Develop ROS™ applications with Visual Studio Code and Azure

Lily Hou, Senior Program Manager
Sean Yen, Senior Software Engineer
Agenda

Our ROS Journey

Visual Studio Code Extension for ROS

Getting Started

  Create a simple ROS application
  Debug ROS application with ROS Launch
  URDF Preview
  ROS2 Support
  Deploy ROS application on Azure with Windows VM

What’s Next?
Our ROS Journey
Our ROS Journey

- \text{Jun 2018}:
  - ROSCON 2018
  - Experimental Release of ROS on Windows

- \text{Sep 2018}:
  - ROSCON 2018

- \text{Oct 2019}:
  - ROSCON 2019
  - Developer flow using VS Code and Azure

- \text{May 2019}:
  - Microsoft Build 2019
  - General Availability of ROS on Windows

- \text{Jul 2019}:
  - Preview of VS Code extension for ROS
279 ROS packages enabled on Windows

~1,800 downloads of ROS Melodic monthly

Over 14,000 installs of ROS extension since July
Visual Studio Code extension for ROS
Visual Studio Code

Free, cross-platform, open source
Fast and lightweight
Rich extension ecosystem

"In the Stack Overflow 2019 Developer Survey, Visual Studio Code was ranked the most popular developer environment tool, with 50.7% of 87,317 respondents claiming to use it." - Wikipedia
ROS Extension

- Automatic ROS workspace activation.
- Allows starting, stopping and viewing the ROS system status.
- Automatically discover build tasks.
- 3D preview URDF and XACRO files.
- Debug ROS nodes (C++ or Python) by attaching to the process or from the ROS launch.
- And more
Getting Started
Pre-requisites

ROS/ROS2 (Melodic and Dashing)
Visual Studio Code & ROS Extension
C/C++ Toolchain (depending on your platform)
  GNU GCC on Linux\MacOS
  Visual C++ Workload on Windows
Demo: A simple ROS application
URDF Preview

A tool built on top of Robot Web Tools
Visualize URDF\XACRO files in seconds
ROS2 Support

Workspace Discovery

ROS2 Daemon Start\Stop

ROS2 Status Monitor

Colcon Build Tool Integration
ROS on Azure with Windows VM

Look for “ROS” on aka.ms/azure/quickstart

This template creates a Windows VM and installs the ROS into it using the CustomScript extension.
ROS on Azure with Windows VM

Let’s walk through the template
What’s next?

Add debug support for ROS2 Launch system
   Plus ROS and ROS2 coexistence environment
More improvement for cross-platform development
More visualization tooling
End-to-end DevOps workflow
Call to Action

Try it out aka.ms/ros/vscode
Give us feedback on github.com/ms-iot/vscode-ros
Learn more about ROS on Windows IoT and Azure aka.ms/ros