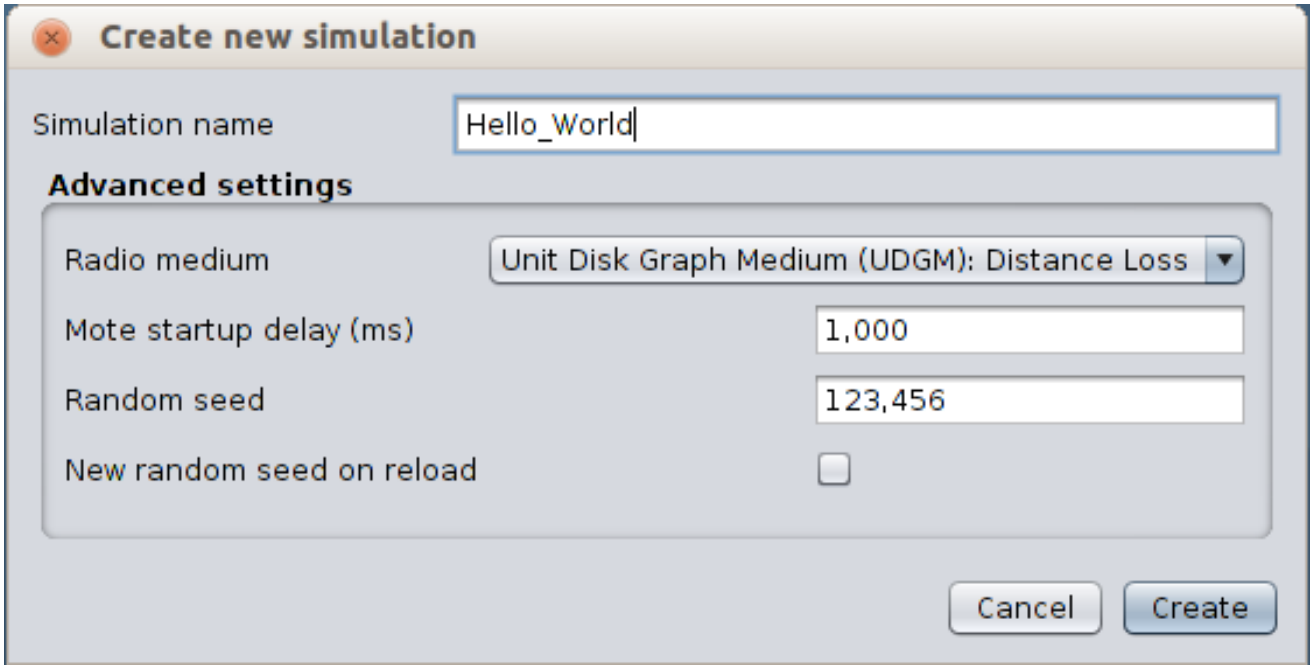
Basics of Cooja

Running Cooja

- To start Cooja manually
  1. Open a terminal and change the directory to “contiki/tools/cooja/”
  2. Run the command “ant run”
- Once Cooja starts, a window will open as illustrated in the screenshot on the right

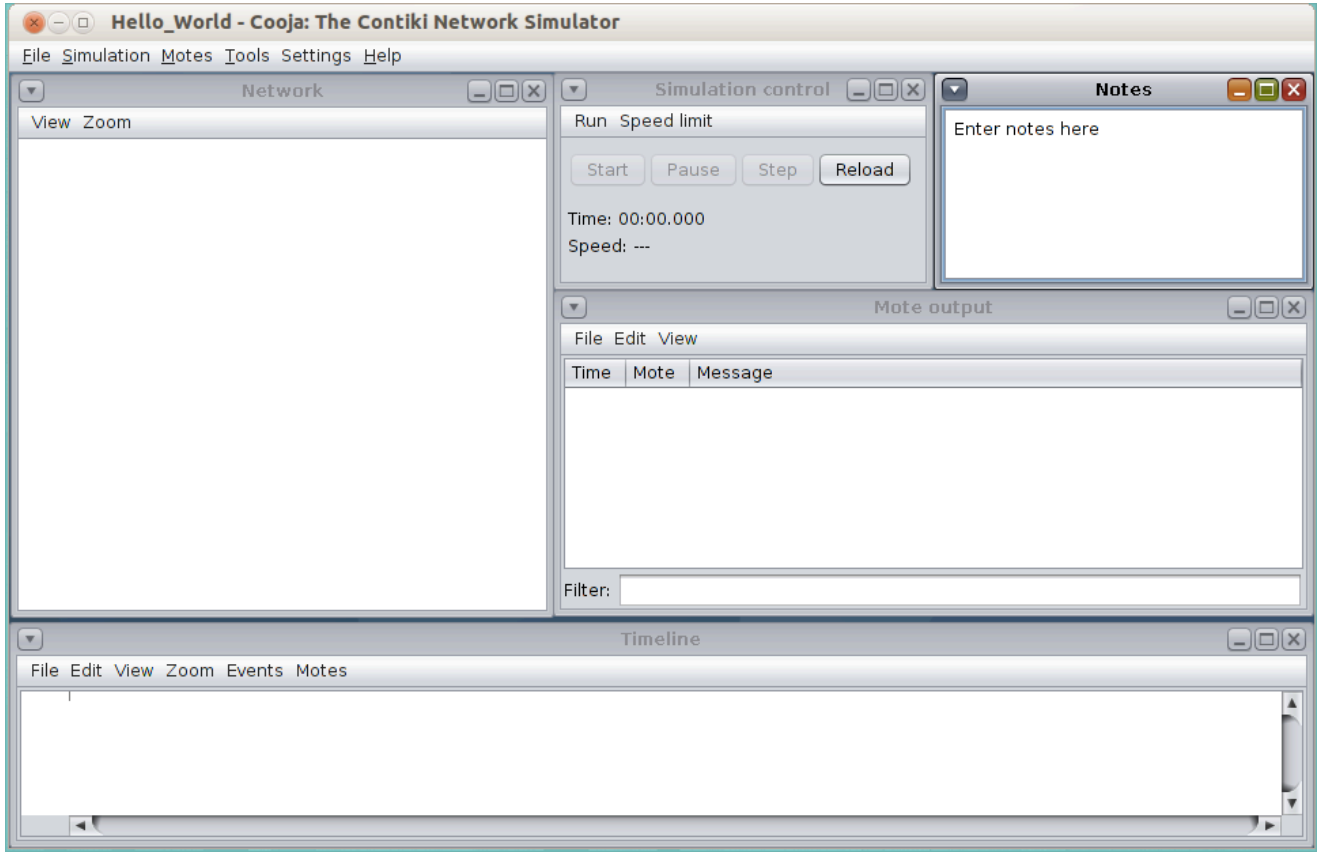
Creating a Simulation

- Click on File > New Simulation
- Give a name to the simulation, then click “Create”



Simulation Interface

- The Cooja graphical interface consists of five areas

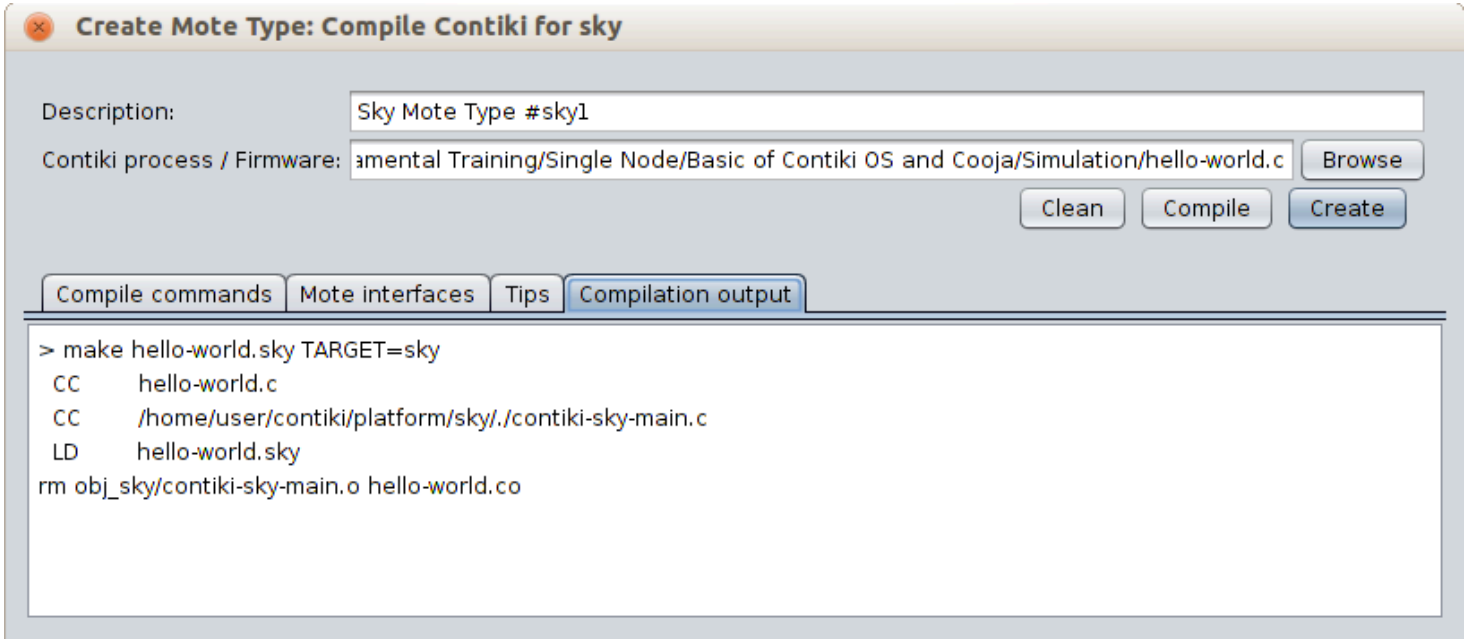


Simulation Interface (cont.)

- Network window
  - Shows the physical layout of the network
  - You can place motes here and move them around, as needed, in order to form the topology you desire
- Simulation control window
  - Start, stop, reload, and control the simulation rate of the simulation
- Mote output window
  - Shows output generated by all the motes, e.g., the output from the printf() function
  - Output can be filtered via input in the “Filter” field (e.g., to only show output from mote 2, then you can enter “ID:2” in this field)
- Note window
  - Allows taking notes during the simulation
- Timeline window
  - Shows the events that occur on each mote over the simulation timeline

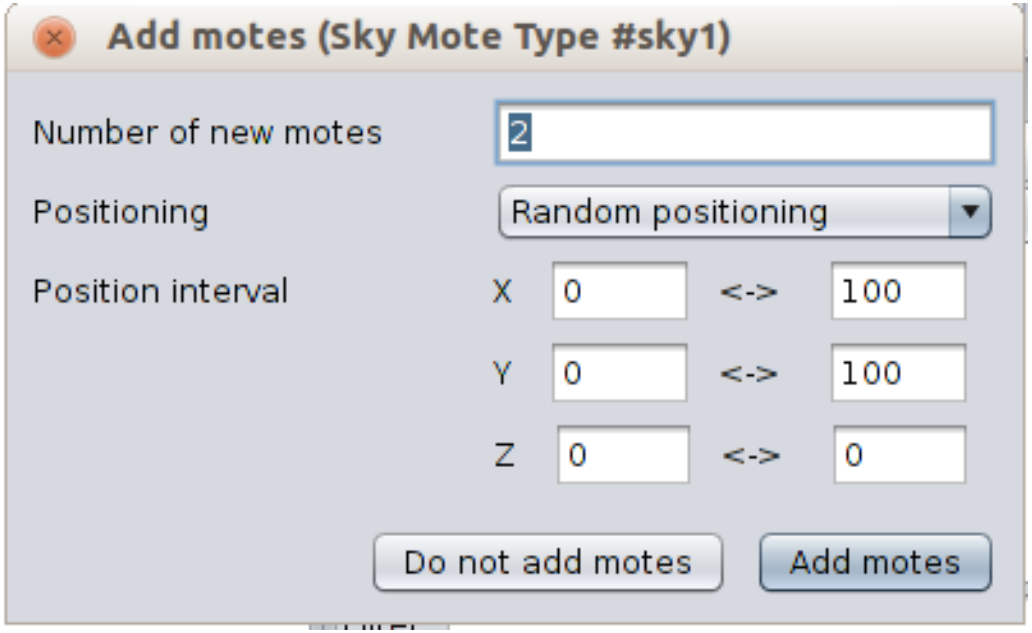
Adding Motes

- Click on the menu Motes > Add Motes
- In Create New Mote Type, select Sky Mote (also called Tmote Sky)
- In the window that appears, click “Browse” and navigate to the simulation directory “iotrain-sim/database/fundamental_training/single_node/basics_contiki/simulation”
- Select the file “hello-world.c”, click “Compile”, then “Create”



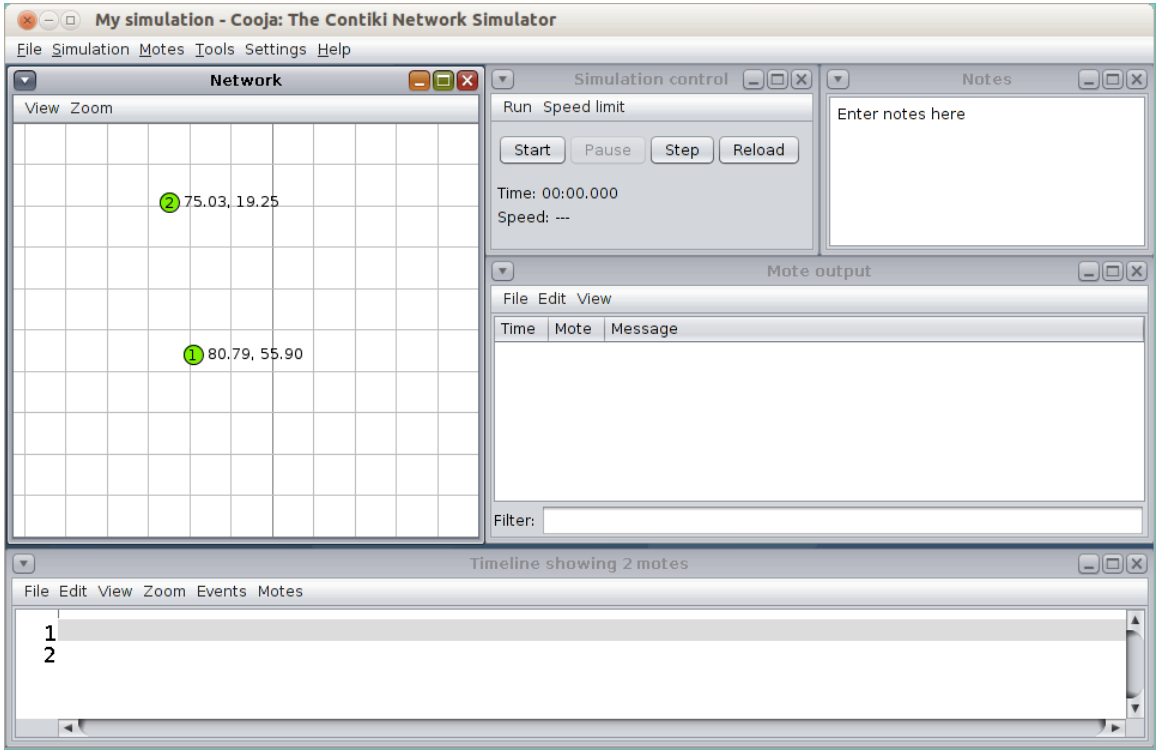
Adding Motes (cont.)

- After pressing “Create”, a window to configure the number of motes and their positions appears
- Add the number of motes you desire (the example below shows 2 motes being added)



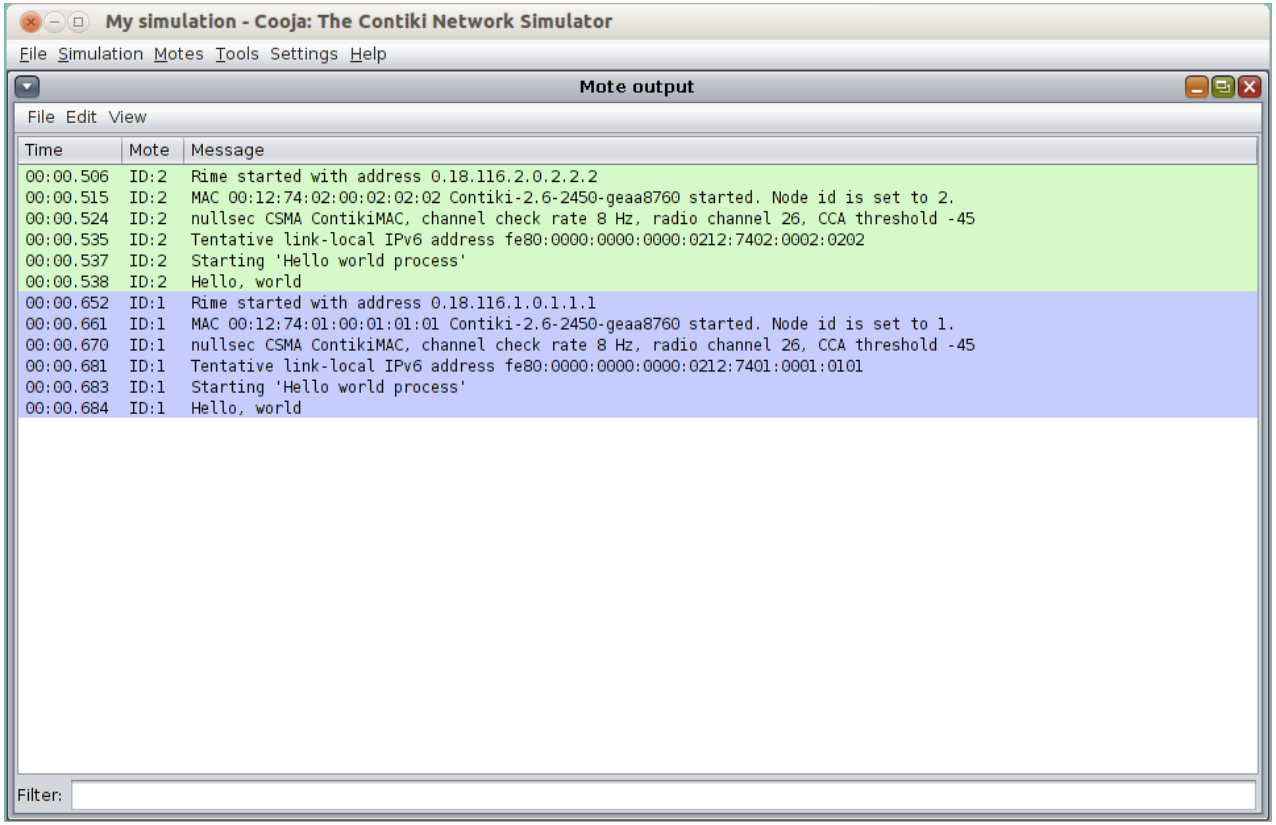
Visualizing the Scenario

- By default, motes are placed at random positions in the Network window
- Use the View menu in the Network window for view options
- Press the “Start” button to run the simulation



Mote Output

- The Mote output window displays information about the simulated motes, e.g., MAC address details, messages, etc.



Saving and Loading Simulations

- Cooja allows to save/load simulation configurations, including all the active plugins
  - Note that the state of a simulation is not saved, and all nodes are reset when the simulation is loaded again
- To save the current simulation, click the menu item File > Save simulation as… and choose the target directory
  - Simulations are stored as files with the extension ".csc", which means 'Cooja Simulation Configuration'
- To later open an existing simulation, click the menu item File > Open simulation > Browse… and select the desired simulation configuration file (.csc)