

Communication Pipeline:

Set 1:

List all rosnodes that exist after running the publisher

The minimal publisher node

List all rostopics that are being present after running the publisher

They're just called topic

What command do I run to see what is being published to a topic?

Rostopic echo <topicname>

What would I change in the publisher to make it publish messages more frequently?

Change the value of the timer_period smaller, so that it runs more frequently

In terminal I run the python script for the subscriber and see information being printed.

Does this mean it is publishing to a topic?

NO

What is the main benefit of a composed node? How might this help in drone autonomy applications?

It requires less resources by having one executable for the publisher and the subscriber. It would be good for drone autonomy because you're using less resources and you're syncing the subscriber and the publisher so that they happen occur more reliably together.

Set 2:

What needed to be added the launch file?

A launch description had to be added to the launch file.

With rqt_graph open, use the button in upper right corner to save an image of the graph and include it in this report. Which components in the graph indicates rosnodes and which indicate rostopics?



The ovals indicate rosnodes and the arrows indicate rostopics.

Why do we need to run the command? When and why do we need to source a bash file?

We have to run the command to create the rostopic and actually get the turtles to start moving.

We need to source the bash file when we want to run ROS commands or ROS nodes.

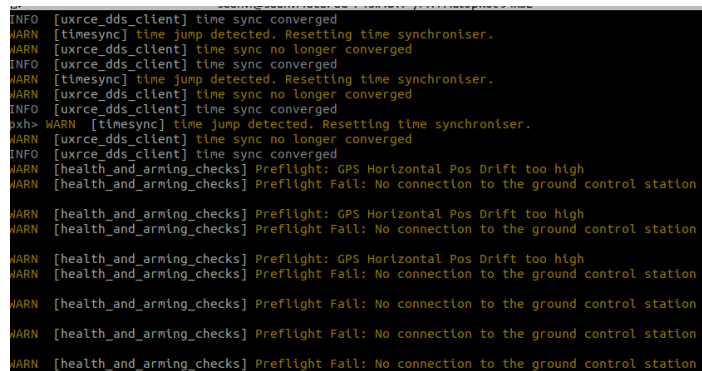
Were there any steps that didn't work or were particularly confusing? How did you work around them?

No, everything worked pretty smoothly.

Create a launch file for the subscriber and listener you made above.

Set 3:

What happens after you run the DDS Client? Post a screenshot of your terminal output

A screenshot of a terminal window with a black background and yellow text. The text shows a series of log messages from the DDS Client. It starts with 'INFO [uxrce_dds_client] time sync converged', followed by a warning 'WARN [timesync] time jump detected. Resetting time synchroniser.' and then 'WARN [uxrce_dds_client] time sync no longer converged'. This pattern repeats several times. Then, it shows 'INFO [uxrce_dds_client] time sync converged' again, followed by another warning about a time jump. After that, there are several 'WARN [health_and_arwing_checks] Preflight Fail: No connection to the ground control station' messages. The terminal output is as follows:

```
INFO [uxrce_dds_client] time sync converged
WARN [timesync] time jump detected. Resetting time synchroniser.
WARN [uxrce_dds_client] time sync no longer converged
INFO [uxrce_dds_client] time sync converged
WARN [timesync] time jump detected. Resetting time synchroniser.
WARN [uxrce_dds_client] time sync no longer converged
INFO [uxrce_dds_client] time sync converged
pxh> WARN [timesync] time jump detected. Resetting time synchroniser.
WARN [uxrce_dds_client] time sync no longer converged
INFO [uxrce_dds_client] time sync converged
WARN [health_and_arwing_checks] Preflight: GPS Horizontal Pos Drift too high
WARN [health_and_arwing_checks] Preflight Fail: No connection to the ground control station

WARN [health_and_arwing_checks] Preflight: GPS Horizontal Pos Drift too high
WARN [health_and_arwing_checks] Preflight Fail: No connection to the ground control station

WARN [health_and_arwing_checks] Preflight: GPS Horizontal Pos Drift too high
WARN [health_and_arwing_checks] Preflight Fail: No connection to the ground control station

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```

What happens when you run [ros2 topic list]?

It returns a list of all the active topics in the system

What happens when you run [ros2 node list]?

Returns a list of all active nodes

Pick a topic and try to view the information using echo. Were you able to? What package makes this possible?

Yes, ros2cli/ros2topic

Launch QGround Control and the px4_sitl [make px4_sitl]. Can you figure out how to takeoff and land the drone? Save a screen recording of your team taking off and landing the drone.

