kathara lab

bgp: announcing prefixes with frr

Version	1.0
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Description	a simple bgp announcement; kathara version of a netkit lab

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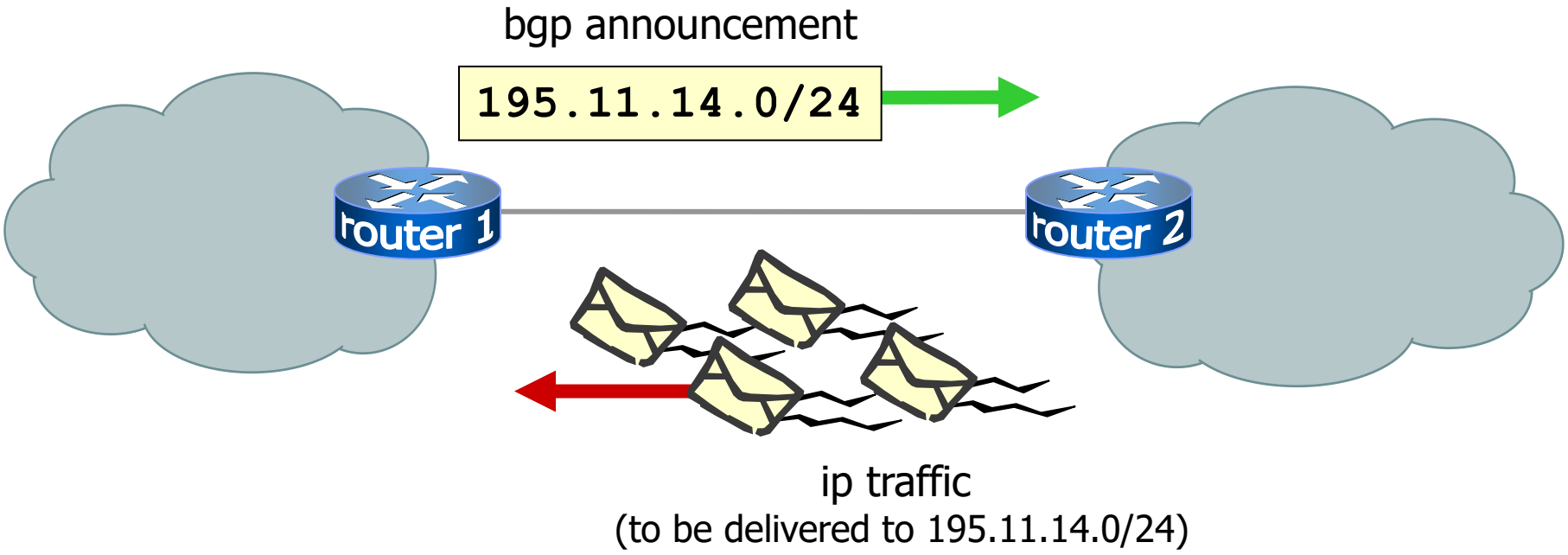
preconditions

- for this lab we assume you have chosen “kathara/frr” as the default image of your Kathará installation
  - execute “kathara settings”
    - select “choose default image”
    - select “kathara/frr”
    - exit from the settings procedure

announcements and traffic flows

- bgp allows a router to offer connectivity to another router
- "offering connectivity" means "promising the delivery to a specific destination"



announcement commands

cisco command syntax

```
network <network-ip> mask <network-mask>
```

frr command syntax

```
network <network-ip/network-mask>
```

- the network command performs the following
  - checks whether the current router has the specified prefix in its kernel forwarding table
    - if not, the command has no effect whatsoever
  - for each peer checks whether the BGP configuration has security filters associated with the peer
    - only in the positive case the prefix is announced to the peer

announcement commands

command syntax

```
no bgp network import-check
```

- this command modifies the network statement disabling the check of the existence of the prefix in the kernel forwarding table
  - default value is **`bgp network import-check`**
- by disabling this check you may announce prefixes that
  - may not be local
  - may not even exist (!)
- not needed for this lab

announcement commands

command syntax

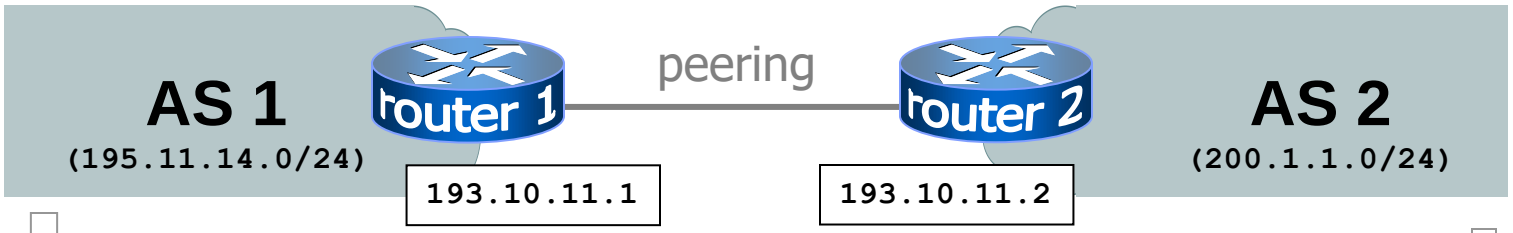
```
no bgp ebgp-requires-policy
```

- the used FRR BGP version is RFC-8212 compliant
  - requires incoming and outgoing filters to be applied for eBGP sessions
  - without incoming filters, no routes will be accepted
  - without outgoing filters, no routes will be announced
- the command modifies the network statement disabling the check of the existence of incoming and outgoing filters

announcement commands

- observe that the **`network`** command
  - *does not* inject any route in the kernel forwarding table
  - checks whether the network address matches the netmask; if it does not, the command is automatically replaced in the router configuration; for example:
    - **`network 193.100.0.0/8`**
      is replaced by
      `network 193.0.0.0/8`
    - **`network 1.2.3.4/0`**
      is replaced by
      `network 0.0.0.0/0`

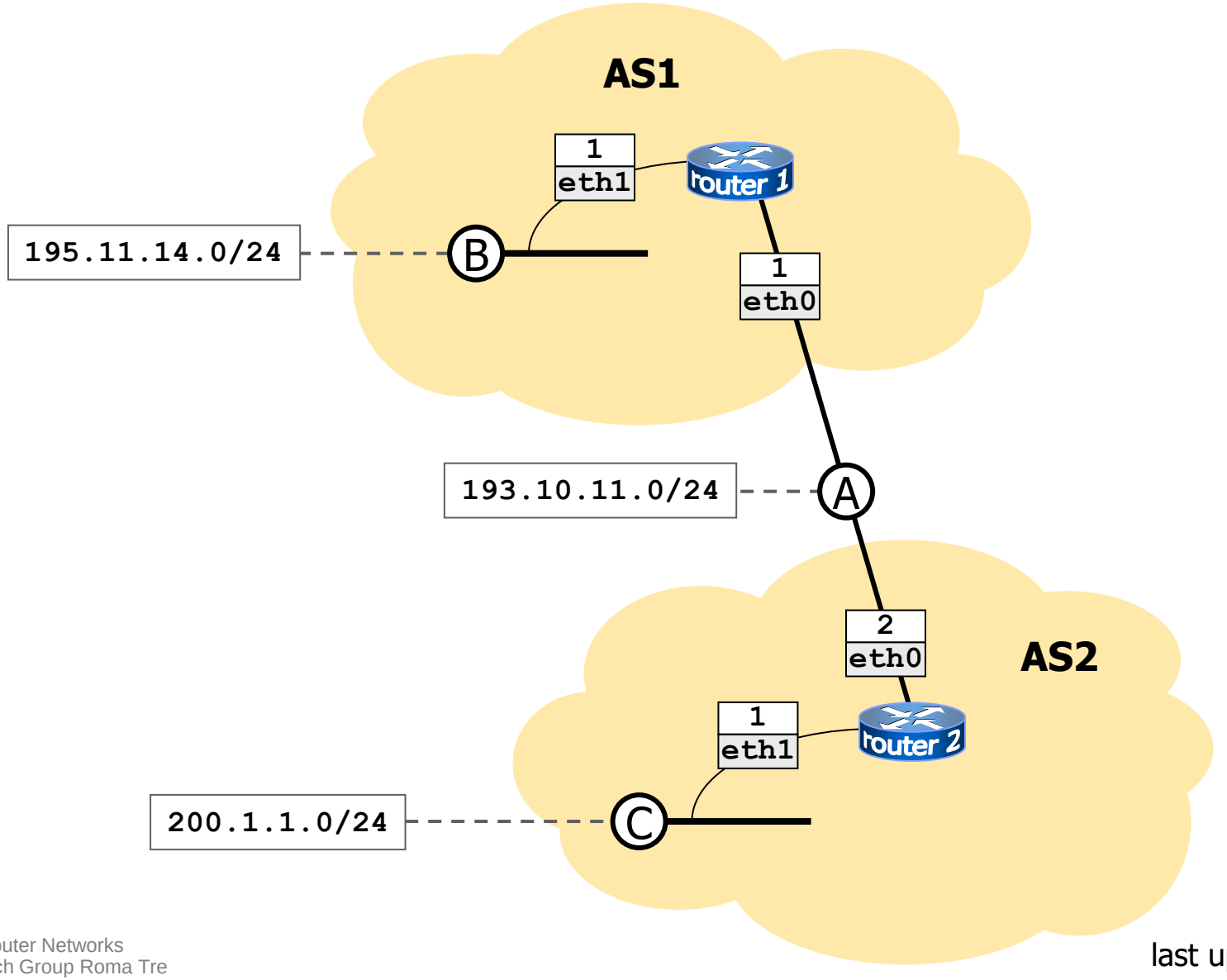
announcement example




```
! router 1 configuration file
router bgp 1
no bgp ebgp-requires-policy
neighbor 193.10.11.2 remote-as 2
network 195.11.14.0/24
```

```
! router 2 configuration file
router bgp 2
no bgp ebgp-requires-policy
neighbor 193.10.11.1 remote-as 1
network 200.1.1.0/24
```

peering configuration



last update: Oct 2021

announcement example

- start the lab

host machine

```
user@localhost:~$ cd kathara-lab_bgp-announcement_frr
user@localhost:~/kathara-lab_bgp-announcement_frr$ kathara lstart
```

- check the zebra routing table

router2

```
root@router2:/# vtysh
...
router2-frr# show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b -
backup

C>* 193.10.11.0/24 is directly connected, eth0, 00:03:41
B>* 195.11.14.0/24 [20/0] via 193.10.11.1, eth0, weight 1, 00:03:38
C>* 200.1.1.0/24 is directly connected, eth1, 00:03:41
router2-frr#
```

announcement example

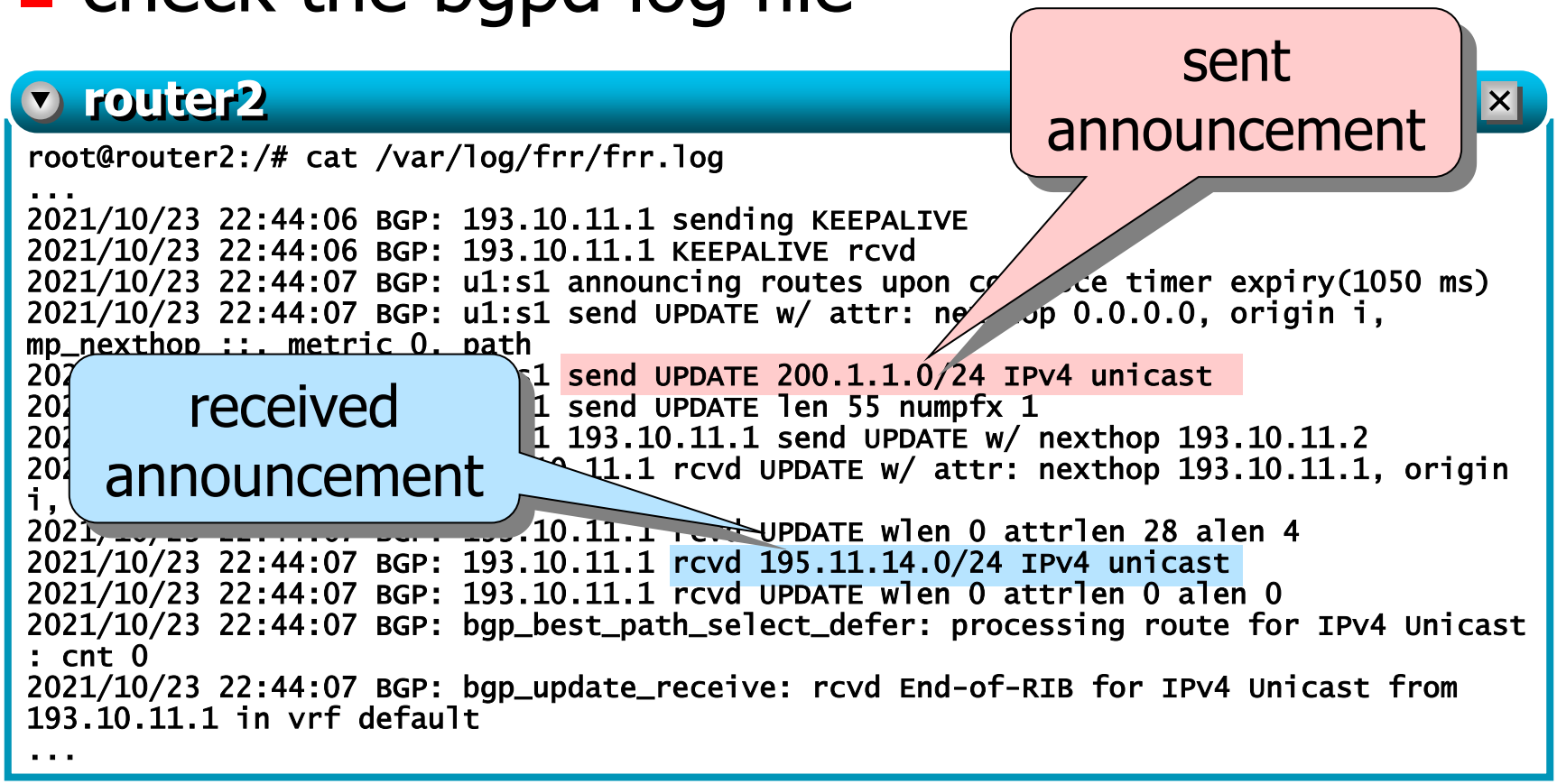
- check the bgpd log file

router2

```
root@router2:/# cat /var/log/frr/frr.log
...
2021/10/23 22:44:06 BGP: 193.10.11.1 sending KEEPALIVE
2021/10/23 22:44:06 BGP: 193.10.11.1 KEEPALIVE rcvd
2021/10/23 22:44:07 BGP: u1:s1 announcing routes upon coalesce timer expiry(1050 ms)
2021/10/23 22:44:07 BGP: u1:s1 send UPDATE w/ attr: nexthop 0.0.0.0, origin i,
mp_nexthop ::, metric 0, path
2021/10/23 22:44:07 BGP: u1:s1 send UPDATE 200.1.1.0/24 IPv4 unicast
2021/10/23 22:44:07 BGP: u1:s1 send UPDATE len 55 numpfx 1
2021/10/23 22:44:07 BGP: u1:s1 193.10.11.1 send UPDATE w/ nexthop 193.10.11.2
2021/10/23 22:44:07 BGP: 193.10.11.1 rcvd UPDATE w/ attr: nexthop 193.10.11.1, origin
i, metric 0, path 1
2021/10/23 22:44:07 BGP: 193.10.11.1 rcvd UPDATE wlen 0 attrlen 28 alen 4
2021/10/23 22:44:07 BGP: 193.10.11.1 rcvd 195.11.14.0/24 IPv4 unicast
2021/10/23 22:44:07 BGP: 193.10.11.1 rcvd UPDATE wlen 0 attrlen 0 alen 0
2021/10/23 22:44:07 BGP: bgp_best_path_select_defer: processing route for IPv4 Unicast
: cnt 0
2021/10/23 22:44:07 BGP: bgp_update_receive: rcvd End-of-RIB for IPv4 Unicast from
193.10.11.1 in vrf default
...
```

announcement example

- check the bgpd log file



announcement example

- check the vtysh cli (command line interface)
  - type "**`vtysh`**"
  - type "**`show ip bgp neighbors`**"
  - type "**`show ip bgp`**"
  - type "**`show ip bgp 200.1.1.0`**"
- ping "**`200.1.1.0`**"
- terminate the lab

host machine

```
user@localhost:~$ cd kathara-lab_bgp-announcement_frr
user@localhost:~/kathara-lab_bgp-announcement_frr$ kathara lclean
```