NETWORK SIMULATION NS-2 ASSIGNMENT-2

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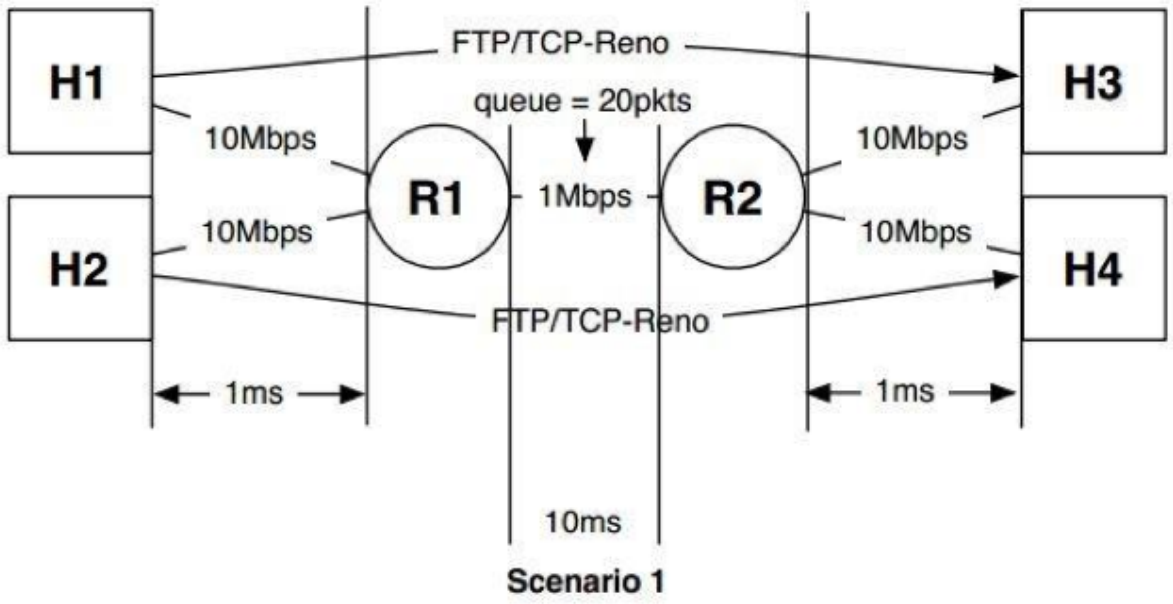
This is submitted as a part of ECEN 602 Network Simulation Assignment-2 (Buffer Management Techniques).

Setup:

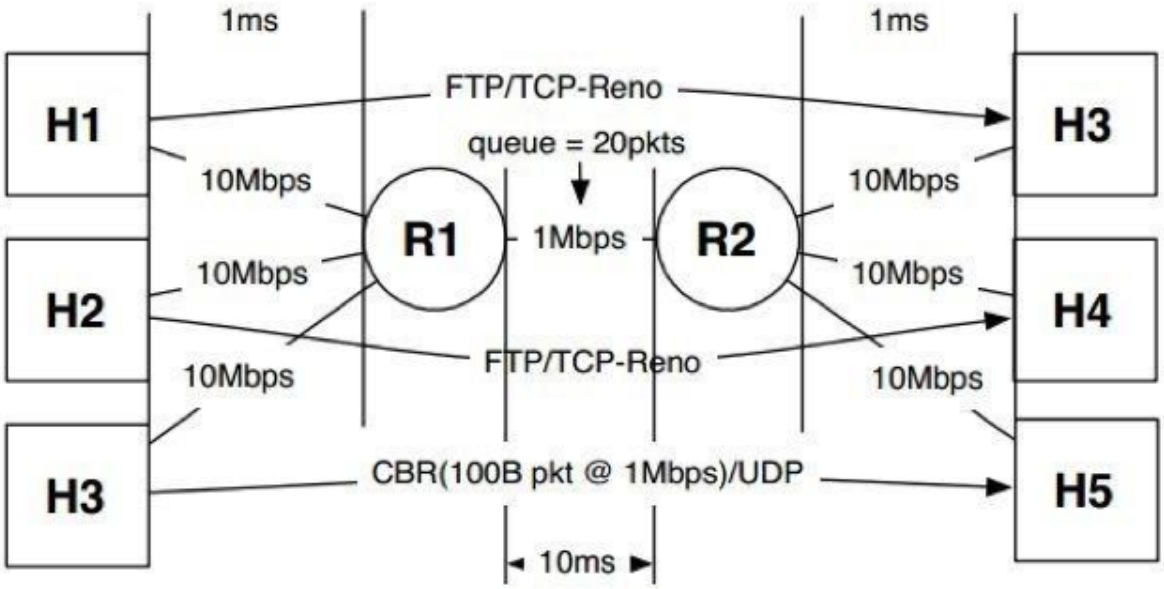
The following setup configuration was done on NAM.

Setup configuration:

- The routers, sources and receivers were set up using standard ns2 commands
- Duplex links were established with DropTail and RED mechanisms across the various nodes
- End to end delay between sources and routers was set up according to the test cases given in the problem statement
- RTTs were in a successive increasing ratio
- Queue is 20 packets
- Simulation was run and animated using standard NAM tool for 180ms
- First 30ms was ignored and then throughput and relative throughput was tabulated



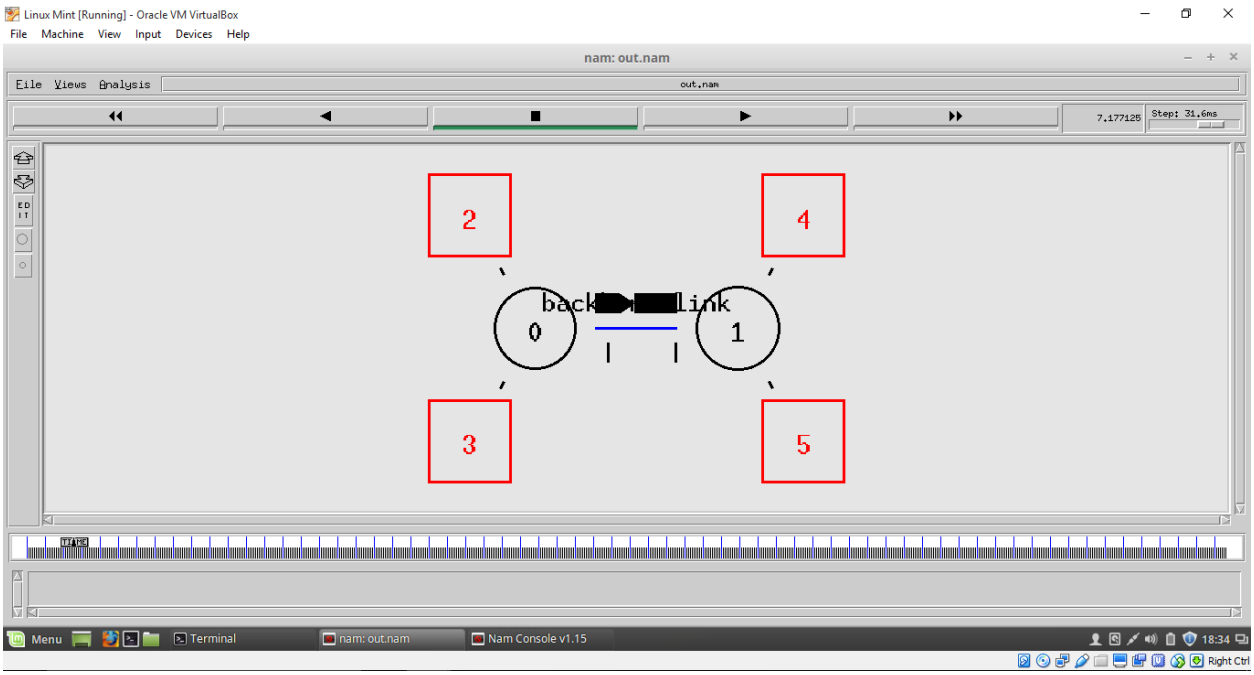
Router R1, Router R2, Source1: H1, Source2: H2, Receiver1: H3, Receiver2: H4



Scenario 2

Router R1, Router R2, Source1: H1, Source2: H2, Source3: H3, Receiver1: H6, Receiver2: H4, Receiver3: H5

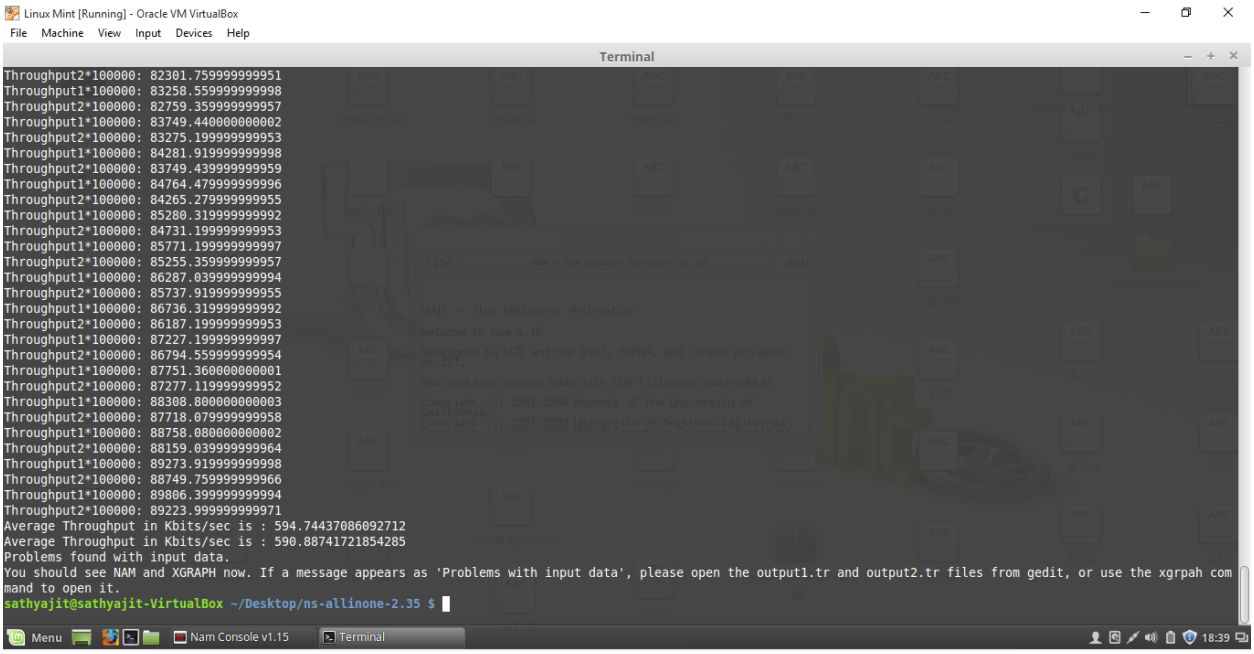
Part (a) of Report: For each of the – Scenario 1, make a table of the simulation cases and the relative throughput ratio.



Queue Mechanism : DropTail

Final Result:

Cases	Average Throughput in kbps
File Transfer 1	594.7443
File Transfer 2	590.8874



File Transfer 1 Results:

Time	Throughput
30	14676.799999999900
31	582.399999999999
32	524.159999999999
33	499.199999999999
34	457.600000000000
35	524.159999999999
36	515.840000000000
37	449.279999999999
38	482.560000000000
39	532.480000000000
40	549.120000000000
41	465.920000000000
42	515.840000000000
43	524.159999999999
44	474.240000000000
45	465.920000000000
46	507.519999999999
47	532.480000000000
48	515.840000000000

49	474.240000000000
50	540.799999999999
51	482.560000000000
52	474.240000000000
53	449.279999999999
54	532.480000000000
55	499.199999999999
56	540.799999999999
57	482.560000000000
58	499.199999999999
59	507.519999999999
60	507.519999999999
61	449.279999999999
62	490.880000000000
63	532.480000000000
64	540.799999999999
65	457.600000000000
66	524.159999999999
67	532.480000000000
68	449.279999999999
69	474.240000000000
70	524.159999999999
71	499.199999999999
72	532.480000000000
73	499.199999999999
74	499.199999999999
75	482.560000000000
76	507.519999999999
77	482.560000000000
78	474.240000000000
79	507.519999999999
80	549.120000000000
81	416.000000000000
82	549.120000000000
83	540.799999999999
84	465.920000000000
85	416.000000000000
86	549.120000000000
87	540.799999999999
88	532.480000000000
89	440.959999999999
90	540.799999999999
91	507.519999999999
92	474.240000000000

93	449.279999999999
94	540.799999999999
95	482.560000000000
96	432.639999999999
97	607.360000000000
98	499.199999999999
99	515.840000000000
100	482.560000000000
101	474.240000000000
102	474.240000000000
103	549.120000000000
104	432.639999999999
105	565.759999999999
106	490.880000000000
107	532.480000000000
108	366.079999999999
109	607.360000000000
110	474.240000000000
111	499.199999999999
112	499.199999999999
113	540.799999999999
114	507.519999999999
115	507.519999999999
116	399.360000000000
117	590.720000000000
118	449.279999999999
119	532.480000000000
120	507.519999999999
121	524.159999999999
122	449.279999999999
123	540.799999999999
124	440.959999999999
125	515.840000000000
126	482.560000000000
127	524.159999999999
128	490.880000000000
129	524.159999999999
130	515.840000000000
131	524.159999999999
132	457.600000000000
133	515.840000000000
134	457.600000000000
135	515.840000000000
136	507.519999999999

137	532.480000000000
138	465.920000000000
139	432.639999999999
140	607.360000000000
141	465.920000000000
142	457.600000000000
143	440.959999999999
144	599.039999999999
145	524.159999999999
146	490.880000000000
147	449.279999999999
148	532.480000000000
149	507.519999999999
150	465.920000000000
151	465.920000000000
152	532.480000000000
153	549.120000000000
154	474.240000000000
155	507.519999999999
156	524.159999999999
157	490.880000000000
158	449.279999999999
159	507.519999999999
160	532.480000000000
161	532.480000000000
162	474.240000000000
163	524.159999999999
164	499.199999999999
165	457.600000000000
166	465.920000000000
167	532.480000000000
168	490.880000000000
169	532.480000000000
170	482.560000000000
171	515.840000000000
172	490.880000000000
173	515.840000000000
174	449.279999999999
175	490.880000000000
176	524.159999999999
177	557.440000000000
178	449.279999999999
179	515.840000000000
180	532.480000000000

181	91.520000000000
182	0.000000000000
183	0.000000000000
184	0.000000000000

File transfer 2 results:

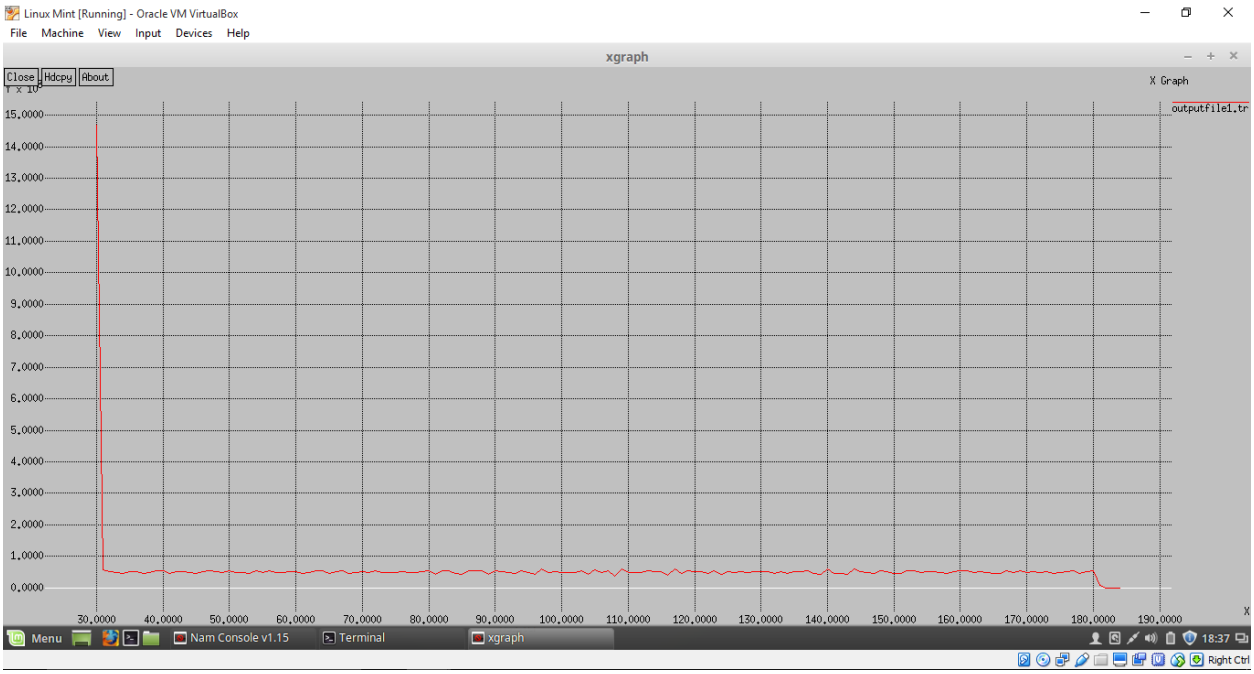
Time	Throughput
30	14160.96000
31	607.36000
32	474.24000
33	499.20000
34	391.04000
35	632.32000
36	482.56000
37	549.12000
38	399.36000
39	590.72000
40	449.28000
41	532.48000
42	399.36000
43	557.44000
44	524.16000
45	540.80000
46	440.96000
47	515.84000
48	482.56000
49	524.16000
50	449.28000
51	532.48000
52	524.16000
53	549.12000
54	457.60000
55	515.84000
56	457.60000
57	515.84000
58	482.56000
59	507.52000
60	499.20000
61	449.28000
62	607.36000
63	465.92000
64	457.60000
65	440.96000

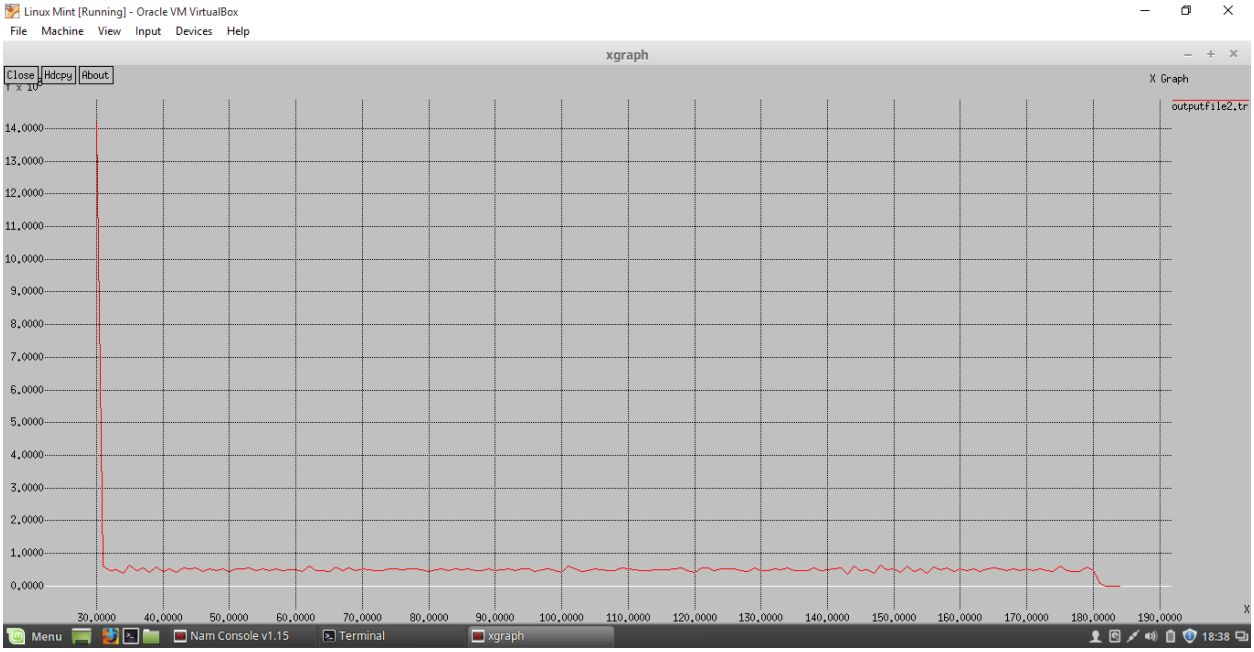
66	582.40000
67	465.92000
68	549.12000
69	465.92000
70	532.48000
71	507.52000
72	465.92000
73	465.92000
74	532.48000
75	515.84000
76	499.20000
77	515.84000
78	524.16000
79	490.88000
80	449.28000
81	507.52000
82	532.48000
83	457.60000
84	532.48000
85	507.52000
86	532.48000
87	457.60000
88	465.92000
89	532.48000
90	482.56000
91	499.20000
92	524.16000
93	474.24000
94	532.48000
95	515.84000
96	449.28000
97	490.88000
98	524.16000
99	482.56000
100	424.32000
101	615.68000
102	532.48000
103	449.28000
104	474.24000
105	524.16000
106	507.52000
107	474.24000
108	457.60000
109	565.76000

110	524.16000
111	499.20000
112	482.56000
113	482.56000
114	490.88000
115	490.88000
116	499.20000
117	515.84000
118	549.12000
119	465.92000
120	416.00000
121	549.12000
122	549.12000
123	465.92000
124	515.84000
125	524.16000
126	515.84000
127	474.24000
128	440.96000
129	549.12000
130	482.56000
131	474.24000
132	532.48000
133	499.20000
134	540.80000
135	482.56000
136	474.24000
137	482.56000
138	540.80000
139	465.92000
140	490.88000
141	532.48000
142	540.80000
143	357.76000
144	607.36000
145	474.24000
146	507.52000
147	382.72000
148	632.32000
149	499.20000
150	532.48000
151	399.36000
152	599.04000
153	449.28000

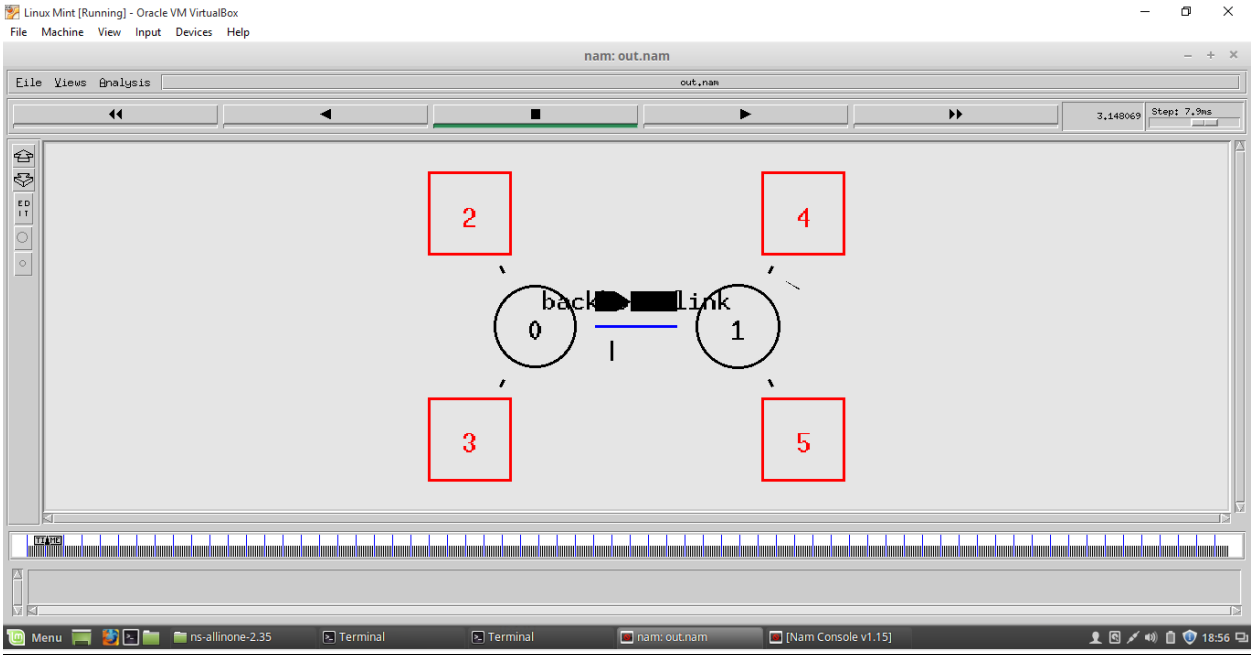
154	532.48000
155	391.04000
156	574.08000
157	507.52000
158	549.12000
159	432.64000
160	532.48000
161	465.92000
162	524.16000
163	449.28000
164	532.48000
165	540.80000
166	532.48000
167	457.60000
168	515.84000
169	474.24000
170	515.84000
171	465.92000
172	524.16000
173	482.56000
174	449.28000
175	607.36000
176	482.56000
177	440.96000
178	440.96000
179	590.72000
180	474.24000
181	74.88000
182	0.00000
183	0.00000
184	0.00000

The following are the XGRAPH results for Scenario 1 – Drop Tail.



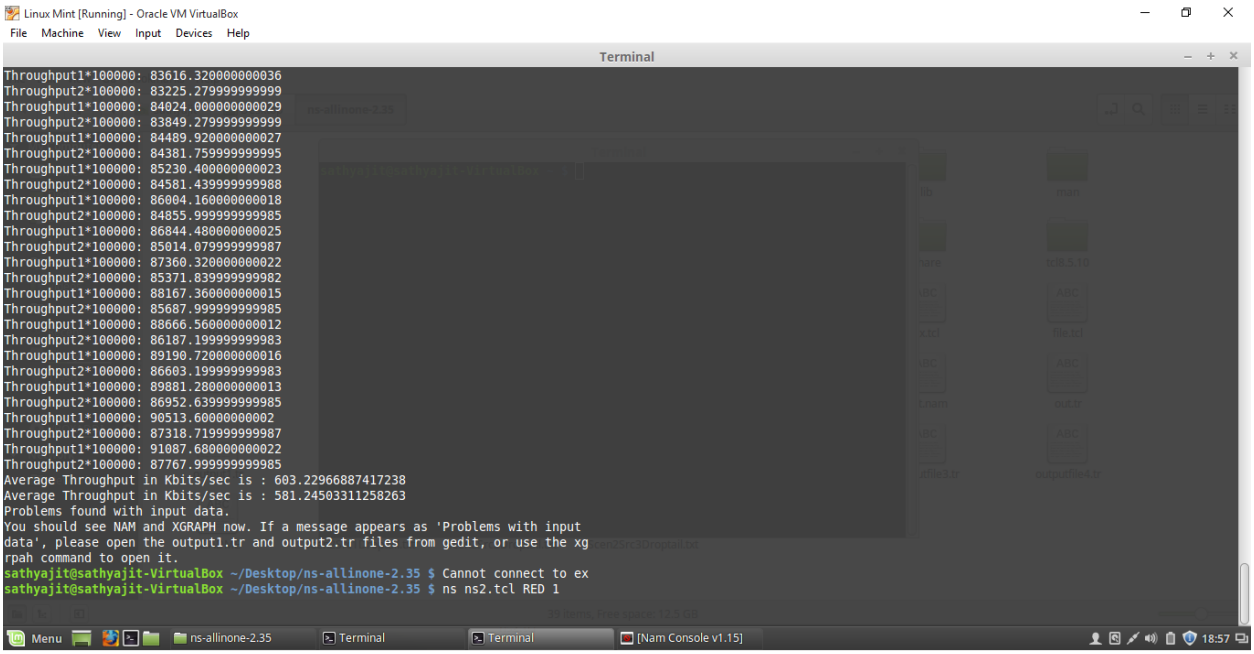


Queue Mechanism : RED



Final Result:

Cases	Average Throughput in kbps
File Transfer 1	603.2296
File Transfer 2	581.2450



File Transfer 1 Results:

Time	Throughput
30	14726.7200
31	673.9200

32	499.2000
33	507.5200
34	299.5200
35	457.6000
36	574.0800
37	665.6000
38	407.6800
39	416.0000
40	357.7600
41	524.1600
42	640.6400
43	557.4400
44	540.8000
45	457.6000
46	582.4000
47	474.2400
48	465.9200
49	665.6000
50	474.2400
51	599.0400
52	599.0400
53	490.8800
54	424.3200
55	507.5200
56	549.1200
57	565.7600
58	657.2800
59	449.2800
60	282.8800
61	574.0800
62	715.5200
63	890.2400
64	349.4400
65	416.0000
66	732.1600
67	615.6800
68	407.6800
69	524.1600
70	424.3200
71	524.1600
72	524.1600
73	665.6000
74	832.0000
75	565.7600

76	549.1200
77	274.5600
78	332.8000
79	673.9200
80	540.8000
81	632.3200
82	640.6400
83	673.9200
84	490.8800
85	632.3200
86	332.8000
87	432.6400
88	582.4000
89	582.4000
90	632.3200
91	798.7200
92	590.7200
93	524.1600
94	557.4400
95	257.9200
96	499.2000
97	773.7600
98	624.0000
99	416.0000
100	291.2000
101	366.0800
102	499.2000
103	291.2000
104	440.9600
105	565.7600
106	232.9600
107	424.3200
108	574.0800
109	599.0400
110	515.8400
111	299.5200
112	341.1200
113	241.2800
114	557.4400
115	615.6800
116	507.5200
117	407.6800
118	416.0000
119	607.3600

120	532.4800
121	507.5200
122	557.4400
123	557.4400
124	424.3200
125	532.4800
126	565.7600
127	549.1200
128	549.1200
129	532.4800
130	440.9600
131	349.4400
132	158.0800
133	349.4400
134	507.5200
135	457.6000
136	399.3600
137	241.2800
138	482.5600
139	557.4400
140	698.8800
141	549.1200
142	599.0400
143	574.0800
144	324.4800
145	557.4400
146	374.4000
147	366.0800
148	457.6000
149	449.2800
150	615.6800
151	565.7600
152	424.3200
153	282.8800
154	457.6000
155	324.4800
156	274.5600
157	349.4400
158	524.1600
159	565.7600
160	682.2400
161	657.2800
162	549.1200
163	291.2000

164	590.7200
165	665.6000
166	274.5600
167	341.1200
168	282.8800
169	407.6800
170	465.9200
171	740.4800
172	773.7600
173	840.3200
174	515.8400
175	807.0400
176	499.2000
177	524.1600
178	690.5600
179	632.3200
180	574.0800
181	33.2800
182	0.0000
183	0.0000
184	0.0000

File Transfer 2 Results:

Time	Throughput
30	14294.0800
31	349.4400
32	507.5200
33	432.6400
34	740.4800
35	515.8400
36	449.2800
37	316.1600
38	590.7200
39	515.8400
40	723.8400
41	482.5600
42	357.7600
43	391.0400
44	507.5200
45	540.8000
46	349.4400
47	599.0400
48	532.4800

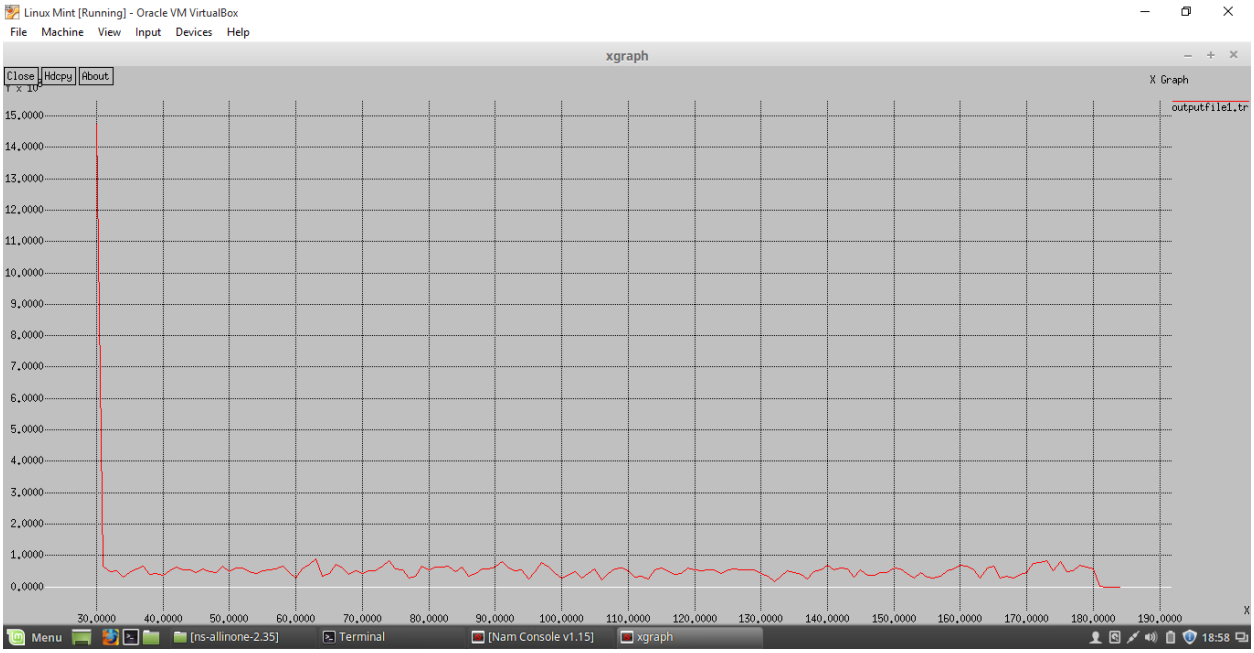
49	282.8800
50	549.1200
51	357.7600
52	474.2400
53	457.6000
54	615.6800
55	482.5600
56	465.9200
57	440.9600
58	299.5200
59	590.7200
60	715.5200
61	299.5200
62	416.0000
63	108.1600
64	565.7600
65	565.7600
66	366.0800
67	382.7200
68	590.7200
69	482.5600
70	574.0800
71	416.0000
72	532.4800
73	307.8400
74	191.3600
75	424.3200
76	449.2800
77	698.8800
78	690.5600
79	307.8400
80	374.4000
81	449.2800
82	274.5600
83	416.0000
84	440.9600
85	432.6400
86	665.6000
87	565.7600
88	316.1600
89	465.9200
90	424.3200
91	166.4000
92	357.7600

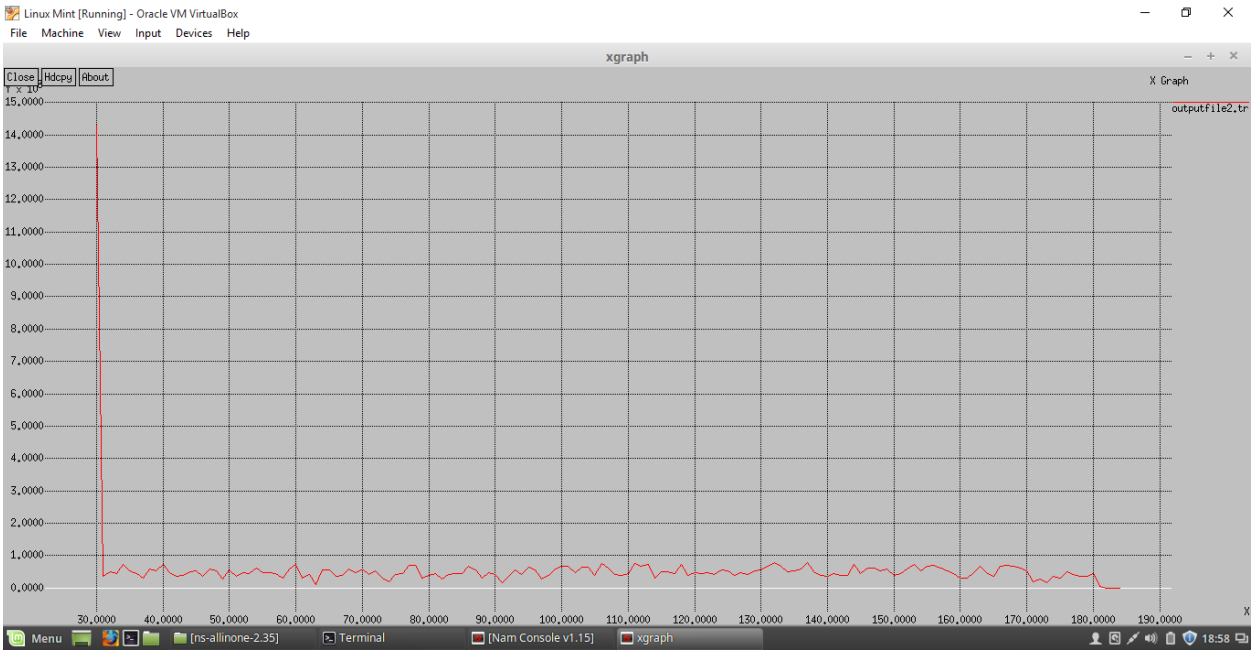
93	557.4400
94	407.6800
95	640.6400
96	557.4400
97	266.2400
98	399.3600
99	582.4000
100	673.9200
101	673.9200
102	465.9200
103	640.6400
104	640.6400
105	399.3600
106	765.4400
107	607.3600
108	424.3200
109	391.0400
110	432.6400
111	748.8000
112	657.2800
113	740.4800
114	316.1600
115	507.5200
116	490.8800
117	440.9600
118	732.1600
119	391.0400
120	465.9200
121	457.6000
122	482.5600
123	416.0000
124	549.1200
125	515.8400
126	391.0400
127	465.9200
128	416.0000
129	524.1600
130	565.7600
131	657.2800
132	790.4000
133	673.9200
134	490.8800
135	540.8000
136	590.7200

137	773.7600
138	499.2000
139	399.3600
140	357.7600
141	457.6000
142	391.0400
143	391.0400
144	715.5200
145	440.9600
146	624.0000
147	624.0000
148	532.4800
149	574.0800
150	382.7200
151	432.6400
152	582.4000
153	715.5200
154	532.4800
155	682.2400
156	698.8800
157	607.3600
158	524.1600
159	457.6000
160	316.1600
161	291.2000
162	465.9200
163	673.9200
164	457.6000
165	357.7600
166	682.2400
167	707.2000
168	682.2400
169	624.0000
170	532.4800
171	199.6800
172	274.5600
173	158.0800
174	357.7600
175	316.1600
176	499.2000
177	416.0000
178	349.4400
179	366.0800
180	449.2800

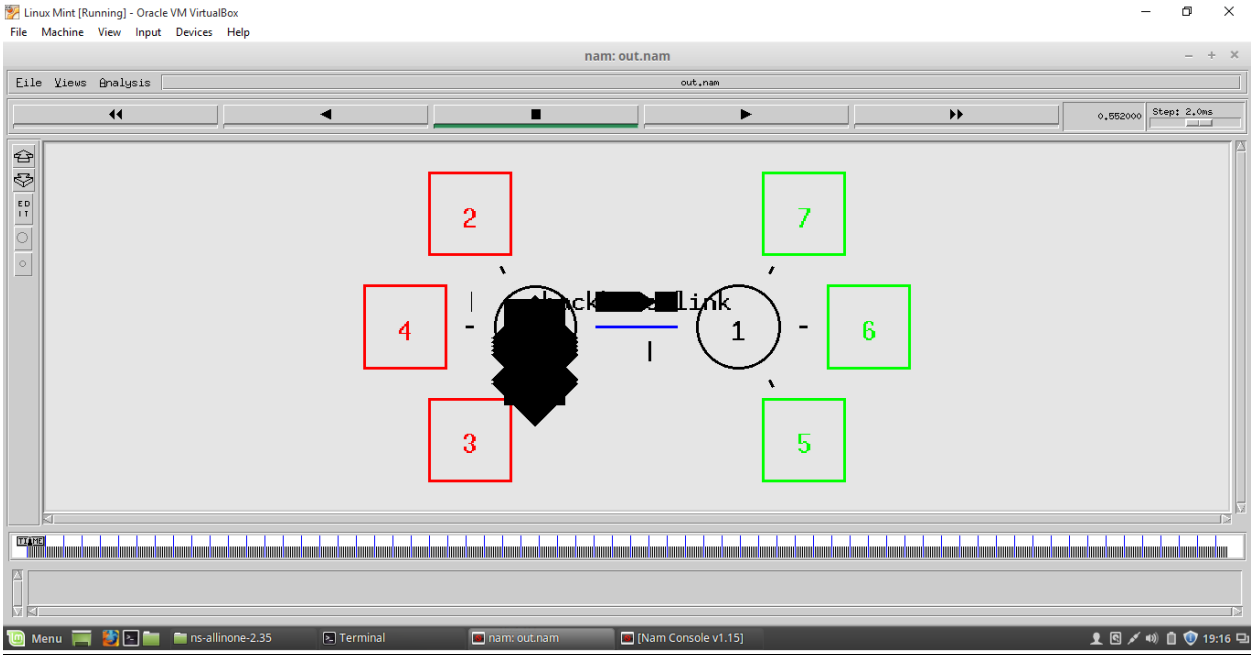
181	41.6000
182	0.0000
183	0.0000
184	0.0000

The following are the XGRAPH results for Scenario 1 – RED.





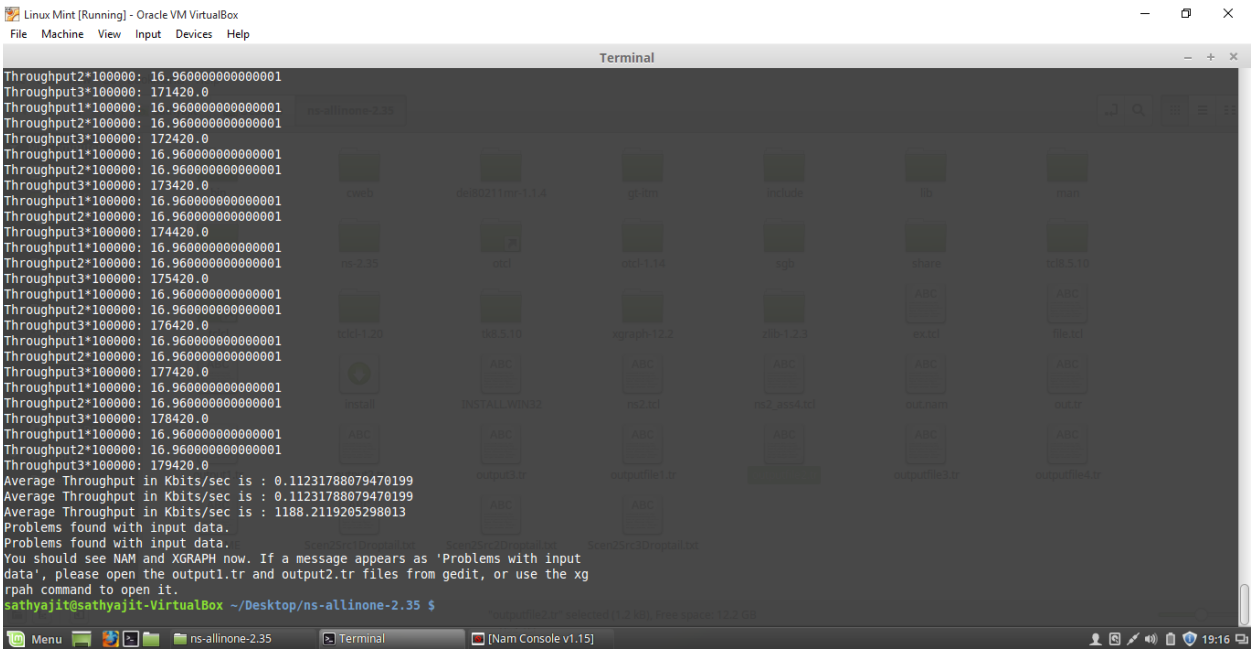
Part (b) of Report: For each of the – Scenario 2, make a table of the simulation cases and the relative throughput ratio.



Queue Mechanism : DropTail

Final Result:

Cases	Average Throughput in kbps
File Transfer 1	0.1123
File Transfer 2	0.1123
File Transfer 3	1188.2119



File Transfer 1 Results:

Time	Throughput
30	16.9600
31	0.0000
32	0.0000
33	0.0000
34	0.0000
35	0.0000
36	0.0000
37	0.0000
38	0.0000
39	0.0000
40	0.0000
41	0.0000
42	0.0000
43	0.0000
44	0.0000
45	0.0000
46	0.0000
47	0.0000
48	0.0000
49	0.0000
50	0.0000
51	0.0000
52	0.0000
53	0.0000
54	0.0000
55	0.0000
56	0.0000
57	0.0000
58	0.0000
59	0.0000
60	0.0000
61	0.0000
62	0.0000
63	0.0000
64	0.0000
65	0.0000
66	0.0000
67	0.0000
68	0.0000
69	0.0000
70	0.0000
71	0.0000

72	0.0000
73	0.0000
74	0.0000
75	0.0000
76	0.0000
77	0.0000
78	0.0000
79	0.0000
80	0.0000
81	0.0000
82	0.0000
83	0.0000
84	0.0000
85	0.0000
86	0.0000
87	0.0000
88	0.0000
89	0.0000
90	0.0000
91	0.0000
92	0.0000
93	0.0000
94	0.0000
95	0.0000
96	0.0000
97	0.0000
98	0.0000
99	0.0000
100	0.0000
101	0.0000
102	0.0000
103	0.0000
104	0.0000
105	0.0000
106	0.0000
107	0.0000
108	0.0000
109	0.0000
110	0.0000
111	0.0000
112	0.0000
113	0.0000
114	0.0000
115	0.0000

116	0.0000
117	0.0000
118	0.0000
119	0.0000
120	0.0000
121	0.0000
122	0.0000
123	0.0000
124	0.0000
125	0.0000
126	0.0000
127	0.0000
128	0.0000
129	0.0000
130	0.0000
131	0.0000
132	0.0000
133	0.0000
134	0.0000
135	0.0000
136	0.0000
137	0.0000
138	0.0000
139	0.0000
140	0.0000
141	0.0000
142	0.0000
143	0.0000
144	0.0000
145	0.0000
146	0.0000
147	0.0000
148	0.0000
149	0.0000
150	0.0000
151	0.0000
152	0.0000
153	0.0000
154	0.0000
155	0.0000
156	0.0000
157	0.0000
158	0.0000
159	0.0000

160	0.0000
161	0.0000
162	0.0000
163	0.0000
164	0.0000
165	0.0000
166	0.0000
167	0.0000
168	0.0000
169	0.0000
170	0.0000
171	0.0000
172	0.0000
173	0.0000
174	0.0000
175	0.0000
176	0.0000
177	0.0000
178	0.0000
179	0.0000
180	0.0000
181	0.0000
182	0.0000
183	0.0000
184	0.0000

File transfer 2 results:

Time	Throughput
30	16.9600
31	0.0000
32	0.0000
33	0.0000
34	0.0000
35	0.0000
36	0.0000
37	0.0000
38	0.0000
39	0.0000
40	0.0000
41	0.0000
42	0.0000
43	0.0000
44	0.0000

45	0.0000
46	0.0000
47	0.0000
48	0.0000
49	0.0000
50	0.0000
51	0.0000
52	0.0000
53	0.0000
54	0.0000
55	0.0000
56	0.0000
57	0.0000
58	0.0000
59	0.0000
60	0.0000
61	0.0000
62	0.0000
63	0.0000
64	0.0000
65	0.0000
66	0.0000
67	0.0000
68	0.0000
69	0.0000
70	0.0000
71	0.0000
72	0.0000
73	0.0000
74	0.0000
75	0.0000
76	0.0000
77	0.0000
78	0.0000
79	0.0000
80	0.0000
81	0.0000
82	0.0000
83	0.0000
84	0.0000
85	0.0000
86	0.0000
87	0.0000
88	0.0000

89	0.0000
90	0.0000
91	0.0000
92	0.0000
93	0.0000
94	0.0000
95	0.0000
96	0.0000
97	0.0000
98	0.0000
99	0.0000
100	0.0000
101	0.0000
102	0.0000
103	0.0000
104	0.0000
105	0.0000
106	0.0000
107	0.0000
108	0.0000
109	0.0000
110	0.0000
111	0.0000
112	0.0000
113	0.0000
114	0.0000
115	0.0000
116	0.0000
117	0.0000
118	0.0000
119	0.0000
120	0.0000
121	0.0000
122	0.0000
123	0.0000
124	0.0000
125	0.0000
126	0.0000
127	0.0000
128	0.0000
129	0.0000
130	0.0000
131	0.0000
132	0.0000

133	0.0000
134	0.0000
135	0.0000
136	0.0000
137	0.0000
138	0.0000
139	0.0000
140	0.0000
141	0.0000
142	0.0000
143	0.0000
144	0.0000
145	0.0000
146	0.0000
147	0.0000
148	0.0000
149	0.0000
150	0.0000
151	0.0000
152	0.0000
153	0.0000
154	0.0000
155	0.0000
156	0.0000
157	0.0000
158	0.0000
159	0.0000
160	0.0000
161	0.0000
162	0.0000
163	0.0000
164	0.0000
165	0.0000
166	0.0000
167	0.0000
168	0.0000
169	0.0000
170	0.0000
171	0.0000
172	0.0000
173	0.0000
174	0.0000
175	0.0000
176	0.0000

177	0.0000
178	0.0000
179	0.0000
180	0.0000
181	0.0000
182	0.0000
183	0.0000
184	0.0000

File Transfer 3 Results:

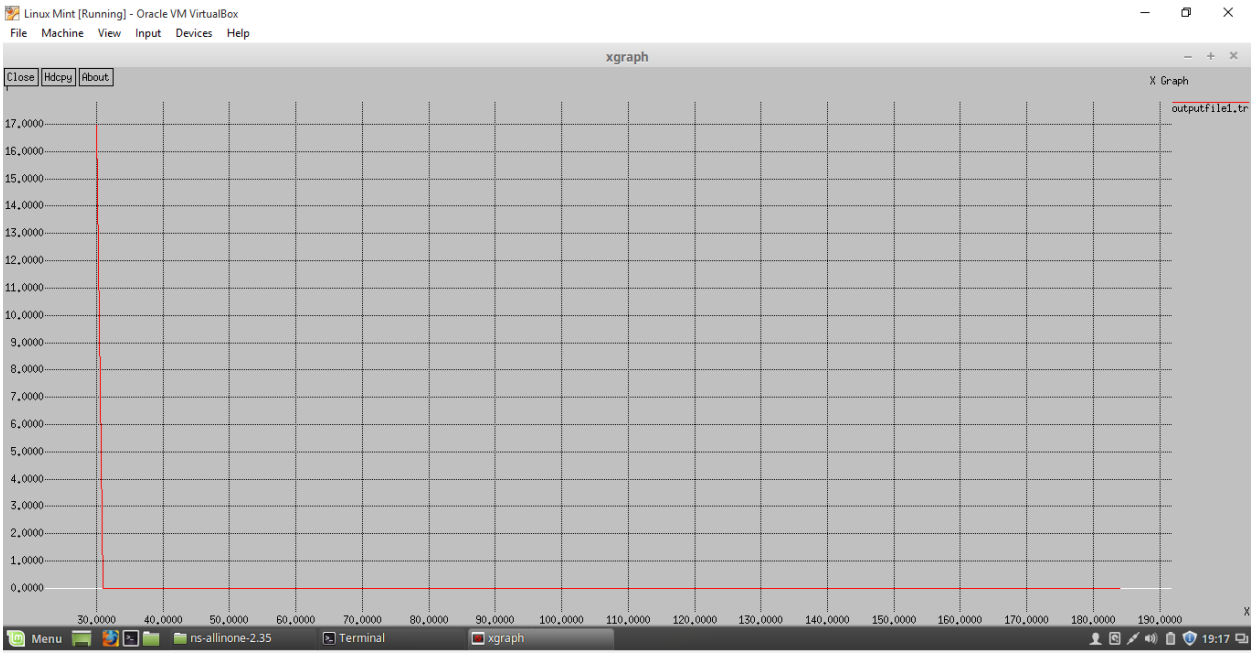
Time	Throughput
30	29420.0000
31	1000.0000
32	1000.0000
33	1000.0000
34	1000.0000
35	1000.0000
36	1000.0000
37	1000.0000
38	1000.0000
39	1000.0000
40	1000.0000
41	1000.0000
42	1000.0000
43	1000.0000
44	1000.0000
45	1000.0000
46	1000.0000
47	1000.0000
48	1000.0000
49	1000.0000
50	1000.0000
51	1000.0000
52	1000.0000
53	1000.0000
54	1000.0000
55	1000.0000
56	1000.0000
57	1000.0000
58	1000.0000
59	1000.0000
60	1000.0000
61	1000.0000

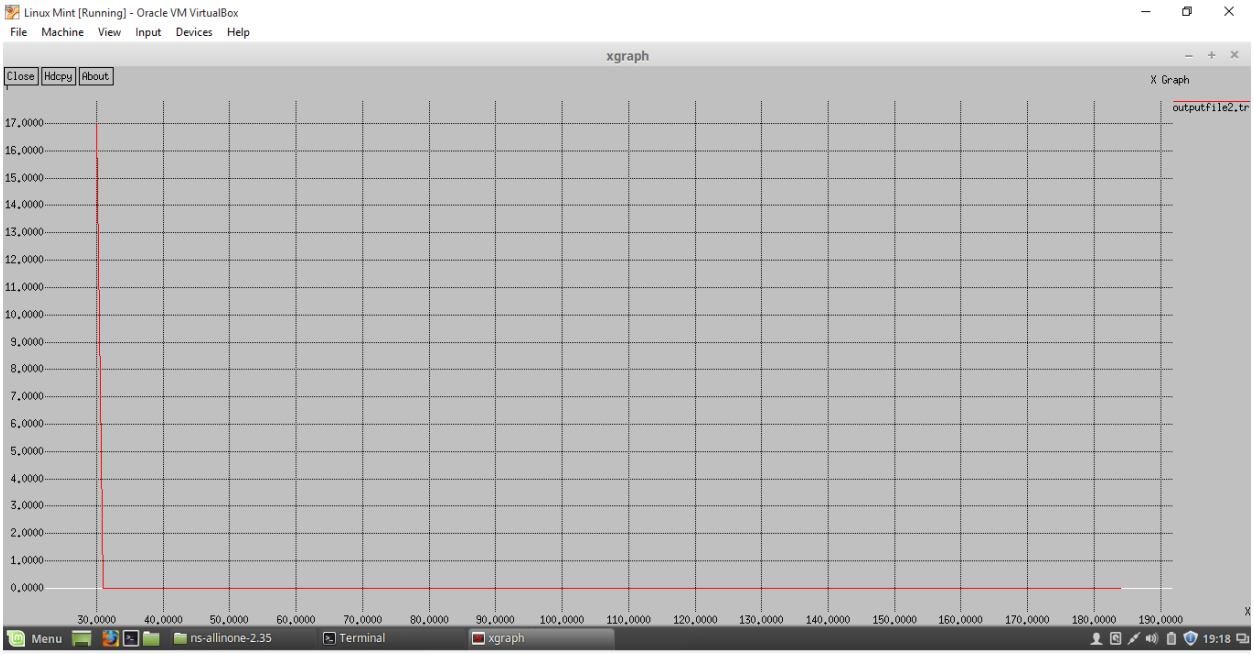
62	1000.0000
63	1000.0000
64	1000.0000
65	1000.0000
66	1000.0000
67	1000.0000
68	1000.0000
69	1000.0000
70	1000.0000
71	1000.0000
72	1000.0000
73	1000.0000
74	1000.0000
75	1000.0000
76	1000.0000
77	1000.0000
78	1000.0000
79	1000.0000
80	1000.0000
81	1000.0000
82	1000.0000
83	1000.0000
84	1000.0000
85	1000.0000
86	1000.0000
87	1000.0000
88	1000.0000
89	1000.0000
90	1000.0000
91	1000.0000
92	1000.0000
93	1000.0000
94	1000.0000
95	1000.0000
96	1000.0000
97	1000.0000
98	1000.0000
99	1000.0000
100	1000.0000
101	1000.0000
102	1000.0000
103	1000.0000
104	1000.0000
105	1000.0000

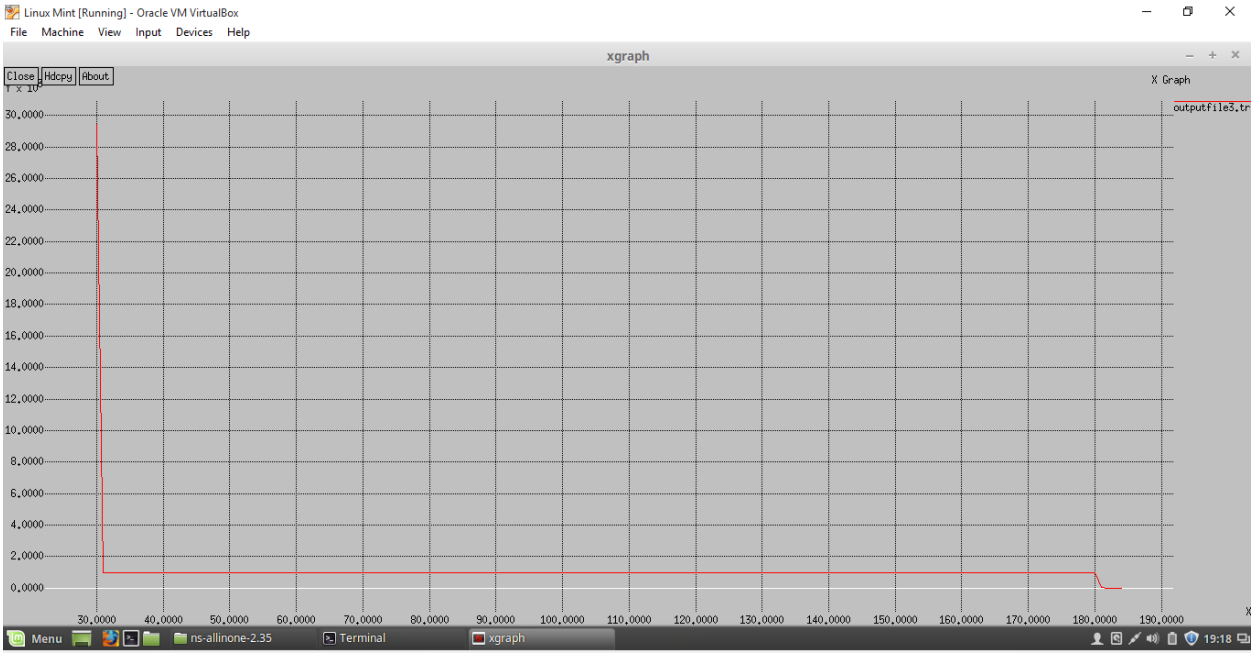
106	1000.0000
107	1000.0000
108	1000.0000
109	1000.0000
110	1000.0000
111	1000.0000
112	1000.0000
113	1000.0000
114	1000.0000
115	1000.0000
116	1000.0000
117	1000.0000
118	1000.0000
119	1000.0000
120	1000.0000
121	1000.0000
122	1000.0000
123	1000.0000
124	1000.0000
125	1000.0000
126	1000.0000
127	1000.0000
128	1000.0000
129	1000.0000
130	1000.0000
131	1000.0000
132	1000.0000
133	1000.0000
134	1000.0000
135	1000.0000
136	1000.0000
137	1000.0000
138	1000.0000
139	1000.0000
140	1000.0000
141	1000.0000
142	1000.0000
143	1000.0000
144	1000.0000
145	1000.0000
146	1000.0000
147	1000.0000
148	1000.0000
149	1000.0000

150	1000.0000
151	1000.0000
152	1000.0000
153	1000.0000
154	1000.0000
155	1000.0000
156	1000.0000
157	1000.0000
158	1000.0000
159	1000.0000
160	1000.0000
161	1000.0000
162	1000.0000
163	1000.0000
164	1000.0000
165	1000.0000
166	1000.0000
167	1000.0000
168	1000.0000
169	1000.0000
170	1000.0000
171	1000.0000
172	1000.0000
173	1000.0000
174	1000.0000
175	1000.0000
176	1000.0000
177	1000.0000
178	1000.0000
179	1000.0000
180	1000.0000
181	28.8000
182	0.0000
183	0.0000
184	0.0000

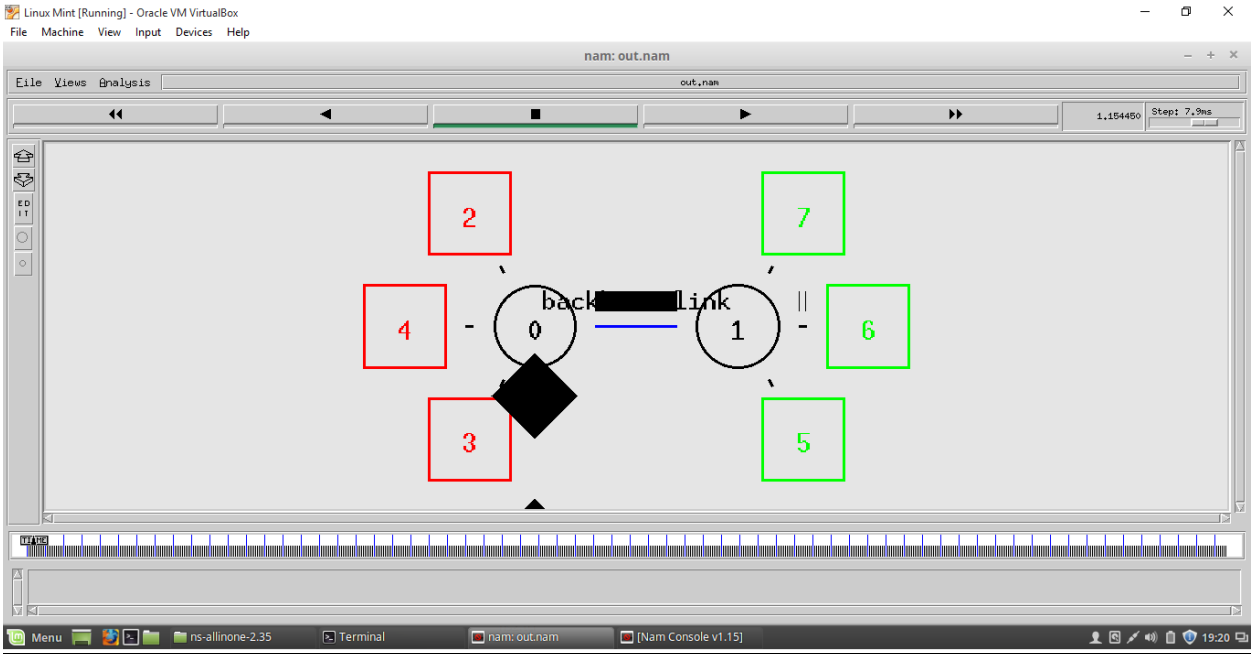
The following are the XGRAPH results for Scenario 2 – Drop Tail.





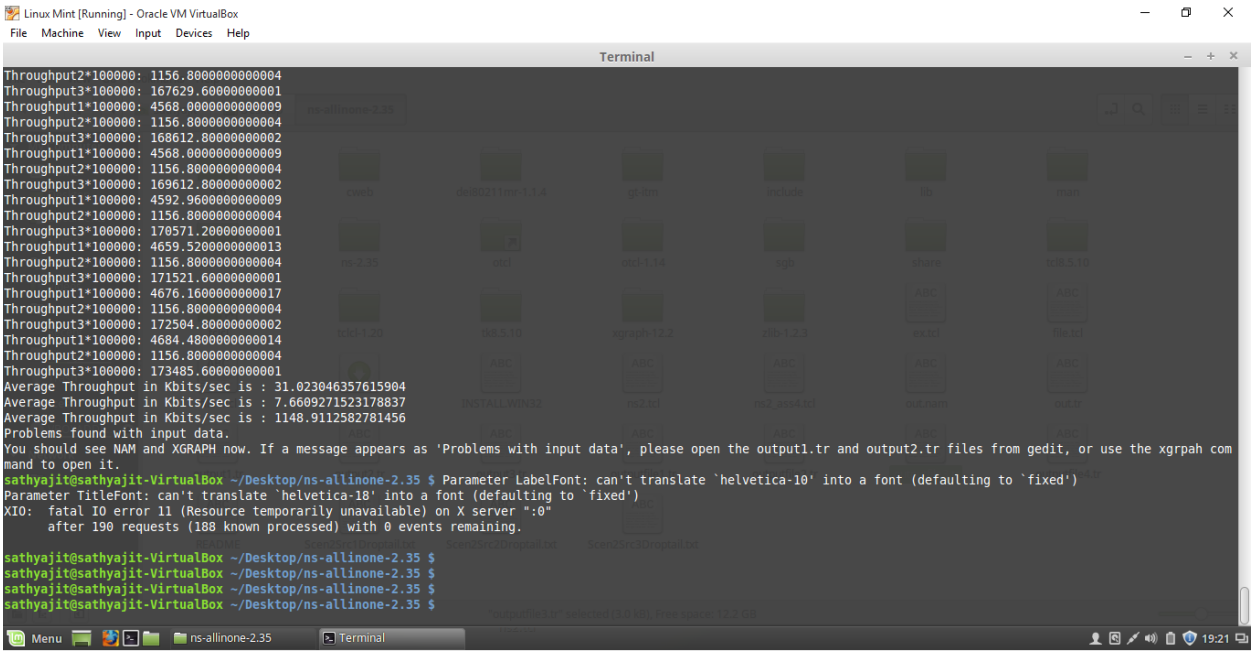


Queue Mechanism : RED



Final Result:

Cases	Average Throughput in kbps
File Transfer 1	31.0230
File Transfer 2	7.6609
File Transfer 3	1148.9112



File Transfer 1 Results:

Time	Throughput
30	266.5600
31	16.6400
32	0.0000
33	33.2800
34	0.0000
35	0.0000
36	0.0000
37	49.9200
38	33.2800
39	33.2800
40	0.0000
41	0.0000
42	24.9600
43	49.9200
44	41.6000
45	0.0000
46	66.5600
47	16.6400
48	49.9200
49	0.0000
50	91.5200
51	16.6400
52	24.9600
53	0.0000
54	58.2400

55	16.6400
56	24.9600
57	0.0000
58	49.9200
59	8.3200
60	0.0000
61	74.8800
62	0.0000
63	33.2800
64	24.9600
65	49.9200
66	0.0000
67	41.6000
68	33.2800
69	41.6000
70	0.0000
71	33.2800
72	0.0000
73	33.2800
74	41.6000
75	0.0000
76	33.2800
77	24.9600
78	66.5600
79	8.3200
80	33.2800
81	0.0000
82	58.2400
83	74.8800
84	0.0000
85	8.3200
86	0.0000
87	49.9200
88	24.9600
89	0.0000
90	16.6400
91	0.0000
92	33.2800
93	41.6000
94	41.6000
95	16.6400
96	41.6000
97	33.2800
98	41.6000

99	49.9200
100	33.2800
101	8.3200
102	74.8800
103	41.6000
104	16.6400
105	0.0000
106	41.6000
107	41.6000
108	66.5600
109	24.9600
110	41.6000
111	58.2400
112	33.2800
113	16.6400
114	0.0000
115	41.6000
116	16.6400
117	0.0000
118	74.8800
119	0.0000
120	16.6400
121	0.0000
122	41.6000
123	16.6400
124	0.0000
125	49.9200
126	41.6000
127	24.9600
128	66.5600
129	0.0000
130	74.8800
131	0.0000
132	49.9200
133	41.6000
134	41.6000
135	41.6000
136	8.3200
137	33.2800
138	33.2800
139	49.9200
140	24.9600
141	66.5600
142	49.9200

143	16.6400
144	41.6000
145	124.8000
146	33.2800
147	16.6400
148	0.0000
149	58.2400
150	8.3200
151	41.6000
152	8.3200
153	49.9200
154	33.2800
155	24.9600
156	33.2800
157	49.9200
158	8.3200
159	41.6000
160	0.0000
161	99.8400
162	16.6400
163	0.0000
164	0.0000
165	41.6000
166	41.6000
167	0.0000
168	33.2800
169	49.9200
170	0.0000
171	74.8800
172	0.0000
173	91.5200
174	8.3200
175	33.2800
176	0.0000
177	24.9600
178	66.5600
179	16.6400
180	8.3200
181	0.0000
182	0.0000
183	24.9600
184	0.0000

File Transfer 2 Results:

Time	Throughput
30	882.2400
31	0.0000
32	0.0000
33	24.9600
34	0.0000
35	0.0000
36	0.0000
37	0.0000
38	0.0000
39	24.9600
40	8.3200
41	0.0000
42	0.0000
43	0.0000
44	0.0000
45	0.0000
46	0.0000
47	0.0000
48	0.0000
49	0.0000
50	0.0000
51	0.0000
52	24.9600
53	8.3200
54	0.0000
55	0.0000
56	0.0000
57	0.0000
58	0.0000
59	0.0000
60	0.0000
61	0.0000
62	0.0000
63	0.0000
64	0.0000
65	0.0000
66	0.0000
67	0.0000
68	0.0000
69	0.0000
70	0.0000
71	0.0000
72	0.0000

73	0.0000
74	0.0000
75	0.0000
76	0.0000
77	0.0000
78	41.6000
79	16.6400
80	41.6000
81	8.3200
82	0.0000
83	0.0000
84	24.9600
85	0.0000
86	0.0000
87	0.0000
88	0.0000
89	16.6400
90	0.0000
91	0.0000
92	0.0000
93	0.0000
94	0.0000
95	0.0000
96	0.0000
97	0.0000
98	0.0000
99	0.0000
100	0.0000
101	0.0000
102	0.0000
103	0.0000
104	0.0000
105	0.0000
106	0.0000
107	0.0000
108	0.0000
109	0.0000
110	0.0000
111	0.0000
112	0.0000
113	0.0000
114	0.0000
115	0.0000
116	16.6400

117	0.0000
118	0.0000
119	0.0000
120	0.0000
121	0.0000
122	0.0000
123	0.0000
124	0.0000
125	0.0000
126	0.0000
127	0.0000
128	0.0000
129	0.0000
130	0.0000
131	0.0000
132	0.0000
133	0.0000
134	0.0000
135	0.0000
136	0.0000
137	0.0000
138	0.0000
139	0.0000
140	0.0000
141	0.0000
142	0.0000
143	0.0000
144	0.0000
145	0.0000
146	0.0000
147	0.0000
148	0.0000
149	0.0000
150	0.0000
151	0.0000
152	16.6400
153	0.0000
154	0.0000
155	0.0000
156	0.0000
157	0.0000
158	0.0000
159	0.0000
160	0.0000

161	0.0000
162	0.0000
163	0.0000
164	0.0000
165	0.0000
166	0.0000
167	0.0000
168	0.0000
169	0.0000
170	0.0000
171	0.0000
172	0.0000
173	0.0000
174	0.0000
175	0.0000
176	0.0000
177	0.0000
178	0.0000
179	0.0000
180	0.0000
181	0.0000
182	0.0000
183	0.0000
184	0.0000

File Transfer 3 Results:

Time	Throughput
30	28296.8000
31	967.2000
32	1000.0000
33	949.6000
34	1000.0000
35	1000.0000
36	1000.0000
37	950.4000
38	958.4000
39	975.2000
40	975.2000
41	1000.0000
42	958.4000
43	949.6000
44	975.2000
45	1000.0000

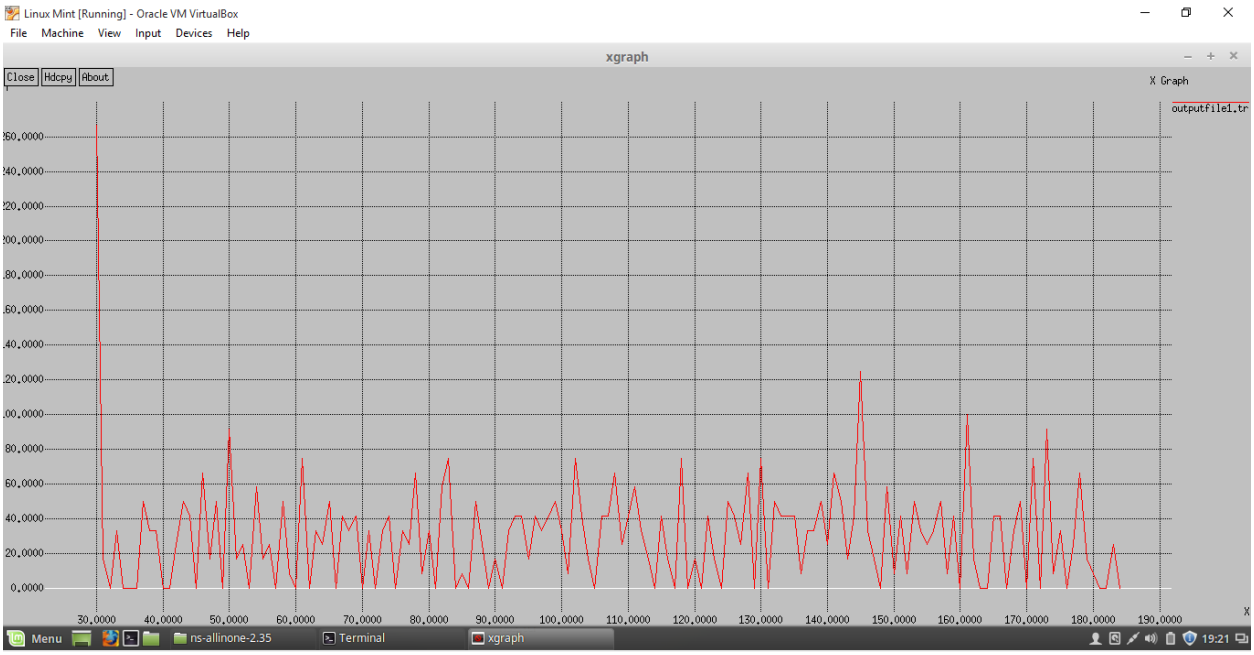
46	924.8000
47	967.2000
48	958.4000
49	1000.0000
50	908.0000
51	975.2000
52	958.4000
53	967.2000
54	958.4000
55	983.2000
56	958.4000
57	1000.0000
58	975.2000
59	974.4000
60	1000.0000
61	933.6000
62	1000.0000
63	967.2000
64	974.4000
65	942.4000
66	1000.0000
67	966.4000
68	966.4000
69	950.4000
70	1000.0000
71	975.2000
72	1000.0000
73	949.6000
74	958.4000
75	1000.0000
76	958.4000
77	967.2000
78	939.2000
79	936.0000
80	941.6000
81	975.2000
82	958.4000
83	933.6000
84	983.2000
85	975.2000
86	1000.0000
87	958.4000
88	966.4000
89	983.2000

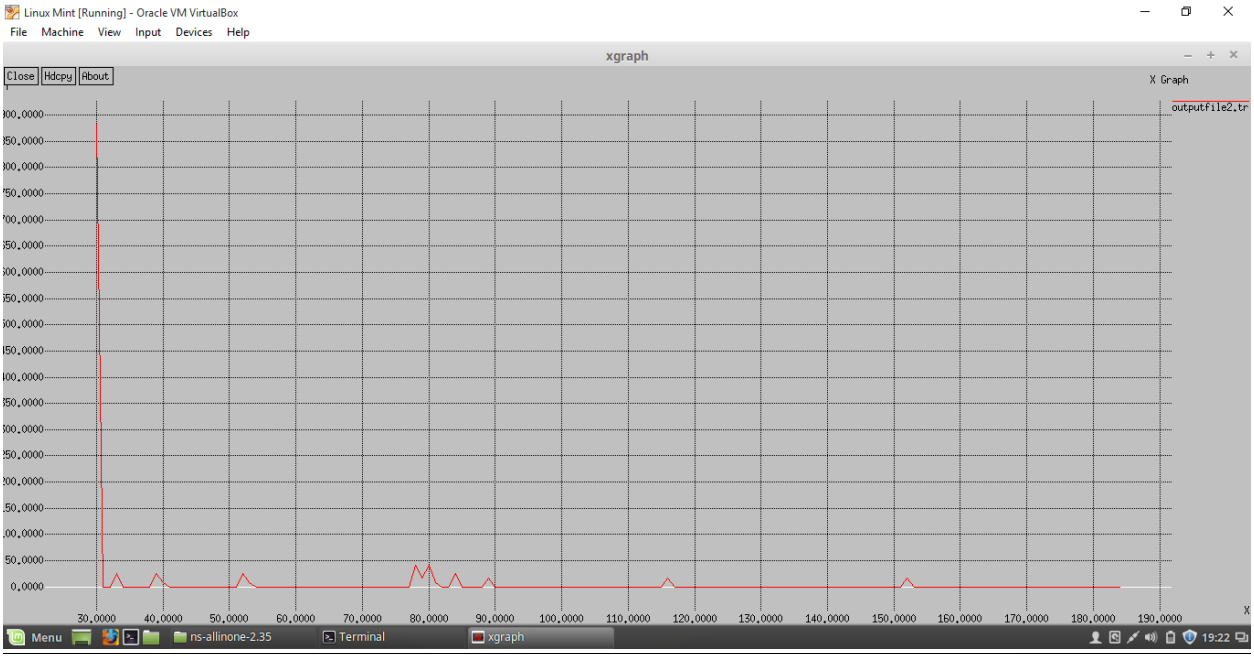
90	967.2000
91	1000.0000
92	991.2000
93	958.4000
94	950.4000
95	983.2000
96	958.4000
97	966.4000
98	962.4000
99	954.4000
100	967.2000
101	966.4000
102	941.6000
103	958.4000
104	975.2000
105	1000.0000
106	967.2000
107	949.6000
108	950.4000
109	958.4000
110	975.2000
111	932.8000
112	967.2000
113	983.2000
114	1000.0000
115	958.4000
116	966.4000
117	1000.0000
118	933.6000
119	1000.0000
120	967.2000
121	1000.0000
122	966.4000
123	966.4000
124	1000.0000
125	950.4000
126	975.2000
127	966.4000
128	941.6000
129	1000.0000
130	933.6000
131	1000.0000
132	933.6000
133	966.4000

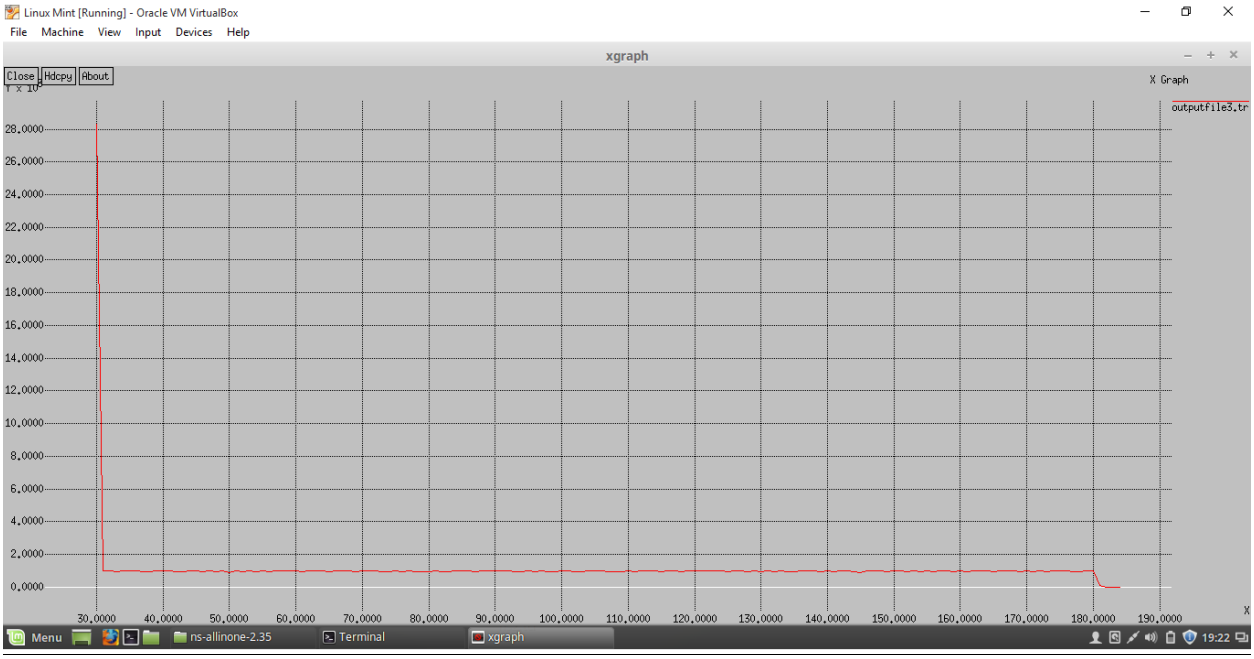
134	950.4000
135	950.4000
136	974.4000
137	975.2000
138	975.2000
139	933.6000
140	966.4000
141	933.6000
142	971.2000
143	979.2000
144	949.6000
145	867.2000
146	966.4000
147	983.2000
148	1000.0000
149	938.4000
150	987.2000
151	966.4000
152	941.6000
153	975.2000
154	956.0000
155	977.6000
156	933.6000
157	975.2000
158	983.2000
159	941.6000
160	1000.0000
161	916.8000
162	975.2000
163	1000.0000
164	1000.0000
165	949.6000
166	967.2000
167	1000.0000
168	975.2000
169	932.8000
170	1000.0000
171	933.6000
172	1000.0000
173	916.8000
174	975.2000
175	983.2000
176	1000.0000
177	958.4000

178	950.4000
179	983.2000
180	980.8000
181	85.6000
182	0.0000
183	0.0000
184	0.0000

The following are the XGRAPH results for Scenario 2 – RED.






Linux Mint [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
xgraph
Close Hdcpy About
T x 10
X Graph
outputfile3.tr
28.0000
26.0000
24.0000
22.0000
20.0000
18.0000
16.0000
14.0000
12.0000
10.0000
8.0000
6.0000
4.0000
2.0000
0.0000
30.0000 40.0000 50.0000 60.0000 70.0000 80.0000 90.0000 100.0000 110.0000 120.0000 130.0000 140.0000 150.0000 160.0000 170.0000 180.0000 190.0000
X
Menu
ns-allinone-2.35
Terminal
xgraph
19:22