



X-Plane to GPS
Android application by Appropel
Instruction Manual v1.40



INTRODUCTION

X-Plane to GPS is a utility that allows you to use your Android tablet or other device as a moving map for X-Plane, the popular flight simulator by Laminar Research. The app reads location data broadcast by X-Plane and spoofs the GPS location of the device to match that of the simulated aircraft. X-Plane to GPS is not a moving map itself; it allows you to use Google Earth, Garmin Pilot, or any other application that depends upon the GPS location. Note that the app is designed to work with X-Plane running on a PC, *not* the mobile version.

X-Plane to GPS has been developed and tested with X-Plane versions 9 and 10. Other versions are not guaranteed to work as the internal data formats change frequently over time.

CONFIGURATION

X-Plane to GPS offers quick-start configuration instructions within the application itself. To access the instructions simply navigate to the 'Instructions' tab and follow the steps listed there. More detailed versions of these instructions are given below.

1. Ensure that the Android device running X-Plane to GPS is set to allow mock locations. It is best to perform this step before starting X-Plane to GPS. From the device's home screen navigate to Settings -> Applications -> Development and ensure that "Allow mock locations" is checked. Turning this setting on allows applications to set the GPS position of the device to anywhere on the Earth; for our purposes this will be the location of the simulated aircraft. Note that some other Android applications will not allow this setting to be enabled, so be sure to remember where it is and how to turn it off if needed.

IMPORTANT: If you are running Android 4.2 (Jelly Bean) or newer, Google has hidden the Developer Options menu. To reveal it, tap seven times on Settings -> About Phone -> Build Number. For further information type "android developer options menu" into Google.

2. As of version 1.40, the application can automatically configure X-Plane for you. On the Settings tab, select the version of X-Plane you are using - 9 or 10. Make sure that "Automatically configure X-Plane" is checked, and also that "Broadcast configuration to entire subnet" is checked (try this first). Jump ahead to step 5. If everything works, great - if not, keep reading.

The "Broadcast" option attempts to send configuration to every address on

your local network (in technical terms, the /24 subnet). In most cases this will automatically locate your instance of X-Plane, however in certain unusual situations it might not. The alternative is to uncheck "Broadcast configuration to entire subnet" and manually enter the IP address of the computer running X-Plane in the "Simulator IP address" field. You can find this address by selecting the X-Plane menu item Settings->Net Connections and looking for the line at the top that says "YOUR IP addresses are:".

NOTE: This option is intended for the common scenario where X-Plane is running on a single PC. If your setup involves multiple PCs running X-Plane, do not use the "Broadcast configuration to entire subnet" option - uncheck this option and manually enter the IP address of your master machine.

If automatic configuration does not succeed using the direct IP address of X-Plane, you can still configure X-Plane manually. Continue reading the following steps.

3. Start X-Plane and select the menu item Settings -> Net Connections. Switch to the Data tab and find the box labeled 'IP of data receiver' (for X-Plane 9, the tab is called Advanced). Enter the IP address of your Android phone/tablet. X-Plane to GPS displays this value on the Instructions tab; it can also be found under Settings -> Wireless & networks. You will get the best performance if your Android device is connected to the same local (wireless) network as the computer running X-Plane. Otherwise, the updates will probably be too slow to be acceptable.
4. In X-Plane select the menu item Settings -> Data Input & Output. Select the tab 'Data Set'. This tab lists over 100 different data items that can be broadcast over the network. Turn on the leftmost checkbox for items 3, 17, and 20 (for X-Plane 9, check 3, 18, and 20). This sends information about the simulated aircraft's speed, heading, and location to X-Plane to GPS.
5. In X-Plane to GPS select the 'Data' tab. The button at the bottom of the screen has two states - Active and Paused. Select Active to start receiving data from X-Plane and simulating the GPS position. You should see values in the fields above - Latitude, Longitude, Altitude, Heading, and Groundspeed. If these fields are blank or do not appear to be changing (assuming the simulated aircraft is moving) there may be a problem with your network or X-Plane setup. Note that while X-Plane to GPS is active an Android Service is running in the background. This ensures that Android does not prematurely kill the application, but can also use extra battery power. It is recommended to plug your device in while using X-Plane to GPS, and be sure to return X-Plane to GPS to 'Paused' state when you are finished flying.

OPERATION

Once X-Plane to GPS is active you may now switch to the moving map application of your choice such as Google Earth or Garmin Pilot. Any mapping application which depends upon the device's GPS position should work. As you fly the simulated aircraft in X-Plane the map will follow along. One particularly cool thing to do is replay an approach and landing while watching the map to see how well the pilot flew.

When done flying X-Plane be sure to return X-Plane to GPS to Paused status. Also, you may want to disable 'Allow mock locations' to ensure that your device will return to showing the real-world location. Some devices may need to be powered off and back on after disabling mock locations. In extreme cases the built-in GPS may become confused and take very long to establish a real-world position; an app such as GPS Doctor (<https://play.google.com/store/apps/details?id=com.epekware.gpsdoctor>) may help.

MAPPING APPLICATIONS

Appropiel endorses the following moving map applications:

- Naviator by 123west (<http://www.naviatorapp.com/>)
- iFly GPS by Adventure Pilot (<http://www.iflygps.com/>)
- EasyVFR by PocketFMS (<http://www.pocketfms.com/easyvfr/>). See the compatibility note below.

If you are looking for a free moving map app, try Avare:

<http://avgps.wordpress.com/avare-overview/>

SETTINGS TAB / OTHER FEATURES

In most cases the default port used by X-Plane (49000) for transmitting UDP data should work just fine. Under certain cases it may be necessary to change the port that X-Plane to GPS uses. This can be done under the Settings tab by changing the Port value. This must match the port configured in X-Plane for sending data.

X-Plane can only transmit data to one device; in other words, only one IP address can be entered on the Net Connections tab. As of v1.30 X-Plane to GPS supports a 'forwarding' feature that allows you to enter another IP address that data packets will be rebroadcast to. This allows chaining devices together and

doing things like running X-Plane to GPS on two or more tablets at once. To activate this feature, switch to the Settings tab. Turn on the checkbox labeled 'Forward UDP' and enter an IP address in the 'Forward Address' field. Packets received from X-Plane will now also be forwarded to the other address provided.

If you are using the EasyVFR mapping application published by PocketFMS, turn on the "EasyVFR compatibility" checkbox under the Settings tab. Note that you must have version 3.9 or above. Leave this option unchecked for all other mapping apps.

TROUBLESHOOTING

Various things may prevent X-Plane to GPS from working properly and communicating with X-Plane. Here are some things to try if the app does not appear to be working:

- The Android device running X-Plane to GPS and the PC running X-Plane should be on the same wireless network. Verify that the IP addresses for both machines are on the same subnet.
- Make sure that no firewalls are running on the PC (for example Windows Firewall). Either disable the firewall or set up an exception for the IP address of the Android device.
- Test if the PC can ping the Android device.
- A network analyzer such as Wireshark (<http://www.wireshark.org>) can help determine if packets are reaching the PC. X-Plane to GPS sends and receives UDP packets, so there cannot be error-checking on its side.
- Certain wireless routers are known to be problematic.
- If the moving map starts to fall behind in position there may be too many packets being broadcast for the network or Android device to keep up with. Go to the Settings->Data Input & Output menu in X-Plane and select the first tab, Data Set. In the lower right-hand corner is a value labeled "UDP rate". This controls the number of packets that X-Plane sends every second. Set this to a slower value, for example 1 per second.
- If your setup involves multiple PCs running X-Plane, do not use the "Broadcast configuration to entire subnet" option. This may result in more than one PC sending out UDP position updates.

KNOWN ISSUES

On some recent Android devices Google Maps may continue to show your actual location instead of the X-Plane position. The solution is to go to Settings->Location Services and uncheck "Google's location service" and "Location & Google search". This ensures that Maps is using only GPS data, which is spoofed by this application. This seems to be a problem only with Google Maps and not any other known mapping applications.

If you are running Android 4.2 (Jelly Bean) or newer, Google has hidden the Developer Options menu. To reveal it, tap seven times on Settings -> About Phone -> Build Number.

Google Earth does not work properly with X-Plane to GPS under the latest Jellybean versions. The developer has contacted Google about this issue.

FREQUENTLY ASKED QUESTIONS

Q: Can this application work with Microsoft Flight Simulator?

A: Microsoft Flight Simulator does not appear to have a built-in way to export flight data like X-Plane does. There are ways to do this with payware add-ons but they are expensive so not much effort has been spent pursuing this.

Q: Is there an iPhone version of this application?

A: Apple iOS does not allow the position of the GPS to be spoofed ("mock locations") like Android does. Thus, an application like this cannot be written for the iPhone/iPad.

RELATED APPLICATIONS

Be sure to check out Copilot X, also from Appropiel. This app lets you control X-Plane using voice commands - it's just like having a virtual copilot!

CREDITS

Programming - Kevin Roll / Appropel

Artwork - Heather Lynn / Gossamer Hollow Graphic Design

SUPPORT

Please contact the developer at kroll@appropel.com with any problems, suggestions, or omissions. Appropel is driven by customer feedback and would love to hear from you. Also, reviews on Google Play are greatly appreciated.