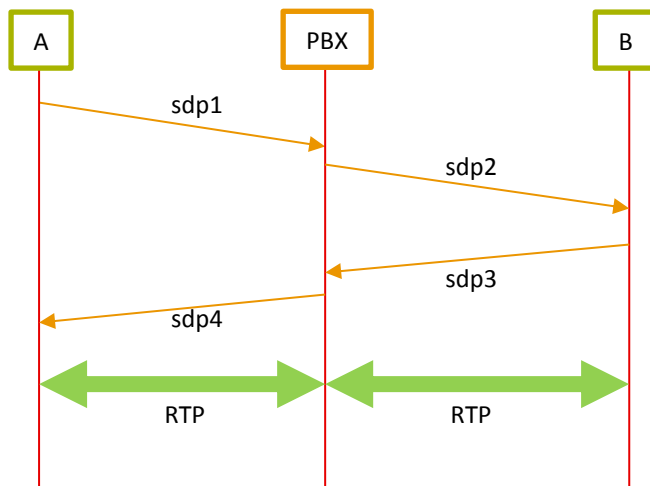


ACTIVITIES**ACTIVITY 4.1**

1. Consider the following multimedia communication scenario:
 - a. There are 2 RTP end systems (A and B) and a PBX
 - b. The PBX is both relaying the signalling and the media (it acts as a RTP entity)
 - c. The PBX modifies the SDP content in order to anchor the media
2. A supports the following media and encodings:
 - a. Audio: A-law, iLBC
 - b. Video: H.261
 - c. Text: T.140
3. B supports the following media and encodings:
 - a. Audio: A-law
 - b. Video: H.261
4. A performs an SDP exchange with the PBX and, as a consequence of it, an audio/video session is established between A and the PBX. The PBX performs a SDP exchange with B and, as a consequence of it, an audio/video session is established between the PBX and B. The PBX acts as an RTP proxy and relays the received RTP to/from A/B.
5. The flow and exchanged SDP messages are shown next:



SDP1:

```
v=0
o=a 2890844526 2890844526 IN IP4 a.lab.example.com
s=
c=IN IP4 a.lab.example.com
t=0 0
m=audio 49170 RTP/AVP 8 97
a=rtpmap:8 PCMA/8000
a=rtpmap:97 iLBC/8000
m=video 51372 RTP/AVP 31
a=rtpmap:31 H261/90000
```

SDP2:

```
v=0
o=b 2808772211 2808772211 IN IP4 pbx.lab.example.com
s=
c=IN IP4 pbx.lab.example.com
t=0 0
m=audio 49170 RTP/AVP 8 97
a=rtpmap:8 PCMA/8000
a=rtpmap:97 iLBC/8000
m=video 51372 RTP/AVP 31
a=rtpmap:31 H261/90000
```

SDP3:

```
v=0
o=a 2808899564 2808899564 IN IP4 b.lab.example.com
s=
c=IN IP4 b.lab.example.com
t=0 0
m=audio 49170 RTP/AVP 8
a=rtpmap:8 PCMA/8000
m=video 51372 RTP/AVP 31
a=rtpmap:31 H261/90000
```

SDP4:

```
v=0
o=b 2808661122 2808661122 IN IP4 pbx.lab.example.com
s=
c=IN IP4 pbx.lab.example.com
t=0 0
m=audio 49170 RTP/AVP 8
a=rtpmap:8 PCMA/8000
m=video 51372 RTP/AVP 31
a=rtpmap:31 H261/90000
```

6. Consider we now want to re-arrange the existing media session such that now it flows directly between A and B (instead of between A and PBX and between PBX and B). This is a common arrangement in commercial PBXs, which may get out of the media path if it is not required to offer specific services (eg. recording)

- a. What would be the SDP exchange necessary to enable this re-arrangement? Provide a sequence diagram including a valid content for the SDP messages.

NOTE: The sessions in A and B should just be modified (not destroyed and re-created)

ACTIVITY 4.2

1. Read chapters 1, 2, 3 and 4 of the RFC 3261 (base SIP specification)
2. With regards the SIP flow described in chapter 4, please answer the following questions:
 - a. What SIP messages are carrying the SDP exchange?
 - b. How can Atlanta proxy route the INVITE message to the Biloxi proxy?
 - c. How is the 200OK response routed from Bob to Biloxy
 - d. How is the ACK message routed from Alice to Bob?