OpusFSI

Flight Simulator Interface for Prepar3D
Getting Started - Networked PCs

Live View Multi-Screen Display

Photo courtesy of the Human-Centered Design Institute, Florida Institute of Technology

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Software Installation

The first stage is to install and set up the OpusFSI software on your server PC in accordance with the OpusFSI_v6_Getting_Started_Single_PC guide. When you have tested out the single PC standalone operation then you are ready to set up the OpusFSI 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 don't need to install the sim or FSUIPC on the clients unless you are using **Live View**.

Installing OpusFSI

The OpusFSI software must be installed on your server and each of your client P3D systems. Simply copy the OpusFSI_v6.msi installation file onto your client systems and double-click on the file.

Alternatively you can create an OpusFSI_v6 folder on each of your client PCs and simply copy the files and sub-folders across from the server's OpusFSI_v6 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 OpusFSI_v6 with the exception that you must not install OpusFSI in the **Opus Software** or **Program Files** folders, and don't install in more than one folder on your PC.

Upgrading OpusFSI

Download the latest Release or Beta version from the downloads page on our website.

Uninstall the old software on your server before installing the upgrade via Control Panel, Uninstall a Program, do not delete your **OpusFSI_v6** folder. Double click on the Opus msi file and follow the instructions to install the software upgrade.

All your original configuration (DAT and CMD) and camera definition (CAM, LIM and CDF) files will remain intact in the **OpusFSI_v6** 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 **OpusFSI_v6 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 OpusFSI_v6 folder containing your camera and system configuration files.

Alternatively you can simply create a c:\OpusFSI_v6 folder on each of your client PCs and copy the files and sub-folders across from the server's c:\OpusFSI_v6 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.*

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 P3D system without too much fuss.

On each of your client systems ...

In Windows Explorer, navigate to your installation folder (c:\OpusFSI_v6) and right-click on the P3DCLIENT program. Select the **Send to - Desktop (create shortcut)** option. Right-click on the new desktop icon, select **Properties**, check the program is configured to **Start In:** your installation folder (c:\OpusFSI_v6). Select the compatibility tab (if available) and tick the checkbox to **Run this program as an Administrator**. Click **OK**.
Left click on the icon once to select it and then left click again to select the icon name, type in **OpusFSI_v6 CLIENT** to rename the icon.

Automatically Selecting the Simulator Type

The P3DCLIENT program will accept a NONE argument to select **No Connection To The Simulator** mode.

So if you have P3D you can create desktop shortcuts, running 'c:\OpusFSI_v6\P3DCLIENT.EXE' for the latest release Lockheed Martin Prepar3D, and 'c:\OpusFSI_v6\P3DCLIENT NONE' for no simulator when using just the Live Weather Assistant or Client Side LWE Control.

Automatically Selecting an Optional User Configuration File

The P3DCLIENT start up program accepts an optional User CFG Filename as a program argument. This argument can be specified before or after the sim type argument. When specified the User CFG File will replace the current FSICLIENT.CFG file. This option allows you to create various OpusFSI client configurations. The configurations can be specific to different sim versions for example, or different flight modes (e.g. the preferred weather options for VFR flying etc.).

To create a new configuration simply edit the options in OpusFSI, quit OpusFSI, then copy/rename the current CFG file as appropriate, finally append the name of your CFG file to the start up program. You can create various Desktop Shortcuts which utilise your various User CFG Filenames.

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 OpusFSI network is created by running the SERVER program on the main (host) Flight Simulator PC, and running the CLIENT program on each of the client PCs.

There is no need to run the sim to carry out the initial set up and configuration of your SERVER and CLIENT programs. You may need to set up your network first, see below.

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 **OpusFSI** 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 SERVER and CLIENT 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 CLIENT 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:	P3DGROUP	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 **OpusFSI**.

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 OpusFSI 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 P3DSERVER (or P3DCLIENT on a client PC) in the OpusFSI installation folder.

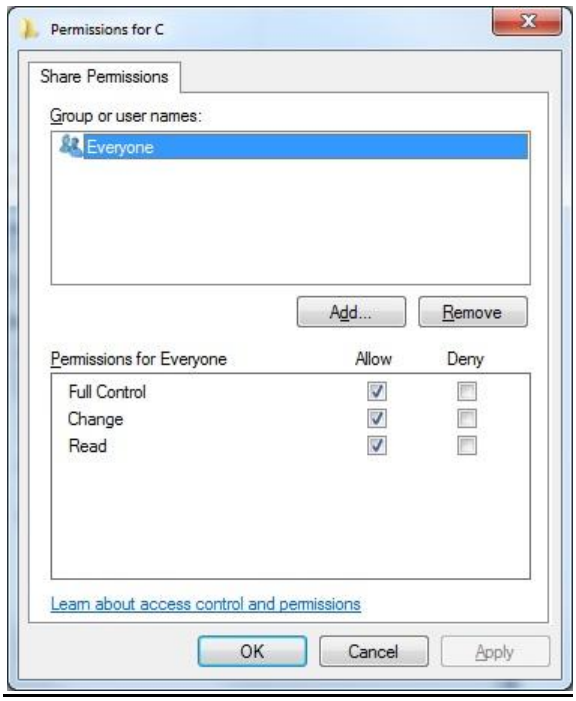
Sharing and Security Permissions

Set up your sharing and security permissions for Everyone on your server and client systems. Both the drive and the sim install folder must be shared and accessible. You may need to set sharing **and** security permissions on both your OpusFSI_v6 and your Prepar3D folder in order for OpusFSI to write the necessary weather files into the Prepar3D\Weather\themes folder.

Sharing

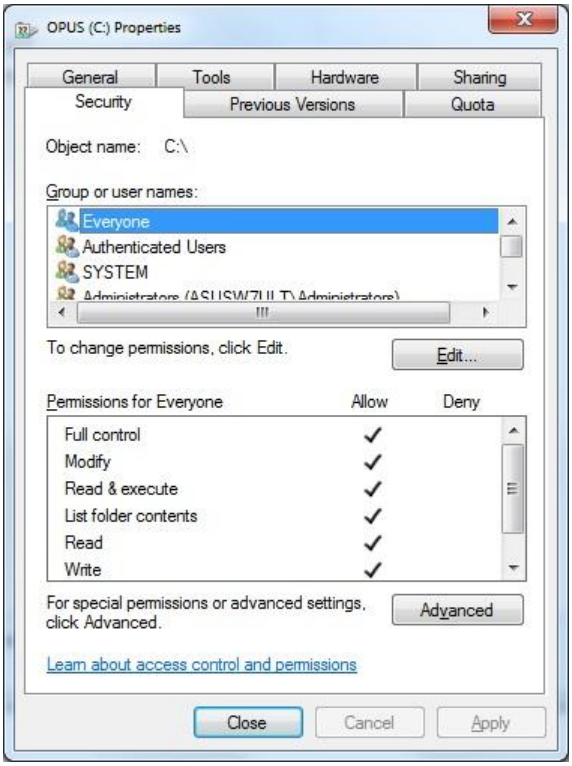
To set up *Sharing* on a drive run Windows Explorer, right click on the drive you wish to share, select **Properties**, select the **Sharing** tab, select **Advanced Sharing**, tick the checkbox to share the drive and enter a share name. Make sure the share name is a single letter code, e.g. C, not 'Drive C' for instance, otherwise OpusFSI 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. **OpusFSI** 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 SERVER and CLIENT programs are detailed below. You can monitor the connection status on the main form displays of the SERVER program and each of the CLIENT 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.

Recommended Start Up Procedure For Live View and Live Camera Operation

- Run Prepar3D on all systems and wait for them initialize. Wait for your flight to fully load and initialize on all systems. We recommend loading a default flight with nil wind.
- Run the P3DSERVER program on your main SERVER system.
- Run the P3DCLIENT programs on each of the client systems and watch them connect to the server.
- When all the 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 SERVER 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 Prepar3D on all systems and load flight.
2. Run the SERVER program.
3. Run all CLIENT 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 **OpusFSI** software, created your desktop shortcuts, and set up your network. This section uses a pictorial guide to configuring your networked system.

The SERVER and CLIENT programs **MUST** be started in their local installation folders, in other words they MUST be started in **OpusFSI_v6**.

Run the SERVER program on your main 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, SIM, or FSUIPC is needed on the client, they are only required if you are using Live View. If you wish to see traffic on the LWA Map then enable Live Traffic on the Client.

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, SIM, or FSUIPC is needed on the client.

If you receive **TypeInitialisation** errors when trying to run the CLIENT program use the .NETv4 variant of SimConnect and SlimDX.

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 P3DCLIENT program on your client (assuming you have installed or copied your OpusFSI_v6 folder across onto there).
Open the clients Configuration dialog.
Specify your server's computer name or IP address.
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 SIM 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.

The CLIENT Live Weather Control **Display Weather Report**' options will control the first **OpusFSI Weather Report** as opposed to the 'in sim' weather report window.

In this mode of operation Live Camera is disabled.

Full Operation (Views and/or weather on client PCs)

Figure 1 - FSI P3D Server's Main Form

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

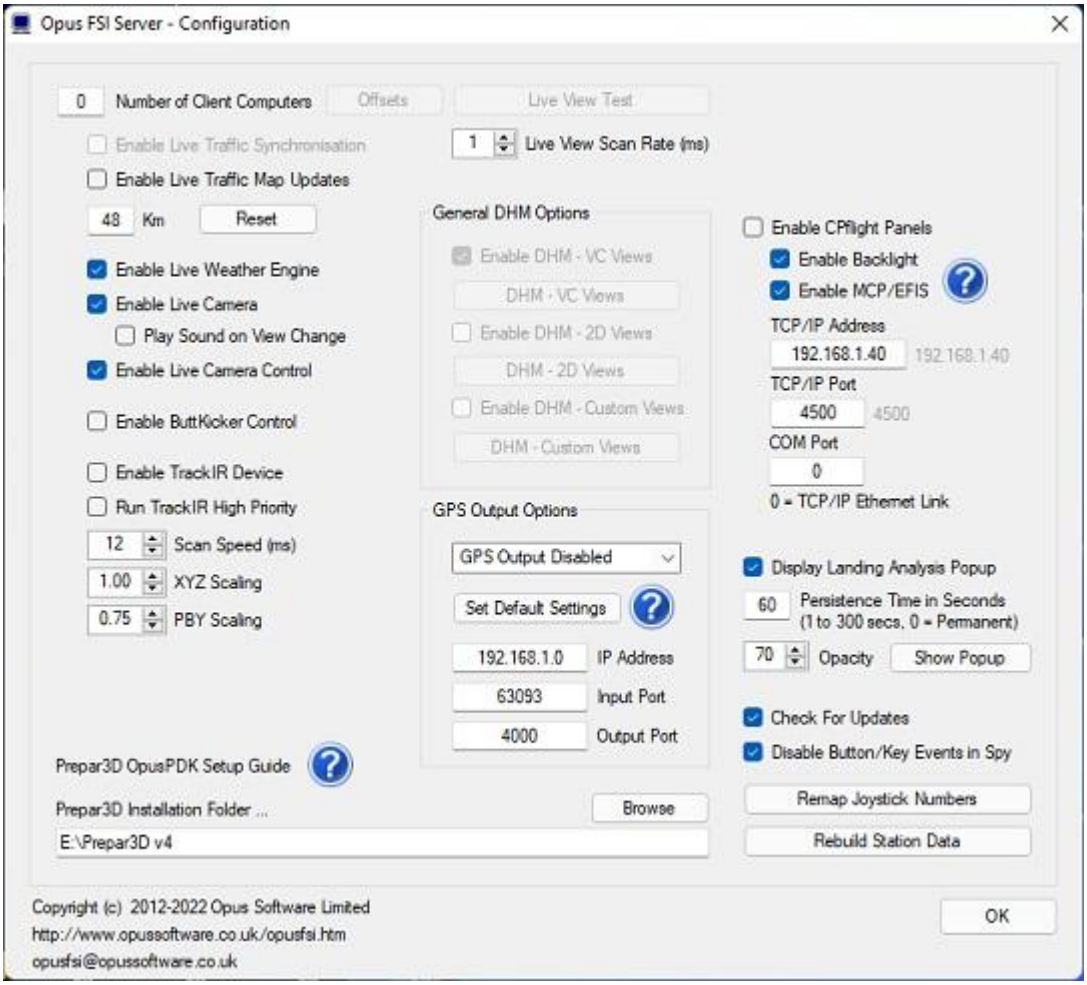


Figure 2 - FSI Server's Configuration Dialog

Specify the number of **Client Computers** you intend connecting to the server.

Enable Live Traffic will currently display traffic information on the LWA Assistant map. Live Traffic has not yet been implemented for Live View.

Enable **Live Weather Engine** if required.

Selective Updates with Client Systems Warning:

Due to several omissions and errors within the Lockheed Martin weather related SimConnect and PDK functions it is not possible for OpusFSI to correctly reset and manage certain weather data. As a result, if you have performed any selective weather updates and you shutdown any Prepar3D simulator then it is imperative that you shutdown all Prepar3D simulators along with all P3DSERVER and P3DCLIENT programs. In other words, after any selective weather updates, shutting down any Prepar3D simulator will require a full system restart.

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

Enable TrackIR if required on your system. The **Run TrackIR High Priority** option will affect the priority of the Opus FSITRACKIR 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 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 **Browse** button and locate your simulator installation folder. Any time you change this folder location you must restart the SERVER program. *If you fail to do this you will be unable to select and activate any dynamic weather or weather themes and OpusFSI will not be able to determine your available aircraft names (for camera control).*

Click OK.
Select **View Client App Links** from the server's main form and you will notice that the appropriate number of client links have been created. These will be indicated in yellow until a connection is made.

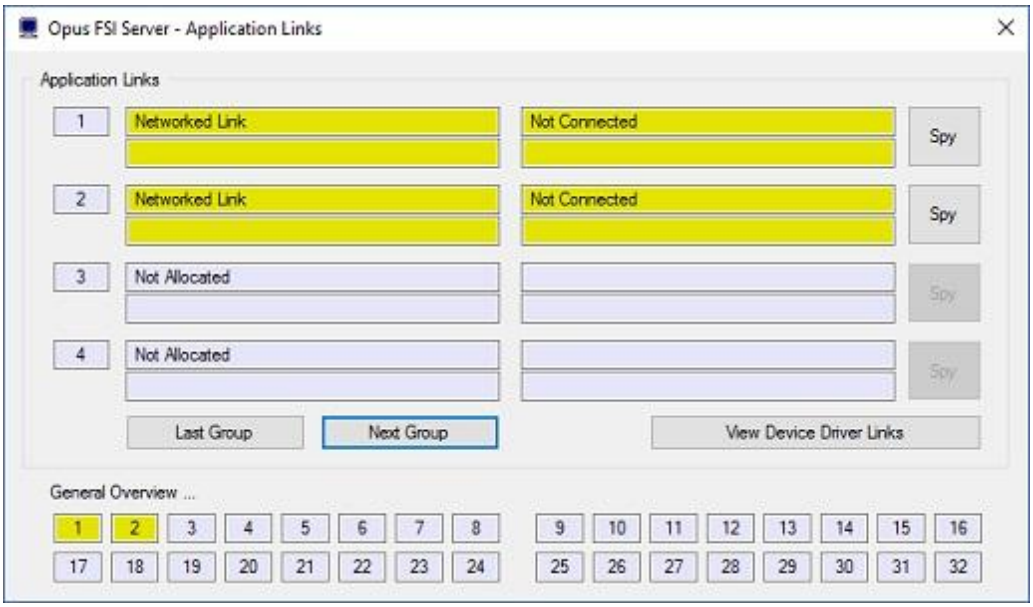


Figure 3 - FSI Server Waiting For Client Connections

On Each Client SIM System ...

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

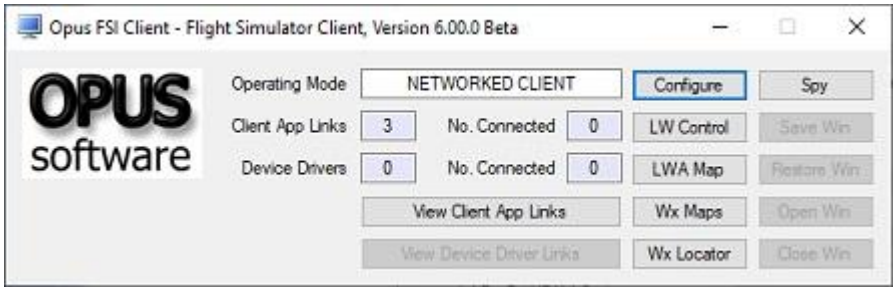


Figure 4 - FSI Client's Main Form

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

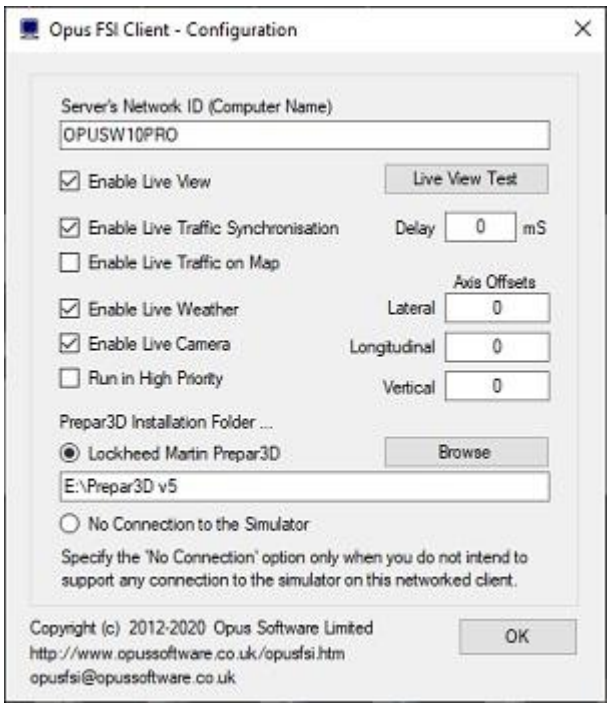


Figure 5 - FSI Client's Configuration Dialog

Specify the network identity (name or IP address) of your main SIM 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 (e.g. -).*

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 **Browse** button and locate your Client's simulator installation folder on the client PC. Any time you change this folder location you must restart the CLIENT 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.
Select **View Client App Links** from the client's main form and 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 SERVER program running on the main SIM server you should notice the links turning green on both the client and server systems as the network connections are made.

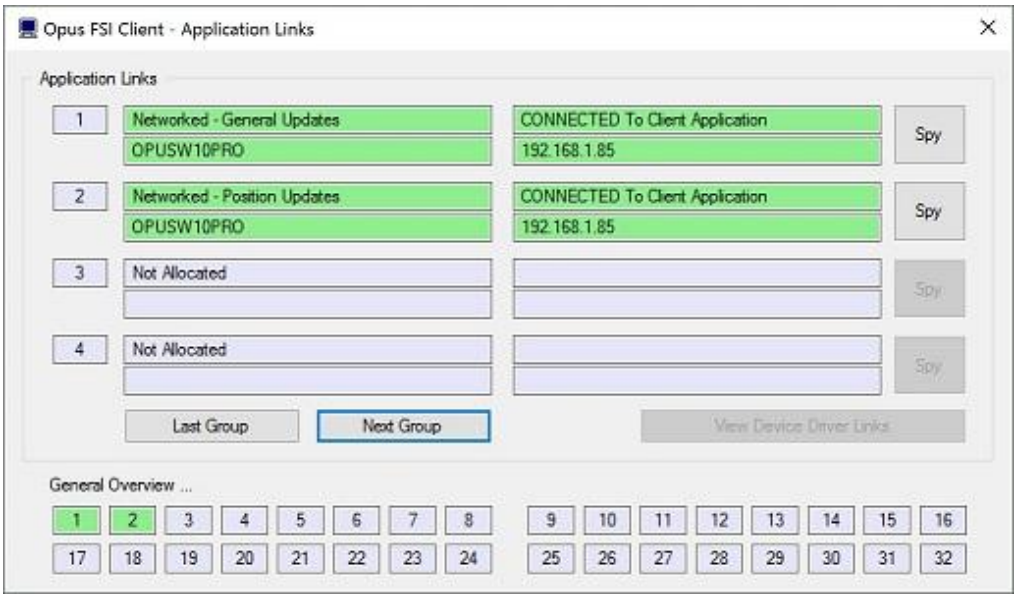


Figure 6 - FSI Client Connected To Server

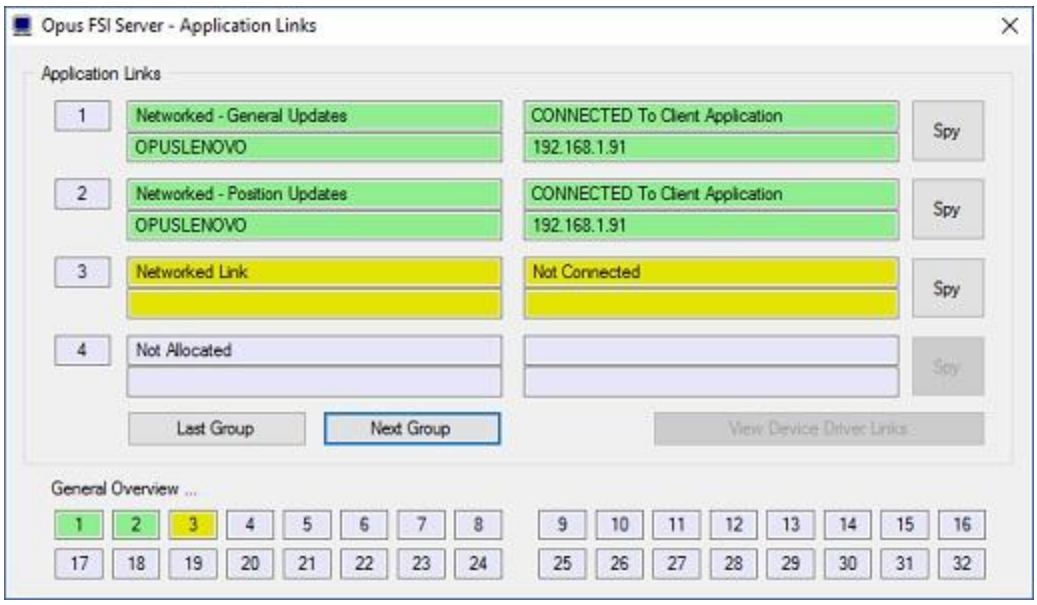


Figure 7 - FSI Server with single client connected

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.

Live View Offsets

The SERVER Config dialog includes an option to manage and edit server side Live View Offsets. The offsets (in meters) adjust the reference point for the aircraft axis on the client system(s). The aircraft's current heading and global position is factored in to determine the current axis offset in latitude and longitude. These Lateral/Longitudinal/Vertical aircraft axis offsets supplement the client side Config options and can be associated with a specific aircraft type or group of aircraft types.

Use the **Offsets** button in the **Config** dialog to open the **Live View Offsets Management** dialog. This dialog allows you to **Create**, **Clone**, **Edit**, **Delete**, or order your server side Live View Offsets. You can also Edit by double-clicking on any entry in the displayed list.

The **Live View Offset Editing** dialog allows you to specify the required Lateral, Longitudinal and Vertical aircraft axis offset values, entered as double precision floating point numbers in meters. A decimal place must be used to enter a fraction of a meter e.g. 0.3. You also have the option to **Assign Aircraft Types to the Offsets** (similar to assigning aircraft types to camera views).

The offsets configuration file is named P3DSERVER.LVO.

Recommended Procedure

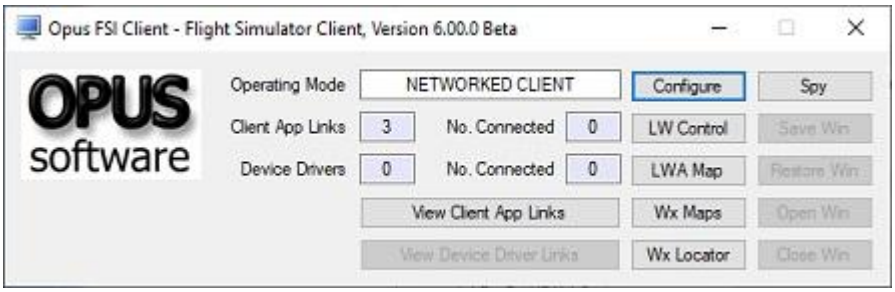
The recommended procedure for setting offsets is,

- First use the client side offset options to set your Live View system up for a specific aircraft combination. The client side offsets can be altered more easily in real time.

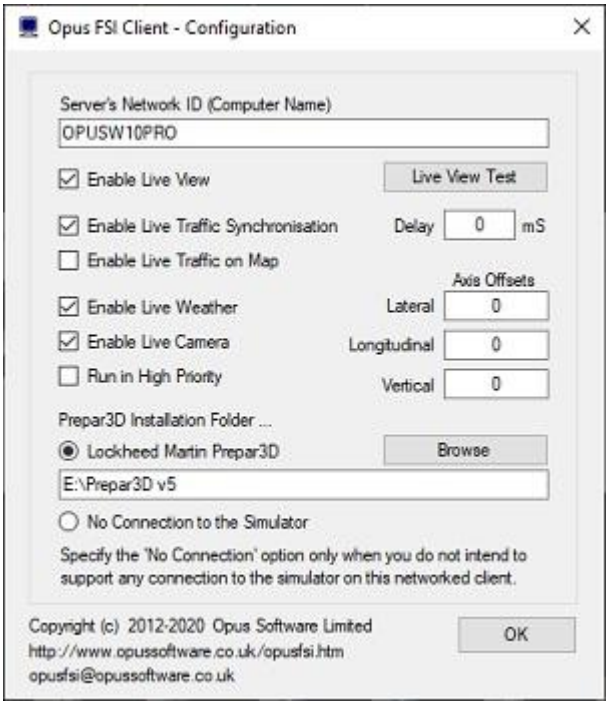
- When you are happy with the offsets create a server side set of offsets and assign them to the loaded aircraft type or types.
- Finally, reset the client side offsets back to zero.

On a Client System ...

Run the CLIENT program on a client Prepar3D system. You will also need to run Prepar3D.



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

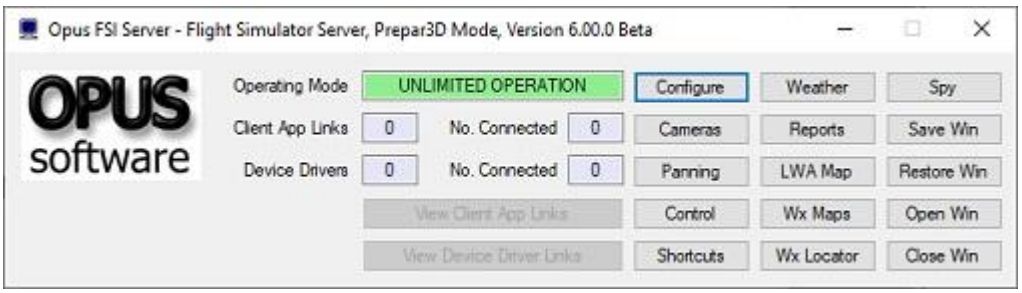


Manually enter and fine tune your offsets. The altitude is in meters.

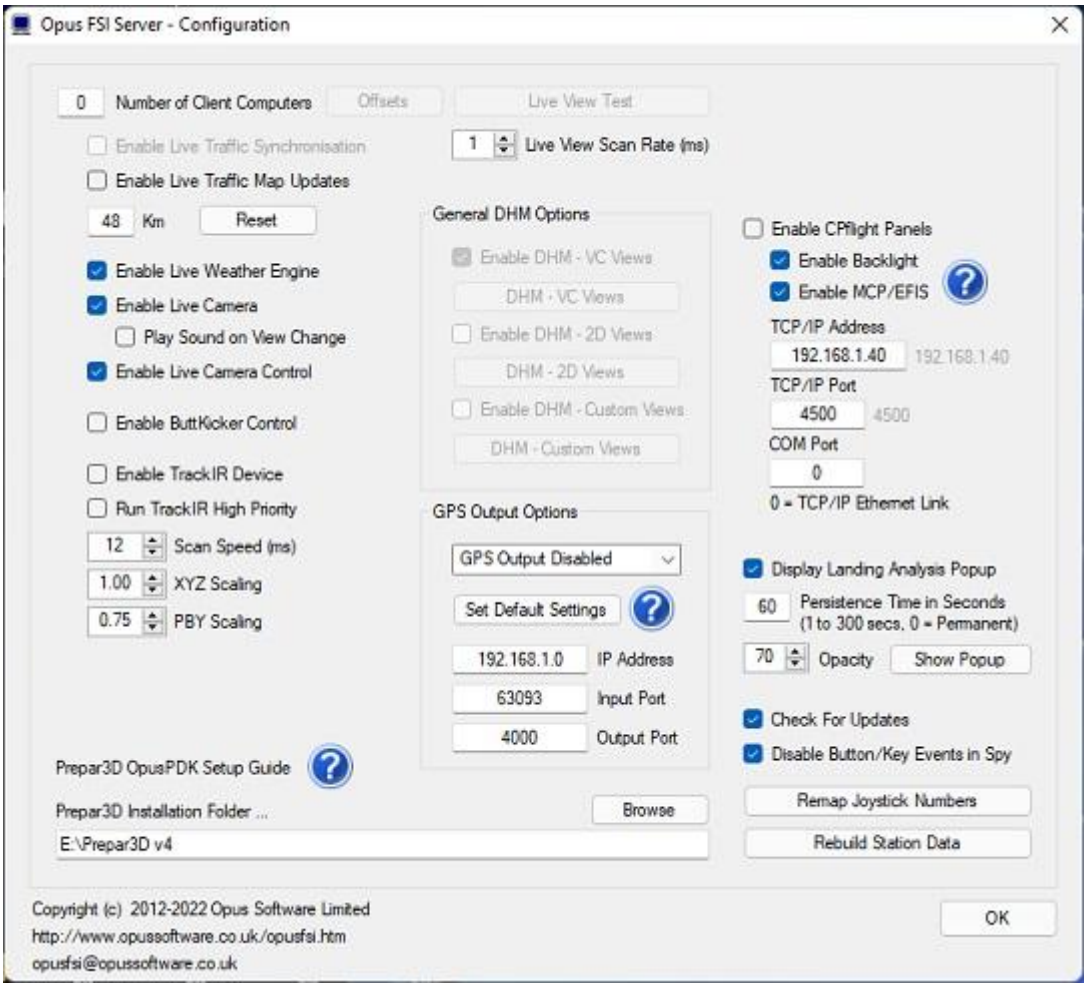
When happy with the offsets, create a server side set of offsets and assign them to the loaded aircraft type or types.

On the OpusFSI Server System ...

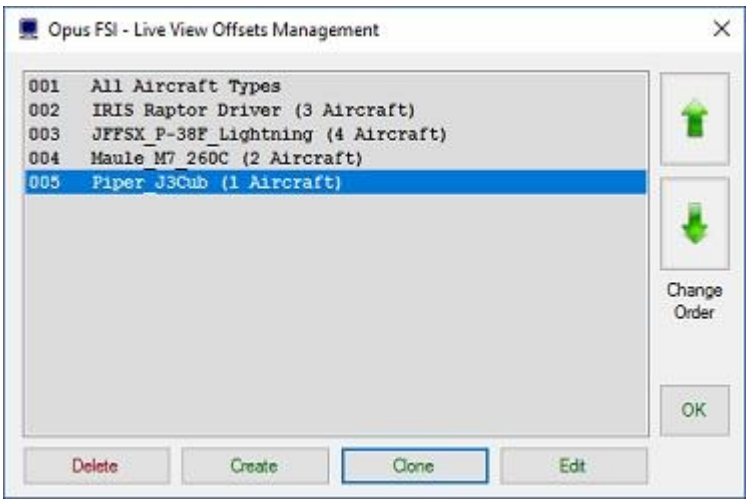
Run the SERVER program on the server Prepar3D system.



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



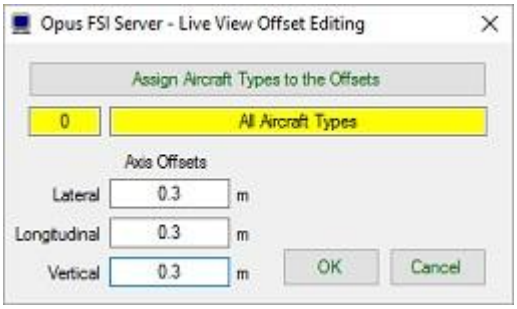
Click on the **Offsets** button to display the '**Opus FSI - Live View Offsets Management**' dialog.



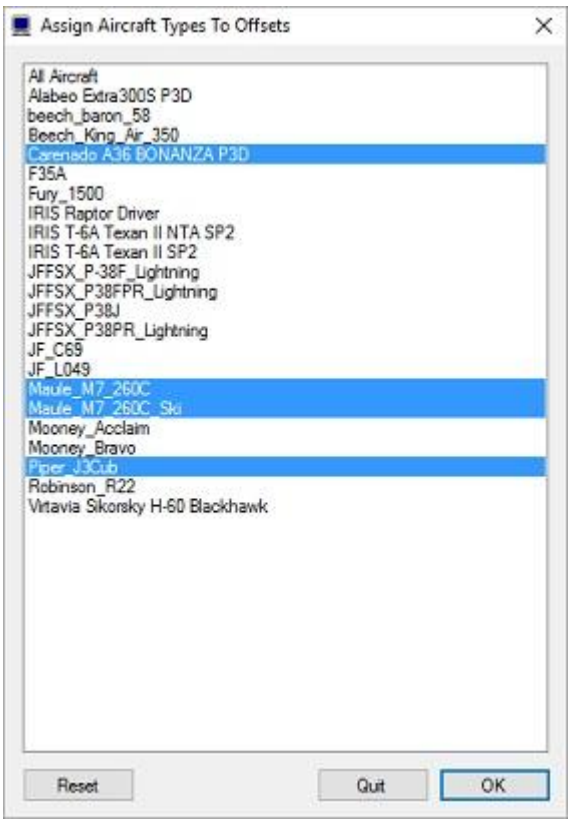
This dialog allows you to **Create**, **Clone**, **Edit**, **Delete**, or order your server side Live View offsets. You can also Edit by double-clicking on any entry in the displayed list.

Creating a Live View Offset

Click on the **Create** button to display the '**Opus FSI Server - Live View Offset Editing**' dialog. Enter the offset values you obtained earlier from the client's configuration.



You have the option to associate the offsets with a specific aircraft type or group of aircraft types by clicking on the **Assign Aircraft Types to the Offsets** button. Click on the aircraft type to select it or use the shift key or control key to select multiple types.



To **Clone** an offset select the desired offset from the '**Opus FSI - Live View Offsets Management**' dialog and then click on the **Clone** button. The new clone will appear at the bottom of the list.

To **Delete** an offset record click on the desired offset within the list and then click on the **Delete** button.

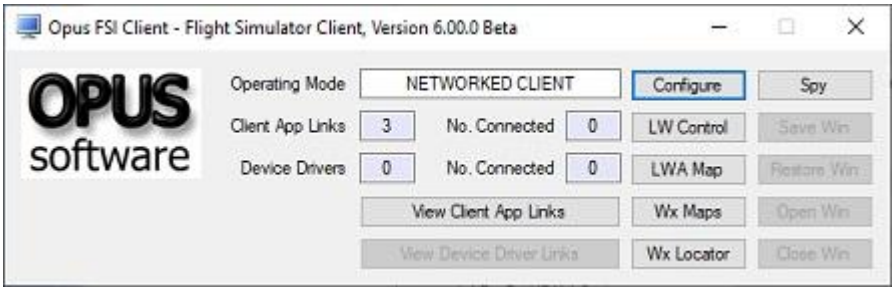
To **Edit** an offset either double click the mouse over the entry in the list, or click on the entry to select it and then click on the **Edit** button.

You may move records up or down in the list using the green arrow keys.

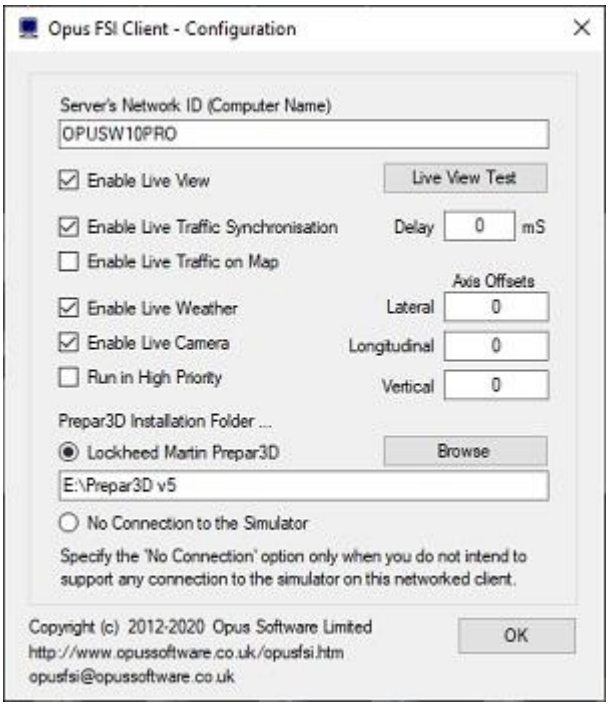
Finally, reset the client side offsets back to zero, if you don't then they will be added to the server offsets.

On the Client System ...

Run the P3DCLIENT program on the client Prepar3D system.



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



Reset the client side offsets back to zero.

Recommended Settings for CLIENT 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 SIM 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 CLIENT machines, the Flight Simulator should be configured with the following recommended settings.

Aircraft, Select Aircraft ...

Select a simple stock or dummy simulator aircraft (e.g. the stock C172 or B737).

Aircraft, Realism Settings ...

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.

Options, Settings, Display, Graphics ...

To see wing flex you must select advanced animations.

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 P3DSERVER or P3DCLIENT 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 a P3D 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.

Options, Settings, Display, 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 P3D you can remove all unused aircraft from the standard P3D \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.

Options, Settings, Display, Weather ...

The weather options must be identical to the server, i.e. matching cloud draw distance, cloud detail etc. 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. 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.

Options, Settings, Display, Traffic ...

Disable all AI traffic.

FREE FLIGHT

Options, Settings, General ...

Turn off the 'Pause on task switch' option. You do not need to pause or set P3D into slew mode, these modes have no effect on the system's performance.

Options, Settings, 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.

World, Weather...

Select *Weather Themes* and set to *Clear Skies*.

Virus Checkers

We recommend turning off all virus checkers whilst running P3D since they can have a serious effect on performance and can even stop or delete our software.

Performance using Live View

Please remember you cannot just rely on the frame rate measurements because P3D will always give a fairly high priority to updating the screen. On networked systems you must always give your server's 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 P3D that is producing them!

OpusFSI has very little impact on the SIM performance and can generally communicate the position updates as fast as P3D can issue them. So if you are having stutter problems then you should investigate other possible causes. For instance, make sure you are not running any software (AV or Firewall) that could be interfering with the SERVER program's piped IPC link communications. Are you draining the SIM 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 P3D settings.

Try turning OFF **Live Traffic** and restarting the OpusFSI SERVER.

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 OpusFSI generally updates the client systems as fast as the server 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: For P3D 8-20 updates per second with the server Live View Scan Rate (server Config dialog) set to zero.

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). For P3D 8-20 updates per second with the server Live View Scan Rate (server Config dialog) set to zero.

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

Client ASUS Gaming Laptop:
Windows 7 64-bit
Intel Quad Core, i7 2630QM CPU @ 2GHz
12GB memory
2 x 700GB HDD
NVidia GeForce GTX560M

Client Lenovo Gaming Laptop:
Windows 10 64-bit
Intel Xeon, E3-1505M CPU @ 2.8GHz
16GB memory
2 x 500GB SSD
NVidia Quadro M4000M

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 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 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 OpusFSI_v6 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 (or just the client system you wish to test and set up).

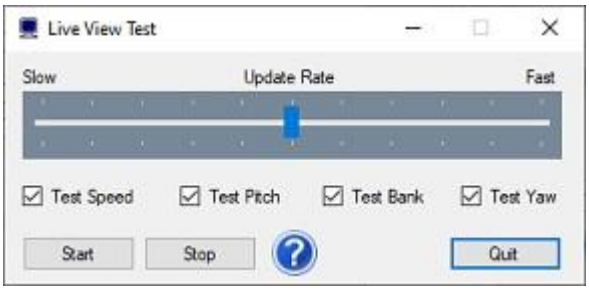
Your aircraft can be sat at an airport before starting the test, alternatively you may conduct the test with the aircraft positioned anywhere you want. The test is conducted at an altitude of 3000ft on the server and an altitude of 2000ft on the clients so ensure tests are conducted at airfields less than 2000 feet above mean sea level (AMSL).

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

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

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

To start the test, open the server **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 Your System

Testing Your Client System ...

Run the client side Live View Test first to make sure your client system can cope with the changing position and attitude updates reported via its SimConnect interface.

1. Close all Spy windows.
2. Pause your server system's simulator.
3. Open the Configure dialog on your client system.
4. Click on the Live View Test button.
5. Your aircraft should jump to 2000 feet above the runway.
6. With all Test tick boxes ticked, click the Start button.
7. Your client display should now show relatively smooth changes in attitude without any major stutters.
8. You should be able to alter the Update Rate slider and see a fairly smooth motion for all rates.

Testing Your Server 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 3000 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. For P3D you may need to set the server **Live View Scan Rate** to **zero.**

Both server and client systems display the following reports,

P3DSERVER,

APP Position Updates: SIM xxx LAN xxx /sec

P3DCLIENT,

APP Position Updates: LAN xxx SIM xxx /sec

On the server, the SIM and LAN counts indicate the approximate rate at which SimConnect updates are received and IPC updates are transmitted. On the client, the LAN and SIM counts indicate the approximate rate at which IPC updates are received and SimConnect updates are sent to the P3D sim.

N.B. These rates are not synchronised so will not be identical.

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. For P3D you may need to set the server **Live View Scan Rate** to **zero.**

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 Speed, Pitch, Bank and Yaw tick boxes allow you to select speed and 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 at 2000 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

Selective Updates with Client Systems Warning

Due to several omissions and errors within the Lockheed Martin weather related SimConnect and PDK functions it is not possible for OpusFSI to correctly reset and manage certain weather data. As a result, if you have performed any selective weather updates and you shutdown any Prepar3D simulator then it is imperative that you shutdown all Prepar3D simulators along with all SERVER and CLIENT programs. In other words, after any selective weather updates, shutting down any Prepar3D simulator will require a full system restart.

TypeInitialisation errors when running the client program

Select the .NETv4 variants of SimConnect and SlimDX. Run the SlimDX dotNet 4 runtime using our supplied msi file in the OpusFSI_v6 folder.

SlimDX error

You must ensure the P3DCLIENT program ...

Is starting in the correct c:\OpusFSI_v6 folder.
Has permissions to copy and rename the relevant SlimDX DLL file.
Is able to copy the current SlimDX DLL, it's not locked or write protected.
Is not blocked by AV or Win Defender software.

Otherwise its attempt to copy and rename the SlimDX file will fail. You may also need to install the SlimDX dotNet 4 runtime using our supplied msi file in the OpusFSI_v6 folder.

Can't connect to client

Have you configured the correct number of clients in the server?
Can you still see the server's OpusFSI drive and folder in Windows Explorer on your client? Check a windows update hasn't re-enabled 'password protected sharing' on the PCs.
Is an Anti Virus program active or Win Defender active on the client? Stop Anti Virus software and disable Win Defender since these will cause problems and even possibly stop or delete the software.
Are you identifying the server using its IP Address or Computer Name? Try both methods.
Does the client IP Address have the same group numbers as the server, as per the GS Guide?

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 CLIENT 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 SIM systems and the server SIM so that they are all up and running. Then start the SERVER program, let it settle, then each of the CLIENT programs. Once they connect their SIMs 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 SIM 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 SIM 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 SERVER 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 SERVER 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 or even stop or delete the software.

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 P3D install folder must be shared and accessible to the OpusFSI 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 OpusFSI_v6_Getting_Started_Single_PC pdf guide which can be found in the OpusFSI_v6 installation folder, also available from our download page.