Tres herramientas de gestión de redes para gestionarlas a todas

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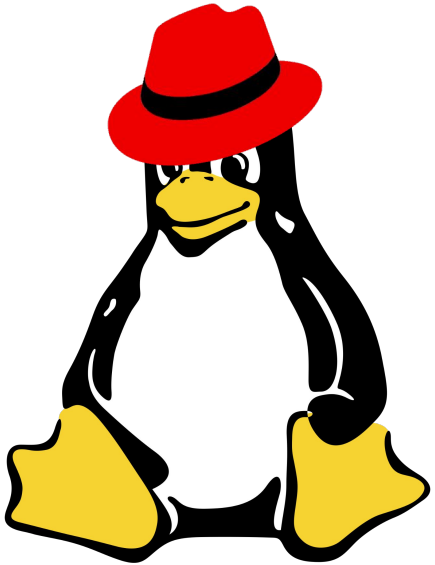
Sobre mi

1. Software Engineer at Red Hat

sugus

netfilter
firewalling, NAT, and packet mangling for linux



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Objetivo

1. Comprender que es NetworkManager
2. La relación que existe entre NM y los diferentes clientes
3. Saber usar la herramienta adecuada en el momento adecuado

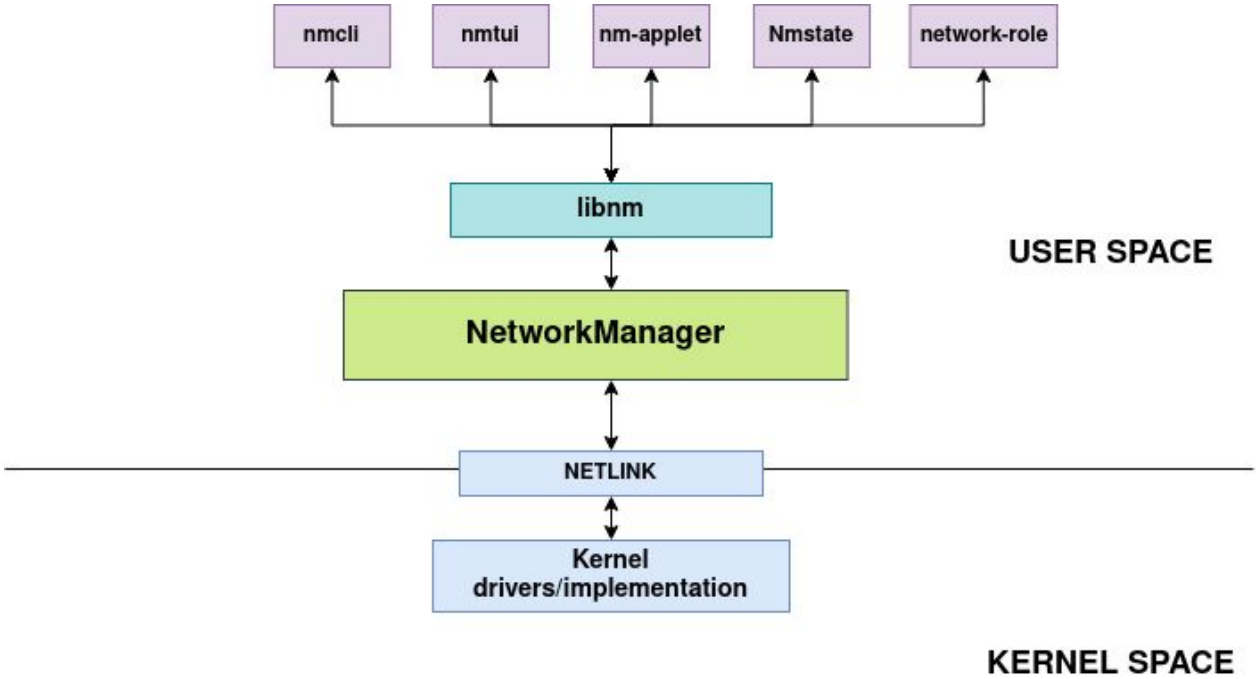
NetworkManager

“NetworkManager is a program for providing detection and configuration for systems to automatically connect to networks. NetworkManager's functionality can be useful for both wireless and wired networks.”

- Archwiki - NetworkManager (https://wiki.archlinux.org/title/NetworkManager)

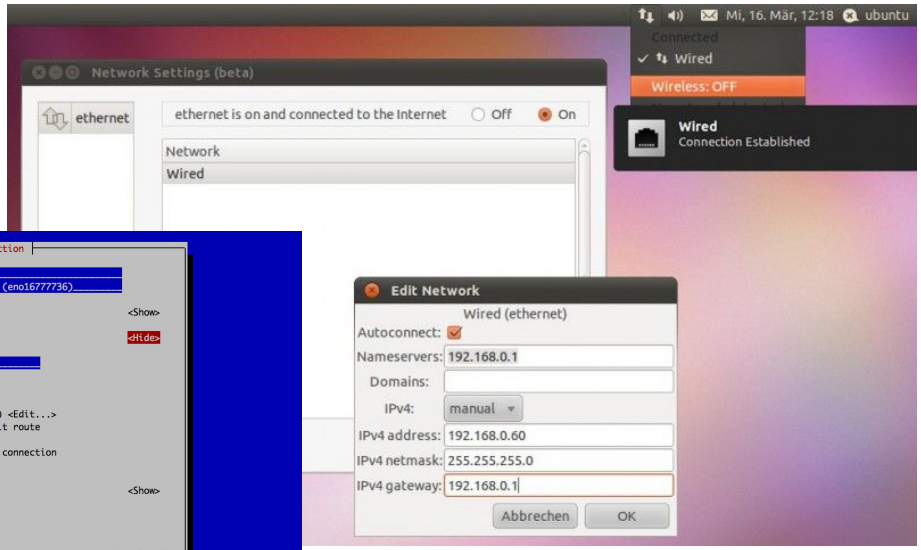
NetworkManager 101

- NetworkManager es un servicio
- Cada NIC tiene un “device” asociado
- El usuario crea configuraciones llamadas “connections”
- Cada “device” puede tener múltiples “connections” asociadas


nmcli
nmtui
nm-applet
Nmstate
network-role
libnm
USER SPACE
NetworkManager
NETLINK
Kernel
drivers/implementation
KERNEL SPACE

Escritorios

- nm-applet
- nmtui



Servidores/entornos de consola

- nmcli
- Nmstate

nmcli connection add type veth con-name veth1 ifname veth1 veth.peer veth2 ipv4.method manual ipv4.dns 8.8.8.8 ipv4.addresses "192.168.100.25/24" connection.autoconnect yes

nmcli connection add type veth con-name veth2 ifname veth2 veth.peer veth1 ipv4.method manual ipv4.dns 8.8.8.8 ipv4.addresses "192.168.100.26/24" connection.autoconnect yes

Nmstate

- Configuración declarativa
- Herramienta de línea de comandos
- Libreria de rust nativa (libnmstate)
- Bindings para C/Python/Golang
- YAML o JSON
- Verificación y rollback
- Se centra en “devices”

```yaml
---
interfaces:
- name: veth1
  state: up
  type: veth
  veth:
    peer: veth2
```

libnmstate

```
#! /bin/python3

import libmstate
from libnmstate.schema import Interface
from libnmstate.schema import InterfaceState
from libnmstate.schema import InterfaceType
from libnmstate.schema import Veth

desired_state = {
        Interface.KEY: [
                {
                        Interface.NAME: "veth1",
                        Interface.STATE: InterfaceState.UP,
                        Interface.TYPE: InterfaceType.VETH,
                        Veth.CONFIG_SUBTREE: {
                                Veth.PEER: "veth2"
                        },
                },
        ],
}

libnmstate.apply(desired_state)
```

Clusters/VMs

- Ansible Linux Network Role
- NMPolicy
- Nmstate

```
- hosts: network-test
  vars:
    network_connections:
      # Specify the bond profile
      - name: bond0
        state: up
        type: bond
        interface_name: bond0
        # ip configuration (optional)
        ip:
          address:
            - "192.0.2.24/24"
            - "2001:db8::23/64"
        # bond configuration settings: (optional)
        bond:
          mode: active-backup
          miimon: 110
```

Ansible Linux Network Role

- Ansible role
- Clusters, VMs.
- NetworkManager y initscripts
- YAML.
- Se centra en “connections”
- Soporte de Nmstate en progreso!

NMPolicy y kubernetes-nmstate

- Kubernetes-nmstate: Configuración de red para entornos con kubernetes
- NMPolicy: Configuración inteligente para clusters con Nmstate

Conclusiones

- Escritorio: nm-applet/nmtui
- Servidor: Nmstate
- Clusters: NMPolicy/Ansible Linux Network Role
- Kubernetes: kubernetes-nmstate

¡Gracias!
¿Alguna pregunta?

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