

# Proposal on short- and mid-term strategy of pointcloud\_container #4112

Unanswered kminoda asked this question in Ideas



kminoda on Jan 22

Collaborator

## Introduction

Currently, Autoware has `/pointcloud_container` which may contain nodes from multiple component such as follows.

- `/sensing/lidar/concatenate_filter`
- `/perception/object_recognition/detection/voxel_grid_downsample_filter`

The container is launched only when `use_pointcloud_container = true`, which behaves as a flag whether to gather pointcloud-related nodes into one inter-component container or not.

## Cons of `use_pointcloud_container = false`

The `/pointcloud_container` is introduced to enable zero-copy communication of data-intense messages such as `/sensing/lidar/concatenated/pointcloud`. For example in TIER IV, all applications (including Robotaxi, Robobus, Cargo, etc) use this `/pointcloud_container` to enhance the performance around LiDAR data communication among multiple ROS nodes. We also have an evaluation flow for `use_pointcloud_container = true` case, but NOT for `use_pointcloud_container = false`. Thus, at least from our end, the false case is not evaluated enough.

## Cons of `use_pointcloud_container = true`

The `/pointcloud_container` accepts nodes from multiple components e.g. Sensing & Perception. This makes it difficult to split those components into separate computers, which may be troublesome for some usecases where they want to load Sensing and Perception components on different computers from computational resource perspective.

## Proposal

Category



Ideas

Labels

component:percept...

component:sensing

2 participants



## Short-term strategy

I propose to remove `use_pointcloud_container` flag and use `/pointcloud_container` by default.

This is mainly due to the fact that the case when

`use_pointcloud_container = false` is not tested enough. Also, removing the unused flag will improve the readability of launch scripts.

PR: [autowarefoundation/autoware.universe#6115](https://github.com/autowarefoundation/autoware.universe/pull/6115)

## Mid-term strategy

As discussed internally w/ [@yukkysaito](#), we should seek alternative means to enable zero-copy communication without using ROS 2 composable nodes, e.g. IceOryx in order to address the cons of `use_pointcloud_container = true` .

Let us know if you have any agrees/disagrees for this proposal. We especially would like to know if there is anyone who see a clear disadvantage of `use_pointcloud_container = true` .

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xmfcx

on Jan 24

Maintainer

edited ▼

I would like to also propose:

- Remove: `use_pointcloud_container` variable and set it `true` for where it is used.
- Set: `pointcloud_container_name` to `pointcloud_container` or something more general like: `sensing_component_container` and remove this variable.

Used in:

[https://github.com/autowarefoundation/autoware\\_launch/blob/8b818d4ddb2e5ad16d3f2f4b20bdd08e3694963/autoware\\_launch/launch/autoware.launch.xml#L7-L8](https://github.com/autowarefoundation/autoware_launch/blob/8b818d4ddb2e5ad16d3f2f4b20bdd08e3694963/autoware_launch/launch/autoware.launch.xml#L7-L8)

- Also make `use_intra_process_comms` to be `true` by default for all composable nodes.
  - Without this, there is no zero copy within the container.

↑ 1

❤️ 2

1 reply



kminoda on Jan 25

Collaborator

Author

Thank you for your comment. For the naming, I would prefer `pointcloud_container` as it may include pointcloud-related nodes from multiple components (sensing, perception, localization, ...).



**kminoda** on Jan 29

Collaborator

Author

PR is now open for removing `use_pointcloud_container`  
[autowarefoundation/autoware.universe#6115](https://autowarefoundation.github.io/autoware.universe/#6115)

↑ 1

0 replies