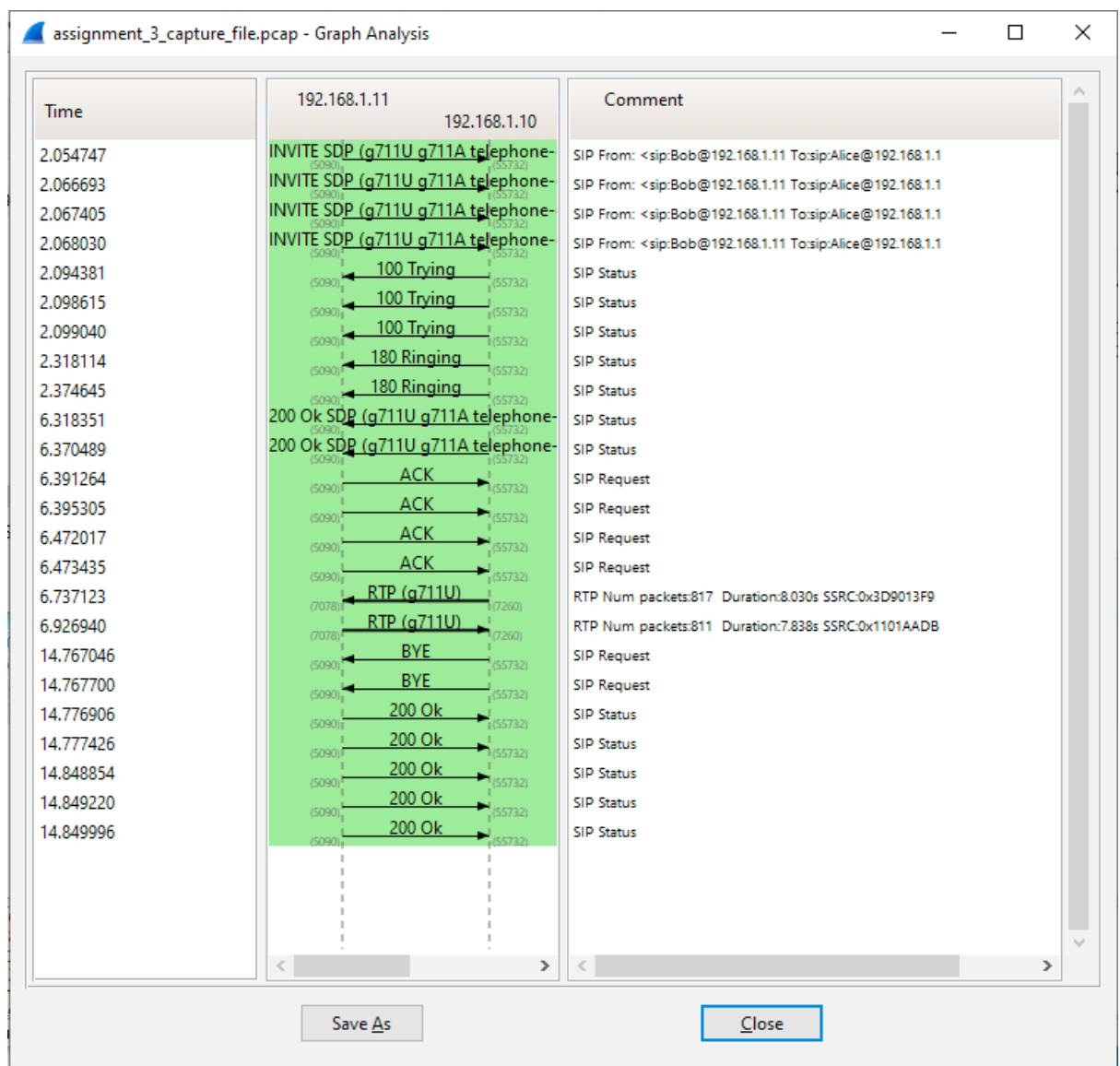


1. SIP
2. start time: 2.054747; stop time: 14.849996; state: COMPLETED
3. caller: Bob@192.168.1.11; callee: Alice@192.168.1.10
4. 192.168.1.11
- 5.



6. 100
7. source: 5090; destination: 55732
8. rtp
9. (rtp) && !(rtp.version == 0)

10.first: 6.737123; last: 14.767404; duration:
8.030281s

Filter: (rtp) && !(rtp.version == 0)		
No.	Time	Source
1474	6.737123	192.168.1.10
1477	6.737559	192.168.1.10
1486	6.761296	192.168.1.10
1492	6.778432	192.168.1.10
...		
7589	14.765358	192.16
7594	14.766697	192.16
7601	14.767404	192.16
...		
Frame 1474: 286 bytes		

11.287.687 bytes

12.channel type: 802.11g; channel number: 1;
bandwidth: 20MHz

```
Channel type: 802.11g (0x0480)
  SSI signal: -22 dBm
  SSI Noise: -88 dBm
  Antenna: 0
  channel number: 1
  channel frequency: 2412
Channel type: 802.11g (ht20) (0x00010480)
MCS information
  Known MCS information: 0x1f
    .... ..00 = Bandwidth: 20 MHz (0)
```

13.2 GHz

```
Channel type: 802.11g (0x0480)
  .... ..0 .... = Turbo: False
  .... ..0. .... = Complementary Code Keying (CCK): False
  .... ..0... .... = Orthogonal Frequency-Division Multiplexing (OFDM): False
  .... ..1... .... = 2 GHz spectrum: True
  .... ..0 .... = 5 GHz spectrum: False
```

14. Bob: 28:cf:e9:18:b8:4f; Alice: 84:8e:0c:08:20:70;
AP: 70:54:d2:92:2d:c1

```
[-] Flags: 0x09
.... ..01 = DS status: Frame from STA to DS via an AP (To DS: 1 From DS: 0) (0x01)
.... .0.. = More Fragments: This is the last fragment
[-] .... 1... = Retry: Frame is being retransmitted
...0 .... = PWR MGT: STA will stay up
..0. .... = More Data: No data buffered
.0.. .... = Protected flag: Data is not protected
0... .... = Order flag: Not strictly ordered
.000 0000 0011 0000 = Duration: 48 microseconds
Receiver address: Pegatron_92:2d:c1 (70:54:d2:92:2d:c1)
BSS Id: Pegatron_92:2d:c1 (70:54:d2:92:2d:c1)
Transmitter address: Apple_18:b8:4f (28:cf:e9:18:b8:4f)
Source address: Apple_18:b8:4f (28:cf:e9:18:b8:4f)
Destination address: Apple_08:20:70 (84:8e:0c:08:20:70)
```

15. The signal was first transmitted from source STA to AP, and then AP to destination STA.

16. Some frames are retransmitted.

```
[-] Frame Control Field: 0x8809
.... ..00 = Version: 0
.... 10.. = Type: Data frame (2)
1000 .... = Subtype: 8
[-] Flags: 0x09
.... ..01 = DS status: Frame from STA to DS via an
.... .0.. = More Fragments: This is the last frame
[-] .... 1... = Retry: Frame is being retransmitted
```

17. First case is frame retransmitting from STA to AP;
second case is frame retransmitting from AP to STA

18. sip; 22

```
nm... Packets: 7643 · Displayed: 22 (0.3%) · Load time: 0:00.129
```

19. (sip) && (sip.resend == 0)

20. 70:54:d2:92:2d:c1; UPC850505

21. (wlan.fc.type_subtype == 0x08) &&
(wlan_mgt.ssid == "UPC850505")

22. 160 bytes / 286 bytes = 55.9%; ITU-T G.711
PCMU

23. It transports statistics and information about the RTP packets, providing insights into QoS.

```
[-] Source 1
    Identifier: 0x1101aadb (285321947)
    [-] SSRC contents
        Fraction lost: 0 / 256
        Cumulative number of packets lost: 0
    [-] Extended highest sequence number received: 214
        Sequence number cycles count: 0
        Highest sequence number received: 214
        Interarrival jitter: 29
        Last SR timestamp: 0 (0x00000000)
        Delay since last SR timestamp: 0 (0 milliseconds)
```

24. RTP carries the media payload while SDP describes the session.

25. 1376

26. UDP

27. ECW: the exponential value of the contention window size; If a node senses channel idle for DIFS then start transmitting, if sense channel busy then start random backoff time t (t range from 0 to $2^{ECW_{min}} - 1$) and then transmit, if no ACK then double the backoff time and repeat, the maximum backoff time is $2^{ECW_{max}} - 1$.

28.

[-] AC Parameters ACI 0 (Best Effort), ACM no , AIFSN 3, ECWmin 4 ,ECWmax 10, TXOP 0
[-] AC Parameters ACI 1 (Background), ACM no , AIFSN 7, ECWmin 4 ,ECWmax 10, TXOP 0
[-] AC Parameters ACI 2 (Video), ACM no , AIFSN 2, ECWmin 3 ,ECWmax 4, TXOP 94
[-] AC Parameters ACI 3 (Voice), ACM no , AIFSN 2, ECWmin 2 ,ECWmax 3, TXOP 47

29. The QoS value being used is inappropriate as the transmitted media is voice and the priority is set to video.

1573	6.957441	192.168.1.11	192.168.1.10	RTP	293	PT=ITU-T G.711 PCMU,
1577	6.957723	192.168.1.11	192.168.1.10	RTP	286	PT=ITU-T G.711 PCMU,
1585	6.958041	192.168.1.10	192.168.1.11	RTP	286	PT=ITU-T G.711 PCMU,

QoS Control: 0x0005
 0101 = TID: 5
 [.... .101 = Priority: video (video) (5)]
 0 = QoS bit 4: Bits 8-15 of QoS Control field are TXOP Duration Requested
00. = Ack Policy: Normal Ack (0x0000)
 0... = Payload Type: MSDU
 0000 0000 = TXOP Duration Requested: 0 (no TXOP requested)

30. 7598, 7603; Alice ended the call

31. from Alice: 817 packets, SSRC: 0x3D9013F9
 from Bob: 811 packets, SSRC: 0x1101AADB

Detected 2 RTP streams. Choose one for forward and reverse direction for analysis							
Src addr	Src port	Dst addr	Dst port	SSRC	Payload	Packets	
192.168.1.10	7260	192.168.1.11	7078	0x3D9013F9	g711U	817	
192.168.1.11	7078	192.168.1.10	7260	0x1101AADB	g711U	811	

32. (max delay, max jitter, mean jitter):
 from Alice: 44.01, 6.15, 2.08 (ms)
 from Bob: 43.52, 8.36, 2.82 (ms)

33. from Bob: 7.90s; from Alice: 8.06s;
 Welcome to Advanced Wireless Network,
 congratulations you have made this far.

34.

