About the SASL Plug-in

This plane uses a plug-in system to drive a number of systems and effects. As of March, 2013, all new Carenado releases use a 64-bit compatible version of SASL (Scriptable Avionics Simulation Library). SASL is essentially a plugin that interprets scripts, and reads them into the sim.

Prop Disc

This plane features an innovative prop disc representation. The three different RPM phases smoothly fade in and out, showing the prop in different levels of blurriness to accurately represent their rotational speed. Also, a side view has been implemented, which gradually fades into view, as the camera progresses towards side view. This implementation features an almost holographic appearance, which also responds visually to blade pitch settings. A feathered prop will cause the side view to appear thick, while a regular full-RPM set prop will appear thin from the side.

2D Pop-up Windows

Carenado planes feature two or more 2D pop-up windows. One that allows for the selection of pre-set viewpoint snap points, and one to activate different configurations. Sometimes an extra window is used for extra instruments or options. The 2D pop-up windows can be called up by clicking on the tiny click zones along the left side of the screen, labeled "C" (Cameras) and "O" (Options). Click on either of these zones to call up the respective 2D window.

These windows will stay in position relative to the computer's monitor, and they're also usable when in exterior views. They can be resized, by clicking and dragging on the bottom right corner, and can be closed by clicking on the "X" at the top right corner.

Alternately, a keyboard shortcut can be assigned to these windows. Simply go to "Settings> Joystick, keys, & equipment", then select the "Keys" tab, then press the button at the bottom, labeled "Add new key assignment" to add a new keyboard short cut. To the left, a new button will appear, labeled "<NONE>". Selecting this button with the mouse will allow you to enter a keyboard shortcut. To assign a function to this keyboard shortcut, locate the "custom cmnds from plug-ins" window at the top right, and click on the square just left of the text box. >From the drop-down menu, go all the way to the top directory, and then select "XAP/Panels/0". This should bind your assigned keyboard shortcut to the "Views" pop-up window. The "Doors" pop-up window can be assigned to "XAP/Panels/1" and the "configurations" window can be assigned to "XAP/Panels/2."

The "Views" pop-up's viewpoints feature smooth transitions from one viewpoint to the next, and really assist in flying the plane. The field of view can also be controlled via this pop-up menu.

To assign individual views to keyboard shortcuts to the camera presets, follow the procedure above, but assign the different keys to "Cameras>1, 2, 3, 4, 5, 6, 7, 8, 9, or 10."

Since X-Plane 10, however, these camera snap points can be assigned via the sim, as outlined in X-plane 10's user documentation. (X-plane>Instructions folder). You can mix and match Carenado's view snap points with X-Plane's view snap points, to increase the total number of camera snap points... or you can simply program the ones Carenado has on the pop-up window into X-Plane 10's view snap system. Load a camera snap point into X-Plane 10's preferences by pressing "Ctrl+ any numpad key". To call up that particular camera snap point, press only the numpad key.

The "Options" pop-up allows for different configuration, depending on the plane.

Static Elements: Certain conditions must be met in order for the static elements to be available: the plane has to be on the ground with parking brakes on and engine off. The static elements automatically disappear when the engine is started. However, releasing the brakes will not automatically remove the static elements; it will merely prevent the operation of the button on the pop-up window.

Sounds

This aircraft is equipped with full 3D sound. Many subtleties in the sounds have been implemented, such as:
- Spin-up and spin-down of gyro when battery is switched on. When engine starts, gyro sound is drowned out.

- Walk-around effect in exterior views. Engines pan to left or right speaker when viewing from the front, depending on the position of the camera. Distinct frontal/rearward sounds depending on the viewing angle.

- Improved Doppler and distance effects implemented.

- Low RPM sounds have their distinct sound, while high-RPM sounds take over when power is applied. This plane also has two in-between sounds for low-mid and high-mid engine RPMs. High quality stereo sounds, recorded from the real plane.

- When startup sequence is successful, the distinct sputtering and engine roaring to life can be heard.

Night Lighting

In this plane, every effort has been made to provide realistic night lighting. The plug-in drives aspects of the lighting that don't look realistic during the daytime, and are therefore activated when it's night time in the sim. In general, bulbs will light up, regardless of day/night time, but their resulting illuminations only work at night. Since X-Plane 10.21, a new and revolutionary lighting system has been finalized, which allows for amazing effects when HDR is turned on in the rendering options. Carenado's v10-compliant planes make full use of this new lighting system, like custom halos, illuminating runways and nearby objects by various aircraft lights, etc.

Internal lights have also been optimized for v10 in the v10-designated aircraft files.

A tip: to navigate around a "cold and dark" cockpit at night, use the "i" key (v9) or Ctrl+N key (v10), to emulate night vision goggles. In the real world, the pilot has the benefit of tactile feedback, which is not available in a simulated environment. Night vision goggles will help orient you inside a cold and dark cockpit at night, until you find all the light switches.

Miscellaneous (Features generally available in most planes)

- NAVCOM radios jump over unused frequencies. (Not normally the case with manipulator-based frequency knobs).

- Doors close beyond 18 Kts IAS. Window closes later.

- Wheels don't eternally spin after take-off.

- Static antennae are animated to vibrate with oncoming airflow.

- Pilot heads are animated in a sequence that alternates between various modes: scanning the instrument panel, looking straight into the flight path, looking into the camera, looking out the window, featuring smooth transitions between these modes.
- Highly detailed baked night textures for the illuminated instrument panel.

- Highly detailed textures. Numerous large (2048x2048) textures for supreme and crisp detail, night time textures, and normal map textures for extremely detailed appearance of exterior components, such as rivets, panelling, air intakes, etc.

- High resolution, polygon-optimized modelling for incredibly immersive interior and stunning exterior visuals, while keeping graphic requirements down.

- Animated sun visors. Spin and twist the visors around to suit your sun-blocking needs.

Troubleshooting

This plane uses the SASL plug-in architecture. This plug-in is designed for Windows, Mac, and Linux, and has been tested extensively on all platforms. However, sometimes different add-ons step on each other's toes, so if there are signs of trouble, or things relating to the plug-in aren't working as expected, please try some of the following tips:

The easiest way to recognize that the plug-in is not working properly is, if the sound isn't working, or to look at the visualization of the prop disc. If it has lines and patterns on it that don't look like a spinning prop, then there's a problem.

The first thing to try to do is to "cycle" or reset the plug-in:

- In X-Plane's "Plugins" menu, select "Plugin admin>Enable/Disable".

- Locate the check box beside "SASL".

- Un-check and re-check it.

This should be done any time a malfunctioning plug-in feature is suspected.

In case a conflict with other plug-ins is suspected, a process of elimination can help find the culprit. Un-checking all the active plug-ins except for this plane's SASL plug-in can help narrow down the plug-in responsible for the conflict. Once it is identified, it can be de-activated (by taking it out of the "Plug-ins" folder in X-Plane's "Resources" directory.)

Sometimes, however, de-activating plug-ins while the sim is running (i.e. without a sim restart) will not be a sufficient measure to eliminating the possibility of plug-in conflict. If the problem persists, please go through the process of taking other plug-ins out of X-Plane's "Resources" directory, until only the SASL plugin is displayed in the "Enable/Disable" pop-up window. (It is recommended to keep a backup copy of these plug-ins in a separate folder.)

If all else fails, a way to easily recognize whether the plane you bought works the way it should with the simulator it was designed for, you can download a fresh demo version of the sim from www.x-plane.com. (Whether v9 or v10 is up to you, but you should download the version for which you intend to find the solution to the problem you're trying to troubleshoot.)

Install a demo version of the sim into a folder that's not buried beneath too many layers of folders, to ensure that the file path doesn't become too long. (On some systems, a long file path will cause the plugin not to load.) Avoid using symbols in the folder titles, as these also sometimes cause problems.

Copy the plane into this clean X-Plane installation, before adding anything else (scenery, plugins, hardware, other aircraft, etc) to the sim directory, and ensure that the plane works as expected. Keep an eye on the log.txt file (a text file in the top directory of X-Plane, which records any troubles that might arise during X-Plane's operation), and make sure no errors are displayed. To pinpoint conflicting 3rd party add-ons, start adding hardware, scenery, plugins, planes, etc. in the order of importance to you as a user, one-by-one, and launch X-Plane between every new addition, and make sure the plane still works, and that there are no error messages in the log.txt file. Once the plane stops working properly, you have the culprit, and it can be reported to Carenado, so that we can add it to our knowledge base, and try to find a fix for it.

If this doesn't solve the plug-in problems, please check our knowledge base at: **http://carenado.zendesk.com**

or notify Carenado by using their bug report form: **support@carenado.com**

Please attach the log.txt file from your last session to any support tickets you submit to Carenado, to help us assist you better.

Filing a bug report with this information will help us narrow things down by a large margin as well, and help us assist other clients.

Alternately, support requests can be filed in Carenado's dedicated forums on the **X-Plane.org** web community. You may find the forums a helpful resource, as many people ask their questions there, and get answers from Careando staff or other knowledgeable users.

The rest of the features should be pretty familiar for anyone having used X-Plane. Have fun! Sincerely, The Carenado team.