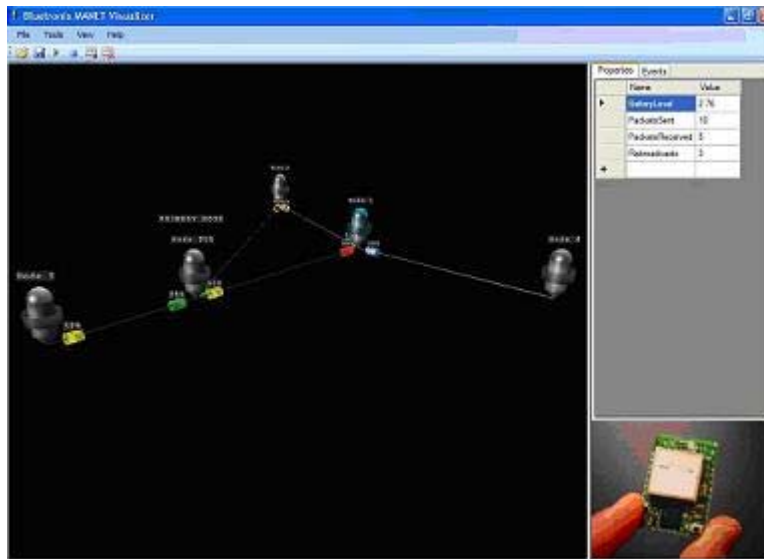


Bluetronix MANET Visualizer



This program is designed to show network activity for a network of nodes running Bluetronix's Swarm Autonomous Routing Algorithm and related test-bed software.

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Connecting the Interface Node

The interface node should be connected and powered ON before starting the visualizer. To connect the interface node and power up the visualizer, follow these steps:

1. Connect the interface node to the COM1 serial port using a standard serial cable.
2. Power ON the interface node.
3. Start the visualizer.
4. Press the RESET button on the interface node to reset the hardware code.
5. If necessary, press CTRL-A or CTRL-D to zoom the display to the interface node's position.

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Viewing Network Activity

Each node that is connected to the network is represented as a cone with a concentric ring. Links are shown as white lines drawn between nodes, and colored cylinders at either end of the link represent the "strengths" of the pheromones associated with the nodes and the link.

Display Controls

The following key combinations allow you to change the view of the nodes on the screen.

- CTRL-A: Zoom to "above view" showing all nodes currently connected.
- CTRL-D: Switch to "default view" showing the interface node.
- CTRL+mouse drag: Zoom the display.
- Shift+mouse drag: Pan the display.
- Alt+mouse drag: Tilt the display.

Network Nodes



The "home" node, or "interface" node, is the node connected via the serial port to the computer running the visualizer.



If a node is sending data, it blinks **green**.



If a node is a hopping point for a packet, it blinks **yellow**.



If a node is receiving data, it blinks **blue**.



If a node sends a packet and it fails to be delivered to the receiving node, the two nodes blink **red**.

Link Values

Link pheromone values are represented visually by colored cylinders. Optionally, the link values can be viewed to four decimal places by checking the "Link Labels" option in the View menu.



High pheromone values are represented as a reddish colored cylinder.



Medium pheromone values are represented as a yellow colored cylinder.



Low pheromone values are represented as a blue colored cylinder.

Packets



Packets are displayed as cones traveling along links between nodes. Different colored cones represent different colored packets.

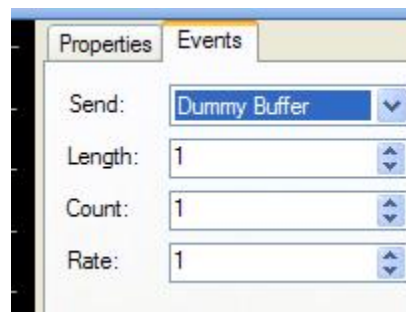
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Sending Network Commands

The following types of commands can be sent to the network nodes:

- [Send "dummy" data](#) (data of arbitrary contents) from one node to another.
- [Send sensor data](#) (data gathered from onboard sensor) from one node to another.
- [Ignore](#) a link.
- [Reestablish](#) a link.

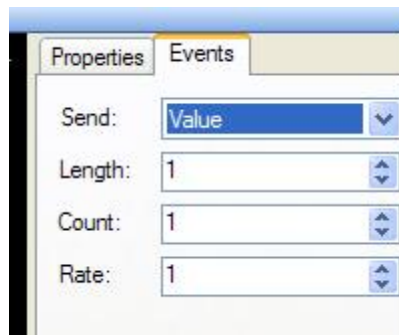
Sending Dummy Data



To send "dummy" data from one node to another, follow these steps:

1. Left-click the node that is to be the source of the data.
2. In the Events tab in the right panel, configure the send event:
 1. Select "Dummy Buffer" from the dropdown menu.
 2. Enter the length of the packets to send in bytes.
 3. Enter the total number of packets to send in the Count box.
 4. Enter the rate at which packets should be sent, in packets per second.
 5. Right-click the node that is to be the destination for the packets.

Sending Sensor Data



To send data from one node's onboard sensor to another node, follow these steps:

1. Left-click the node that is to be the source of the data.
2. In the Events tab in the right panel, configure the send event:
 1. Select "Value" from the dropdown menu.
 2. Enter the total number of packets to send in the Count box.
 3. Enter the rate at which packets should be sent, in packets per second.
 4. Right-click the node that is to be the destination for the packets.

Ignoring a Link



To command a node to temporarily ignore an established link, click the cylinder representing that link. Ignored links will BLINK.

Reestablishing a Link

To command a node to stop ignoring a link, click the cylinder representing the ignored (blinking) link.



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Recording Network Activity

Network activity can be recorded and saved to a file for viewing later. To begin recording, click the  button in the toolbar. To stop recording, click the  button in the toolbar. Remember to save the file using File -> Save.

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Playing Back Saved Demonstrations

To play back a saved demonstration, open the file using File -> Open. Then begin playing the file by clicking the  button in the toolbar. Playback can be stopped by clicking the  button in the toolbar.

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