

# Multi PC AWSIM + Autoware Tests #3813

xmfcx started this conversation in [Show and tell](#)



xmfcx on Sep 6, 2023

Maintainer

edited ▾

I have made 7 tests using AWSIM + Autoware.

## System Configuration

### Specs

#### Autoware PC

CPU: 5900X (12c24t)

GPU: RTX 3090 (24GB VRAM)

Memory: 64GB

#### Simulation PC

CPU: 5900X (12c24t)

GPU: RTX 4080 (16GB VRAM)

Memory: 64GB

### Connectivity info

- Both PCs had <https://www.tp-link.com/us/home-networking/pci-adapter/tx401/> 10 Gigabit PCI Express Network Adapter and connected with a 5m CAT7 cable.
- ROS2 DDS settings were tuned to only use this adapter.
- Both PCs had DDS settings tuned to support high bandwidth traffic.

`/etc/sysctl.d/10-cyclone-max.conf` file:

```
net.core.rmem_max=2147483647
net.ipv4.ipfrag_time=3
net.ipv4.ipfrag_high_thresh=134217728 # (128 MB)
```



`cyclonedds.xml` file:

```
<?xml version="1.0" encoding="UTF-8" ?>
<CycloneDDS xmlns="https://cdds.io/config" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="https://cdds.io/config cyclonedds.xml">
  <Domain Id="any">
    <General>
      <Interfaces>
        <NetworkInterface autodetermine="false" name="enp0s20f0u1">
          <MaxMessageSize>65500B</MaxMessageSize>
        </NetworkInterface>
      </Interfaces>
      <AllowMulticast>default</AllowMulticast>
    </General>
    <Internal>
      <SocketReceiveBufferSize min="10MB"/>
    </Internal>
  </Domain>
</CycloneDDS>
```



#### Category



Show and tell

#### Labels

component:percept...

component:planning

app:awsim

meeting:planning-c...

meeting:sensing-p...

5 participants



```
<Watermarks>
  <WhcHigh>500kB</WhcHigh>
</Watermarks>
</Internal>
</Domain>
</CycloneDDS>
```

- `iperf` tests were made and saw `9.21 Gbits/sec` transfer rates.

## Time synchronization

- Used `chrony` for time sync.
- [Autoware PC /etc/chrony/chrony.conf file](#) (Main PC)
- [AWSIM PC /etc/chrony/chrony.conf file](#) (Client PC)
- Achieved `~50us` time synchronization, shown in the video recordings.

## Additional info

- AWSIM Branch: [tier4/AWSIM@ b5f5910](#)
- Used following exact commit hashes:  
<https://gist.github.com/xmfcx/ab20652891b2ac2cb00cb7095f71cadd>  
(awsim-stable branch)
- Added <https://assetstore.unity.com/packages/tools/gui/graphy-ultimate-fps-counter-stats-monitor-debugger-105778> to show the performance graphs
- Made the top lidar into VLS128 and reduced the horizontal res to 0.4 degrees to have better performance.

## Tests

For each test, see the video descriptions for the time tags for easy navigation.

↑ 6

👍 4

8 comments · 10 replies

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xmfcx on Sep 6, 2023

Maintainer

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### Test 1

<https://www.youtube.com/watch?v=qHces72Bmal>

[00:00](#) - test  
[00:42](#) - ndt faulty init  
[00:49](#) - ndt manual reinit  
[1:07](#) - test 1 goal pose  
[1:23](#) - auto doesnt work  
[1:56](#) - test 1 start  
[3:32](#) - planning/perception reacts late  
[4:38](#) - extremely slow lane change  
[5:18](#) - stops in the middle of the road  
[5:32](#) - blocks the road because of the empty walkway  
[6:52](#) - test 1 end  
[7:27](#) - test 2 goal pose  
[7:47](#) - test 2 start  
[8:37](#) - crashes into other vehicle from side, stops after the crash  
[10:15](#) - mission planner doesn't work for lane change, failure ending

↑ 3

1 reply



**mehmetdogru** on Sep 14, 2023 Maintainer

edited ▼

cc: [@xmfcx](#) [@TakaHoribe](#) [@mitsudome-r](#)

I have created some scenarios for now to kind of initiate the discussions:

Repository commit hashes for the videos:

autoware: [0e5ec31](#)

autoware.universe: [33f62b43431ba18c353f2df09e7243ca71040969](#)

autoware\_launch: [405e5fbe3a21446d57959faf01b76432a79a3743](#)

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[3:32](#) - planning/perception reacts late

- [Scenario](#)
- [Map \(nishishinjuku\)](#)
- [Video](#)
- Explanation:
  - The issue seems here is that NPC is not stopping for the traffic light. Or traffic light is green for NPC while at the same time it is green for us. So it creates a problem. To simulate the issue I didn't consider the traffic light for the scenario. Needs to be analysed.

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[5:18](#) - stops in the middle of the road

[5:32](#) - blocks the road because of the empty walkway

- [Scenario](#)
- [Map \(nishishinjuku\)](#)
- [Video](#)
- Explanation:

- I couldn't reproduce the problem "*stops in the middle of the road*". Probably about the obstacles around us. Needs to be evaluated further.
- To walkways by default we are stopping at the moment. Needs to be discussed if necessary.

[10:15](#) - mission planner doesn't work for lane change, failure ending

- [Scenario](#)
- [Map \(nishishinjuku\)](#)
- [Video](#)
- Explanation:
  - In my case, vehicle is getting stuck with the information `lane_change_right`. Probably `behavior_path_planner` is not able to perform a lane change to the right neighbor lane so it gets stuck before the intersection. Needs further investigation.



xmfcx on Sep 6, 2023

Maintainer

Author

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## Test 2

<https://www.youtube.com/watch?v=nS32hayC2i8>

[0:00](#) - test  
[0:39](#) - ndt faulty init  
[0:44](#) - ndt reinit  
[1:34](#) - test 1 goal pose  
[1:42](#) - test 1 start  
[4:08](#) - test 1 end  
[4:33](#) - test 2 goal pose  
[4:52](#) - test 2 start  
[6:30](#) - perception/planning reacts late to the car in path  
[6:55](#) - traffic jam failure ending

↑ 3

0 replies



xmfcx on Sep 6, 2023

Maintainer

Author

## Test 3

<https://www.youtube.com/watch?v=BPVMzYocuUA>

[0:00](#) - test  
[0:36](#) - ndt faulty init  
[0:41](#) - ndt reinit  
[1:07](#) - test 1 goal pose  
[1:31](#) - test 1 start  
[3:22](#) - test 1 end  
[4:58](#) - test 2 goal pose  
[5:27](#) - test 2 start  
[6:53](#) - surround obstacle blocks the way (neighbor vehicle)  
[7:25](#) - mission planner can't plan lane change, failure ending

↑ 4

0 replies



xmfcx on Sep 6, 2023

Maintainer

Author

## Test 4

<https://www.youtube.com/watch?v=5IZJ4yZiBEw>

[0:00](#) - test  
[0:37](#) - ndt init  
[1:01](#) - test 1 goal pose  
[1:15](#) - test 1 start  
[4:56](#) - perception or planning reacts late  
[7:31](#) - indecisive stopping on intersection  
[8:20](#) - test 1 end  
[10:25](#) - test 2 goal pose  
[10:35](#) - test 2 start  
[11:55](#) - npc van clips through ego car  
[12:33](#) - traffic jam failure ending

↑ 3

0 replies



xmfcx on Sep 6, 2023

Maintainer

Author

## Test 5

<https://www.youtube.com/watch?v=ed181rcJR5k>

[0:00](#) - test  
[0:14](#) - test 1 goal pose  
[0:22](#) - test 1 start  
[1:31](#) - perception/planning reacts late to the vehicle  
[2:18](#) - test 1 end  
[2:57](#) - test 2 goal pose  
[3:11](#) - test 2 start  
[3:44](#) - ndt fails maybe  
[4:09](#) - vehicle falls off the map, failure ending

↑ 2

0 replies



xmfcx on Sep 6, 2023

Maintainer

Author

## Test 6

<https://www.youtube.com/watch?v=WID6m6z18Gc>

[0:00](#) - test

[0:35](#) - ndt faulty init

[0:40](#) - ndt reinit

[1:12](#) - test 1 goal pose

[1:23](#) - test 1 start

[2:59](#) - extremely slow lane change

[4:13](#) - waits in the middle of the road due to empty walkway

[5:17](#) - mission planner failure ending

↑ 2

0 replies



xmfcx on Sep 6, 2023

Maintainer

Author

## Test 7

<https://www.youtube.com/watch?v=jiEt1uyHXJE>

[0:00](#) - test

[0:47](#) - ndt failure init

[0:55](#) - ndt reinit

[1:14](#) - test 1 goal pose

[1:28](#) - test 1 start

[4:01](#) - test 1 end

[4:13](#) - test 2 goal pose

[4:19](#) - test 2 start

[5:08](#) - reacts late to the vehicle

[5:19](#) - after waiting, still waits extra for the intersection

[6:13](#) - test 2 end

[6:29](#) - test 3 goal pose

[6:38](#) - test 3 start

[6:50](#) - refuses to exit after the stopline, failure ending

↑ 2

8 replies



Show 3 previous replies



mehmetdogru on Sep 12, 2023

Maintainer

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@Autostone-c I am not very well informed about perception related topics but maybe `cuda` , `cudnn` or `tensorrt` versions are mismatching? Could you confirm the versions are as [autoware supports](#)?

And did you get any warning/error during build process of autoware on `awsim-stable` branch regarding version mismatching?

cc: [@kaancolak](#) [@xmfcx](#)



**xmfcx** on Sep 12, 2023

Maintainer

Author

edited ▾

I see that you had:

```
1694400101.9227071 [component_container_mt-51] [TRT_COMMON]
[WARNING]: CUDA initialization failure with error: 35 at L168.
```

And then,

```
1694400102.1120832 [ERROR] [component_container_mt-51]:
process has died [pid 7027, exit code -11, cmd
'/data/cjf/crayon-
masp/install/rclcpp_components/lib/rclcpp_components/component_
container_mt --ros-args -r
__node:=traffic_light_node_container -r
__ns:=/perception/traffic_light_recognition -p
use_sim_time:=True -p wheel_radius:=0.383 -p
wheel_width:=0.235 -p wheel_base:=2.79 -p wheel_tread:=1.64 -p
front_overhang:=1.0 -p rear_overhang:=1.1 -p
left_overhang:=0.128 -p right_overhang:=0.128 -p
vehicle_height:=2.5 -p max_steer_angle:=0.7'].

```

I'm not sure why that happened but you might want to isolate and debug that node. I don't have experience running Autoware in Jetson Orin. [@miursh](#) san do you have any idea?



**miursh** on Sep 12, 2023

Collaborator

Sorry I don't have any experience with Orin either.

[@manato](#) [@dan-dnn](#) Do you have any idea about this?



**miursh** on Sep 12, 2023

Collaborator

edited ▾

CUDA error35 looks like some kind of driver error.

Could you confirm that other ML packages or CUDA samples will work?



**Autostone-c** on Sep 12, 2023

i will test and verify it



**mitsudome-r** on Sep 14, 2023

Maintainer

@xmfcx Just as mentioned in today's Planning / Control WG today, there could be some issues that might have been solved in the latest branch. I have created the tag for 2023.09.14 from the latest main branch, and confirmed that it works on AWSIM v1.1.0 release. It might be better if you can use the tag if you plan to do future tests.

↑ 1

1 reply



**mitsudome-r** on Sep 14, 2023

Maintainer

<https://github.com/autowarefoundation/autoware/tree/2023.09.14>