

NGN: Interconnecting with DTAG using Open Source

Sebastian Damm

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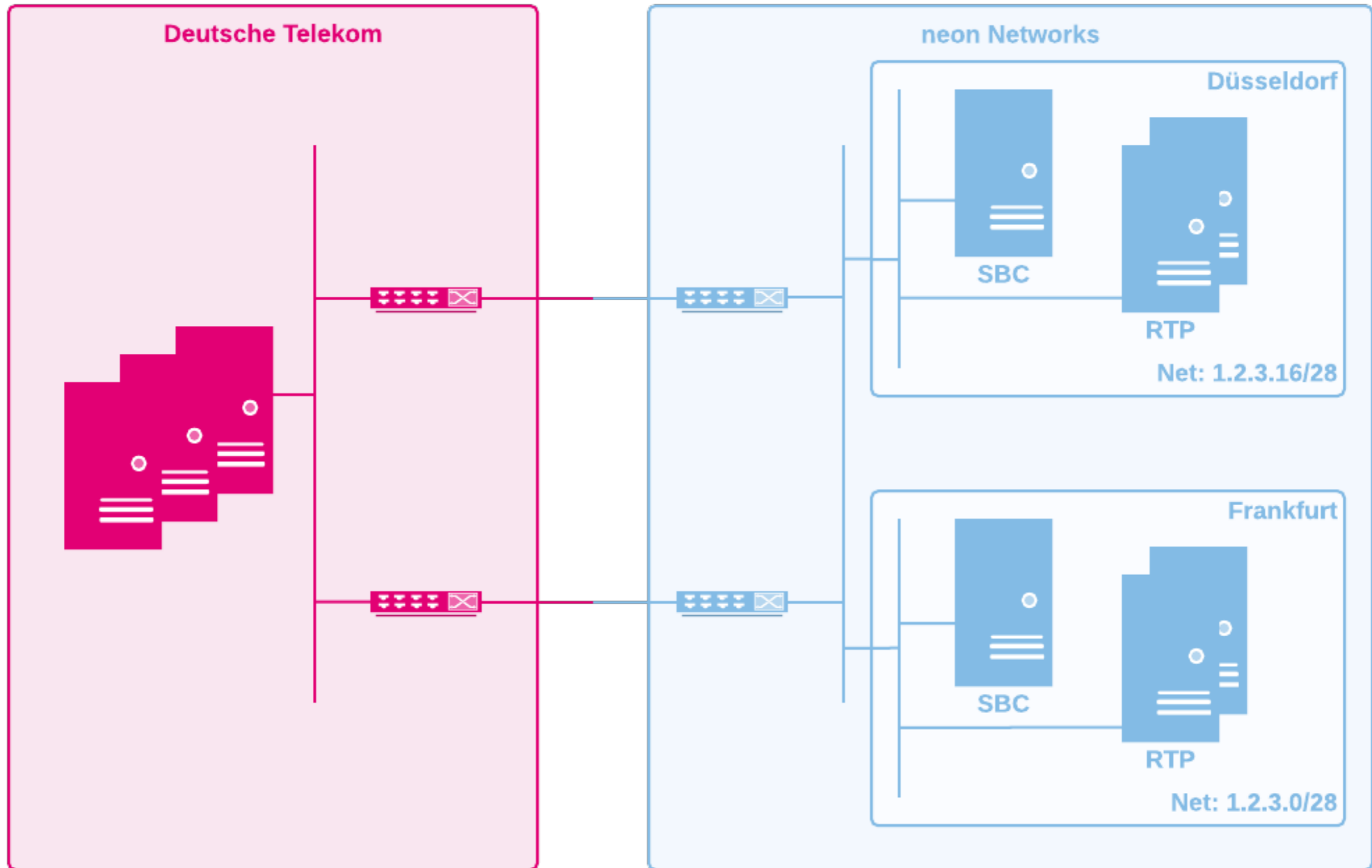
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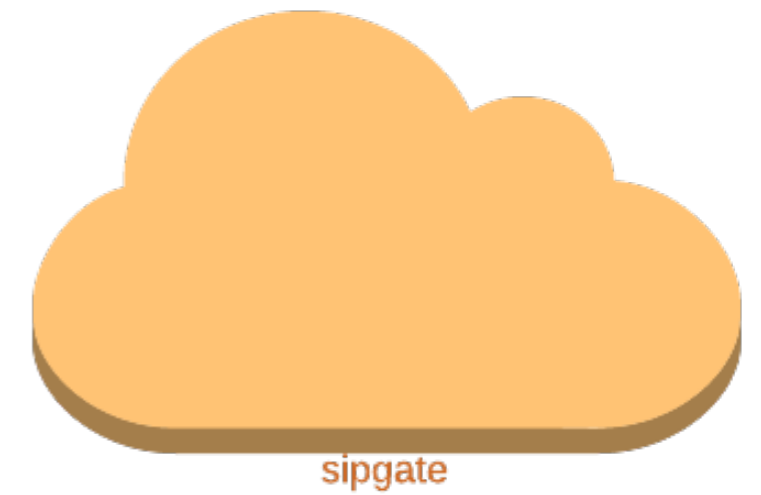
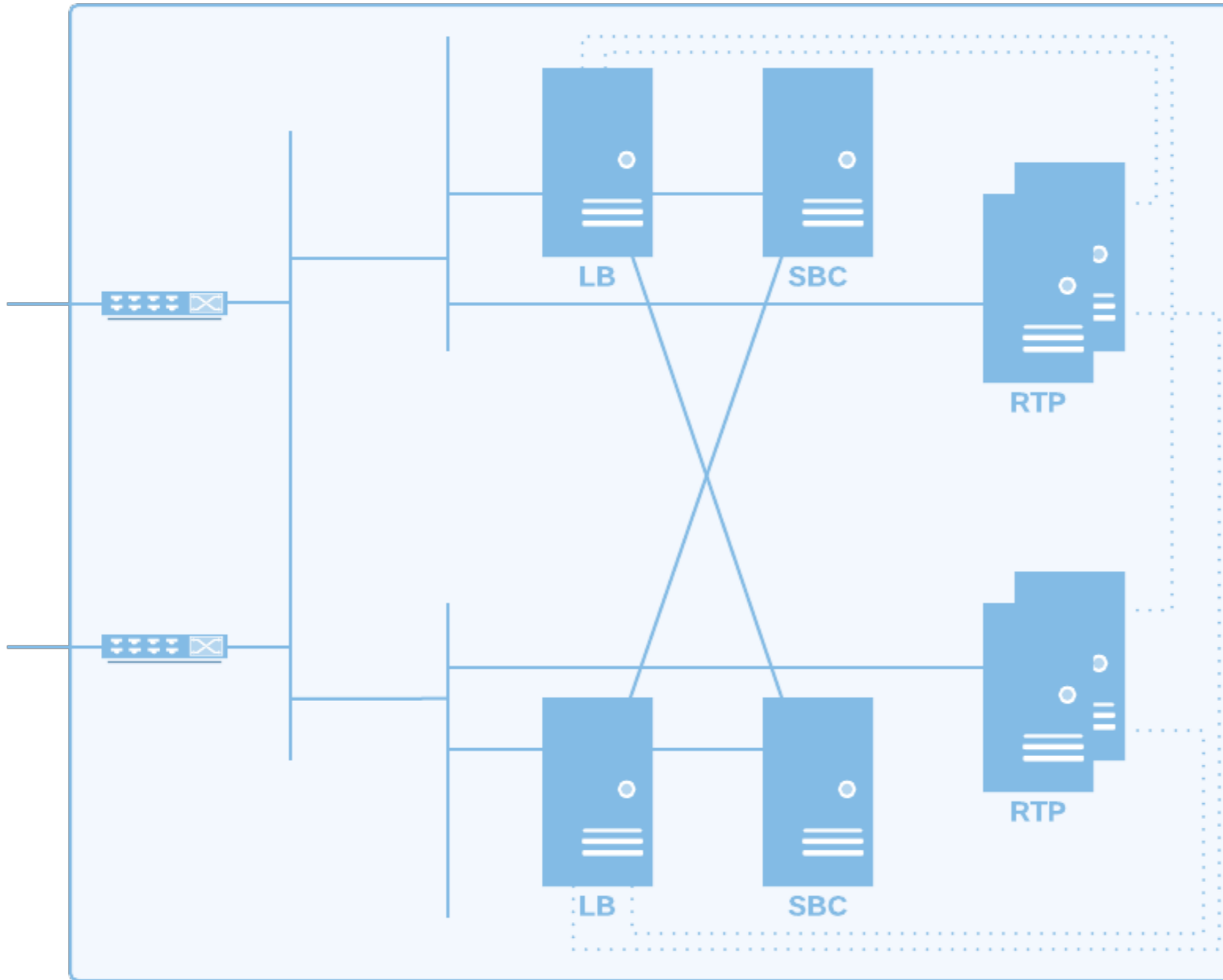
Who we are, what we do

- Düsseldorf based VoIP provider (since 2004)
- Active in Germany and UK
- Full MVNO in the Telefónica network
- Private and Business customers
- VoIP and Mobile products
- Some 100k active customers
- Almost 100 million minutes each month

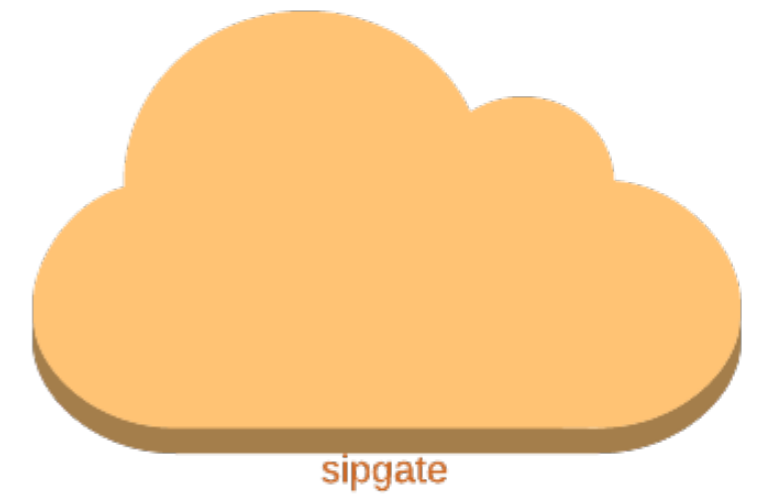
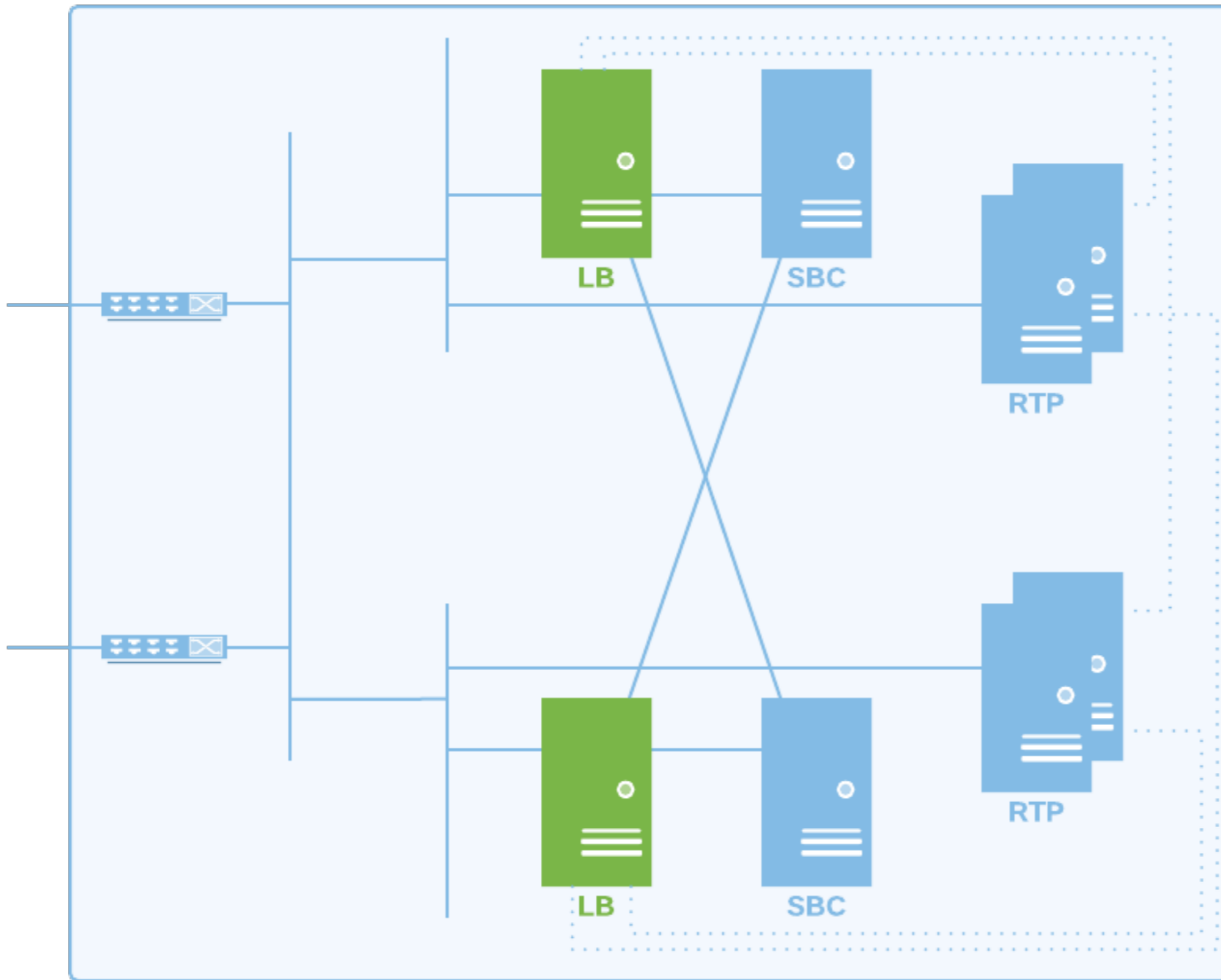
Setup Overview



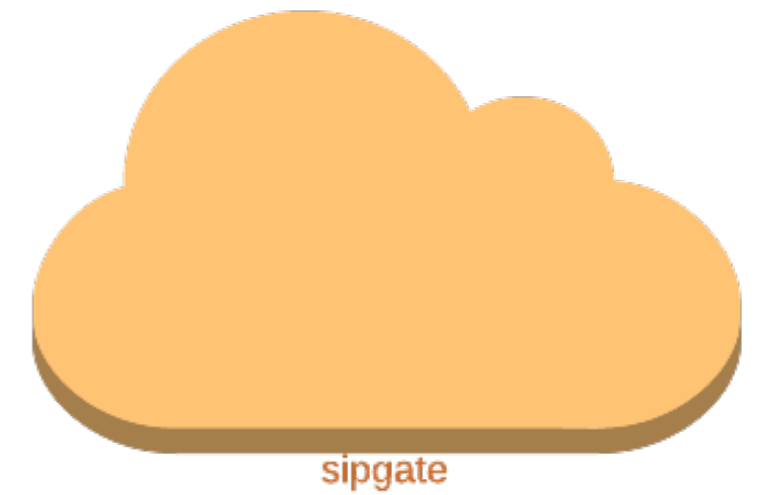
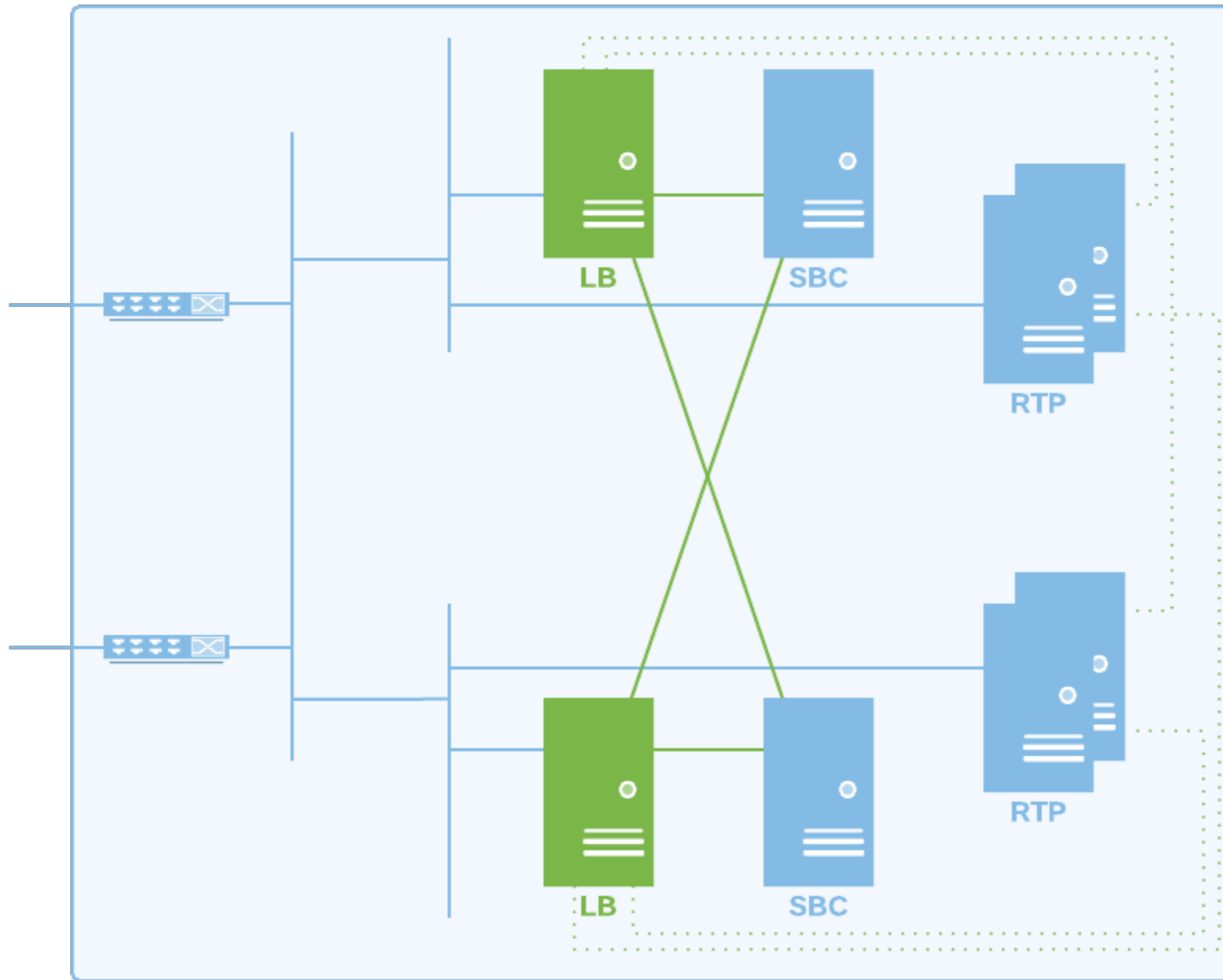
Detailed Setup



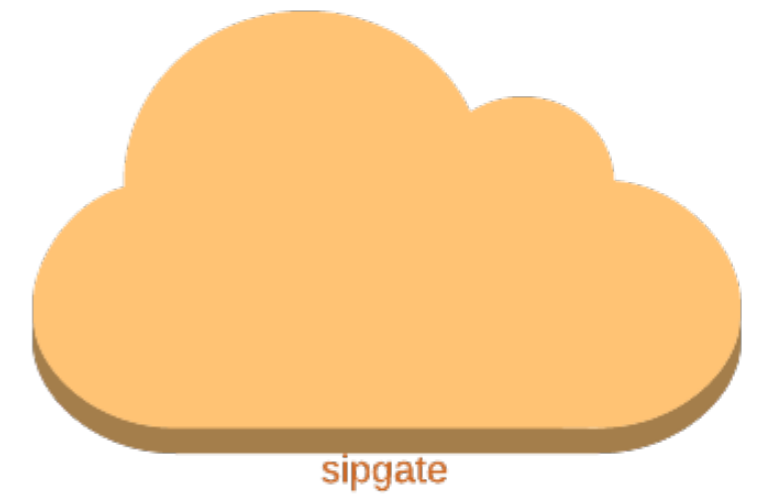
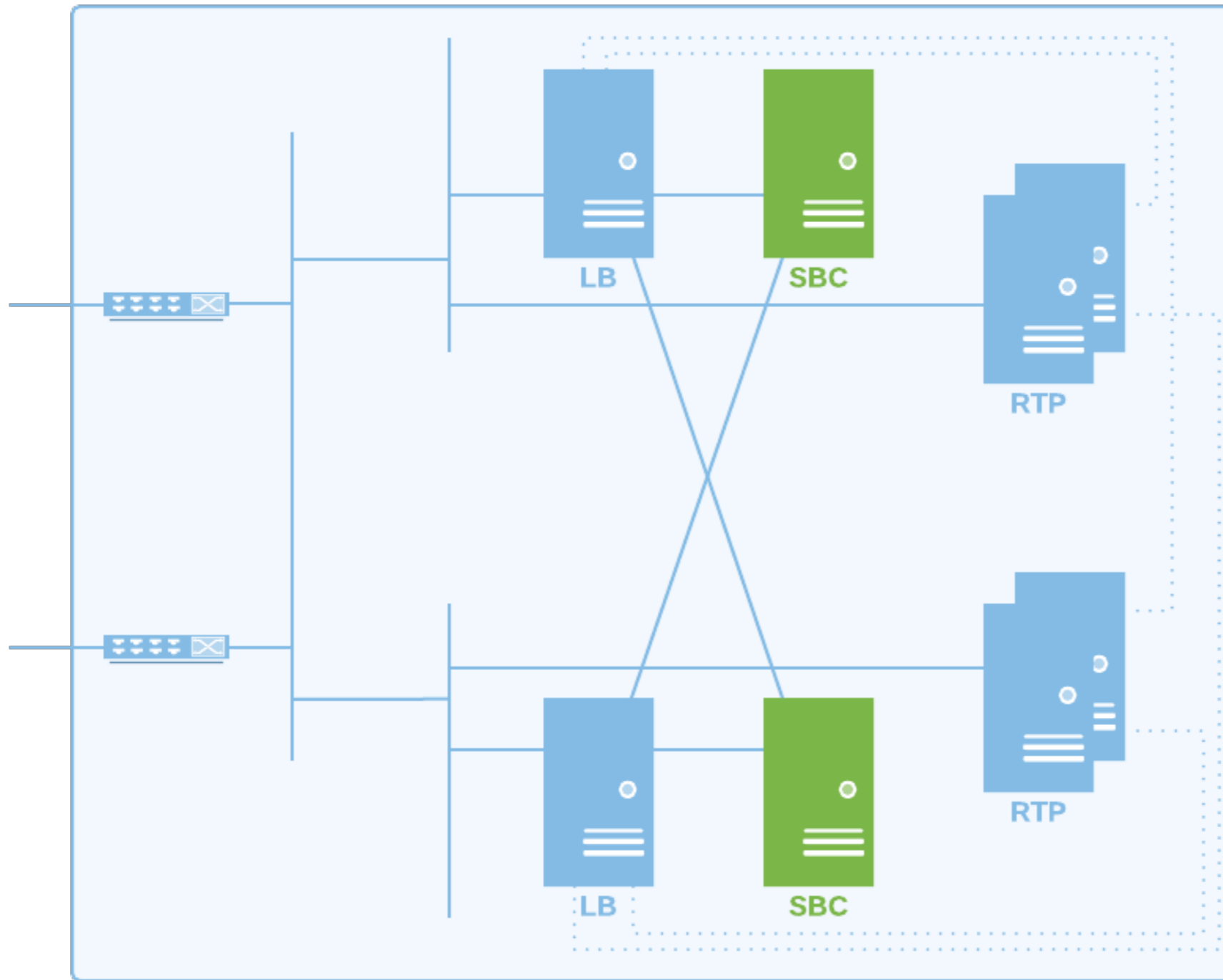
Detailed Setup



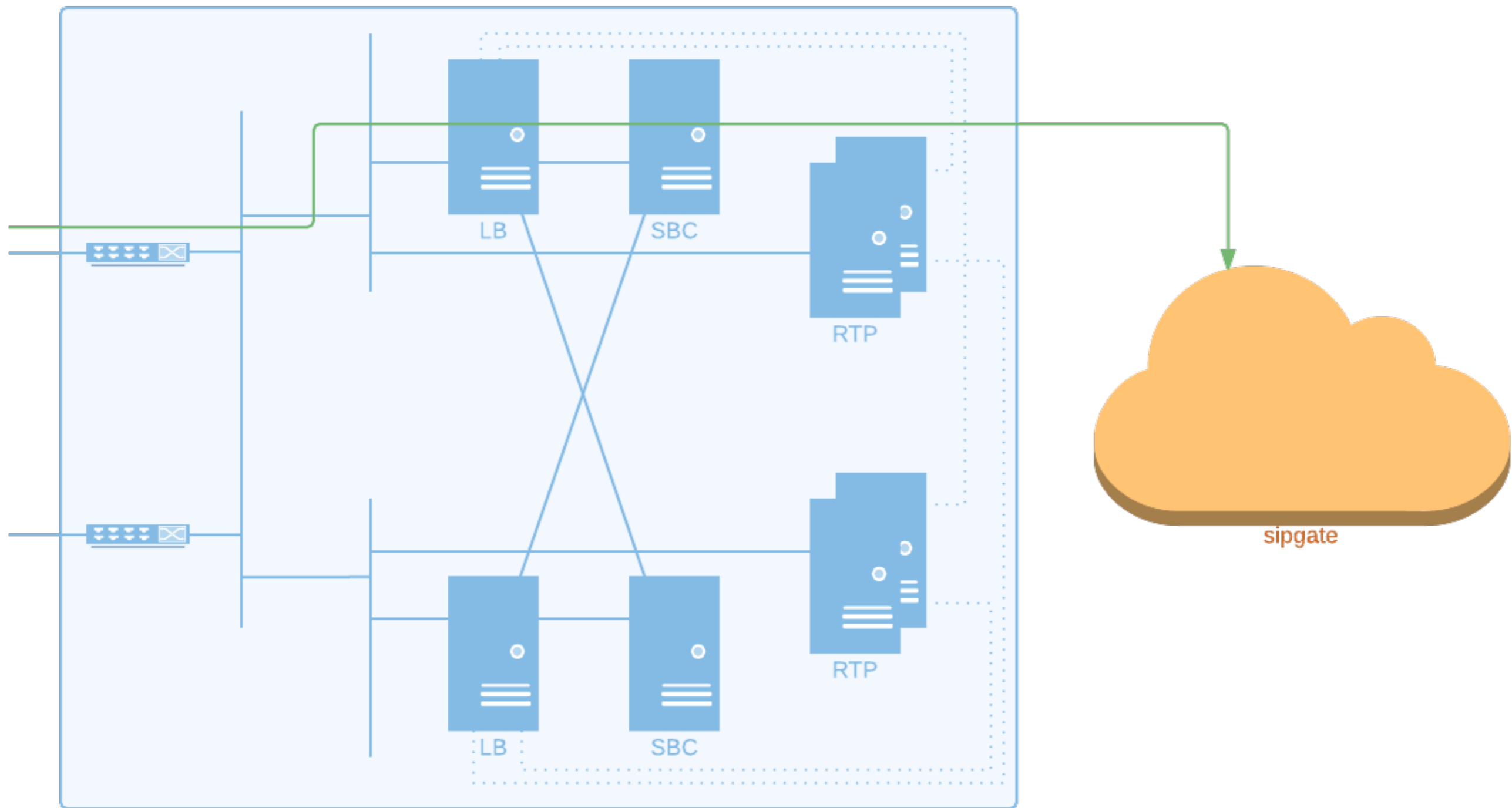
Detailed Setup



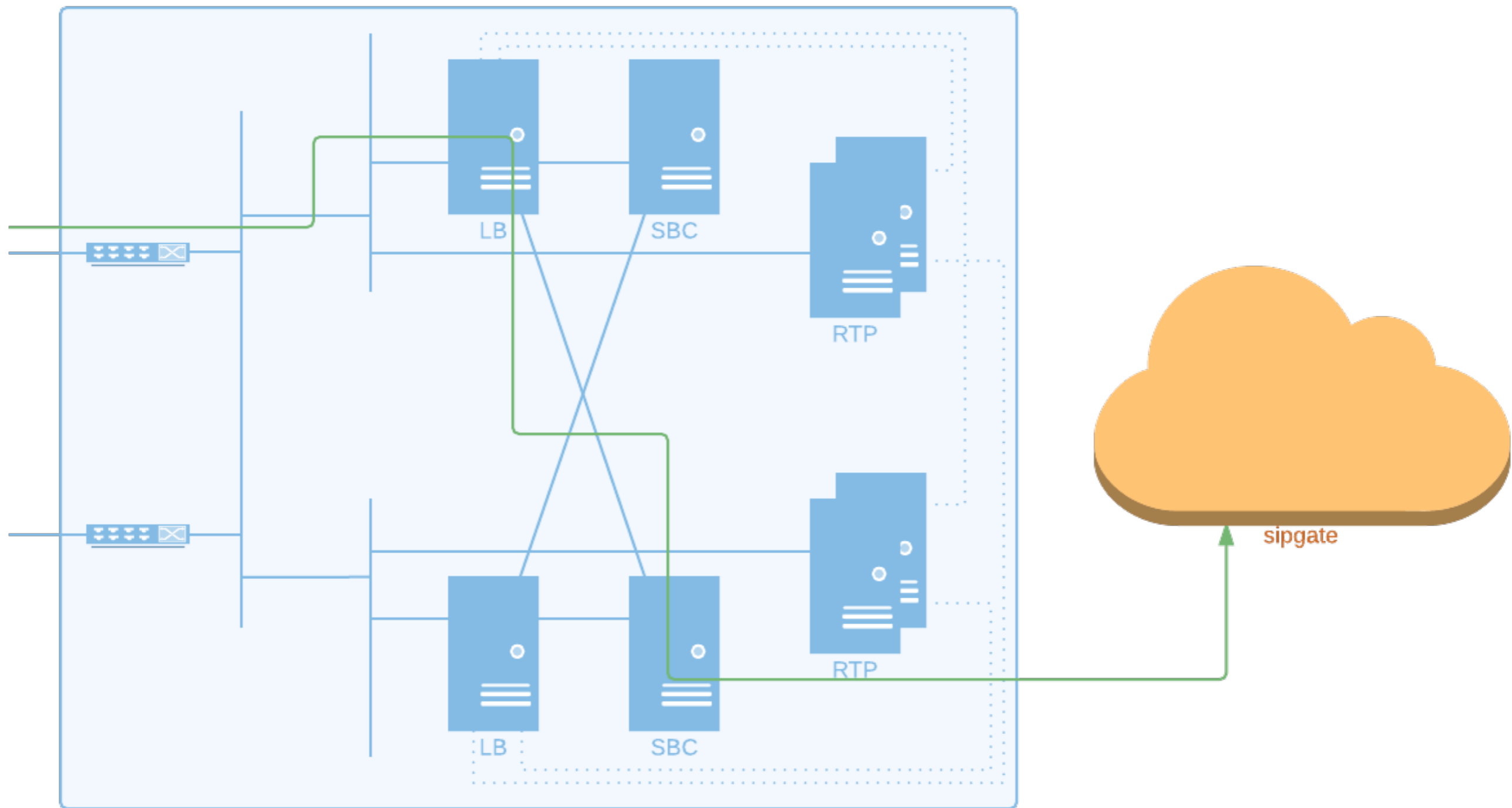
Detailed Setup



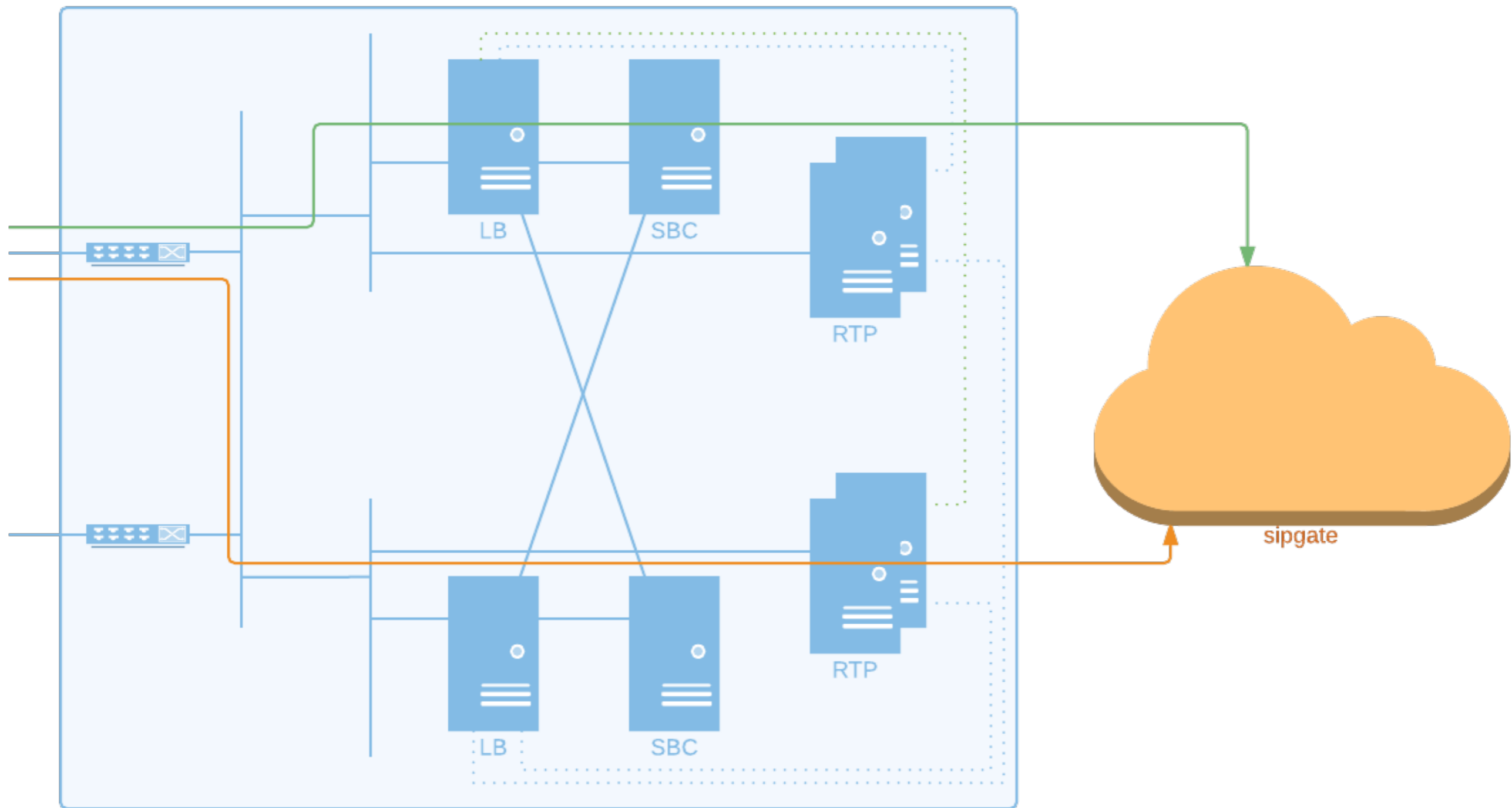
Call Flow



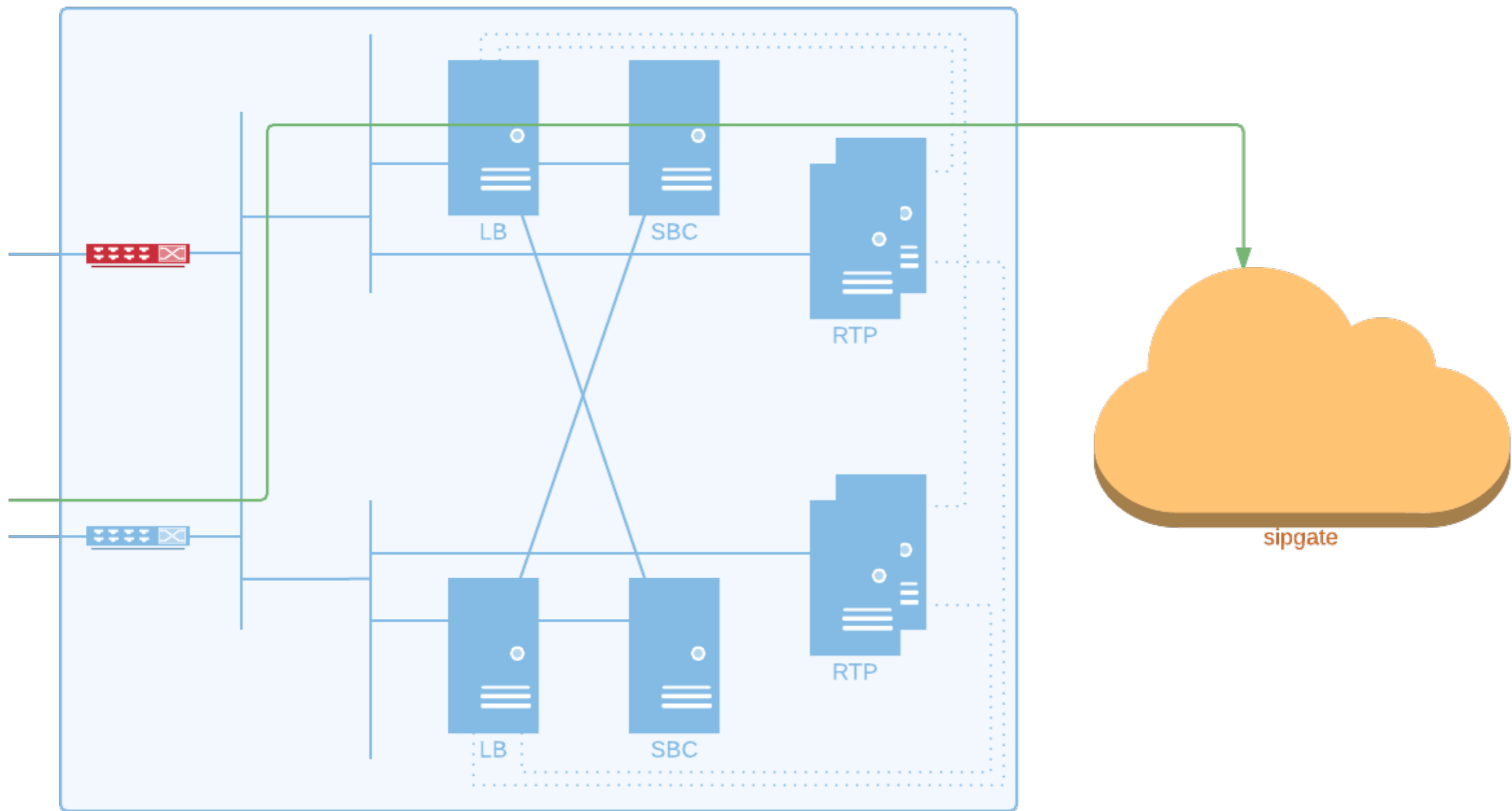
Call Flow



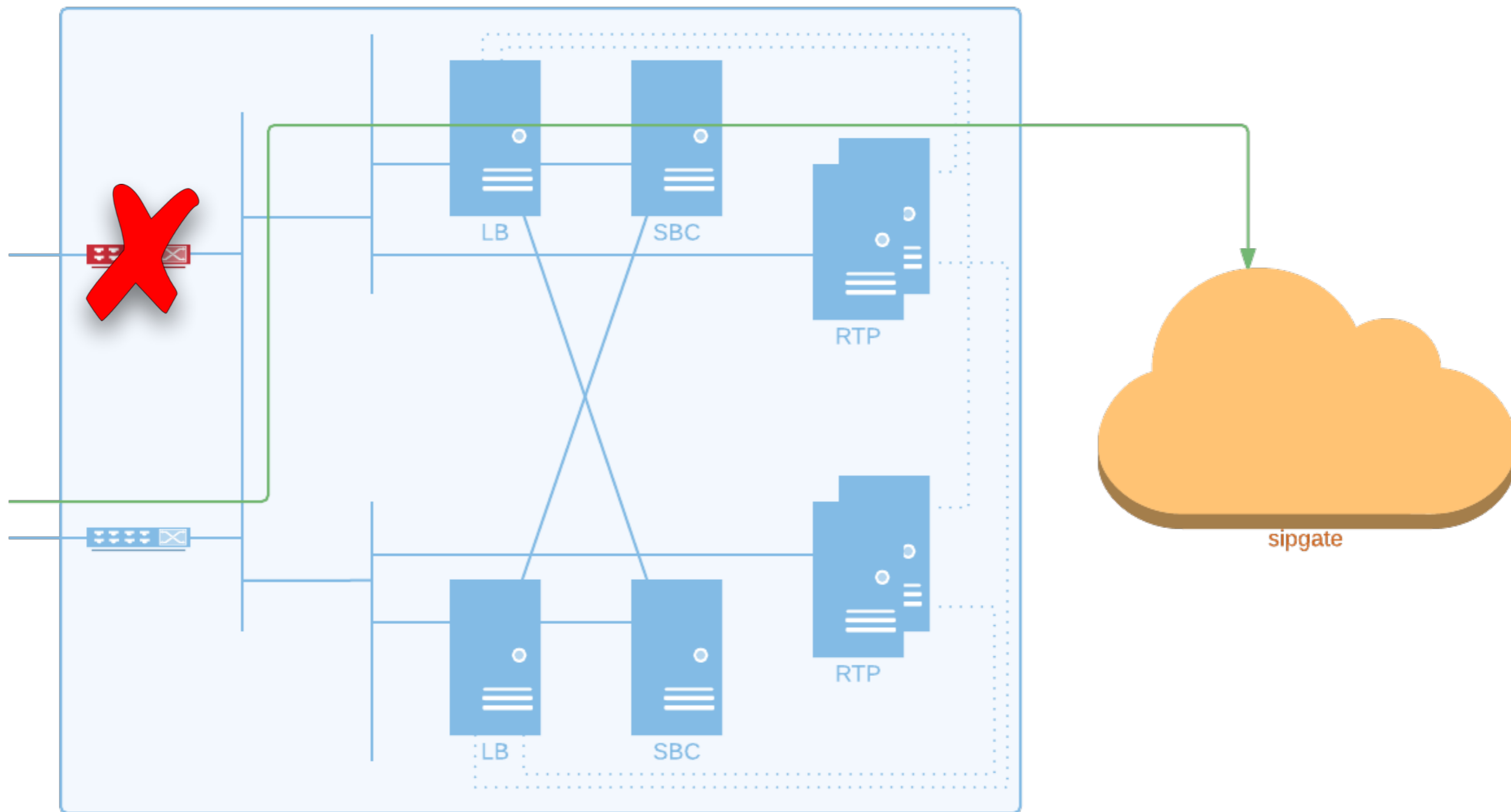
Call Flow



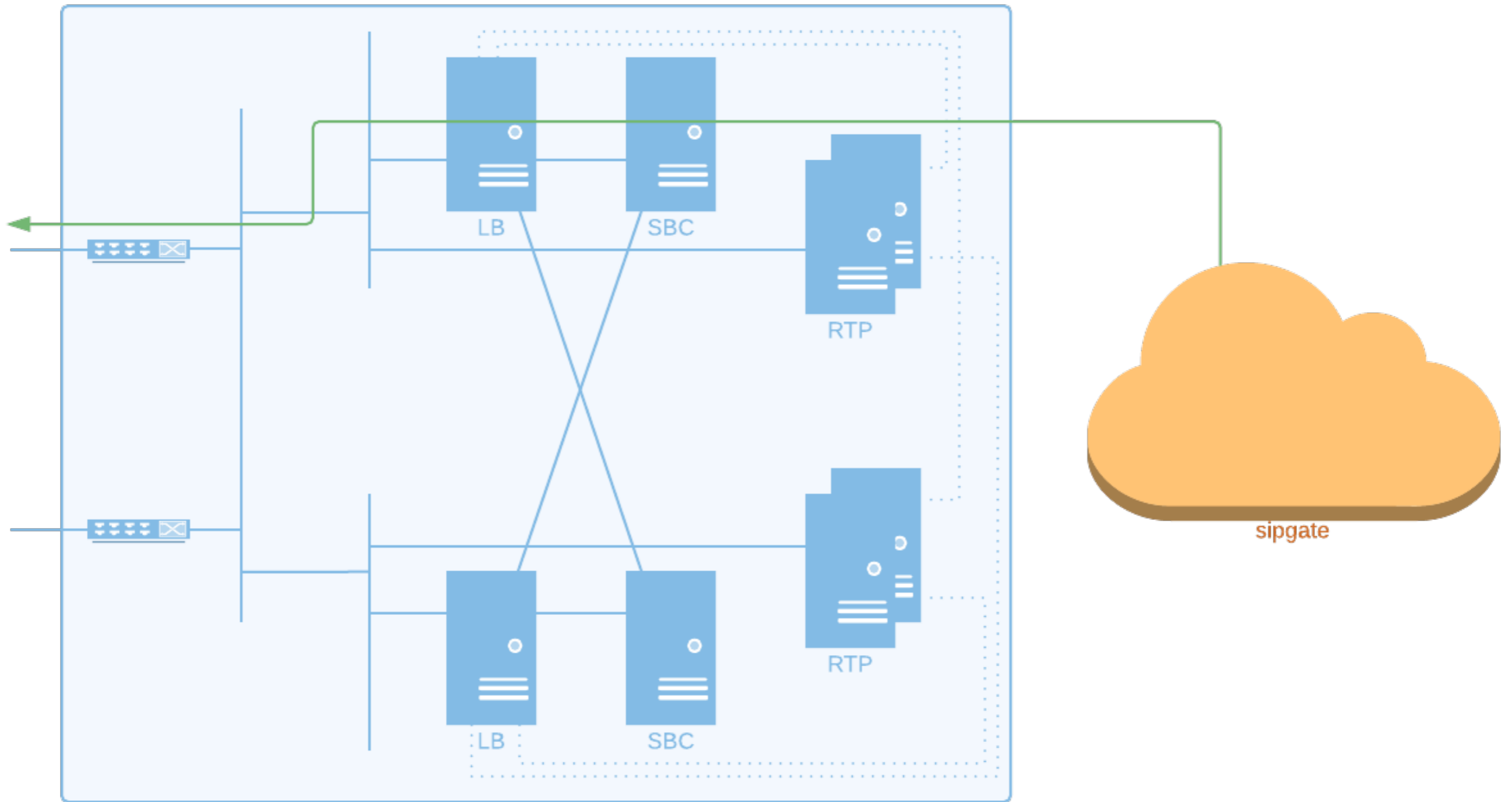
Call Flow



Call Flow



Call Flow



What else?

What else?

You're testing SIP devices.

What else?

You're testing SIP devices.
Go through billing hell.

What else?

You're testing SIP devices.
Go through billing hell.
Expect some signalling specialties.

Signalling

Understand
interesting Request-URIs

Signalling

Understand interesting Request-URIs

```
INVITE sip:+4921163553355;npdi;rn="+49D29821163553355@neon-  
networks.de;transport=udp;user=phone SIP/2.0
```

Signalling

Call Redirection

Diversion, right?

Signalling

Call Redirection

~~Diversion, right?~~

Signalling

History-Info
RfC 4244

Signalling

History-Info RfC 4244

History-Info:

```
<sip:+49B-Number@mydomain.de;user=phone>;index=1,  
<sip:+49C-Number@telekom.de;cause=408>;index=1.1,
```

Signalling

History-Info RFC 4244

History-Info:

```
<sip:+49B-Number@mydomain.de;user=phone>;index=1,  
<sip:+49C-Number@telekom.de;cause=408>;index=1.1,  
<sip:+49D-Number@mydomain.de;cause=302>;index=1.1.1
```


Signalling

P-Germany-Tariff Header

Calls to Service numbers from outside Germany
Defining Tariff class for premium rate numbers

Signalling

Emergency Calls

Signalling

Emergency Calls

ISUP:

CalledPartyNumber='4930CC1'

SIP:

INVITE sip:49301;rn=4930CC1@telekom.de;user=phone

User-To-User:

002D89300412F947FFFF476C6164626163686572205374722E

We did it!

- Lab test: 2 weeks (quickest test ever)
- Live Test (IOPNW): ~8 months
- Quick adaptations thanks to Open Source Software

NGN in the wild

NGN in the wild

404 = 404

NGN in the wild

Großstörung bei der Telekom ist behoben UPDATE

heise online 04.12.2015 12:17 Uhr – Urs Mansmann

vorlesen



Bei der Telekom sind großflächig IP-Telefonanschlüsse und andere Dienste ausgefallen. Offenbar geht die bundesweite Störung auf den Ausfall eines Radius-Servers zur Authentifizierung der Nutzer zurück,

Bei der Telekom sind derzeit eine Unzahl von IP-Telefonanschlüsse im gesamten Bundesgebiet gestört. Uns erreichen zahlreiche Meldungen betroffener Nutzer; auf Störungsmeldeportalen wie [allestörungen](#) gehen sehr viele Meldungen ein; auch Tests mit VoIP-Anschlüssen durch die Redaktion zeigten den Ausfall der IP-Telefonie.

Genauere Informationen von der Telekom zur Ursache der Störung waren zunächst nicht zu erhalten, da der Festnetzanschluss der Konzernzentrale gestört oder überlastet ist. Nach ersten Angaben der Telekom seien aber nicht nur die Telefonie, sondern teilweise auch Internet-Zugänge und IPTV betroffen.

se und andere Dienste ausgefallen.
all eines Radius-Servers zur

NGN in the wild

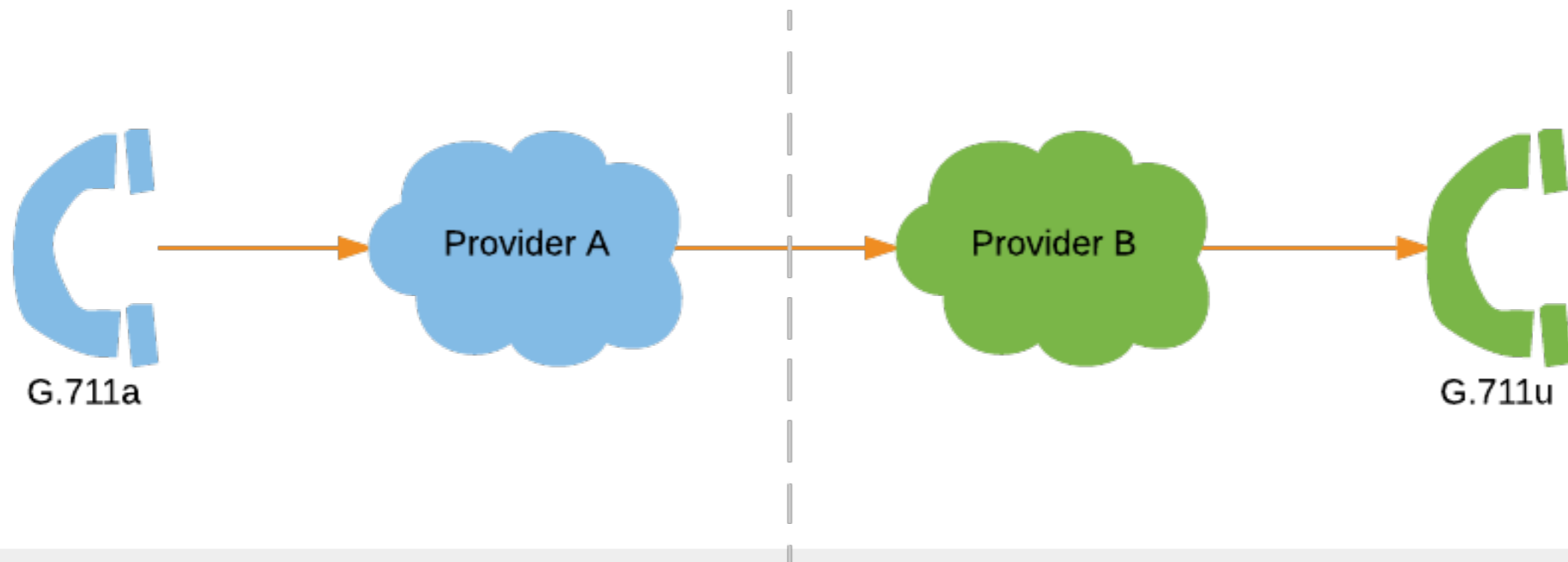
404 = 404

404 = offline

404 = number unknown

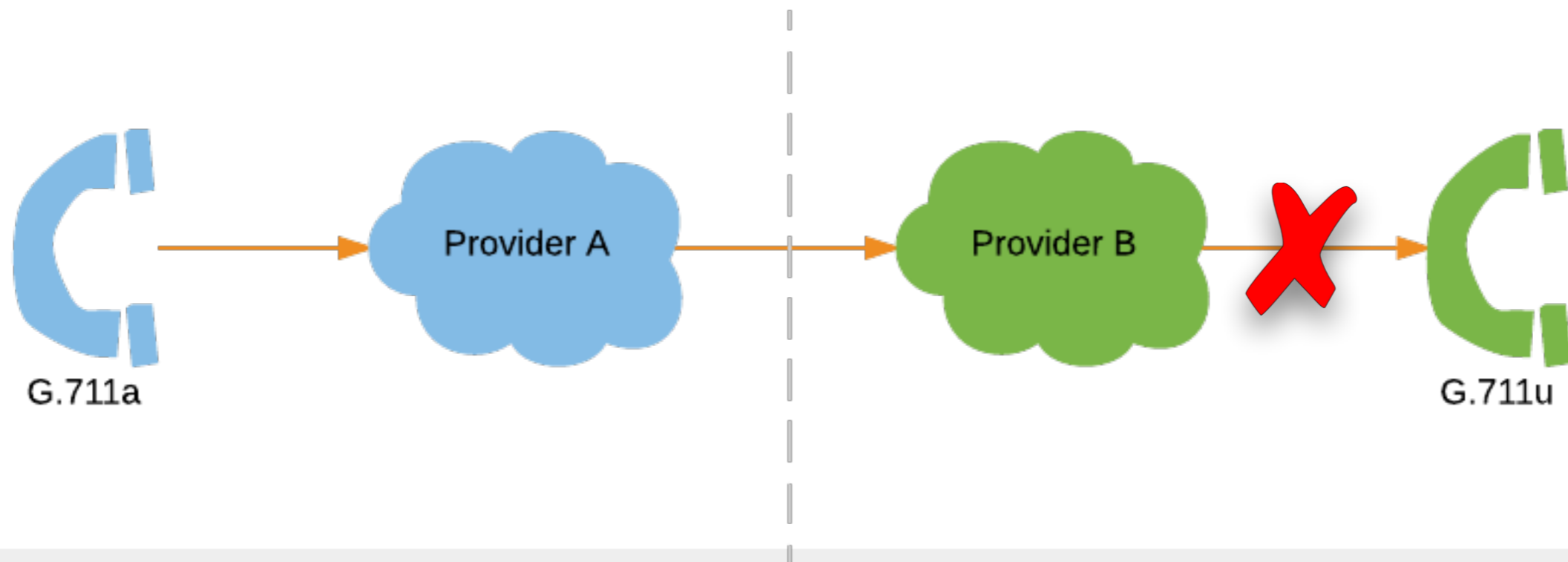
NGN in the wild

Codecs are fun!



NGN in the wild

Codecs are fun!



Oh, and one more thing.

What about Fax?

Is it dead yet?

What about Fax?

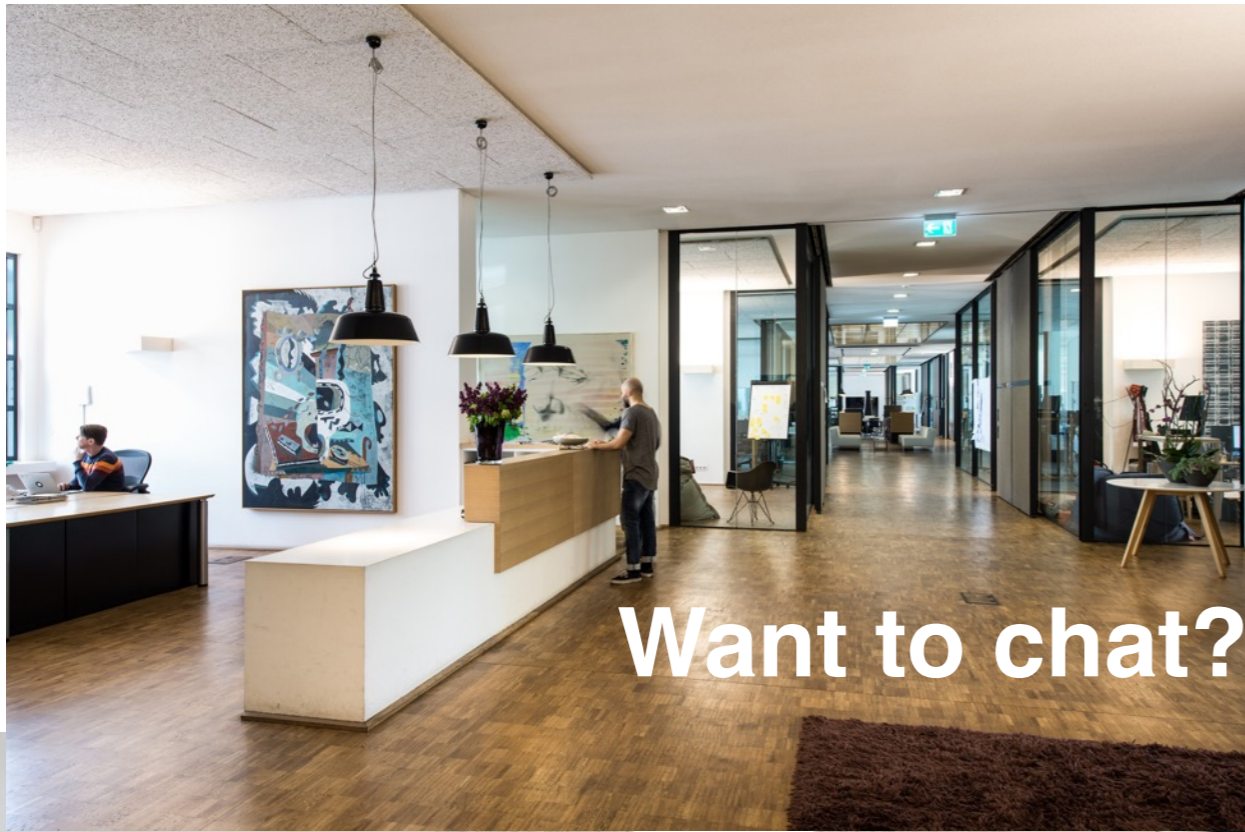
Is it dead yet?

Hopefully, soon.

(Only G.711 support, no T.38 at all.)

Resources

- NGN Interconnect Specs:
http://www.aknn.de/fileadmin/uploads/oeffentlich/Spec_UAKS_NGN_Ic_Interface_V1_0_0.pdf
- Emergency Call Specs:
http://www.bundesnetzagentur.de/DE/Sachgebiete/Telekommunikation/Unternehmen_Institutionen/Anbieterpflichten/Notruf/TechnischeRichtlinie/technischerichtlinie.html
- Redirection Information
Diversion: <https://tools.ietf.org/html/rfc5806>
History-Info: <https://tools.ietf.org/html/rfc4244>
Mapping: <https://tools.ietf.org/html/rfc6044>



Want to chat?



Stop by:
lunch.sipgate.de



That's it

Questions?