UMAA SDK: Stimulator User Guide

Contents

Purpose

The UMAA SDK Stimulators are applications for sending UMAA messages with user input fields via RTI Connext® DDS. Each stimulator hosts one of six core functions of the UMAA standard. They can be found in the package's `/bin` directory.

| Application	UMAA Core Function
eoStim	Engineering Operations (EO)
mmStim	Mission Management (MM)
moStim	Maneuver Operations (MO)
saStim	Situational Awareness (SA)
semStim	Sensor and Effector Management (SEM)
soStim	Support Operations (SO)

These stimulators are GUIs (graphical user interfaces) created for the purpose of testing and debugging, and are **not** intended to serve as HMIs (human-machine interfaces).

Getting Started

The script `runStimulator.sh` has been provided as the method of running each stimulator. This script sets up the necessary environment for them, and requires one command-line argument to specify which of the six stimulators should be ran. For example, to run `eoStim`, enter into the command line:

```
sh $UMAASDK_HOME/runStimulator.sh eo
```

All six UMAA SDK Stimulator applications are the same in their presentation. The main window is divided into two areas. The leftmost side hosts a list of the UMAA messages available to send (the "message list"). The search bar provides a filter for the message list to quickly find a message or groups of messages with similar names.
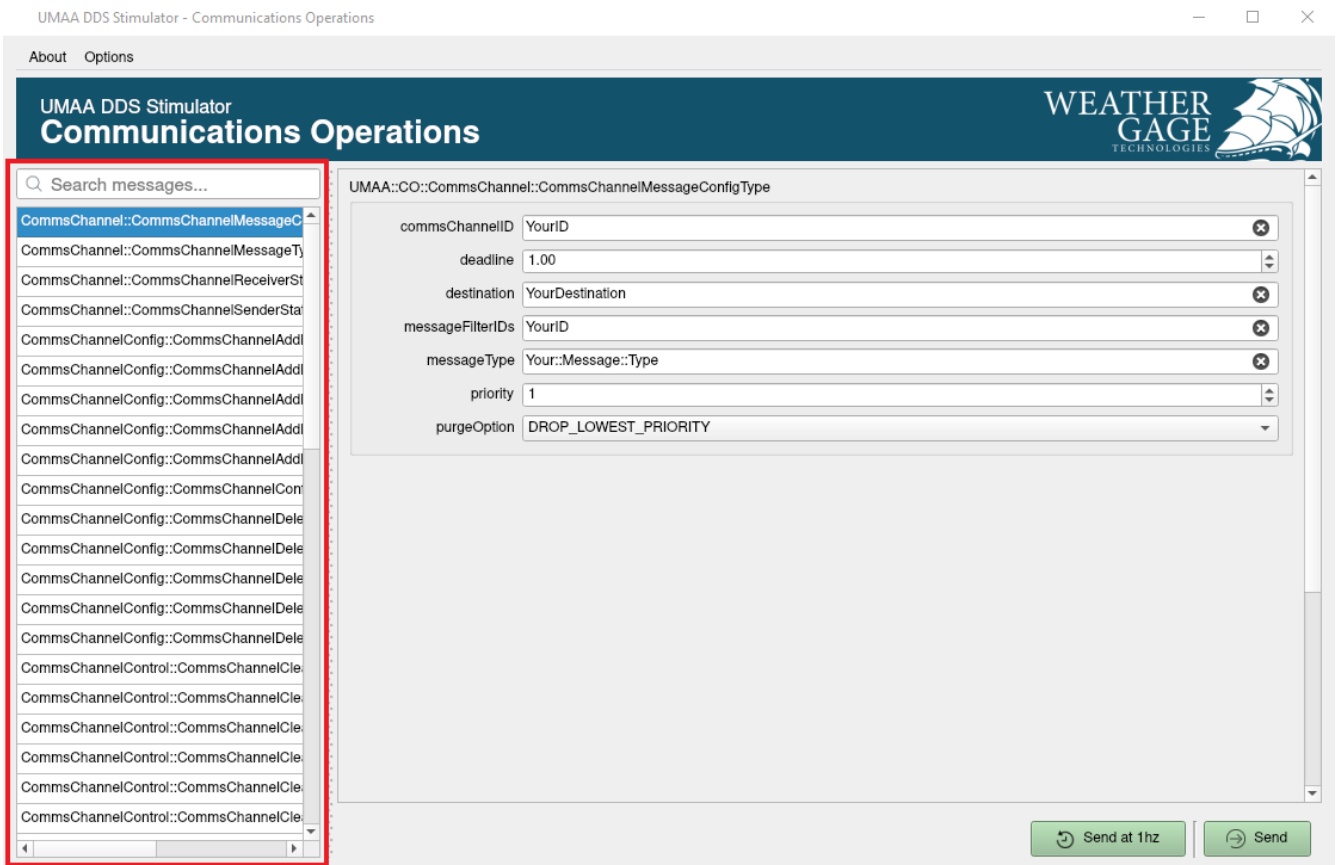
Upon selecting a message from the message list, the right side provides a display for its contents (the "message display"), which may be filled with custom values.
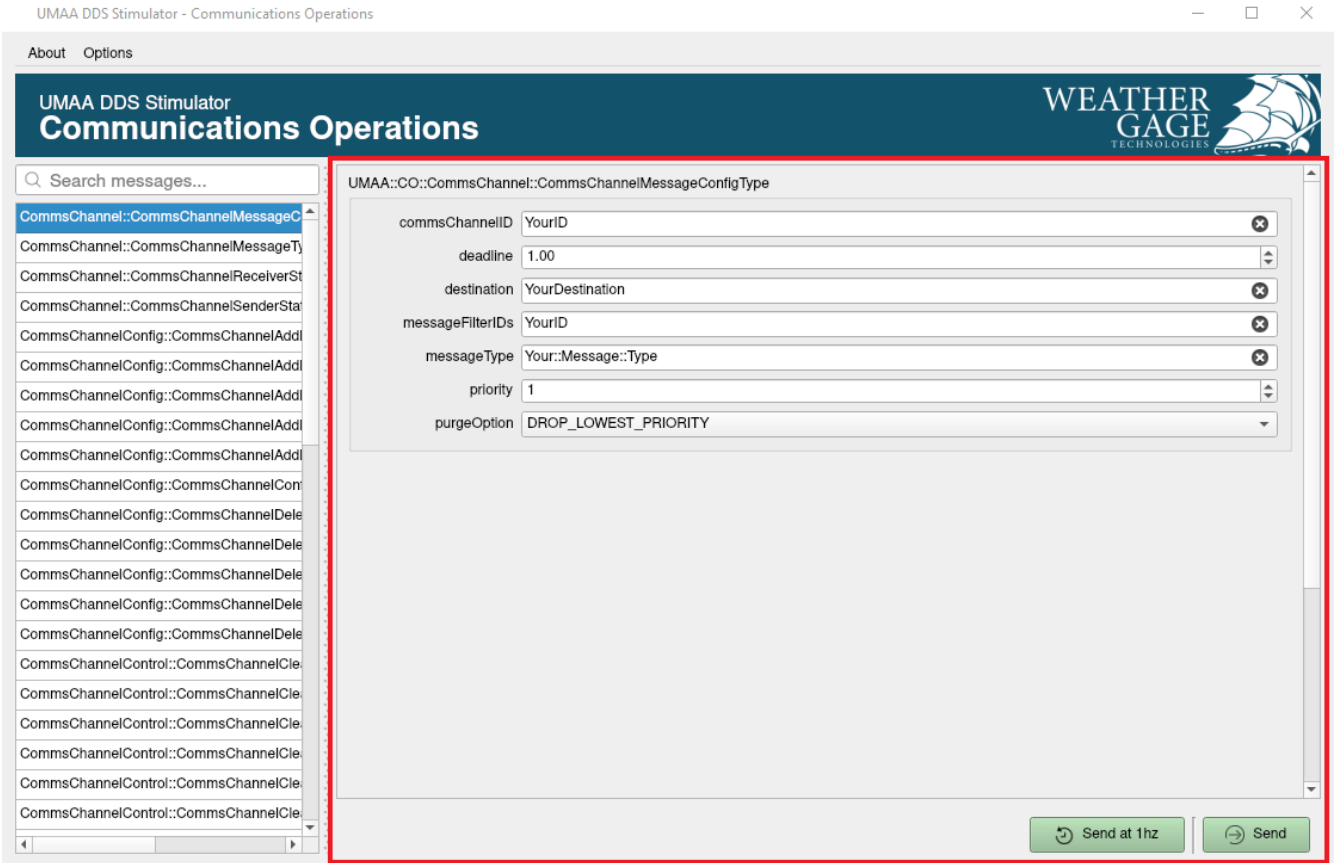
Stimulating a Message

In the bottom-right corner, there are 2 buttons which correspond with the message display. The "Send" button will send the current message shown in the message display, along with its fields' inputs, one time.

The "Send at 1hz" button will send the current message shown in the message display, along with its fields' inputs, once per second. Edits to the message's fields will apply each time it is sent.

To stop sending the message, the "Send at 1hz" button will become "Stop 1hz Send". While a message is being sent on the 1 hertz timer, it will be shown in the message list alongside a timer icon.
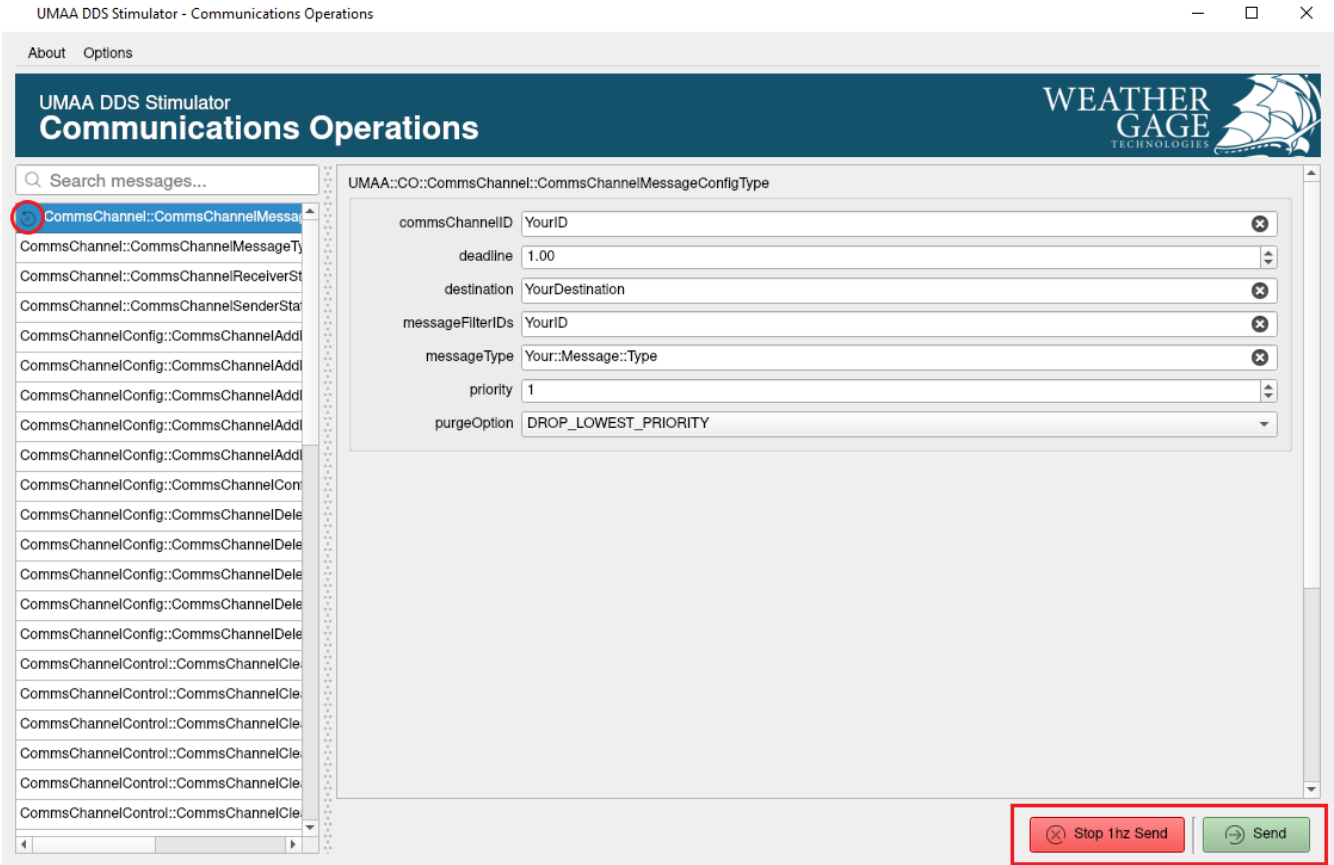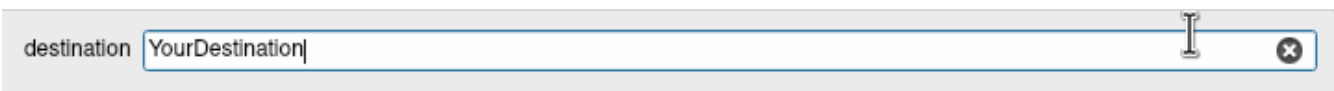
For convenience, each time a message is sent, any time stamps within that message will be updated to the current epoch time.

In the top-left corner, there is a menu bar providing the option to stop sending all timed messages.
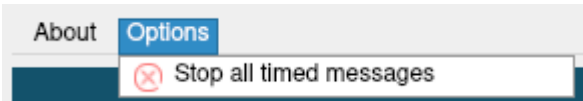

Message Field Inputs

String-typed fields provide an editable line of text which may be cleared by the $\otimes$ button on their right side.


Integer-, long-, and double-typed fields provide a spin box, which may be edited by typing or the up/down buttons on their right side. Using the scroll wheel while hovering the input will increase/decrease its value by 1.
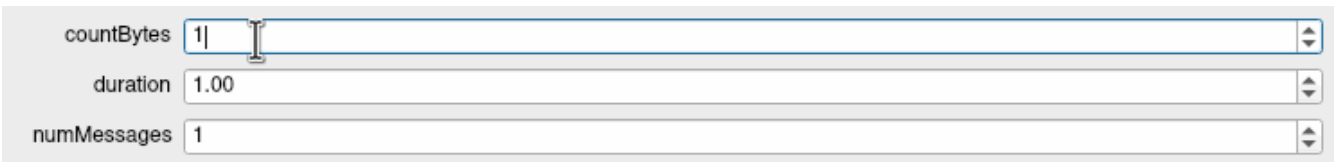

Boolean-typed fields provide a check box, where checking is true, and unchecking is false.
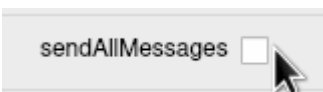
Enumeration-typed fields provide a drop-down selection of their possible values. Using the scroll wheel while hovering the input will scroll though its values.
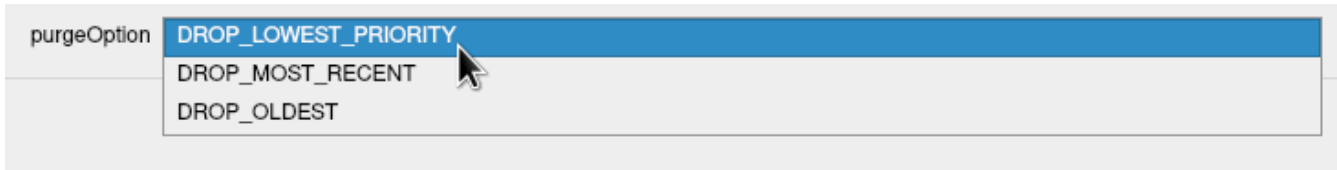
Union-typed fields provide an enumeration drop-down at the top which controls the selection of the union's possible subtypes.
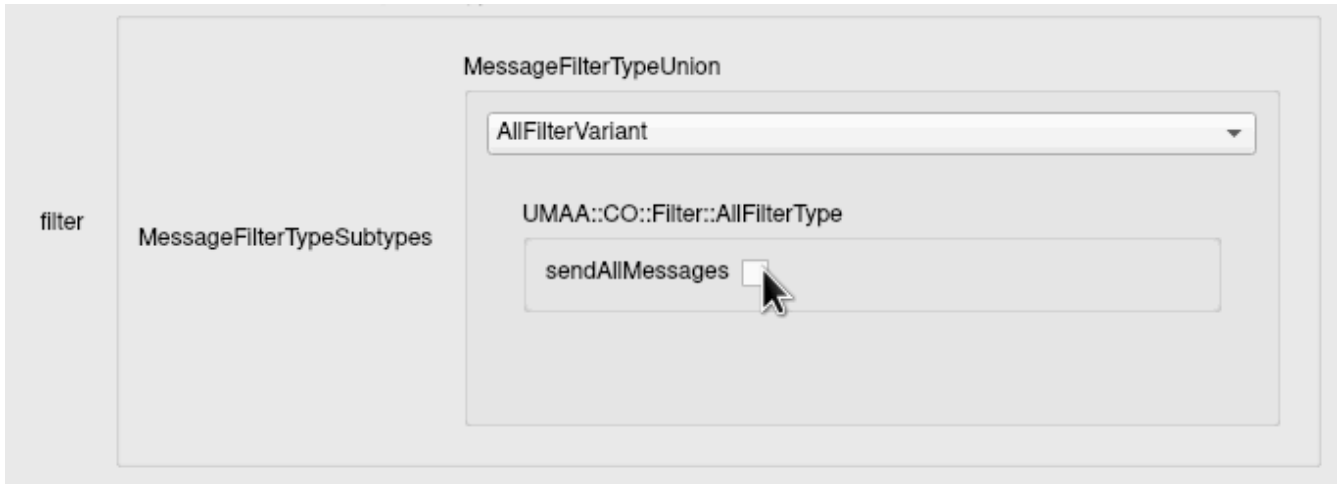
Advanced Options

Specifying DDS Domain ID

All UMAA SDK Stimulators can be given a command-line argument to specify the DDS domain ID to be used when sending messages. If left unspecficied, the UMAA SDK Stimulators will default to domain ID 40.

```
-d <DOMAIN_ID>, --domainId <DOMAIN_ID>
```

Where `<DOMAIN_ID>` is an integer within range 0-232, inclusive.

To utilize this argument when running a stimulator from the `runStimulator.sh` script, simply append it to the script's command-line arguments. For example, to run `eoStim` with domain ID 52, enter into the command line:

```
sh $UMAASDK_HOME/runStimulator.sh eo -d 52
```

Specifying DDS QoS

Users can provide their own DDS Quality of Service (QoS) file to be loaded by the stimulators at runtime. Simply place the USER_QOS_PROFILES.xml in the directory the stimulator will be ran from.

To learn more about what DDS QoS is, visit this site.

Monitoring Messages

To monitor stimulated messages, the *rtiddsspy* debugging tool from RTI Connext® provides a look into DDS traffic. When running this tool, ensure its options align with any that may have been provided to the stimulator (see Advanced Options above). It is recommended

that *rtiddsspy* is ran with the `-printSample` option so that the fields within sent messages can be seen.

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