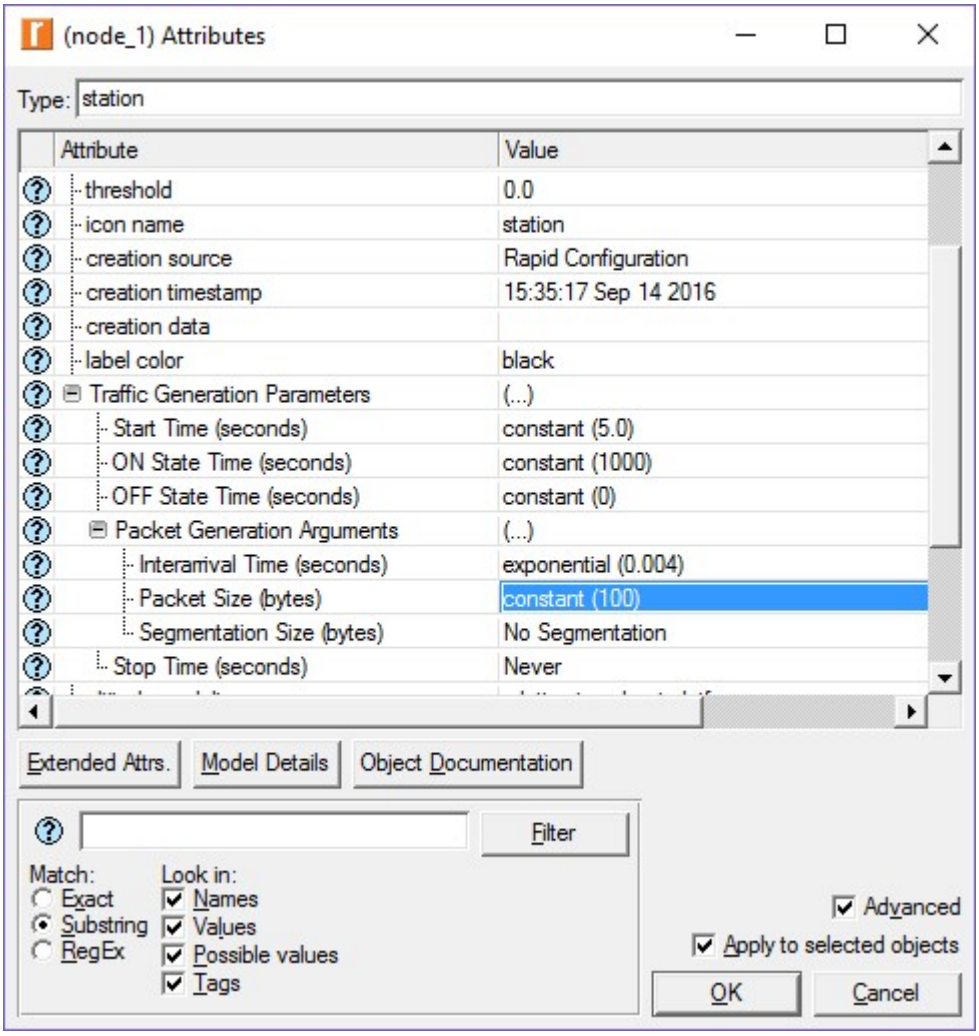
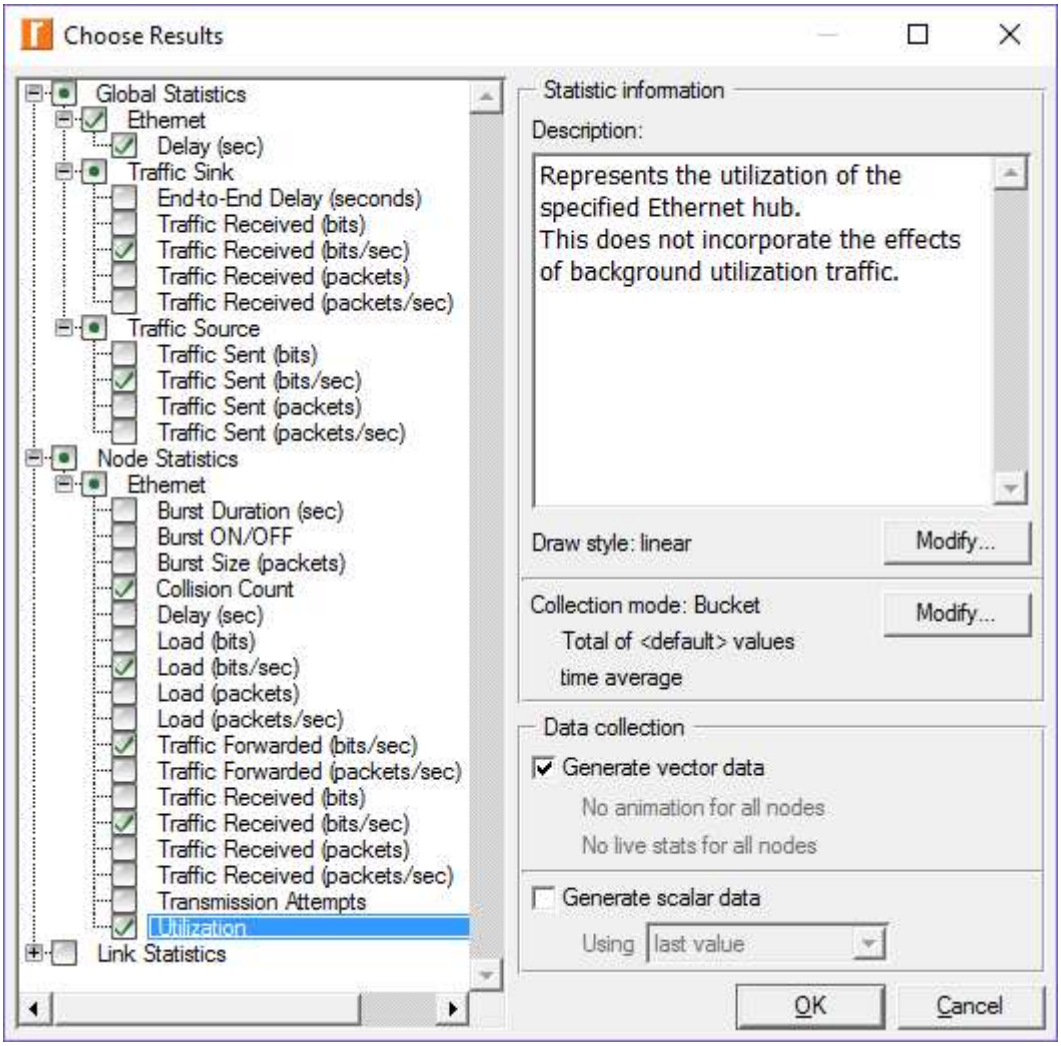
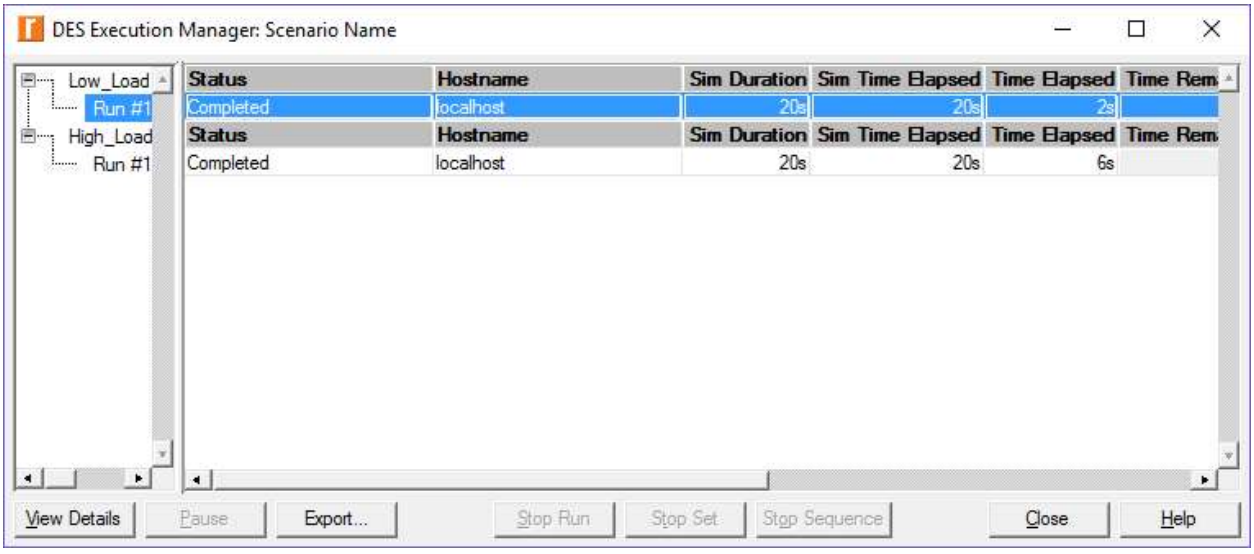
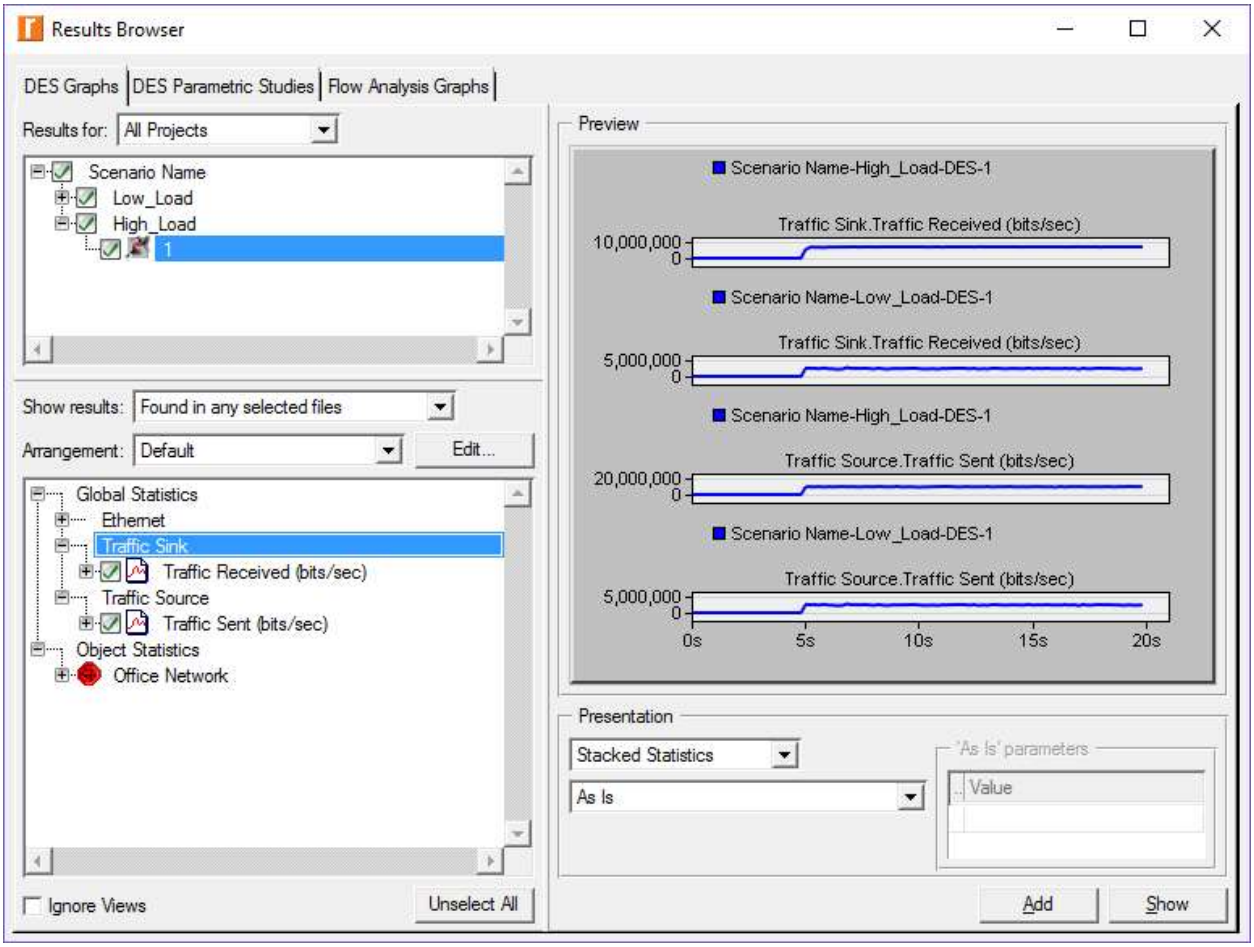
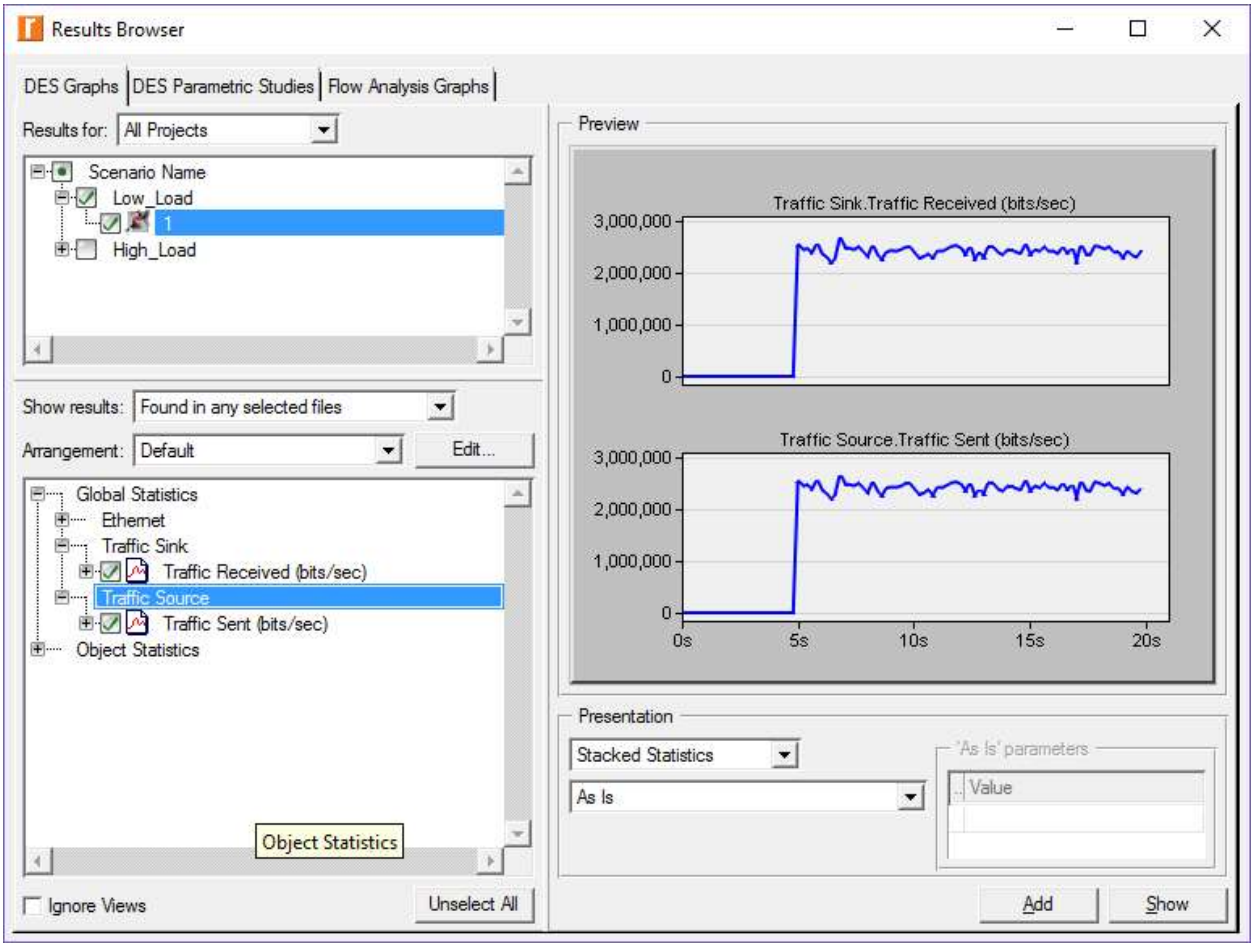
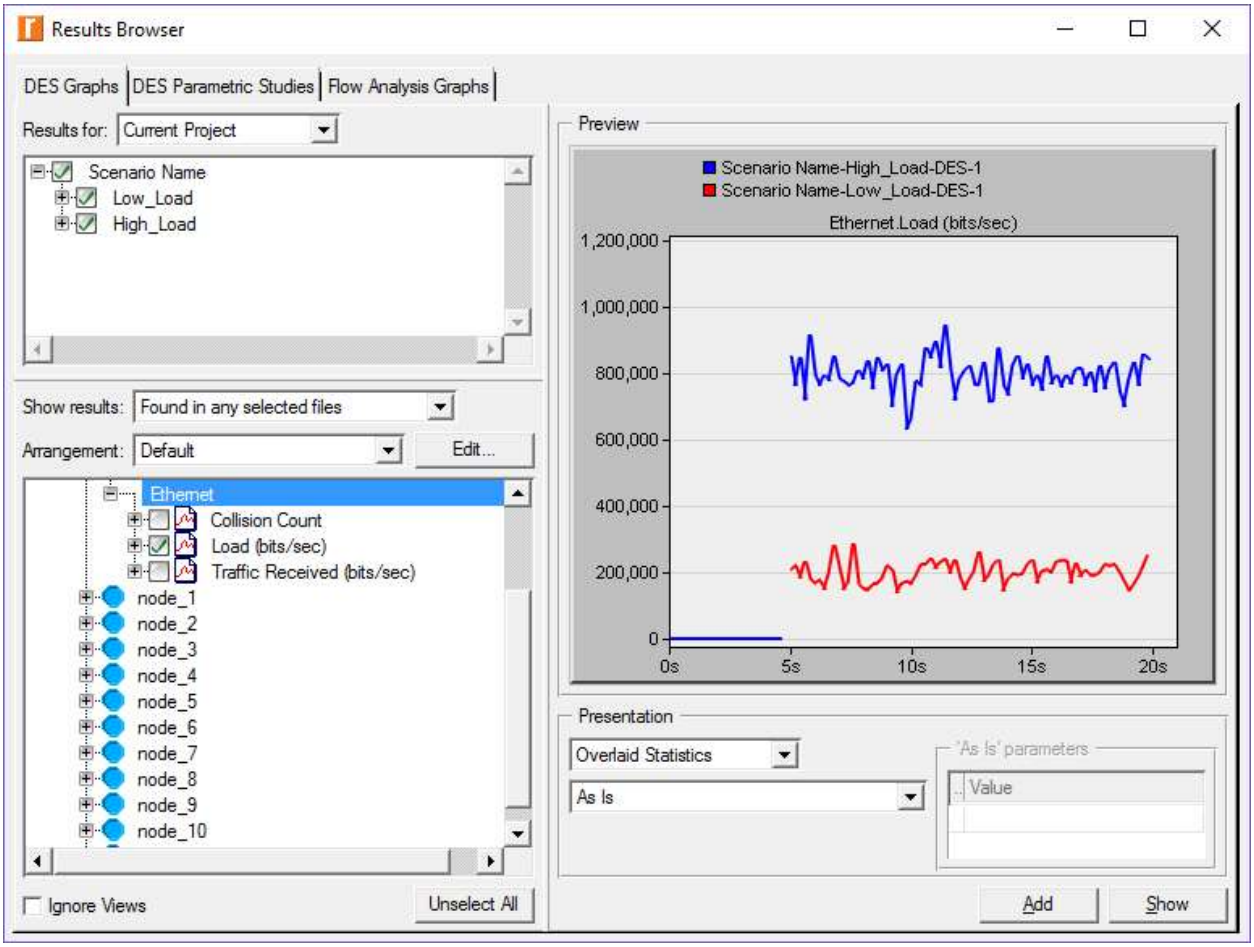

(node_1) Attributes
Type: station
Attribute
Value
threshold
0.0
icon name
station
creation source
Rapid Configuration
creation timestamp
15:35:17 Sep 14 2016
creation data
label color
black
Traffic Generation Parameters
(...)
Start Time (seconds)
constant (5.0)
ON State Time (seconds)
constant (1000)
OFF State Time (seconds)
constant (0)
Packet Generation Arguments
(...)
Interarrival Time (seconds)
exponential (0.004)
Packet Size (bytes)
constant (100)
Segmentation Size (bytes)
No Segmentation
Stop Time (seconds)
Never
Extended Attrs.
Model Details
Object Documentation
Filter
Match:
Exact
Substring
RegEx
Look in:
Names
Values
Possible values
Tags
Advanced
Apply to selected objects
OK
Cancel

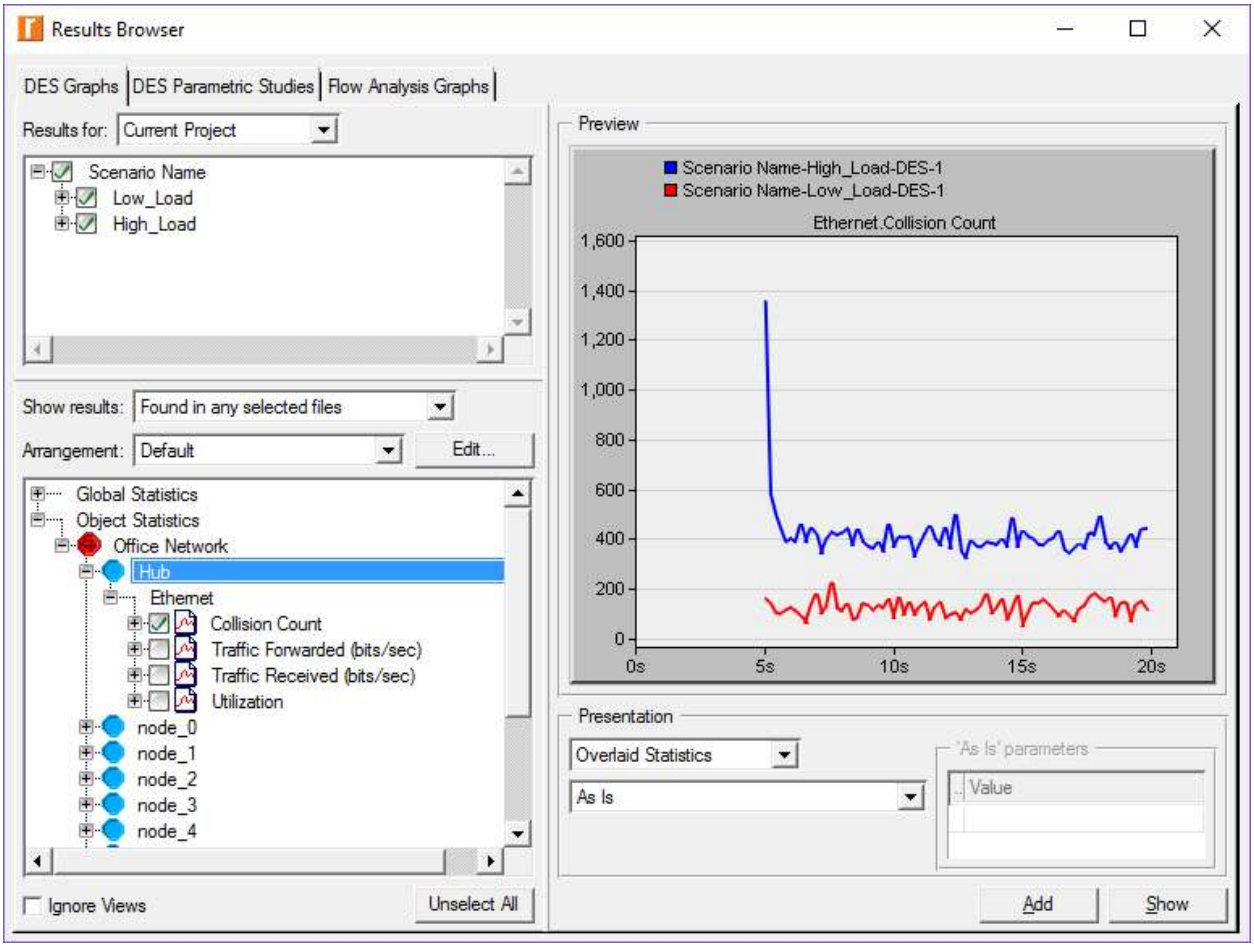

Choose Results
Global Statistics
Ethernet
Delay (sec)
Traffic Sink
End-to-End Delay (seconds)
Traffic Received (bits)
Traffic Received (bits/sec)
Traffic Received (packets)
Traffic Received (packets/sec)
Traffic Source
Traffic Sent (bits)
Traffic Sent (bits/sec)
Traffic Sent (packets)
Traffic Sent (packets/sec)
Node Statistics
Ethernet
Burst Duration (sec)
Burst ON/OFF
Burst Size (packets)
Collision Count
Delay (sec)
Load (bits)
Load (bits/sec)
Load (packets)
Load (packets/sec)
Traffic Forwarded (bits/sec)
Traffic Forwarded (packets/sec)
Traffic Received (bits)
Traffic Received (bits/sec)
Traffic Received (packets)
Traffic Received (packets/sec)
Transmission Attempts
Utilization
Link Statistics
Statistic information
Description:
Represents the utilization of the specified Ethernet hub.
This does not incorporate the effects of background utilization traffic.
Draw style: linear
Modify...
Collection mode: Bucket
Total of <default> values
time average
Modify...
Data collection
Generate vector data
No animation for all nodes
No live stats for all nodes
Generate scalar data
Using
last value
OK
Cancel

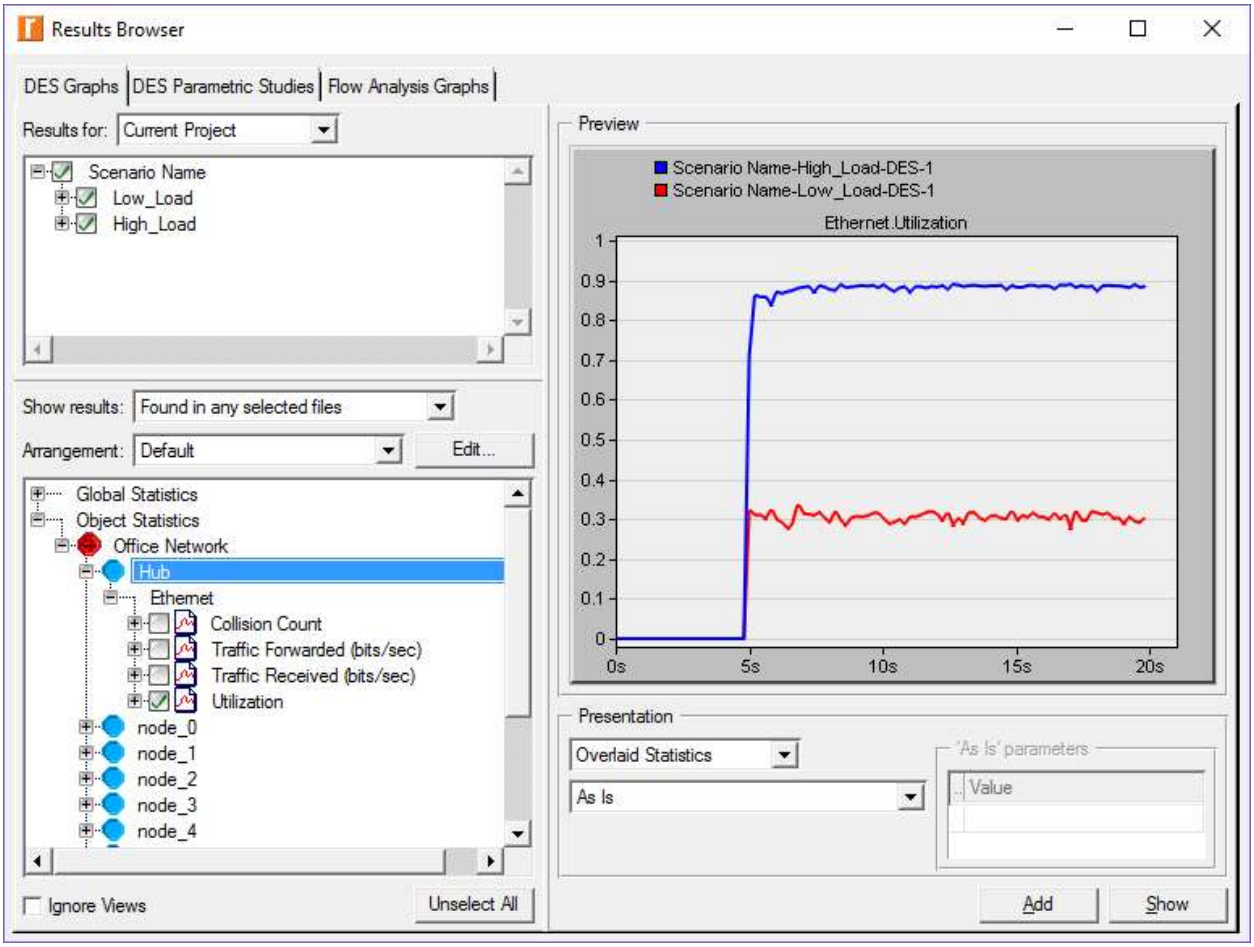

DES Execution Manager: Scenario Name
Low_Load
Run #1
High_Load
Run #1
Status
Hostname
Sim Duration
Sim Time Elapsed
Time Elapsed
Time Rem
Completed
localhost
20s
20s
2s
Status
Hostname
Sim Duration
Sim Time Elapsed
Time Elapsed
Time Rem
Completed
localhost
20s
20s
6s
View Details
Pause
Export...
Stop Run
Stop Set
Stop Sequence
Close
Help

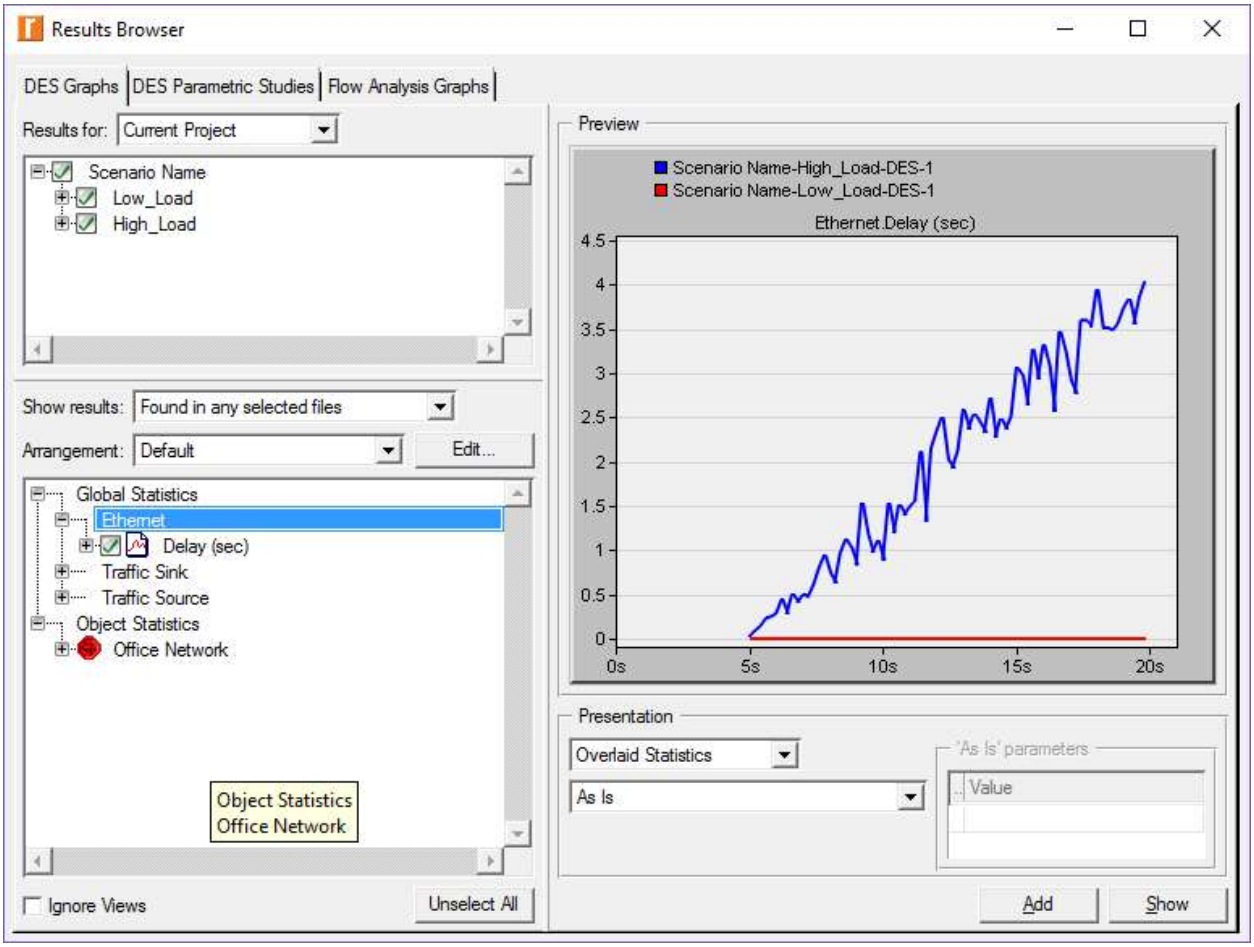

Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for:
All Projects
Scenario Name
Low_Load
High_Load
1
Show results:
Found in any selected files
Arrangement:
Default
Edit...
Global Statistics
Ethernet
Traffic Sink
Traffic Received (bits/sec)
Traffic Source
Traffic Sent (bits/sec)
Object Statistics
Office Network
Ignore Views
Unselect All
Preview
Scenario Name-High_Load-DES-1
Traffic Sink.Traffic Received (bits/sec)
10,000,000
0
Scenario Name-Low_Load-DES-1
Traffic Sink.Traffic Received (bits/sec)
5,000,000
0
Scenario Name-High_Load-DES-1
Traffic Source.Traffic Sent (bits/sec)
20,000,000
0
Scenario Name-Low_Load-DES-1
Traffic Source.Traffic Sent (bits/sec)
5,000,000
0
0s
5s
10s
15s
20s
Presentation
Stacked Statistics
As Is
'As Is' parameters
Value
Add
Show

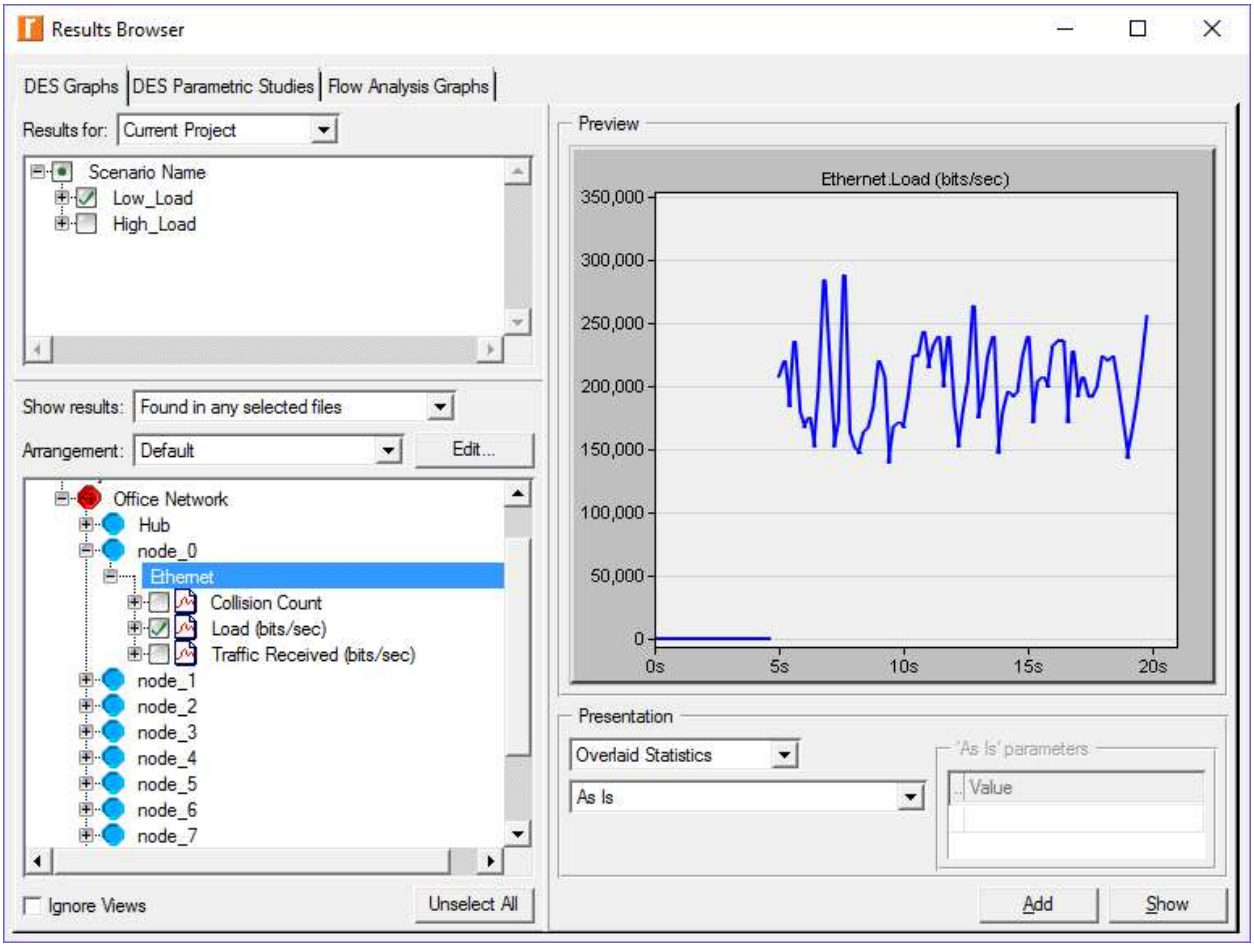

Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for:
All Projects
Scenario Name
Low_Load
1
High_Load
Show results:
Found in any selected files
Arrangement:
Default
Edit...
Global Statistics
Ethernet
Traffic Sink
Traffic Received (bits/sec)
Traffic Source
Traffic Sent (bits/sec)
Object Statistics
Object Statistics
Ignore Views
Unselect All
Preview
Traffic Sink.Traffic Received (bits/sec)
3,000,000
2,000,000
1,000,000
0
Traffic Source.Traffic Sent (bits/sec)
3,000,000
2,000,000
1,000,000
0
0s
5s
10s
15s
20s
Presentation
Stacked Statistics
As Is
'As Is' parameters
Value
Add
Show

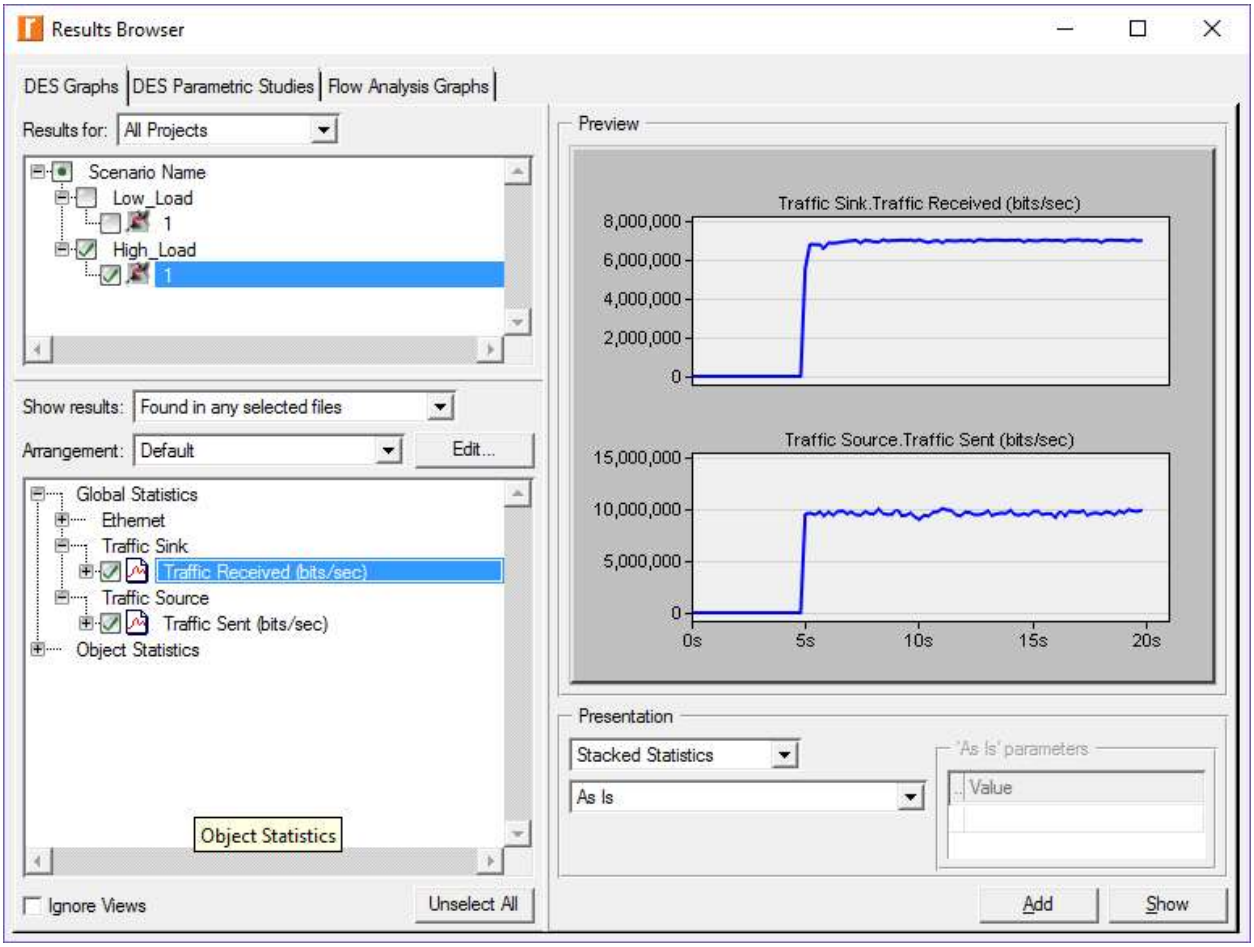

Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for:
Current Project
Scenario Name
Low_Load
High_Load
Show results:
Found in any selected files
Arrangement:
Default
Edit...
Ethernet
Collision Count
Load (bits/sec)
Traffic Received (bits/sec)
node_1
node_2
node_3
node_4
node_5
node_6
node_7
node_8
node_9
node_10
Ignore Views
Unselect All
Preview
Scenario Name-High_Load-DES-1
Scenario Name-Low_Load-DES-1
Ethernet.Load (bits/sec)
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
0s
5s
10s
15s
20s
Presentation
Overlaid Statistics
As Is
'As Is' parameters
Value
Add
Show


Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for:
Current Project
Scenario Name
Low_Load
High_Load
Show results:
Found in any selected files
Arrangement:
Default
Edit...
Global Statistics
Object Statistics
Office Network
Hub
Ethernet
Collision Count
Traffic Forwarded (bits/sec)
Traffic Received (bits/sec)
Utilization
node_0
node_1
node_2
node_3
node_4
Ignore Views
Unselect All
Preview
Scenario Name-High_Load-DES-1
Scenario Name-Low_Load-DES-1
Ethernet.Collision Count
1,600
1,400
1,200
1,000
800
600
400
200
0
0s
5s
10s
15s
20s
Presentation
Overlaid Statistics
As Is
'As Is' parameters
Value
Add
Show


Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for:
Current Project
Scenario Name
Low_Load
High_Load
Show results:
Found in any selected files
Arrangement:
Default
Edit...
Global Statistics
Object Statistics
Office Network
Hub
Ethernet
Collision Count
Traffic Forwarded (bits/sec)
Traffic Received (bits/sec)
Utilization
node_0
node_1
node_2
node_3
node_4
Ignore Views
Unselect All
Preview
Scenario Name-High_Load-DES-1
Scenario Name-Low_Load-DES-1
Ethernet.Utilization
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0s
5s
10s
15s
20s
Presentation
Overlaid Statistics
As Is
'As Is' parameters
Value
Add
Show

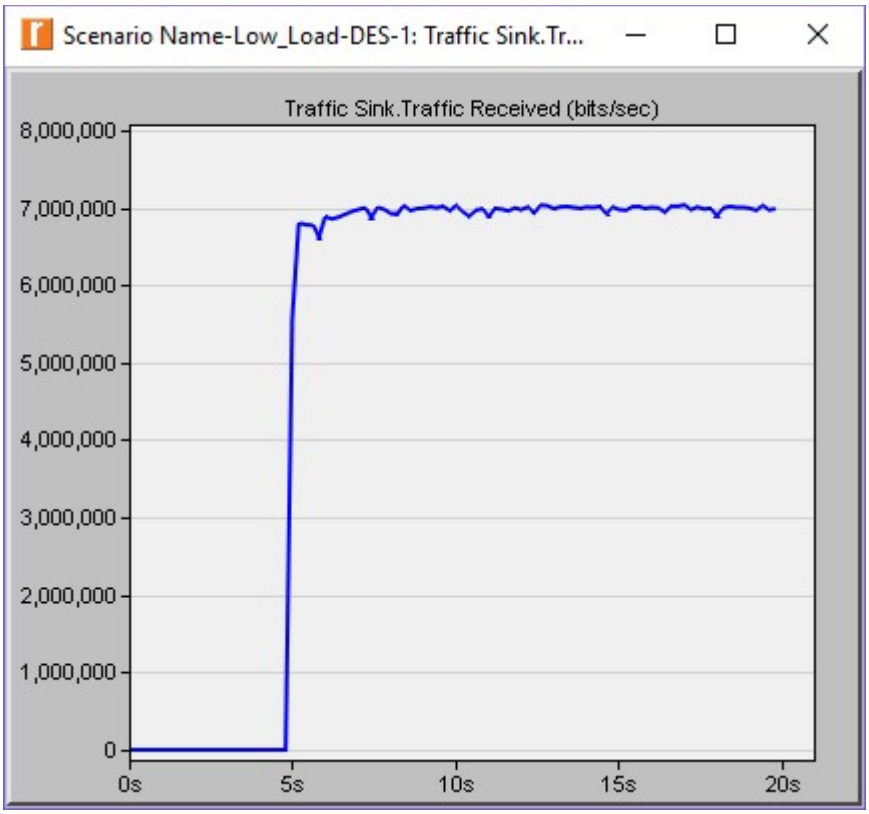

Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for:
Current Project
Scenario Name
Low_Load
High_Load
Show results:
Found in any selected files
Arrangement:
Default
Edit...
Global Statistics
Ethernet
Delay (sec)
Traffic Sink
Traffic Source
Object Statistics
Office Network
Object Statistics
Office Network
Ignore Views
Unselect All
Preview
Scenario Name-High_Load-DES-1
Scenario Name-Low_Load-DES-1
Ethernet.Delay (sec)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0s
5s
10s
15s
20s
Presentation
Overlaid Statistics
As Is
'As Is' parameters
Value
Add
Show


Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for:
Current Project
Scenario Name
Low_Load
High_Load
Show results:
Found in any selected files
Arrangement:
Default
Edit...
Office Network
Hub
node_0
Ethernet
Collision Count
Load (bits/sec)
Traffic Received (bits/sec)
node_1
node_2
node_3
node_4
node_5
node_6
node_7
Ignore Views
Unselect All
Preview
Ethernet.Load (bits/sec)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
0s
5s
10s
15s
20s
Presentation
Overlaid Statistics
As Is
'As Is' parameters
Value
Add
Show

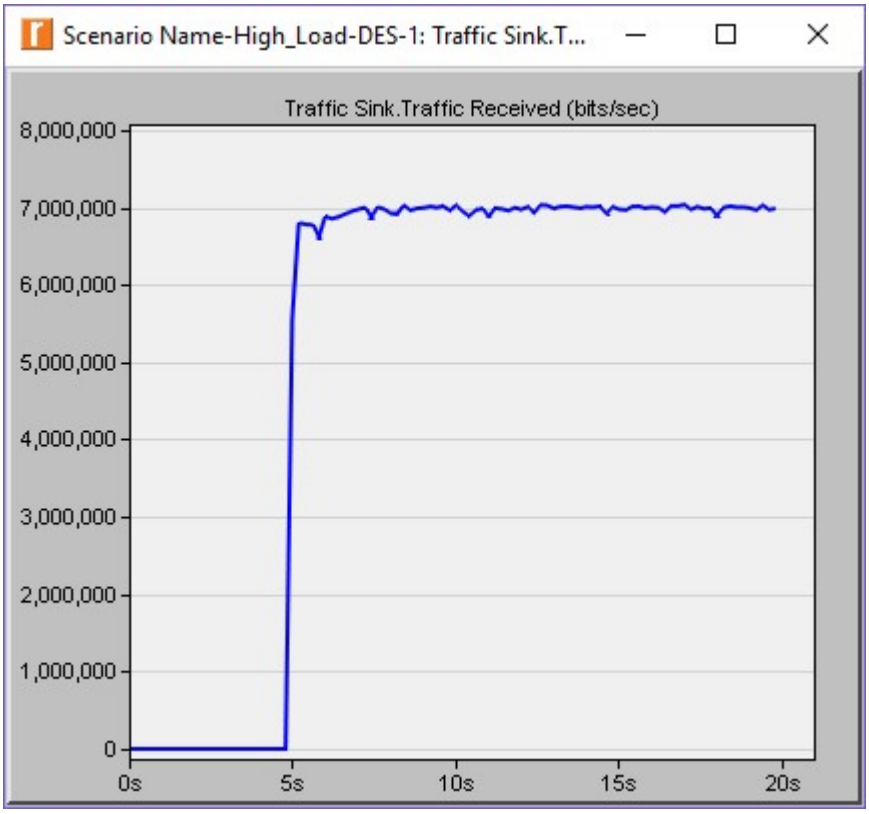


Interarrival Time (seconds) to **exponential (**0.001**)**

Low_load

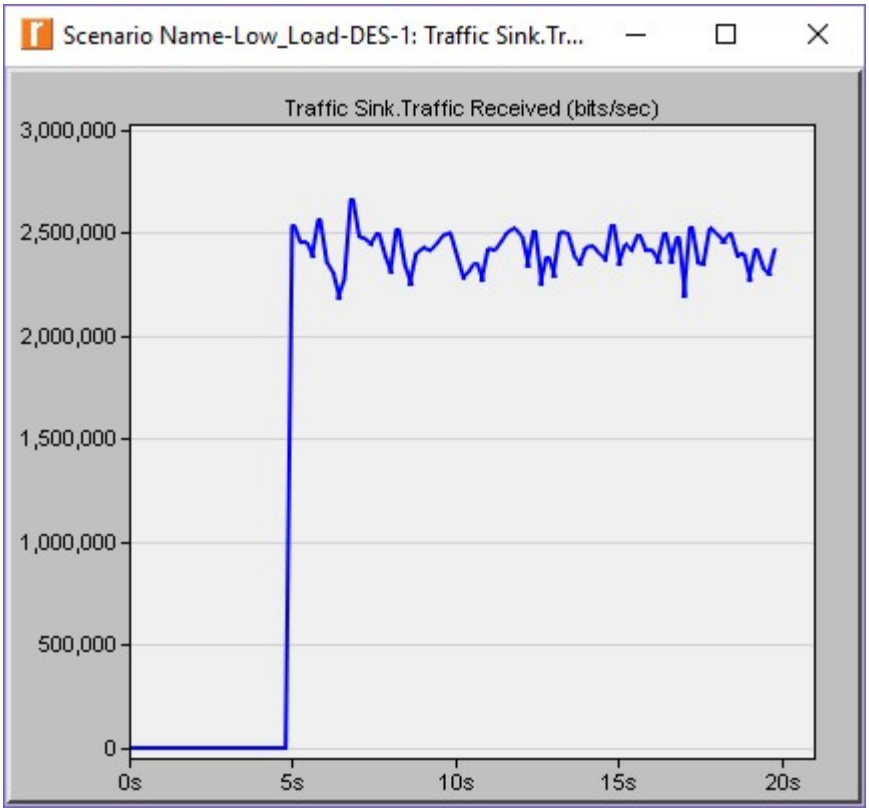

Scenario Name-Low_Load-DES-1: Traffic Sink.Tr...
Traffic Sink.Traffic Received (bits/sec)
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
0s
5s
10s
15s
20s

High_load

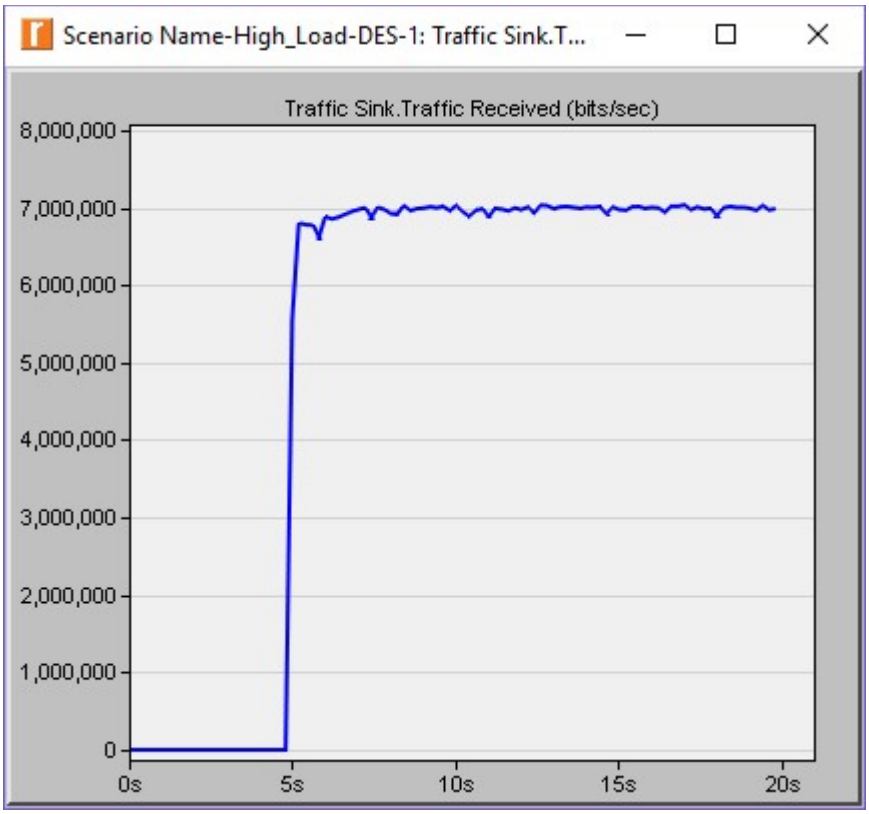

Scenario Name-High_Load-DES-1: Traffic Sink.T...
Traffic Sink.Traffic Received (bits/sec)
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
0s
5s
10s
15s
20s

Interarrival Time (seconds) to **exponential (**0.004**)**

Low_load



High_load

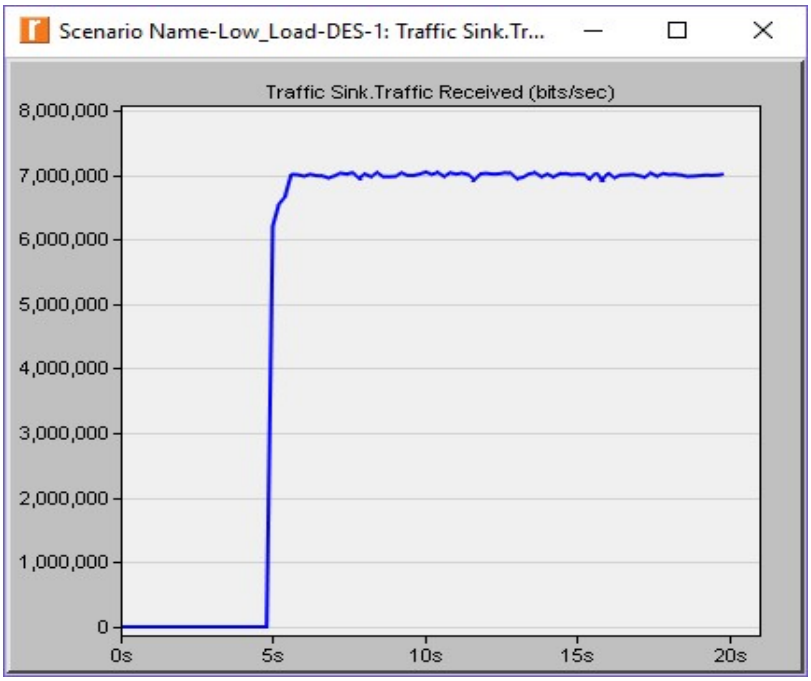


Q1

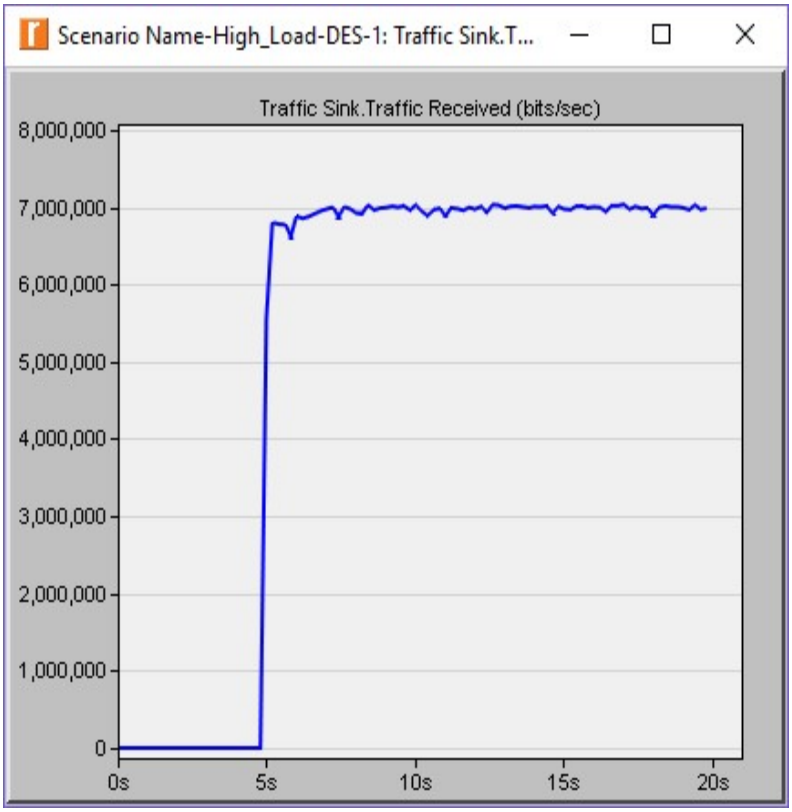
duplicate scenarios and modify the interarrival times for all the Ethernet stations to 0.0008,0.002, 0.003, 0.005, and 0.006, respectively.

Interarrival Time (seconds) to **exponential (**0.0008**)**

Low_load

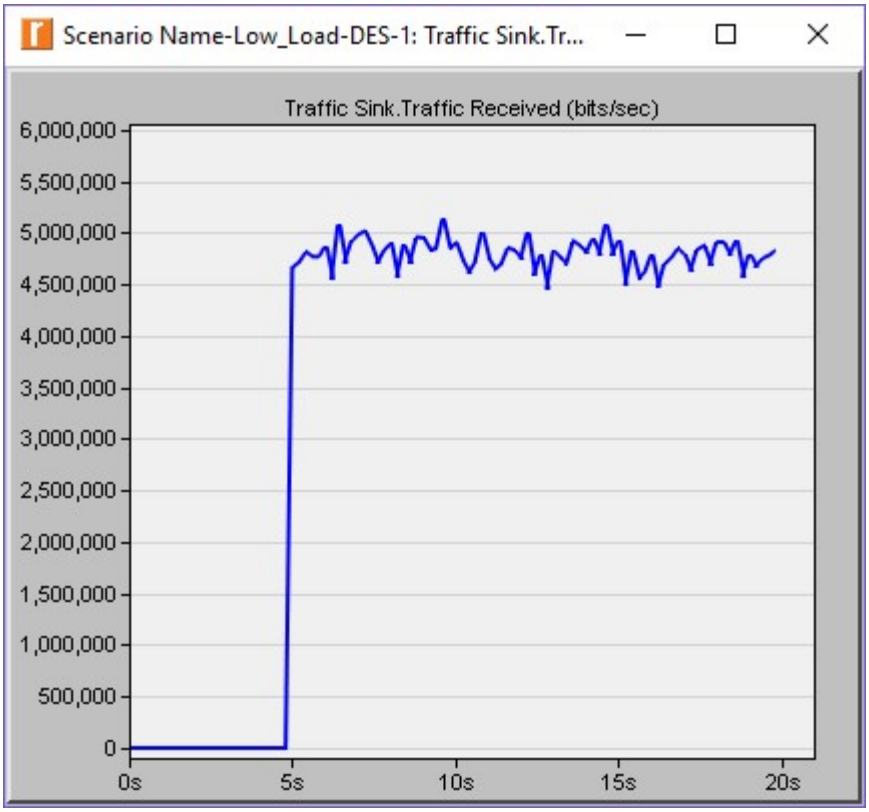


High_load

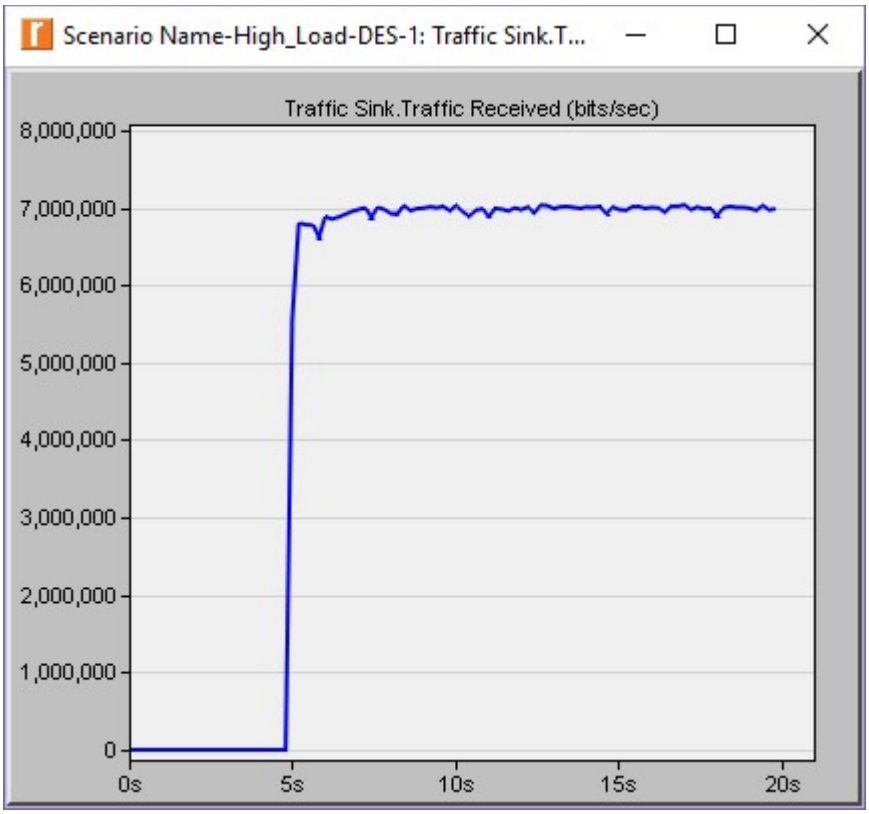


Interarrival Time (seconds) to **exponential (**0.002**)**

Low_load

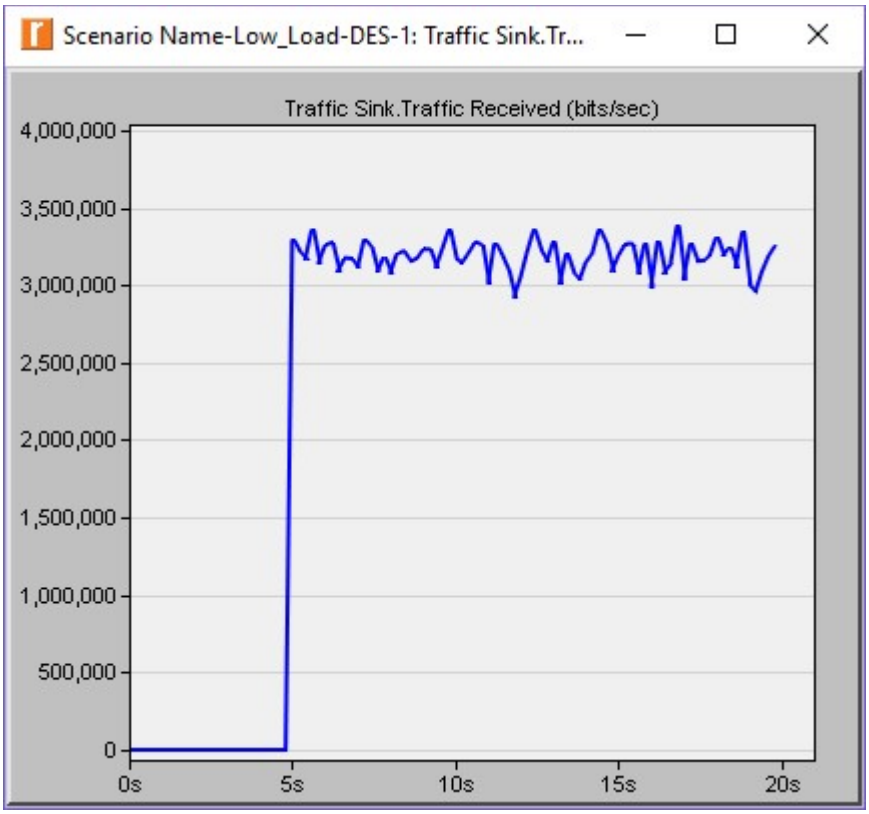


Hiegh_load

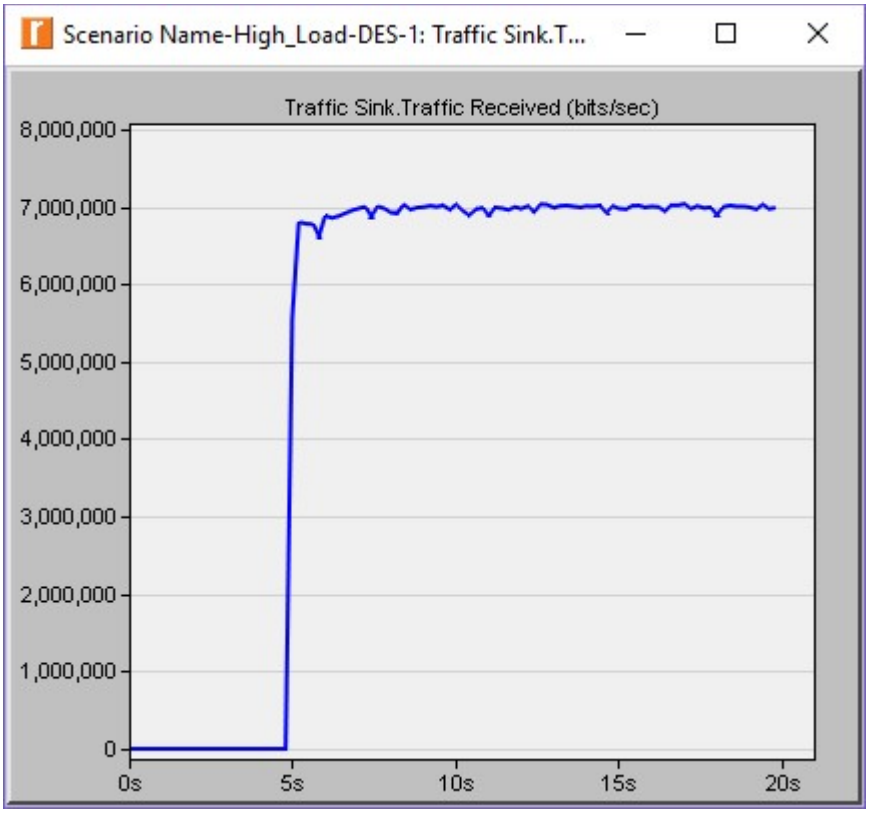


Interarrival Time (seconds) to **exponential (**0.003**)**

Low_load

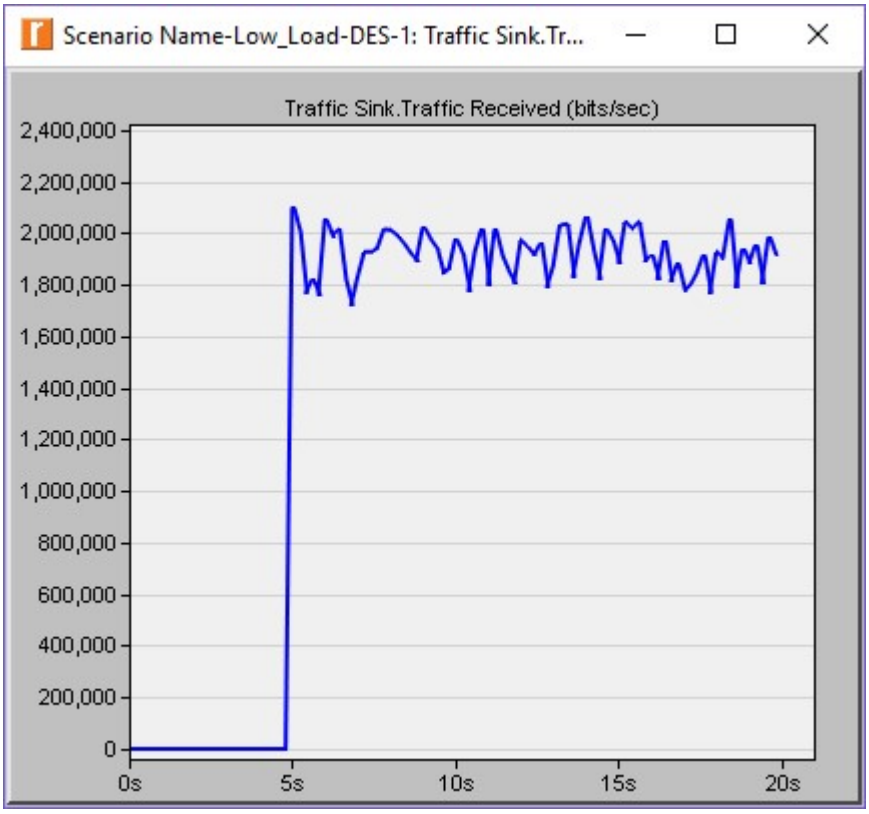

Scenario Name-Low_Load-DES-1: Traffic Sink.Tr...
Traffic Sink.Traffic Received (bits/sec)
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
0s
5s
10s
15s
20s

High_load

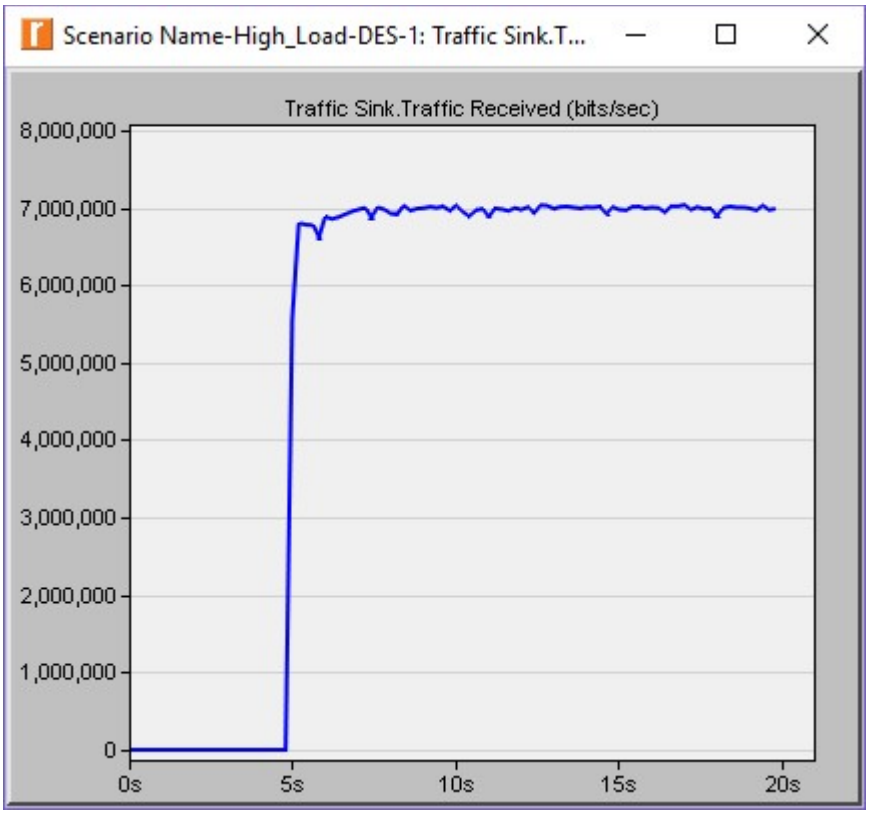

Scenario Name-High_Load-DES-1: Traffic Sink.T...
Traffic Sink.Traffic Received (bits/sec)
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
0s
5s
10s
15s
20s

Interarrival Time (seconds) to **exponential (**0.005**)**

Low_load

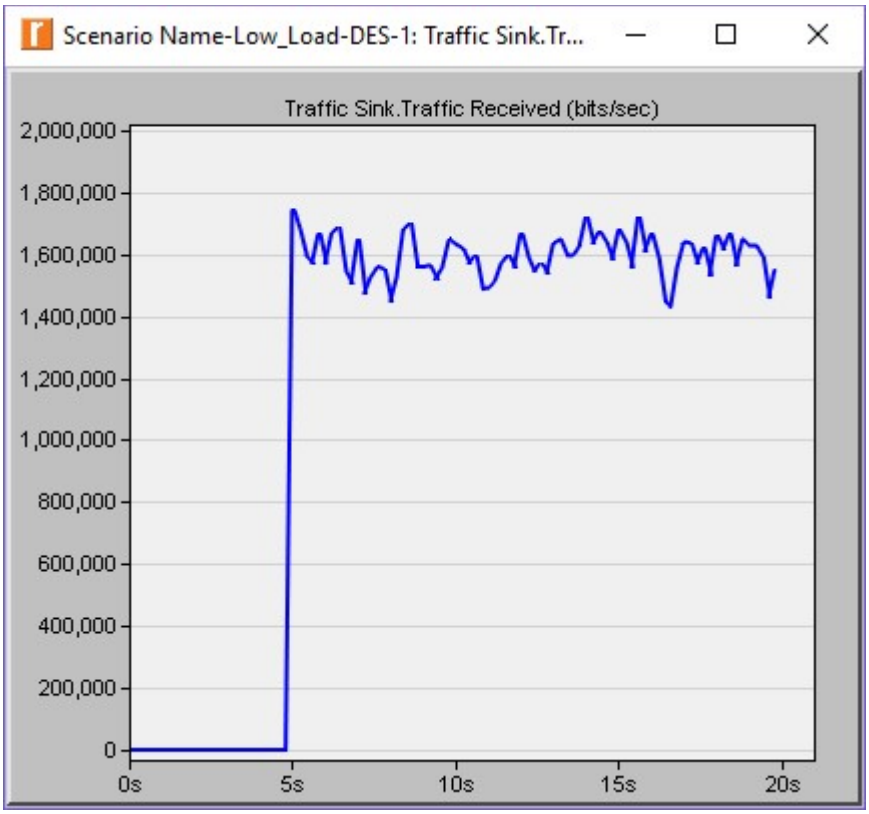


High_load

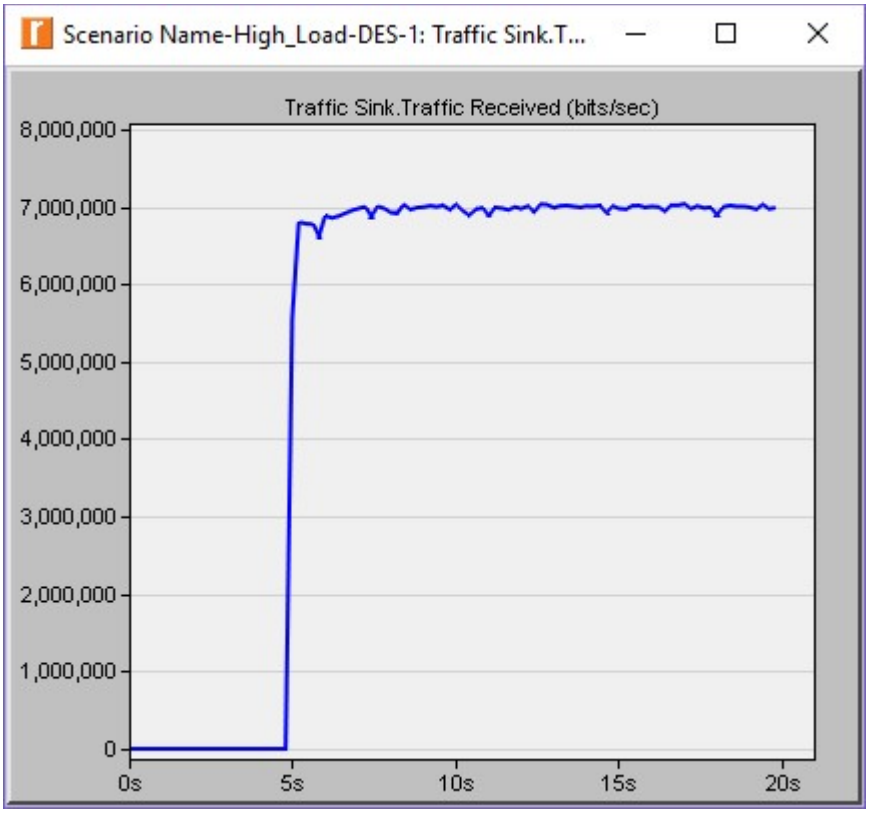


Interarrival Time (seconds) to **exponential (**0.006**)**

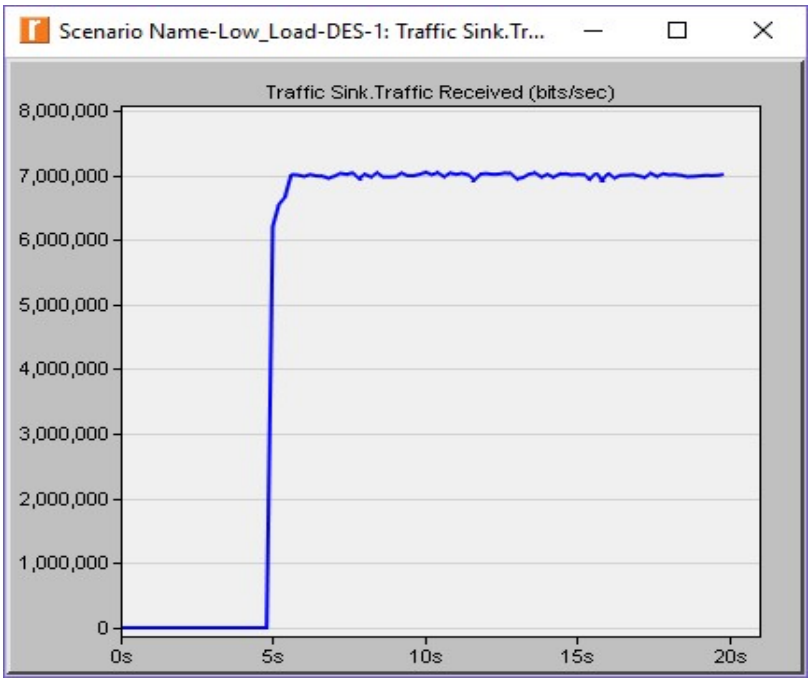
Low_load


Scenario Name-Low_Load-DES-1: Traffic Sink.Tr...
Traffic Sink.Traffic Received (bits/sec)
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
0s
5s
10s
15s
20s

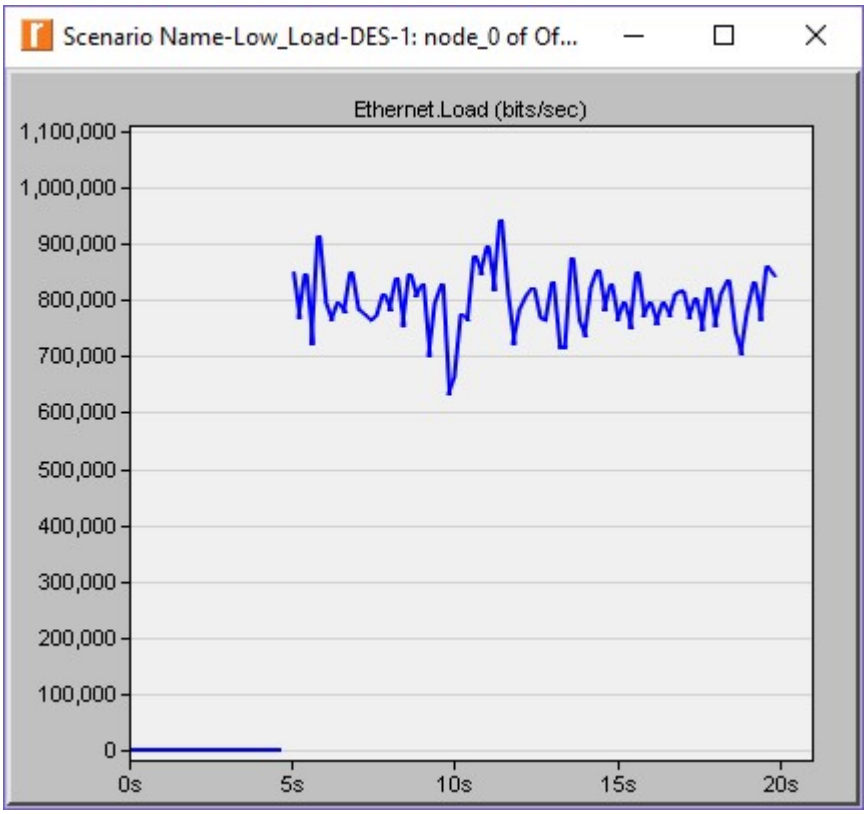
High_load


Scenario Name-High_Load-DES-1: Traffic Sink.T...
Traffic Sink.Traffic Received (bits/sec)
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
0s
5s
10s
15s
20s

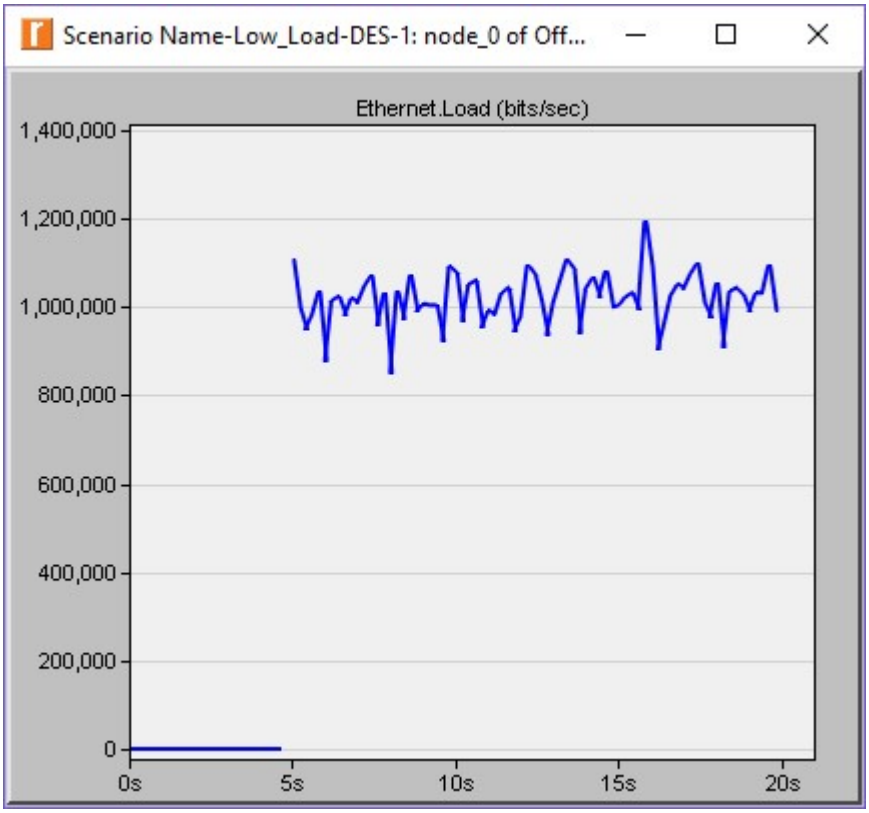
Maximum throughput is achieved when **Interarrival Time (seconds)** to **exponential (**0.0008**) and exponential (**0.001**)**



The offered load that corresponds to this interarrival time to **exponential (**0.001**)**



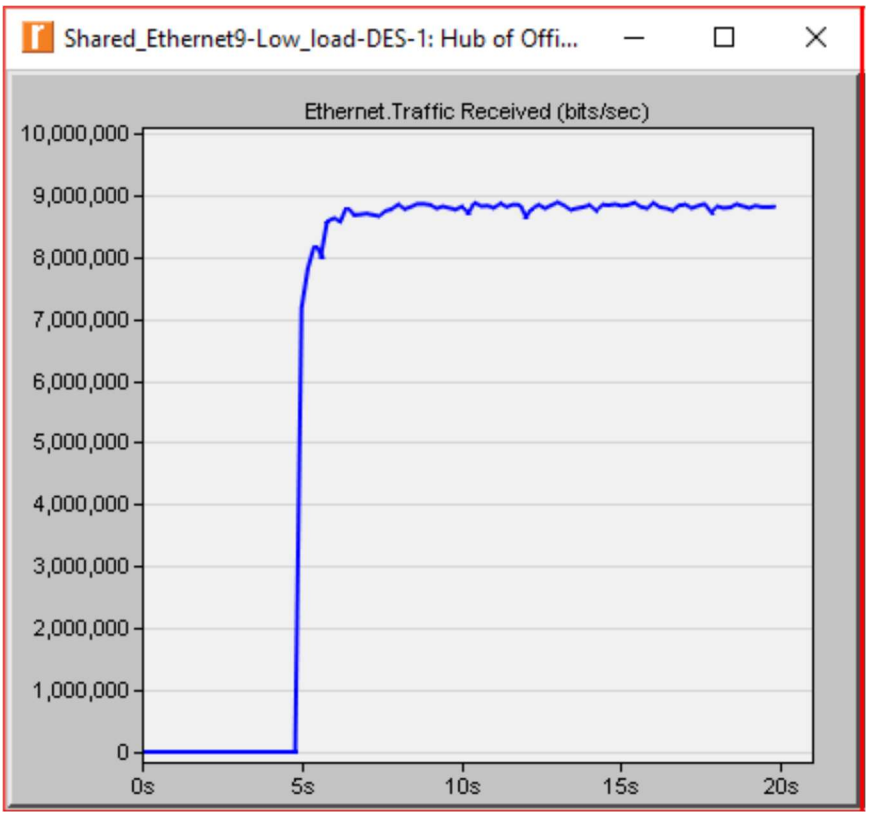
The offered load that corresponds to this interarrival time to **exponential (**0.0008**)**

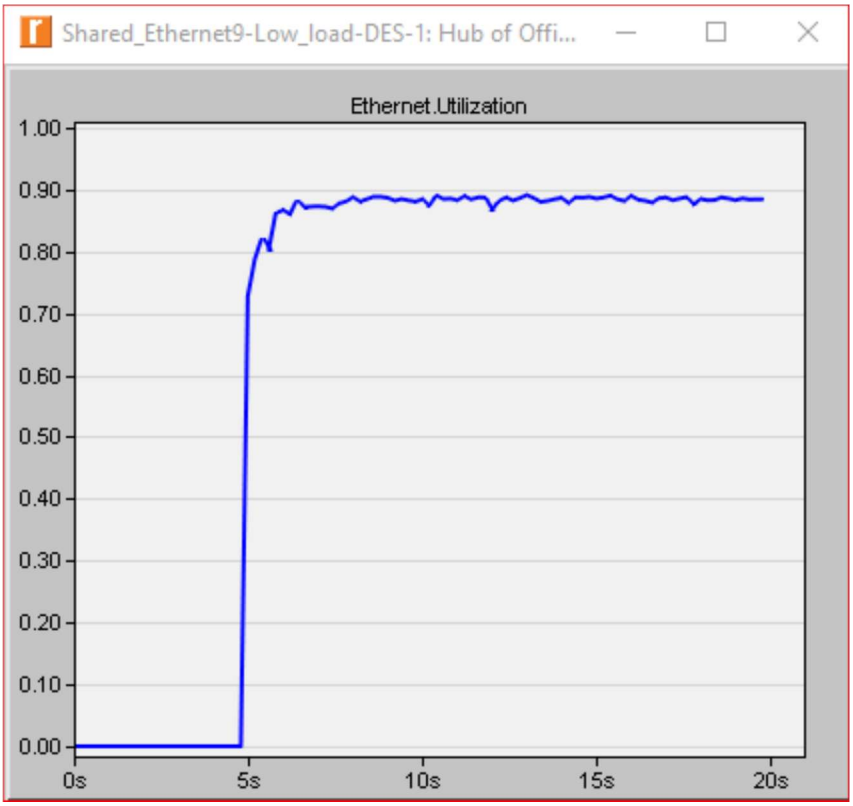


Throughput stop increasing because the bandwidth of the station reaches to the limit while the hub still receives data to process and cause collision which show the increase in load.

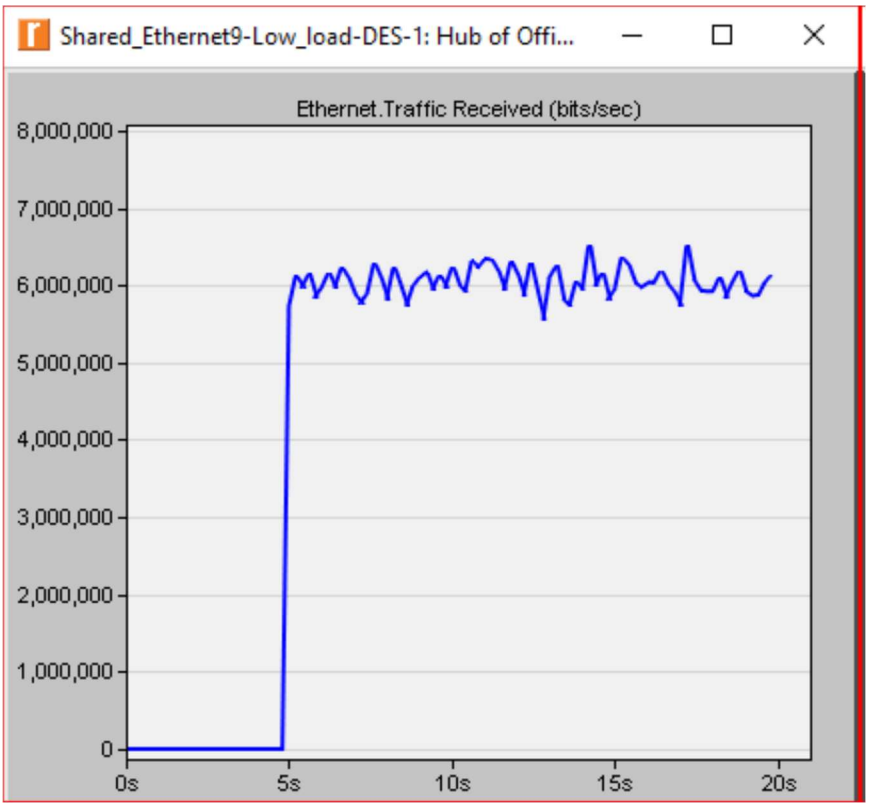
Throughput stop increasing because the bandwidth of the station reach to the limit while the hub still received data to process and cause collision which show the increase in load

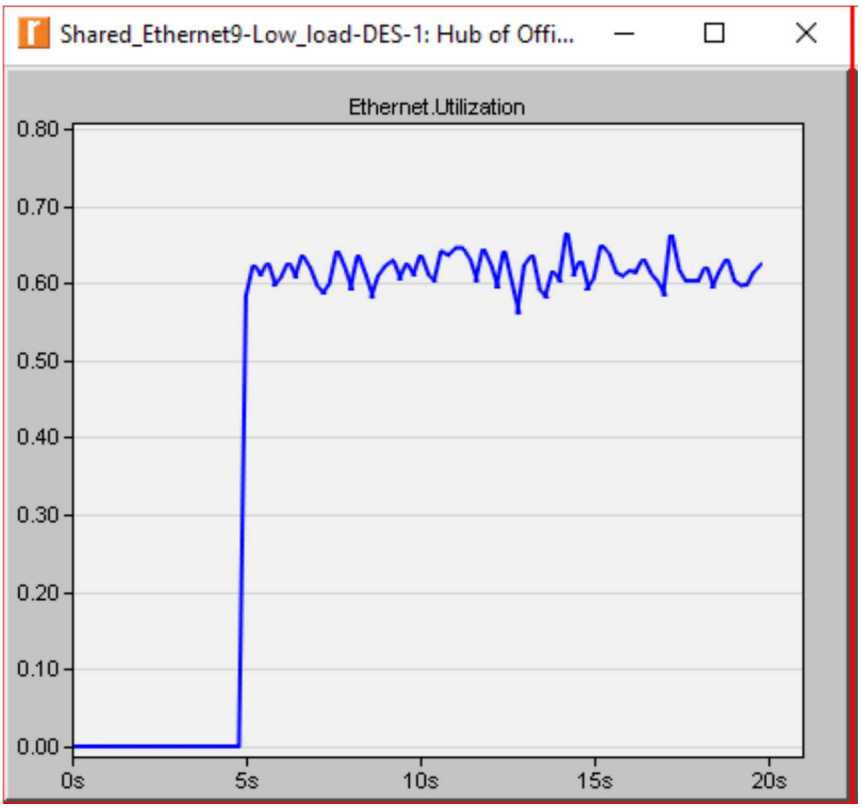
Q2):-
Interarrival Times 0.001



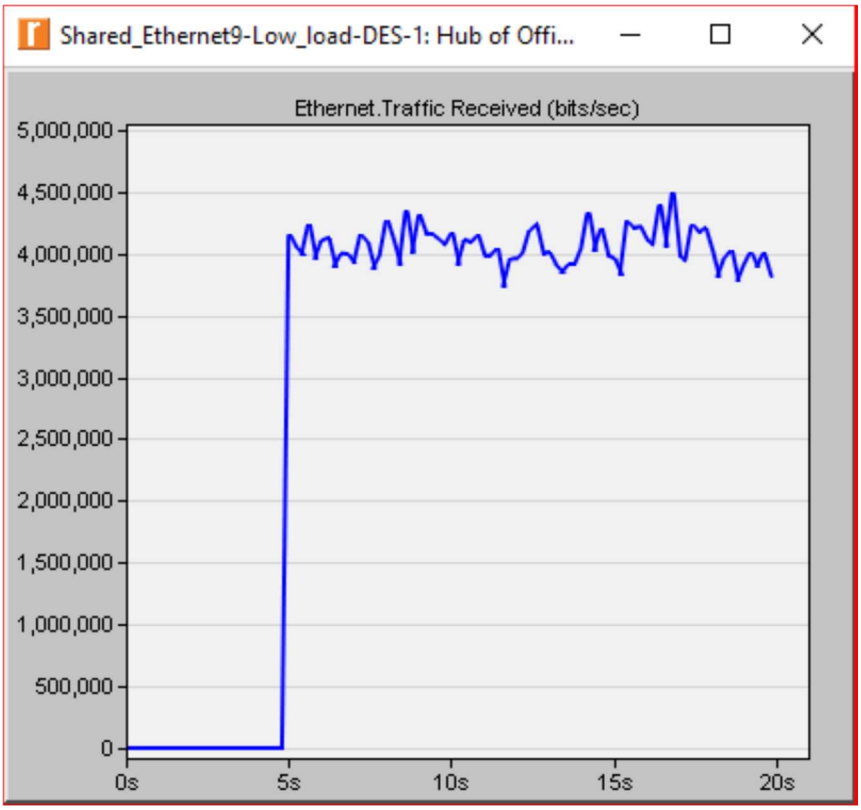


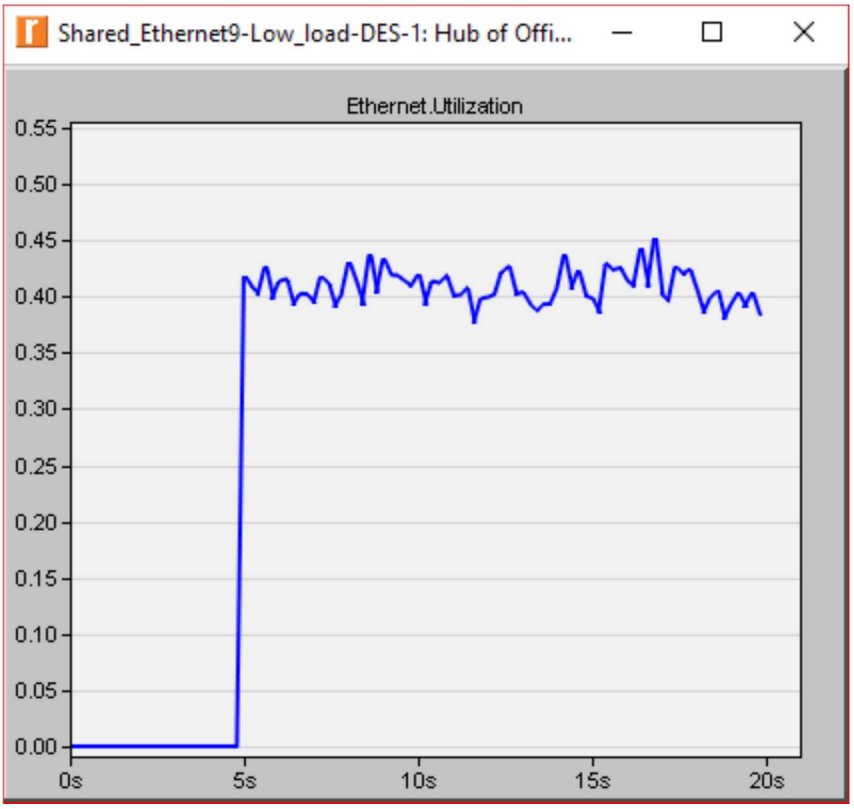
Interarrival Times 0.0002



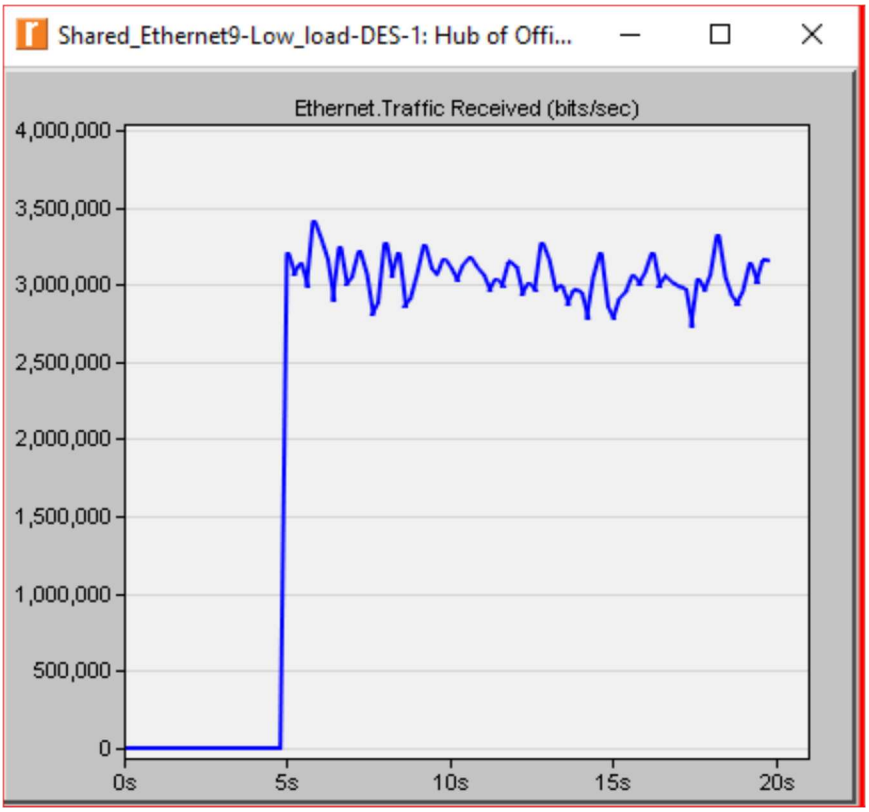


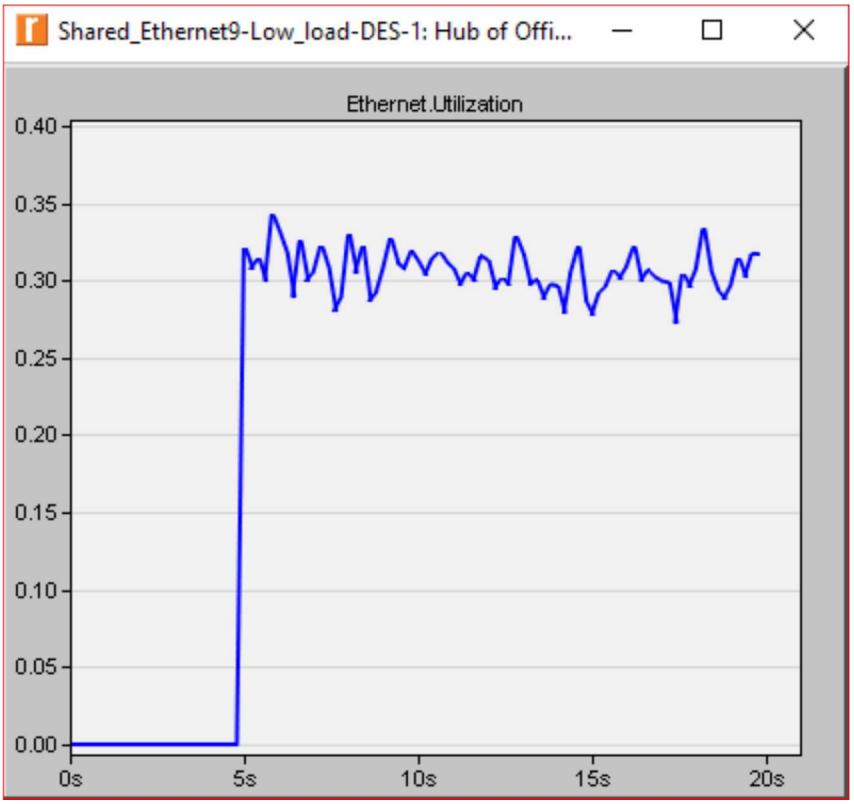
Interarrival Times 0.003



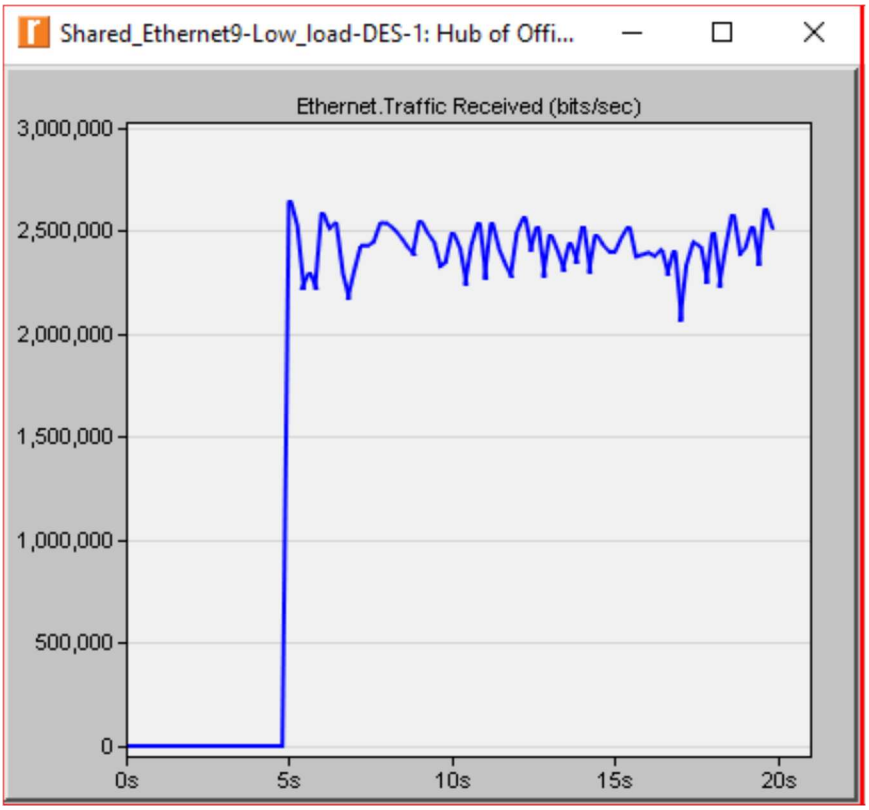


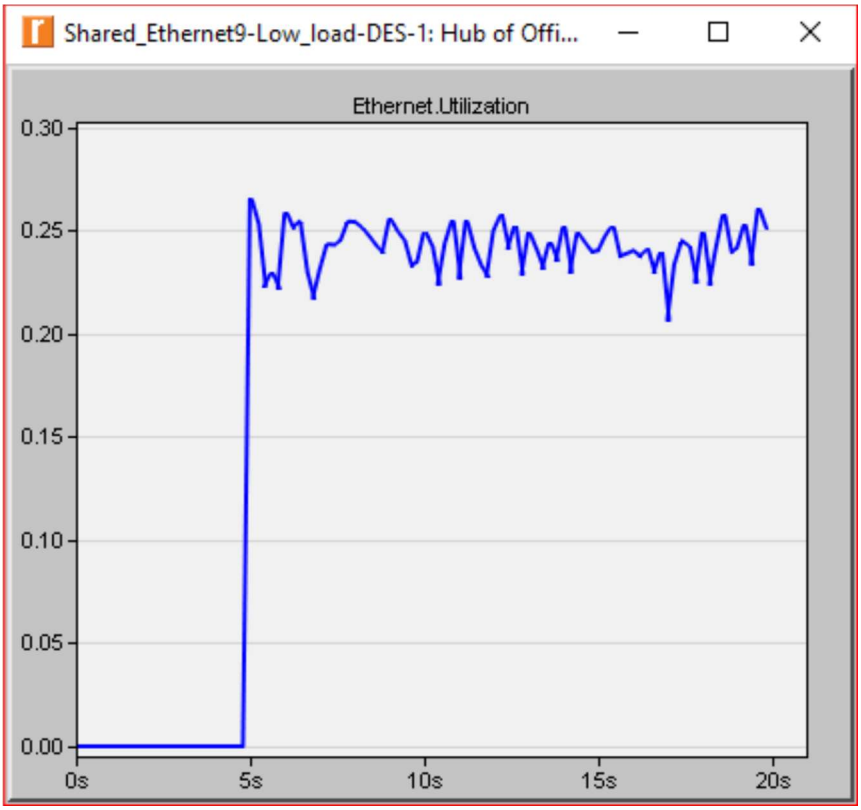
Interarrival Times 0.004



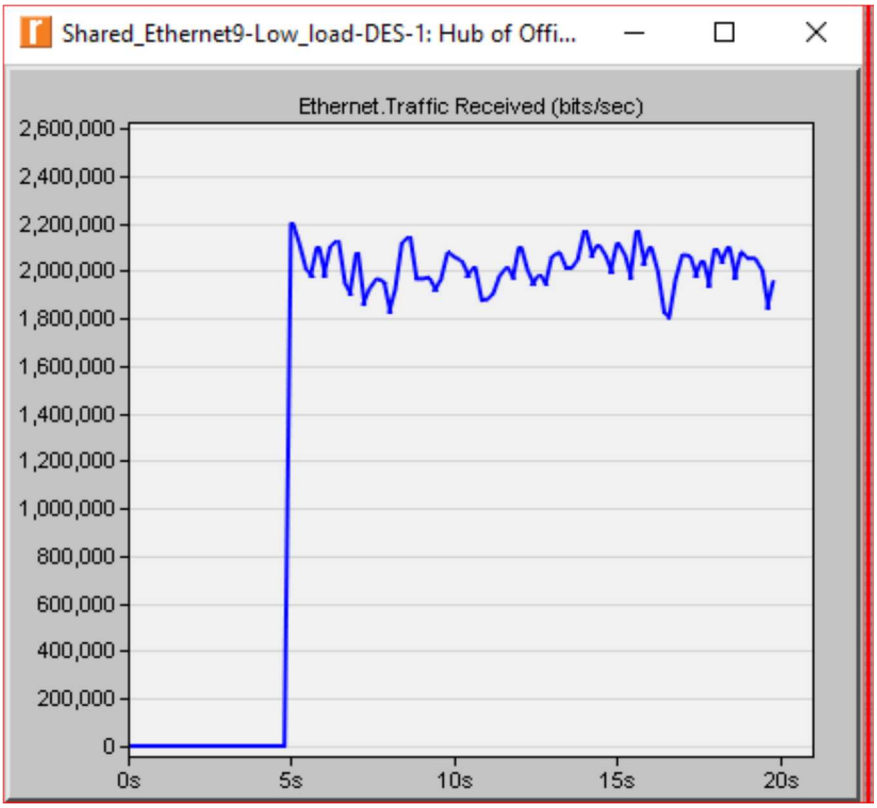


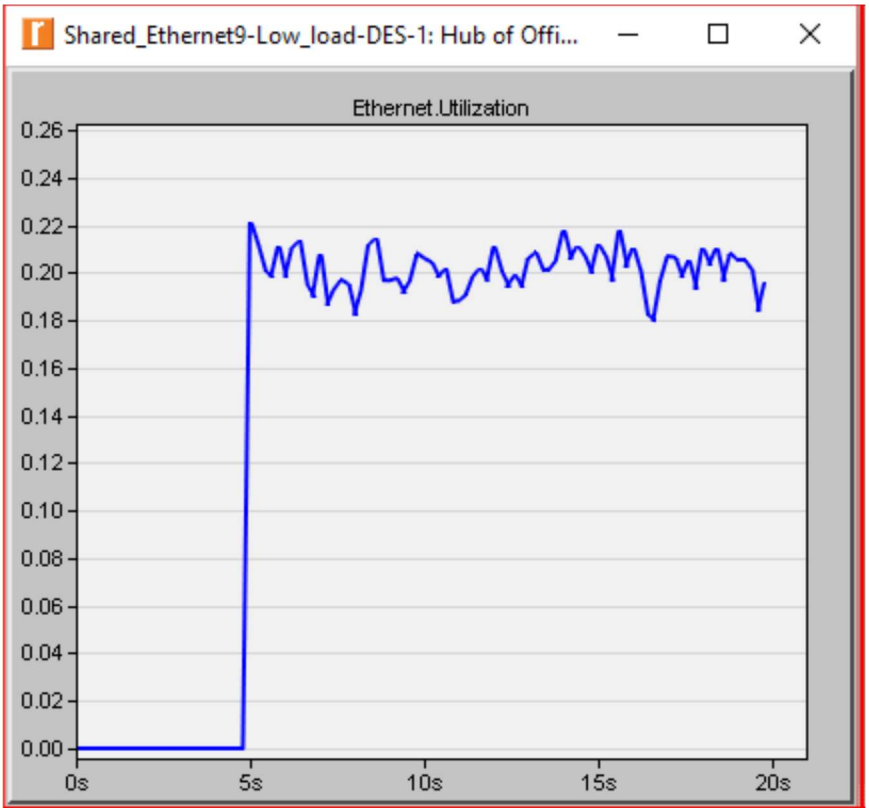
Interarrival Times 0.005



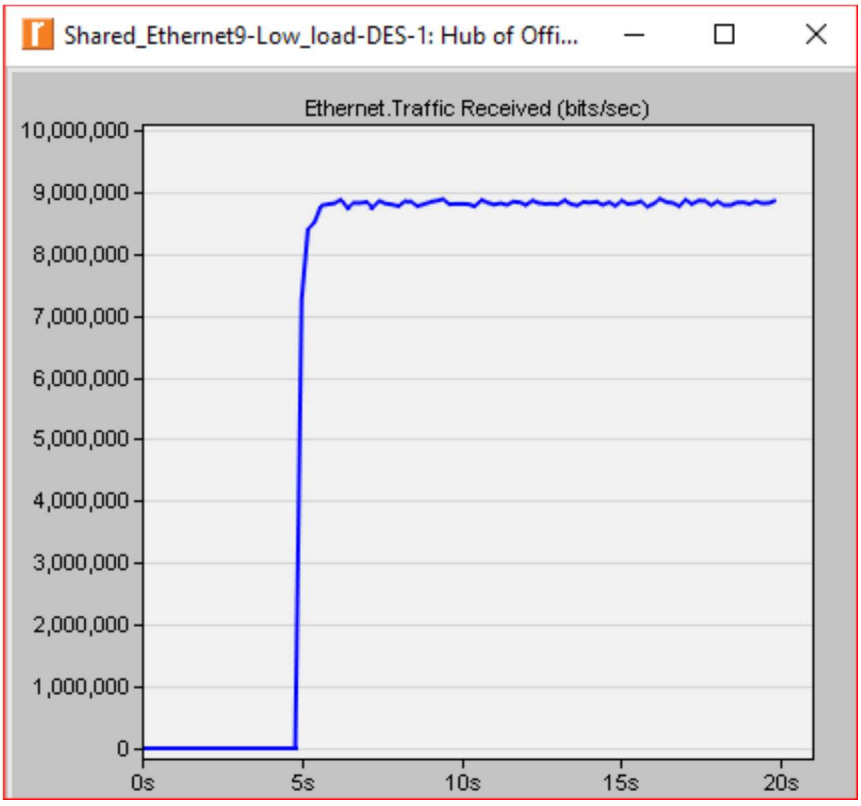


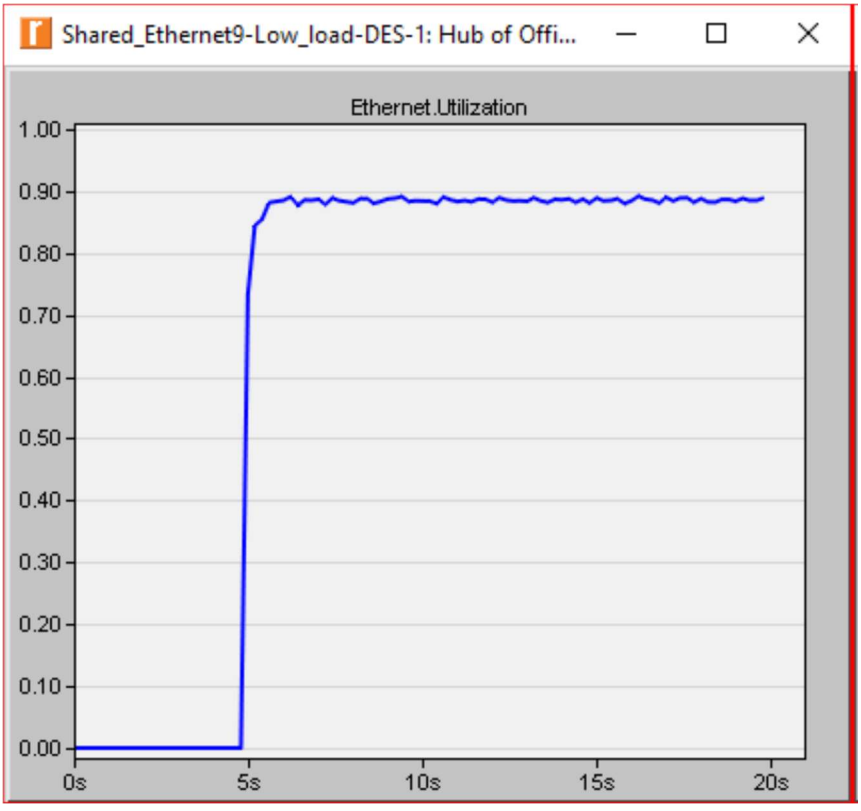
Interarrival Times 0.006





Interarrival Times 0.0008





This shows that Traffic Received values and Utilization values are same which means

Utilization give us the percentage of system performance relay on how many bits processed as Traffic Received plots.

The system will not reach 100 % because the time process is zero which means the hub send all data as broadcast.