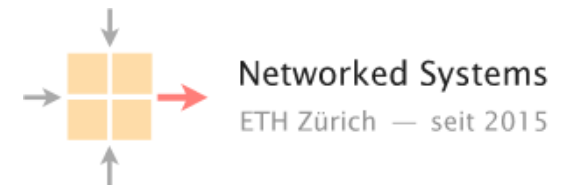


Communication Networks 2022

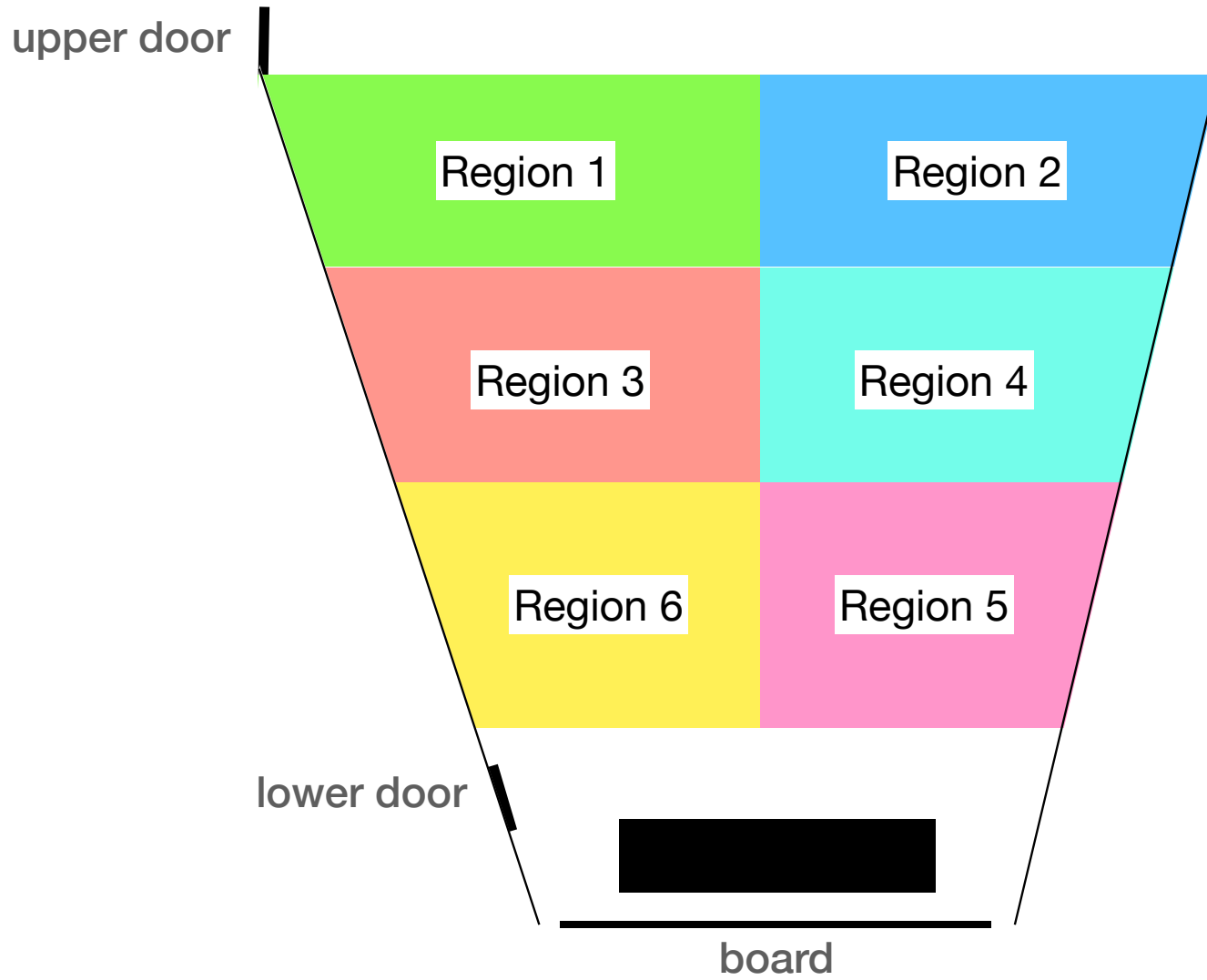
Connectivity Fäscht

Introduction

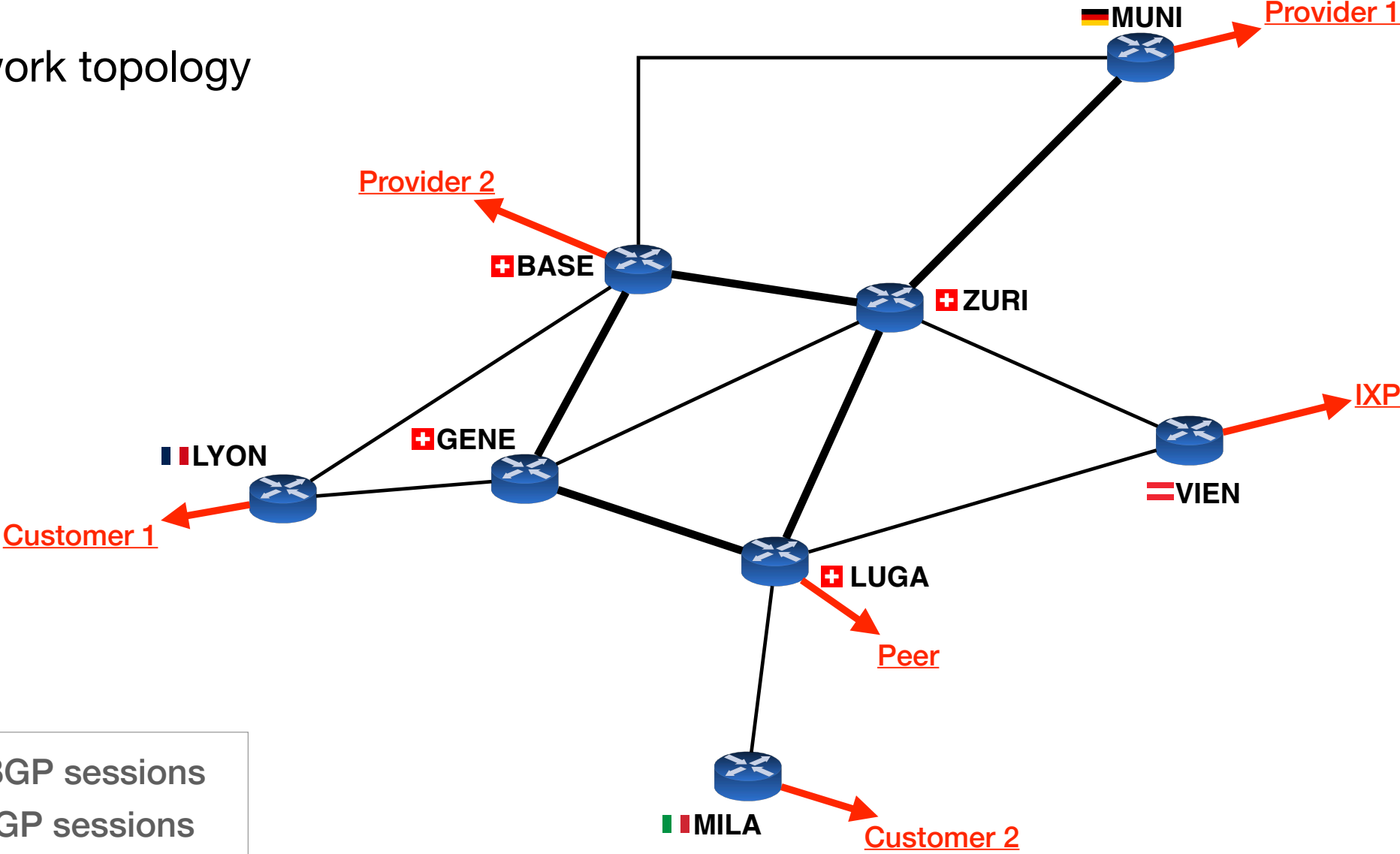
Thursday 7 April 2022



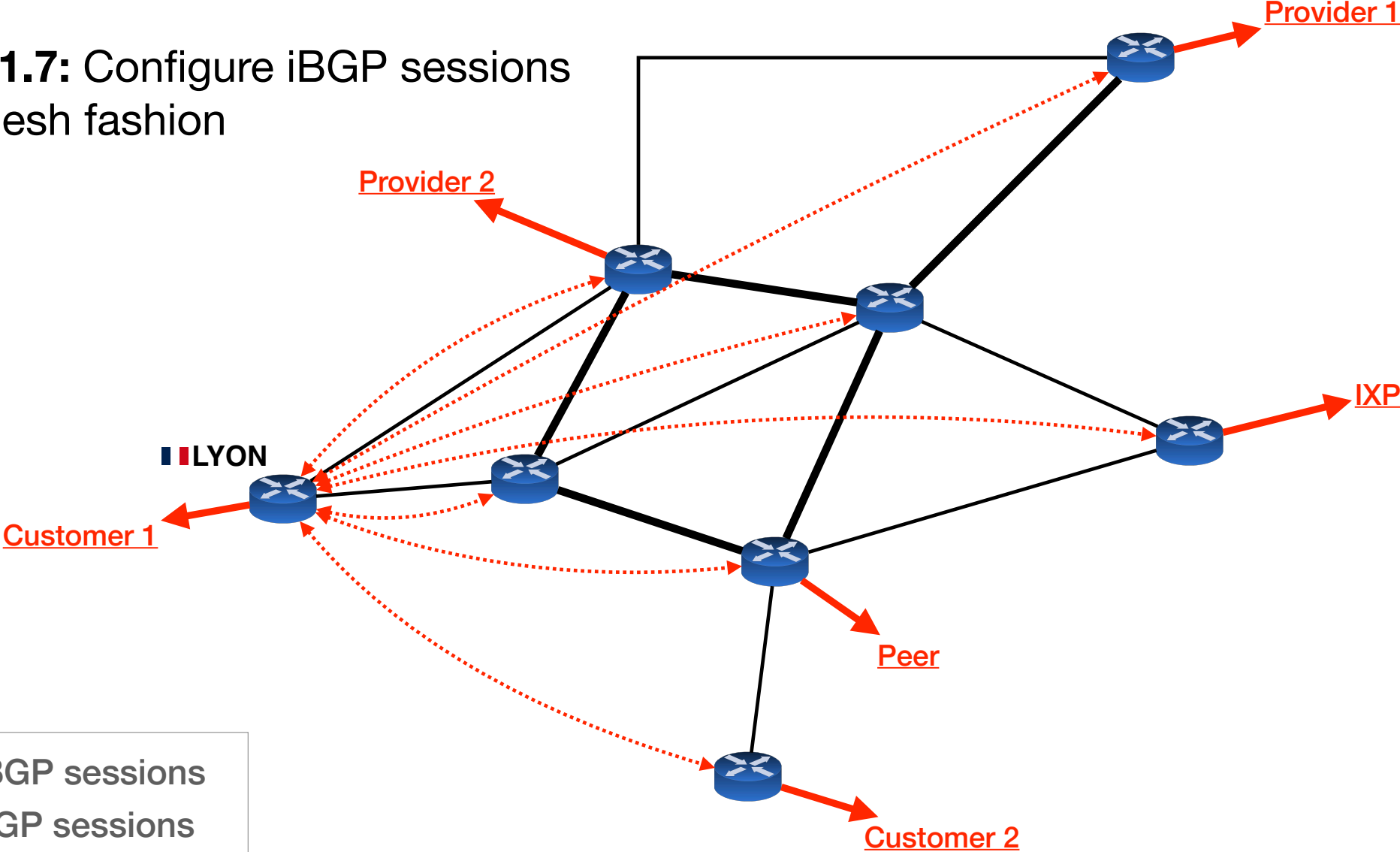
Please sit in the area reserved for your region



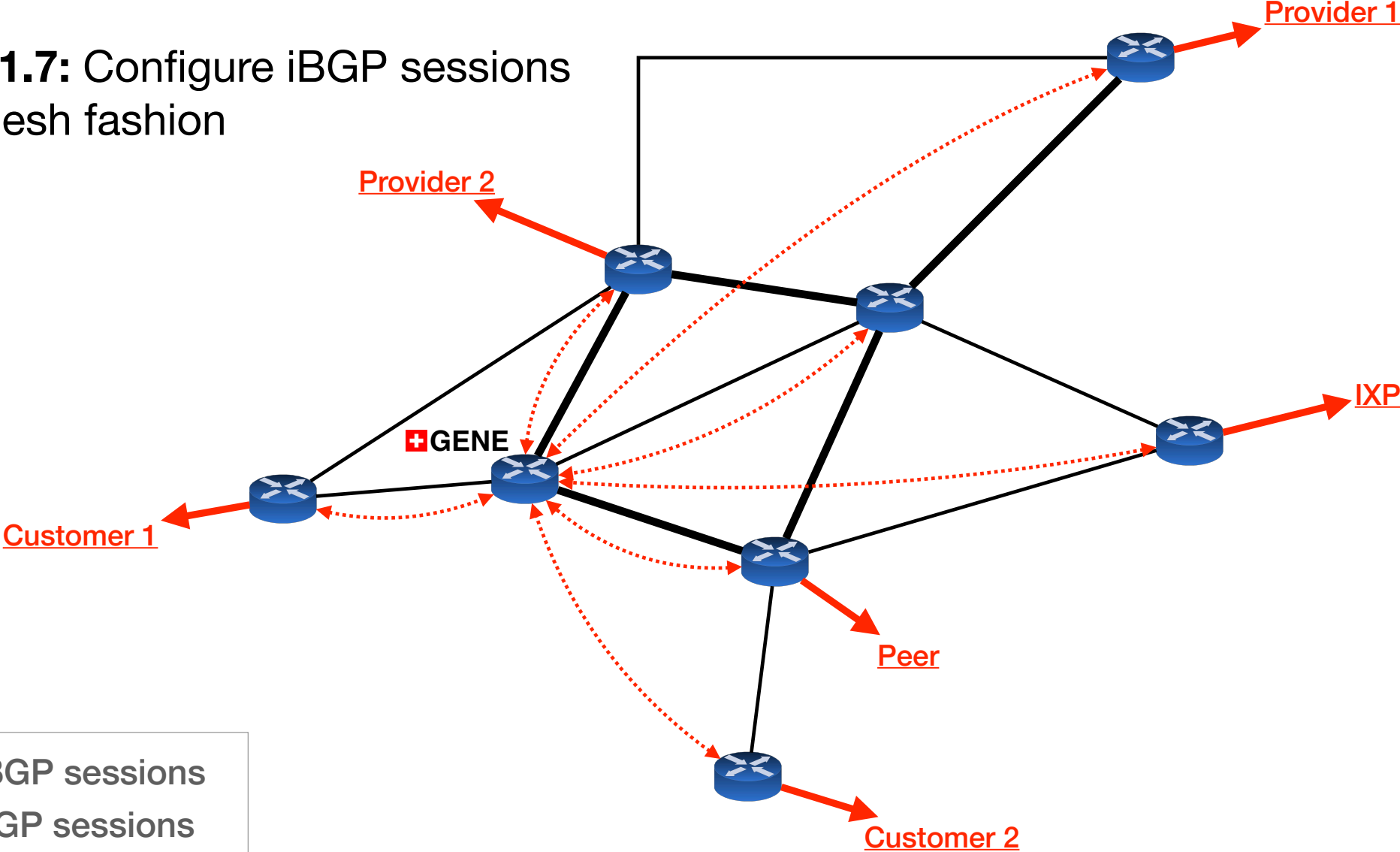
Your network topology



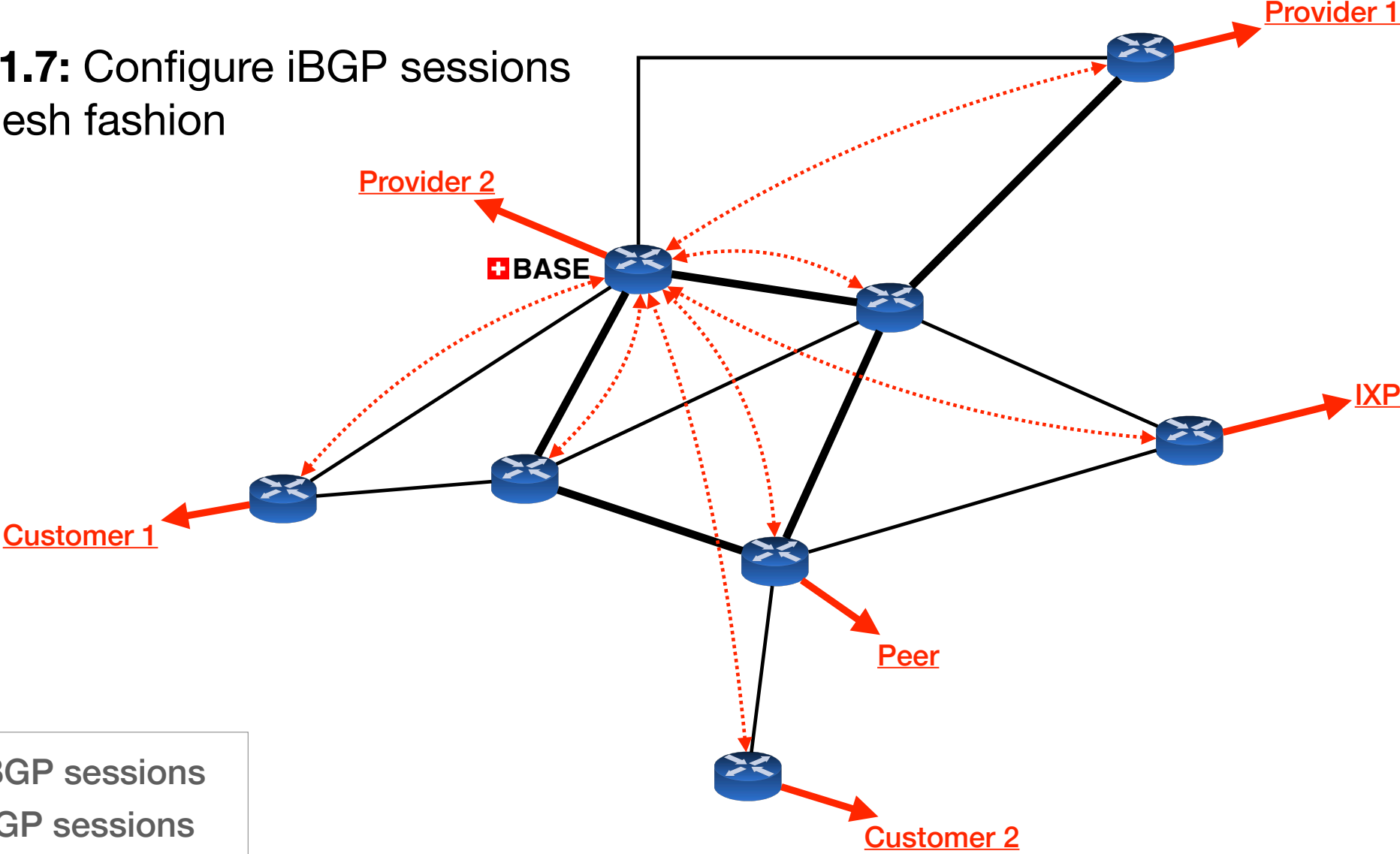
Question 1.7: Configure iBGP sessions in a full-mesh fashion



Question 1.7: Configure iBGP sessions in a full-mesh fashion



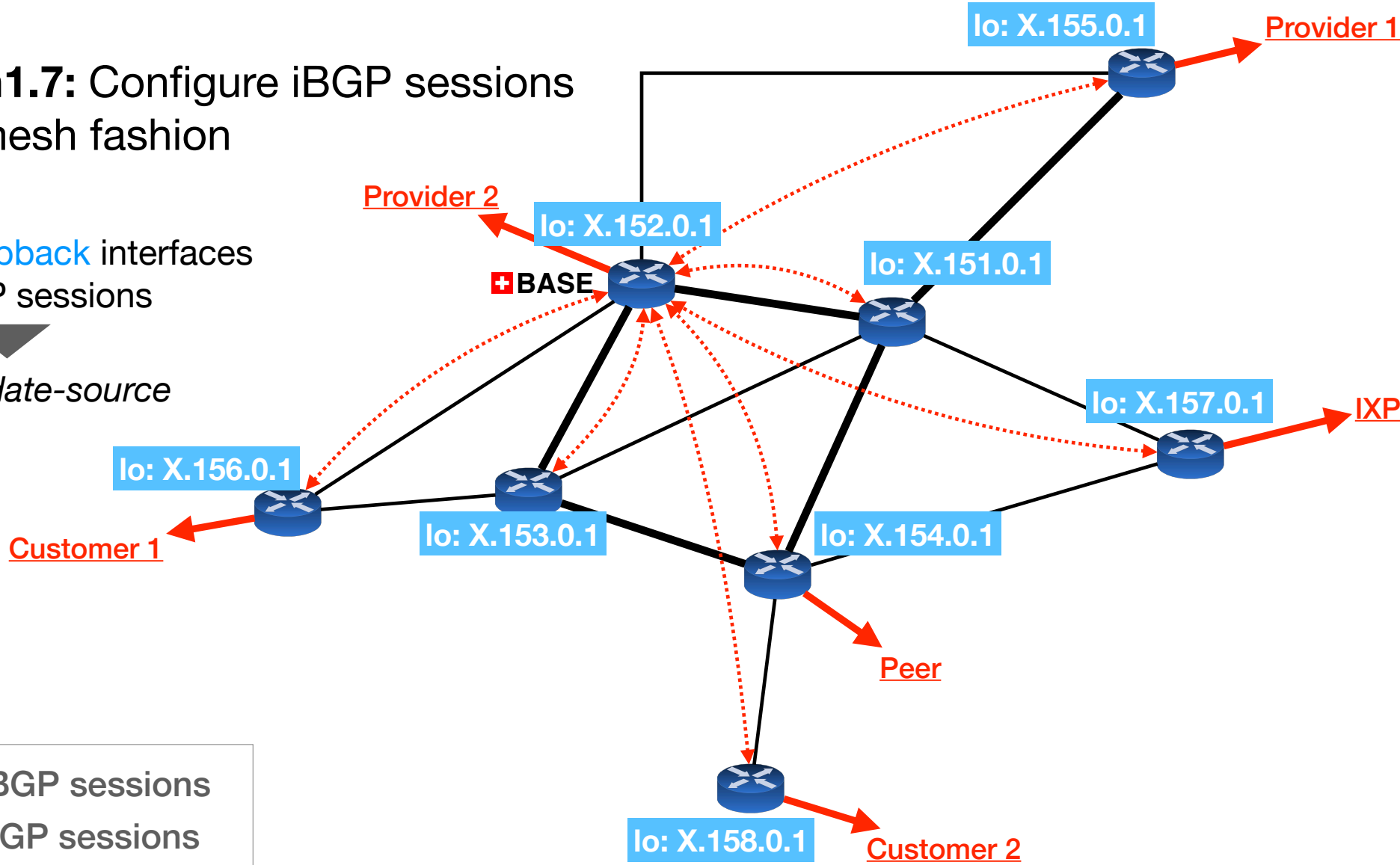
Question 1.7: Configure iBGP sessions in a full-mesh fashion



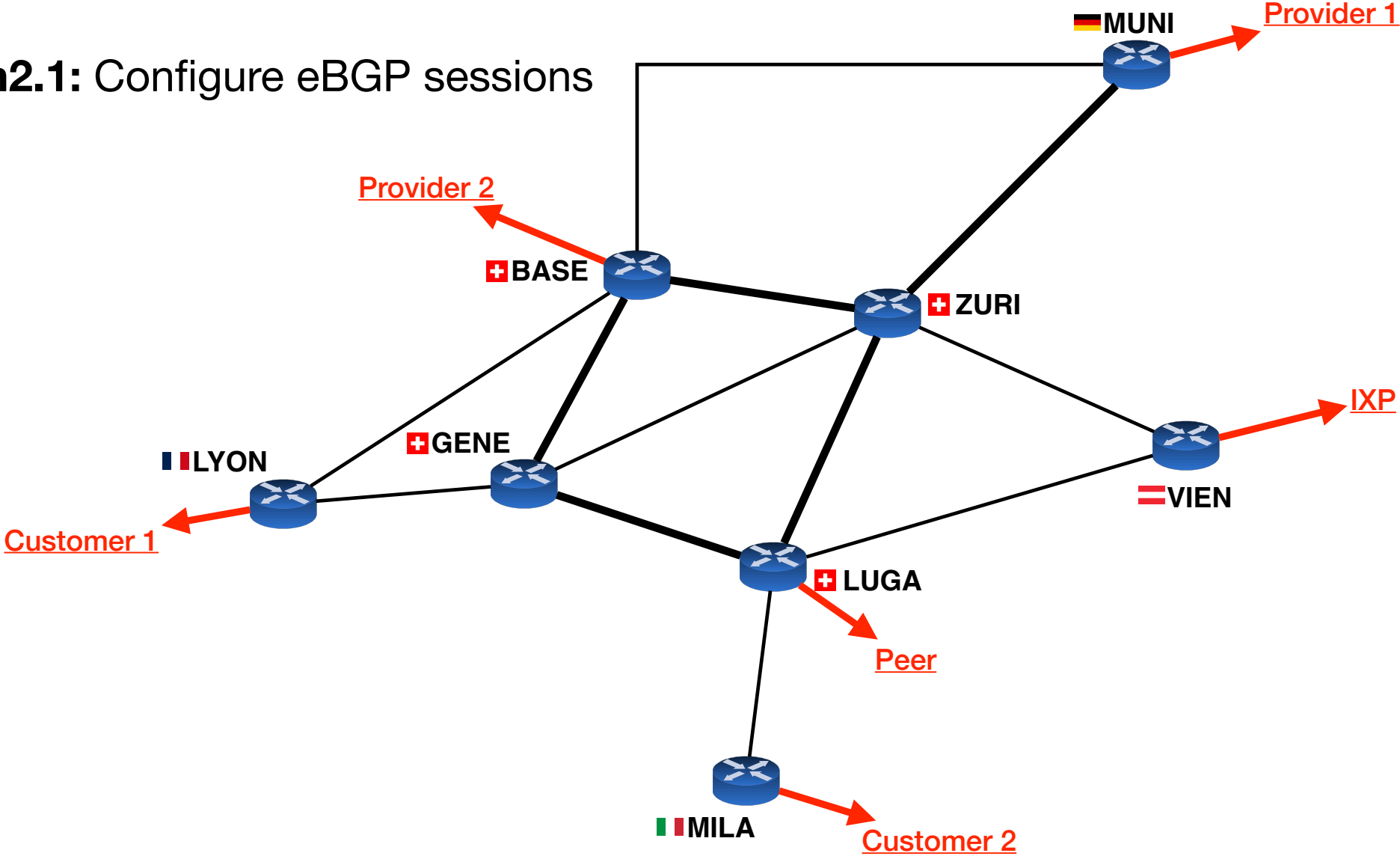
Question 1.7: Configure iBGP sessions in a full-mesh fashion

Use the **loopback** interfaces for the iBGP sessions

using *update-source*

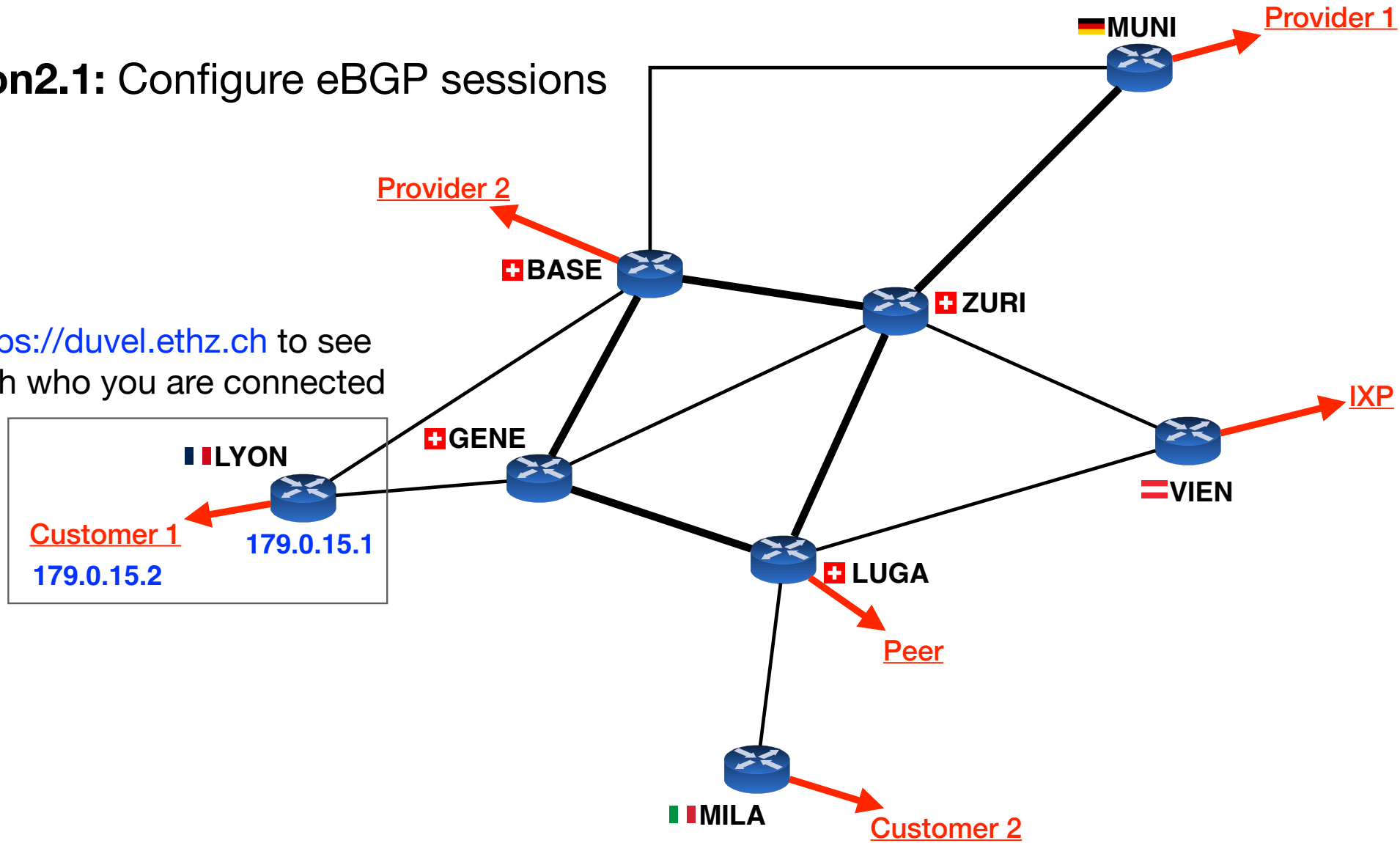


Question 2.1: Configure eBGP sessions



Question 2.1: Configure eBGP sessions

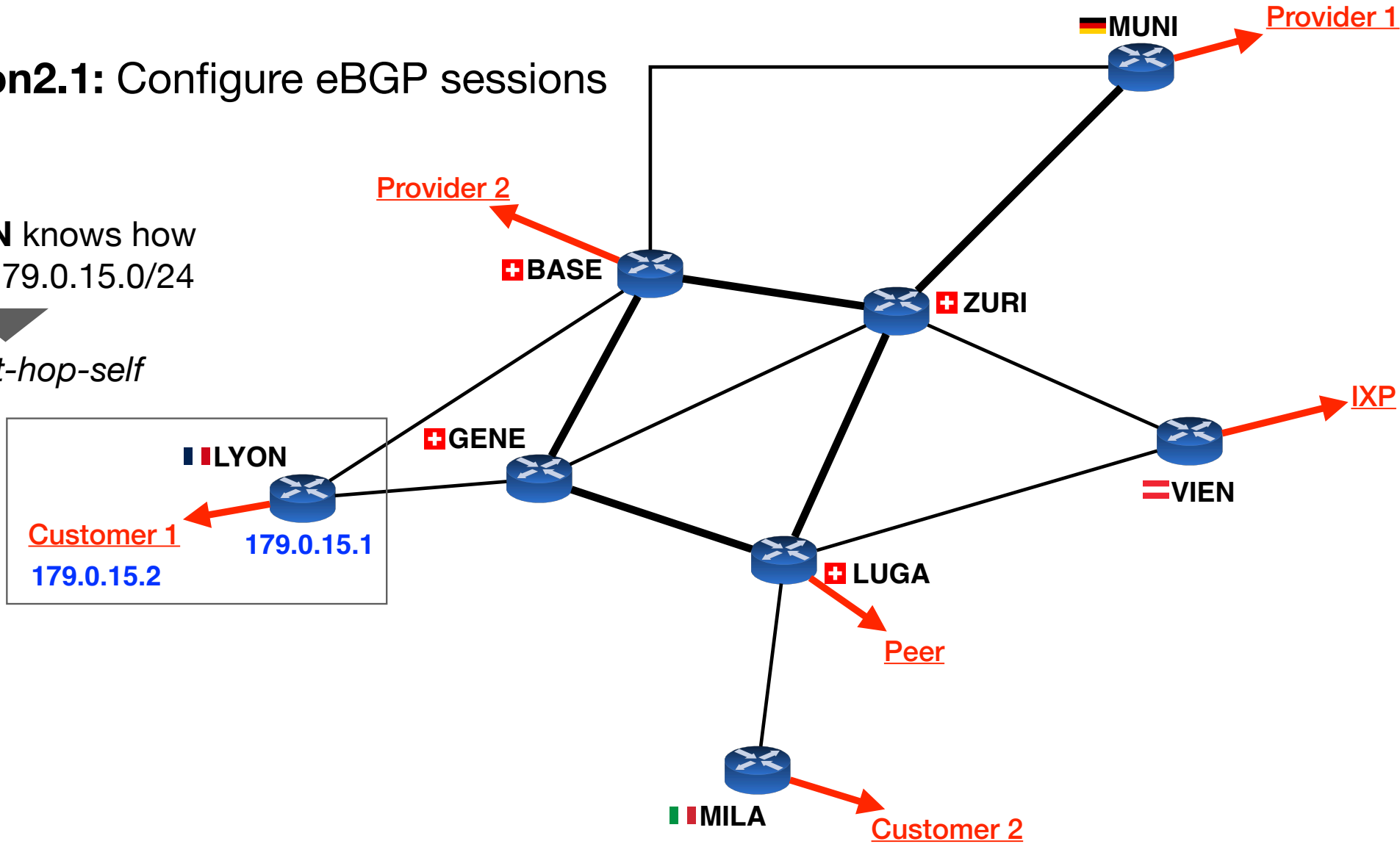
<https://duvel.ethz.ch> to see with who you are connected



Question 2.1: Configure eBGP sessions

only **LYON** knows how to reach 179.0.15.0/24

use *next-hop-self*



How to debug BGP

From your routers' CLI:

show ip bgp summary

show ip bgp

show ip bgp neighbour X.X.X.X routes

show ip bgp neighbour X.X.X.X advertised-routes

How to debug BGP

From your routers' CLI:

`show ip bgp summary`

`show ip bgp`

`show ip bgp neighbour X.X.X.X routes`

`show ip bgp neighbour X.X.X.X advertised-routes`

◀ shows your BGP neighbours
and the status of each session

How to debug BGP

From your routers' CLI:

show ip bgp summary

show ip bgp

show ip bgp neighbour X.X.X.X routes

show ip bgp neighbour X.X.X.X advertised-routes

◀ shows routes learnt with BGP
along with their AS path

How to debug BGP

From your routers' CLI:

show ip bgp summary

show ip bgp

show ip bgp neighbour X.X.X.X routes

show ip bgp neighbour X.X.X.X advertised-routes

◀ shows routes received from neighbour X.X.X.X

How to debug BGP

From your routers' CLI:

show ip bgp summary

show ip bgp

show ip bgp neighbour X.X.X.X routes

show ip bgp neighbour X.X.X.X advertised-routes

◀ shows routes advertised to neighbour X.X.X.X

How to debug BGP

From your routers' CLI:

show ip bgp summary

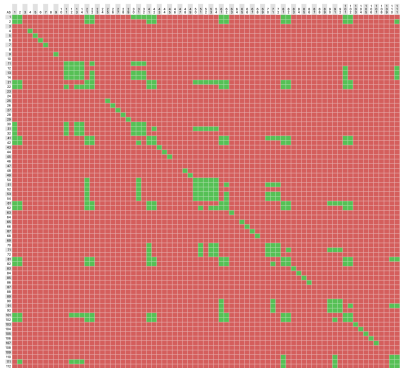
show ip bgp

show ip bgp neighbour X.X.X.X routes

show ip bgp neighbour X.X.X.X advertised-routes

From the mini-Internet website

Connectivity matrix



Looking glass

```
AS 1 Router ZURI
2022-04-05T19:15:15
BGP table version is 28, local router ID is 1.151.0.1, vrf id 0
Default local pref 100, local AS 1
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
              i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete

Network      Next Hop      Metric LocPrf Weight Path
* 11.0.0.0/8  1.152.0.1      0 100    0 i
* i          1.153.0.1      0 100    0 i
**          0.0.0.0        0          32768 i
* 2.0.0.0/8  180.120.0.2    0 150    0 2 i
**          179.0.1.2     0 150    0 2 i
**          180.120.0.21  0 150    0 21 i
* 122.0.0.0/8 1.152.0.1      0 150    0 22 i
*          180.120.0.22  0 150    0 22 i
**          179.0.2.2     0 150    0 22 i
**          1.152.0.1     0 40     0 30 i
**          1.152.0.1     0 150    0 30 31 i
**          1.152.0.1     0 150    0 32 i
**          180.120.0.41  0 40     0 41 i
**          180.120.0.42  0 40     0 42 i
**          180.120.0.61  0 40     0 61 i
**          180.120.0.62  0 40     0 62 i
**          180.120.0.81  0 40     0 81 i
**          180.120.0.82  0 40     0 82 i
**          180.120.0.101 0 40     0 101 i
**          180.120.0.102 0 40     0 102 i
```

BGP policy analyser

policy analysis

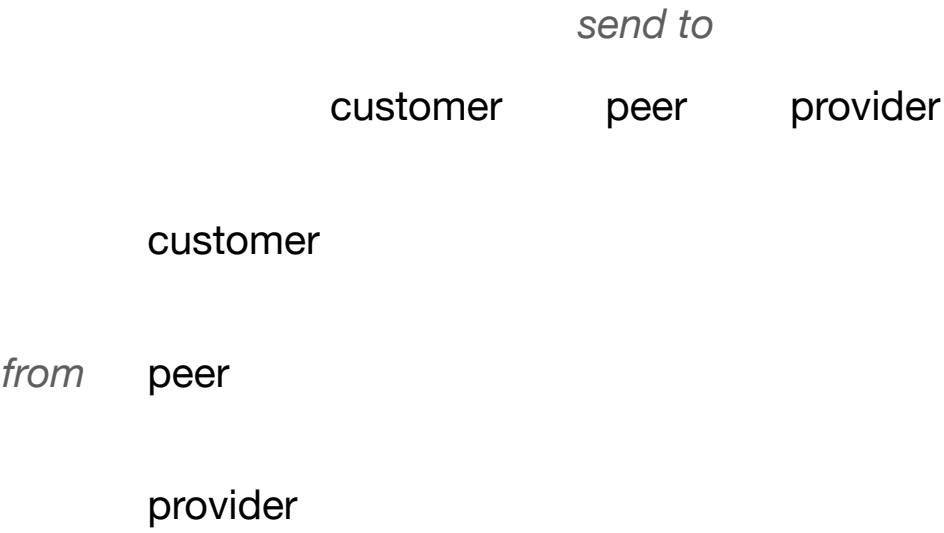
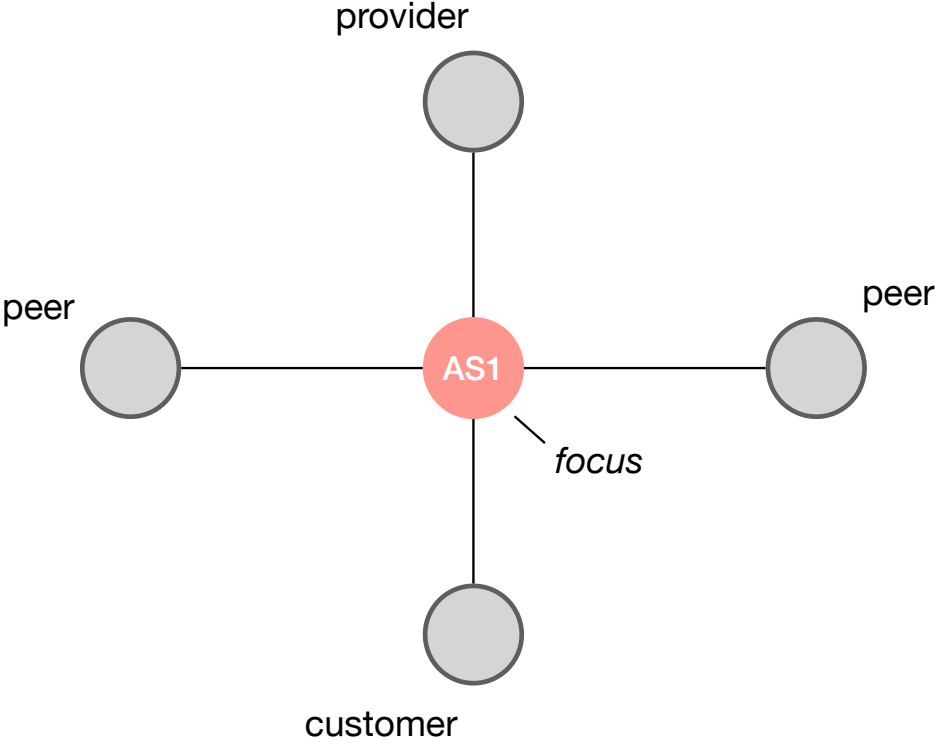
updates every 5 minutes, last updated on 2022-04-05 at 19:35.

The BGP advertisements of AS 52 violate policies:

- You should not export 21.0.0.0/8 to AS 50 (because it is a Peer-Peer link)
- You should not export 31.0.0.0/8 to AS 50 (because it is a Peer-Peer link)
- You should not export 51.0.0.0/8 to AS 50 (because it is a Peer-Peer link)

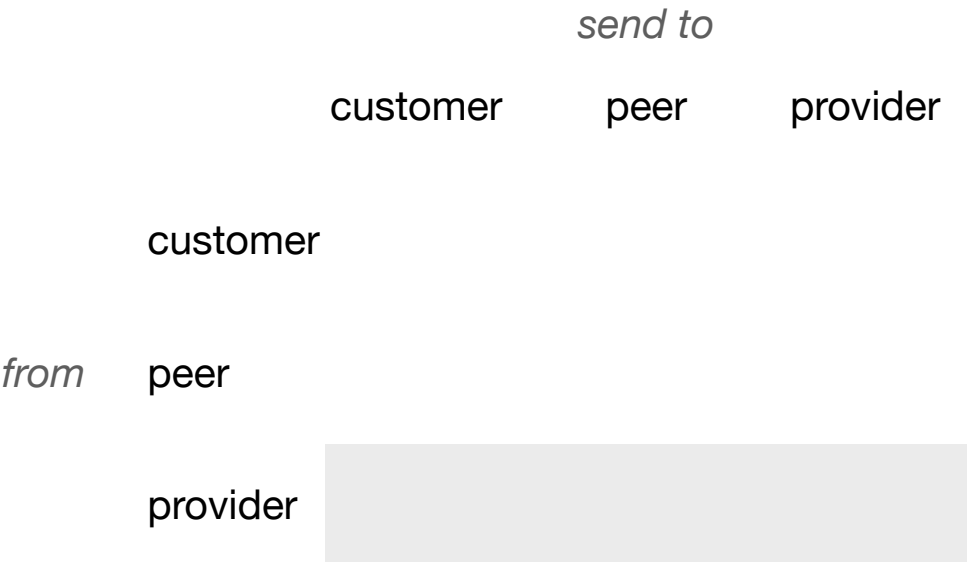
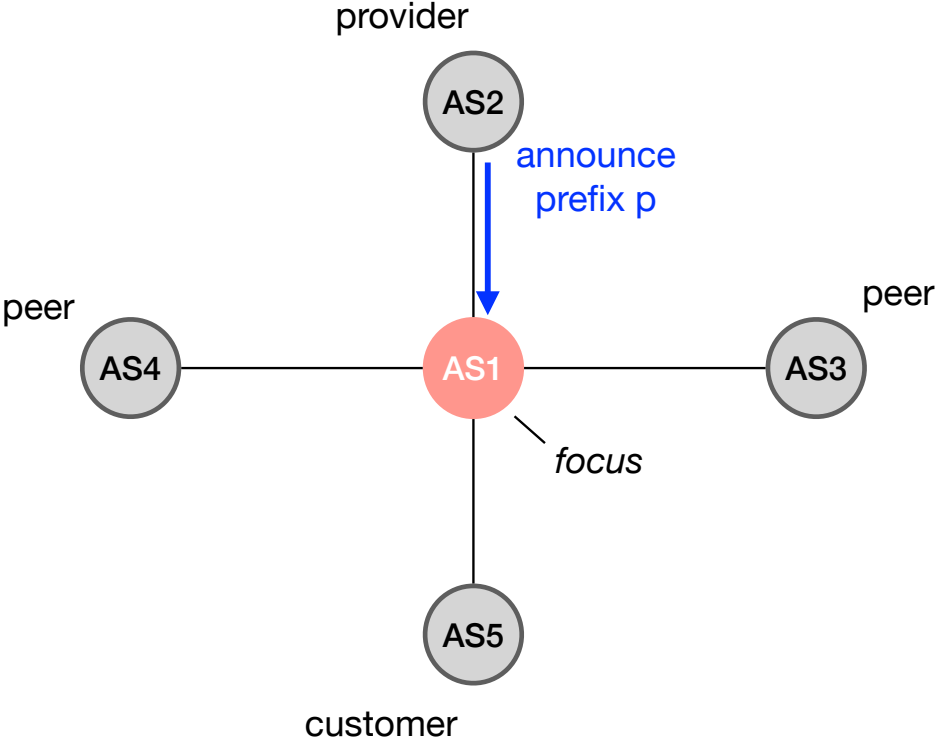
Business relationships conditions

see lecture about routing policies (slide 83+)



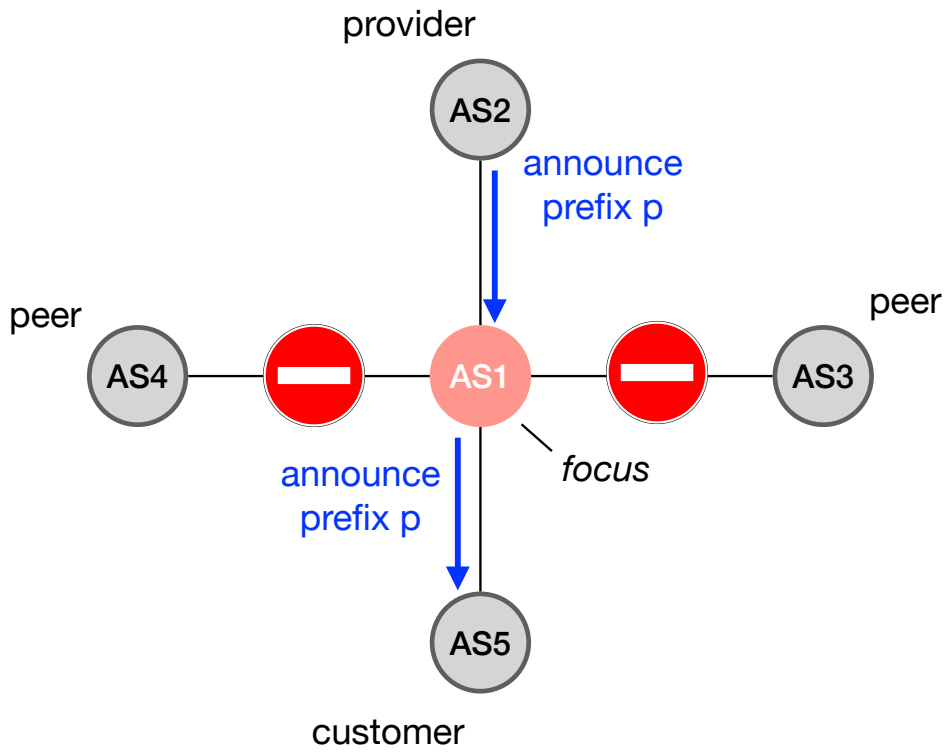
Business relationships conditions

see lecture about routing policies (slide 83+)



Business relationships conditions

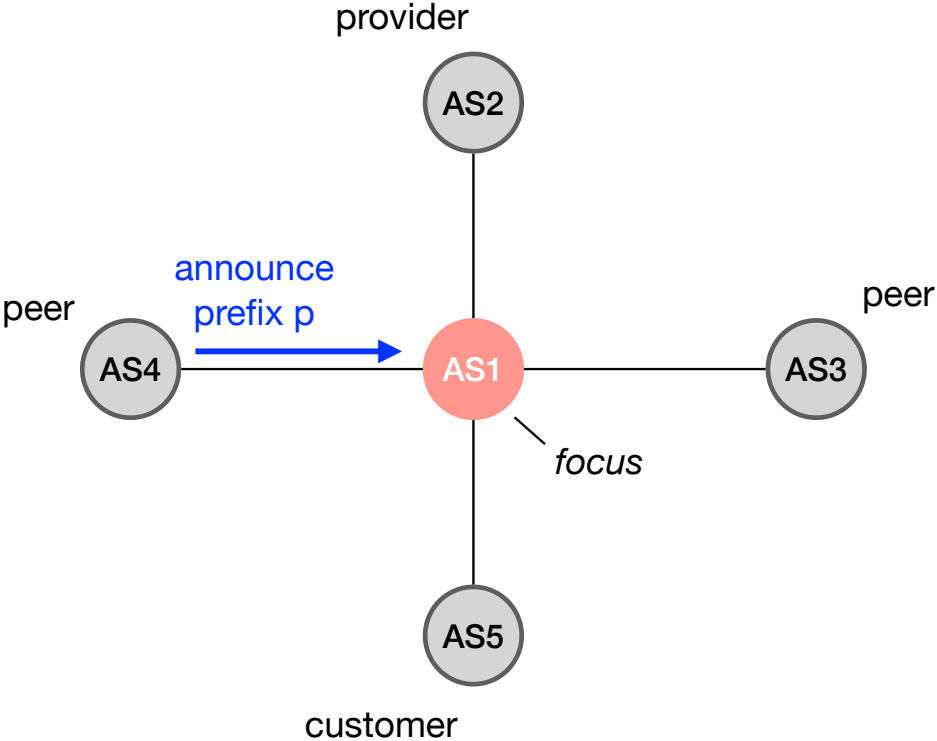
see lecture about routing policies (slide 83+)



	customer	peer	provider
customer			
peer			
provider	✓	⊘	⊘

Business relationships conditions

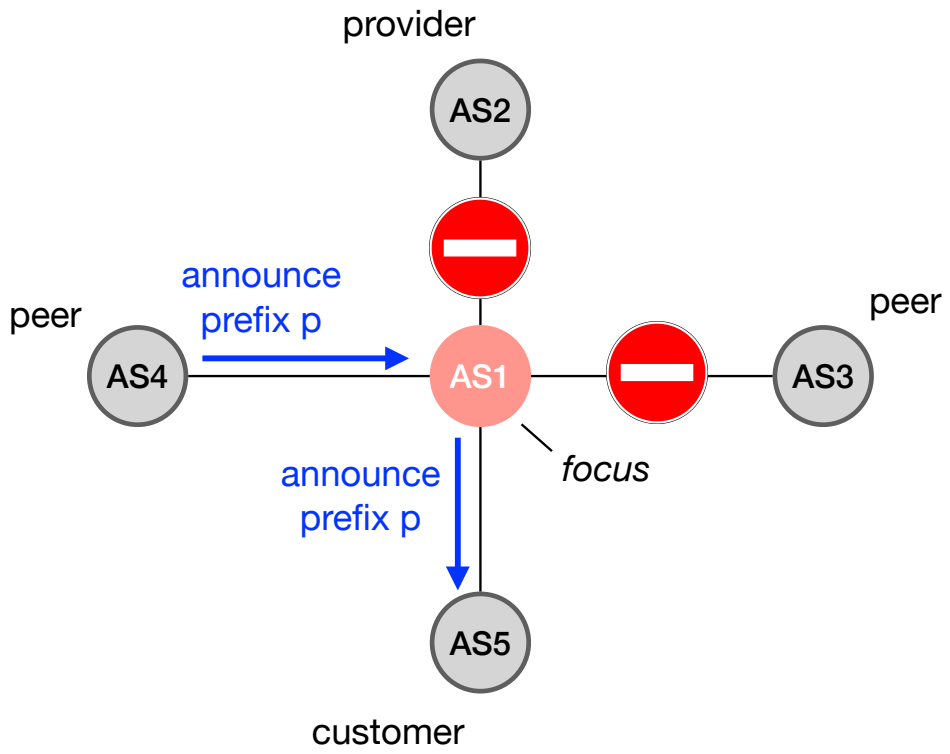
see lecture about routing policies (slide 83+)



		<i>send to</i>		
		customer	peer	provider
<i>from</i>	customer			
	peer			
	provider	✓	⊘	⊘

Business relationships conditions

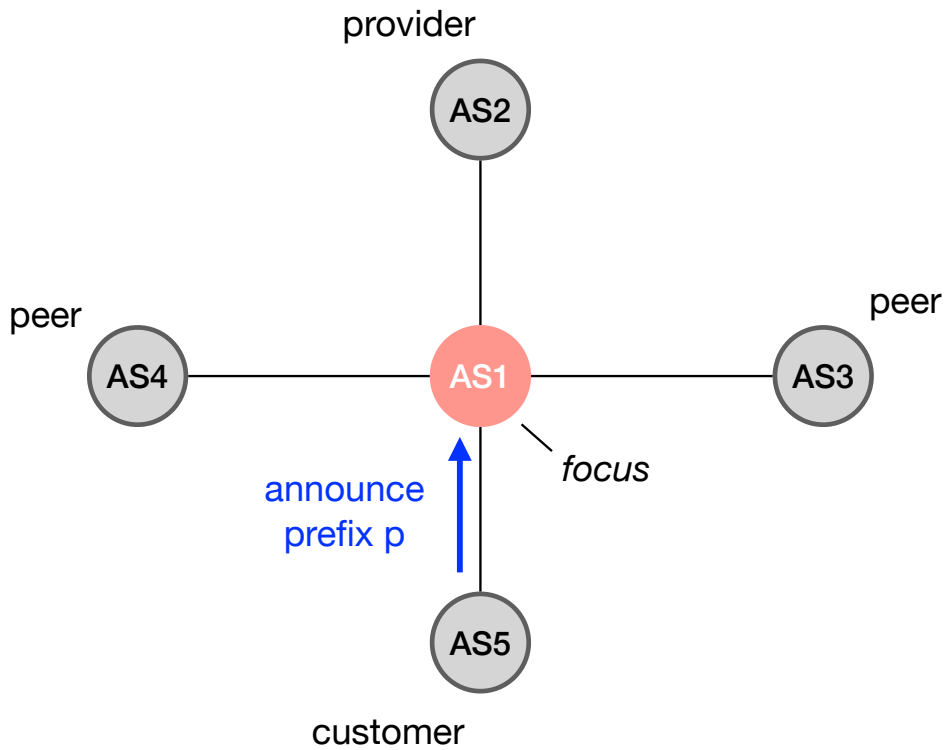
see lecture about routing policies (slide 83+)



		send to		
		customer	peer	provider
from	customer			
	peer	✓	⊘	⊘
	provider	✓	⊘	⊘

Business relationships conditions

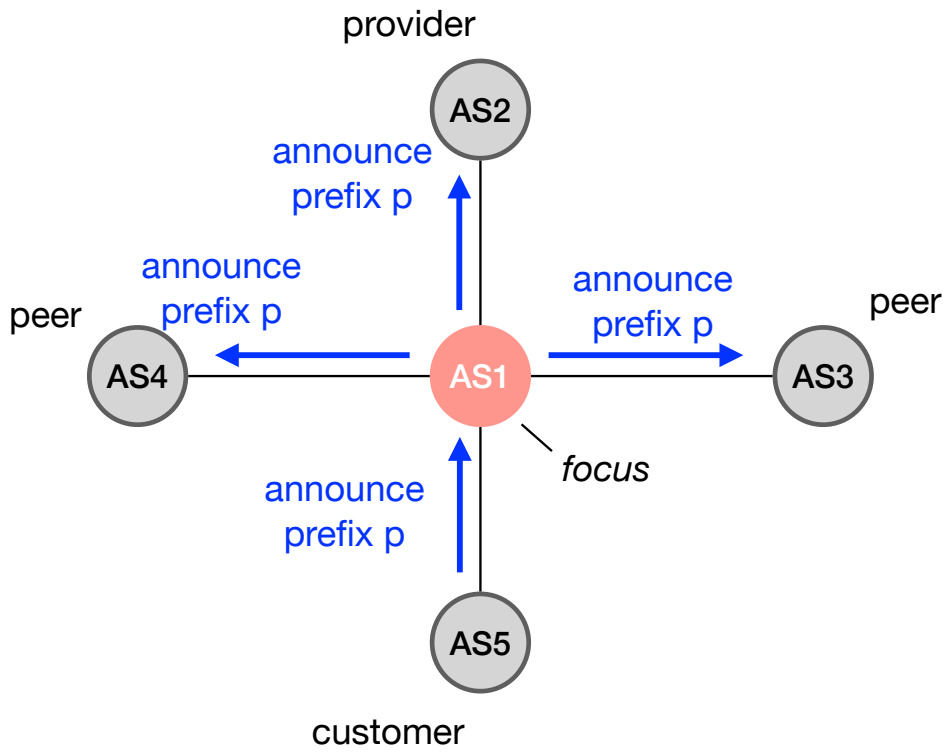
see lecture about routing policies (slide 83+)



		send to		
		customer	peer	provider
from	customer			
	peer	✓	⊘	⊘
	provider	✓	⊘	⊘

Business relationships conditions

see lecture about routing policies (slide 83+)



		send to		
		customer	peer	provider
from	customer	✓	✓	✓
	peer	✓	⊘	⊘
	provider	✓	⊘	⊘