

SRv6 over NETCONF using Sysrepo

Main technologies used:

Segment Routing over IPv6

- new source routing technique
- <http://www.segment-routing.org/>
- <http://www.segment-routing.net/>

LEDE

- Linux Embedded Development Environment is a Linux operating system based on OpenWrt
- <https://lede-project.org/>

Netopeer2

- open source NETCONF server with a modular datastore allowing interconnection and control of various applications
- <https://github.com/CESNET/Netopeer2>

Sysrepo

- YANG-based configuration and operational datastore for Unix/Linux applications
- <http://www.sysrepo.org/>

Customized Linux 4.4 kernel

- <https://github.com/segment-routing/openwrt>

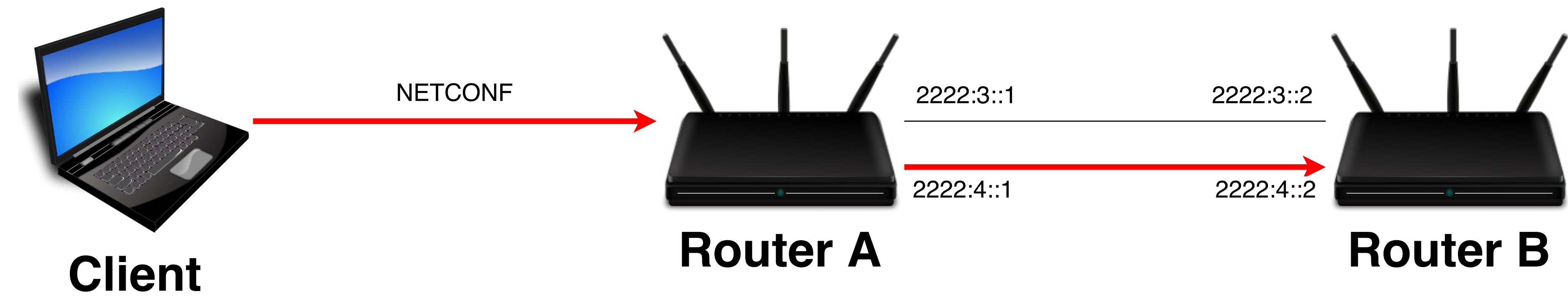
Initial state:

Our custom LEDE image with following "add-ons" is loaded on the routers:

- Netopeer2 server
- Sysrepo
- custom 4.4 kernel

```
user@user-laptop:~$ ping 2222:4::2
PING 2222:4::2 (2222:4::2): 56 data bytes
64 bytes from 2222:4::2: seq=0 ttl=64 time=0.852 ms
64 bytes from 2222:4::2: seq=1 ttl=64 time=0.464 ms
64 bytes from 2222:4::2: seq=2 ttl=64 time=0.468 ms
```

```
root@rtrA:~# ip -6 route list
2222:4::1 dev eth0.4 proto kernel metric 256 pref medium
2222:4::/80 dev eth0.4 metric 1024 pref medium
```



Hackathon goal:

Configure SRv6 explicit path via NETCONF

- code up a daemon utilizing Sysrepo serving SRv6 NETCONF capability on LEDE
- configure following explicit path on Router A via NETCONF:
ip -6 route add 2222:4::2 via 2222:3::2 encap seg6 mode encap segs 2222:3::2
- demonstrate that path of ICMP packet changes based on the present config

```
user@user-laptop:~$ ping 2222:4::2
PING 2222:4::2 (2222:4::2): 56 data bytes
64 bytes from 2222:4::2: seq=0 ttl=64 time=0.583 ms
64 bytes from 2222:4::2: seq=1 ttl=64 time=0.580 ms
64 bytes from 2222:4::2: seq=2 ttl=64 time=0.539 ms
```

```
root@rtrA:~# ip -6 route list
2222:4::1 dev eth0.4 proto kernel metric 256 pref medium
2222:4::2 encap seg6 mode encap segs 1 [ 2222:3::2 ] via 2222:3::2 dev eth0.3 metric 1024 mtu 1436 pref medium
2222:4::/80 dev eth0.4 metric 1024 pref medium
```

