



D3.18

Micro-ROS Agent Software Release Y4

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Abstract	This document provides links to the released software and documentation for deliverable D3.18 <i>Micro-ROS Agent Release Y4</i> of the Task 3.3 <i>ROS Bridging & Interoperability</i> .



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1 Summary

The micro-ROS Agent is a ROS2 node wrapping the [Micro XRCE-DDS Agent](#). This node acts as a server between the DDS Network and micro-ROS nodes inside an MCU. It receives and sends messages from micro-ROS nodes. It also keeps track of the micro-ROS nodes, exposing them to the ROS 2 network. Finally, it interacts with the DDS Global Data Space on behalf of the micro-ROS nodes.

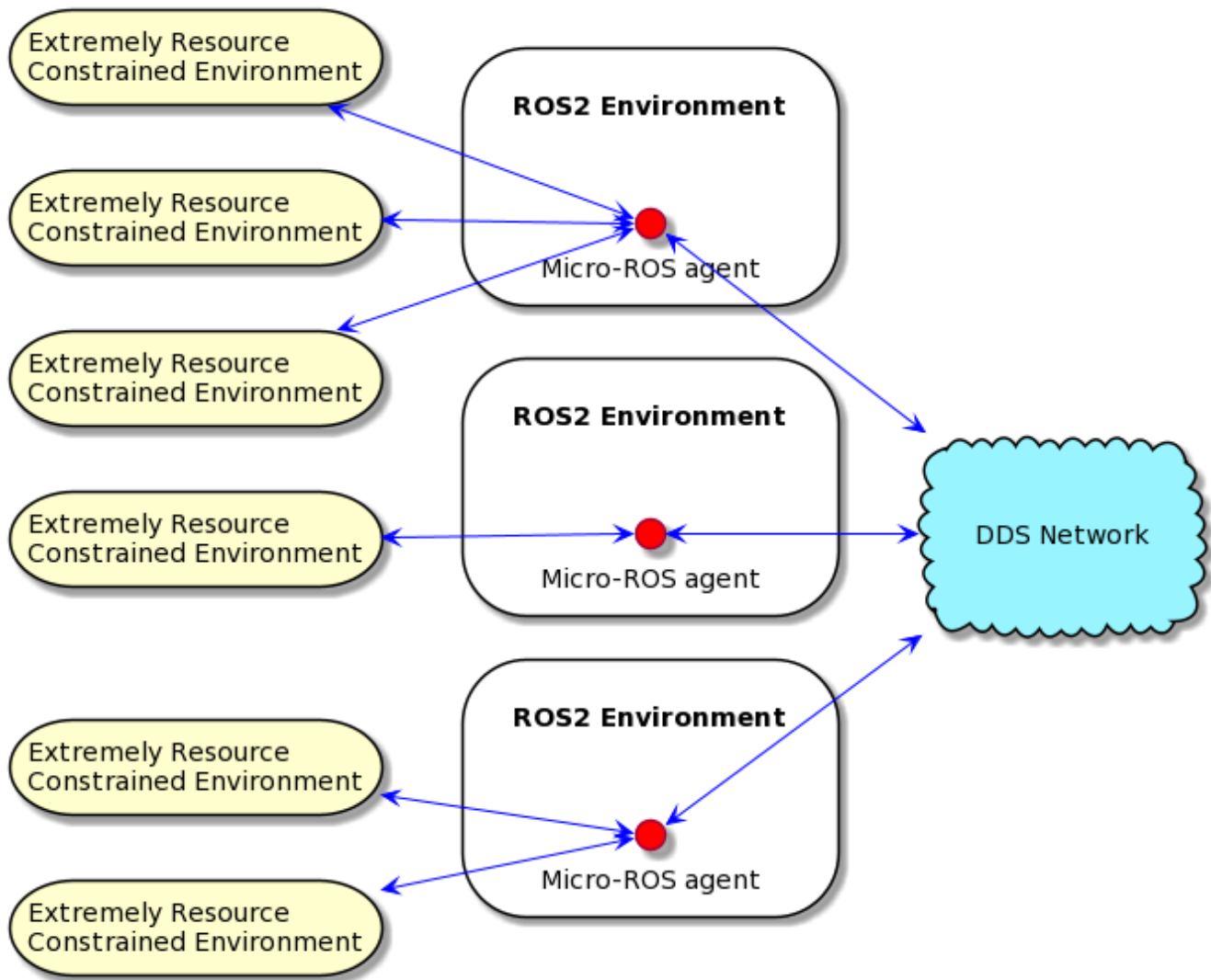


Figure 1: image

2 Acronyms and keywords

Term	Definition
XRCE	Extremely Resource Constrained Environments

Term	Definition
DDS	Data Distribution service
ROS2	Robot Operating System

3 Overview to Results

This document provides links to the released software and documentation for deliverable D3.18 *Micro-ROS Agent Release Y4* of the Task 3.3 *ROS Bridging & Interoperability*.

4 Links to Software Repositories

The micro-ROS Agent is provided as a ROS2 package available at:

- Git repository: <https://github.com/microROS/micro-ROS-Agent.git>

Branch	Latest commit	ROS 2 version
crystal	dac8802	crystal
dashing	1d271eb	dashing
foxy	3788521	foxy
galactic	b89677e	galactic
main	d7dab5c	rolling

This package depends on Micro XRCE-DDS Agent:

- Git repository: <https://github.com/eProsima/Micro-XRCE-DDS-Agent>

Branch	Latest commit	ROS 2 version
ros2	34bc3ba	foxy, galactic, rolling

More information in *D3.16 Micro XRCE-DDS for ROS Software Release Y4*

How to build a micro-ROS-Agent is detailed in the build system micro-ROS-build:

- Git repository: https://github.com/micro-ROS/micro_ros_setup.git

Branch	Latest commit	ROS 2 version
main	0c61c67	rolling
galactic	92599b1	galactic

Branch	Latest commit	ROS 2 version
foxy	e920c89	foxy
dashing	ffbd034	dashing/eloquent
crystal	2138d50	crystal

https://github.com/micro-ROS/micro_ros_setup#building-micro-ros-agent has micro-ROS-Agent compilation instructions.

The micro-ROS Agent is available in DockerHub. <https://hub.docker.com/r/microros/micro-ros-agent> These images are automatically generated from the micro-ROS/docker repository: <https://github.com/micro-ROS/docker>

5 Annex 1: micro-ROS-Agent readme

Content of <https://github.com/micro-ROS/micro-ROS-Agent/blob/galactic/README.md> from 25th November 2021.

This repository contains the Micro-ROS Agent package. Micro-ROS Agent is a ROS 2 node that wraps the Micro XRCE-DDS Agent. For further information about Micro XRCE-DDS Agent click [here](#) This package is a part of the Micro-ROS project stack. For more information about Micro-ROS project click [here](#).

The node acts as a server between DDS Network and Micro-ROS nodes inside MCU. It receives and send messages from Micro-ROS nodes, and keep track of the Micro-ROS nodes exposing them to the ROS 2 network. The node interacts with DDS Global Data Space on behalf of the Micro-ROS nodes.

5.1 Package features

5.1.1 XML generation

During the build process, the package looks for all ROS 2 messages to generate an initial list of XML profiles. These profiles can are referenced in the Agent-Client communication to avoid sending the full XML content. This reference mechanism can be switched on and off from the Micro XRCE-DDS middleware layer.

5.1.2 Agent-Client communication mechanism

Communication between the Micro-ROS Agent and the Micro-ROS nodes supports two types of transport:

- UDP and TCP over IPv4 and IPv6.
- Serial Port transports.

All available configurations are supported directly by the Micro XRCE-DDS agent.

5.2 Purpose of the Project

This software is not ready for production use. It has neither been developed nor tested for a specific use case. However, the license conditions of the applicable Open Source licenses allow you to adapt the software to your needs. Before using it in a safety relevant setting, make sure that the software fulfills your requirements and adjust it according to any applicable safety standards, e.g., ISO 26262.

5.3 License

This repository is open-sourced under the Apache-2.0 license. See the [LICENSE](#) file for details.

For a list of other open-source components included in this repository, see the file [3rd-party-licenses.txt](#).

5.4 Known Issues/Limitations

Please notice the following issues/limitations:

- There is an unknown issue when dealing with serial ports shared with the micro-ROS agent running inside a Docker. Sometimes it works with a remarkable packet loss.