Network Troubleshooting

- Linux command line tools:
  - `ip address, ip route, ip netns`
    - `ifconfig, route are deprecated`
  - `iptables`
    - `useful options: -n -v --line-numbers`
  - `ping, host, traceroute, tcpdump, arp, arping`
  - Protocol decoders - `wireshark`

Open vSwitch Command Summary

- ovs-vsctl
  - show - overview of Open vSwitch configuration
  - add-br -
- ovs-ofctl
  - dump-flows
  – examine flow tables
  - dump-ports
 - port statistics by port number
  - show
  - port number to port name mapping
- ovs-appctl
  - bridge/dump-flows
  – examine flow tables
  - fdb/show <br> lists mac/vlan pairs learned
- Use port mirroring to see traffic processed by a port

Open vSwitch Port Mirroring

- Used to monitor traffic within Open vSwitch
- Mirror selective ports or all the traffic
- Useful for debugging network problems

Configure Open vSwitch Port Mirrors

- Create a virtual ethernet interface:

```
ip link add type veth
ip link set veth0 up
```

- Add it into the Open vSwitch bridge br-int:

```
ovs-vsctl add-port br-int "veth0"
```

- Create the mirror and mirror the packets from eth1, br-int, patch-tun:

```
ovs-vsctl -- set Bridge br-int mirrors=@m \
-- --id=@veth0 get Port veth0 \
-- --id=@eth1 get Port eth1 \
-- --id=@patch-tun get Port patch-tun \
-- --id=@br-int get Port br-int \
-- --id=@m create Mirror name=veth select-src-port=@eth1,@patch-tun,@br-int \
select-dst-port=@eth1,@patch-tun,@br-int output-port=@veth0
```

- When finished delete the mirror:

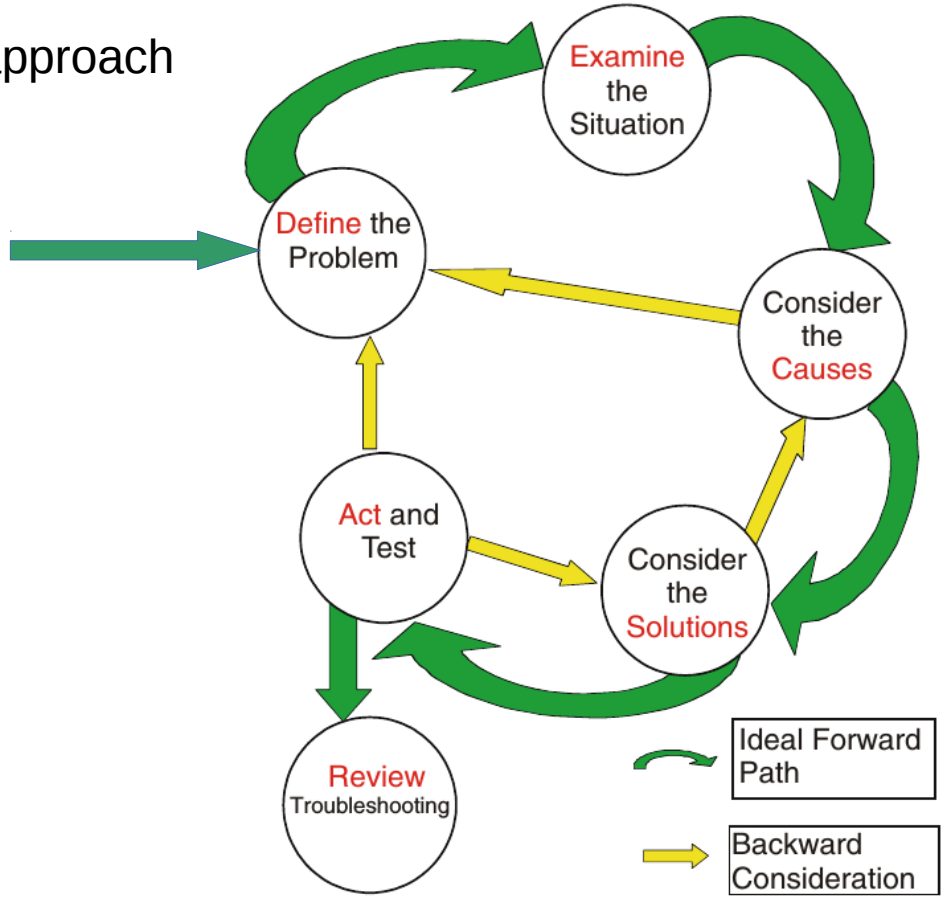
```
ovs-vsctl clear Bridge br-int mirrors
```

Neutron-debug Command

- Extension to the neutron command
- Sub-commands:
  - probe-clear Clear All probes.
  - probe-create Create probe port and interface, then plug it in.
    - option: network id into which the probe will be injected
  - probe-delete Delete probe - delete port then uplug.
    - option: probe id which will be removed
  - probe-exec Exec commands on the namespace of the probe.
    - option: port-id command
  - probe-list List probes.
  - ping-all Ping all fixed_ips.
    - option: network id to be used to ping all fixed IPs

Troubleshooting Process

An iterative approach



Ross, C. (2004). The DECSAR method: A new approach to troubleshooting

Neutron Troubleshooting Process

- Define the problem
  - Understand the error
    - One tenant or all?
    - One network or all?
    - What protocols are used?
    - Is it an L2 or L3 problem?
  - Examine/locate
    - Look carefully at what is happening
      - typically insufficient time is spent here
    - Isolate to tenant, network, VM, compute or network nodes
- Consider causes
- Need more data?
  - lather rinse and repeat
- Consider Solutions
- Test
  - If necessary - lather rinse and repeat

Network Monitoring

- Traffic Levels
  - Add sFlow to Open vSwitch
  - Watch for:
    - Failures
  - Blackhat behaviors
- Ceilometer
- Neutron metering agent
  - uses iptable stats to log traffic to and from particular IP ranges