

# MAFC FLIGHT SIM

Made possible by MAFC member donations!



# SIM Overview

- X-Plane 11 Flight Simulation Software
- Gaming PC, Yoke, Rudder Pedals, and IR Tracking (optional)
- 15 Aircraft, 5 are similar to MAFC planes
- Navigraph Database Manager (keeps charts, plates, etc. current)
- Detailed NYC Scenery Add-On
- Supports Foreflight and other mapping devices
- User Guide (200+ pages, yikes!)

Very realistic for training on VFR, IFR, and Avionics

Change weather conditions, turbulence, W&B, and many other things.

# Aircraft Similar to MAFC Fleet

- Cessna 172 with Steam Gauges & G530, G430 pair
- Cessna 172 with G1000
- Piper Archer III with Steam Gauges & G530, G430 pair
- Piper Arrow III with Aspen E1000 & Dual G430's
- Piper Arrow III with Garmin G5

*(We can add more as training needs evolve)*

- Other aircraft include Boeing 737, 747, MD-80, Beech Baron, Beech King Air, Stinson L5, Cirrus Vision jet, Glider, Sikorsky helicopter

# Brief Tour

- Very easy to get started with basic flying
  - Has a “flight school” (4 basic scenarios to get started)
  - Many, many items can be adjusted & configured (see the manual)
  - Training functions such as saving scenarios, replay, ATC
  - Failures (just about anything at any preset time or event triggered)
- 
- Before using, suggest reviewing:
  - MAFC User Guide &
  - X-Plane 11 Manual: Chapter 5 “Setting Up Your Flight”

# Quick Start

- Log on to MAFC PILOT user account on Windows 11
- Launch X-Plane 11 (from task bar or desktop)

- Notes:

The GPS instruments are a little cumbersome to use with a mouse

You will need to know some keyboard shortcuts (B=brakes, P=pause, etc.)

We will type up a list of commonly used shortcuts for reference

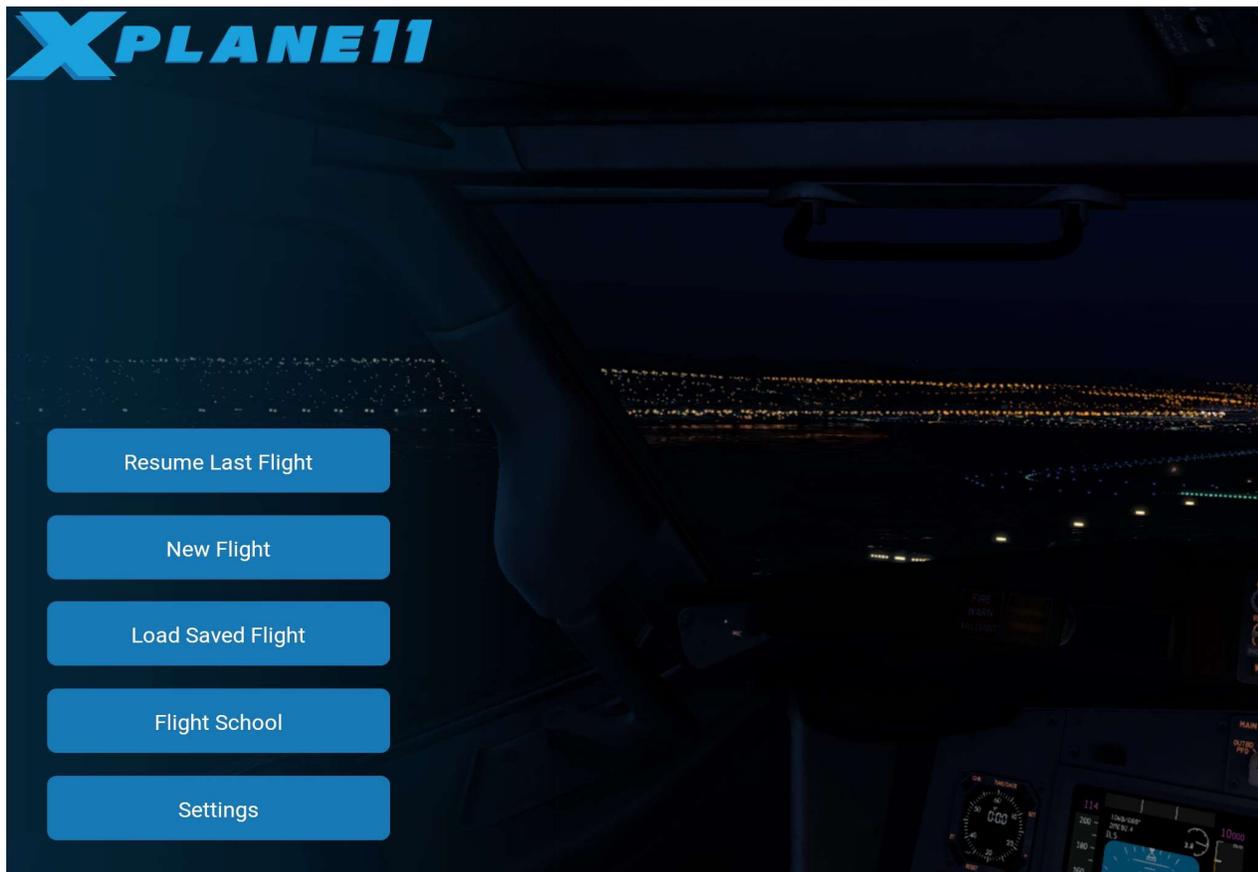
*(all shortcuts are listed in the manual and via the settings page on X-Plane)*

# Windows Desktop for MAFC Sim

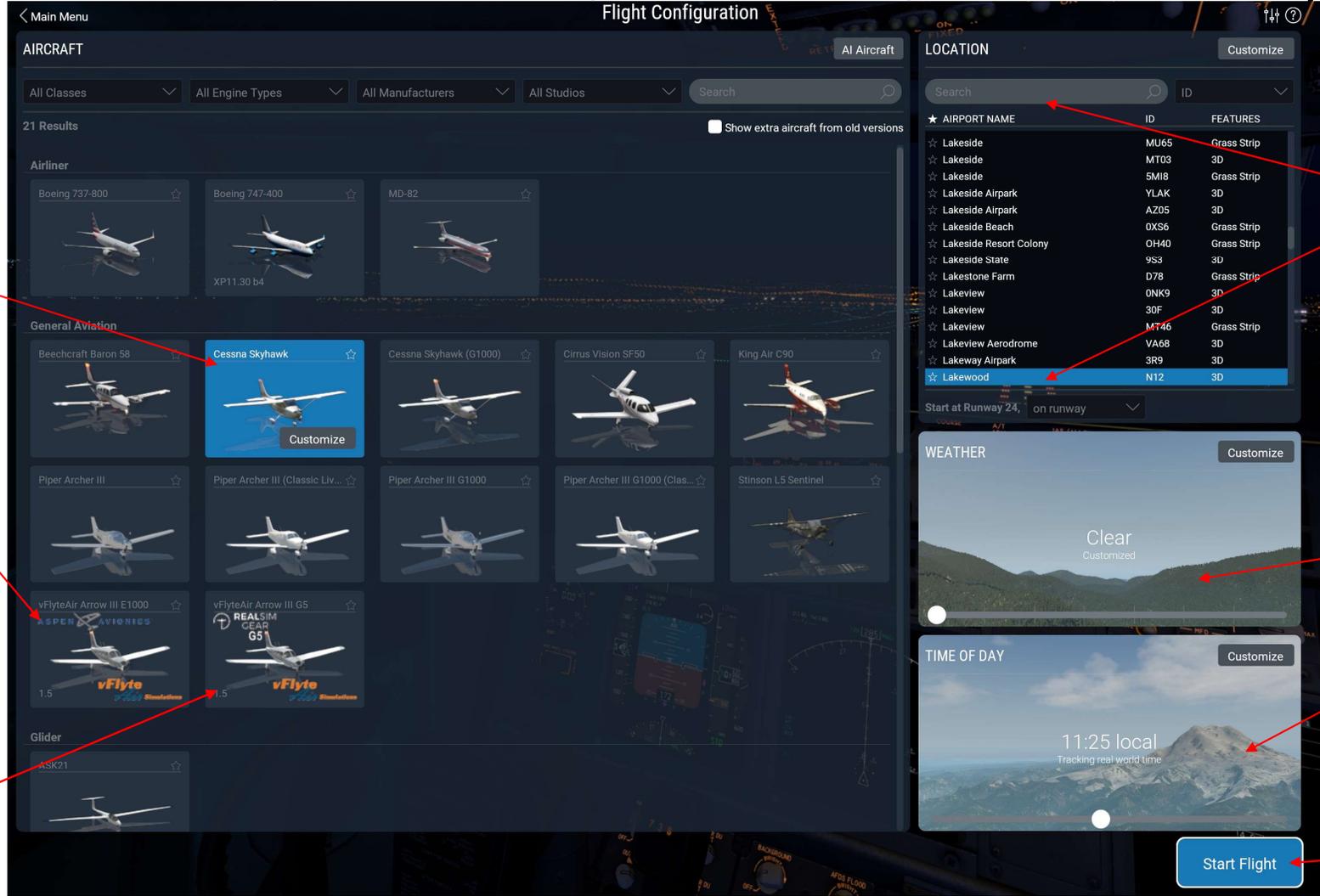
Navigraph aviation database



Select the Flight (new, saved, last flight, etc)



# Select Aircraft, Location, Weather, Time of Day



Aircraft

Arrow with E1000 or Analog Steam Gauges can be selected (see later slides on how to do this)

Arrow with G5 or Analog Steam Gauges can be selected

Location, airport

Weather

Date, Time

Start Flying!

# Yoke Functions:

## Useful Keyboard Functions:

p = Pause Simulation  
b = Parking brake on/off

<Enter> = Contact ATC

d = Sync DG w Compass

## Views:

<Shift>9 = 3-D Cockpit  
<Shift>4 = Circle  
<Shift 5> = From Tower

Toggle Sim Speed:  
<Ctrl> t = 1x, 2x, 4x

Toggle Ground Speed:  
<Alt> t = 1x, 2x, 4x

General Sound Graphics Network Data Output **Joystick** Keyboard GPS Hardware VR Hardware

Device CH Flight Sim Yoke May need to do calibration before flight Calibrate View Front

11-12 Zoom view in, out  
13-14 Elevator Trim up, dn  
Contact ATC (ptt button)

3-Throttle  
2 Prop  
Mixture  
Brakes (pushbutton)  
4 Pan View u, d, r, l  
5-6 Rudder Trim r, l

7-8 Flaps up, dn  
9-10 Gear up, dn

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14

CH Products  
**FLIGHT SIM**  
YOKE

Reset to Defaults for CH Flight Sim Yoke

- 4 Hat Switch
  - Rotate view: tilt down.
  - Hat switch up + right.
  - Rotate view: pan right.
  - Hat switch down + right.
  - Rotate view: tilt up.
  - Hat switch down + left.
  - Rotate view: pan left.
  - Do nothing.
- 5 Roll trim left.
- 6 Roll trim right.
- 7 Flaps up a notch.
- 8 Flaps down a notch.
- 9 Landing gear up.
- 10 Landing gear down.
- 11 Move view forward slow.
- 12 Move view backward slow.
- 13 Pitch trim down.
- 14 Pitch trim up.

# Rudder Pedals

- Yaw left, right
- Toe brakes
- Tension adjustment (center knob)

Settings

Flight Configuration

General Sound Graphics Network Data Output **Joystick** Keyboard GPS Hardware VR Hardware

Device Saitek Pro Flight Rudder Pedals May need to do calibration before flight Calibrate



Reset to Defaults for Saitek Pro Flight Rudder Pedals

Front

- 1 Right Toe
  - Right toe brake
  - Reverse Axis
  - Add Response Curve
- 2 Left Toe
  - Left toe brake
  - Reverse Axis
  - Add Response Curve
- 3 Both Pedals
  - Yaw
  - Reverse Axis
  - Add Response Curve

# C172 Steam Gauges with G530, G430



# C172 G1000



# Arrow III with E1000, Dual G430's



# ARROW: Toggle Between Glass or Steam Gauges

You can select the Arrow's instrumentation (glass or steam gauges) as follows:

1. Look for the "Piper" icon on the lower left and select it.

2. On the next slide you'll see the config window.



# ARROW: Toggle Between Glass or Steam Gauges

From this window you can select either "Analog Panel" or "Glass Panel"

Reminder: There are 2 Arrows which can be selected at the start of the flight:

- Arrow E1000
- Arrow G5

If you select the Arrow E1000 this window will allow you to go between E1000 and Analog gauges.

If you have selected the Arrow G5, this window will let you select G5 or Analog.



# Arrow with G5, Dual G430's



# Archer III with G530, G430



# Aircraft W&B, Fuel Configuration (Archer)

The screenshot displays a flight configuration interface for a Piper Archer III aircraft. The main window is titled "Flight Configuration" and shows the aircraft name "PIPER ARCHER III". A modal window titled "WEIGHT, BALANCE, & FUEL" is open, showing various settings and a summary of the aircraft's weight and fuel configuration.

**WEIGHT, BALANCE, & FUEL**

Show Units In: US Customary (selected) / Metric

Center of Gravity: Default

Payload Weight: 120.0 lbs

Total Internal Fuel Weight: 150.0 lbs

Fuel Tank 1 (Left): 75.0 lbs

Fuel Tank 2 (Right): 75.0 lbs

**2028 lbs**  
TOTAL WEIGHT

1758 lbs EMPTY WEIGHT    2558 lbs MAX WEIGHT

**02:52:52**  
FLIGHT TIME  
NORMAL CRUISE

Restore Defaults    Done

AIRCRAFT CLASS: General Aviation  
ENGINE TYPE: Single Engine  
MANUFACTURER: Piper  
DESIGN STUDIO: AeroSphere  
FILE PATH: Aircraft/Laminar Research/AeroSphere Archer III v4/AeroSphere Piper Archer III/PiperArcher/PiperArcher.acf

LOCATION: KEWR  
AIRPORT NAME: Newark Liberty Intl

FLIGHT IN PROGRESS  
Current location: 40°N / 74.25°W (near NJ44)

Broken Customized

17:56 local  
22:56 UTC

# Failure Configuration Page

If you're an Instructor,  
you'll LOVE this page!

Fail basically anything

Fail at a specific TIME or  
upon certain conditions  
(speed, altitude, etc.)

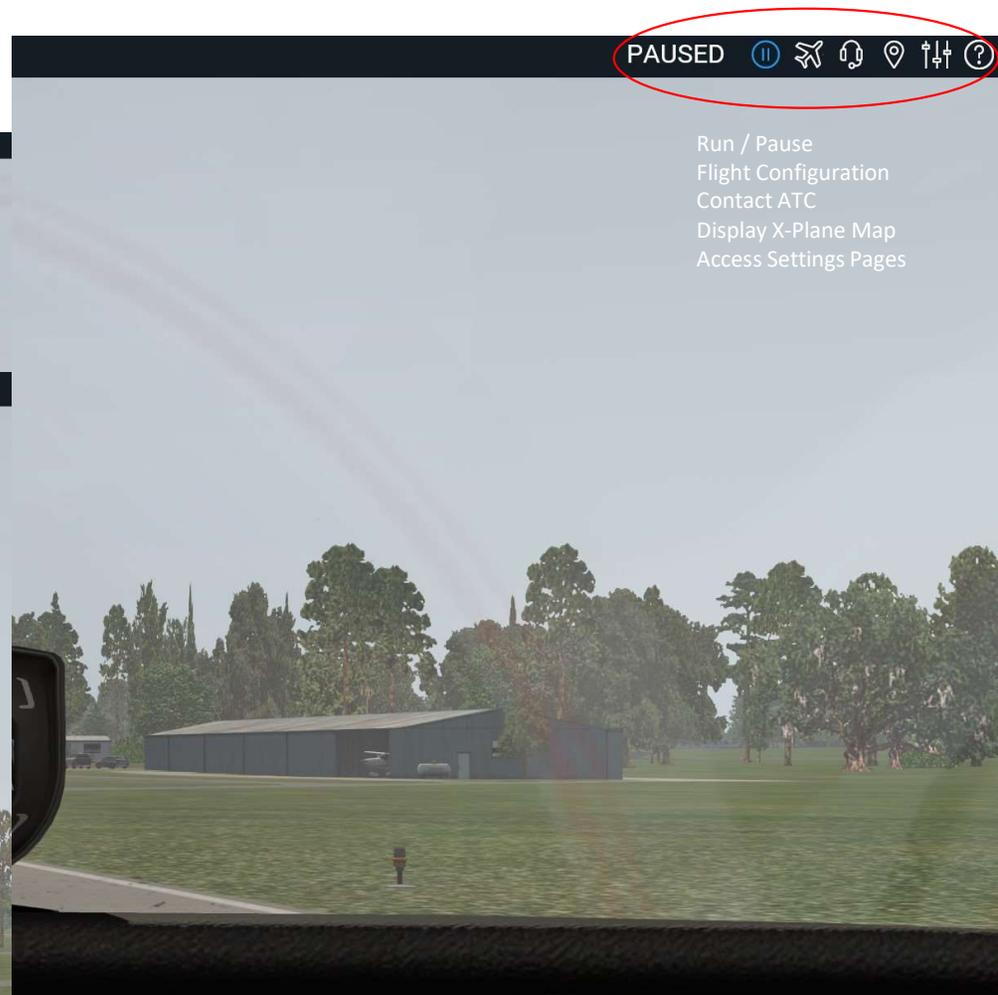
Flight Configuration Failures

Search

|                           |   |
|---------------------------|---|
| Engine fire 1             | Always working  |
| Engine flameout 1         | Always working  |
| Engine fail 1             | Always working  |
| Engine separation 1       | Failed<br>Fail when Ctrl+f is pressed<br>Fail at exact altitude<br>Fail at exact speed<br>Set exact time until failure<br>Set mean time until failure<br>Always working |
| <b>Fuel/Air</b>           |   |
| Engine-driven fuel pump 1 | Always working  |
| Electric fuel pump 1      | Always working  |
| Fuel flow restricted 1    | Always working  |
| Air flow restricted 1     | Always working  |
| Fuel flow fluctuation 1   | Always working  |
| <b>Prop</b>               |   |
| Engine drive shaft 1      | Always working  |
| Engine seize 1            | Always working  |
| <b>Start</b>              |   |
| Starter 1                 | Always working  |
| <b>Wings</b>              |   |
| <b>Control Surfaces</b>   |   |
| <b>Multi Rotors</b>       |   |
| <b>NAVAIDs</b>            |   |

Fix All Systems  Set mean time between failures 10000 hours X-Plane has about 250 systems that can fail, so this is 39 hours per failure. Done

# Menu Bar Items



PAUSED

- Run / Pause
- Flight Configuration
- Contact ATC
- Display X-Plane Map
- Access Settings Pages

# Weather Configuration Page

The screenshot displays the 'Weather Settings' interface, which is part of a larger 'Flight Configuration' menu. The interface is organized into several sections:

- LAYER PROPERTIES:** This section on the left allows for configuring a single layer. It includes sliders and input fields for Altitude (46000 ft MSL), Direction (282 deg), Speed (20 kts), Turbulence (None), Gust Speed Increase (0 kts), and Total Wind Shear (0 deg). A circular wind direction indicator is also present.
- Layer Stack:** The central area shows a vertical stack of layers. The top layer is a blue bar representing wind, labeled '282 @ 20 kt'. Below it are several empty layers. At the bottom, a grey bar represents 'Broken cumulus' clouds at 41 ft MSL (NJ44 ground level).
- ATMOSPHERIC CONDITIONS:** This section on the right includes:
  - Visibility:** Set to 5.0 sm, with a 'Set visibility as' dropdown set to 'Visibility' (checked) over 'RVR'.
  - Precipitation:** Set to 'Light'.
  - Storminess:** Set to 'None'.
  - Temperature at nearest airport:** Set to 58.4 °F.
  - Barometric pressure at sea level:** Set to 29.92 inHg.
- THERMALS:** This section includes sliders for Altitude (5000 ft AGL), Coverage (0%), and Climb Rate (500 ft/min).
- BODIES OF WATER:** Currently collapsed.
- RUNWAY CONDITIONS:** 'Runway Wetness' is set to 'Dry'.

At the bottom of the interface, the 'Weather mode' is set to 'Manually configured', and a 'Done' button is located in the bottom right corner.

# Settings Pages (showing Graphics setup)

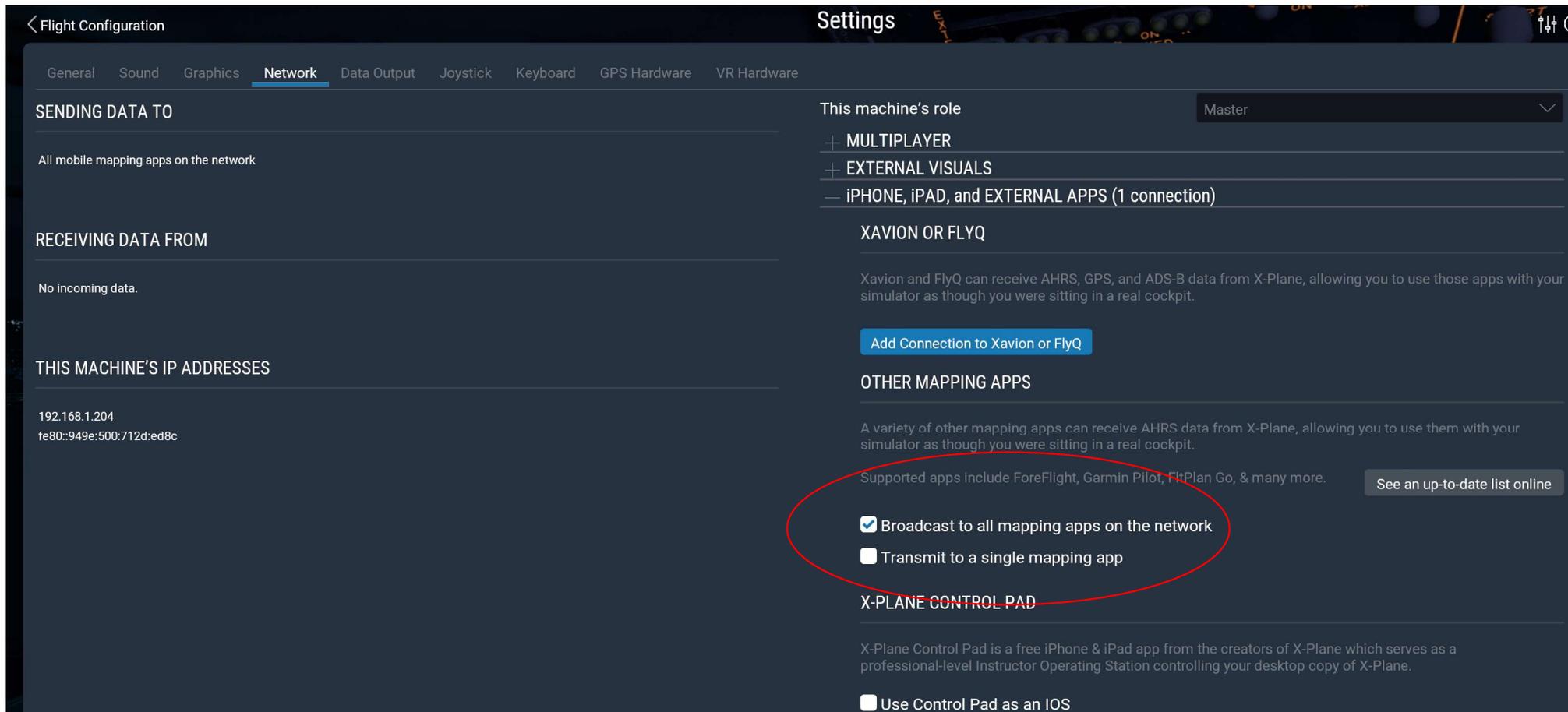
Do not change this Graphics setup page !

Other setup pages include:

- Sounds
- Network (FlightAware)
- Yoke & Rudder Pedals setup
- Keyboard shortcuts
- Other stuff

The screenshot shows the 'Weather Settings' window with the 'Graphics' tab selected. The window title is 'Settings'. The 'Graphics' tab is active, showing various settings for visual effects, texture quality, and antialiasing. The 'Visual Effects' slider is set to 'High (HDR)'. The 'Texture Quality' slider is set to 'High', with a note indicating '2190 MB of textures currently loaded'. The 'Antialiasing' slider is set to '4x SSAA+FXAA'. The 'Anisotropic Filtering' slider is set to '4x'. Below these are sections for 'ACCESSIBILITY' (Base Font Size: 14 px, User Interface Size: 200%), 'MONITOR CONFIGURATION' (Monitor usage: Full Screen Simulator, Resolution: Default Monitor Settings), 'VISUAL SETTINGS' (Default view [w]: Forward with 3-D cockpit, Allow windshield effects: checked), 'FIELD OF VIEW' (Lateral field of view: 60.00 degrees, Use non-proportional vertical field of view: unchecked), and 'VISUAL OFFSETS' (Lateral rotation offset: 0.00 degrees, Vertical rotation offset: 0.00 degrees, Roll rotation offset: 0.00 degrees, Enable flat (fractional) offsets: unchecked). At the bottom, there are checkboxes for 'Use Vsync' (unchecked), 'Enable TrackIR & TrackHat view tracking in 3-D cockpit' (checked), and 'Enable Matrox TripleHead2Go' (unchecked). A 'Done' button is in the bottom right corner.

# Foreflight & other mapping apps



The screenshot shows the 'Settings' menu in X-Plane 11, specifically the 'Network' tab. The interface is dark-themed. On the left, there are three sections: 'SENDING DATA TO' (All mobile mapping apps on the network), 'RECEIVING DATA FROM' (No incoming data), and 'THIS MACHINE'S IP ADDRESSES' (192.168.1.204, fe80::949e:500:712d:ed8c). The right side is divided into several sections: 'This machine's role' (set to Master), a list of roles (MULTIPLAYER, EXTERNAL VISUALS, and a selected 'iPHONE, IPAD, and EXTERNAL APPS (1 connection)'), 'XAVION OR FLYQ' (with an 'Add Connection to Xavion or FlyQ' button), 'OTHER MAPPING APPS' (with a 'See an up-to-date list online' button), and 'X-PLANE CONTROL PAD' (with a 'Use Control Pad as an IOS' button). A red circle highlights the 'Broadcast to all mapping apps on the network' checkbox, which is checked, and the 'Transmit to a single mapping app' checkbox, which is unchecked.

Flight Configuration Settings

General Sound Graphics **Network** Data Output Joystick Keyboard GPS Hardware VR Hardware

**SENDING DATA TO**

All mobile mapping apps on the network

**RECEIVING DATA FROM**

No incoming data.

**THIS MACHINE'S IP ADDRESSES**

192.168.1.204  
fe80::949e:500:712d:ed8c

This machine's role: Master

- + MULTIPLAYER
- + EXTERNAL VISUALS
- iPHONE, IPAD, and EXTERNAL APPS (1 connection)

**XAVION OR FLYQ**

Xavion and FlyQ can receive AHRS, GPS, and ADS-B data from X-Plane, allowing you to use those apps with your simulator as though you were sitting in a real cockpit.

Add Connection to Xavion or FlyQ

**OTHER MAPPING APPS**

A variety of other mapping apps can receive AHRS data from X-Plane, allowing you to use them with your simulator as though you were sitting in a real cockpit.

Supported apps include ForeFlight, Garmin Pilot, FltPlan Go, & many more. [See an up-to-date list online](#)

- Broadcast to all mapping apps on the network
- Transmit to a single mapping app

**X-PLANE CONTROL PAD**

X-Plane Control Pad is a free iPhone & iPad app from the creators of X-Plane which serves as a professional-level Instructor Operating Station controlling your desktop copy of X-Plane.

- Use Control Pad as an IOS

# MAFC SIM: Ready for Take-Off!

