Running networking labs with Docker User Experience
Roman Dodin
FRNOG 2022
WHOIS
Hey, Je m'appelle Roman

• Product manager by day

• Open-source contributor by night: containerlab, scrapligo, gnmic, commando, kne, ...

• Get in touch: @ntdvps
Network labs
A basic need of a neteng

- Test config changes before they down prod
- Prototype solutions
- Learn new protocols, designs, frameworks
Declarative domination
Can we use it for labs infrastructure?

IT Infrastructure/Workloads

Network labs
Containerlab
Bringing declarativeness to [networking] labs

name: mylab

topology:
  nodes:
  - 
  links:

Network Labs

IT

Terraform

CONTAINERlab
Topography definition file

**topology definition**

```
name: rr

- topology:
  - nodes:
    - srlinux:
      - kind: srl
      - image: ghcr.io/nokia/srlinux
    - ceos:
      - kind: ceos
      - image: ceos:4.25.0F
    - gobgp:
      - kind: linux
      - image: ghcr.io/hellt/network-multitool

- links:
  - endpoints: ["srlinux:e1-1", "ceos:eth1"]
  - endpoints: ["ceos:eth2", "gobgp:eth1"]
```
$ containerlab deploy -t frnog.clab.yml

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Container ID</th>
<th>Image</th>
<th>Kind</th>
<th>State</th>
<th>IPv4 Address</th>
<th>IPv6 Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ceos</td>
<td>b58c42293c82</td>
<td>ceos:4.25.0F</td>
<td>ceos</td>
<td>running</td>
<td>172.20.20.2</td>
<td>2001:172:20:20::2</td>
</tr>
<tr>
<td>3</td>
<td>srlinux</td>
<td>244aa33b261c</td>
<td>ghcr.io/nokia/srlinux</td>
<td>srl</td>
<td>running</td>
<td>172.20.20.4</td>
<td>2001:172:20:20::4</td>
</tr>
</tbody>
</table>

srlinux

ssh admin@srlinux

Welcome to the srlinux CLI.
Type 'help' (and press <ENTER>) if you need any help using this.
--{ running }--[ ]--
A:srl#

ceos

ssh admin@ceos

Password:

ceos>

gobgp

docker exec -it gobgp bash
gobgp>
Et alors?
Containerlab
Key benefits

- Declarative
- git
- Shareable
- Open
- Container-based
- Light
- Fast
# Multivendor and open

Both container- and VM-based Network OSes

<table>
<thead>
<tr>
<th>Company</th>
<th>OSes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nokia</td>
<td>srl</td>
</tr>
<tr>
<td></td>
<td>vr-sros</td>
</tr>
<tr>
<td>Juniper</td>
<td>crpd</td>
</tr>
<tr>
<td></td>
<td>vr-vmx</td>
</tr>
<tr>
<td></td>
<td>vr-vqfx</td>
</tr>
<tr>
<td>Arista</td>
<td>ceos</td>
</tr>
<tr>
<td></td>
<td>vr-veos</td>
</tr>
<tr>
<td>Cisco</td>
<td>vr-xrv9k</td>
</tr>
<tr>
<td></td>
<td>vr-csr</td>
</tr>
<tr>
<td>Sonic</td>
<td>sonic-vs</td>
</tr>
<tr>
<td></td>
<td>frr</td>
</tr>
<tr>
<td>NVIDIA</td>
<td>cvx</td>
</tr>
<tr>
<td></td>
<td>vr-pan</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>vr-ftosv</td>
</tr>
<tr>
<td>Dell</td>
<td>Keysight_ixia-c</td>
</tr>
<tr>
<td>Ixia</td>
<td>Containerized NOS</td>
</tr>
</tbody>
</table>
Containerlab

Sounds interesting, where do I start?

• Explore containerlab.dev documentation portal

• Try to create a lab with the Network OS dearest to your heart

• Missing feature, a problem, a nice idea? Reach out to us via Github Issues/Discussions

• Join our growing community on Discord

• Give containerlab repo a ⭐