Simulating networks in your laptop

no need for clouds, it rained enough

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Routing software testing requirements

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- automatable
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What is needed

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That's all.

What is useless

- one kernel per node
- one distribution image per node
- one systemd per node
- a massive hypervisor

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- Crazy times: accidentally found 0-day in openvswitch

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- written and maintained by Ondřej Zajíček of BIRD Team
- uses Linux kernel network namespaces
- minimized startup times
- minimal memory / CPU overhead (just the software running in)
- runnable in your laptop

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Downsides (maybe)

- lack of documentation (help appreciated)
- needs local `root` access (this will be history soon)
- no other isolation than network namespaces
- CLI-only tool based on config files
- expects BIRD to run in every node
- kinda hairy

BIRD Netlab basic configuration

```
NETLAB_NODES="m1 m2 m3 m4"
netlab_init
if_dummy m1 ve0 10.1.1 2001:db8:1:1
if_dummy m2 ve0 10.2.1 2001:db8:2:1
if_dummy m3 ve0 10.3.1 2001:db8:3:1
if_dummy m4 ve0 10.4.1 2001:db8:4:1
if_veth m1 ve1 m2 ve2 10.0.1 2001:db8:0:1
if_veth m2 ve1 m3 ve2 10.0.2 2001:db8:0:2
if_veth m3 ve1 m4 ve2 10.0.3 2001:db8:0:3
if_veth m4 ve1 m1 ve2 10.0.4 2001:db8:0:4
netlab_start
```

BIRD Netlab for 1000-node loop

```
NETLAB_NODES="$(echo m{1..1000})"
netlab_init
for i in $(seq 1000); do
  if_dummy m$i ve0 10.$((i/252)).$((i%252)) \
      2001:db8:0:$(printf "%03x" $i)
done
for i in $(seq 999); do
  if_veth m$i ve$((i+1)) m$((i+1)) ve$i \
      10.$((i/252+100)).$((i%252)) 2001:db8:1:$(printf "%03x" $i)
done
if_veth m1000 ve1 m1 ve1000 10.103.244 2001:db8:1:3e8
netlab_start
```

BIRD Netlab tryout

- ditch your containers
- look at https://gitlab.nic.cz/labs/bird-tools/-/tree/master/netlab
- it may move to the main BIRD repository soon
- new test suites covering more functionality appreciated
- please consult before contributing

Stay in touch

BIRD Users Mailing list at bird-users@network.cz

maria.matejka@nic.cz, `@marenamat` at social networks

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