off password protected sharing
- Allow Windows to manage Homegroup connections

Do this for both **Public** and **Home and Work** profiles. If you are using a LAN via a **Public** network to communicate then you can just change the settings for your **Public** network.

At the very least you should have '**FILE AND PRINTER SHARING**' turned **ON** and '**PASSWORD PROTECTED SHARING**' turned **OFF** for your network.

Remember to click '**Save Changes**' after modifying each profile, you will also have to restart the FSXSERVER and FSXCLIENT program afterwards. It might also take a minute for the changes to come into effect and the client and server programs to connect.

After changing the Network Advanced Sharing above you must also enable certain features through your Windows Firewall, assuming that **Windows Firewall** is enabled that is, but it is best to enable the features just in case you enable the Firewall later.

Control Panel - System and Security - Windows Firewall - Allow a program or feature through Windows Firewall

Enable both **Home/Work(Private)** and **Public** options for the following features,

- Core Networking
- File and Printer Sharing
- Network Discovery

Once again, at the very least you should have '**FILE AND PRINTER SHARING**' enabled through the Firewall on your server and all client systems.

Also make sure all the computer systems have the same **Workgroup** set,

Control Panel - System and Security - System - Change Settings - Change...

and configure the main server's computer name or IP Address into the FSXCLIENT programs. You will probably have to use the computer name over a Wi-Fi link.

If you are using LAN cable then make sure you configure compatible Internet Protocol Version 4 (TCP/IPv4) IP Addresses into all of your LAN adapters. You will also need to use a crossover cable for PC to PC connections.

Control Panel - Network and Internet - Network Sharing Center - Change Adapter Settings

Right-click on your local area network device, select Properties, highlight 'Internet Protocol Version 4 (TCP/IPv4)', click Properties and edit the assigned IP Address and Subnet masks within either your General or Alternate Configuration tabs,

For example,

Workgroup: FSXGROUP on all computers.

IP v4 Addresses: 192.168.1.11 on the server.
 192.168.1.21 on the 1st client,
 192.168.1.22 on the 2nd client etc.

All Subnet masks must be set to 255.255.255.0

On some networks you may have to configure the IP v4 Address as an 'Alternate Configuration'. Generally though, if you can 'see' the computers within Windows Explorer 'Network' then you should be able to connect and communicate using **OpusFSX**.

On some systems you may actually have to go as far as setting up the drive's Sharing and Security Permissions, or enter a password, so that you can access the other computer's folders and files. To check if you need to enter a password run Windows Explorer and try to view folders on the networked PC. You will be prompted for a password if necessary.

Firewall

You may need to allow OpusFSX through your firewall. In **Control Panel** select **System and Security, Windows Firewall, Allow a Program or feature through Windows Firewall**. Click on **Allow another program** and browse to FSXSERVER (or FSXCLIENT on a client PC) in the OpusFSX installation folder.

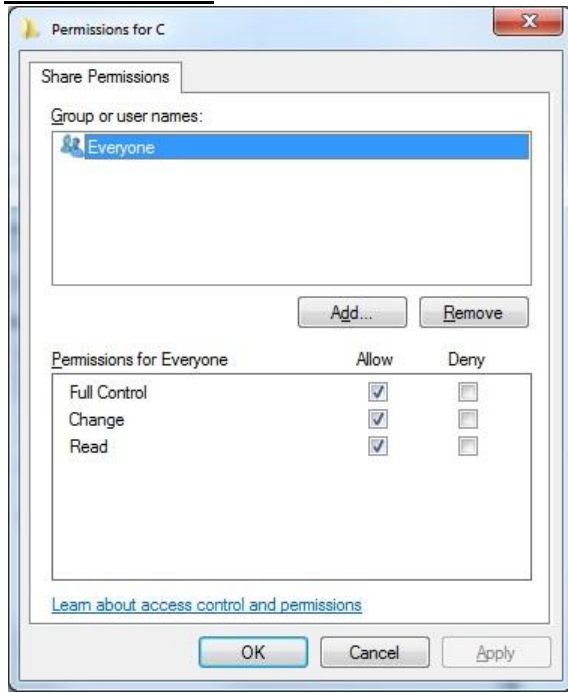
Sharing and Security Permissions

Set up your sharing and security permissions for Everyone on your server and client systems. Both the drive and the FSX install folder must be shared and accessible.

Sharing

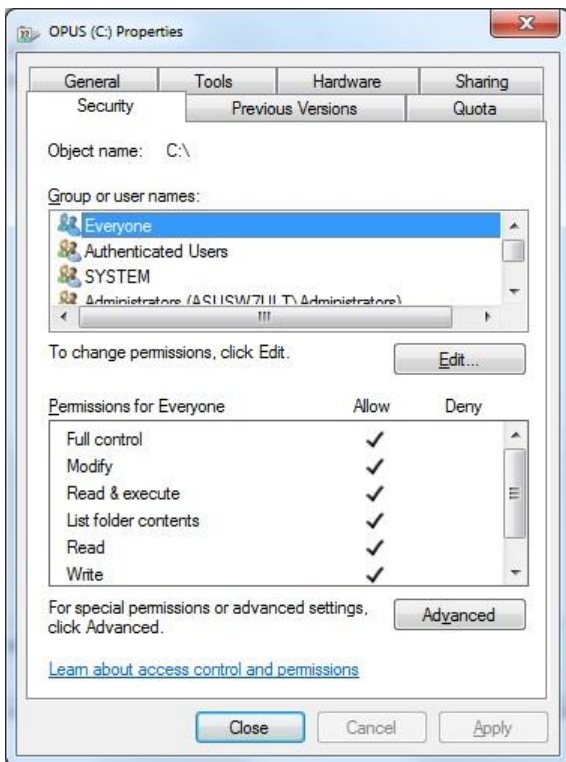
To set up *Sharing* on a drive run Windows Explorer, right click on the drive you wish to share, select **Properties**, select the **Sharing** tab, select **Advanced Sharing**, tick the checkbox to share the drive and enter a share name. Make sure the share name is a single letter code, e.g. C, not 'Drive C' for instance, otherwise OpusFSX will not be able to find the drive.

Click on **Permissions**, enter **Everyone** in the **Group or user names** box and tick the checkboxes to allow **Full Control** for **Everyone**. Some users find it is not enough to share folders, the whole drive must be shared.



Security Permissions

To set up *Security Permissions* run Windows Explorer, right click on the drive you wish to set Security settings for, select **Properties**, select the **Security** tab, select **Everyone** in the **Group or user names** box and ensure the Permissions are **Full Control**, if not click on the **Edit** button and tick the Permissions checkboxes to allow **Full Control** for **Everyone**. If **Everyone** does not exist click **Advanced**, click **Change Permissions**, click **Add**, type in the name **Everyone** and click **OK**. Also select **Authenticated Users** in the **Group or user names** box and tick the checkboxes to allow **Full Control**.



If you are connecting more than two machines together over the network then we recommend the following options,

- Bridge LAN connections through machines equipped with two LAN adapters.
- Install a Gigabit LAN hub (better).
- Install a Gigabit LAN switch (best).

If your network relies on other devices (routers, bridges, servers etc.) then I'm afraid we can offer very little advice or assistance, the set up to allow IPC connections will be your responsibility.

OpusFSX utilizes multiple IPC connections to achieve optimum performance, it does not use socket based TCP/IP or similar links which are considered far too slow. You will therefore have to configure your network accordingly with adequate sharing, permissions and security settings assigned to all of the networked computer systems.

Win7 and XP Networked Systems

You may (or may not) experience problems if you have both Win7 and XP systems on your network. Removing the homegroup and reverting to standard networking may help. See these websites,

<http://windows.microsoft.com/en-US/windows7/Networking-home-computers-running-different-versions-of-Windows>

and http://www.youtube.com/watch?v=VRY4_POp9zA

General Operation

The recommended start up procedures for the FSXSERVER and FSXCLIENT programs are detailed below. You can monitor the connection status on the main form displays of the FSXSERVER program and each of the FSXCLIENT programs. In each case, the Application Links will turn green when a connection is made. Note, the server will allocate two or three links for each 'Live View' client, one link for each of the possible 'Live View' Position & Attitude, Weather and Traffic connections.

*To ensure optimum performance, the settings within FSX/Prepar3D on each client FSX system should be configured in accordance with the instructions in **FSX Computer System Settings** section at the end of this guide. Please adjust your settings before using **Live View**.*

Recommended Start Up Procedure For Live View and Live Camera Operation

- Run FSX/Prepar3D on all systems and wait for them initialize with the FSX Free Flight dialog on display. Click either the FLY NOW button or Load your chosen flight and wait for your flight to fully load and initialize on all systems.
- Run the FSXSERVER program on your main SERVER system.
- Run the FSXCLIENT programs on each of the client systems and watch them connect to the server.
- When all the FSX/Prepar3D systems have settled and fully initialized, decide on your chosen Weather option for the flight and load it through the Weather option of your FSXSERVER program.
- One final check that all your cloud formations are in synch and all desired zoom settings are set then you are ready to fly.

Checklist:

1. Run FSX/Prepar3D on all systems and FLY NOW or Load flight.
2. Run the FSXSERVER program.
3. Run all FSXCLIENT programs.
4. Check/reload Dynamic weather or Choose Weather Theme.
5. Start Flying.

Set Up and Configuration

This section assumes you have already installed the **OpusFSX** software, created your desktop shortcuts, and set up your network. This section uses a pictorial guide to configuring your networked system.

The FSXSERVER and FSXCLIENT programs **MUST** be started in their local installation folders, in other words they **MUST** be started in **\OpusFSX**.

Run the FSXSERVER program on your main FSX/Prepar3D system. You do not need to run the flight simulator (if installed) at this time since we are just going to configure the system.

Live Weather Assistant

If you are using a networked client only for displaying weather maps via Live Weather Assistant then NO license, FSX, or FSUIPC4 is needed on the client, they are only required if you are using Live View.

Client Side LWE Control

If you are using the client only for Live Weather Assistant and/or Live Weather Control (i.e. entering weather or flight plan data via the client dialogs) then NO license, FSX, or FSUIPC4 is needed on the client. If you receive **TypeInitialisation** errors when trying to run the FSXCLIENT program then navigate to the OpusFSX installation folder on your client and install the SimConnect libraries using the supplied **SimConnect.msi** file in the OpusFSX folder.

Set up your server's sharing, sharing permissions, and security permissions as per the instructions in this guide.

Configure a 1 in the **Number of Live View Client Computers** field on your server. This should open two Application Links ready for the client to connect.

Run the FSXCLIENT program on your client (assuming you have installed or copied your OpusFSX folder across onto there).

Open the clients Configuration dialog.

Specify your server's computer name or IP address.

Tick **Enable Live View Updates**.

Select the **No Connection to the Simulator** option.

Click **OK** and restart.

The client will open two communications links and attempt to connect to the server. After it connects the links will turn green. You can now open the Live Weather Control dialog and control the server's LWE.

After the links are connected, showing green banners, then with FSX running on the server you will see 1 second position updates coming from the server (Spy on the Live View - Position & Attitude link). All LWE control messages will be communicated over the Live View - Weather link, again you can use the link's Spy window to monitor the communications.

In this mode of operation Live Camera is disabled.

Full Operation

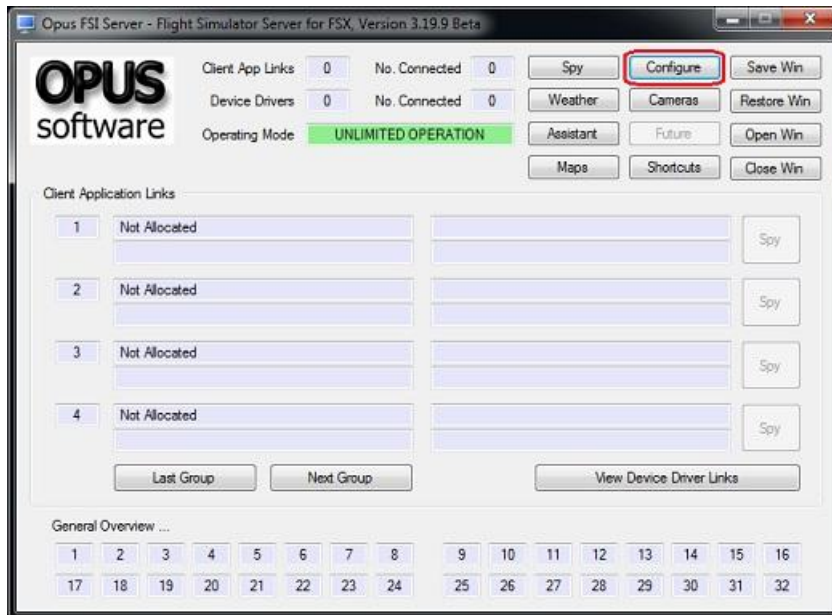


Figure 1 - FSX Server's Main Form

Click on the **Configure** button to display the 'Opus FSX Server - Configuration' dialog.

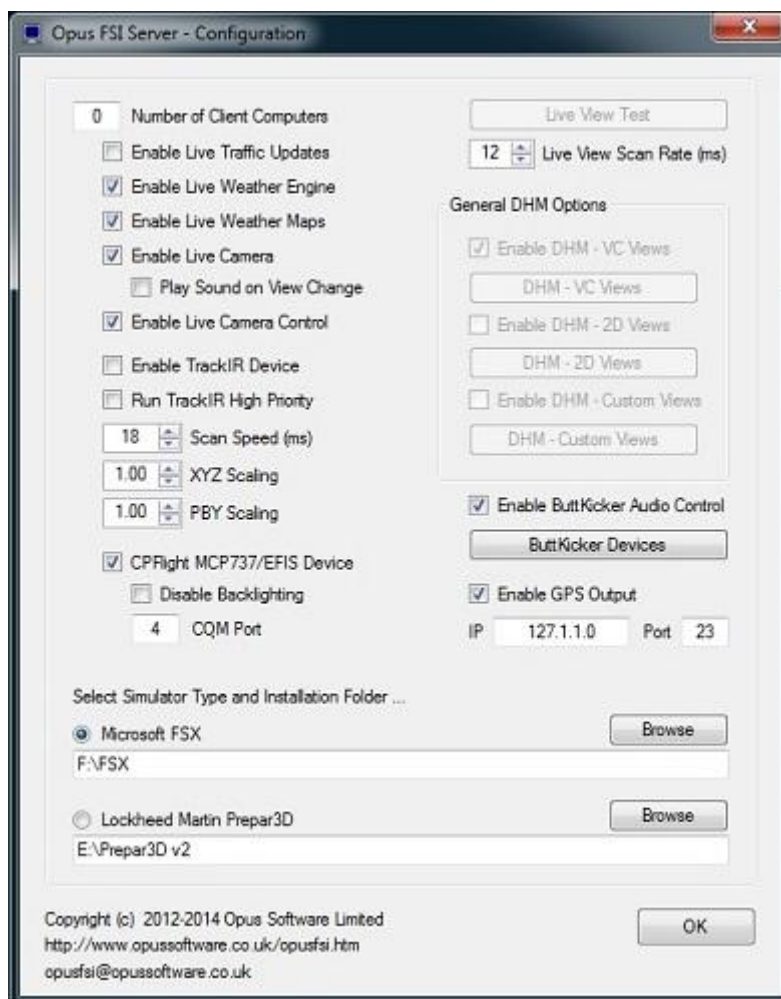


Figure 2 - FSX Server's Configuration Dialog

Specify the number of **Live View Client Computer** systems you intend connecting to the server.

Live Traffic has not been implemented yet.

Enable **Live Weather Engine** and **Weather Maps** if required. This option is available in limited form on the free demonstration software. The LWE is restricted to 160km (100 miles) in all directions and the weather is updated only whilst your aircraft is on the ground.

Enable **Live Camera** unless you want to control the views manually with **Live Camera Control** and use **General DHM Options**.

Enable TrackIR and the CPFlight driver if required on your system. The **Run TrackIR High Priority** option will affect the priority of the Opus FSXTRACKIR program as well as any active Natural Point TrackIR4 or TrackIR5 programs and is only required if your TrackIR operation is not smooth.

The **Live View Scan Rate** (0 to 60ms) adjustment is for networked systems and controls the position update rate communicated to the server enabling you to match the preferred rate found using the **Live View Test**. This should be tuned on fast systems to limit the position update rate of transmission to an acceptable level.

Click on the appropriate radio button to select a flight simulator type, and click on the **Browse** button and locate your simulator installation folder. Any time you change this folder location you must restart the FSXSERVER program. *If you fail to do this you will be unable to select and activate any dynamic weather or weather themes and OpusFSX will not be able to determine your available aircraft names (for camera control).*

Click OK. You will notice that the appropriate number of client links have been created. These will be indicated in yellow until a connection is made.

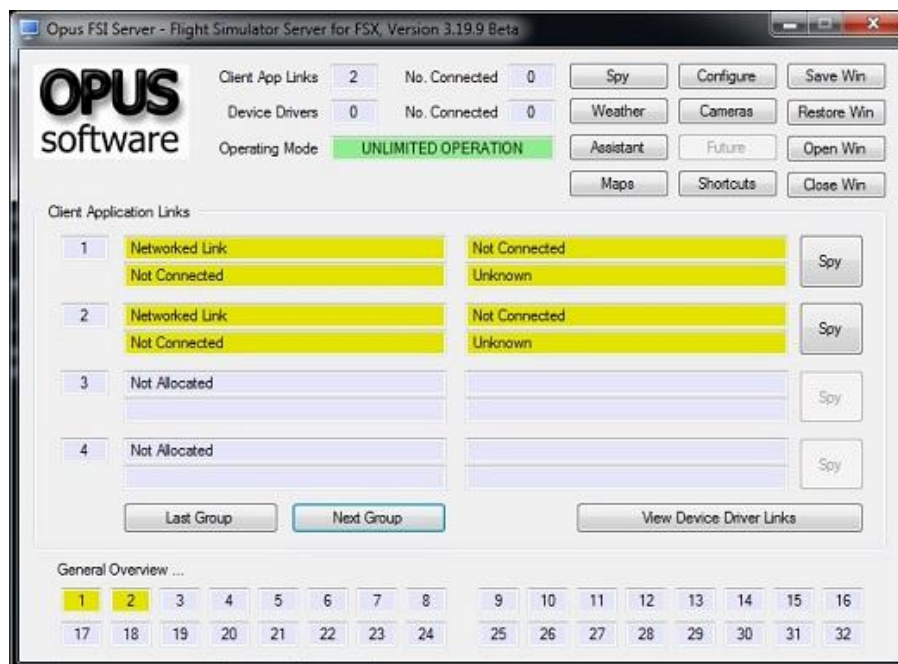


Figure 3 - FSX Server Waiting For Client Connections

On Each Client FSX System ...

Run the FSXCLIENT program on the client FSX/Prepar3D system. Once again you do not need to run FSX/Prepar3D at the moment.

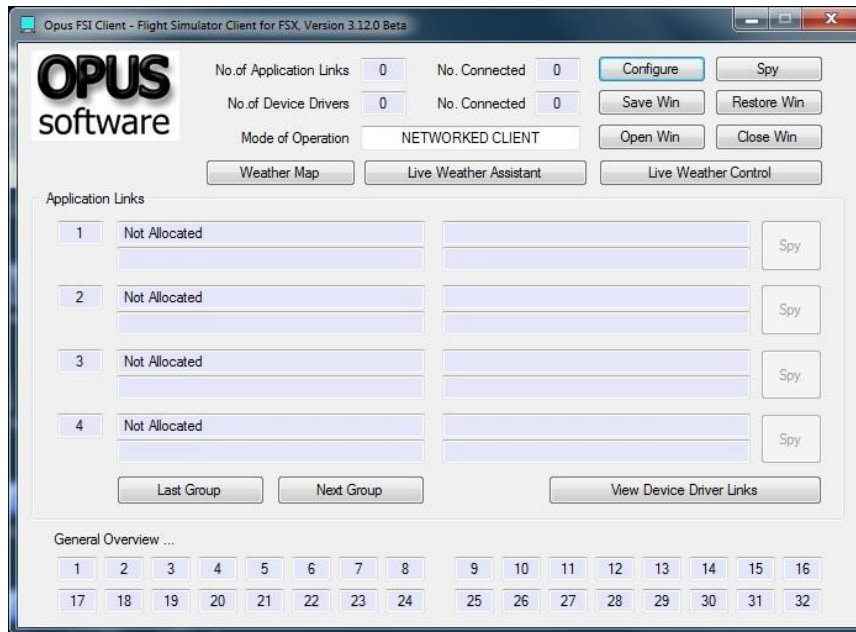


Figure 4 - FSX Client's Main Form

Click on the **Configure** button to display the 'Opus FSX Client - Configuration' dialog.



Figure 5 - FSX Client's Configuration Dialog

Specify the network identity (name or IP address) of your main FSX server machine. *If you have problems on the network and are using Computer Names in the configuration then try using IP addresses and vice versa. Do not use non alphanumeric characters in the computer name.*

Enable the required options for the client system. If you select **Enable Live View** you should also set **Enable Live Camera** unless you intend controlling the views manually.

Set **Enable Live Weather** if you wish to update weather on the client.

Enable **Run in High Priority** if required on your system, this helps some Live View networked systems operate more smoothly. This option is set automatically if you enable **No Connection to the Simulator** when the client is used solely for client side LWE Control and Live View, Live Weather and Live Camera are disabled.

Click on the appropriate radio button to select your Client's flight simulator type, and click on the **Browse** button and locate your Client's simulator installation folder. Any time you change this folder location you must restart the FSXCLIENT program. *If you fail to do this correctly you will be unable to activate any dynamic weather or select themes on the client systems.*

Click OK. You will notice that the appropriate number of application links have been created. These will be indicated in yellow until a network connection is made. With the FSXSERVER

program running on the main FSX server you should notice the links turning green on both the client and server systems as the network connections are made.

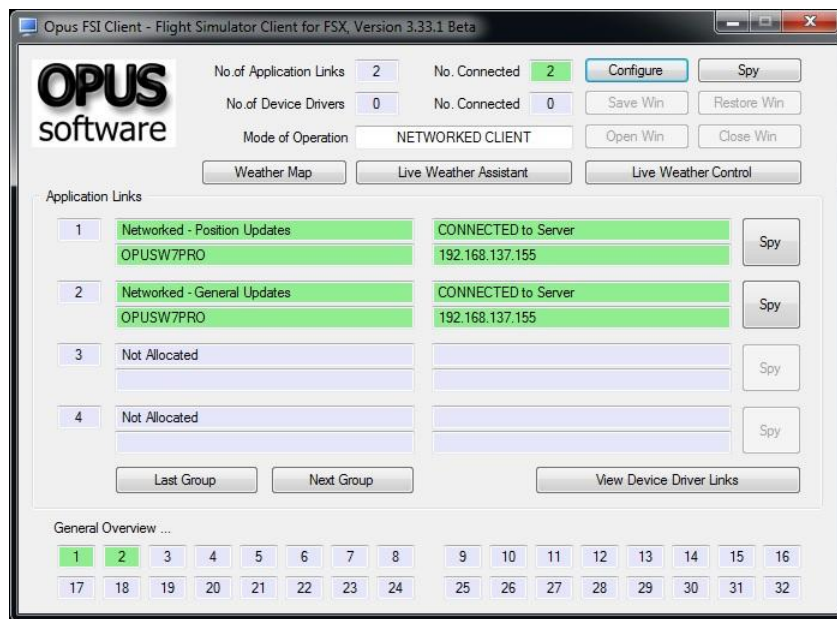


Figure 6 - FSX Client Connected To Server

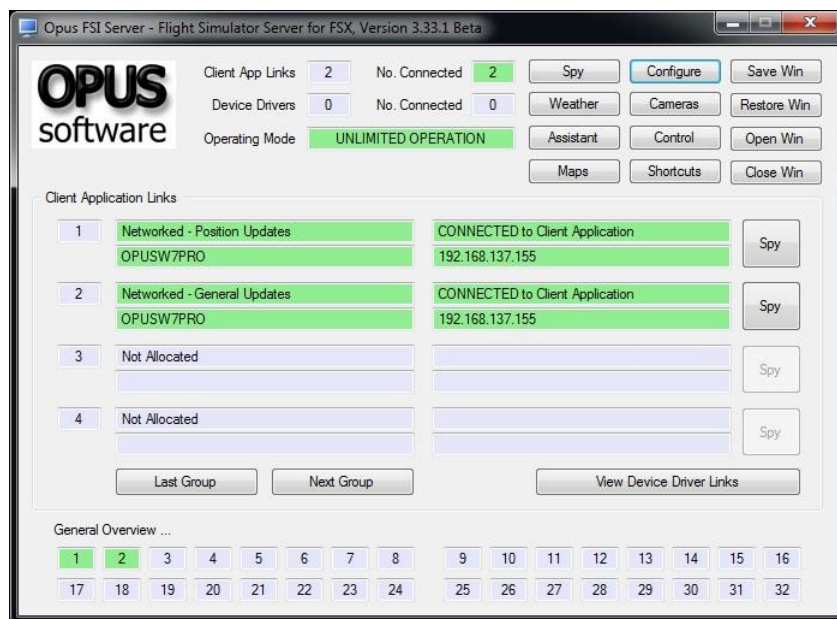


Figure 7 - FSX Server with Single Client Connected

After you have successfully established a connection with each of your client systems, shut down the server and clients and use the Recommended Start Up Procedure described above to enjoy your networked flight simulator system.

*To ensure optimum performance, the settings within FSX on each client FSX system should be configured in accordance with the instructions at the end of this guide in the **FSX Computer System Settings** section. Please adjust your settings before using **Live View**.*

FSX Computer System Settings

Recommended Settings for FSXSERVER and FSXCLIENT Systems

fsx.cfg File Settings

You must edit your fsx.cfg file, this file can be found in,

c:\Users\<your account name>\AppData\Roaming\Microsoft\FSX

If you can't see the **AppData** folder within Windows Explorer then you will need to change the **View** settings as follows,

Organize - Folder and Search Options - View - Enable the 'Show hidden files, folders, and drives' option.

On all FSX systems we recommend you specify the following fields within in the fsx.cfg file,

**[GRAPHICS]
HIGHMEMFIX=1
[DISPLAY]
WideViewAspect=True**

These setting will allow FSX to make better use of the 64-bit memory environment with >2GB memory, also supports modern day wide aspect screens for addons such as PMDG 737NGX.

We also recommend you optimize all of your fsx.cfg files using,
http://www.simforums.com/forums/setting-up-fsx-and-how-to-tune-it_topic29041.html

Recommended Settings for FSXCLIENT Systems using Live View

The Flight Simulator program on all client 'Live View' PCs is going to be used to provide nothing more than a scenic display. It is therefore highly recommended that you to turn off all FSX settings that are likely to have an adverse effect on the client system's display performance.

In order to see the full synchronized effects of Live View users may need to save a default flight with all engines running on each client system to ensure the aircraft is powered up correctly and ready to fly.

To provide the smoothest possible 'Live View' experience on each of the FSXCLIENT machines, the Flight Simulator should be configured with the following recommended settings.

SETTINGS

Display ...

To see wing flex you must select advanced animations which is set via the Graphics tab.

Sound ...

Turn off all sound by deselecting all sound options (e.g. Engines, Cockpit, Environment and Voice) and turn off both the 'Play user interface sounds' and 'Play user interface music' options.

Realism ...

Turn all 'Flight model' settings to their easiest settings.

Enable the 'Ignore crashes and damage' option.

Enable 'Unlimited fuel'.

Turn off all 'Special Effects' and 'Flight Controls' settings.

General ...

Turn off the 'Pause on task switch' option. You do not need to pause or set FSX into slew mode, these modes have no effect on the system's performance.

Customize

Graphics ...

Set the 'Target frame rate' on the server and all client PCs to UNLIMITED.

A word of caution, if you set your target frame rate too high on either the FSXSERVER or FSXCLIENT systems then you may experience problems with the snow and rain effects. That is, you may see some snow and rain falling vertically whilst moving. This is an FSX problem and the only solution we've found so far is to restrict the machine's frame rate. If this is a problem then a setting of **20fps to 60fps** should result in a smooth operation. On slower systems, or systems with slow hard disk drives, you may also notice the occasional screen flicker. Once again lowering the target frame rate should help.

If you experience lag on your client systems you may have to lower the frame rate on your server.

Aircraft ...

Unless you have a specific reason for wanting to see the cockpit view; select the **2-D instrument panel** as the default cockpit view and set the **2-D panel transparency** to 100%.

If you only want scenic views and not cockpit or external aircraft views on your client systems then you can optimize the performance even further by selecting a simple aircraft type (e.g. the standard Cessna 172 or Boeing 737).

To speed up the loading of FSX you can remove all unused aircraft from the standard 'Microsoft Flight Simulator X\SimObjects\Airplanes\' folder.

My advice would be to create a new 'Microsoft Flight Simulator X\SimObjects\Airplanes_Removed\' folder and move all the unused airplane sub-folders into there.

Weather ...

Turn off the 'Thermal visualization' option.

Turn off the 'Download winds aloft with real-world weather' option.

Enable turbulence and thermal effects on the aircraft.

Set the 'Rate at which weather changes over time' to zero (No Change).

We recommend you set the 'Cloud draw distance' to between 80mi/128km and 100mi/160km. If you generally fly at a higher altitudes then the higher setting is preferable but if you fly at lower altitudes then the lower setting is preferable.

Traffic ...

Disable all AI traffic.

FREE FLIGHT

Set 'CURRENT WEATHER' to Clear Skies.

Virus Checkers

We recommend turning off all virus checkers whilst running FSX since they can have a serious effect on performance.

Performance using Live View

Please remember you cannot just rely on the frame rate measurements because FSX will always give a fairly high priority to updating the screen. On networked systems you must always give your server's FSX/P3D adequate CPU capacity to perform other essential tasks, such as issuing the very important position updates. If your system has the stutters, then it is these infrequent position updates from the server's FSX/P3D that is producing them!

OpusFSX has very little impact on the FSX performance and can generally communicate the position updates as fast as FSX/P3D can issue them. So if you are having stutter problems then you should investigate other possible causes. For instance, are you draining the FSX performance by displaying too many views on the server, in-house we never drive more than the single view on the server. Remember if you must have a wide panoramic view then you can always install a wide view screen or use three identical display screens with a TrippleHead2Go type product, in which case, as far as the sim is concerned, you are still driving a single main view, just one with a large pixel width. Other possible causes could be your server's PC spec (is it up to the job), insufficient memory (Windows 7 64-bit + loads of memory is highly recommended), do you have a poor or slow network connection (this is the age of Gigabit LANs - there's no excuse), is your actual aircraft sim well behaved (or does it hog the processor?), is your scenery too complex for your system, or have you been over enthusiastic with the FSX/P3D settings.

To give you some idea as to what performance figures you should be aiming to achieve, here are my details recorded using a high-spec server PC with a single ASUS gaming laptop client (I have included the actual server computer and client laptop specs below).

First note, the client position update rates (most important) are displayed in the client's window for the 'Networked Live View - Position and Attitude' application link when the aircraft is in motion. Remember OpusFSX generally updates the client systems as fast as the server FSX/P3D program can issue position updates.

On the ground

Sitting on the runway in the **Real Air SF260** at **UK2000 East Midlands Extreme** airport,
Server Frame Rates: 50+ fps (67% full screen view), or 46 fps (2560 x 1600 full screen view)
Client Frame Rates: 40 to 50 fps (approx 1024 x 1040 view), or 28 fps (1920 x 1080 full screen view)

Client Position Updates: Smooth at 50 to 60 updates per second.

In the Air

Cruising at 4000ft in the **Real Air SF260** (on a very cloudy day),

Server Frame Rates: 60 to 100 fps (67% full screen view), or 65 fps (2560 x 1600 full screen view)

Client Frame Rates: 60 to 120 fps (approx 1024 x 1040 view), or 45 fps (1920 x 1080 full screen view)

Client Position Updates: Smooth at 80 to 120 updates per second, or 70 to 80 updates per second (full screen view)

In both cases I have my target frames rates set to Unlimited. On my server I am driving into a single 2560 x 1600, 32-bit Virtual Cockpit view, and my client laptop is driving a single 1920 x 1080, 32-bit 2D cockpit 'scenic' view.

Server PC:

Windows 7 64-bit

Intel Six Core, i7 X990 CPU @ 3.47GHz

24GB memory

465GB HDD

2 x 224GB Kingston SSD (FSX on one, P3D on the other, everything else on drive C)

2 x NVidia GeForce GTX580s

ASUS Client Gaming Laptop:

Windows 7 64-bit

Intel Quad Core, i7 2630QM CPU @ 2GHz

12GB memory

2 x 700GB HDD

NVidia GeForce GTX560M

My Server's FSX Settings:

Graphics,

Target Frame Rates: Unlimited

Filtering: Anisotropic

Anti-aliasing: ON

Global Texture: V.High

Advanced Animations: ON

Scenery,

Level of Detail: Medium

Mesh Complexity: 100

Mesh Resolution: 2m

Texture: 7cm

Water Effects: High 1.x

Scenery: Very Dense

Autogen: Sparse

Ground Shadows: OFF

Special Effects: High

Weather,
Cloud Drawing: 110mi/176km
Thermal Vis: NONE
Disable Turb: YES
Detailed Clouds: YES
Cloud Cover: MAX

Traffic,
Airline: 32%
GA: 16%
Airport: Minimum
Road: 4%
Ships: 4%
Boats: 3%

My client systems are set up in accordance with our Getting Started guide. Note also, I use Kingston Solid State Drives (SSDs) to give the fastest possible read performance for FSX and P3D. Do not load the operating system on these drives though since the write performance is quite poor.

My client system's view does not stutter with this setup and does not change if I add a second client system. On some systems we have set the target frame rates to 60 or Unlimited on the server and 24 on the client systems. You may have to play with yours. One hint - if you're flying along and the rain or snow is still falling vertically then FSX/P3D cannot cope so try lowering your target frame rate to 30 or less.

Live View Test

These tests are designed to help you set up your Live View system and isolate problems within your server, network, or client systems. Make sure you have set up all systems in accordance with the Getting Started Guide for Networked Systems.

Pay careful attention to all the recommended sharing, permissions and security settings, remembering the share both the install drive and folders of OpusFSX and your simulator. Also pay attention to the recommended settings and optimisation of your client systems.

Starting Up

Run the simulator and load the flights on the server and all client systems. Your aircraft can be set at an airport before starting the test, alternatively you may conduct the test with the aircraft positioned anywhere you want.

Your simulator should be run in Windowed Mode on all systems.

Run the FSXSERVER program on your server and let it initialise, then run the FSXCLIENT program on each client system you are going to test.

Allow all the systems to settle down with all client system simulator's fully initialised and positioned. You are now ready to conduct the Live View link tests.

To start the test, open the Configure dialog and click on the Live View Test button. The Live View Test dialog will be displayed and your simulator will be un-paused.



On the server you will not be needing your simulator display so just minimise it to the taskbar.

Testing The Link

Determine Your Optimum Update Rate ...

Close any Spy windows you have opened and ensure you have minimised your server's simulator to the taskbar.

Start off with the **Update Rate** slider in the centre position and tick each of the **Pitch**, **Bank**, and **Yaw** test options, then click the **Start** button. You should now see your client display jump to 500 feet above the surface and start moving in all three attitude axis. Let it run for a few seconds then click the Stop button. The client display should stop and reset straight and level without any significant delay. Adjust the Update Rate until you can run this test and Stop without any appreciable lag in the client response.

Once you have determined your optimum Update Rate open the Position & Attitude Spy window on your client system, start the test and make a note of the rough average number of Position Updates per second. Divide 1000 by this figure and set the ms rate in the **Live View Scan Rate** box provided in the Configure dialog e.g. 100 updates per second is 10 ms.

Stuttering Client Display

Your client display should move fairly smoothly with no major stutters or abrupt changes in attitude.

If your client display stutters badly running the Live View Test on your Server then you most likely have a problem with either your network connection or your actual client simulator system, try conducting the Live View Test on your client system.

If your client display stutters badly whilst running the Live View Test on your Client then this will indicate your client simulator system cannot cope with the position and attitude updates. Please make sure you have optimised your client simulator system, stopped all unnecessary software including any virus scanners, selected a stock or dummy simulator aircraft (e.g. the stock C172 or B737). You could also try adjusting the simulator settings, changing the simulator's target frame rate etc.

Options

Update Rate

This slider will typically alter the update rate from between 50 updates per second (Slow) up to about 120+ updates per second. This slider should be adjusted so that there is no appreciable lag when Stopping the test.

If there is a lag then reduce the rate of updates sent from the server by adjusting the configurable scan rate (i.e. increase the value) in the server Configure dialog's **Live View Scan Rate (ms)**.

Test Tick Boxes

The Test Pitch, Bank and Yaw tick boxes allow you to select each of the attitude modes individually.

Start Button

Click the Start button to start the test and vary the selected pitch, bank and yaw attitudes for the aircraft. At the start of a test the aircraft is automatically positioned 500 feet AGL.

Stop Button

Click the Stop button to terminate the test and re-centre the aircraft.

Quit

Either click on the Quit button or the dialog's X to abort the test and close the Live View Test dialog.

FAQ and Troubleshooting

Typelinitialisation errors when running the FSXCLIENT program

Navigate to the OpusFSX installation folder on your client and install the SimConnect libraries using the supplied **SimConnect.msi** file.

Can I use a Wi-Fi network ?

Yes you can, however you should note that a direct Wi-Fi link is only going to give you 54Mbps and a redirected link will operate at about 16 to 24Mbps. This may be faster than an ancient 1990s 10base-T network running at 10Mbps but nowadays everyone uses either 100Base-TX (100 Mbps) or a 1000Base-T gigabit LAN running at 1000Mbps (1Gbps). The modern cabled LANs are going to operate up to 64 times faster than the Wi-Fi link!

However, if you must use a Wi-Fi link (no LAN ports or Cat5 cable) then just make sure all the computer systems have the same workgroup set (Control Panel - System and Security - System - Change Settings - Change...) and configure the main server's computer name into the FSXCLIENT programs. You will find the link works perfectly well with perhaps a few tiny jitters when taking off of flying fast and low (depends how good or busy your Wi-Fi link is).

My client system lags behind the server

The lag indicates the clients cannot keep up with the updates. The programs have 32K buffers for both receive and transmit over each IPC link, hence the possible back log.

There are two solutions. The best is to reduce the rate of updates sent from the server by adjusting the configurable scan rate (i.e. increase the value) in the server Configure dialog's **Live View Scan Rate (ms)**. The second solution is to occasionally pause using the 'P' key on the server, let everything catch up and then unpause, let things settle and the lag will then be gone. You can also use the pause key to measure the lag or amount of buffering at the client end. If the system is configured and tuned correctly there should never be any lag and both server and client should pause together almost instantly. If your system is set up correctly it should be able to cope with the throughput.

We have a Live View test facility to help you tune your system.

Start up all the client FSX systems and the server FSX so that they are all up and running. Then start the FSXSERVER program, let it settle, then each of the FSXCLIENT programs. Once they connect their FSXs will normally reload to the new location, they will also resync after receiving their first weather update (necessary to ensure correct cloud sync). Once all the client systems are settled then you can force another weather update just before takeoff to make sure all is well and then you are ready to go.

It is very important to set up your client systems as per the Getting Started guides to optimise your client systems, this can have a dramatic impact on the performance. It also helps if you are displaying scenic views to select one of the simple FSX stock aircraft (e.g. the C172 or B737), some people even use a dummy aircraft that has zero overheads. You may also try adjusting the target frames rates, either Unlimited or on slower systems you could even set 20 to 30. It's all about giving FSX more time to process the stream of position updates.

Also, if you are using Static Weather Themes and have paused the system for any length of time (>1min), then it would be best to select Weather on the FSXSERVER and click Update Weather, this re-synchs everything including the cloud formations. The tell tale sign that one system has been paused too long is that you will get different cloud formations on the server and client system. Anytime this happens just re-sync via the Weather option in the FSXSERVER program. If you don't pause this should never happen.

We also recommend not running anti-virus software since this can have a serious performance effect on the clients.

Can't get cameras or weather on the clients

You haven't set up your sharing and security permissions for Everyone on your server and client systems. Both the drive and the FSX install folder must be shared and accessible to the OpusFSX program. Hence you have no client weather (the client cannot copy the weather file), and you have no external aircraft view (the client cannot prepare your aircraft.cfg files).

You should also have the all the standard views available, so with a cockpit view on display on the

client, hitting the S key four times should cycle to the custom external aircraft view. But this will only happen when the CameraDefinition has been appended to the aircraft.cfg files. Both systems must be shared with all security permissions set as per this guide.

Win7 and XP networked systems

You may (or may not) experience problems if you have both Win7 and XP systems on your network. Removing the homegroup and reverting to standard networking may help.

<http://windows.microsoft.com/en-US/windows7/Networking-home-computers-running-different-versions-of-Windows>

and http://www.youtube.com/watch?v=VRY4_POp9zA

Please also refer to the FAQ in the OpusFSX_Getting_Started_Single_PC pdf guide which can be found in the OpusFSX installation folder, also available from our download page.