

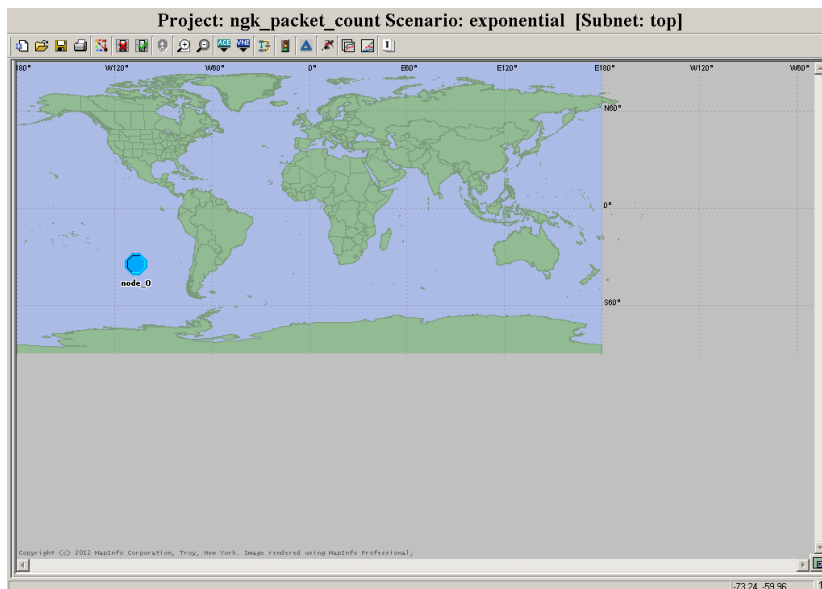
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CSC/ECE 570
Professor Thuent

OPNET LAB 3

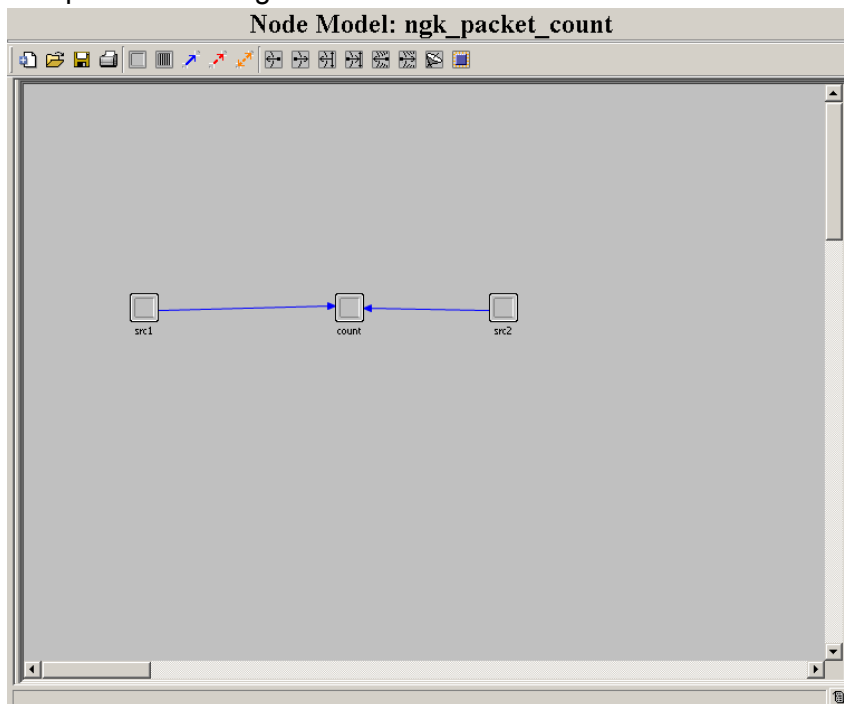
Based on "Basic Processes" and "Packet Switching I" Tutorials
Due Date: Tuesday October 30, 8:00 am

Do the tutorial "Basic Processes"

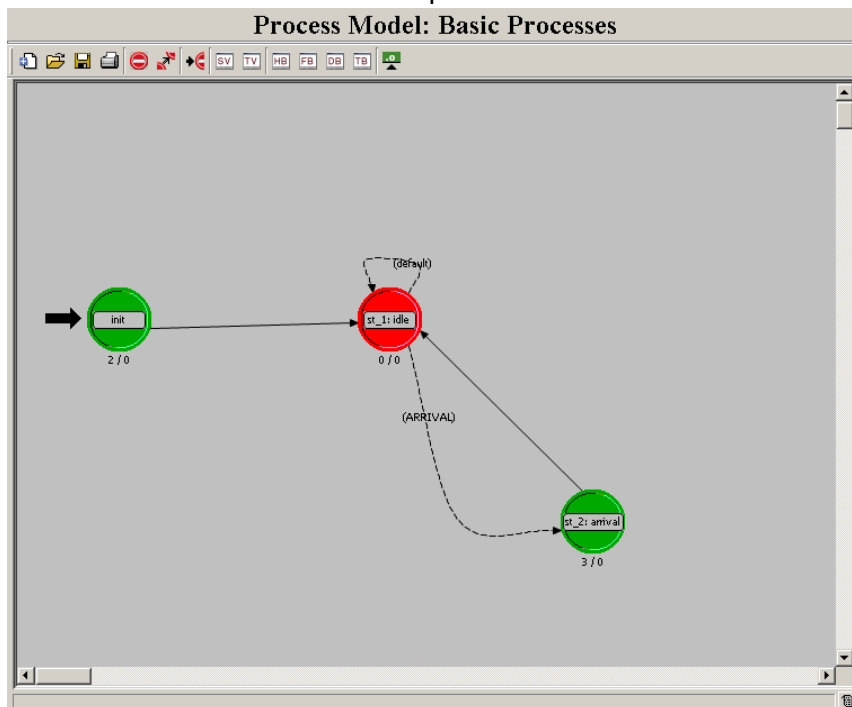
Question 1: For the one fixed processor module that generates packets use constant interarrival time of 2.0. For the promoted value, do two cases:
In this tutorial we will setup a simple counter. Here is the network model with the created node model.



The packet counting node model:



The Process model of the count processor:



The constant interarrival time is set to 2.0 for the fixed processor module.

(src1) Attributes

Attribute	Value
name	src1
process model	simple_source
icon name	processor
Packet Format	NONE
Packet Interarrival Time	constant (2.0)
Packet Size	constant (1024)
Start Time	10.0
Stop Time	Infinity

Extended Attrs.

Match: ☐ Exact ☒ Substring ☐ RegEx

Look in: ☒ Names ☒ Values ☒ Possible values ☒ Tags

☐ Apply to selected objects

OK Cancel

1a) Constant interarrival time of 0.5

Provide the figure on number of packets received as in the tutorial.

Promoted value now has a 0.5 constant interarrival rate:

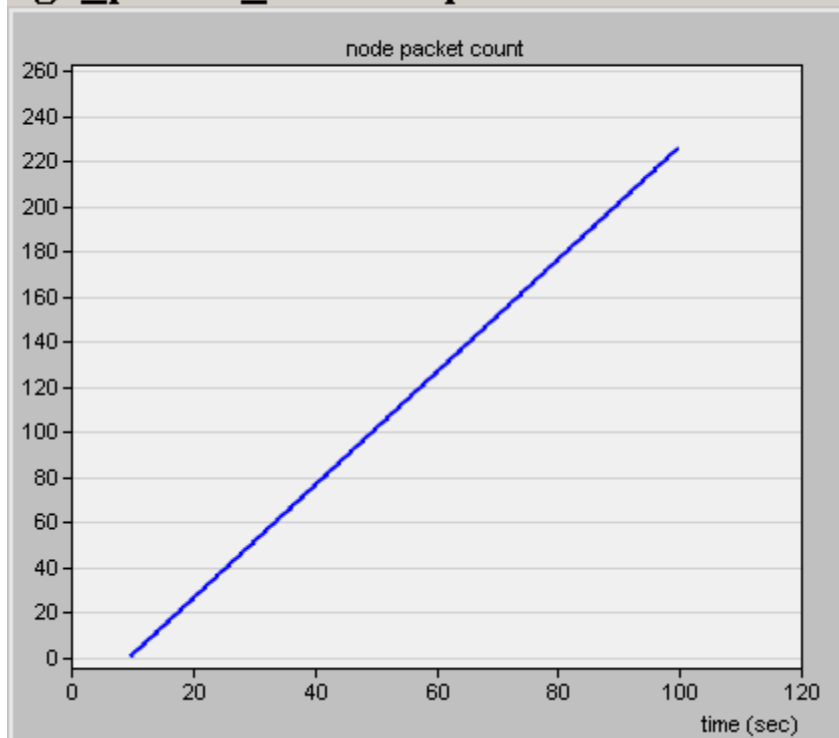
(node_0) Attributes

Attribute	Value
name	node_0
src2.Packet Interarrival Time	constant (0.5)

☐ Exact match ☐ Advanced ☐ Apply to selected objects

The packet count figure generated from the simulation:

ngk_packet_count-exponential-DES-1: no



1b) Exponential interarrival time with mean 0.5

Provide the figure on number of packets received as in the tutorial. For the constant – exponential case, provide the number of packets received figure for 30 – 60 seconds.

The promoted value now has an interarrival time of 0.5.

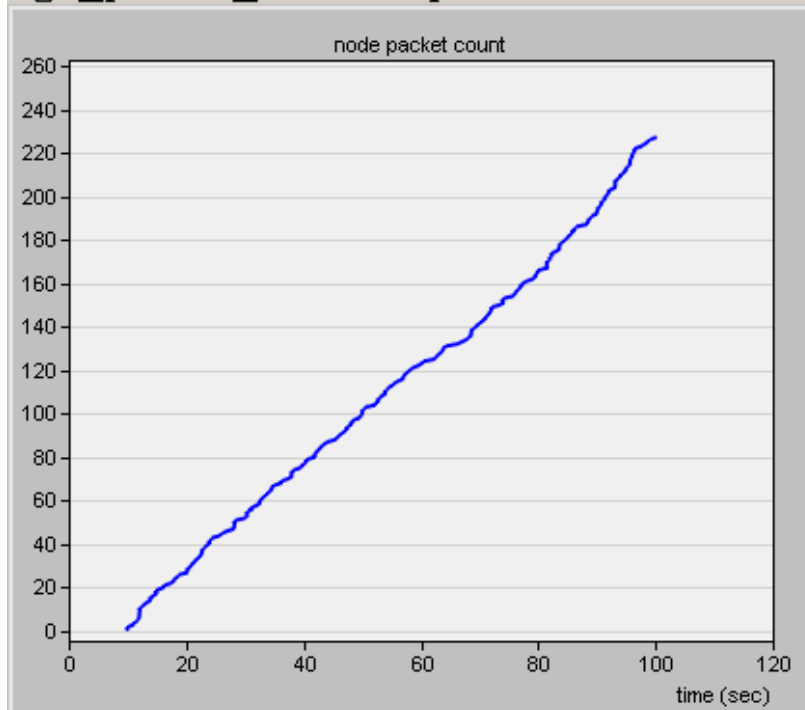
(node_0) Attributes

Attribute	Value
name	node_0
src2.Packet Interarrival Time	exponential (0.5)

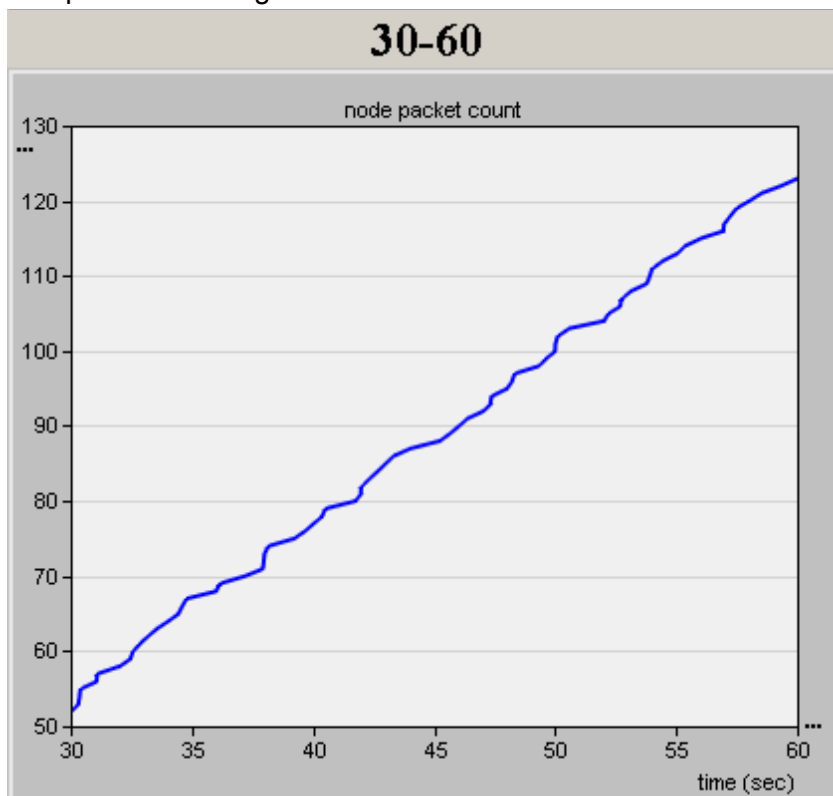
☐ Exact match ☐ Advanced ☐ Apply to selected objects

The packet count figure generated from the simulation run:

ngk_packet_count-exponential-DES-1: no

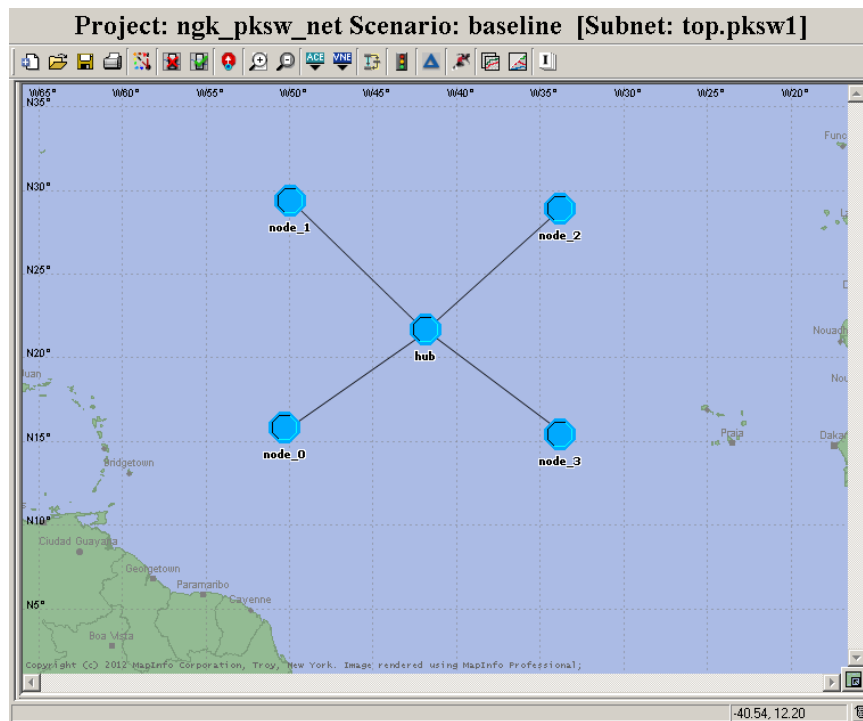


The packet count figure from 30 seconds to 60 seconds:

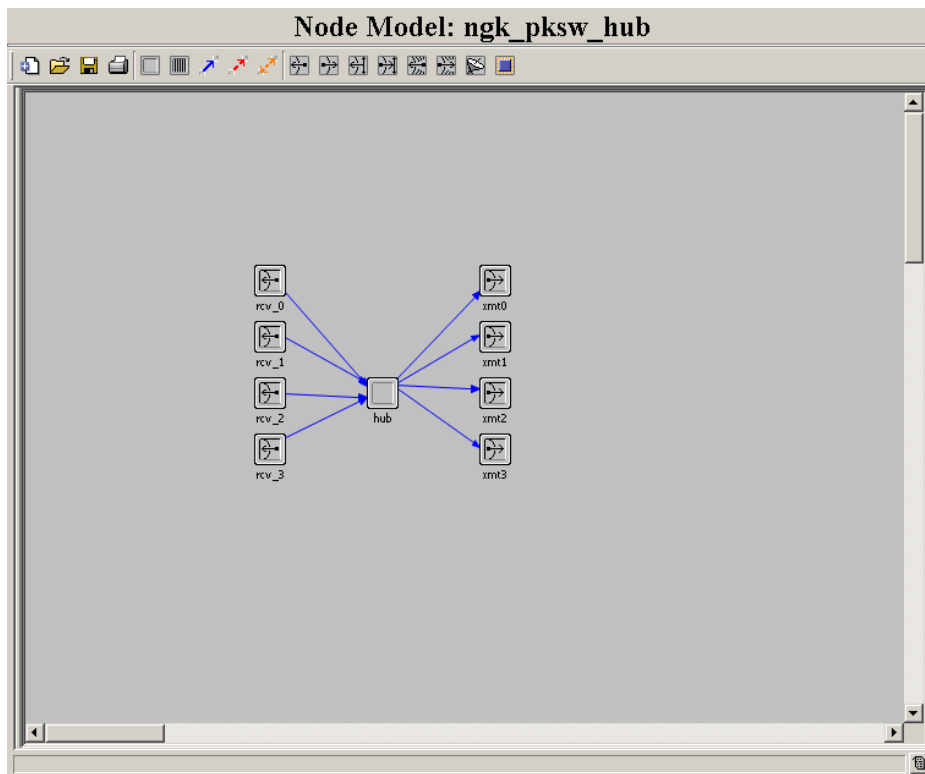


Do the tutorial “Packet Switching I”

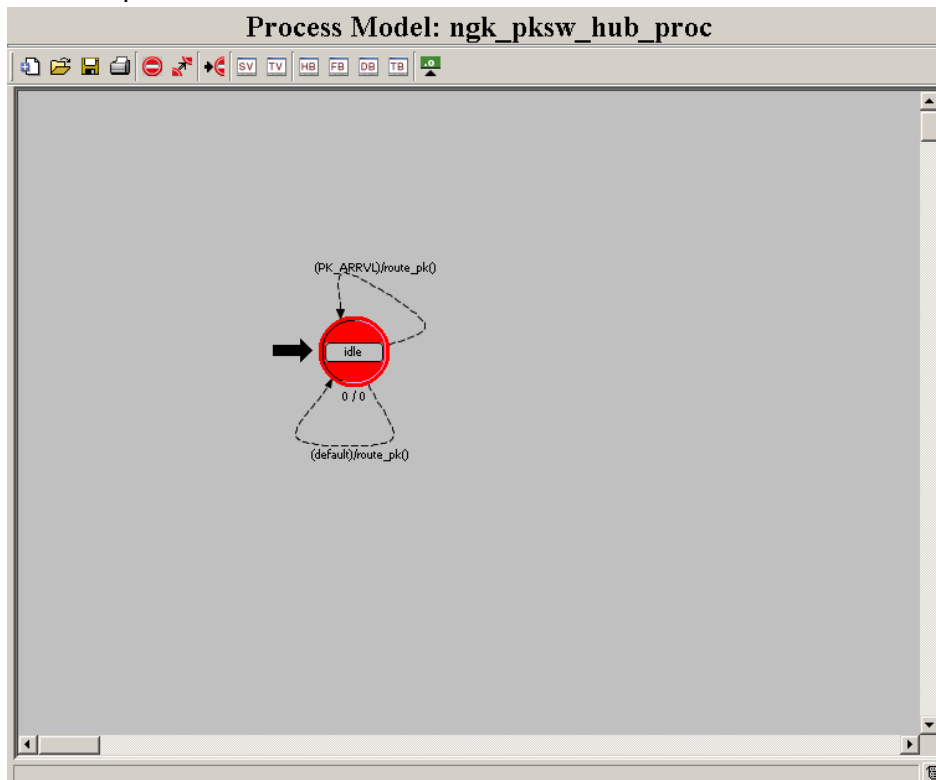
Network model for the Packet Switched scenario:



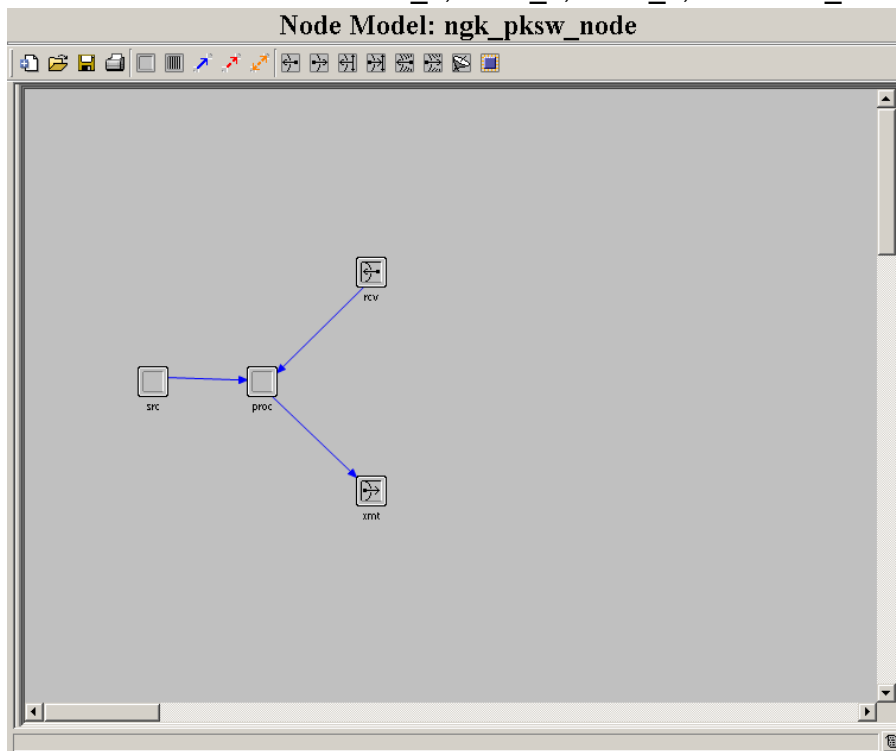
The hub node model:



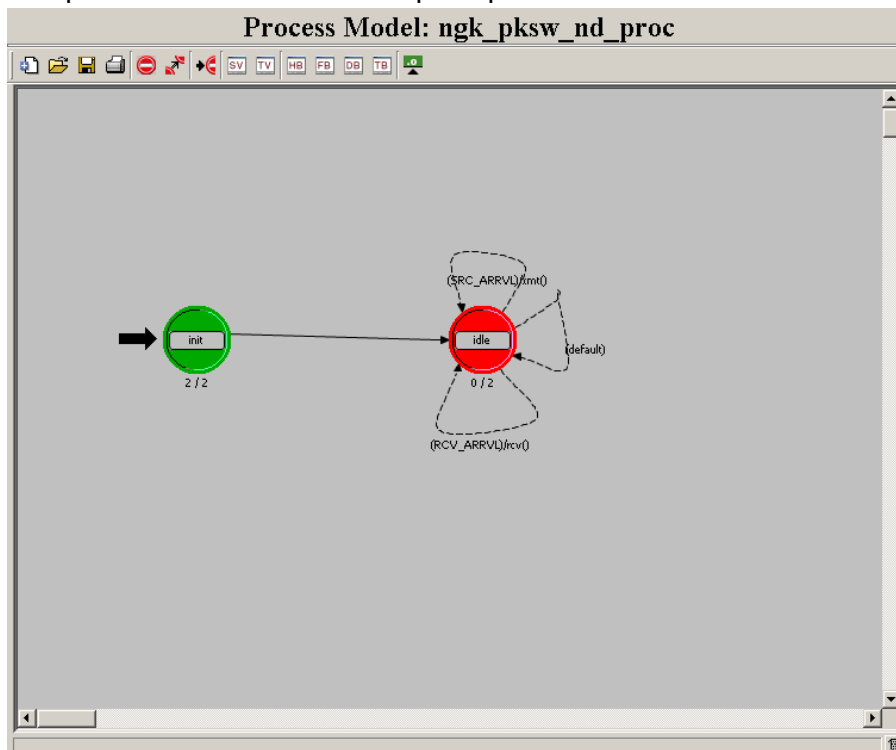
The hub process model:



The node model used for Node_0, Node_1, Node_2, and Node_3:



The process model used in the 'proc' processor module:



Before the simulation run two more symbols (3 and exp2) are added to the interarrival time attribute list:

Attribute: source interarrival time

Data type

Attribute properties

☒ Private ☐ Public

Symbol map

	Symbol	St...	Value
20	uniform (min, max)	su...	uniform (min, max)
21	uniform_int (min, ...	su...	uniform_int (min, max)
22	weibull (shape, sc...	su...	weibull (shape, scale)
23	scripted (filename)	su...	scripted (filename)
24	4	add	constant(4)
25	8	add	constant(8)
26	40	add	constant(40)
27	80	add	constant(80)
28	3	add	constant(3)
29	exp2	add	exponential(2)
30			

☒ Allow other values ☒ Inherit

New symbol:

Default value

☒ Inherit

Units

☒ Inherit

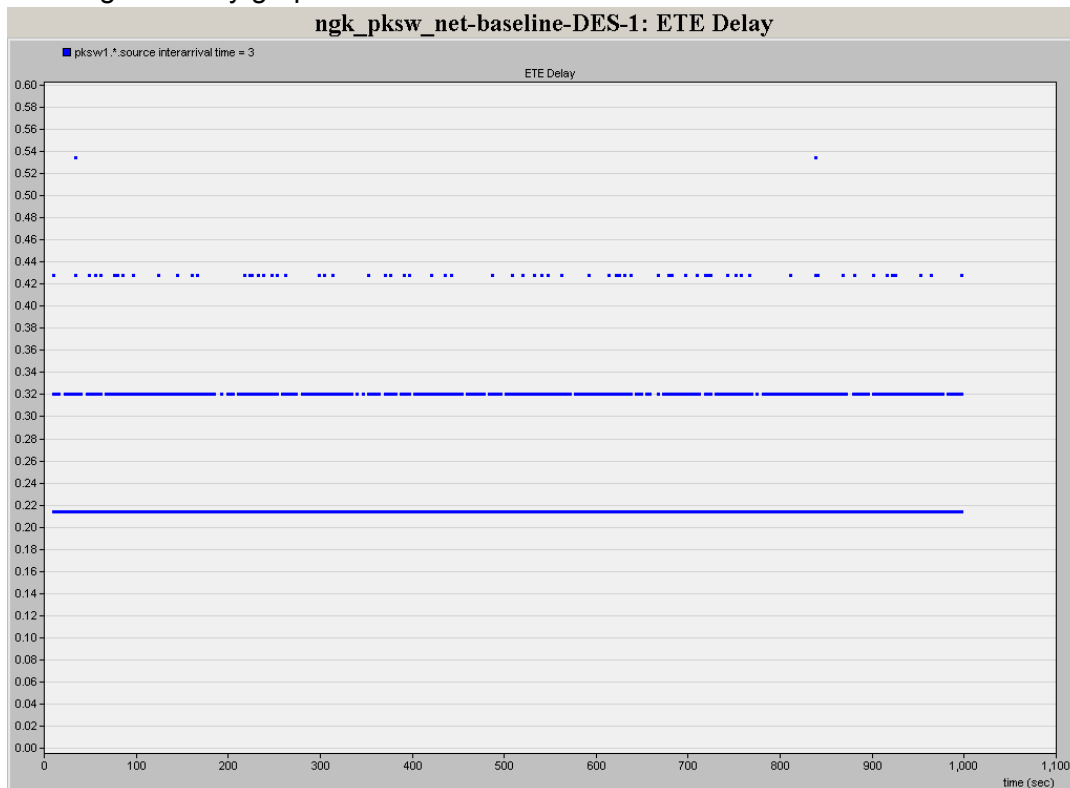
Comments

Specifies the distribution name and arguments to be used for generating random outcomes for times between successive packet generations.

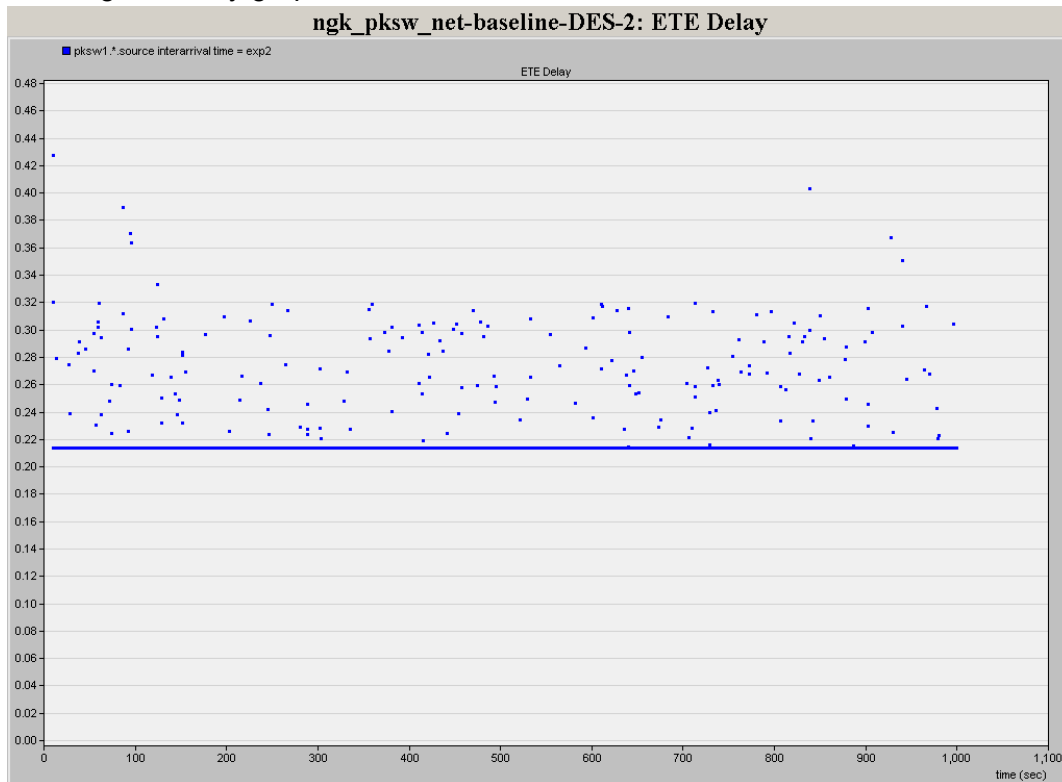
While selecting a distribution, replace the arguments within parenthesis (e.g., mean, variance, location, etc.) with the desired numerical values.

☒ Inherit

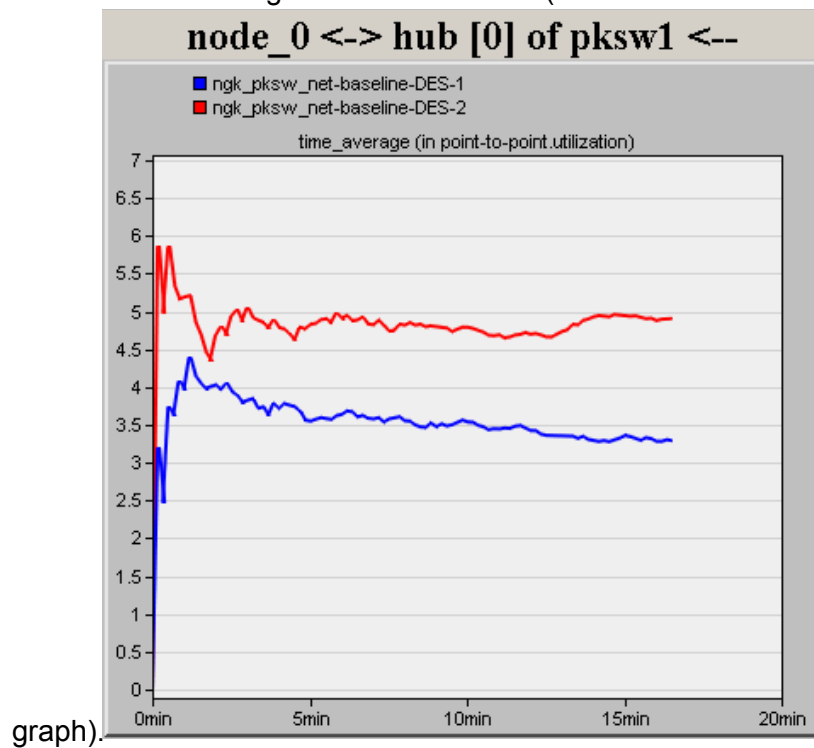
2a) Do the tutorial and run when it generates packets using constant interarrival time of 3.0. Give a good delay graph:



2b) Run when it generates packets using exponential interarrival time of 2.0.
Give a good delay graph:



Give the time average utilization for both (one



graph).