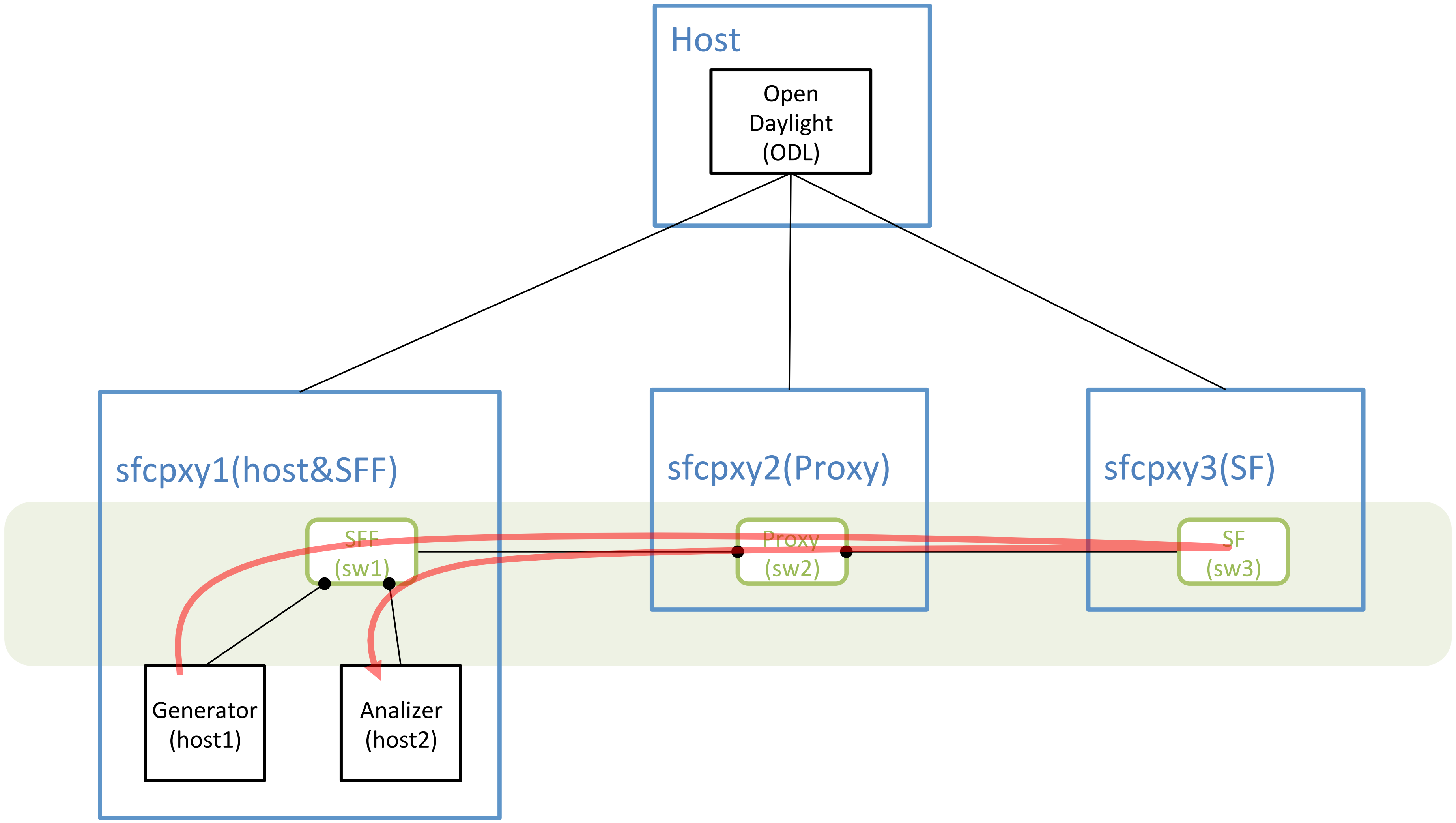
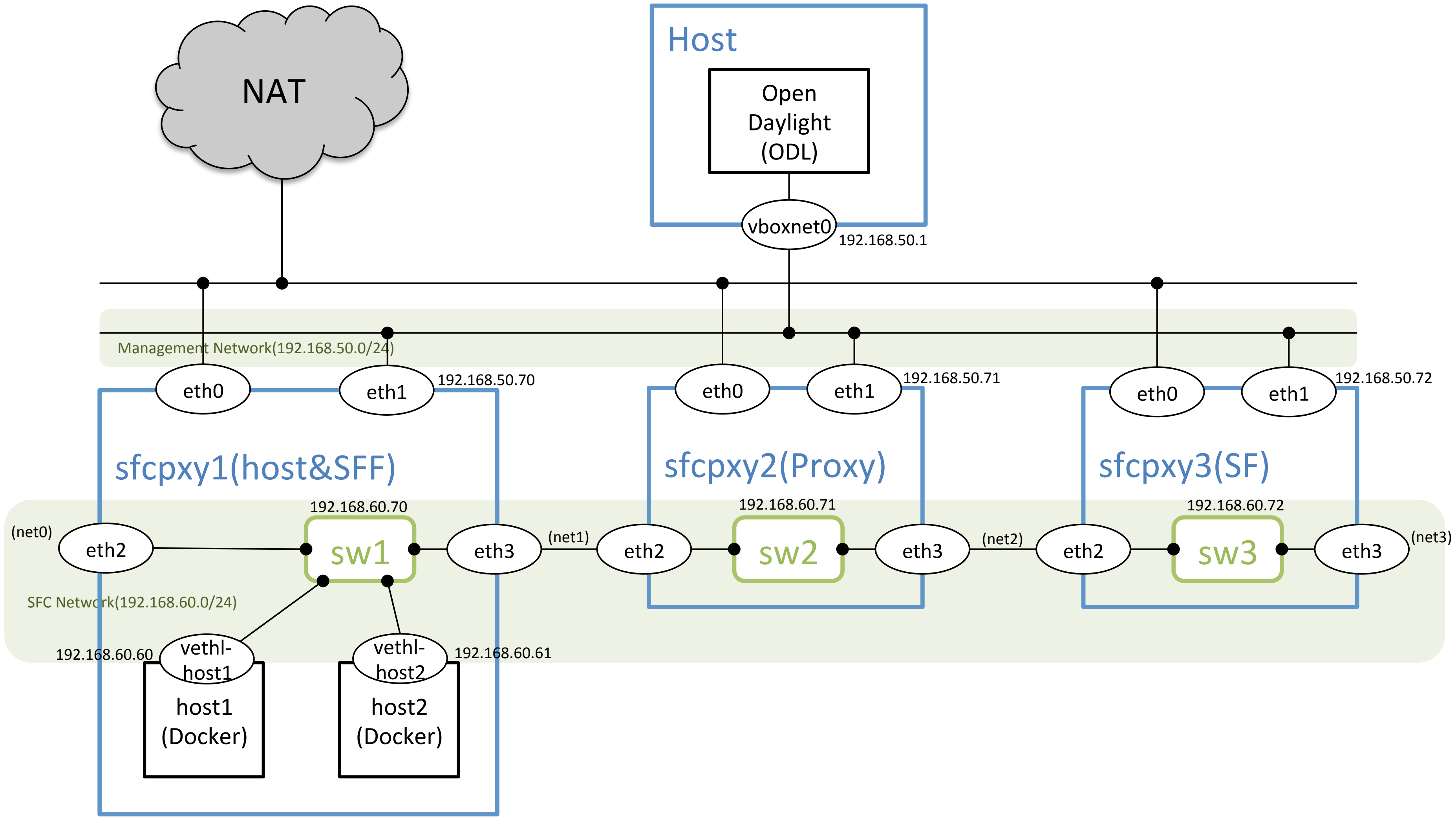
Network Topology(logical)

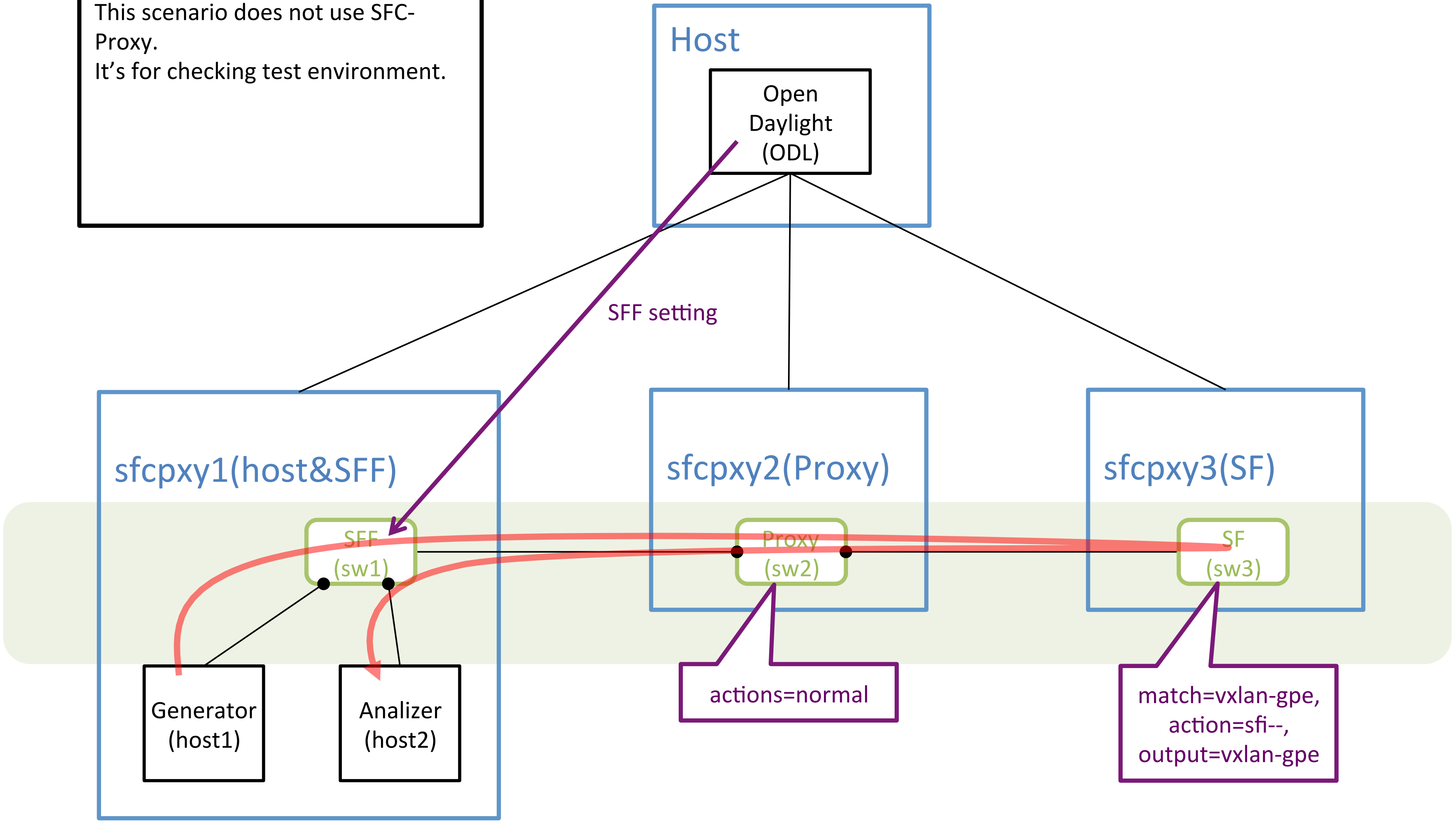


Network Topology(detailed)



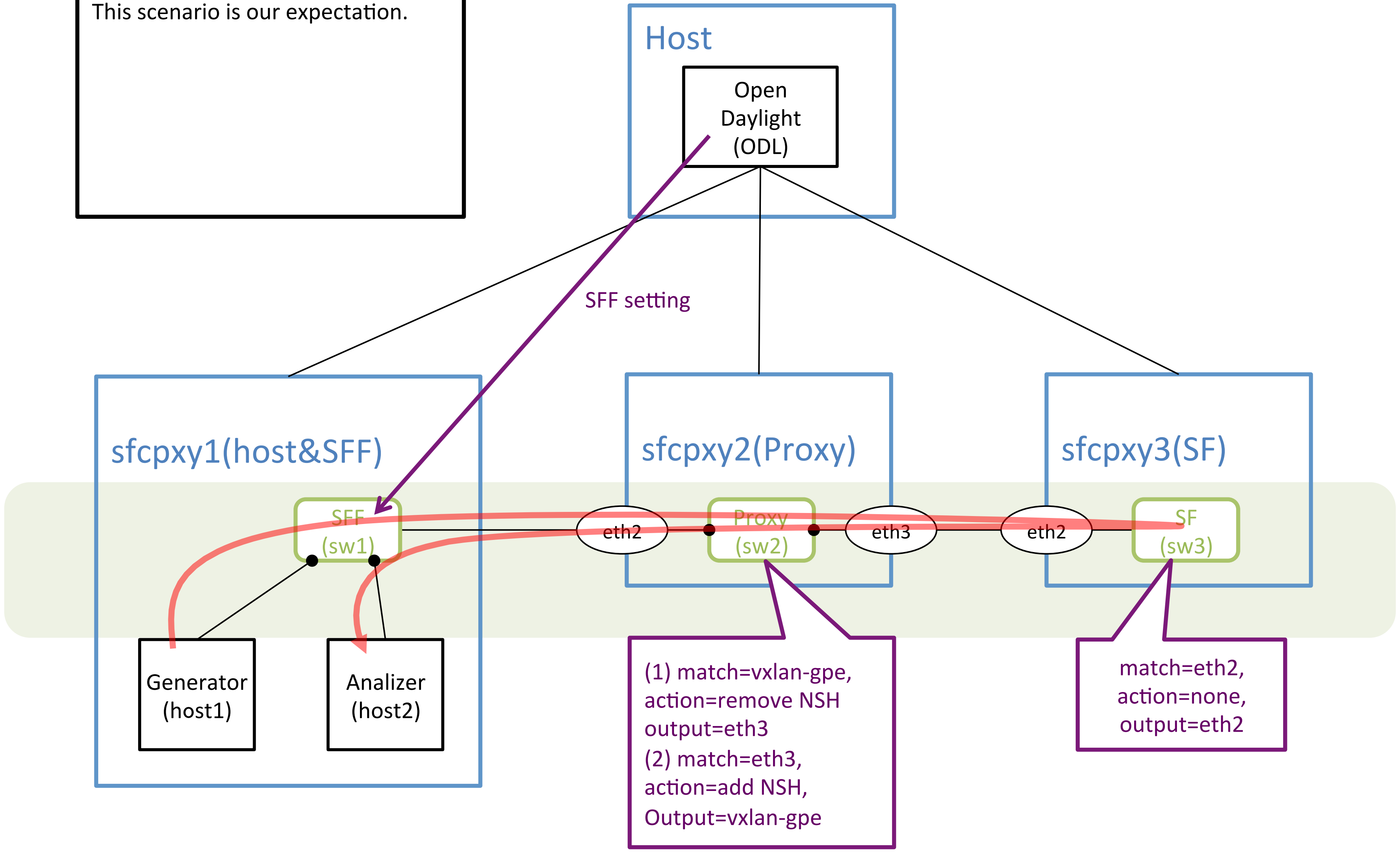
Scenario1: NSH-aware SF

This scenario does not use SFC-Proxy.
It's for checking test environment.



Scenario2: non NSH-aware SF

This scenario is our expectation.

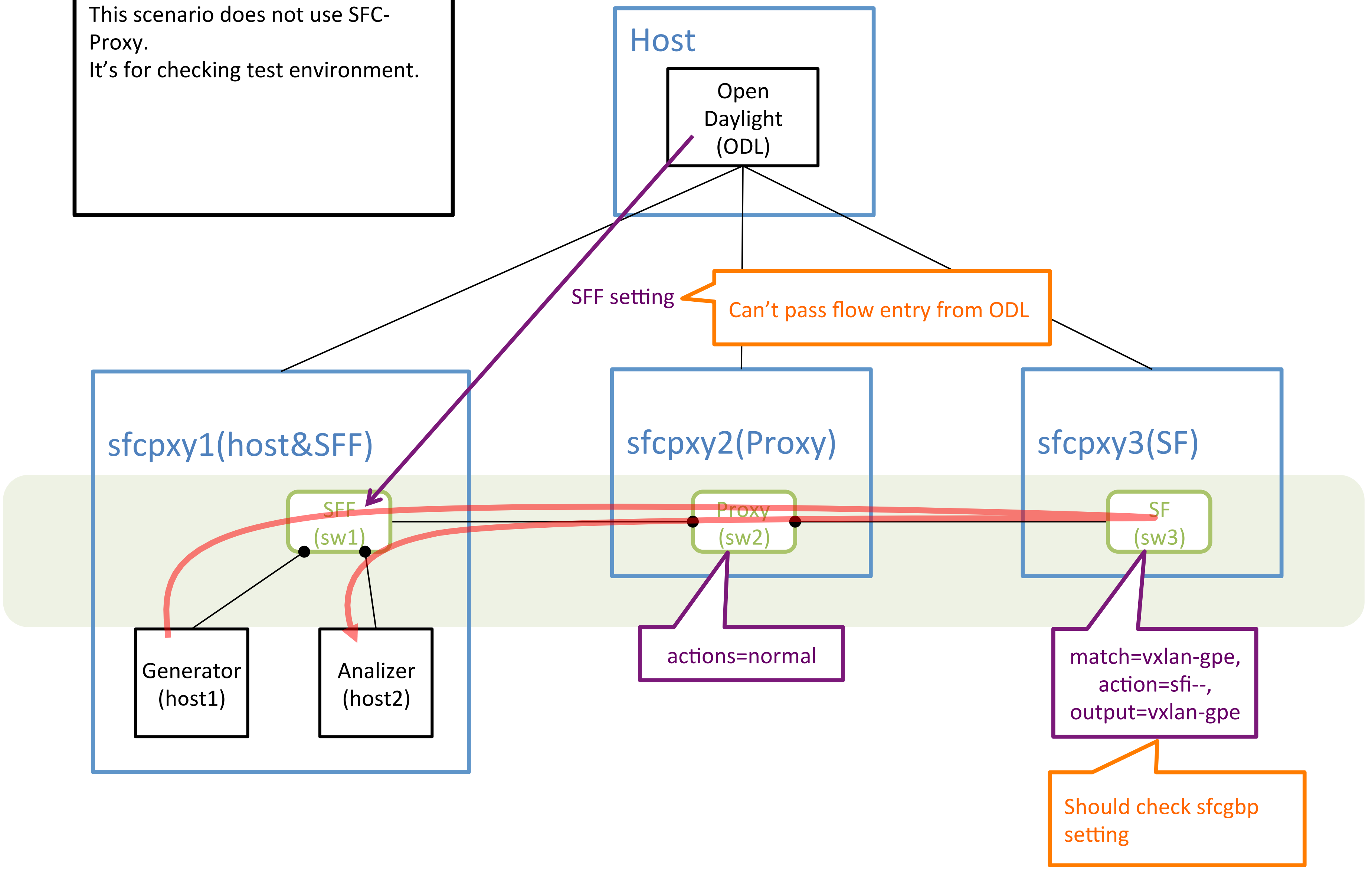


(1) match=vxlan-gpe,
action=remove NSH
output=eth3
(2) match=eth3,
action=add NSH,
Output=vxlan-gpe

match=eth2,
action=none,
output=eth2

Consideration:
Scenario1: NSH-aware SF

This scenario does not use SFC-Proxy.
It's for checking test environment.



Preparation (Before testing)

- Install the applications below.
  - VirtualBox
    - https://www.virtualbox.org/wiki/Downloads
  - Vagrant
    - https://www.vagrantup.com/downloads.html
- Install the OpenDaylight.
  - https://www.opendaylight.org/downloads
- Download VM image file.
  - https://atlas.hashicorp.com/toshirin/boxes/sfcpxy_base/versions/1.0/providers/virtualbox.box
  - Large file about 3.0GB.

Start Network & VMs(1)

1) Clone the “sfcpxy” git repogitory.
   - git clone https://github.com/toshirin/sfcpxy.git
2) In the repogitory, modify the “Vagrantfile”.
   - Find “###Your Directory Here###”, and replace to your VM image file path which you have downloaded before.
3) Read the configuration, then start VMs.
   - **source ./env.sh**
   - vagrant up
     - This may take several minutes.

Start Network & VMs(2)

4) You run the OpenDaylight.
   - bin/karaf
   - If you run the OpenDaylight first, you install the SFC modules below.
     - feature:install odl-sfc-core odl-sfc-ui odl-sfc-ui odl-sfcofl2
5) Run the setting scripts.
   - ./startdemo.sh nsh-aware
     - The argument phrase is for selection of test scenarios.
     - As a first step, select “nsh-aware”.
6) If you want to login to the VMs, use “vagrant ssh sfcpxyN”.
   - N is a host number.

Operation in the emulated host.

1) Login to the “sfcpxy1”.
   – vagrant ssh sfcpxy1
2) Check the docker status.
   – docker ps
3) Login to the emulated host.
   – docker attach host1
     - The choices are “host1” and “host2”.
     - Don’t forget to **double ENTER**.
4) If you want to detach from the emulated host, press “Ctrl-p Ctrl-q”.
   – you can go back to the sfcpxy1’s prompt.

Test procedure

- (All settings are in the emulated host.)
- Generate NSH packet
  – cd /sfc/sfc-py/sfc
  – python3.4 sff_client.py --remote-sff-ip=10.0.35.1 --sfp-id=1 --sfp-index=255 --encapsulate=vxlan-nsh-ethernet-legacy --inner-src-ip=10.1.0.10 --inner-dest-ip=10.2.0.10
    - adjusting...
- Analyze NSH packet
  – sudo tcpdump –i eth0

Stop Networks & VMs

- Stop networks:
  - ./cleandemo.sh
- Stop VMs temporarily:
  - vagrant halt
    - If you want to re-run, you also execute “vagrant up”.
- Remove VMs:
  - vagrant destroy

Some tips

- Directory share
  - Host:<vagrant execution dir> = sfcpxyN:/vagrant = hostN:/vagrant
    - It's useful for sharing the packet capture file.

Trouble shooting

- If you don’t go well by the environment, check below.

1. Don’t you forget **”source ./env.sh“**?
2. What is your vagrant version?
   – The older version doesn’t work. We recomment **over 1.7**.
3. Are your VMs running longer?
   – Longer operation may cause dirty status.
   – Clean the current VMs by “vagrant destroy; vagrant up”.
4. Did you update the vagrant image file?
   – Vagrant may cache the old image file.
   – Delete cache file in “~/.vagrant.d/boxes”(as MacOS).

How to re-build the OVS

1) Login to the “sfcpxy2”.
   – vagrant ssh sfcpxy2
2) Checkout the ovs-nsh repository and build script.
   – mkdir ovs_work
   – cd ovs_work   # cd=<start dir>/ovs_work
   – git clone https://github.com/pritesh/ovs.git
   – curl https://raw.githubusercontent.com/pritesh/ovs/nsh-v8/third-party/start-ovs-deb.sh > start-ovs-deb.sh
   – chmod +x start-ovs-deb.sh
   – cd ovs   # cd=<start dir>/ovs_work/ovs
   – git checkout nsh-v8
   – git branch -v
3) Work in the ovs directory.   # cd=<start dir>/ovs_work/ovs
4) Re-build the ovs.
   – cd ..   # cd=<start dir>/ovs_work
   – ./start-ovs-deb.sh -n