CSCE 3313 Course Project (Sections 01 and 03)

Analysis of RTP and RTCP using Wireshark and GNS3

Due Date: Dec. 1st, 2020

The goal of this project is to understand and analyze the following two media transport protocols: 1) The Real-time Transport Protocol (RTP) and 2) The RTP Control Protocol (RTCP). The RTP is a network layer protocol that provides Voice over Internet Protocol (VoIP) support, through which audio and video traffic can be transferred over IP networks. While RTP delivers the media streams, RTCP is used to monitor the quality of service (QoS).

In this project, you will establish a real-time conference session over a wired or a wireless network using an open source video conferencing software that ***is based on the RTP/RTCP*** protocol suite and ***does not encrypt the payload***. Using the Wireshark monitoring and analysis tool, you will capture and analyze the data and control packets.

Project Learning Outcomes:

1. Deep understanding of media transport protocols used over the Internet.
2. Extensive use of Wireshark filters, beyond their classic use with the TCP/IP protocol stack.
3. Understanding of the Network Time Protocol (NTP) and wall-clock protocol.
4. Understanding the VOIP network communication between two VMs using GNS3

Project Requirements:

1. Explain the RTP and RTCP protocols in details.
2. Filter the RTP and RTCP packets in Wireshark
3. Identify the payload type whether audio or video.
4. Inspect the following different reports used by RTCP:
   - Sender Report (SR)
   - Receiver Report (RR)
   - Source Description (SDES)
   - End of Participation (BYE)
   - Application Specific (APP)
5. Examine and compute the end-to-end (E2E) delays.
6. VOIP test from VM1 to VM2 using Cisco IP communicator

Project Logistics: each group consists of <u>two students only</u>.

Project Deliverables:

a. Network setup configuration, Pcap files and Cfg files. **(7 points)**
b. VoIP with Cisco IP communicator over GNS3. **(7 points)**
c. Technical report summarizing the results and major findings. **(6 points)**
d. Demo with 10 minutes Q&A session. **(5 points)** (*Time will be scheduled later*)