

Final Project Presentation  
ENSC 427 : Communication Networks  
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# PERFORMANCE ANALYSIS OF VIDEO STREAM OVER WI-FI AND ETHERNET

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## Team 5

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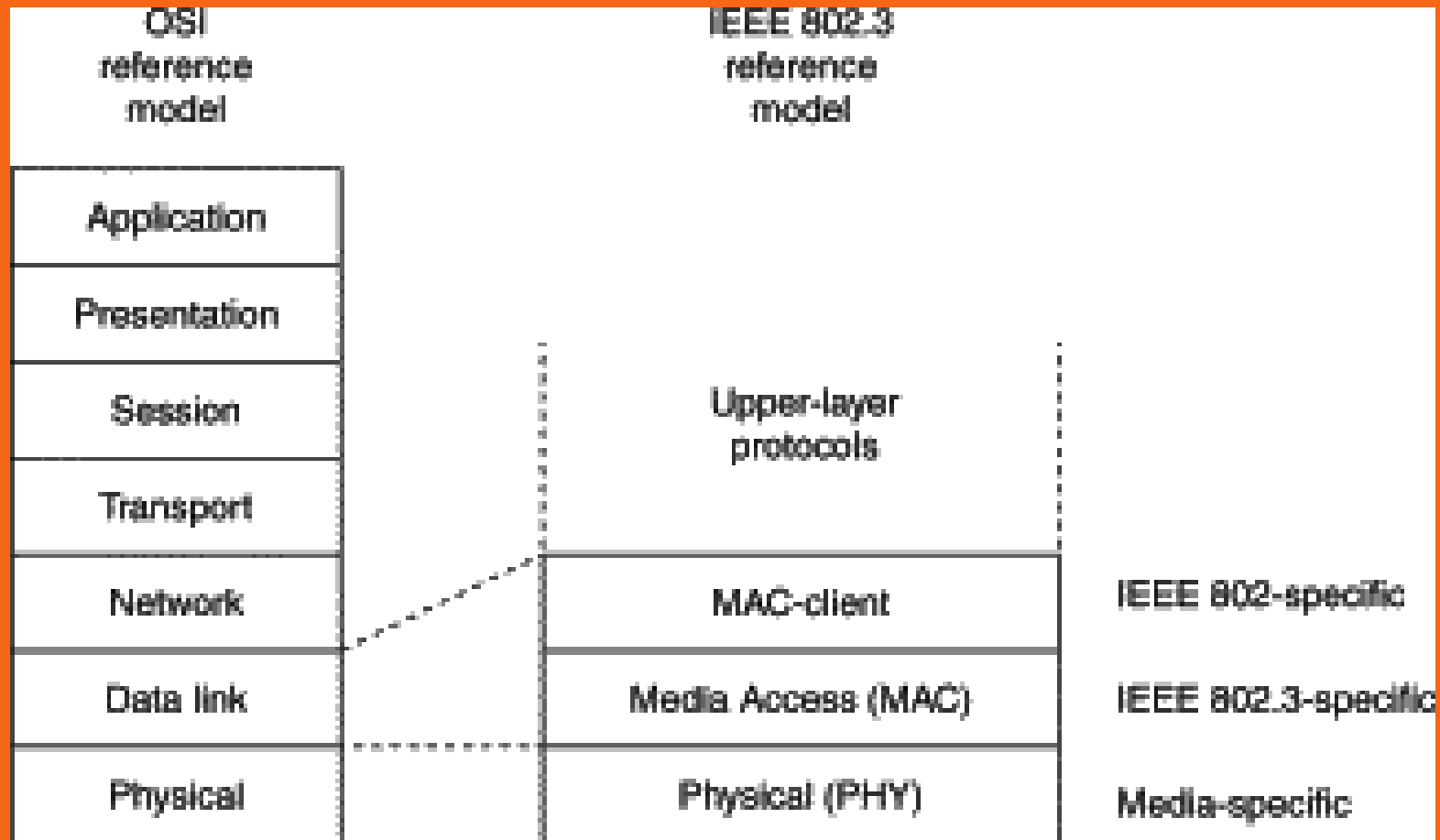
# OVERVIEW

- Introduction
- Basic Information
- Implementation
- Results
- Discussion
- Future work
- References

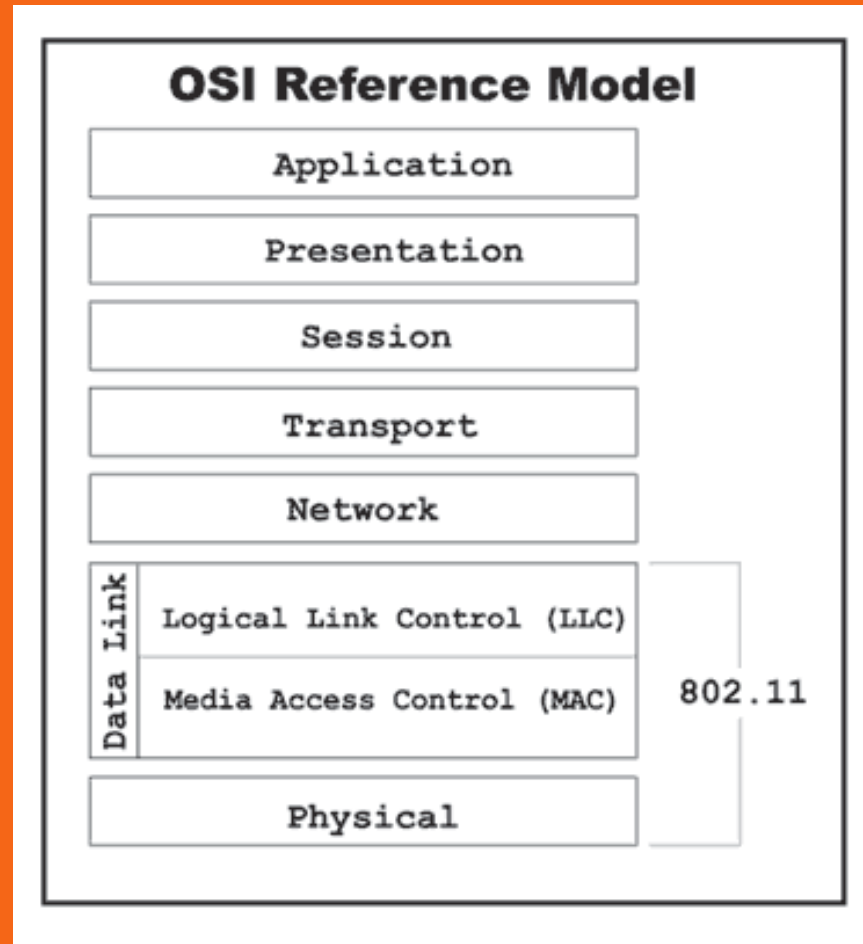
# INTRODUCTION

- Motivation
  - Online video Streaming highly popular
    - Netflix, HuluPlus, HBO NOW
- Connectivity
  - Ethernet
  - Wireless LAN
- Riverbed Modeler
- **GOAL:** Compare video streaming performance over Ethernet and Wi-Fi

# BASIC INFORMATION – ETHERNET



# BASIC INFORMATION – WI-FI

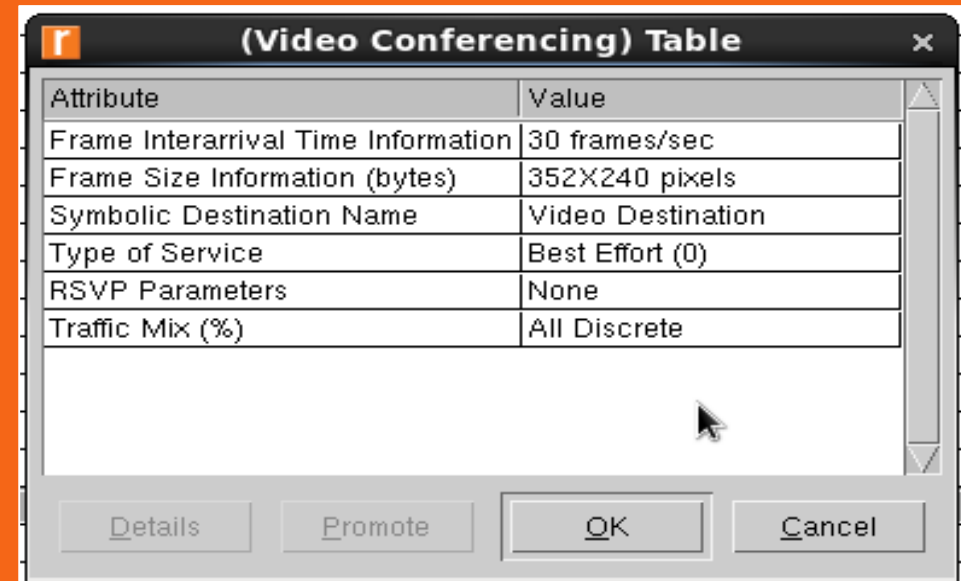


# SETTING UP WLAN NETWORK

?	Wireless LAN MAC Address	Auto Assigned
?	[-] Wireless LAN Parameters	(...)
?	Wireless LAN BSS Identifier	1
?	Wireless LAN Access Point Functionality	Disabled
?	Wireless LAN Physical Characteristics	Extended Rate PHY (802.11g)
?	Wireless LAN Data Rate (bps)	24 Mbps
?	[+] Channel Settings	Auto Assigned
?	Wireless LAN Transmit Power (W)	0.005
?	Wireless LAN Packet Reception-Power Thre...	-95
?	Wireless LAN Rts Threshold (bytes)	None
?	Wireless LAN Fragmentation Threshold (byt...	None
?	Wireless LAN CTS-to-self Option	Enabled
?	Wireless LAN Short Retry Limit	7
?	Wireless LAN Long Retry Limit	4
?	Wireless LAN AP Beacon Interval (secs)	0.02
?	Wireless LAN Max Receive Lifetime (secs)	0.5
?	Wireless LAN Buffer Size (bits)	256000
?	Wireless LAN Roaming Capability	Disabled
?	Wireless LAN Large Packet Processing	Drop
?	[+] PCF Parameters	Disabled
?	[+] HCF Parameters	Default
?	[+] High Throughput Parameters	Default 802.11n Settings
?	[+] WAVE Parameters	Not Supported

# APPLICATION ATTRIBUTES

- Use of Video Conferencing over Streaming
- High Quality
  - 30 frames per second
  - 352 x 240 pixels
  - ToS : Best Effort



The screenshot shows a window titled "(Video Conferencing) Table" with a close button (X) in the top right corner. The window contains a table with two columns: "Attribute" and "Value". The table lists the following attributes and values:

Attribute	Value
Frame Interarrival Time Information	30 frames/sec
Frame Size Information (bytes)	352X240 pixels
Symbolic Destination Name	Video Destination
Type of Service	Best Effort (0)
RSVP Parameters	None
Traffic Mix (%)	All Discrete

At the bottom of the window, there are four buttons: "Details", "Promote", "OK", and "Cancel". A mouse cursor is visible over the "OK" button.

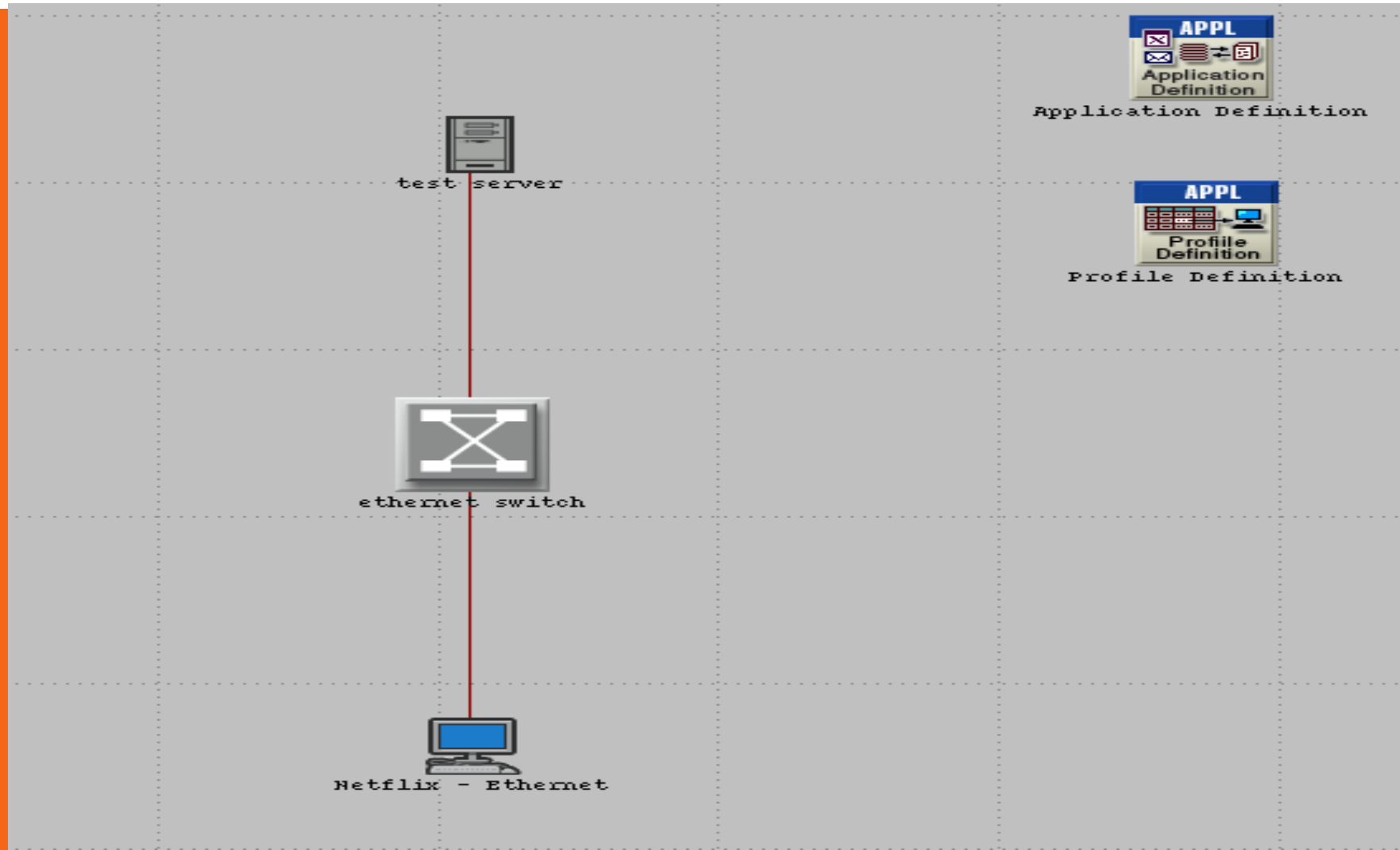
# PROFILE ATTRIBUTES

Type: Utilities

Attribute	Value
--x position	17.35
--y position	17.44
--threshold	0.0
--icon name	util_profiledef
--creation source	Object Palette
--creation timestamp	14:46:47 Apr 07 2015
--creation data	
--label color	black
Profile Configuration	(...)
--Number of Rows	1
Profile	
--Profile Name	Profile
Applications	(...)
--Number of Rows	1
Netflix	
--Name	Netflix
--Start Time Offset (seconds)	uniform (5,10)
--Duration (seconds)	End of Profile
Repeatability	Unlimited
--Operation Mode	Serial (Ordered)
--Start Time (seconds)	uniform (100,110)
--Duration (seconds)	End of Simulation
Repeatability	Once at Start Time
--hostname	
--minimized icon	circle/#708090

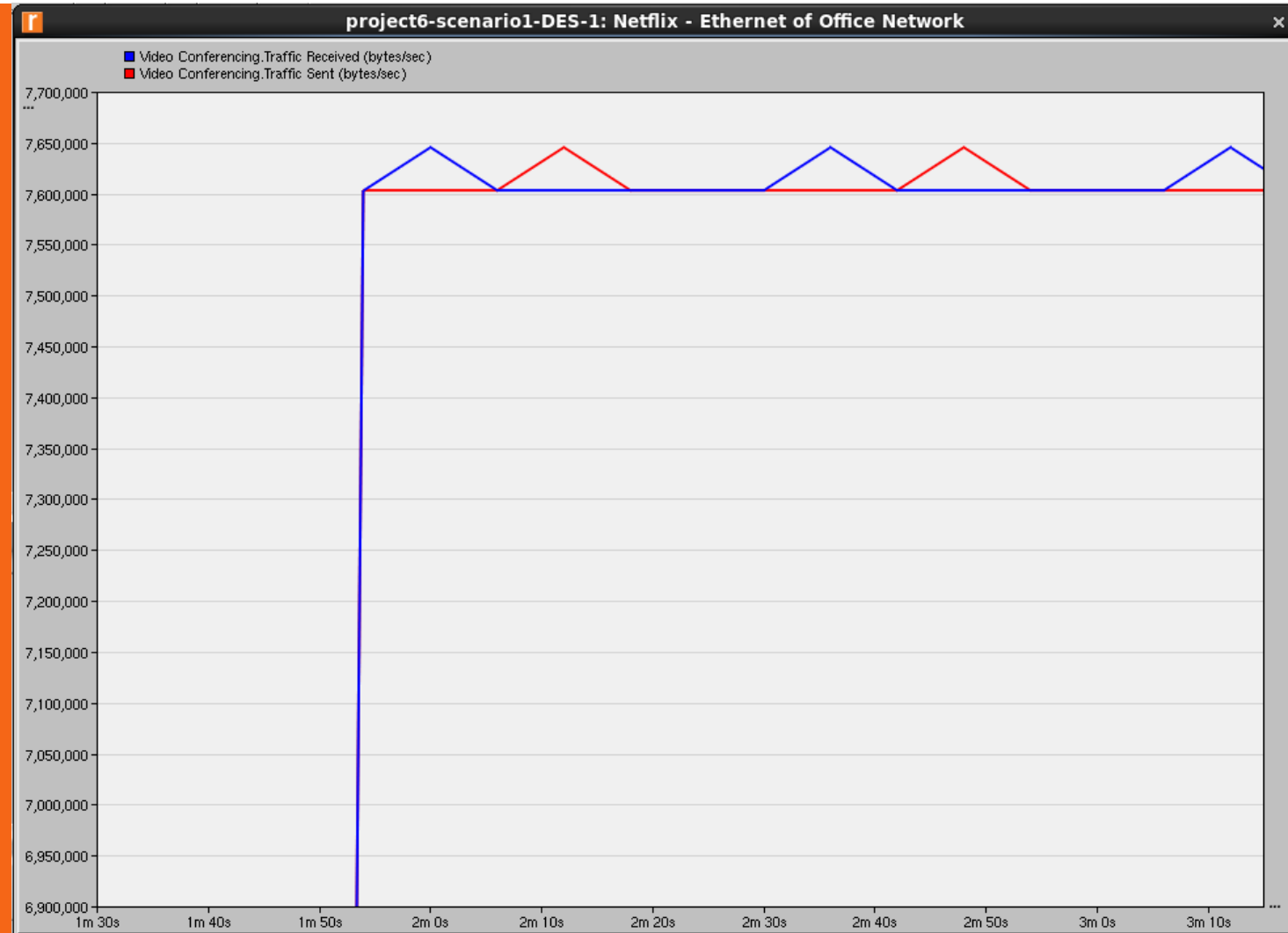


# IMPLEMENTATION



# RESULTS - ETHERNET

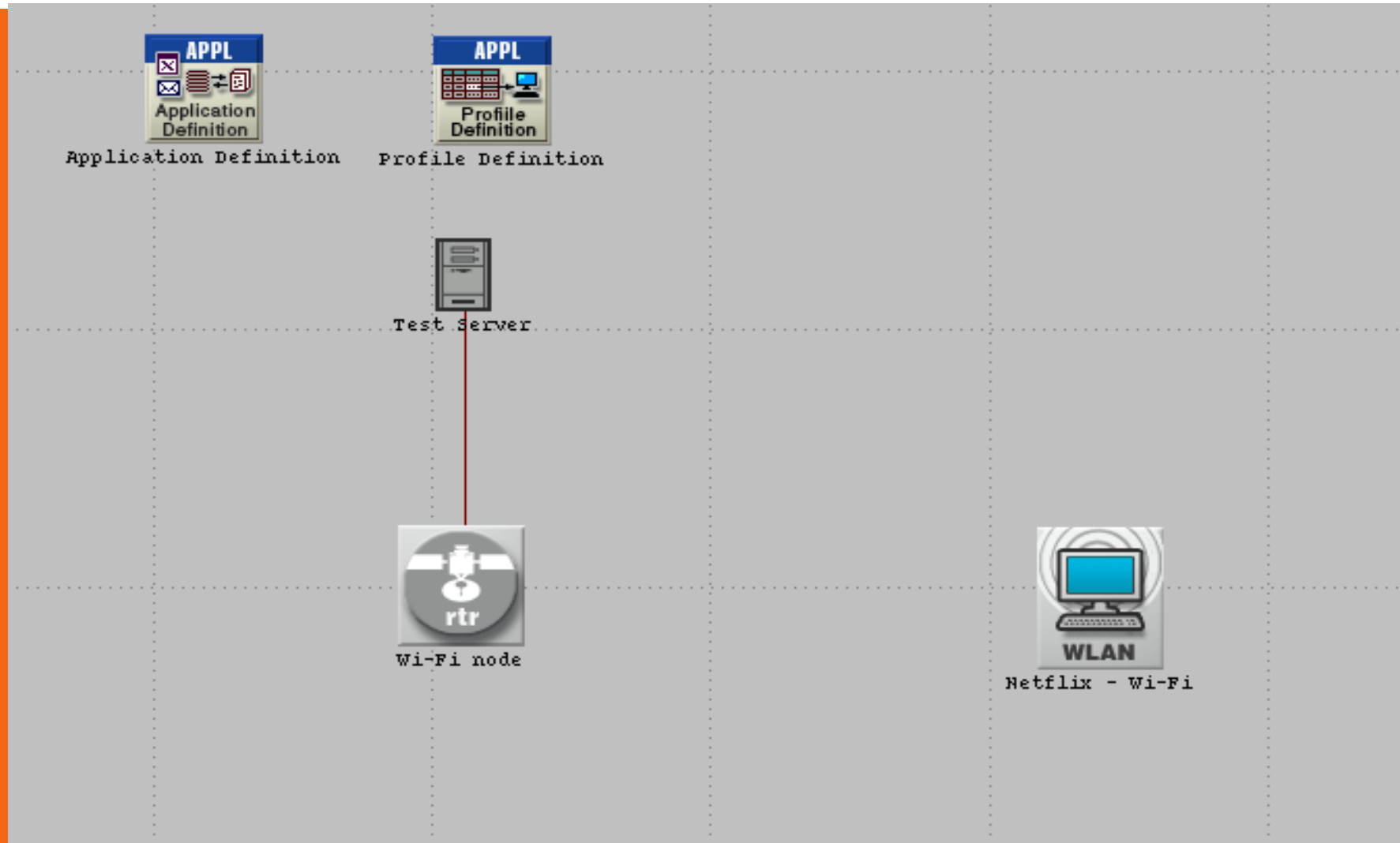
What are these spikes?



# RESULTS – SINGLE USER SYSTEM

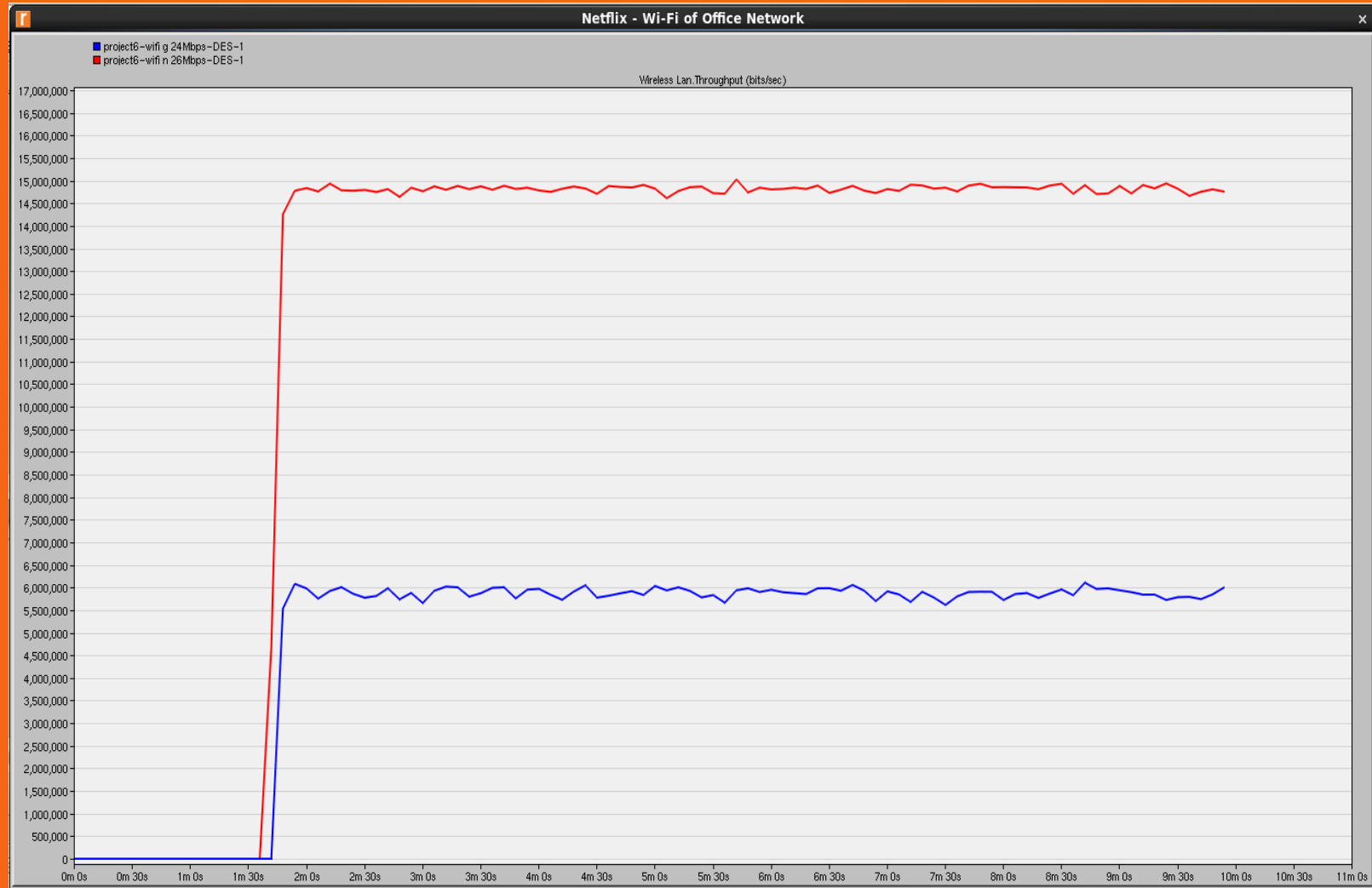


# IMPLEMENTATION (CONTRD.)

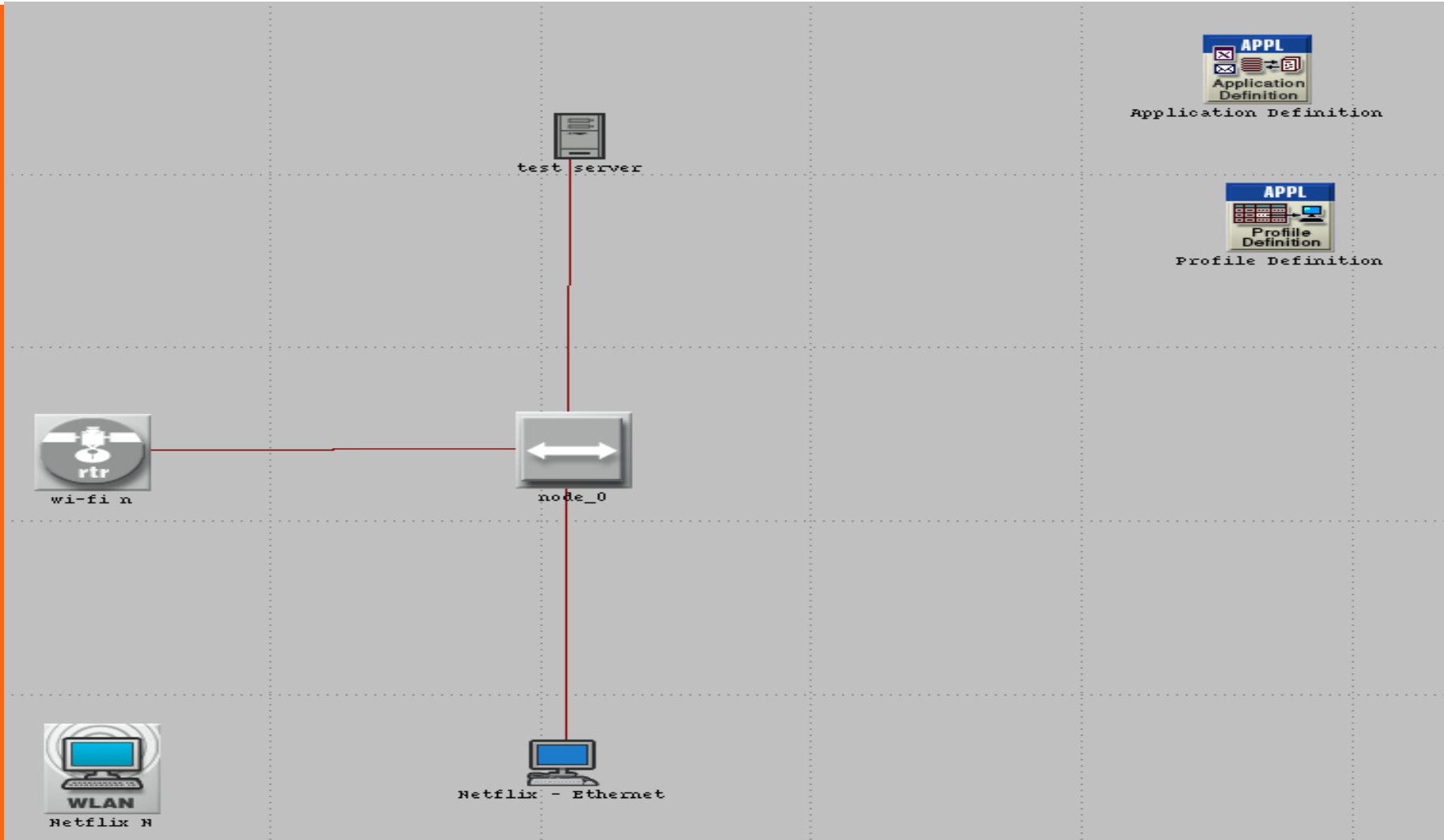


# RESULTS – WI-FI THROUGHPUT-SINGLE USER

IEEE 802.11N  
and 802.11G

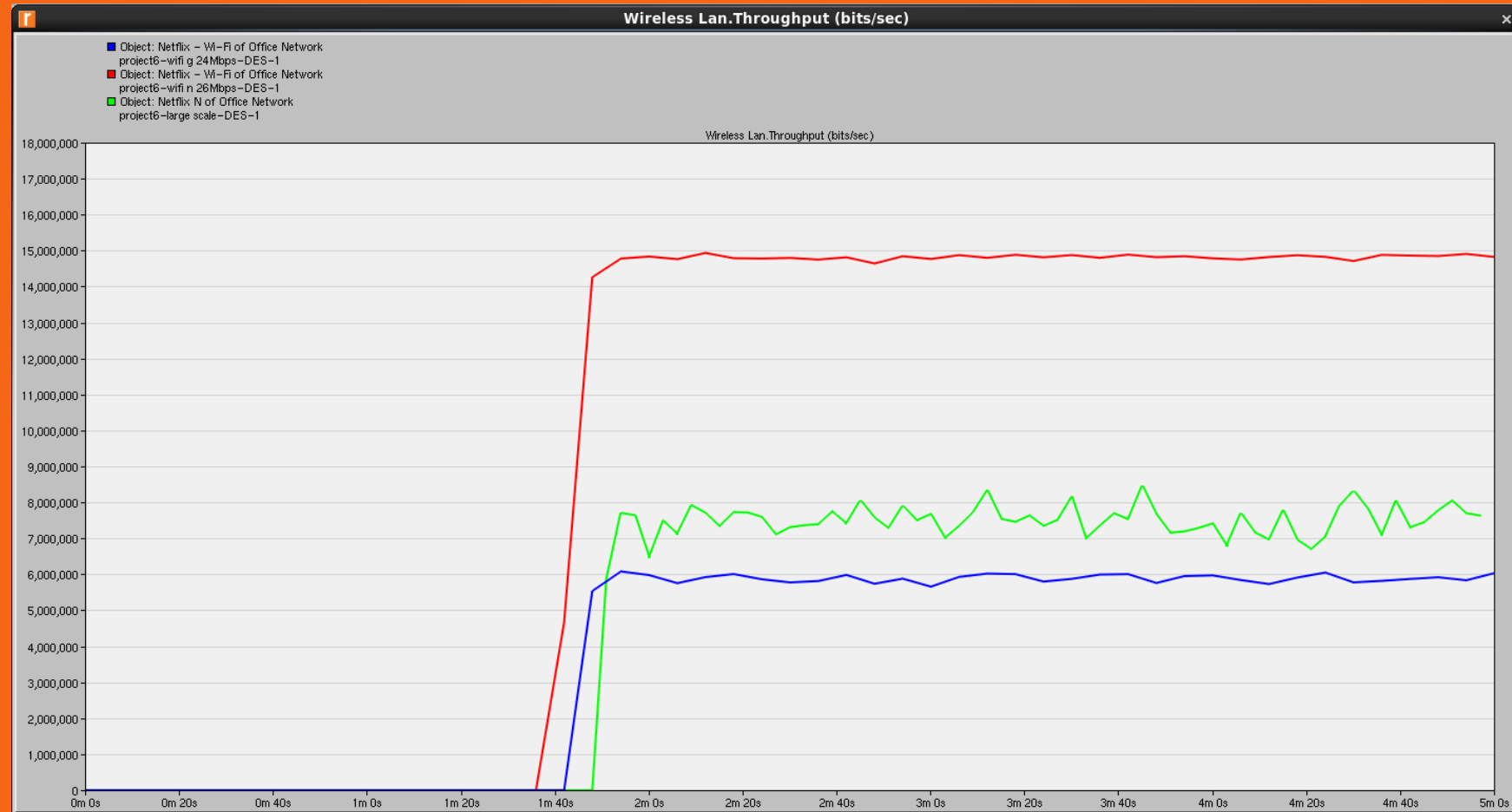


# IMPLEMENTATION (CONTRD.)

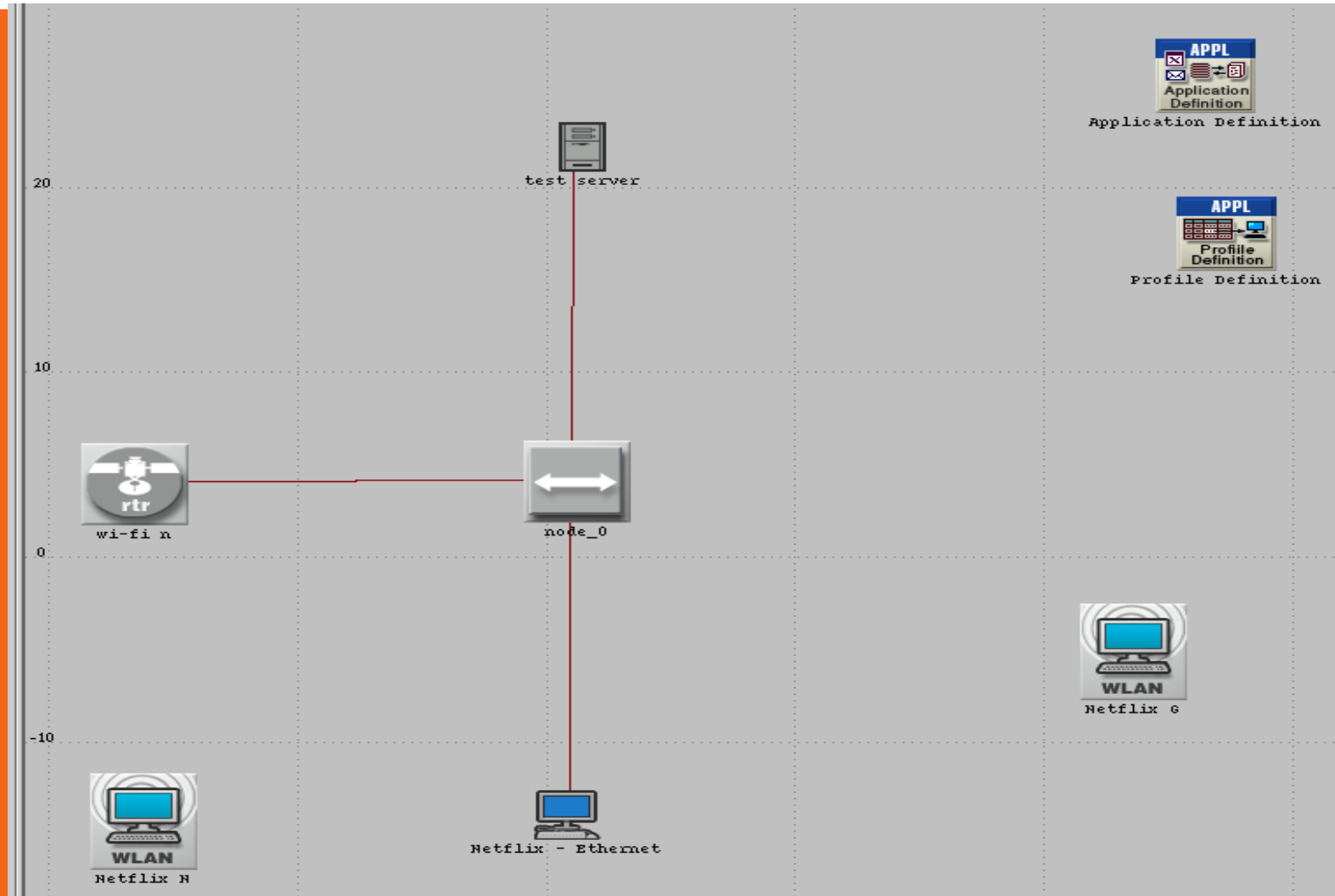


# RESULTS – WI-FI THROUGHPUT – 2 USERS

What happens when you send traffic to Ethernet station and WLAN (N) node simultaneously



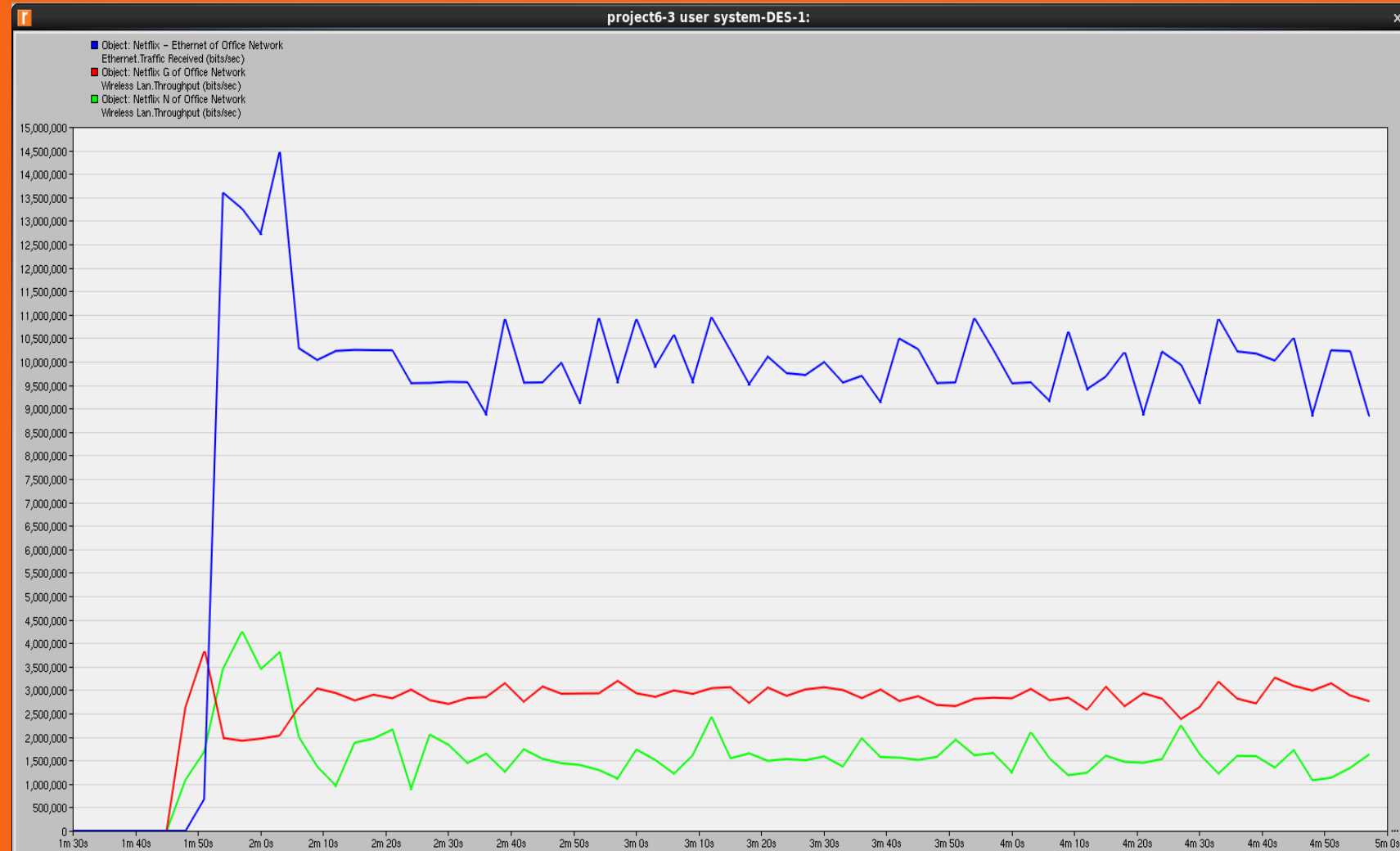
# IMPLEMENTATION (CONTD.)



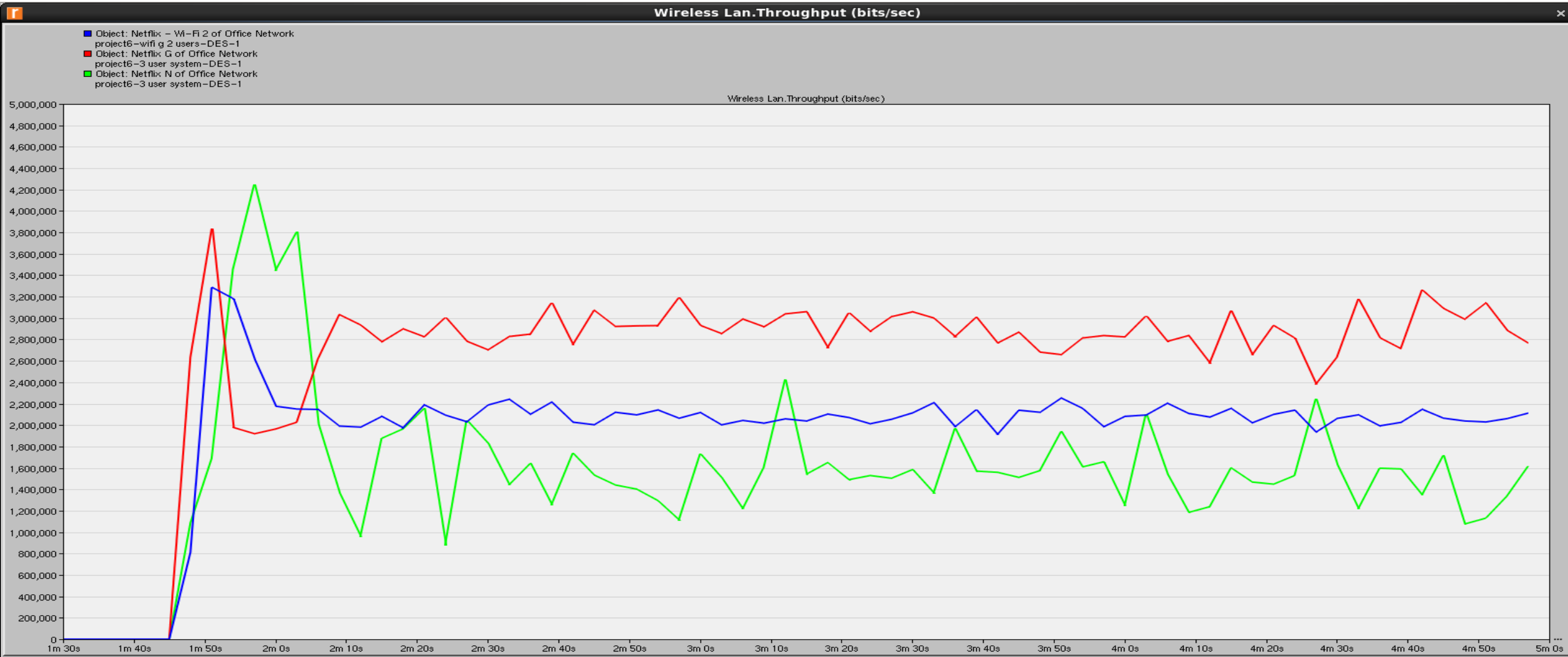


# RESULTS – WI-FI THROUGHPUT – 3 USERS

What happens when you send traffic to Ethernet station, WLAN (G) and WLAN (N) node simultaneously



# RESULTS – COMPARING – 3 USERS & 2 USERS



# FUTURE WORK

- Implementing a more realistic system
  - Larger server – client distances
- Replacing Bit streams
  - Implementing a realistic video trace file
- Implementing Wireless Mobile Nodes
  - Depicting portable devices

# REFERENCES

- [1](Mar. 2015) "WLAN - 802.11 a,b,g and n." National Instruments. [Online]. Available: <http://www.ni.com/white-paper/7131/en/>.
- [2](Apr. 2015) G.Auwera, P.David, and M.Reisslein. Traffic characteristics of H.264/AVC variable bit rate video. [Online]. Available: <http://trace.eas.asu.edu/h264/index.html>
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- [4] S.Calzada, C.Rietchel, T.Szajner, "Performance Analysis of a Wireless Home Network", [Online]. Available:[http://www.sfu.ca/~tszajner/FinalReport\\_Group4\\_Spring2014.pdf](http://www.sfu.ca/~tszajner/FinalReport_Group4_Spring2014.pdf)
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