



Quick Start Guide

4Layer Modeler is a graphical Java-based tool for constructing Internet system network models that can be simulated using ns-3. Nephel3 is a cloud-based service that takes, as input, a model file produced by 4Layer Modeler and generates, as output, ns-3 network simulation program code for simulating the model.

This guide provides basic instructions for getting started with using 4Layer Modeler and Nephel3.

The basic steps to generate ns-3 program code using 4Layer Modeler and Nephel3 are as follows:

- (1) construct an Internet system model using 4Layer Modeler,
- (2) export the model from 4Layer Modeler to a folder or Desktop,
- (3) upload the model to the nephel3.com service,
- (4) receive the ns-3 code that is returned by the service on a web page, and
- (5) copy the code from the web page and paste the copied code to a text file.

The 4Layer Modeler tool can be obtained as follows:

- (1) go to *4-layer.com* and then follow the “download 4Layer Modeler” link,
- (2) verify that you are not a robot and accept the license agreement,
- (3) click on the “Download 4Layer Modeler” button and save the downloaded file *4layermodelerdistribution_preview.tar.gz*, and
- (4) extract the folder named *4layermodelerdistribution_preview* from the file *4layermodelerdistribution_preview.tar.gz*.

The obtained folder *4layermodelerdistribution_preview* contains the software distribution. It includes the Java archive *4layermodeler_preview.jar* which is the 4Layer Modeler tool itself.

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To run the 4Layer Modeler tool:

- (1) either (double) click on the *4layermodeler_preview.jar* file (permissions may need to be set on the jar file to allow for executing the file as a Java program), or
- (2) run the tool from the command line in a terminal by first going to the *4layermodelerdistribution_preview* folder and then typing the command

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java -jar "4layermodeler_preview.jar"
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Once 4Layer Modeler is running, a basic “quickstart” model with two nodes, one link, and one application-layer traffic flow can be created by performing the following steps:

- (1) go to the *Network View* tab in 4Layer Modeler, add a Client node by clicking on the “client” button and then clicking somewhere on the canvas,
- (2) add a Server node by clicking on the “server” button and then clicking somewhere else on the canvas,
- (3) add a bidirectional link between the two nodes by clicking on the “bidirectional link” button, then clicking on the Client, and then clicking on the Server,
- (4) go to the *Application View* tab in 4Layer Modeler, add an application-layer traffic flow between the Client and Server nodes by clicking on the “point-to-point application” button, then clicking on the Client, and then clicking on the Server,
- (5) apply an application traffic type by clicking on the inserted point-to-point application flow (link), selecting the *Edit → Application Element* menu item, and then clicking on the “Apply” button,
- (6) go back to the *Network View* tab in 4Layer Modeler and then save the model as “quickstart” using the *Network Model → Save* menu item, and
- (7) export the “quickstart” model to, *e.g.*, the Desktop using the *Network Model → Export* menu item. The exported model will then appear as a file named *quickstart.flm*.

Once the *quickstart.flm* model file has been obtained, the ns-3 simulation program code for it can be produced using the Nephel3 service. The steps for generating the ns-3 code are as follows:

- (1) go to *nephel3.com* (or *nephel3t.com*),
- (2) verify that you are not a robot and accept the service agreement,
- (3) click on the “Browse...” button to select the *quickstart.flm* model file,
- (4) click on the “Submit Model File” button, and
- (5) once the Nephel3 code generation operation has been completed, right-click on the returned web page, choose Select All, copy the ns-3 program, and then paste the program to a desired text file.