Setting Up OpenShift

In Your Lab or Homelab

Thomas Cameron, RHCA Level V
Senior Principal Solution Architect, Red Hat
https://people.redhat.com/tcameron
thomas@redhat.com
https://github.com/tdcam

Red Hat

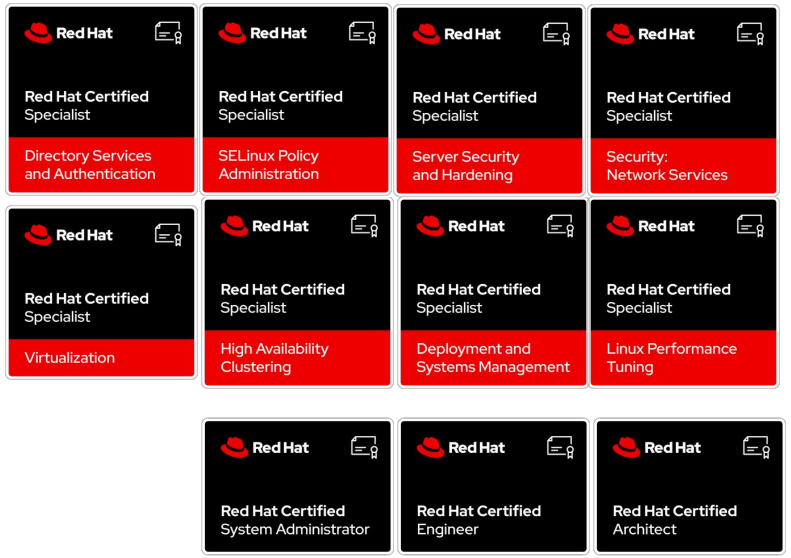
Agenda

Introduction
Credit
Network
DHCP
DNS
HAProxy
NFS
Installation
Post-installation

Introduction

Introduction

Who am I?



I'm Thomas Cameron. Senior Principal Solution Architect.

- I've been doing this since 1993 👴
- Started as a Novell CNE
- Went to work for Microsoft, became an MCSE/MCT
- Started using Linux in 1995 (while working at MSFT)
- Worked for Red Hat for about 14 years - RHCA level 5
- Went to AWS for 4 years back in 2019 - Solution Architect Professional, Solution Architect Associate, Security Specialty, SysOps Associate, AAI
- Saw the error of my ways, and I'm **back at Red Hat!**

Red Hat

Credit

Ryan Hay on Youtube

I used a lot of his information

HUGE credit goes to Ryan Hay (https://github.com/ryanhay)

I shamelessly used his video:

https://www.youtube.com/watch?v=d03xg2PKOPg

And his instructions:

https://github.com/ryanhay/ocp4-metal-install

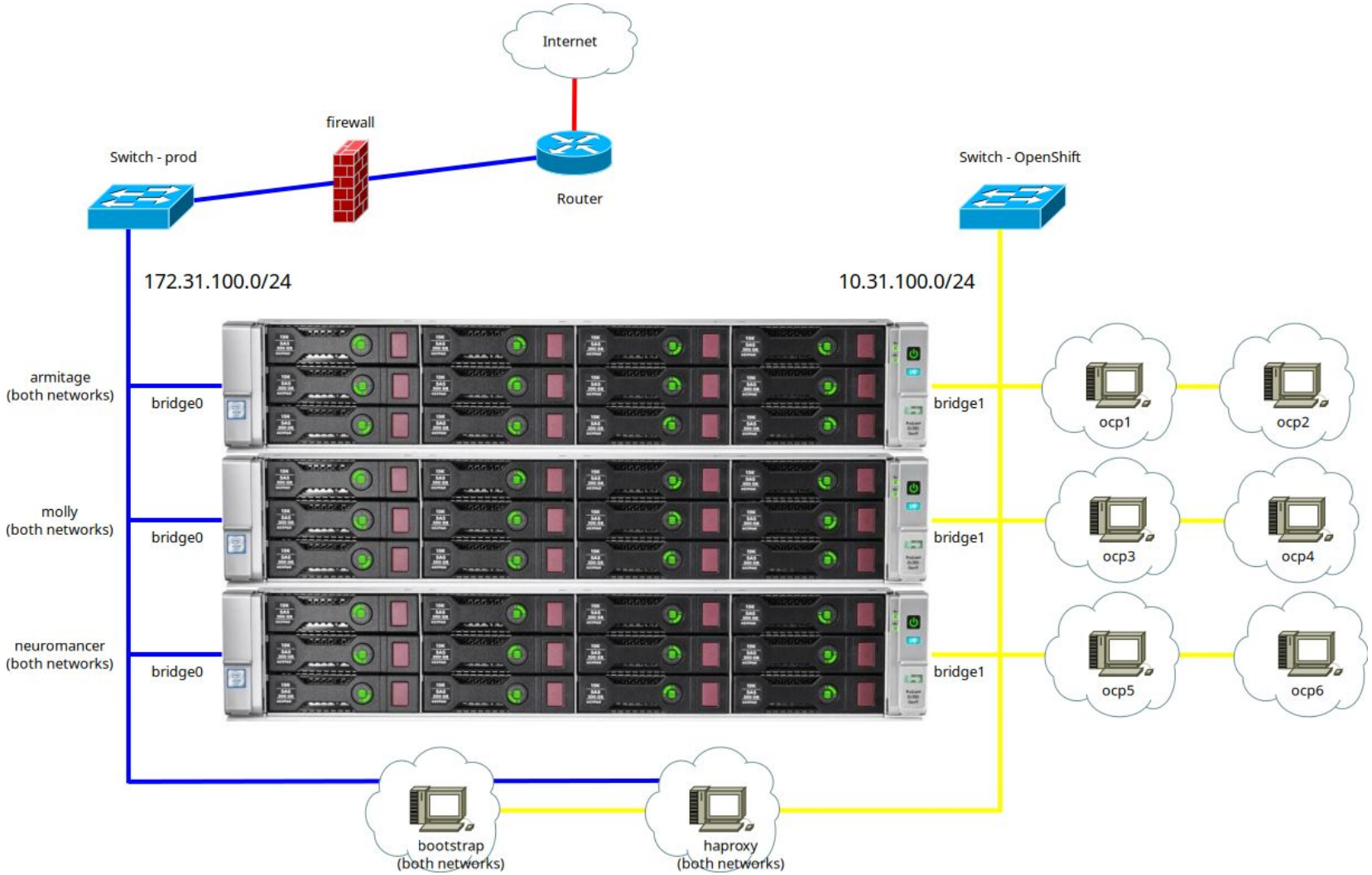
...to prepare this demo. I had to update a fair amount for OpenShift 4.19, but the bones are from his work.

Network

Network

I tried to make it as close to “production” as possible

- Three Proliant DL380 Servers running RHEL 10, connected to the production network (172.31.100.0/24) and the private network (10.31.100.0/24). Each physical interface is bridged.
- Load balancer KVM virtual machine (HAProxy) connected to both networks
  - Also runs DNS and DHCP for the private network
  - The load balancer is used for intercluster communication between nodes and for access from the production network
- Bootstrap VM connected to both networks for installation
- 6 VMs attached to the bridge on the private network only for OpenShift


Internet
firewall
Switch - prod
Router
Switch - OpenShift
172.31.100.0/24
10.31.100.0/24
armitage
(both networks)
bridge0
bridge1
ocp1
ocp2
molly
(both networks)
bridge0
bridge1
ocp3
ocp4
neuromancer
(both networks)
bridge0
bridge1
ocp5
ocp6
bootstrap
(both networks)
haproxy
(both networks)

Red Hat

DHCP

The HAProxy Machine

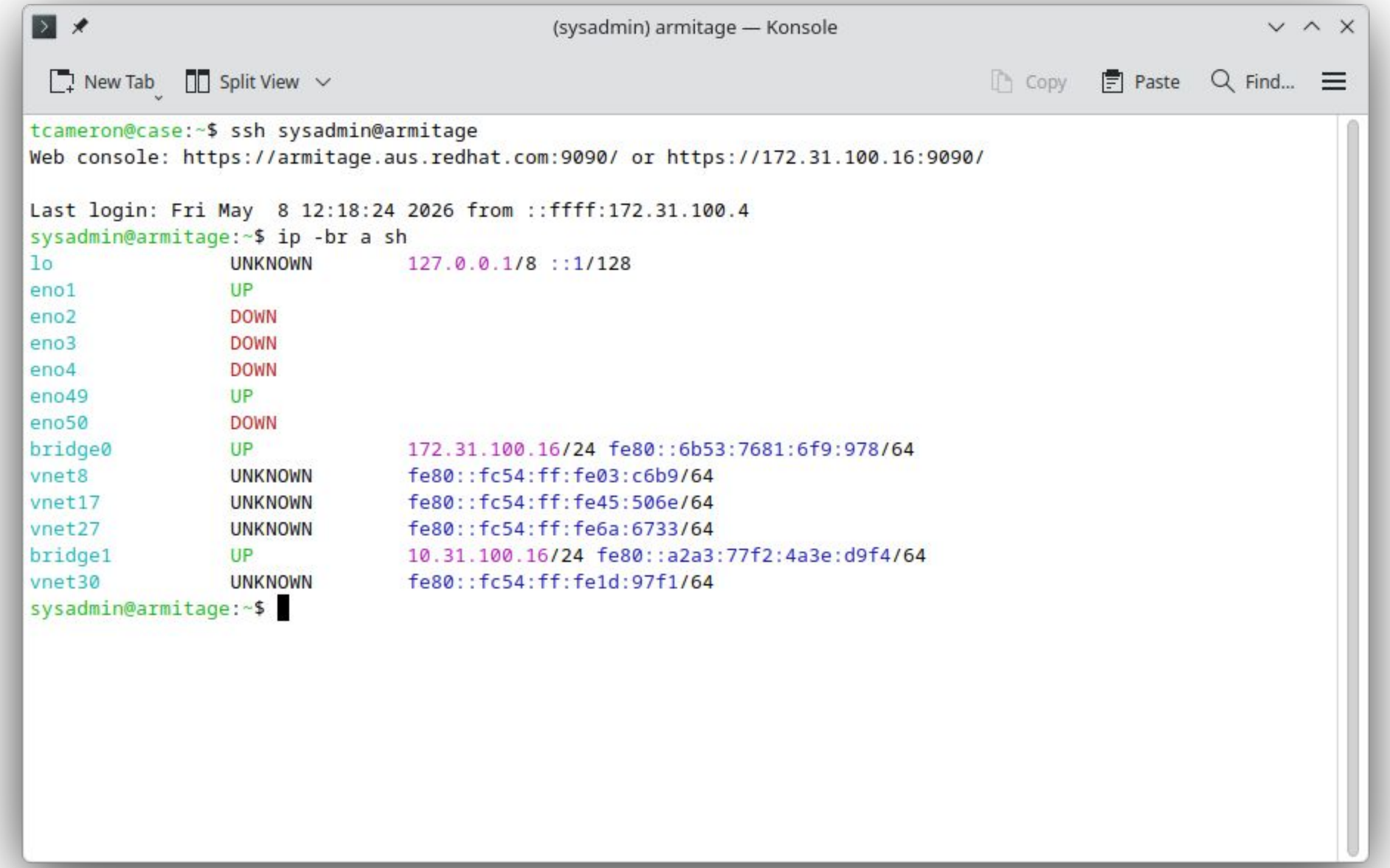
Connect the VM to both networks

I kickstarted the VM on the production network

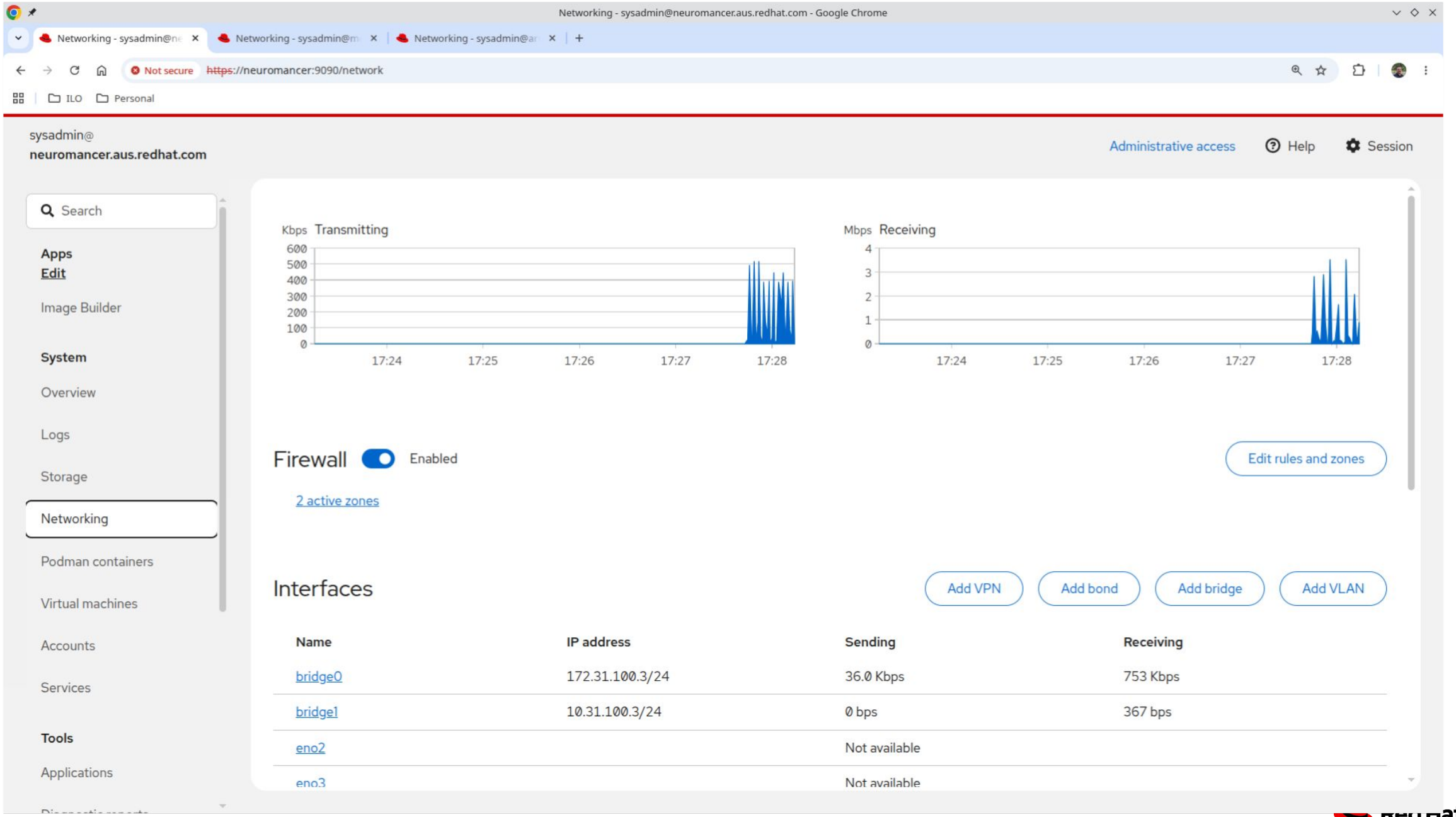
Then added a second interface on the OpenShift network

On the big physical machines, they're connected to each network

Each interface is bridged so we can assign IP addresses to each of the VMs


(sysadmin) armitage — Konsole
New Tab
Split View
Copy
Paste
Find...
tcameron@case:~$ ssh sysadmin@armitage
Web console: https://armitage.aus.redhat.com:9090/ or https://172.31.100.16:9090/
Last login: Fri May 8 12:18:24 2026 from ::ffff:172.31.100.4
sysadmin@armitage:~$ ip -br a sh
lo UNKNOWN 127.0.0.1/8 ::1/128
eno1 UP
eno2 DOWN
eno3 DOWN
eno4 DOWN
eno49 UP
eno50 DOWN
bridge0 UP 172.31.100.16/24 fe80::6b53:7681:6f9:978/64
vnet8 UNKNOWN fe80::fc54:ff:fe03:c6b9/64
vnet17 UNKNOWN fe80::fc54:ff:fe45:506e/64
vnet27 UNKNOWN fe80::fc54:ff:fe6a:6733/64
bridge1 UP 10.31.100.16/24 fe80::a2a3:77f2:4a3e:d9f4/64
vnet30 UNKNOWN fe80::fc54:ff:fe1d:97f1/64
sysadmin@armitage:~$

Red Hat

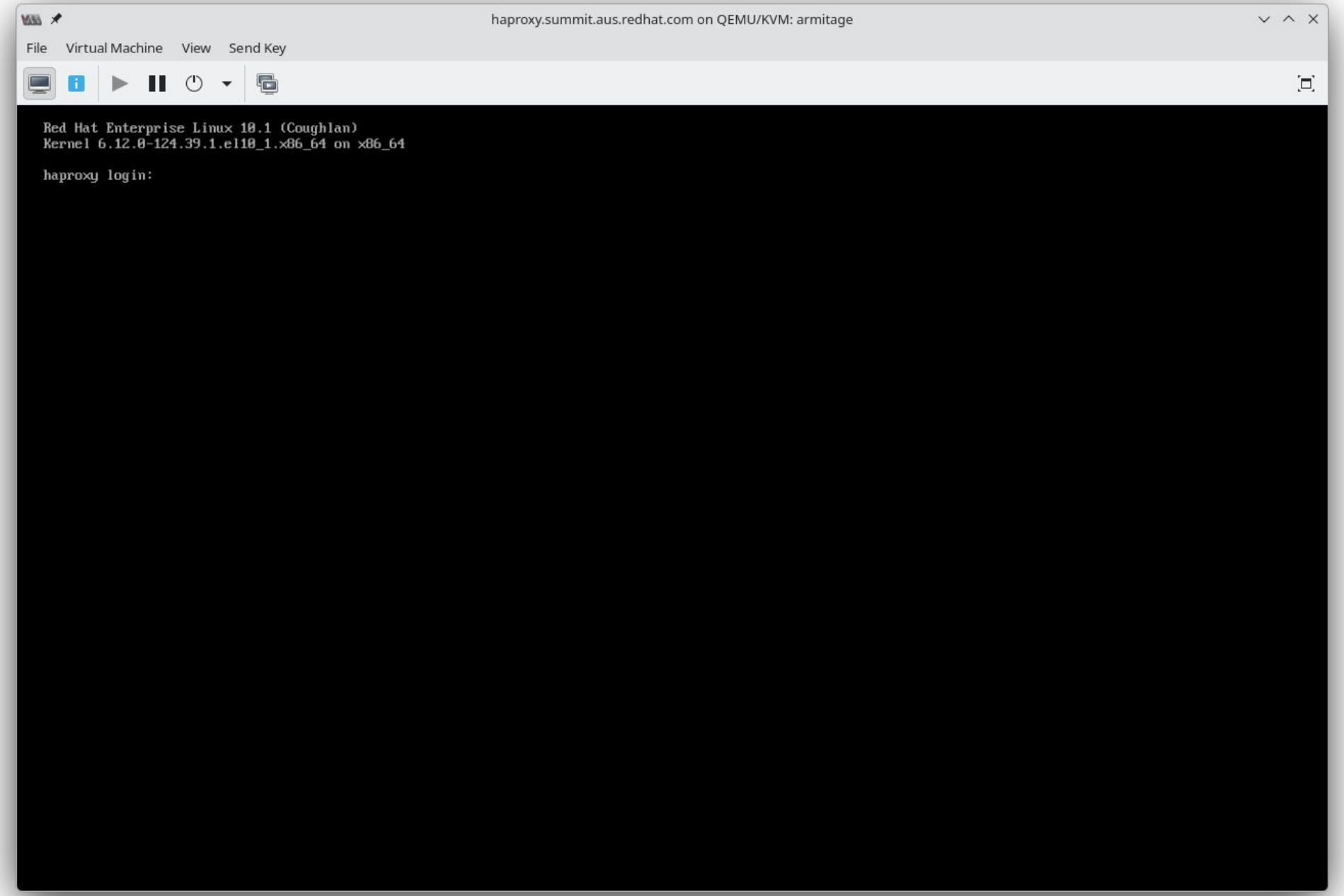

Networking - sysadmin@neuromancer.aus.redhat.com - Google Chrome
Networking - sysadmin@ne
Networking - sysadmin@m
Networking - sysadmin@ar
Not secure
https://neuromancer:9090/network
ILO
Personal
sysadmin@
neuromancer.aus.redhat.com
Administrative access
Help
Session
Search
Apps
Edit
Image Builder
System
Overview
Logs
Storage
Networking
Podman containers
Virtual machines
Accounts
Services
Tools
Applications
Kbps Transmitting
600
500
400
300
200
100
0
17:24
17:25
17:26
17:27
17:28
Mbps Receiving
4
3
2
1
0
17:24
17:25
17:26
17:27
17:28
Firewall
Enabled
Edit rules and zones
2 active zones
Interfaces
Add VPN
Add bond
Add bridge
Add VLAN
Name
IP address
Sending
Receiving
bridge0
172.31.100.3/24
36.0 Kbps
753 Kbps
bridge1
10.31.100.3/24
0 bps
367 bps
eno2
Not available
eno3
Not available

The HAProxy Machine

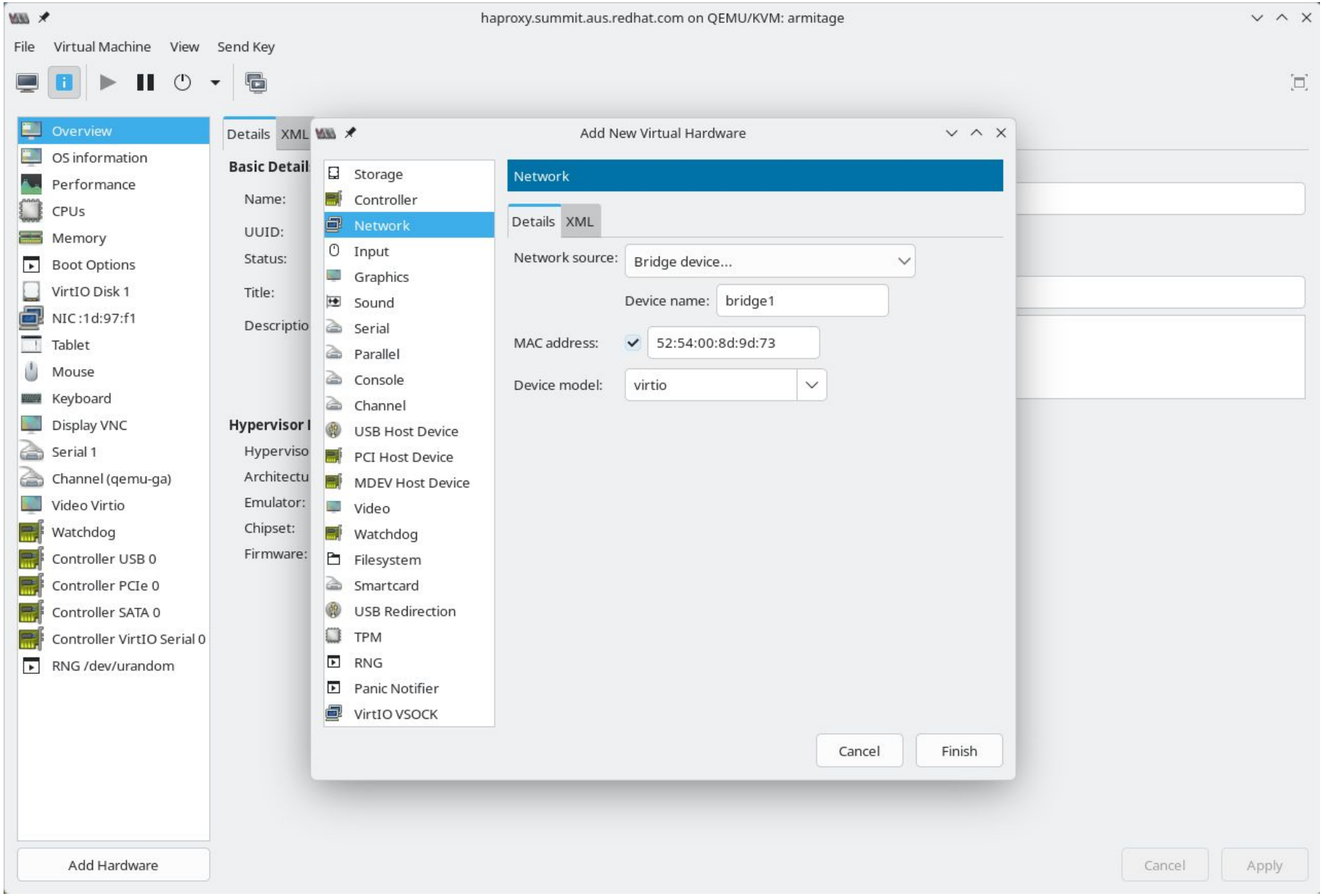
Connect the VM to both networks

I am adding another interface to the VM, and attaching it to the bridged network on the private (10.31.100.0/24) network

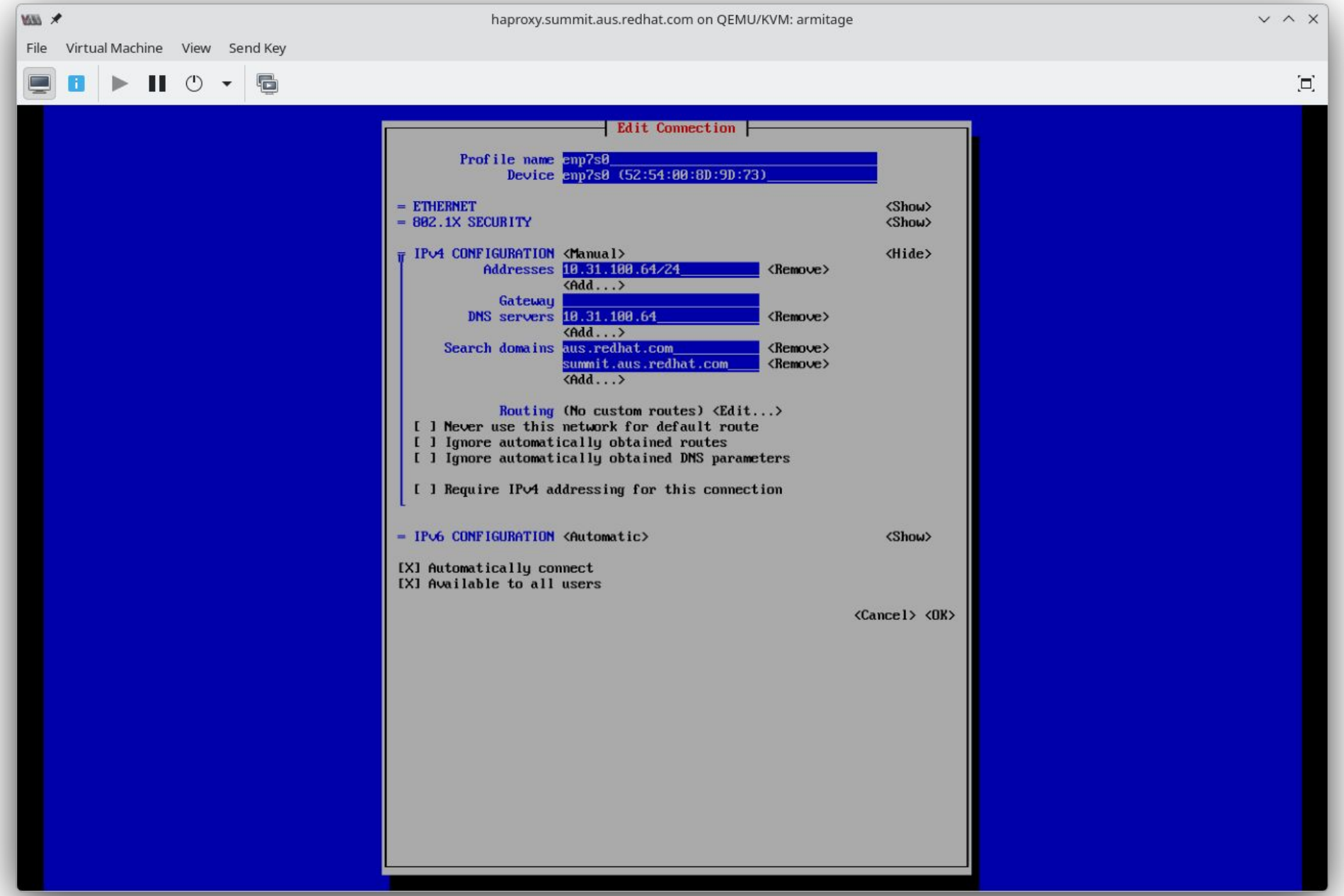
This proxy machine is going to run DNS, DHCP, and a web server, so I will set the IP address statically.


haproxy.summit.aus.redhat.com on QEMU/KVM: armitage
File
Virtual Machine
View
Send Key
Red Hat Enterprise Linux 10.1 (Coughlan)
Kernel 6.12.0-124.39.1.el10_1.x86_64 on x86_64
haproxy login:

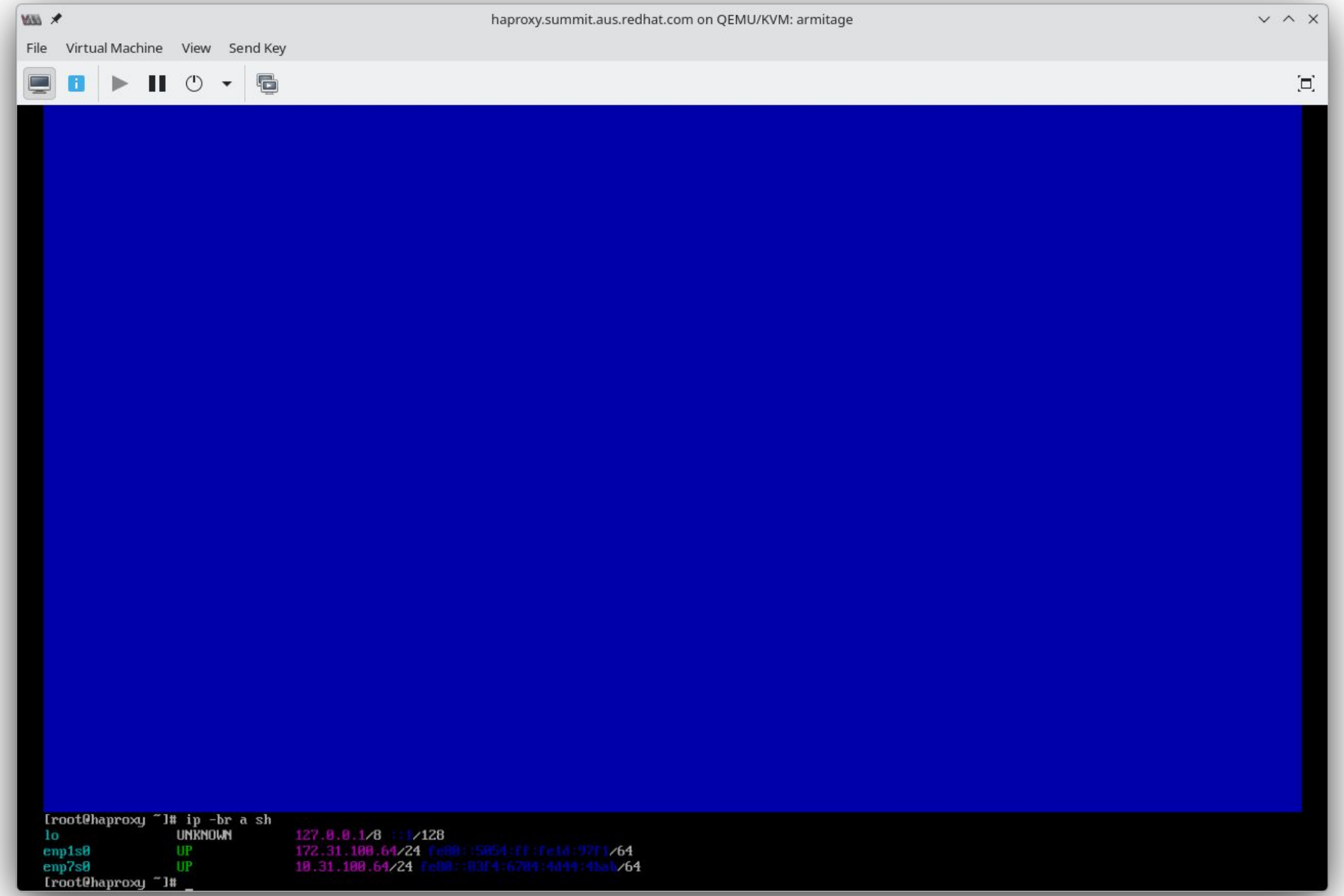
Red Hat


haproxy.summit.aus.redhat.com on QEMU/KVM: armitage
File
Virtual Machine
View
Send Key
Overview
OS information
Performance
CPUs
Memory
Boot Options
VirtIO Disk 1
NIC :1d:97:f1
Tablet
Mouse
Keyboard
Display VNC
Serial 1
Channel (qemu-ga)
Video Virtio
Watchdog
Controller USB 0
Controller PCIe 0
Controller SATA 0
Controller VirtIO Serial 0
RNG /dev/urandom
Add Hardware
Details
XML
Basic Detail
Name:
UUID:
Status:
Title:
Descriptio
Hypervisor I
Hyperviso
Architectu
Emulator:
Chipset:
Firmware:
Add New Virtual Hardware
Storage
Controller
Network
Input
Graphics
Sound
Serial
Parallel
Console
Channel
USB Host Device
PCI Host Device
MDEV Host Device
Video
Watchdog
Filesystem
Smartcard
USB Redirection
TPM
RNG
Panic Notifier
VirtIO VSOCK
Network
Details
XML
Network source:
Bridge device...
Device name:
bridge1
MAC address:
52:54:00:8d:9d:73
Device model:
virtio
Cancel
Finish
Cancel
Apply

Red Hat


haproxy.summit.aus.redhat.com on QEMU/KVM: armitage
File
Virtual Machine
View
Send Key
Edit Connection
Profile name enp7s0
Device enp7s0 (52:54:00:8D:9D:73)
= ETHERNET <Show>
= 802.1X SECURITY <Show>
IPv4 CONFIGURATION <Manual> <Hide>
Addresses 10.31.100.64/24 <Remove>
<Add...>
Gateway
DNS servers 10.31.100.64 <Remove>
<Add...>
Search domains aus.redhat.com <Remove>
summit.aus.redhat.com <Remove>
<Add...>
Routing (No custom routes) <Edit...>
[ ] Never use this network for default route
[ ] Ignore automatically obtained routes
[ ] Ignore automatically obtained DNS parameters
[ ] Require IPv4 addressing for this connection
= IPv6 CONFIGURATION <Automatic> <Show>
[X] Automatically connect
[X] Available to all users
<Cancel> <OK>

Red Hat

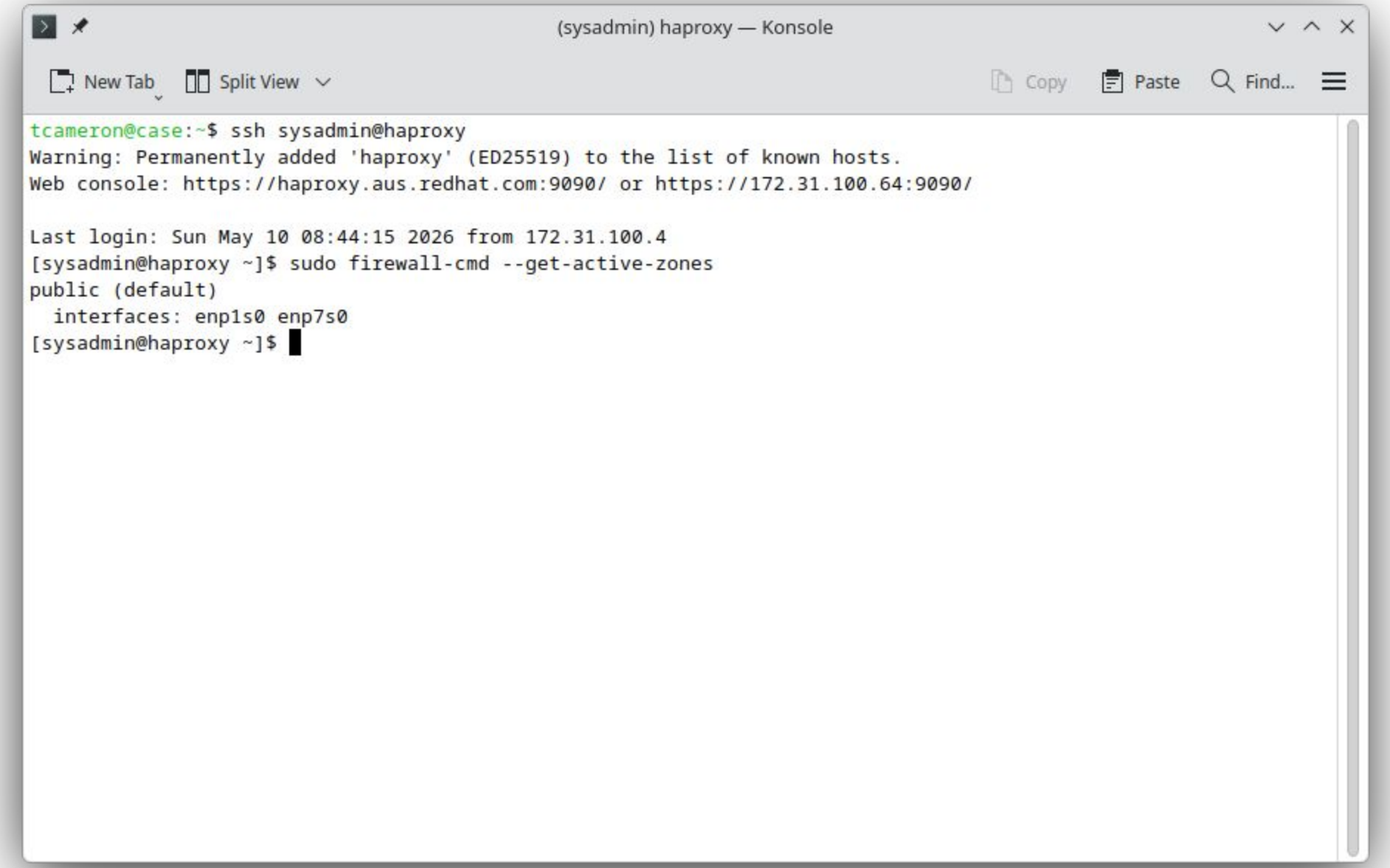

haproxy.summit.aus.redhat.com on QEMU/KVM: armitage
File
Virtual Machine
View
Send Key
[root@haproxy ~]# ip -br a sh
lo UNKNOWN 127.0.0.1/8 ::1/128
enp1s0 UP 172.31.100.64/24
enp7s0 UP 10.31.100.64/24
[root@haproxy ~]#

Red Hat

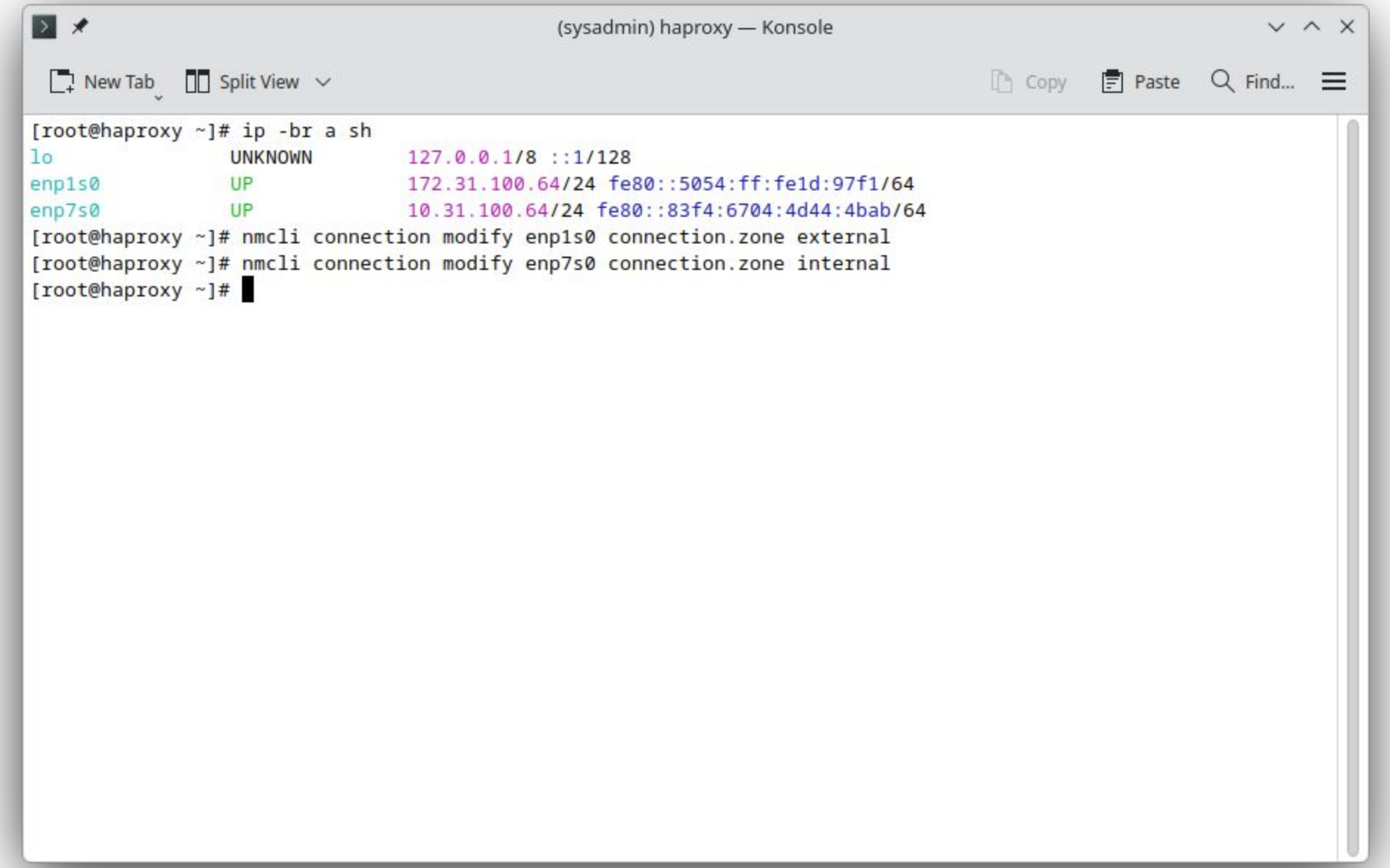
The HAProxy Machine

Connect the VM to both networks

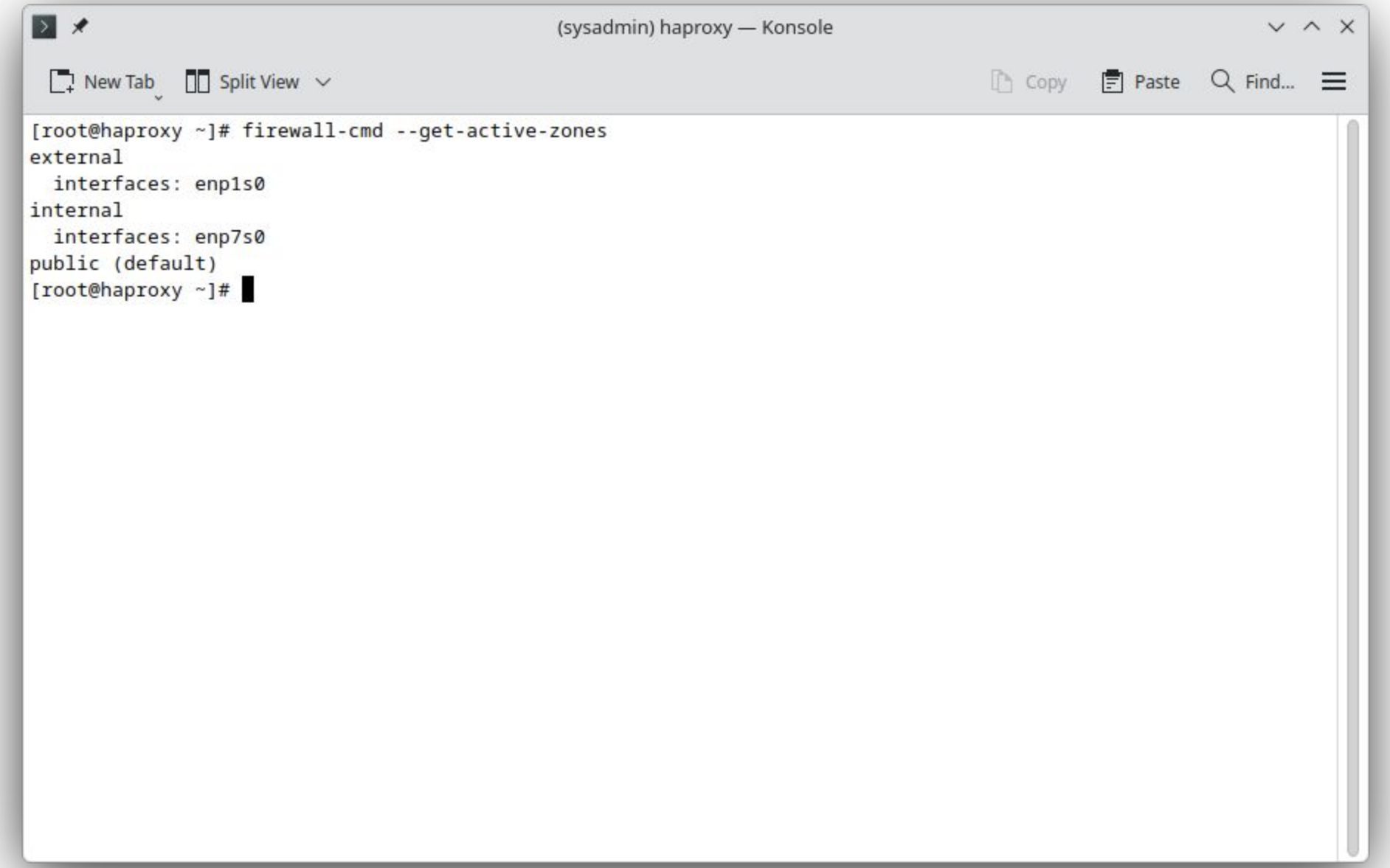
Now we need to configure the firewall. We need to associate each interface with a firewall zone.


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
tcameron@case:~$ ssh sysadmin@haproxy
Warning: Permanently added 'haproxy' (ED25519) to the list of known hosts.
Web console: https://haproxy.aus.redhat.com:9090/ or https://172.31.100.64:9090/
Last login: Sun May 10 08:44:15 2026 from 172.31.100.4
[sysadmin@haproxy ~]$ sudo firewall-cmd --get-active-zones
public (default)
interfaces: enp1s0 enp7s0
[sysadmin@haproxy ~]$

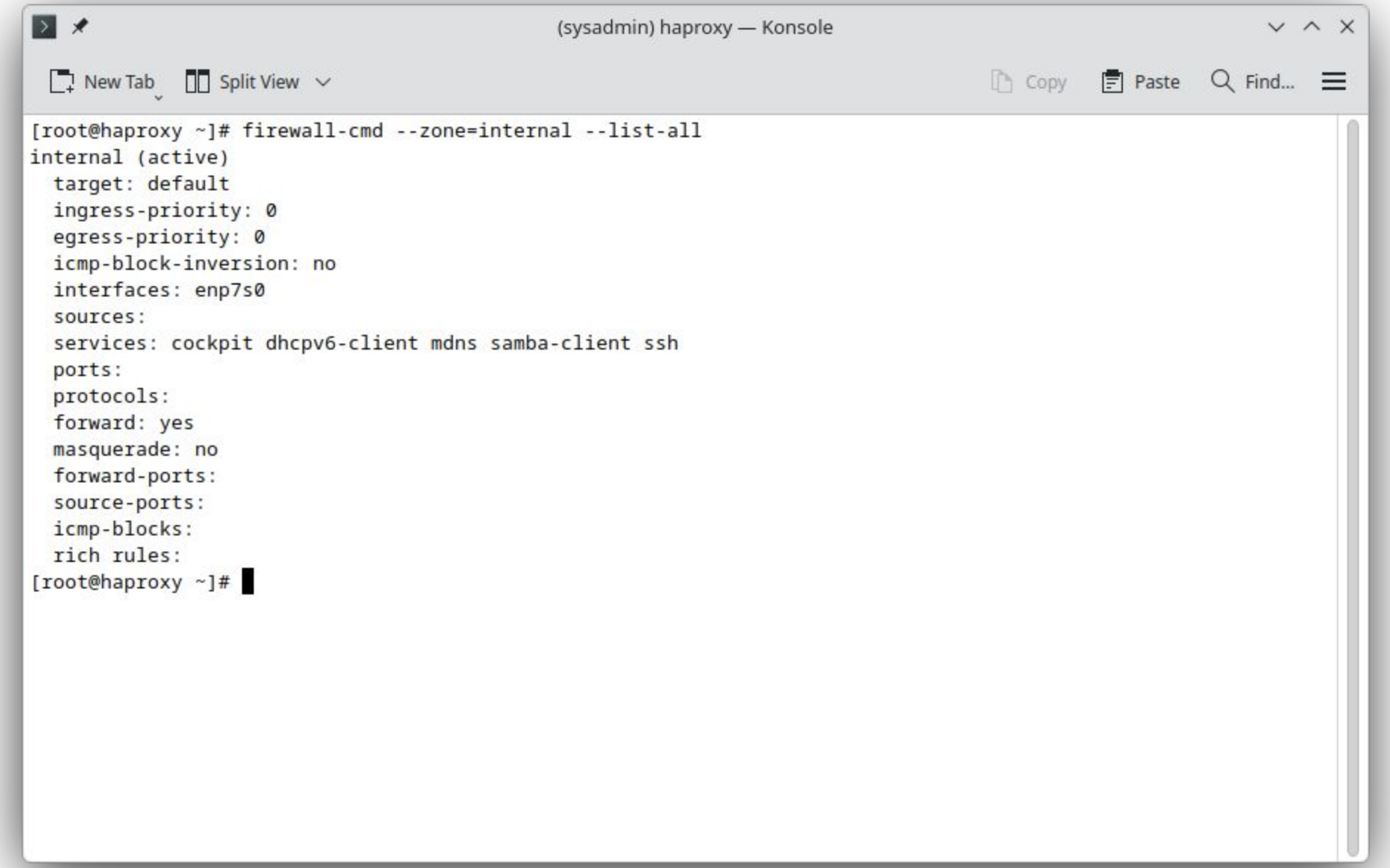
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# ip -br a sh
lo UNKNOWN 127.0.0.1/8 ::1/128
enp1s0 UP 172.31.100.64/24 fe80::5054:ff:fe1d:97f1/64
enp7s0 UP 10.31.100.64/24 fe80::83f4:6704:4d44:4bab/64
[root@haproxy ~]# nmcli connection modify enp1s0 connection.zone external
[root@haproxy ~]# nmcli connection modify enp7s0 connection.zone internal
[root@haproxy ~]#

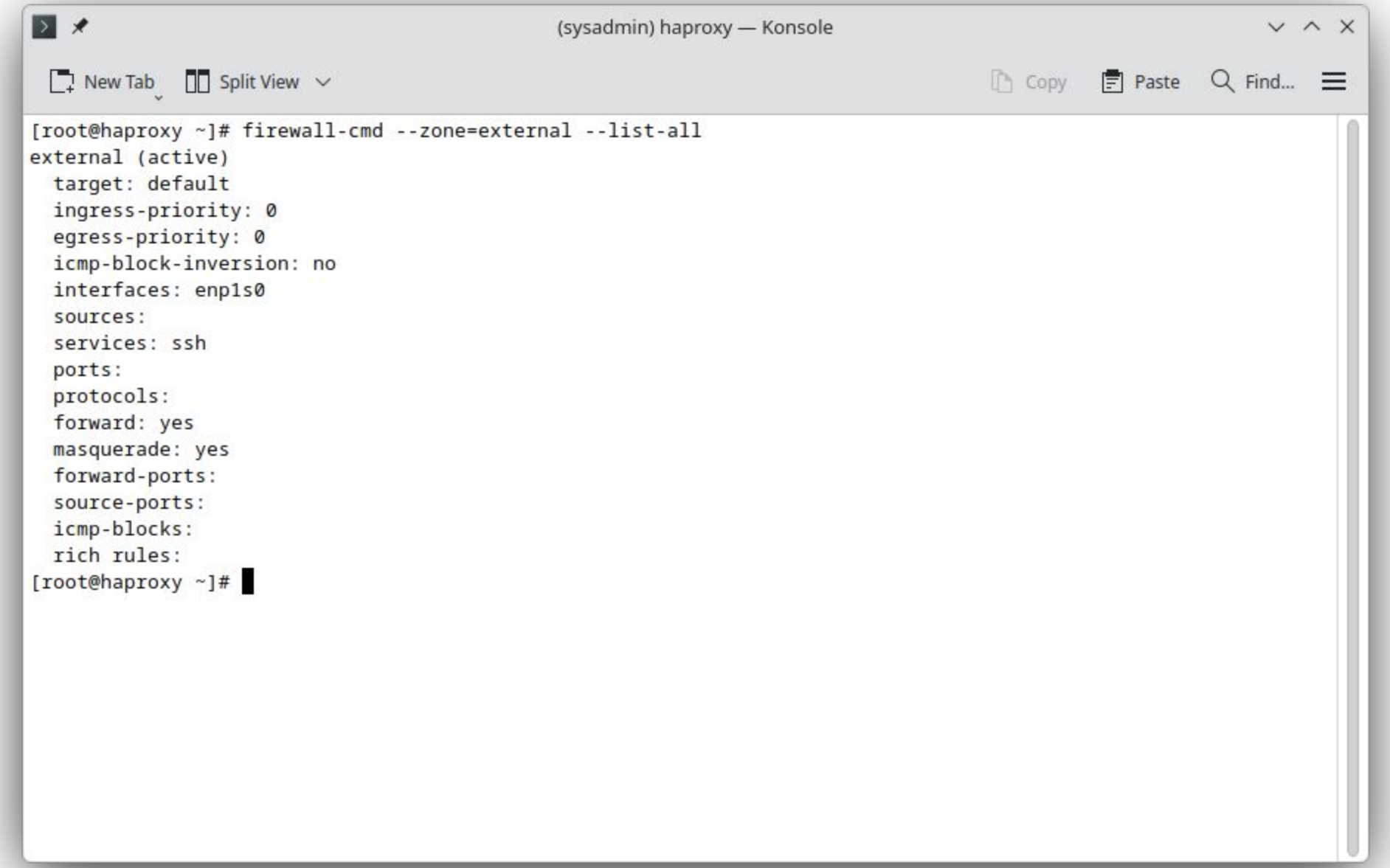
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --get-active-zones
external
  interfaces: enp1s0
internal
  interfaces: enp7s0
public (default)
[root@haproxy ~]#

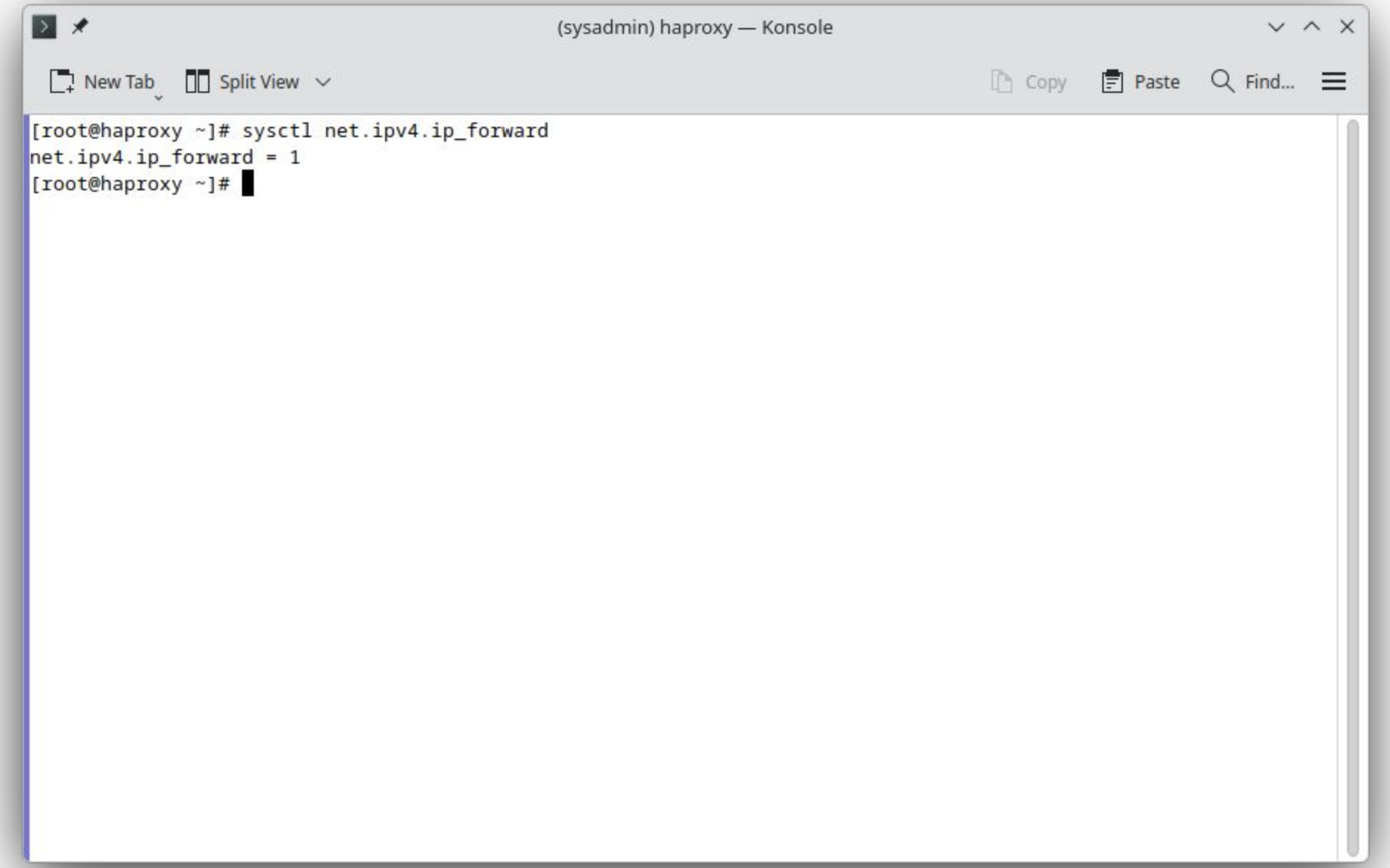
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --zone=internal --list-all
internal (active)
target: default
ingress-priority: 0
egress-priority: 0
icmp-block-inversion: no
interfaces: enp7s0
sources:
services: cockpit dhcpv6-client mdns samba-client ssh
ports:
protocols:
forward: yes
masquerade: no
forward-ports:
source-ports:
icmp-blocks:
rich rules:
[root@haproxy ~]#

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --zone=external --list-all
external (active)
target: default
ingress-priority: 0
egress-priority: 0
icmp-block-inversion: no
interfaces: enp1s0
sources:
services: ssh
ports:
protocols:
forward: yes
masquerade: yes
forward-ports:
source-ports:
icmp-blocks:
rich rules:
[root@haproxy ~]#

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# sysctl net.ipv4.ip_forward
net.ipv4.ip_forward = 1
[root@haproxy ~]#

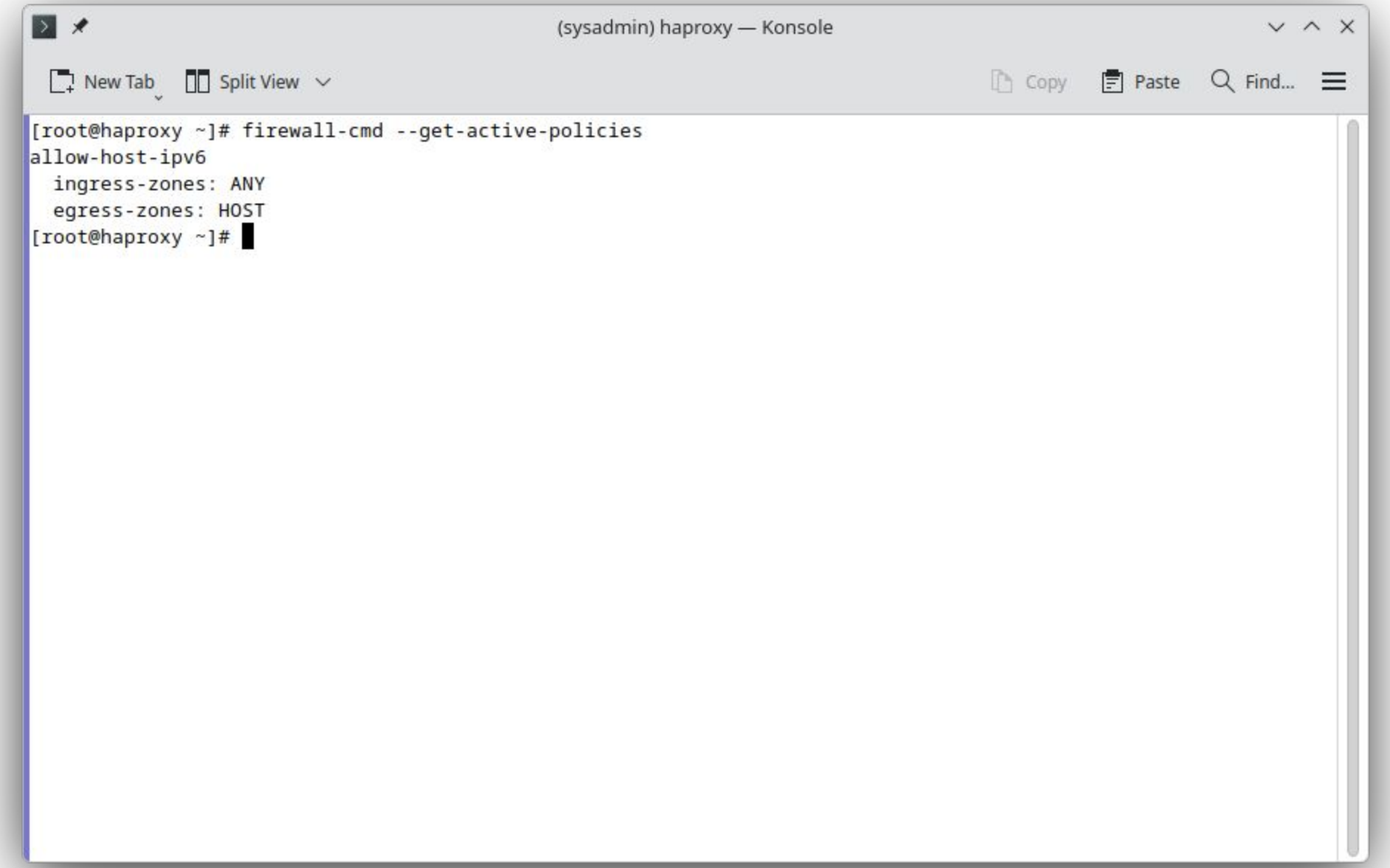
Red Hat

The HAProxy Machine

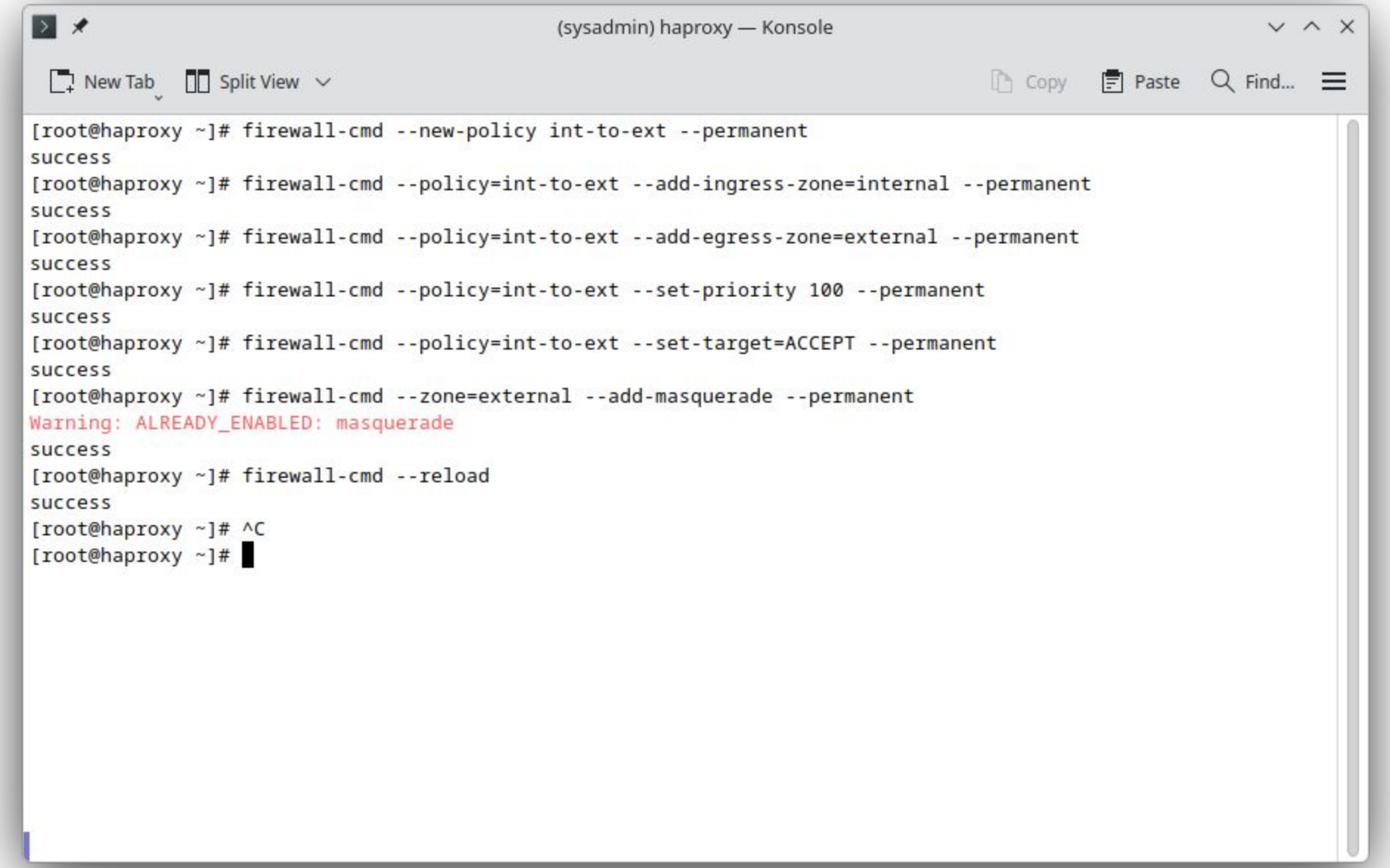
Connect the VM to both networks

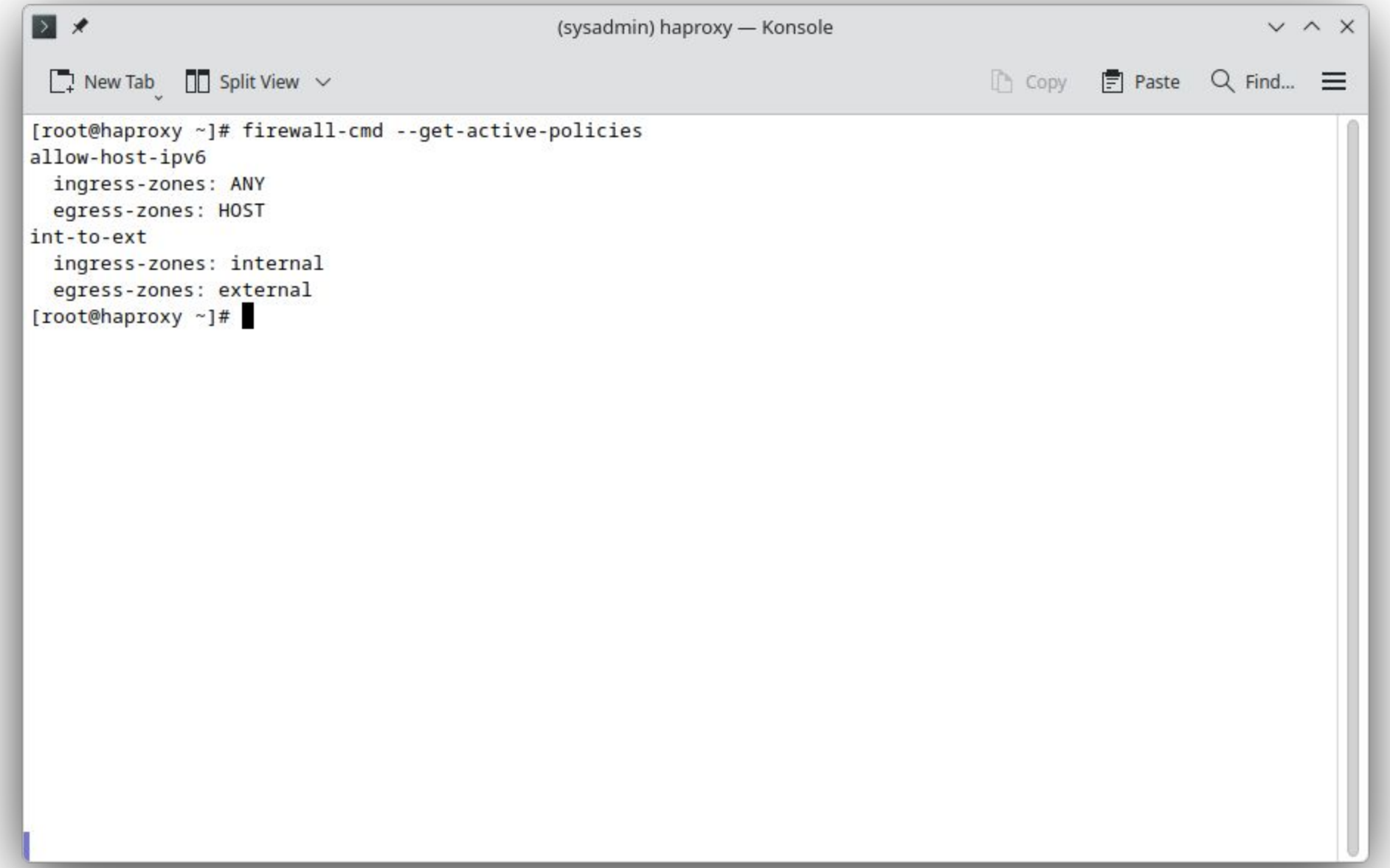
We're going to set up a policy to allow all the traffic from the internal network get out via a masquerade rule:

```
firewall-cmd --new-policy internal-to-external --permanent

firewall-cmd --policy=int-to-ext --add-ingress-zone=internal --permanent

firewall-cmd --policy=int-to-ext --add-egress-zone=external --permanent

firewall-cmd --policy=int-to-ext --add-egress-zone=external --permanent

firewall-cmd --policy=int-to-ext --set-target=ACCEPT --permanent

firewall-cmd --zone=external --add-masquerade --permanent

firewall-cmd --reload
```

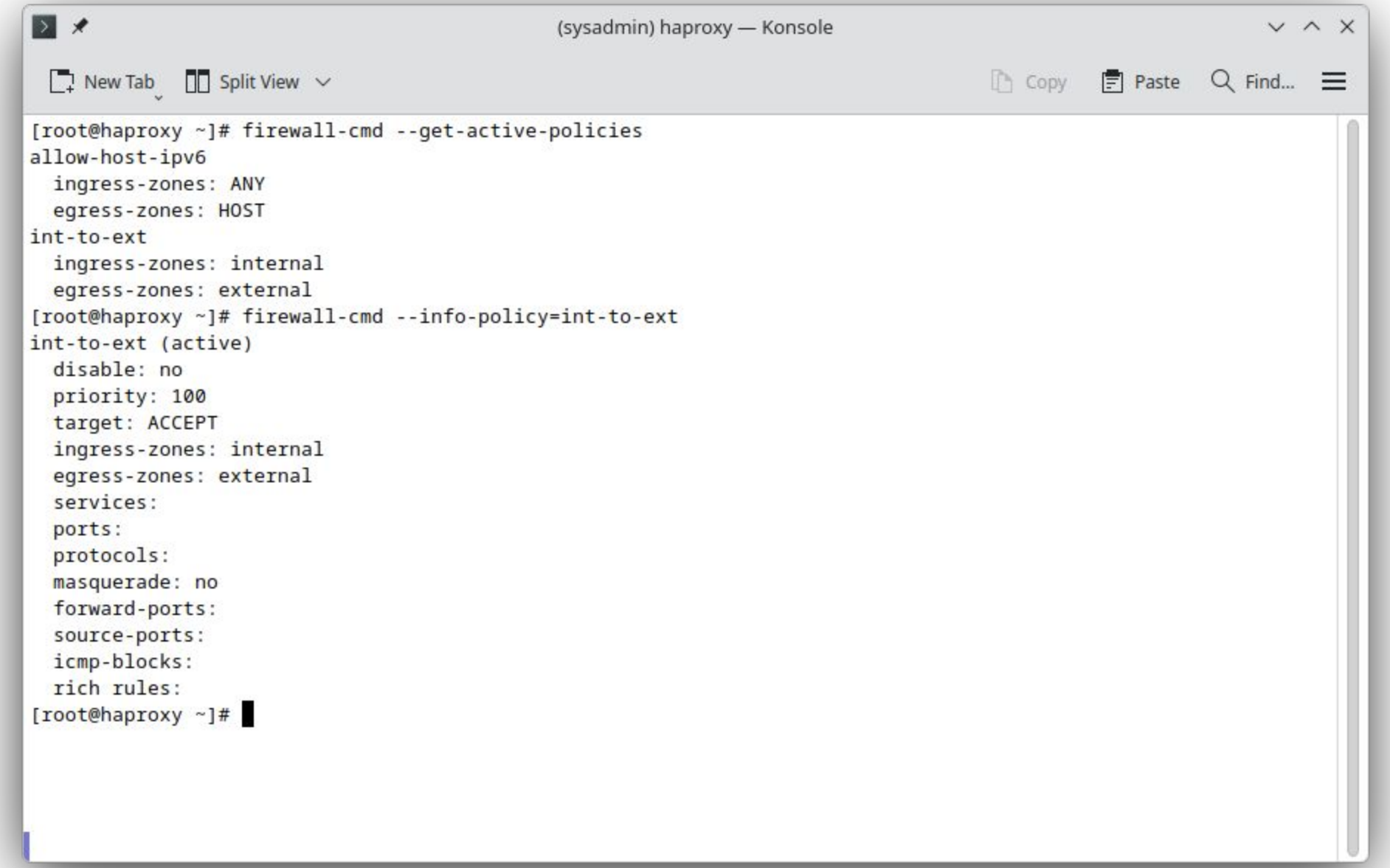

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --get-active-policies
allow-host-ipv6
  ingress-zones: ANY
  egress-zones: HOST
[root@haproxy ~]#

Red Hat

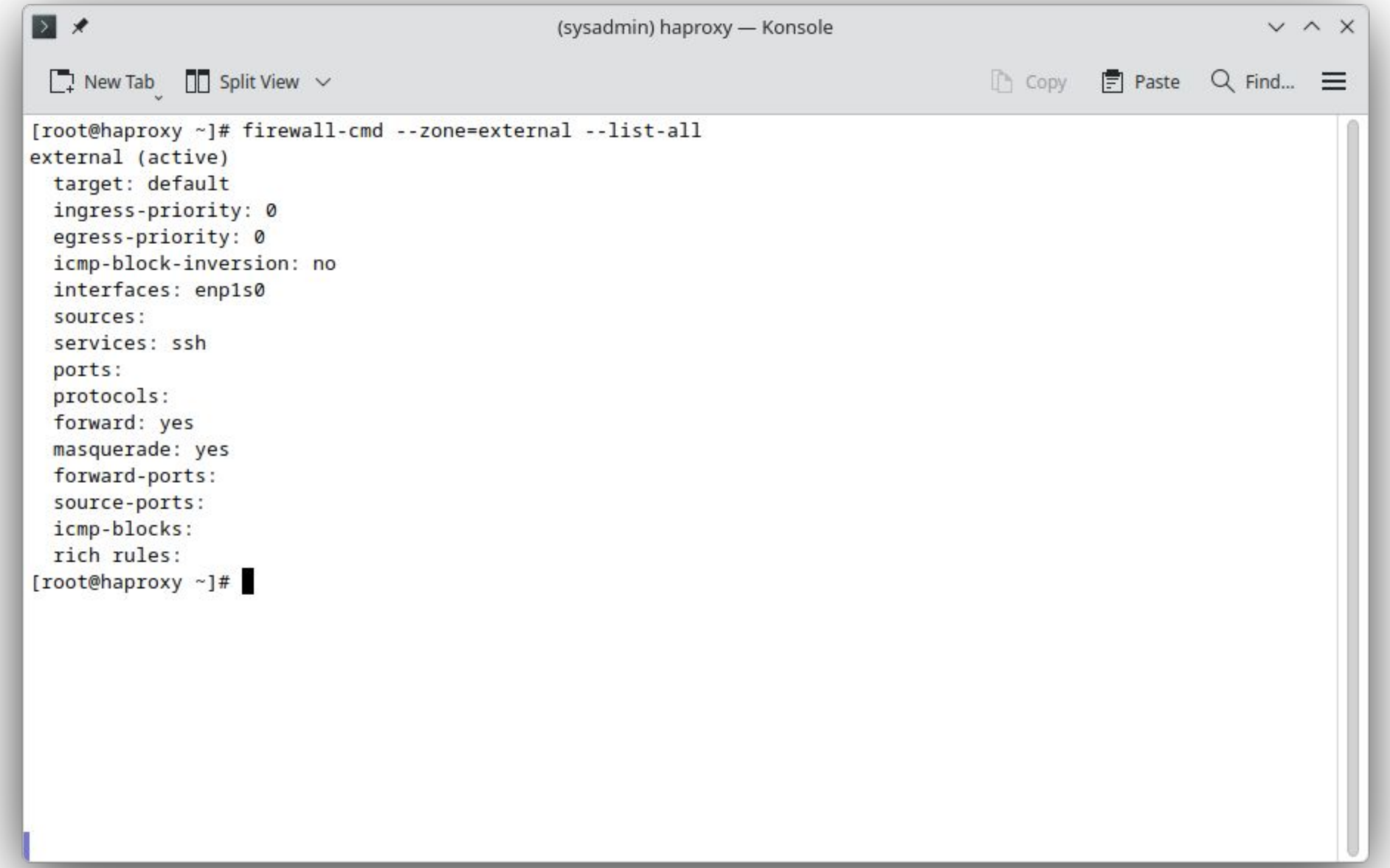

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --new-policy int-to-ext --permanent
success
[root@haproxy ~]# firewall-cmd --policy=int-to-ext --add-ingress-zone=internal --permanent
success
[root@haproxy ~]# firewall-cmd --policy=int-to-ext --add-egress-zone=external --permanent
success
[root@haproxy ~]# firewall-cmd --policy=int-to-ext --set-priority 100 --permanent
success
[root@haproxy ~]# firewall-cmd --policy=int-to-ext --set-target=ACCEPT --permanent
success
[root@haproxy ~]# firewall-cmd --zone=external --add-masquerade --permanent
Warning: ALREADY_ENABLED: masquerade
success
[root@haproxy ~]# firewall-cmd --reload
success
[root@haproxy ~]# ^C
[root@haproxy ~]#


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --get-active-policies
allow-host-ipv6
  ingress-zones: ANY
  egress-zones: HOST
int-to-ext
  ingress-zones: internal
  egress-zones: external
[root@haproxy ~]#

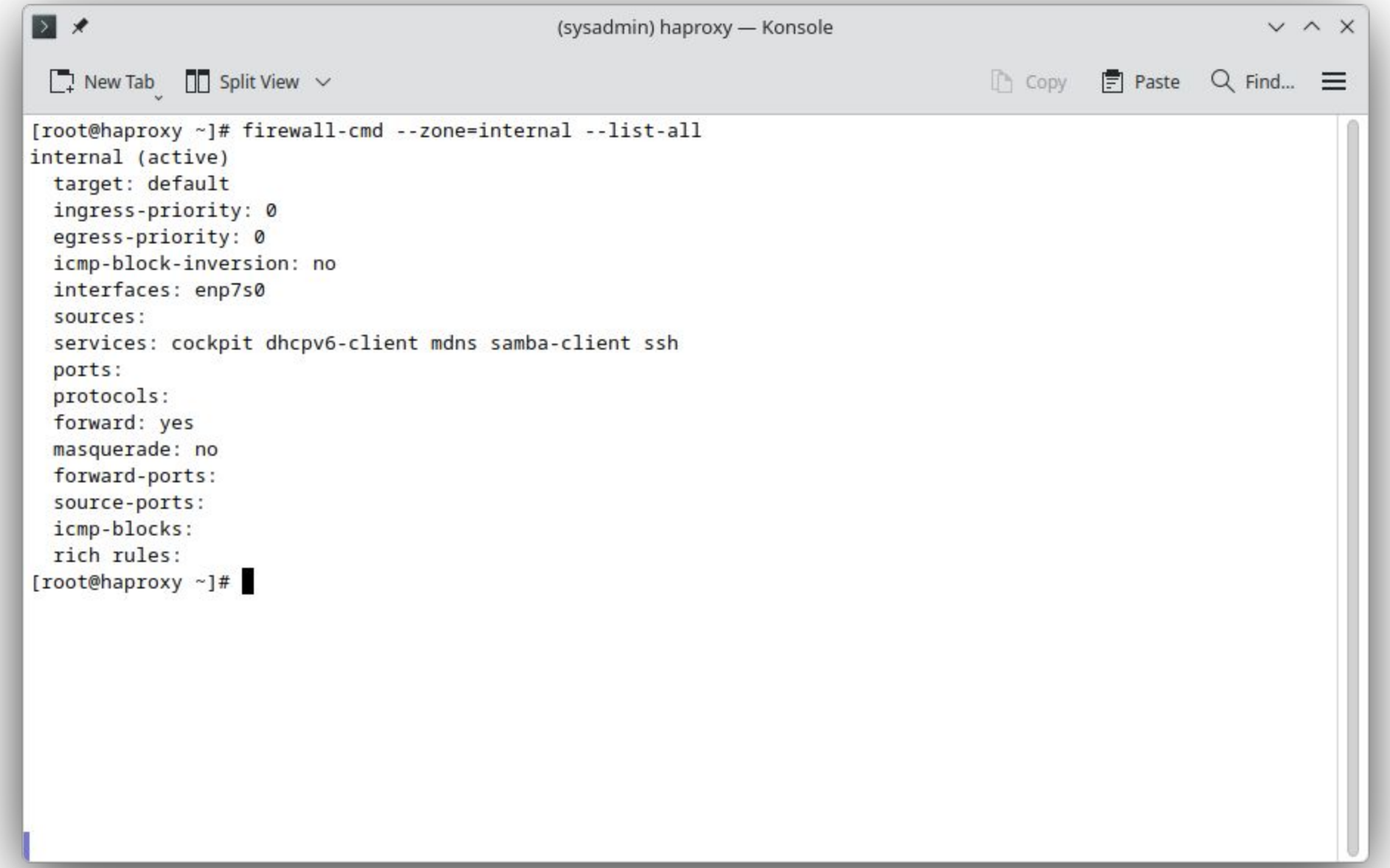
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --get-active-policies
allow-host-ipv6
  ingress-zones: ANY
  egress-zones: HOST
int-to-ext
  ingress-zones: internal
  egress-zones: external
[root@haproxy ~]# firewall-cmd --info-policy=int-to-ext
int-to-ext (active)
  disable: no
  priority: 100
  target: ACCEPT
  ingress-zones: internal
  egress-zones: external
  services:
  ports:
  protocols:
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:
[root@haproxy ~]#

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --zone=external --list-all
external (active)
target: default
ingress-priority: 0
egress-priority: 0
icmp-block-inversion: no
interfaces: enp1s0
sources:
services: ssh
ports:
protocols:
forward: yes
masquerade: yes
forward-ports:
source-ports:
icmp-blocks:
rich rules:
[root@haproxy ~]#

Red Hat

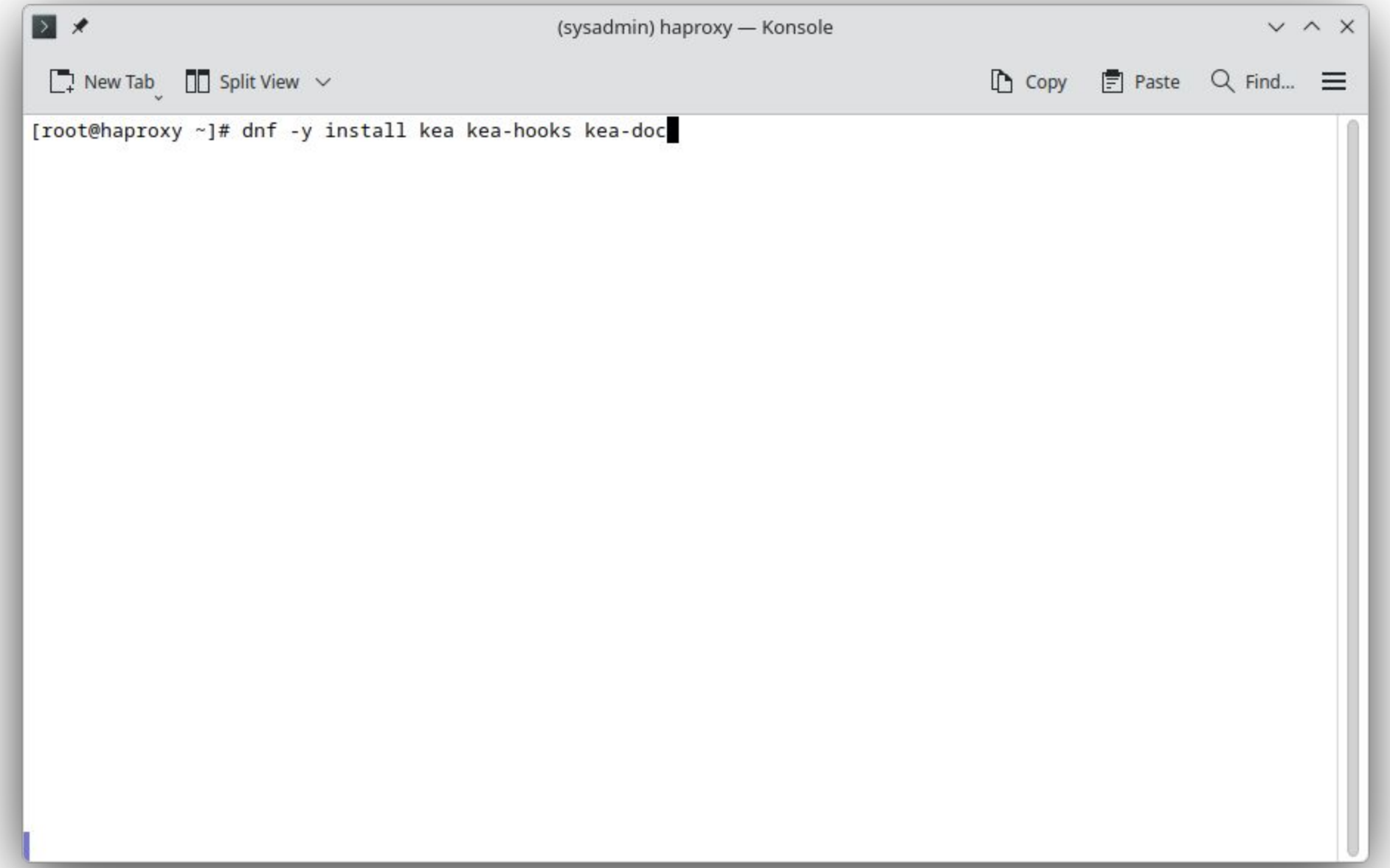

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --zone=internal --list-all
internal (active)
target: default
ingress-priority: 0
egress-priority: 0
icmp-block-inversion: no
interfaces: enp7s0
sources:
services: cockpit dhcpv6-client mdns samba-client ssh
ports:
protocols:
forward: yes
masquerade: no
forward-ports:
source-ports:
icmp-blocks:
rich rules:
[root@haproxy ~]#

Red Hat

The HAProxy Machine

Set up DHCP for the private network

I install kea, kea-hooks, and kea-doc


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# dnf -y install kea kea-hooks kea-doc

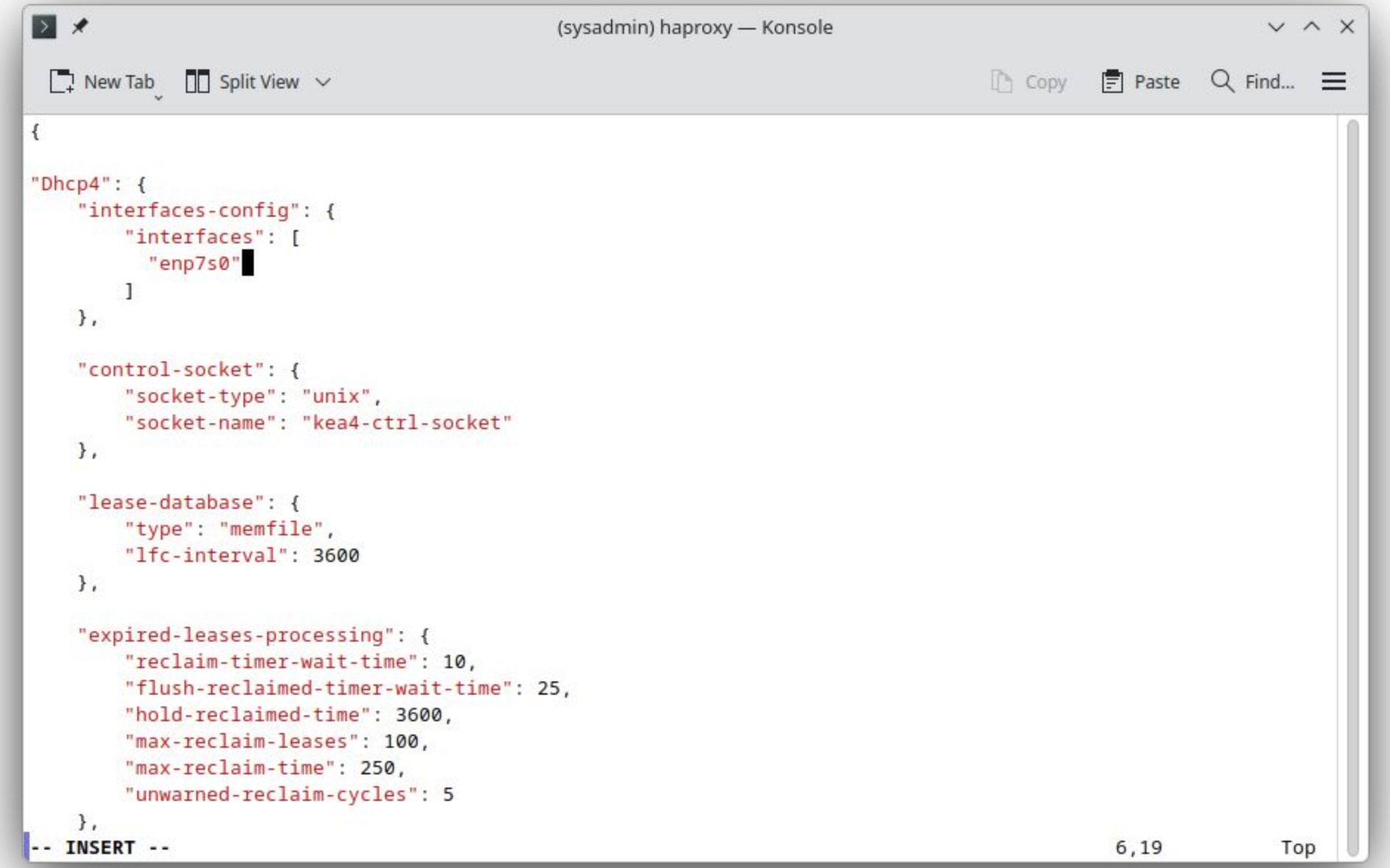
Red Hat

The HAProxy Machine

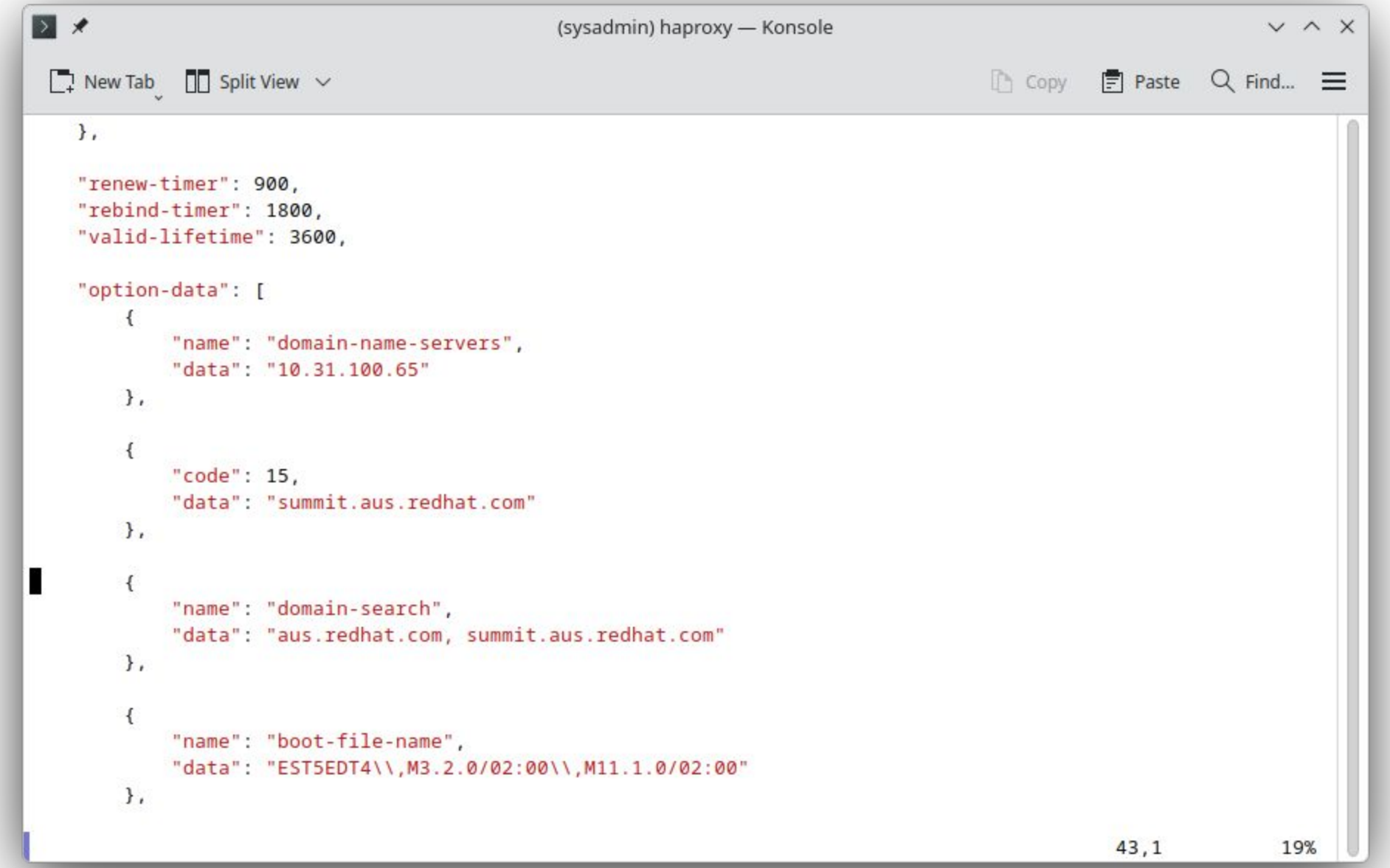
Set up DHCP for the private network

A few updates to the /etc/kea/kea-dhcp4.conf file

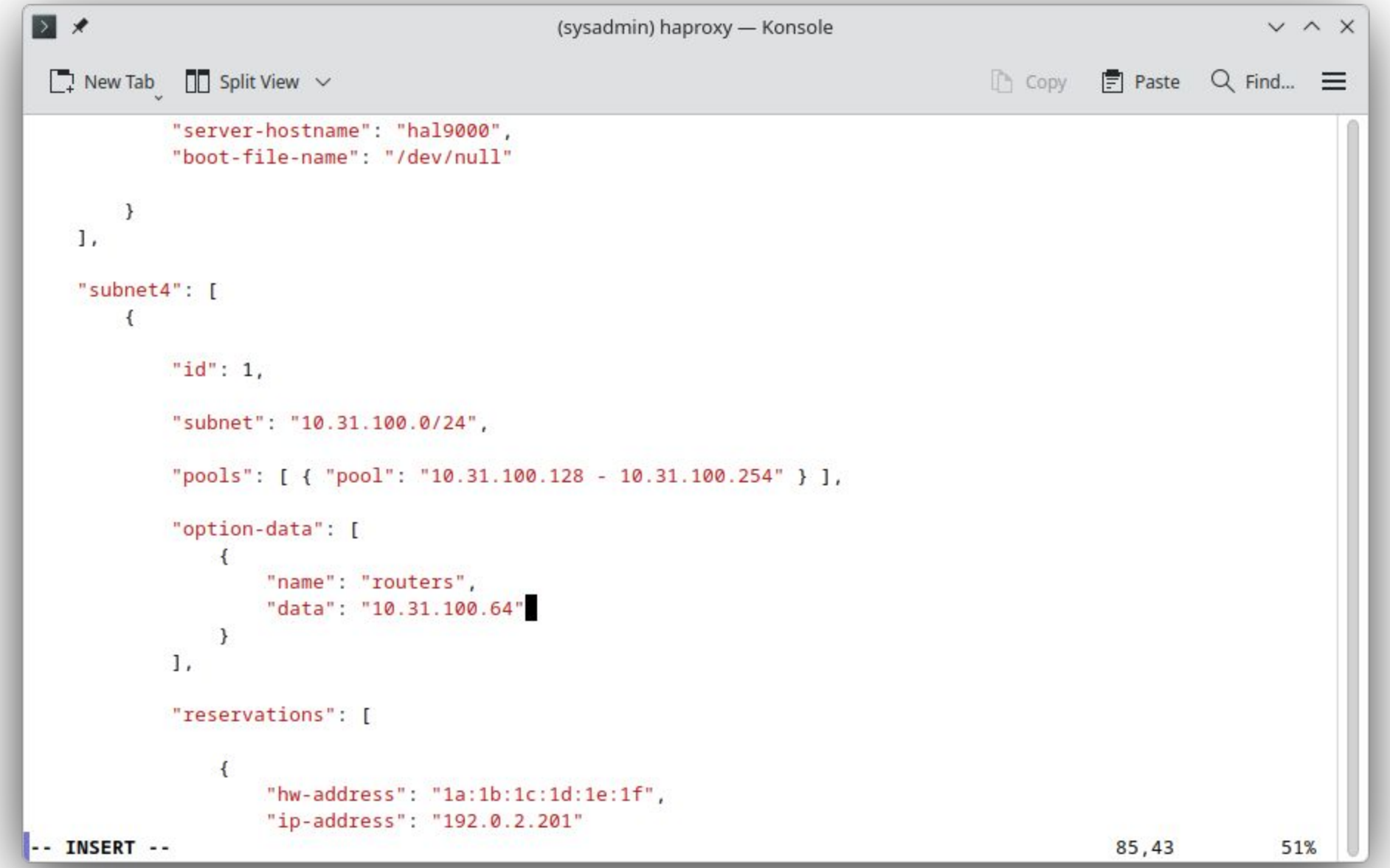
Set the DNS server to be the private interface of the proxy machine, since it's serving DHCP and DNS to the internal network


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
{
"Dhcp4": {
"interfaces-config": {
"interfaces": [
"enp7s0"
]
},
"control-socket": {
"socket-type": "unix",
"socket-name": "kea4-ctrl-socket"
},
"lease-database": {
"type": "memfile",
"lfc-interval": 3600
},
"expired-leases-processing": {
"reclaim-timer-wait-time": 10,
"flush-reclaimed-timer-wait-time": 25,
"hold-reclaimed-time": 3600,
"max-reclaim-leases": 100,
"max-reclaim-time": 250,
"unwarned-reclaim-cycles": 5
},
-- INSERT --
6,19
Top

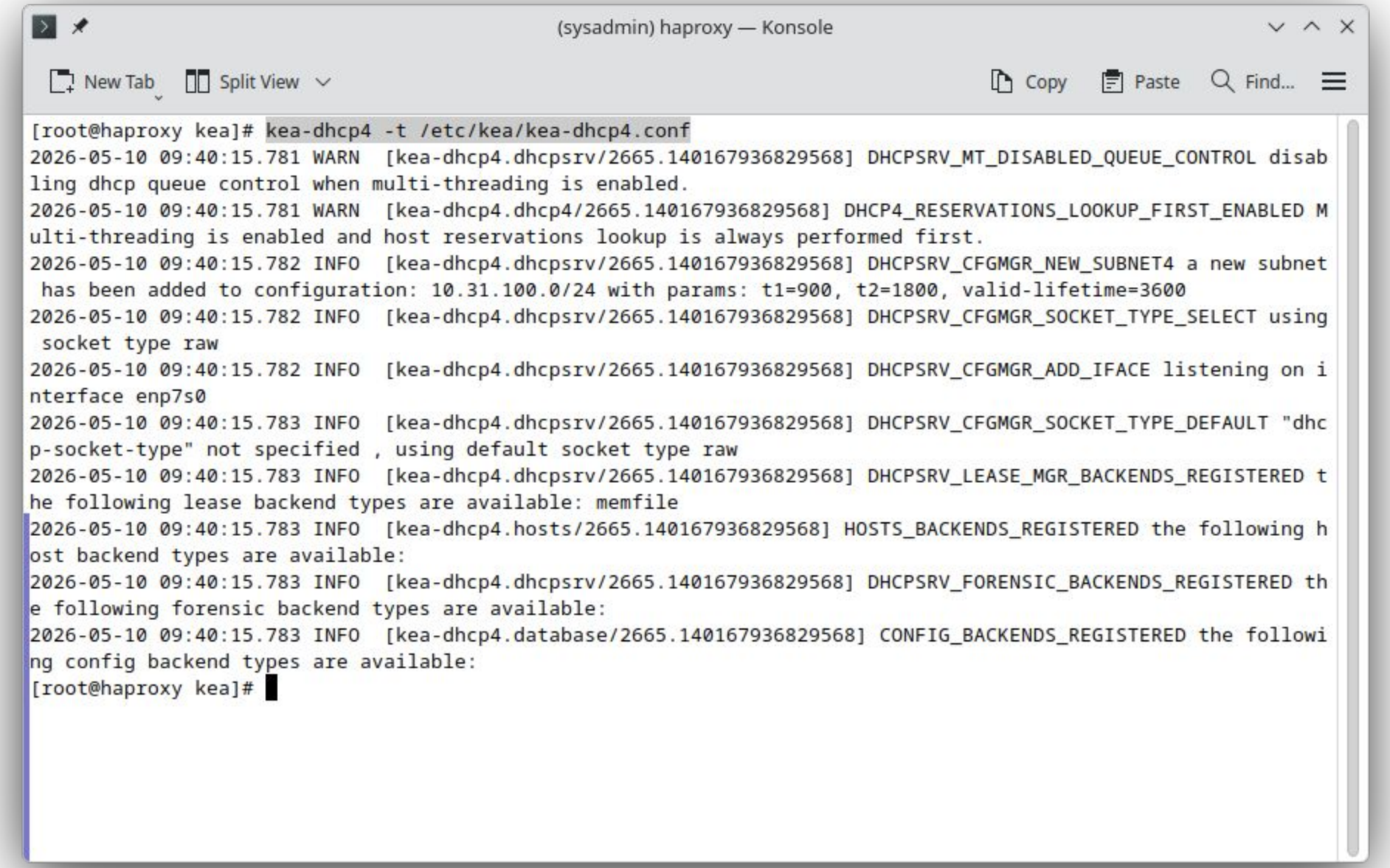
Red Hat

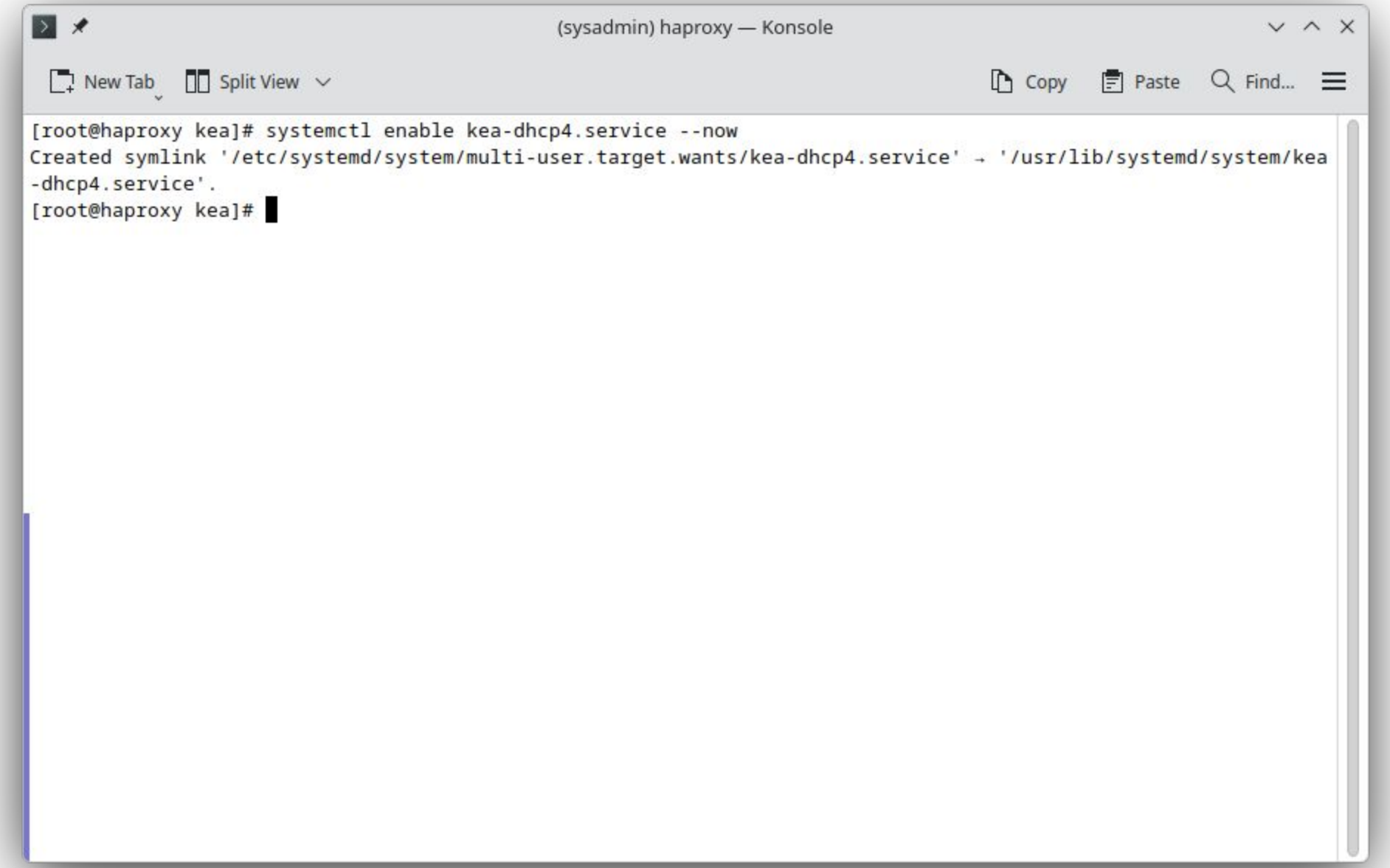

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
},
"renew-timer": 900,
"rebind-timer": 1800,
"valid-lifetime": 3600,
"option-data": [
{
"name": "domain-name-servers",
"data": "10.31.100.65"
},
{
"code": 15,
"data": "summit.aus.redhat.com"
},
{
"name": "domain-search",
"data": "aus.redhat.com, summit.aus.redhat.com"
},
{
"name": "boot-file-name",
"data": "EST5EDT4\\,M3.2.0/02:00\\,M11.1.0/02:00"
},
43,1
19%

Red Hat

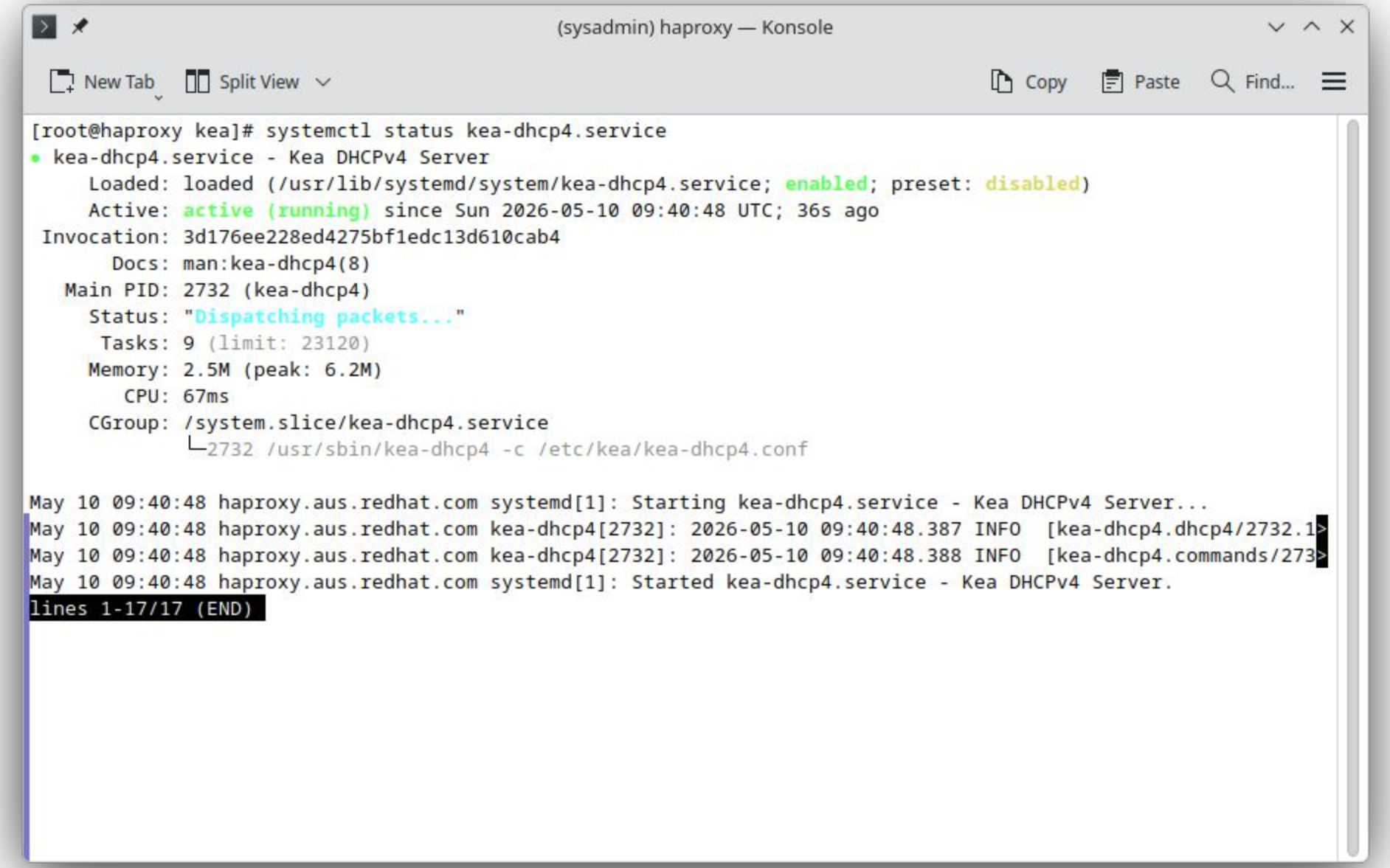

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
"server-hostname": "hal9000",
"boot-file-name": "/dev/null"
}
],
"subnet4": [
{
"id": 1,
"subnet": "10.31.100.0/24",
"pools": [{ "pool": "10.31.100.128 - 10.31.100.254" }],
"option-data": [
{
"name": "routers",
"data": "10.31.100.64"
}
],
"reservations": [
{
"hw-address": "1a:1b:1c:1d:1e:1f",
"ip-address": "192.0.2.201"
-- INSERT --
85,43
51%

Red Hat

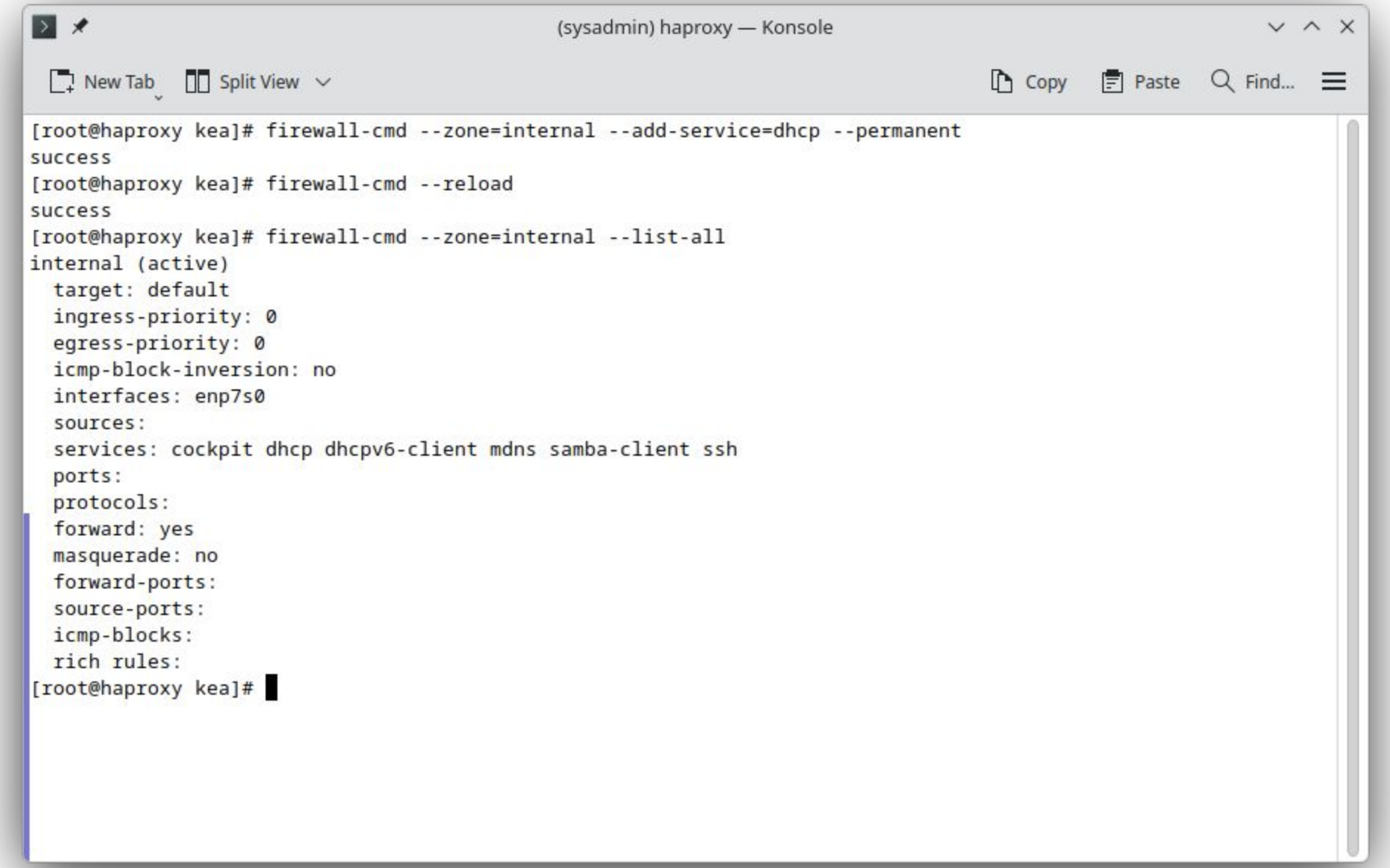

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy kea]# kea-dhcp4 -t /etc/kea/kea-dhcp4.conf
2026-05-10 09:40:15.781 WARN [kea-dhcp4.dhcpsrv/2665.140167936829568] DHCPSRV_MT_DISABLED_QUEUE_CONTROL disabling dhcp queue control when multi-threading is enabled.
2026-05-10 09:40:15.781 WARN [kea-dhcp4.dhcp4/2665.140167936829568] DHCP4_RESERVATIONS_LOOKUP_FIRST_ENABLED Multi-threading is enabled and host reservations lookup is always performed first.
2026-05-10 09:40:15.782 INFO [kea-dhcp4.dhcpsrv/2665.140167936829568] DHCPSRV_CFGMGR_NEW_SUBNET4 a new subnet has been added to configuration: 10.31.100.0/24 with params: t1=900, t2=1800, valid-lifetime=3600
2026-05-10 09:40:15.782 INFO [kea-dhcp4.dhcpsrv/2665.140167936829568] DHCPSRV_CFGMGR_SOCKET_TYPE_SELECT using socket type raw
2026-05-10 09:40:15.782 INFO [kea-dhcp4.dhcpsrv/2665.140167936829568] DHCPSRV_CFGMGR_ADD_IFACE listening on interface enp7s0
2026-05-10 09:40:15.783 INFO [kea-dhcp4.dhcpsrv/2665.140167936829568] DHCPSRV_CFGMGR_SOCKET_TYPE_DEFAULT "dhcp-socket-type" not specified , using default socket type raw
2026-05-10 09:40:15.783 INFO [kea-dhcp4.dhcpsrv/2665.140167936829568] DHCPSRV_LEASE_MGR_BACKENDS_REGISTERED the following lease backend types are available: memfile
2026-05-10 09:40:15.783 INFO [kea-dhcp4.hosts/2665.140167936829568] HOSTS_BACKENDS_REGISTERED the following host backend types are available:
2026-05-10 09:40:15.783 INFO [kea-dhcp4.dhcpsrv/2665.140167936829568] DHCPSRV_FORENSIC_BACKENDS_REGISTERED the following forensic backend types are available:
2026-05-10 09:40:15.783 INFO [kea-dhcp4.database/2665.140167936829568] CONFIG_BACKENDS_REGISTERED the following config backend types are available:
[root@haproxy kea]#


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy kea]# systemctl enable kea-dhcp4.service --now
Created symlink '/etc/systemd/system/multi-user.target.wants/kea-dhcp4.service' → '/usr/lib/systemd/system/kea-dhcp4.service'.
[root@haproxy kea]#

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy kea]# systemctl status kea-dhcp4.service
● kea-dhcp4.service - Kea DHCPv4 Server
Loaded: loaded (/usr/lib/systemd/system/kea-dhcp4.service; enabled; preset: disabled)
Active: active (running) since Sun 2026-05-10 09:40:48 UTC; 36s ago
Invocation: 3d176ee228ed4275bf1edc13d610cab4
Docs: man:kea-dhcp4(8)
Main PID: 2732 (kea-dhcp4)
Status: "Dispatching packets..."
Tasks: 9 (limit: 23120)
Memory: 2.5M (peak: 6.2M)
CPU: 67ms
CGroup: /system.slice/kea-dhcp4.service
└─2732 /usr/sbin/kea-dhcp4 -c /etc/kea/kea-dhcp4.conf
May 10 09:40:48 haproxy.aus.redhat.com systemd[1]: Starting kea-dhcp4.service - Kea DHCPv4 Server...
May 10 09:40:48 haproxy.aus.redhat.com kea-dhcp4[2732]: 2026-05-10 09:40:48.387 INFO [kea-dhcp4.dhcp4/2732.1
May 10 09:40:48 haproxy.aus.redhat.com kea-dhcp4[2732]: 2026-05-10 09:40:48.388 INFO [kea-dhcp4.commands/273
May 10 09:40:48 haproxy.aus.redhat.com systemd[1]: Started kea-dhcp4.service - Kea DHCPv4 Server.
lines 1-17/17 (END)

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy kea]# firewall-cmd --zone=internal --add-service=dhcp --permanent
success
[root@haproxy kea]# firewall-cmd --reload
success
[root@haproxy kea]# firewall-cmd --zone=internal --list-all
internal (active)
target: default
ingress-priority: 0
egress-priority: 0
icmp-block-inversion: no
interfaces: enp7s0
sources:
services: cockpit dhcp dhcpv6-client mdns samba-client ssh
ports:
protocols:
forward: yes
masquerade: no
forward-ports:
source-ports:
icmp-blocks:
rich rules:
[root@haproxy kea]#

Red Hat

DNS

DNS

Configure DNS for the private network

External DNS is already set up, but the machines on the private network need to be able to resolve themselves and each other.

Remember that OpenShift really needs wildcard entries. If not, you have to create an /etc/hosts file with a ridiculous amount of names in it. Don't do it.

DNS

Configure DNS for the private network

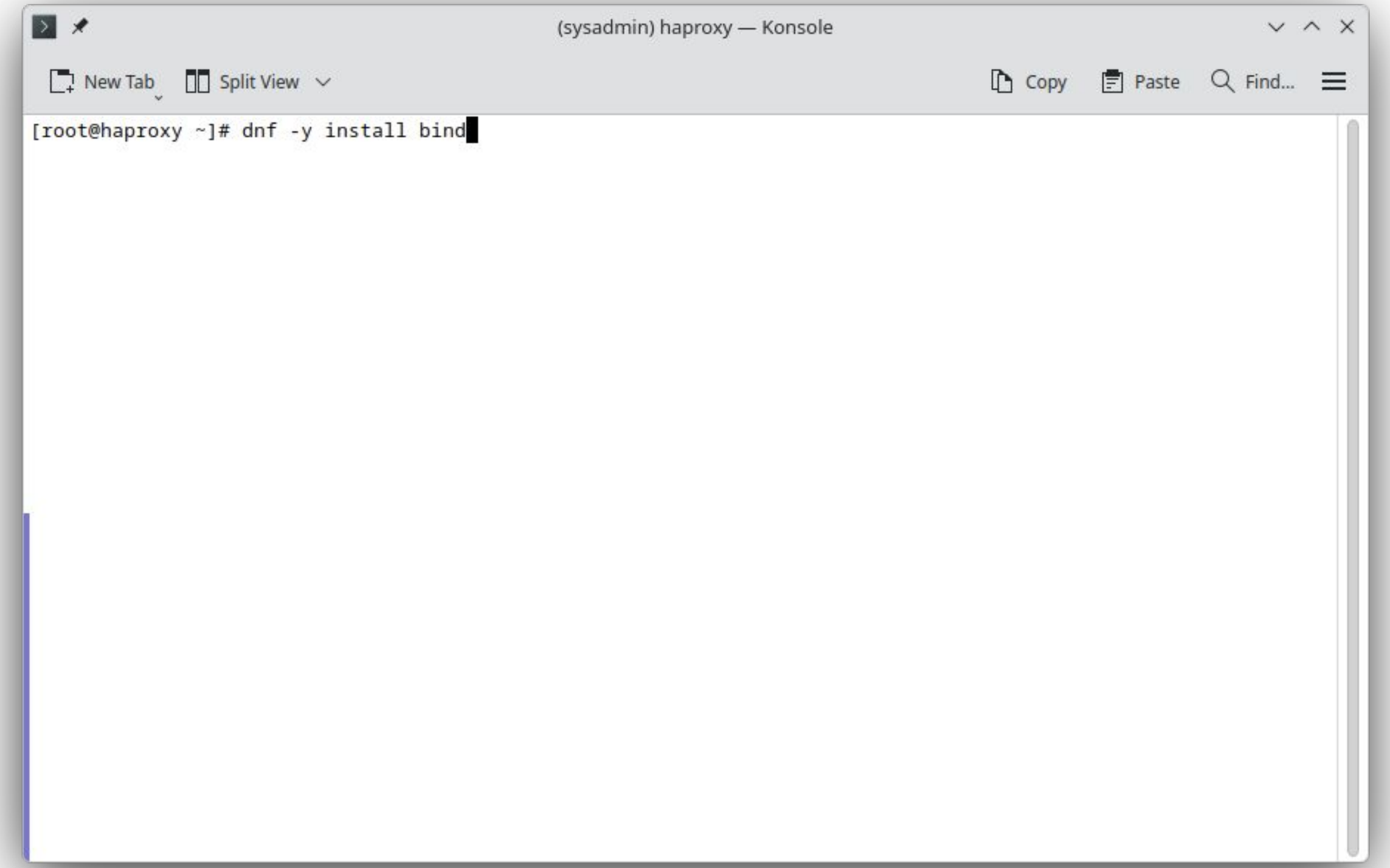
Install bind

Enable and start the service

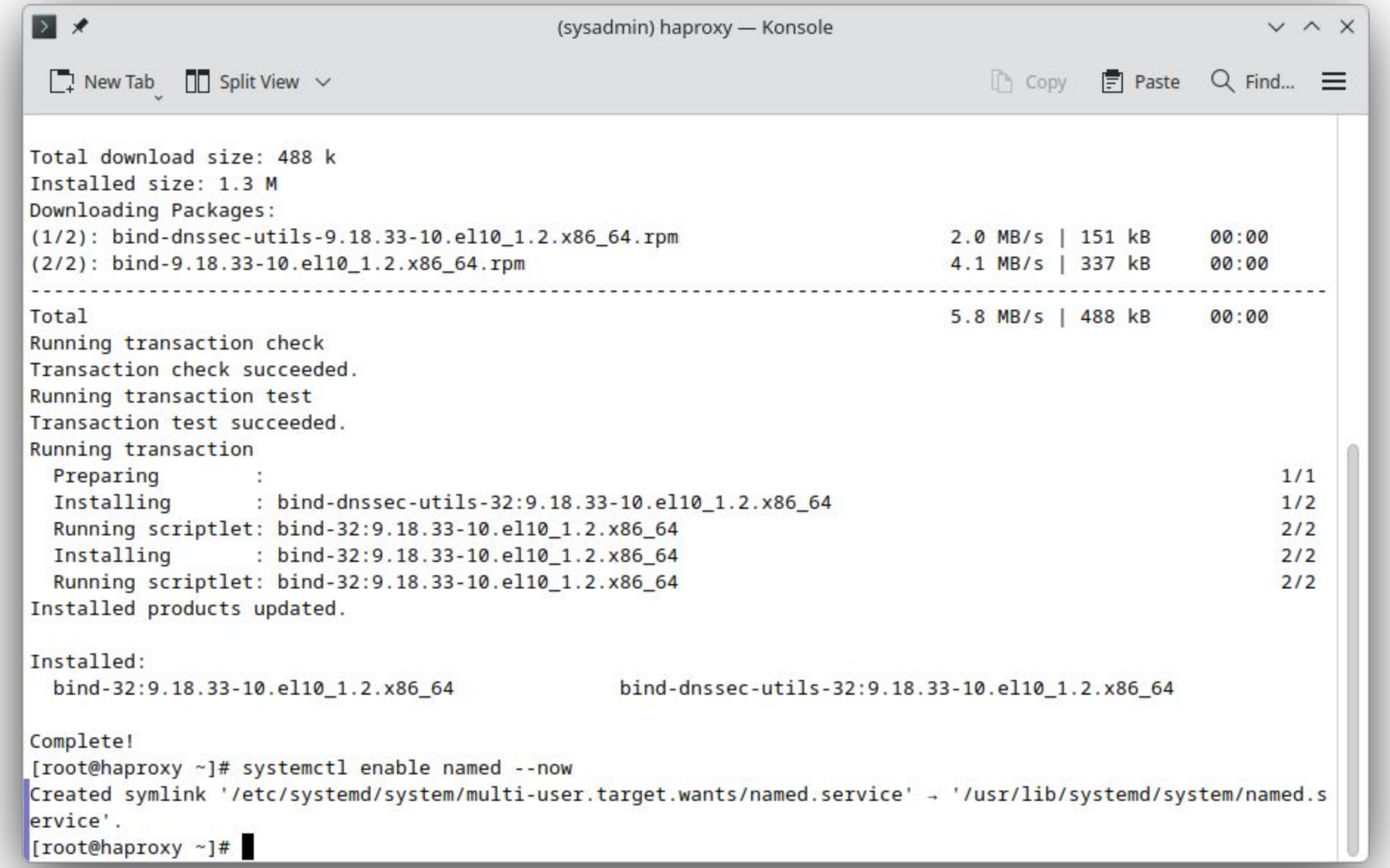
Configure the configs and zone files

Open up the dns service in the firewall

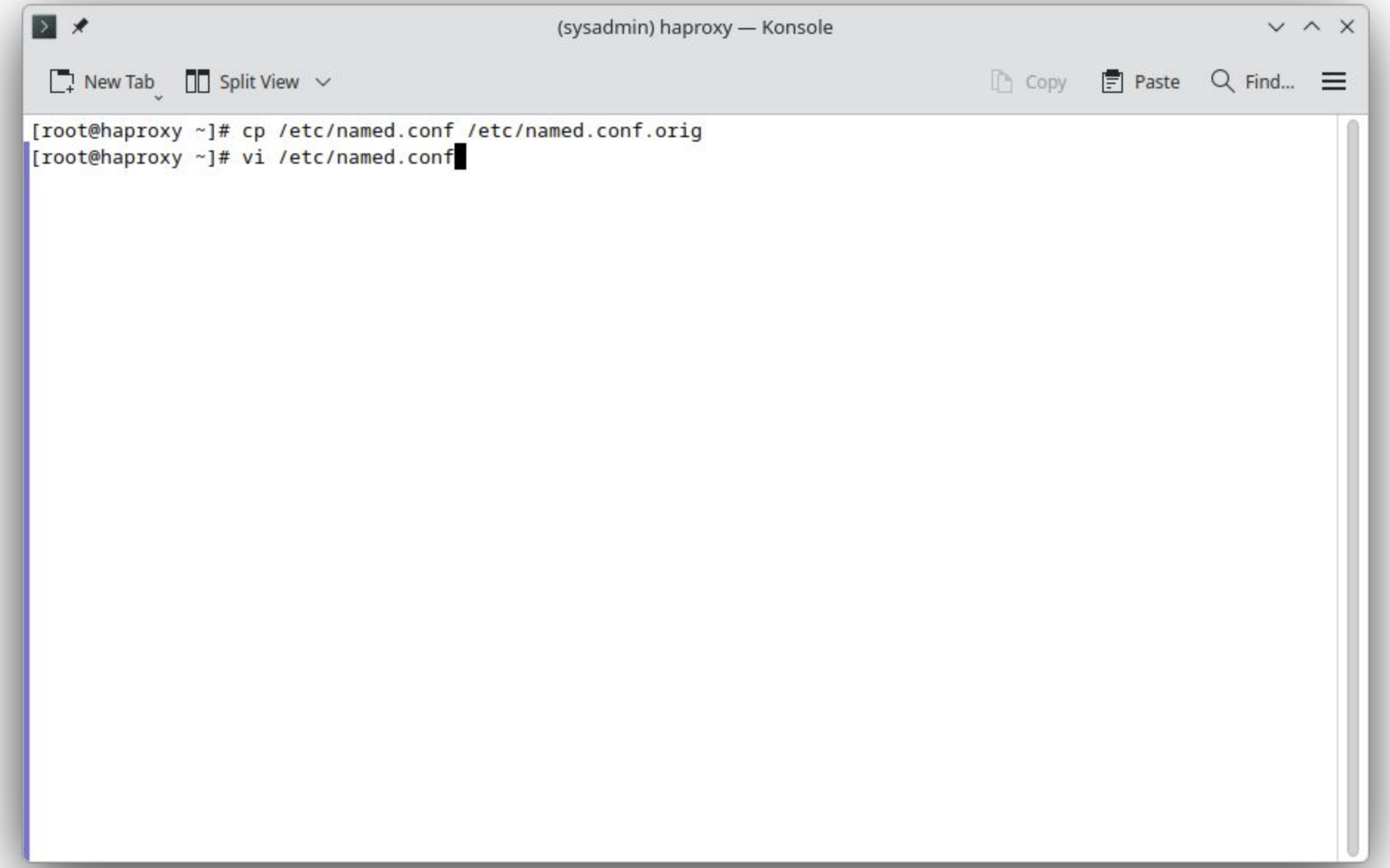
Test resolution


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# dnf -y install bind

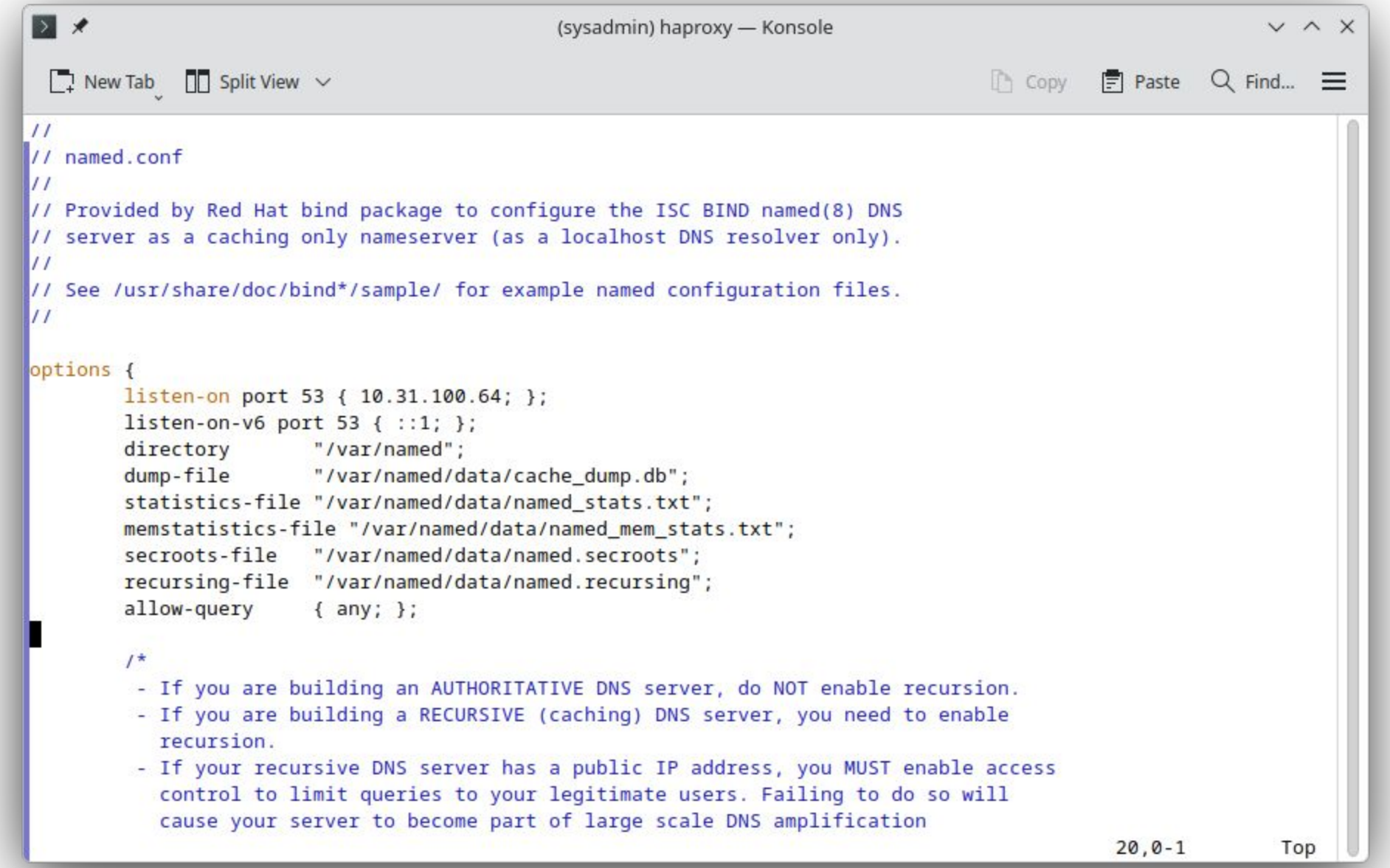
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
Total download size: 488 k
Installed size: 1.3 M
Downloading Packages:
(1/2): bind-dnssec-utils-9.18.33-10.el10_1.2.x86_64.rpm 2.0 MB/s | 151 kB 00:00
(2/2): bind-9.18.33-10.el10_1.2.x86_64.rpm 4.1 MB/s | 337 kB 00:00
Total 5.8 MB/s | 488 kB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Installing : bind-dnssec-utils-32:9.18.33-10.el10_1.2.x86_64 1/2
Running scriptlet: bind-32:9.18.33-10.el10_1.2.x86_64 2/2
Installing : bind-32:9.18.33-10.el10_1.2.x86_64 2/2
Running scriptlet: bind-32:9.18.33-10.el10_1.2.x86_64 2/2
Installed products updated.
Installed:
bind-32:9.18.33-10.el10_1.2.x86_64 bind-dnssec-utils-32:9.18.33-10.el10_1.2.x86_64
Complete!
[root@haproxy ~]# systemctl enable named --now
Created symlink '/etc/systemd/system/multi-user.target.wants/named.service' → '/usr/lib/systemd/system/named.service'.
[root@haproxy ~]#

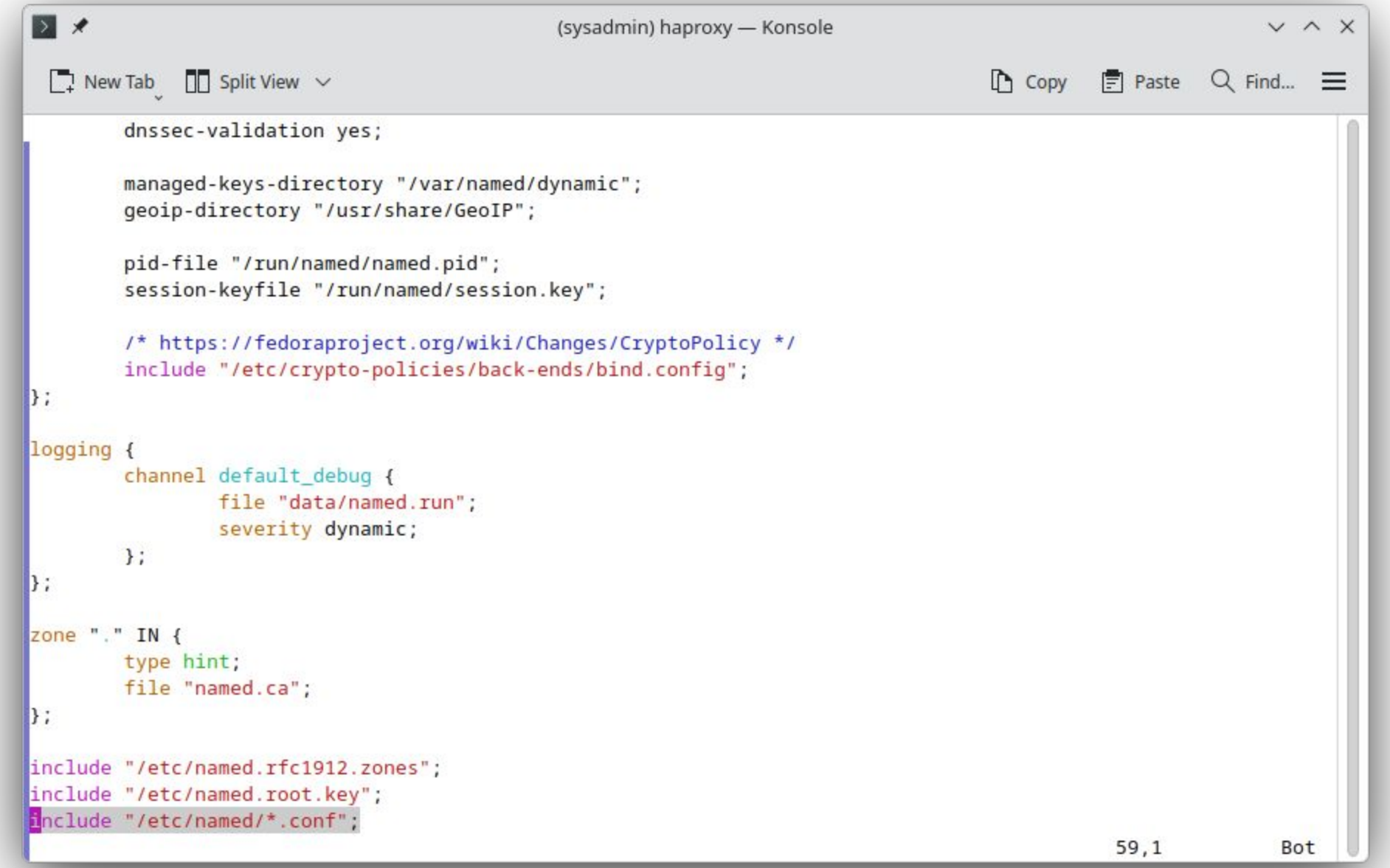
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# cp /etc/named.conf /etc/named.conf.orig
[root@haproxy ~]# vi /etc/named.conf

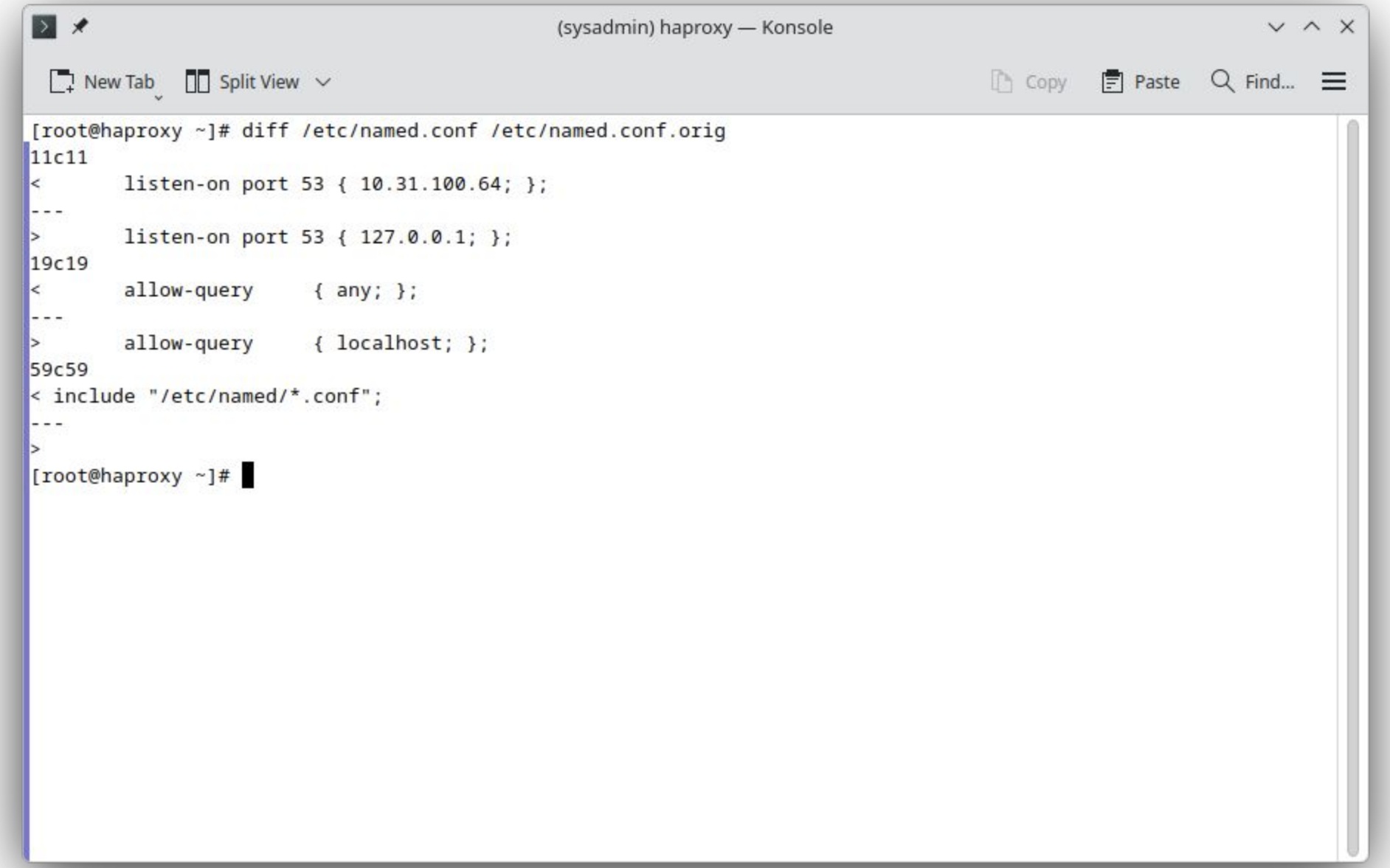
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
//
// named.conf
//
// Provided by Red Hat bind package to configure the ISC BIND named(8) DNS
// server as a caching only nameserver (as a localhost DNS resolver only).
//
// See /usr/share/doc/bind*/sample/ for example named configuration files.
//
options {
listen-on port 53 { 10.31.100.64; };
listen-on-v6 port 53 { ::1; };
directory "/var/named";
dump-file "/var/named/data/cache_dump.db";
statistics-file "/var/named/data/named_stats.txt";
memstatistics-file "/var/named/data/named_mem_stats.txt";
secroots-file "/var/named/data/named.secroots";
recursing-file "/var/named/data/named.recursing";
allow-query { any; };
/*
- If you are building an AUTHORITATIVE DNS server, do NOT enable recursion.
- If you are building a RECURSIVE (caching) DNS server, you need to enable
recursion.
- If your recursive DNS server has a public IP address, you MUST enable access
control to limit queries to your legitimate users. Failing to do so will
cause your server to become part of large scale DNS amplification
20,0-1
Top

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
dnssec-validation yes;
managed-keys-directory "/var/named/dynamic";
geoip-directory "/usr/share/GeoIP";
pid-file "/run/named/named.pid";
session-keyfile "/run/named/session.key";
/* https://fedoraproject.org/wiki/Changes/CryptoPolicy */
include "/etc/crypto-policies/back-ends/bind.config";
};
logging {
channel default_debug {
file "data/named.run";
severity dynamic;
};
};
zone "." IN {
type hint;
file "named.ca";
};
include "/etc/named.rfc1912.zones";
include "/etc/named.root.key";
include "/etc/named/*.conf";
59,1
Bot

Red Hat

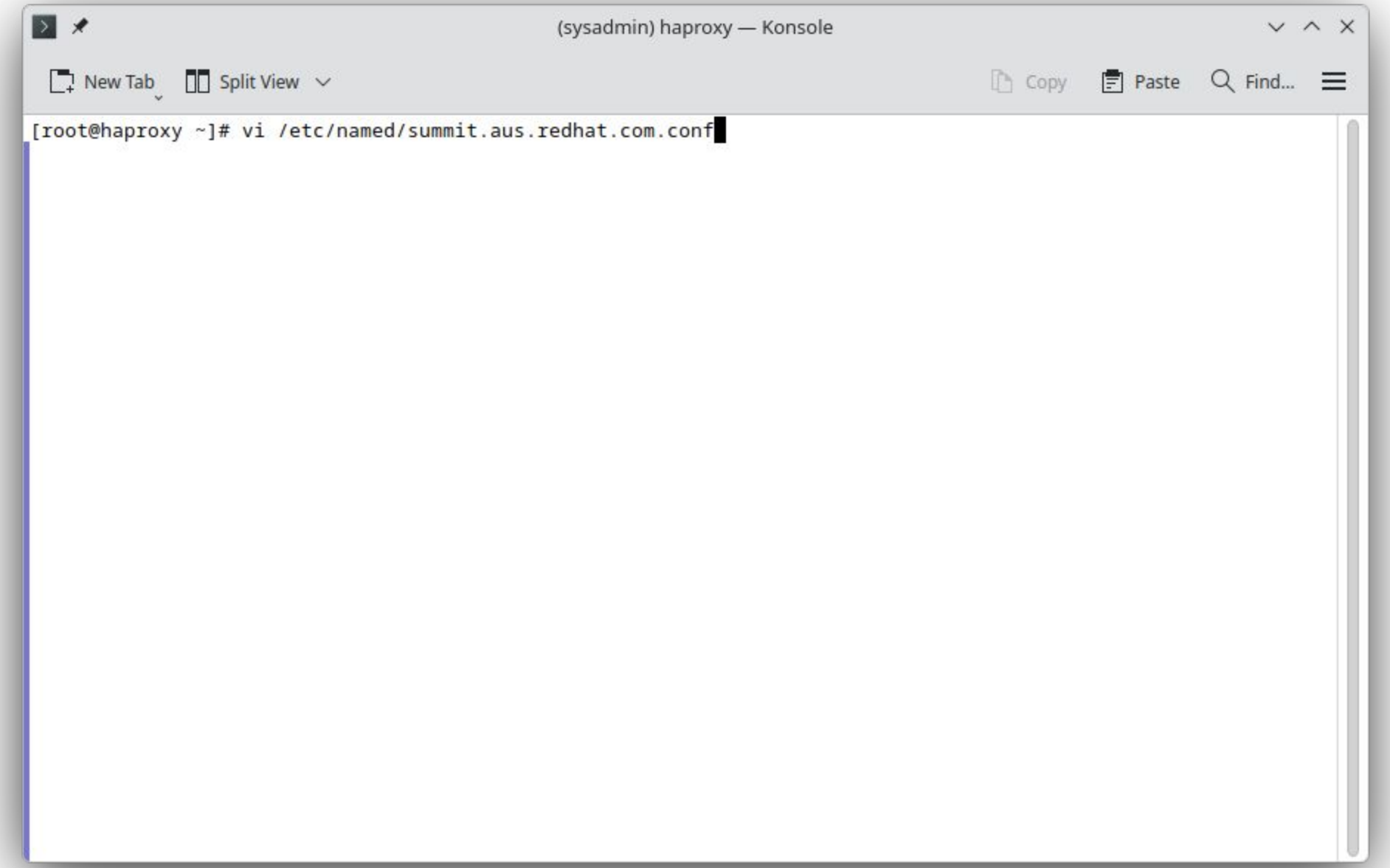

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# diff /etc/named.conf /etc/named.conf.orig
11c11
<   listen-on port 53 { 10.31.100.64; };

>   listen-on port 53 { 127.0.0.1; };
19c19
<   allow-query   { any; };

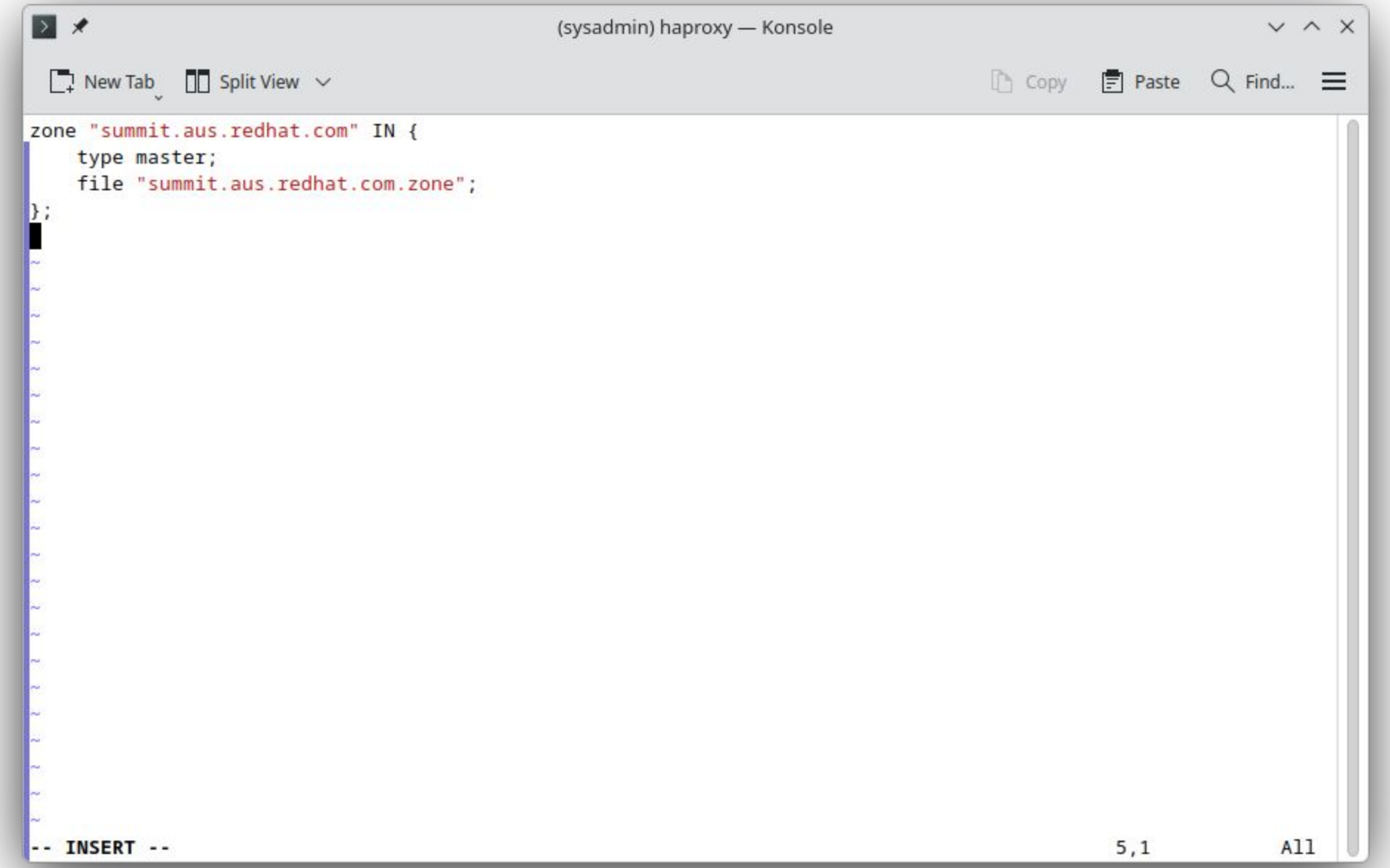
>   allow-query   { localhost; };
59c59
< include "/etc/named/*.conf";

>
[root@haproxy ~]#

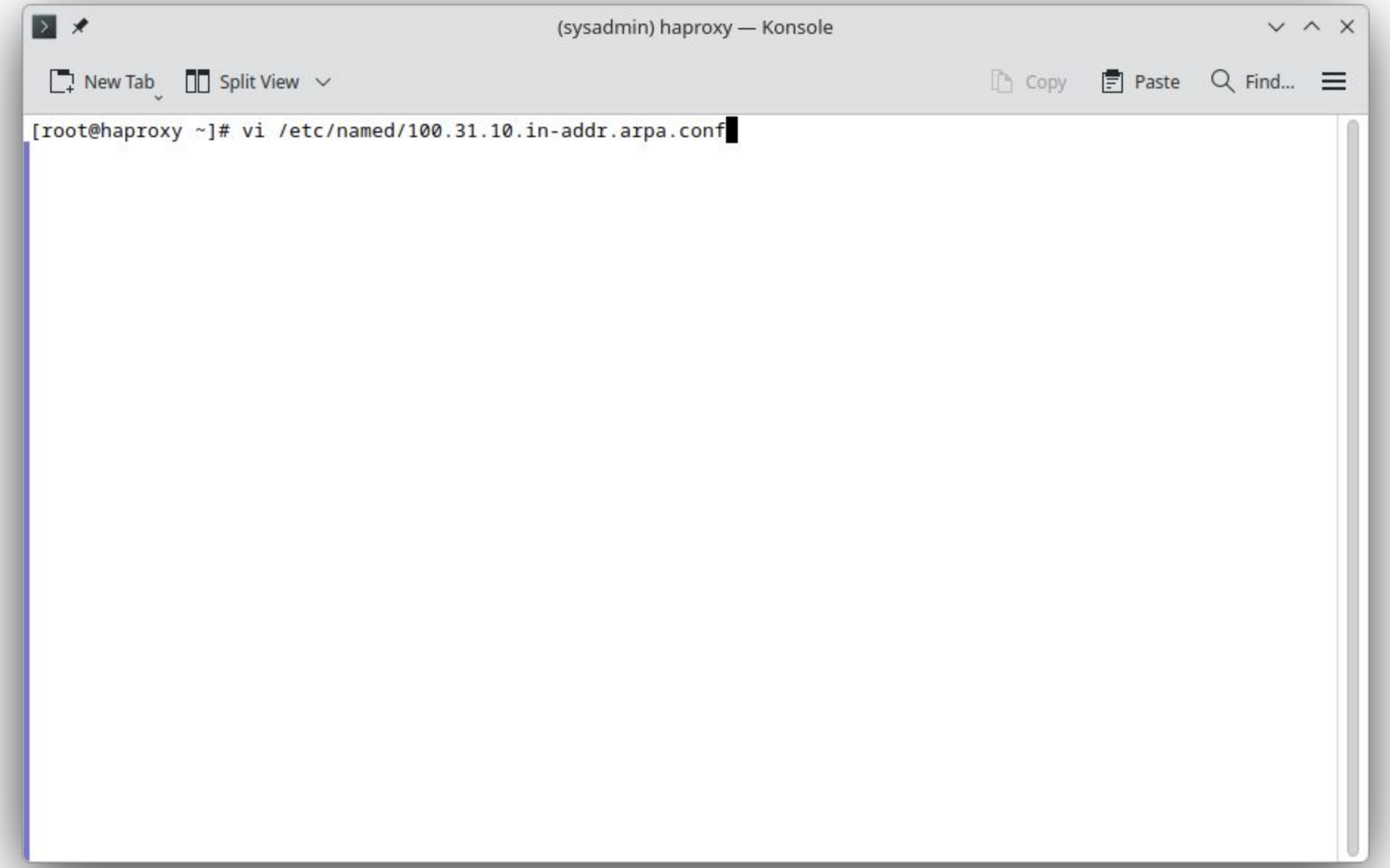
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# vi /etc/named/summit.aus.redhat.com.conf

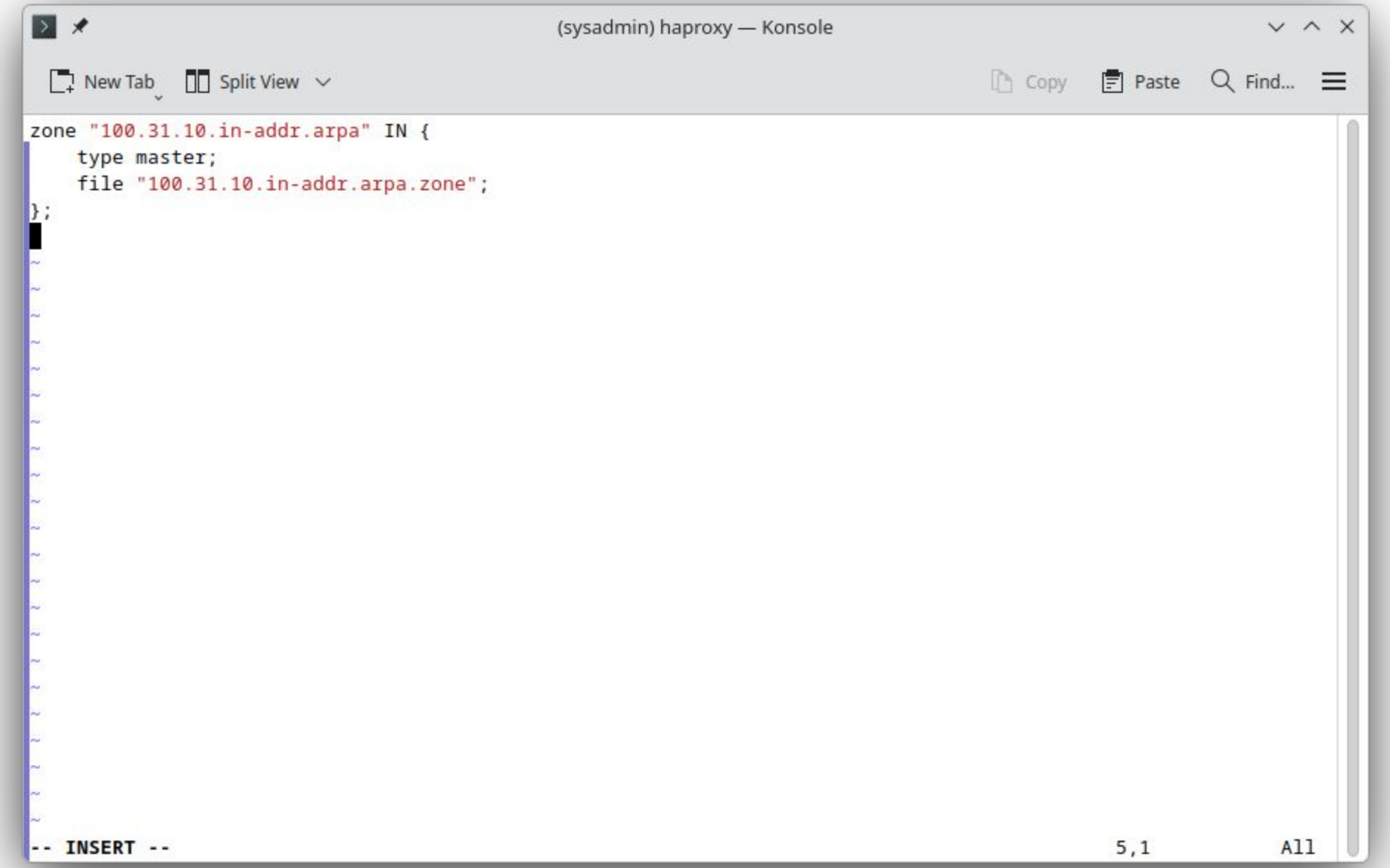
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
zone "summit.aus.redhat.com" IN {
type master;
file "summit.aus.redhat.com.zone";
};
-- INSERT --
5,1
All

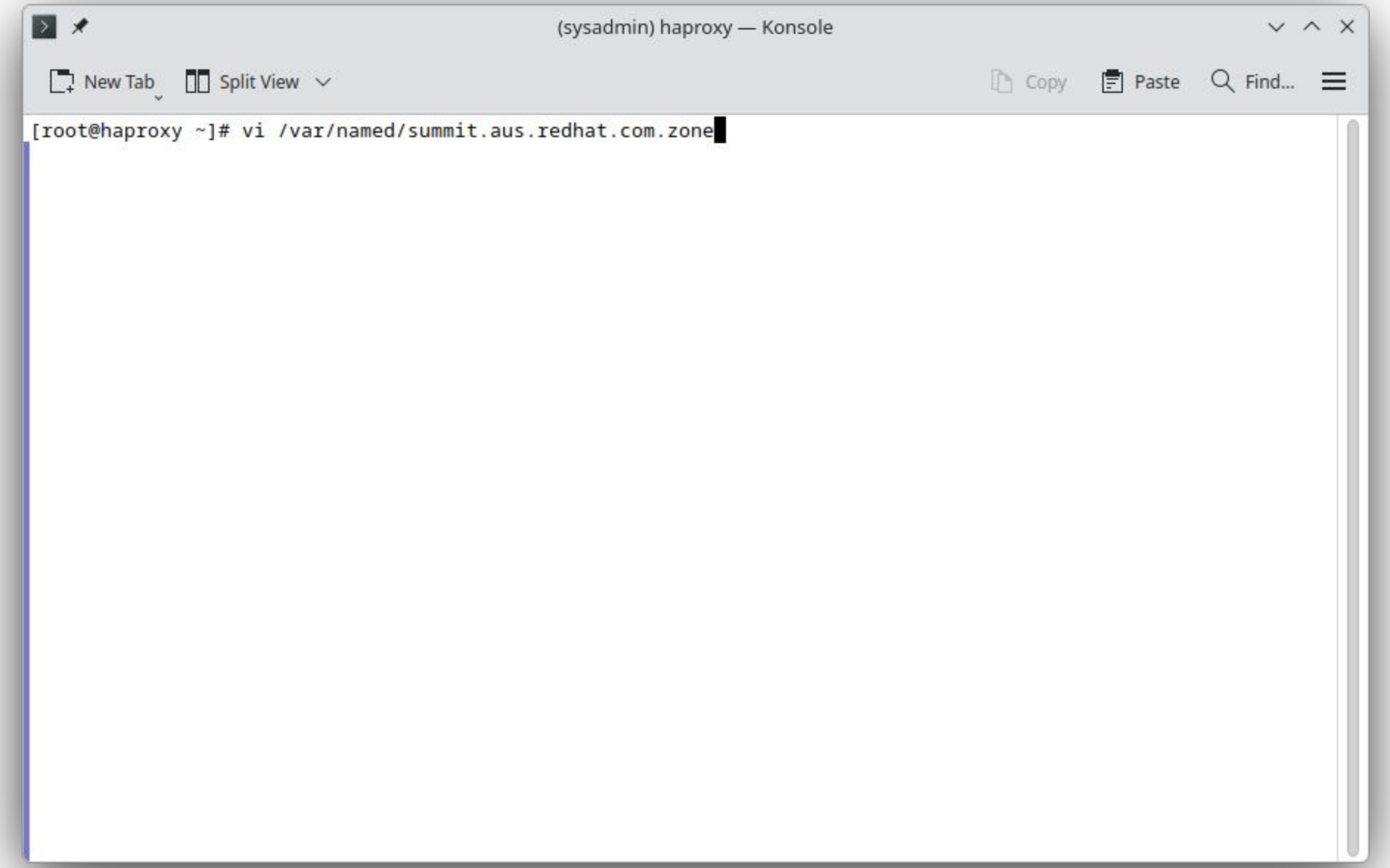
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# vi /etc/named/100.31.10.in-addr.arpa.conf

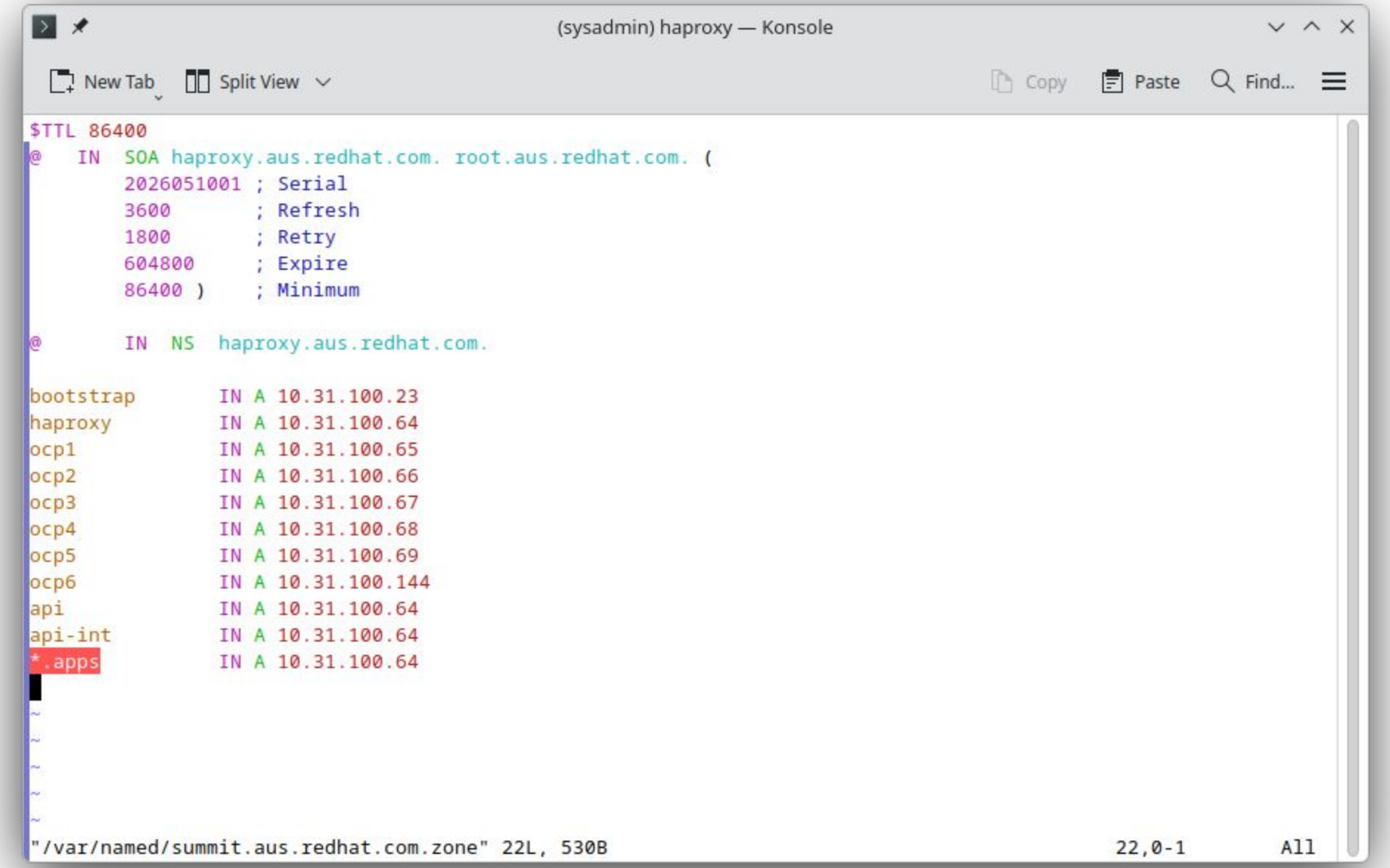
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
zone "100.31.10.in-addr.arpa" IN {
type master;
file "100.31.10.in-addr.arpa.zone";
};
-- INSERT --
5,1
All

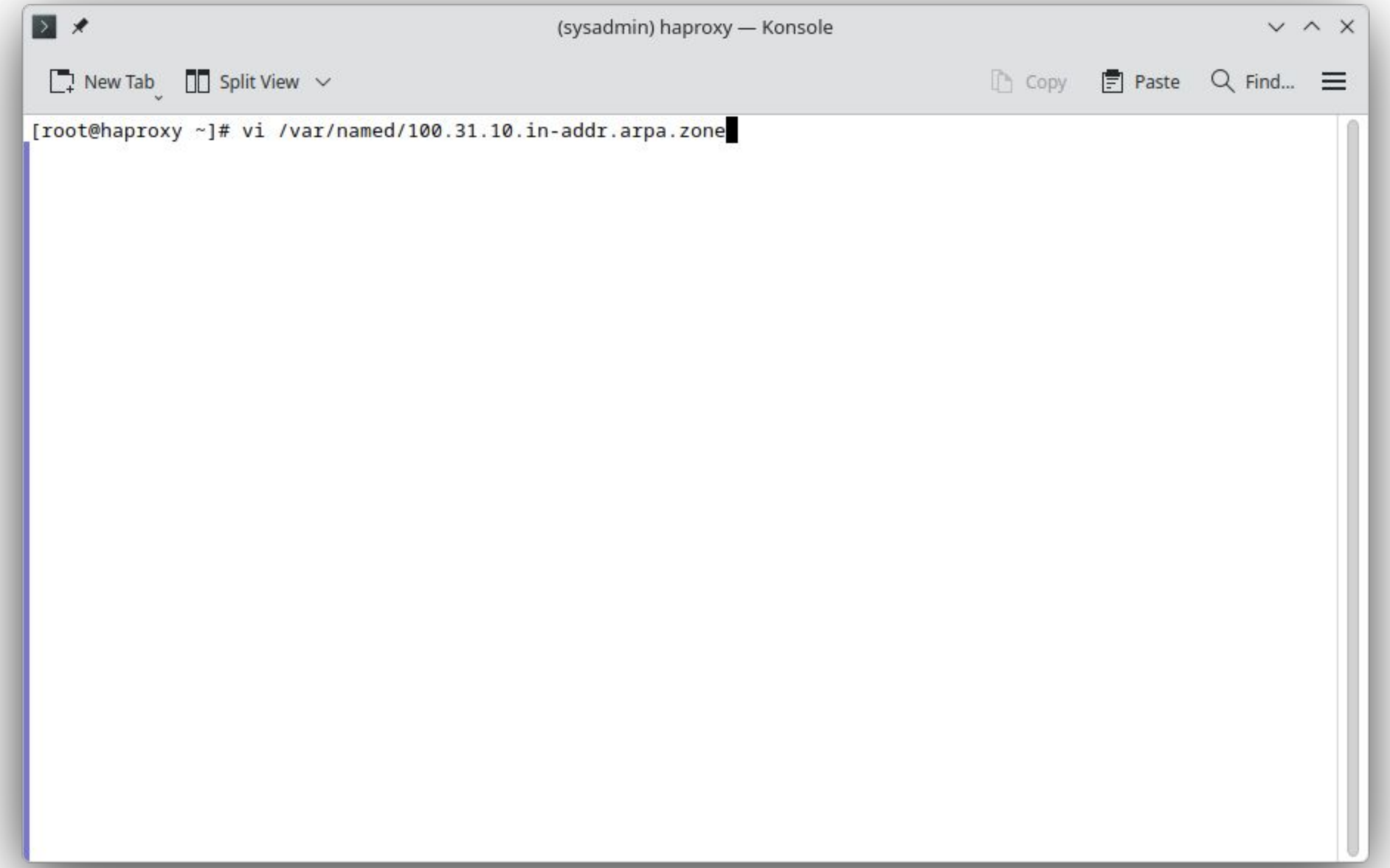
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# vi /var/named/summit.aus.redhat.com.zone

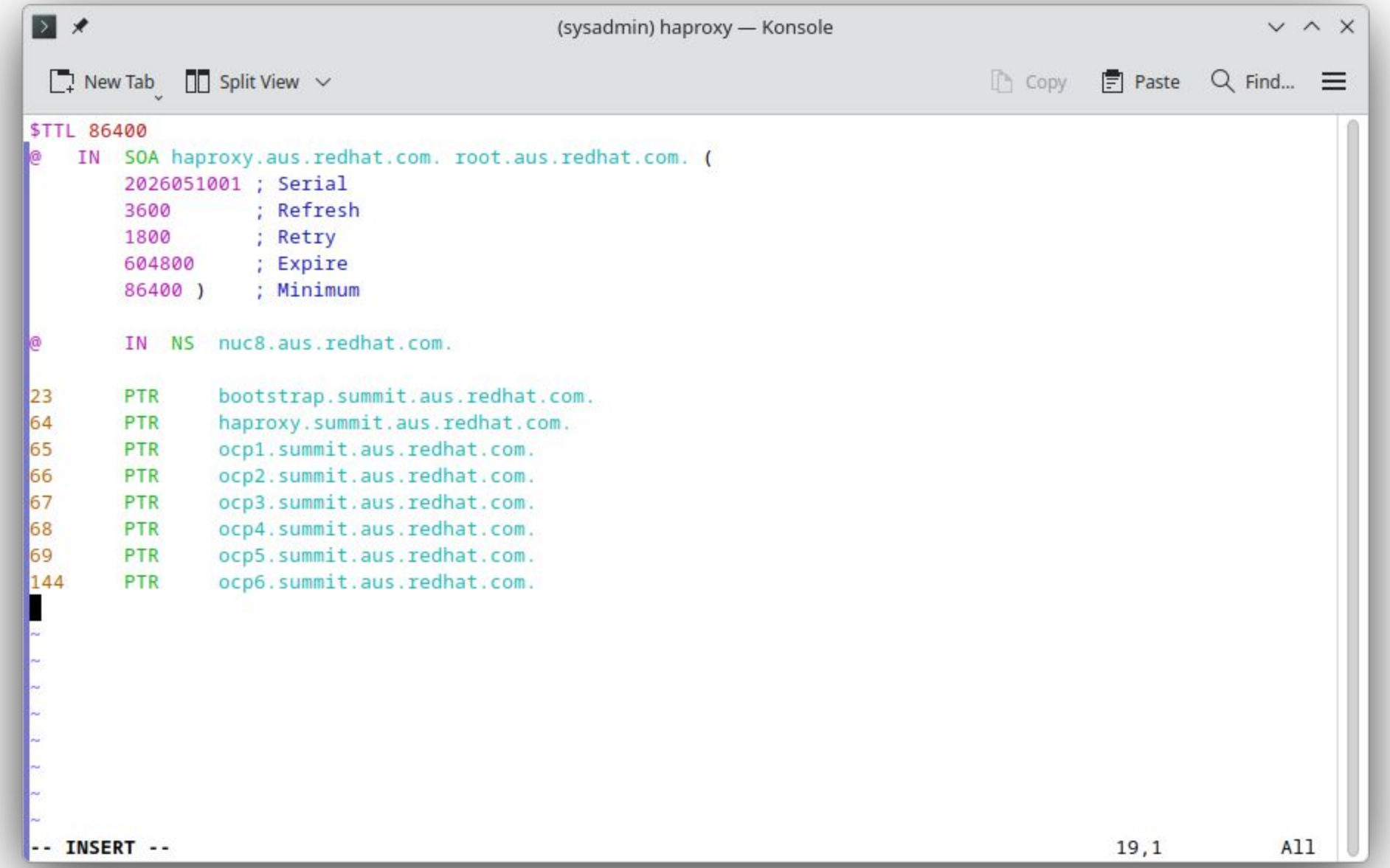
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
$TTL 86400
@ IN SOA haproxy.aus.redhat.com. root.aus.redhat.com. (
2026051001 ; Serial
3600 ; Refresh
1800 ; Retry
604800 ; Expire
86400) ; Minimum
@ IN NS haproxy.aus.redhat.com.
bootstrap IN A 10.31.100.23
haproxy IN A 10.31.100.64
ocp1 IN A 10.31.100.65
ocp2 IN A 10.31.100.66
ocp3 IN A 10.31.100.67
ocp4 IN A 10.31.100.68
ocp5 IN A 10.31.100.69
ocp6 IN A 10.31.100.144
api IN A 10.31.100.64
api-int IN A 10.31.100.64
*.apps IN A 10.31.100.64
"/var/named/summit.aus.redhat.com.zone" 22L, 530B
22,0-1
All

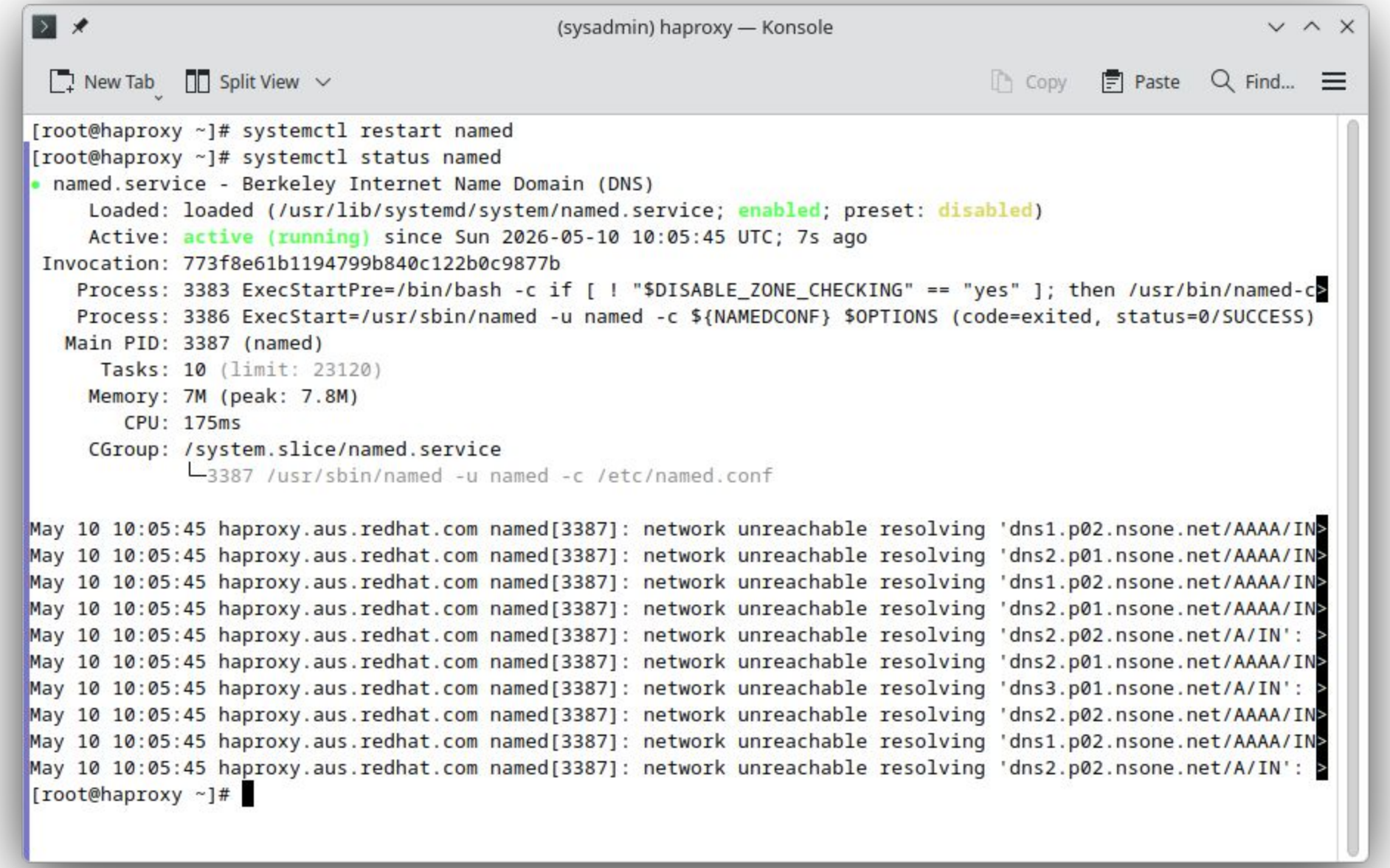
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# vi /var/named/100.31.10.in-addr.arpa.zone

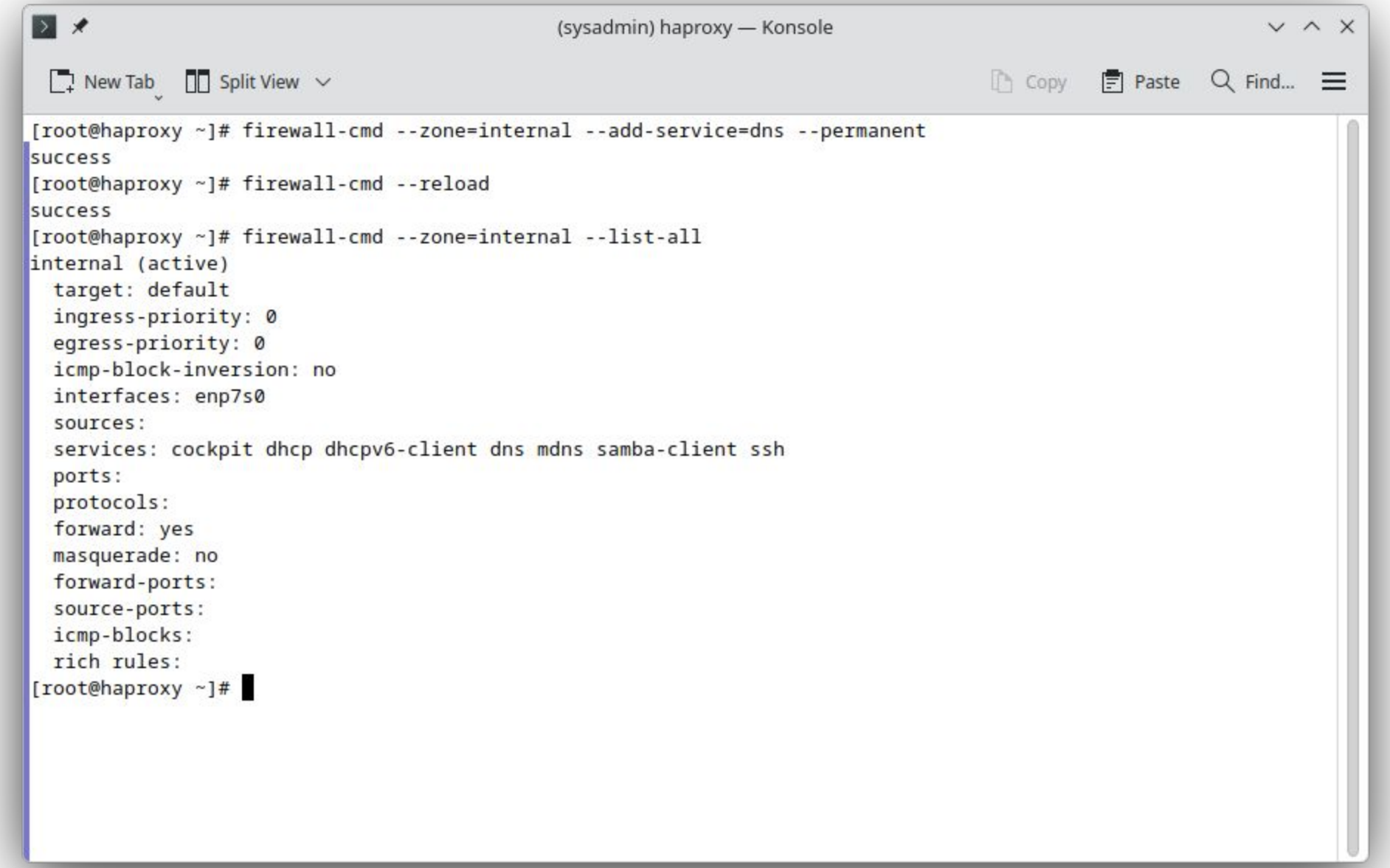
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
$TTL 86400
@ IN SOA haproxy.aus.redhat.com. root.aus.redhat.com. (
2026051001 ; Serial
3600 ; Refresh
1800 ; Retry
604800 ; Expire
86400) ; Minimum
@ IN NS nuc8.aus.redhat.com.
23 PTR bootstrap.summit.aus.redhat.com.
64 PTR haproxy.summit.aus.redhat.com.
65 PTR ocp1.summit.aus.redhat.com.
66 PTR ocp2.summit.aus.redhat.com.
67 PTR ocp3.summit.aus.redhat.com.
68 PTR ocp4.summit.aus.redhat.com.
69 PTR ocp5.summit.aus.redhat.com.
144 PTR ocp6.summit.aus.redhat.com.
-- INSERT --
19,1
All

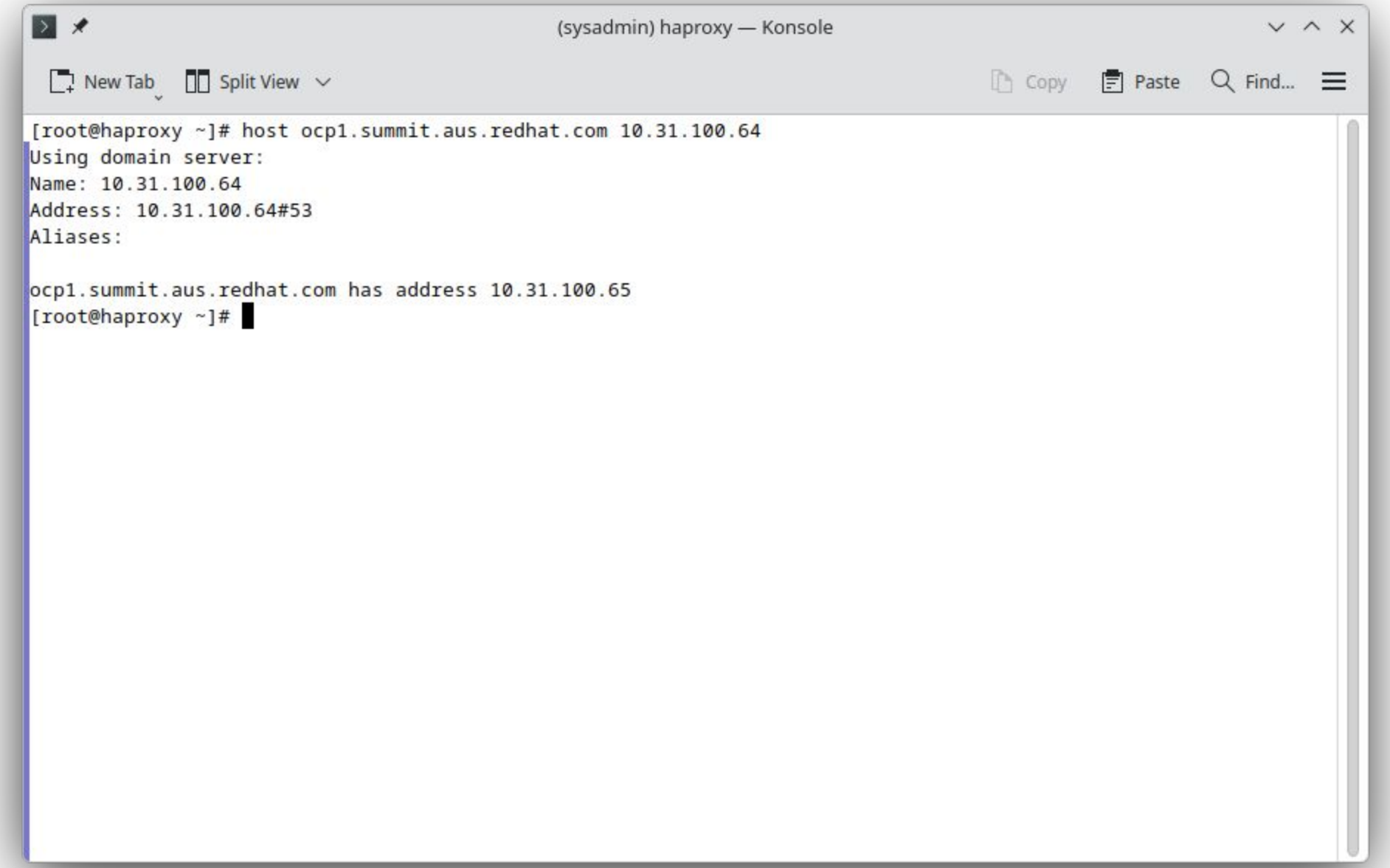
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# systemctl restart named
[root@haproxy ~]# systemctl status named
• named.service - Berkeley Internet Name Domain (DNS)
Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; preset: disabled)
Active: active (running) since Sun 2026-05-10 10:05:45 UTC; 7s ago
Invocation: 773f8e61b1194799b840c122b0c9877b
Process: 3383 ExecStartPre=/bin/bash -c if [! "$DISABLE_ZONE_CHECKING" == "yes"]; then /usr/bin/named-c
Process: 3386 ExecStart=/usr/sbin/named -u named -c ${NAMEDCONF} $OPTIONS (code=exited, status=0/SUCCESS)
Main PID: 3387 (named)
Tasks: 10 (limit: 23120)
Memory: 7M (peak: 7.8M)
CPU: 175ms
CGroup: /system.slice/named.service
└3387 /usr/sbin/named -u named -c /etc/named.conf
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns1.p02.nsone.net/AAAA/IN
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns2.p01.nsone.net/AAAA/IN
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns1.p02.nsone.net/AAAA/IN
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns2.p01.nsone.net/AAAA/IN
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns2.p02.nsone.net/A/IN':
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns2.p01.nsone.net/AAAA/IN
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns3.p01.nsone.net/A/IN':
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns2.p02.nsone.net/AAAA/IN
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns1.p02.nsone.net/AAAA/IN
May 10 10:05:45 haproxy.aus.redhat.com named[3387]: network unreachable resolving 'dns2.p02.nsone.net/A/IN':
[root@haproxy ~]#

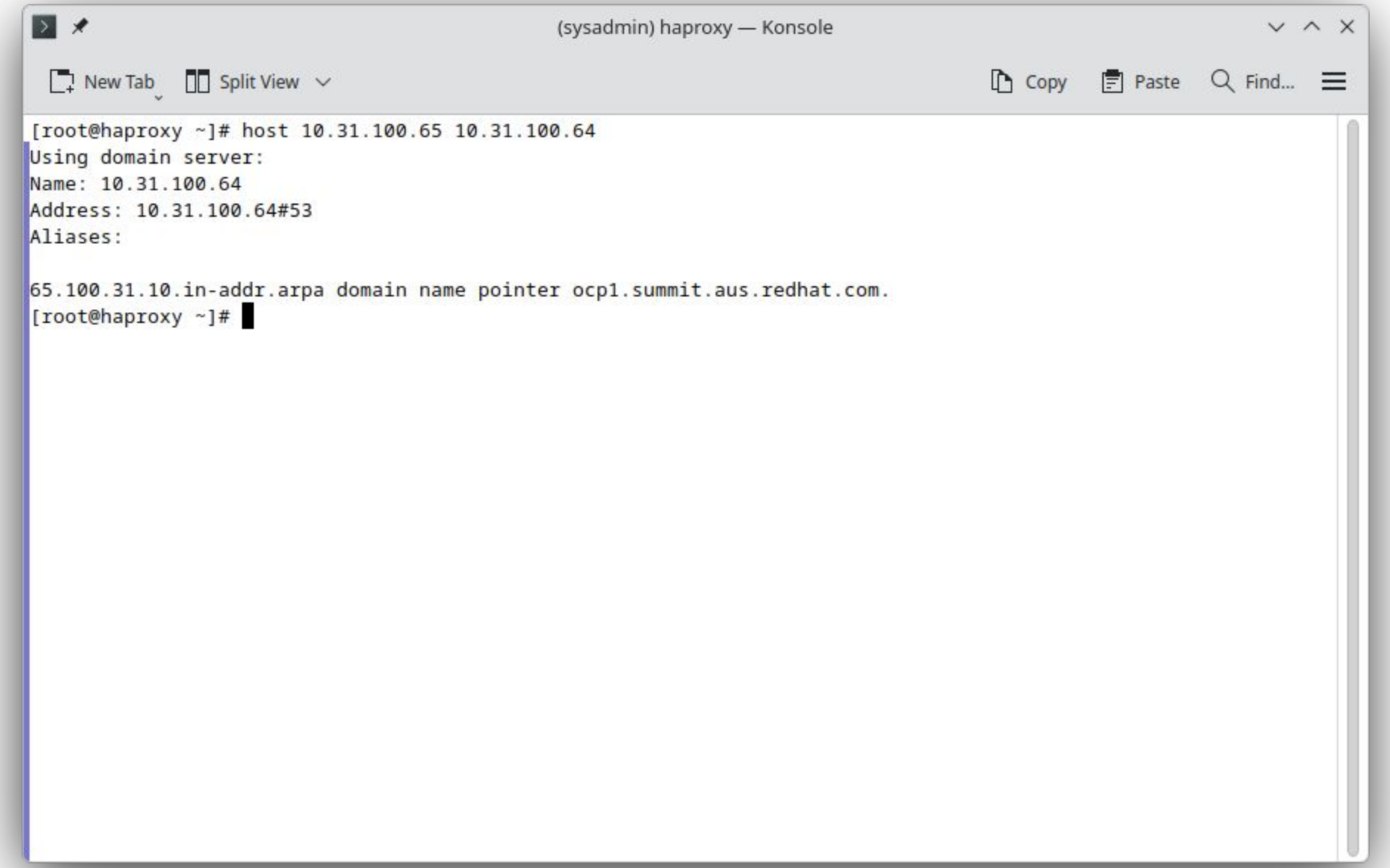
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --zone=internal --add-service=dns --permanent
success
[root@haproxy ~]# firewall-cmd --reload
success
[root@haproxy ~]# firewall-cmd --zone=internal --list-all
internal (active)
target: default
ingress-priority: 0
egress-priority: 0
icmp-block-inversion: no
interfaces: enp7s0
sources:
services: cockpit dhcp dhcpv6-client dns mdns samba-client ssh
ports:
protocols:
forward: yes
masquerade: no
forward-ports:
source-ports:
icmp-blocks:
rich rules:
[root@haproxy ~]#

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# host ocp1.summit.aus.redhat.com 10.31.100.64
Using domain server:
Name: 10.31.100.64
Address: 10.31.100.64#53
Aliases:
ocp1.summit.aus.redhat.com has address 10.31.100.65
[root@haproxy ~]#

Red Hat

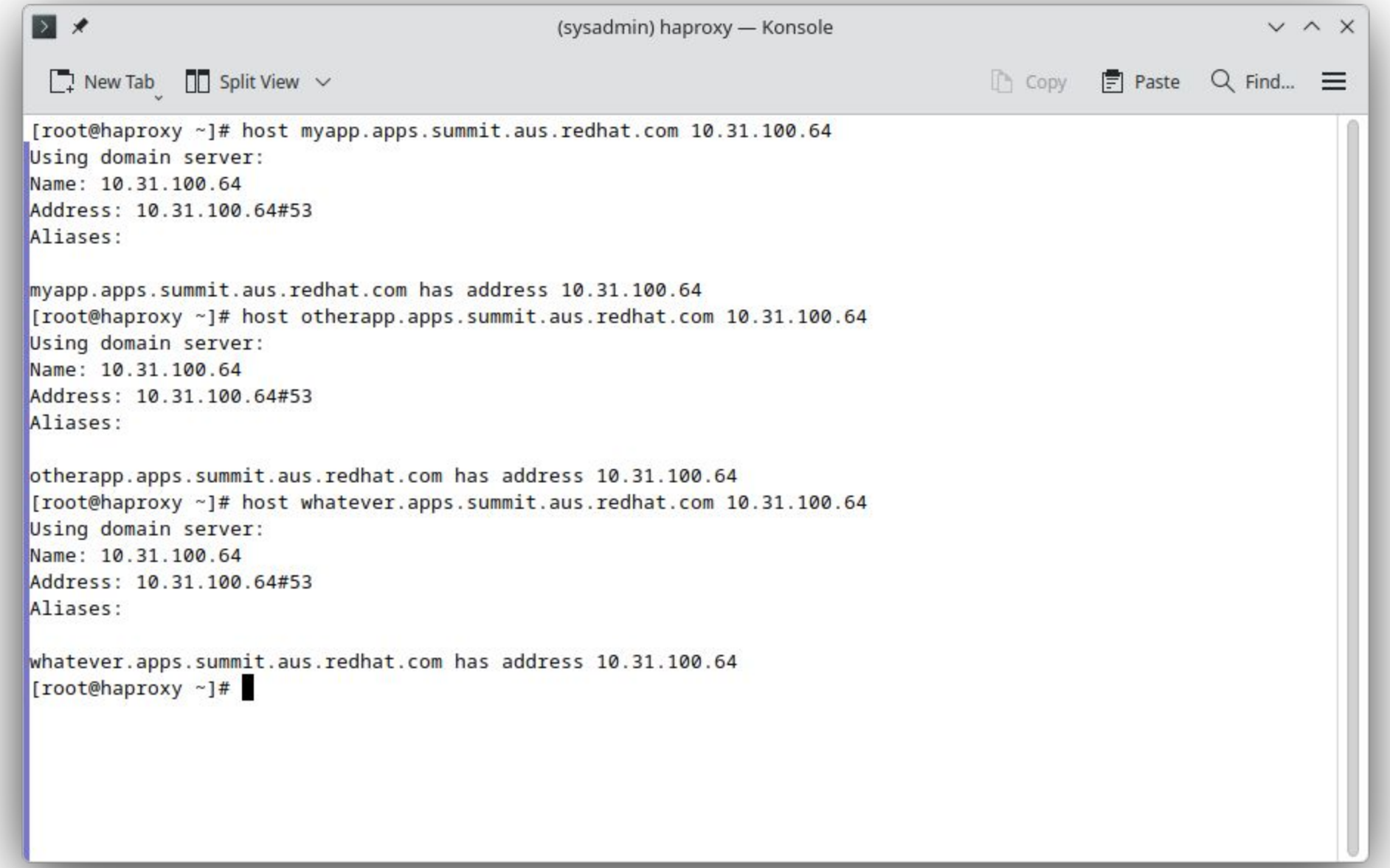

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# host 10.31.100.65 10.31.100.64
Using domain server:
Name: 10.31.100.64
Address: 10.31.100.64#53
Aliases:
65.100.31.10.in-addr.arpa domain name pointer ocp1.summit.aus.redhat.com.
[root@haproxy ~]#

Red Hat

DNS

Configure DNS for the private network

Test the wildcard resolution, as well!


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# host myapp.apps.summit.aus.redhat.com 10.31.100.64
Using domain server:
Name: 10.31.100.64
Address: 10.31.100.64#53
Aliases:
myapp.apps.summit.aus.redhat.com has address 10.31.100.64
[root@haproxy ~]# host otherapp.apps.summit.aus.redhat.com 10.31.100.64
Using domain server:
Name: 10.31.100.64
Address: 10.31.100.64#53
Aliases:
otherapp.apps.summit.aus.redhat.com has address 10.31.100.64
[root@haproxy ~]# host whatever.apps.summit.aus.redhat.com 10.31.100.64
Using domain server:
Name: 10.31.100.64
Address: 10.31.100.64#53
Aliases:
whatever.apps.summit.aus.redhat.com has address 10.31.100.64
[root@haproxy ~]#

Red Hat

HAProxy

HAProxy Service

Install and configure

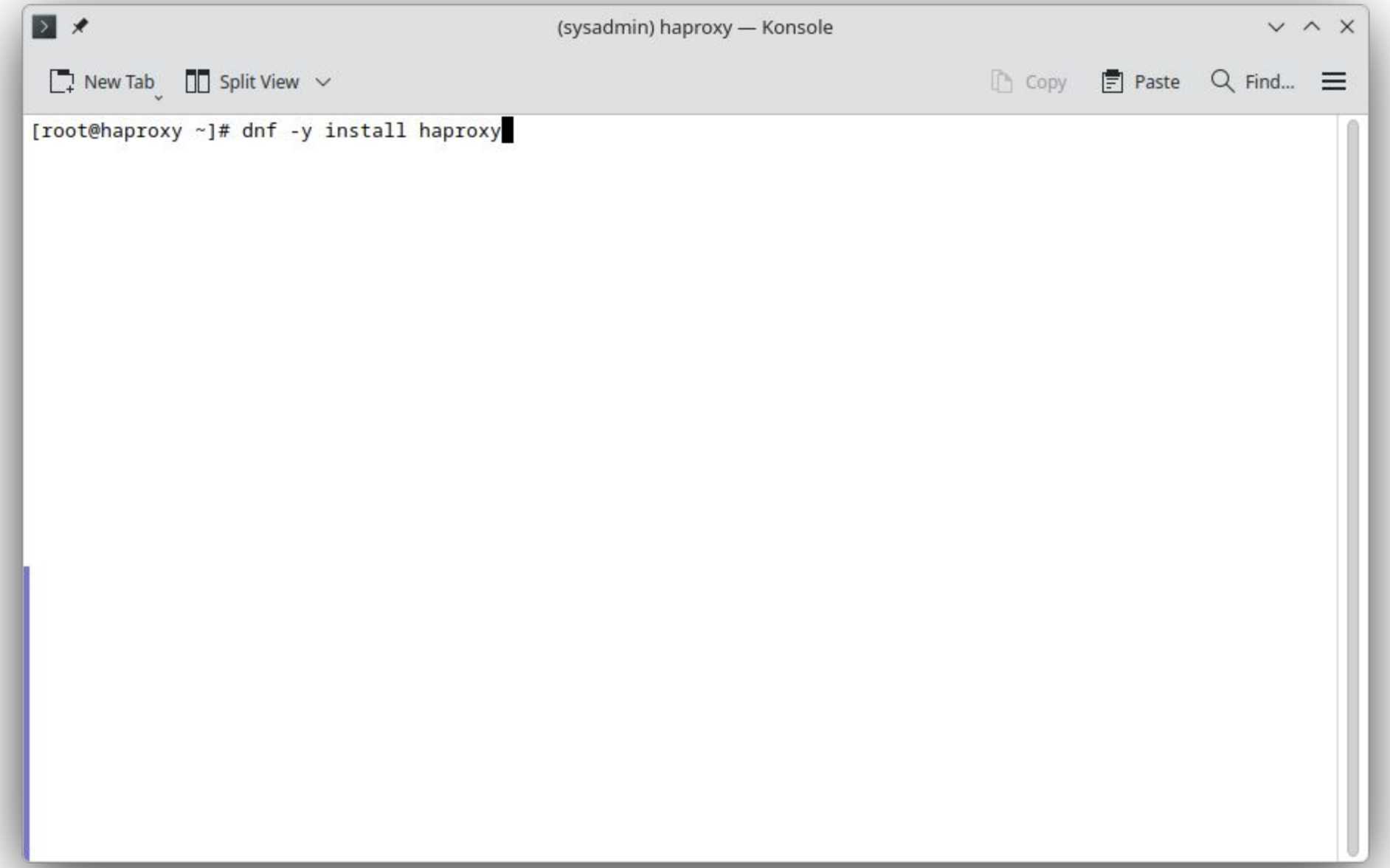
Install the package

Tell SELinux that the proxy can connect

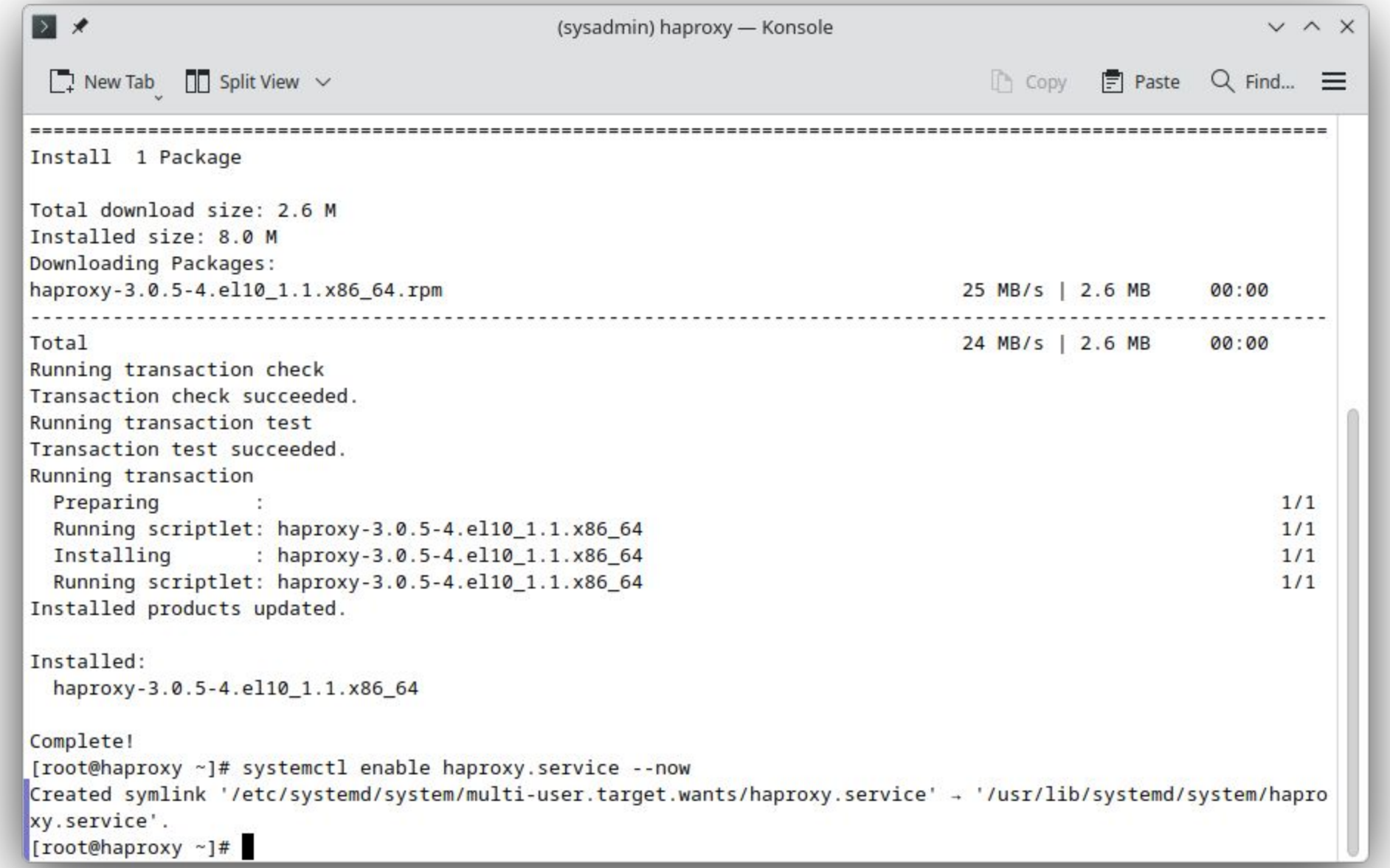
Enable and start the service

Configure the proxy

Test


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# dnf -y install haproxy

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
==========
Install 1 Package
Total download size: 2.6 M
Installed size: 8.0 M
Downloading Packages:
haproxy-3.0.5-4.el10_1.1.x86_64.rpm 25 MB/s | 2.6 MB 00:00

Total 24 MB/s | 2.6 MB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Running scriptlet: haproxy-3.0.5-4.el10_1.1.x86_64 1/1
Installing : haproxy-3.0.5-4.el10_1.1.x86_64 1/1
Running scriptlet: haproxy-3.0.5-4.el10_1.1.x86_64 1/1
Installed products updated.
Installed:
haproxy-3.0.5-4.el10_1.1.x86_64
Complete!
[root@haproxy ~]# systemctl enable haproxy.service --now
Created symlink '/etc/systemd/system/multi-user.target.wants/haproxy.service' → '/usr/lib/systemd/system/haproxy.service'.
[root@haproxy ~]#

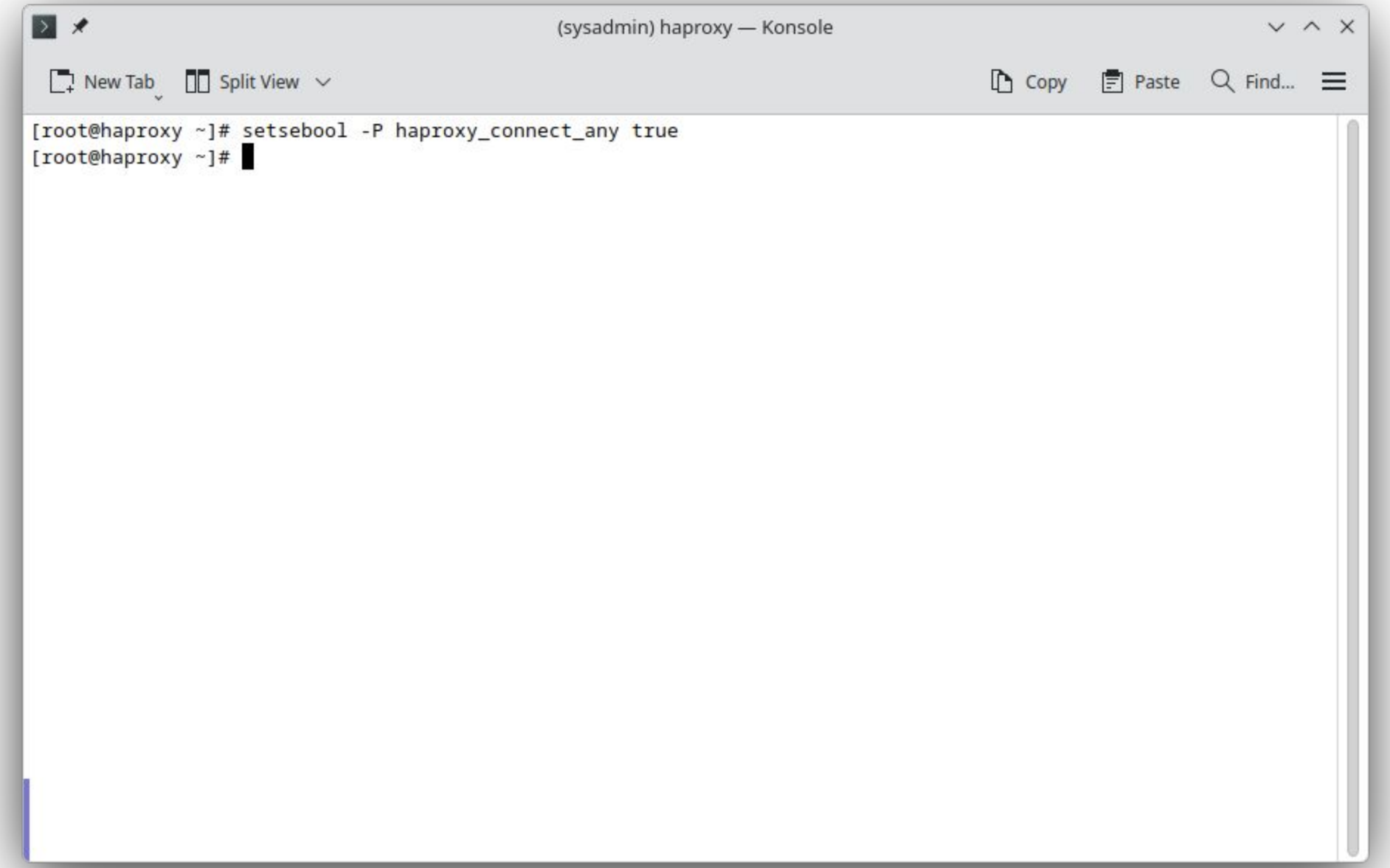
Red Hat

HAProxy Service

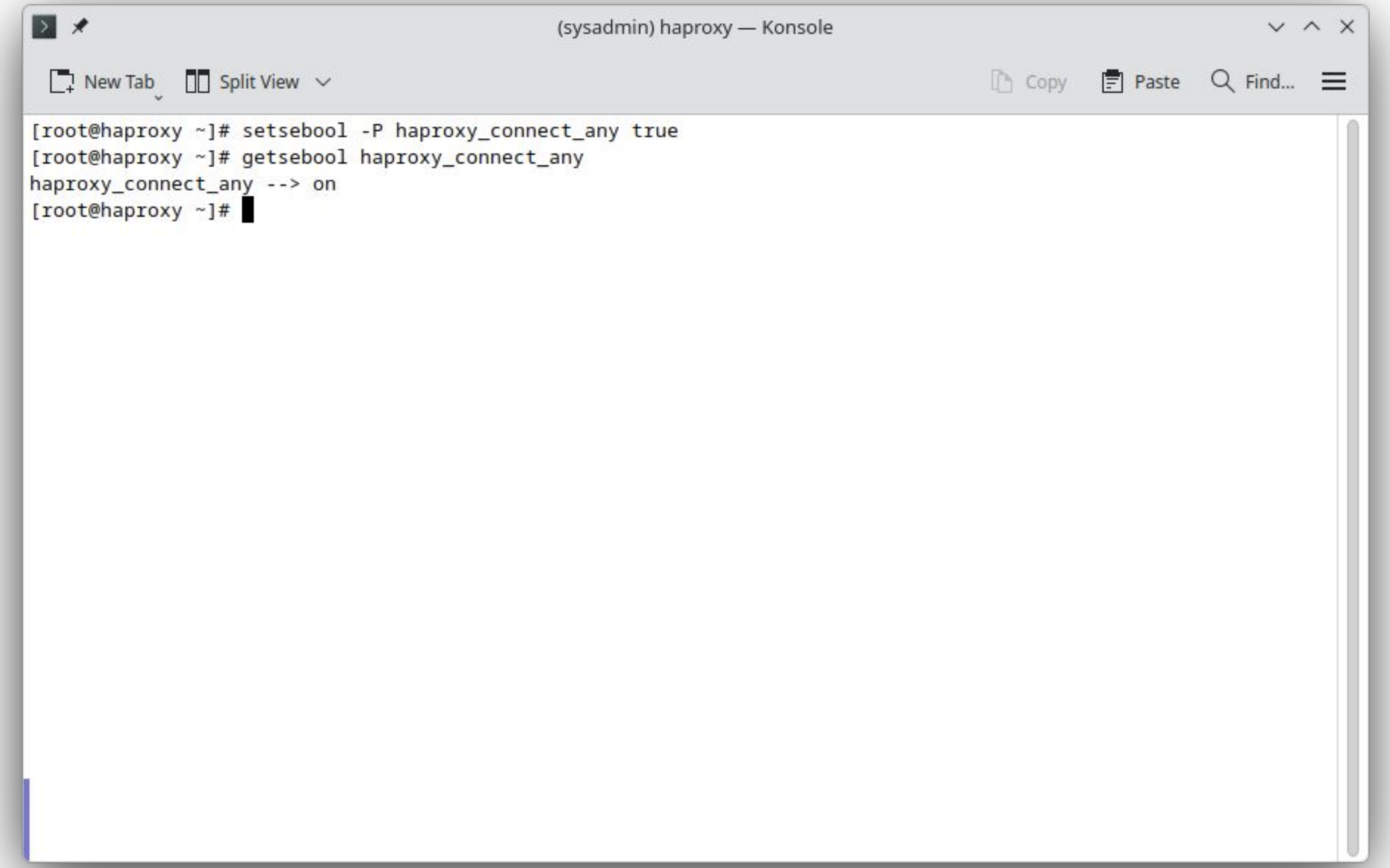
Install and configure

Use setsebool to tell SELinux that it's OK that the proxy software is running

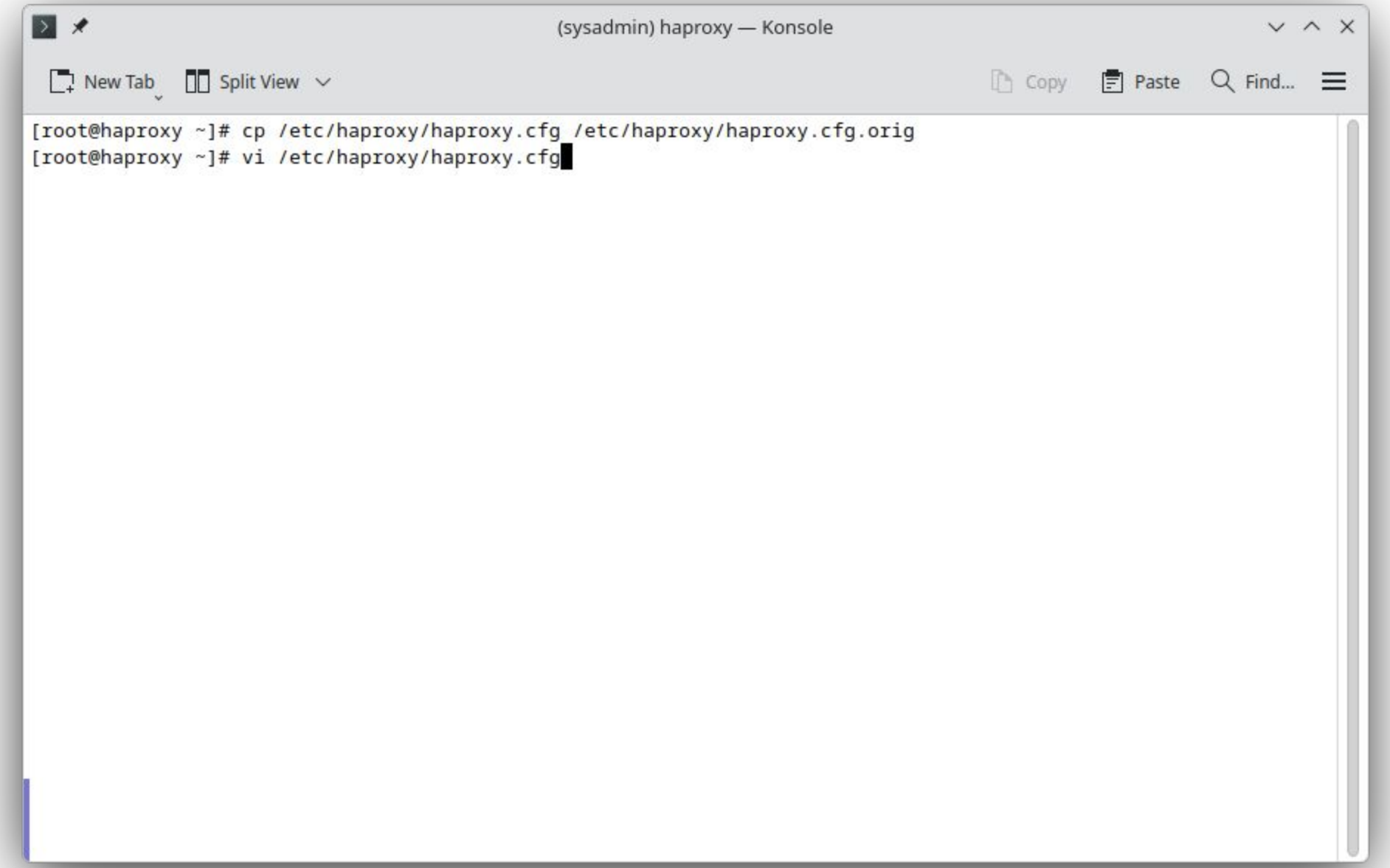
```
setsebool -P haproxy_connect_any true
```


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# setsebool -P haproxy_connect_any true
[root@haproxy ~]#

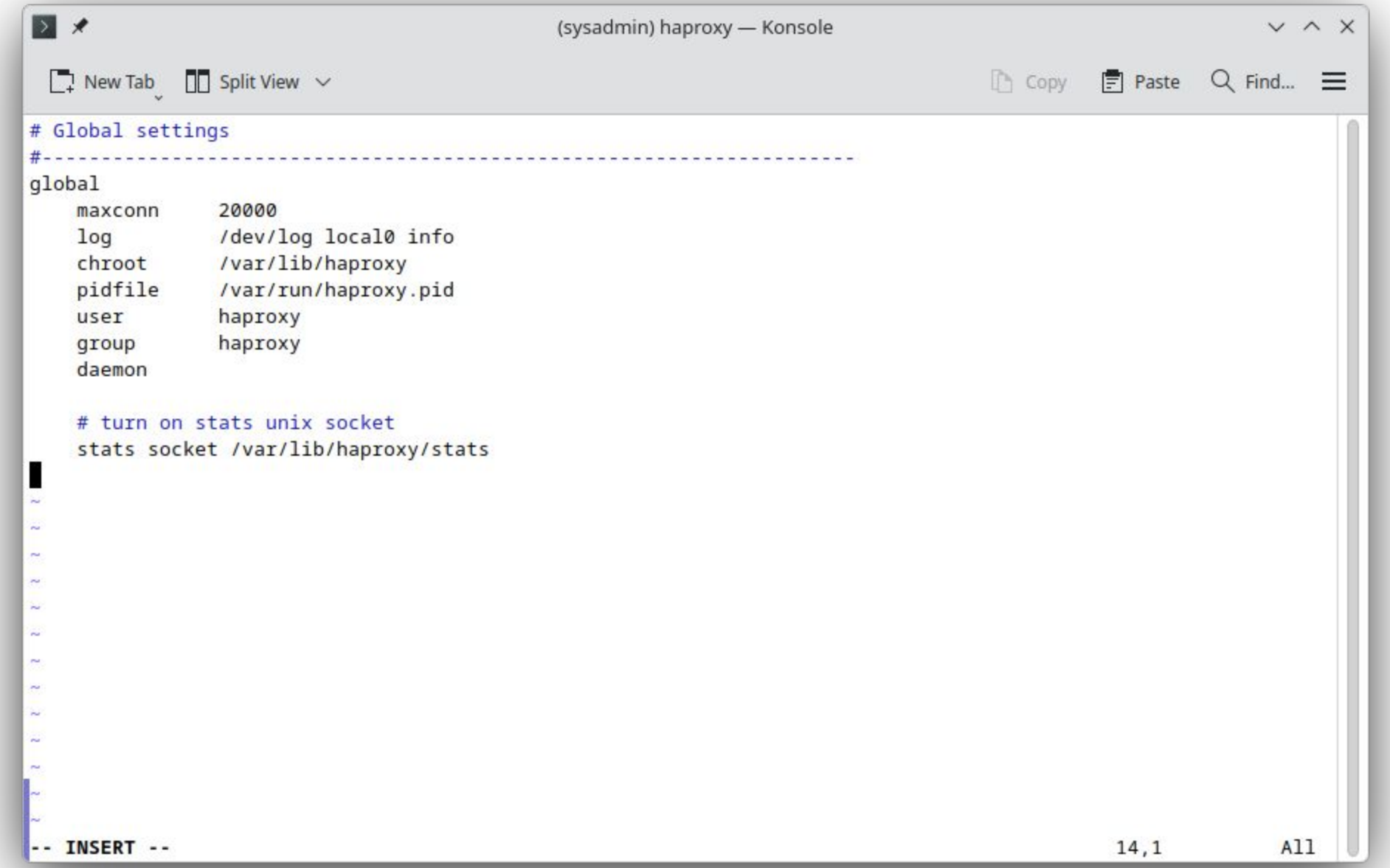
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# setsebool -P haproxy_connect_any true
[root@haproxy ~]# getsebool haproxy_connect_any
haproxy_connect_any --> on
[root@haproxy ~]#

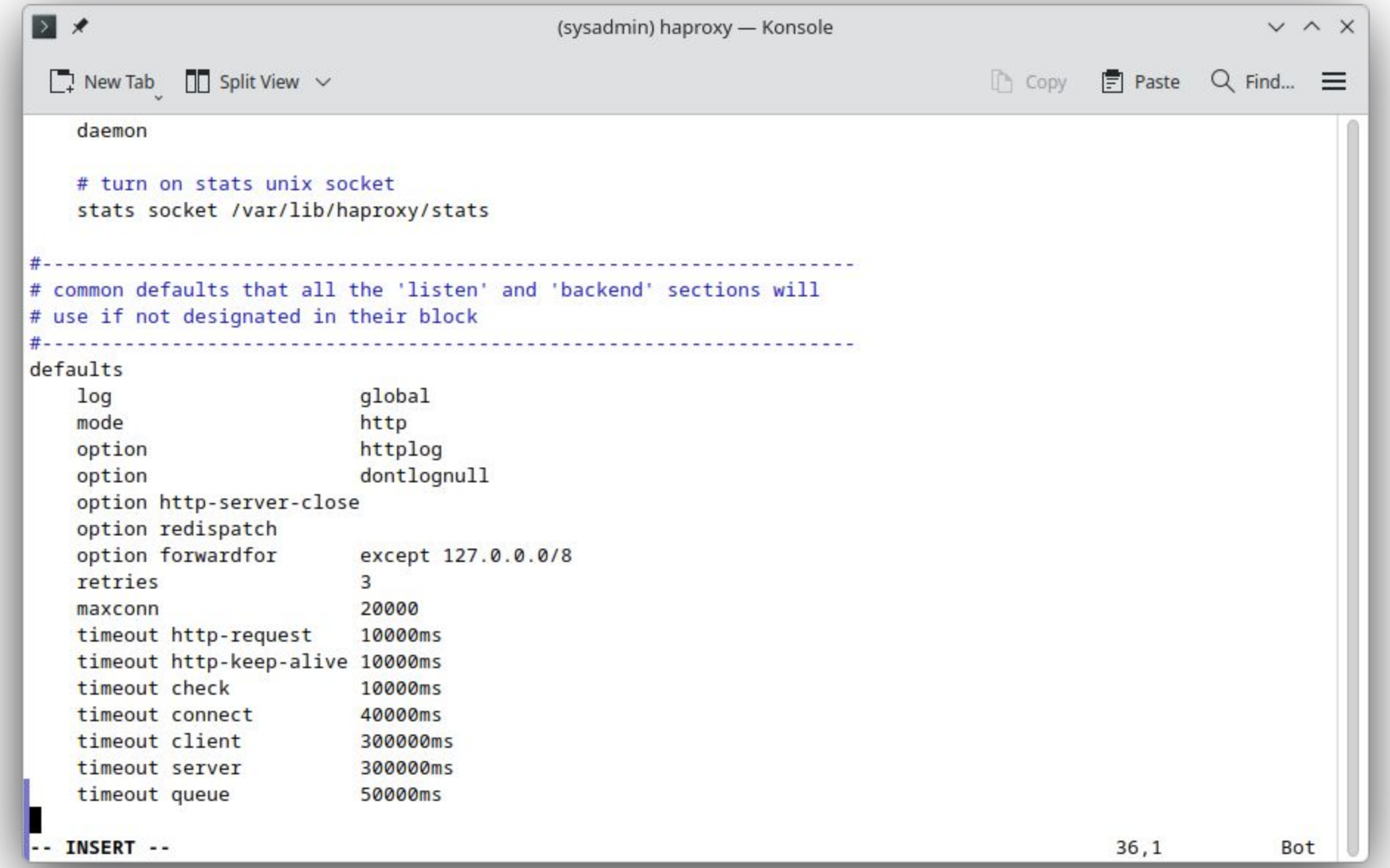
Red Hat

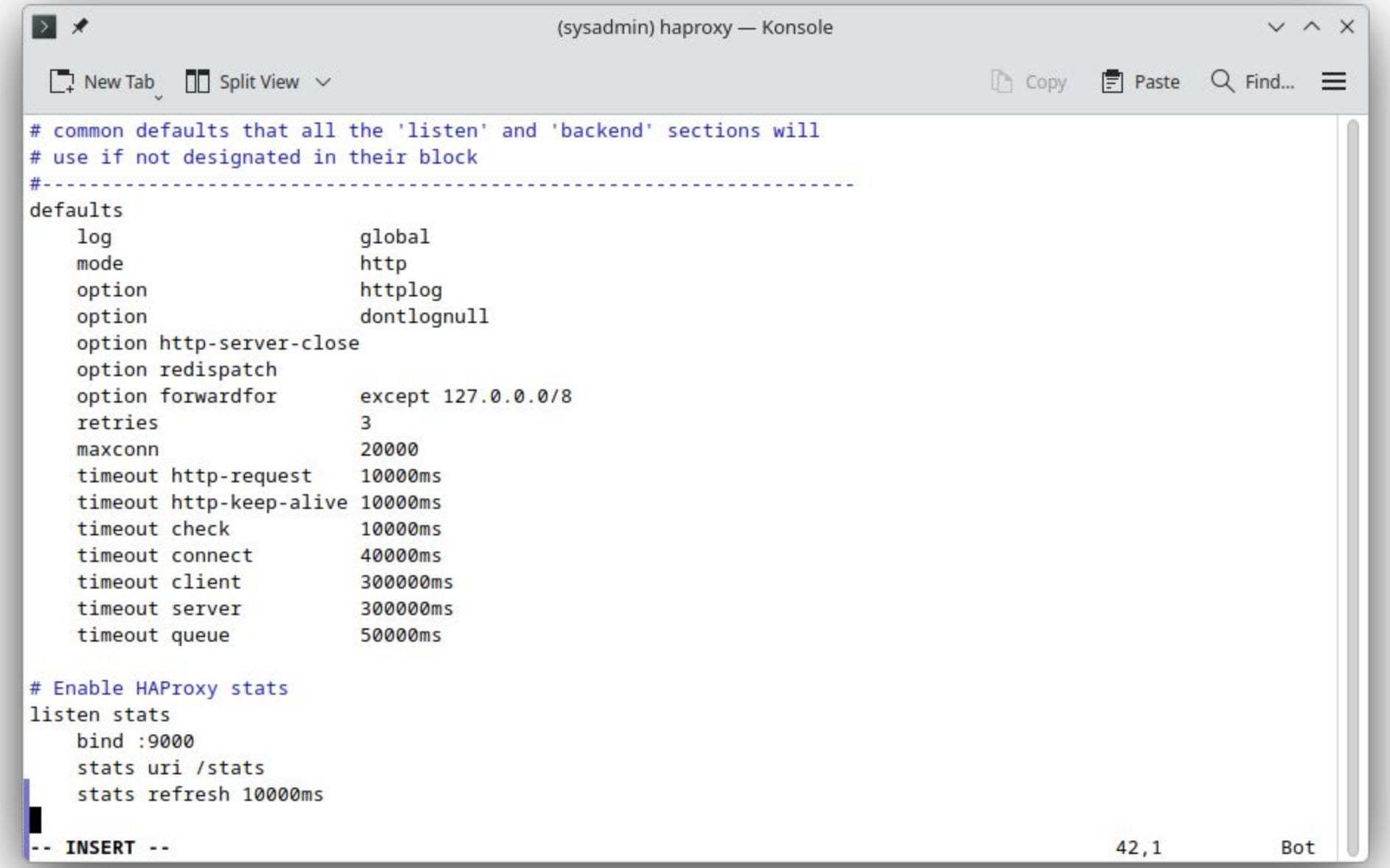

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# cp /etc/haproxy/haproxy.cfg /etc/haproxy/haproxy.cfg.orig
[root@haproxy ~]# vi /etc/haproxy/haproxy.cfg

Red Hat

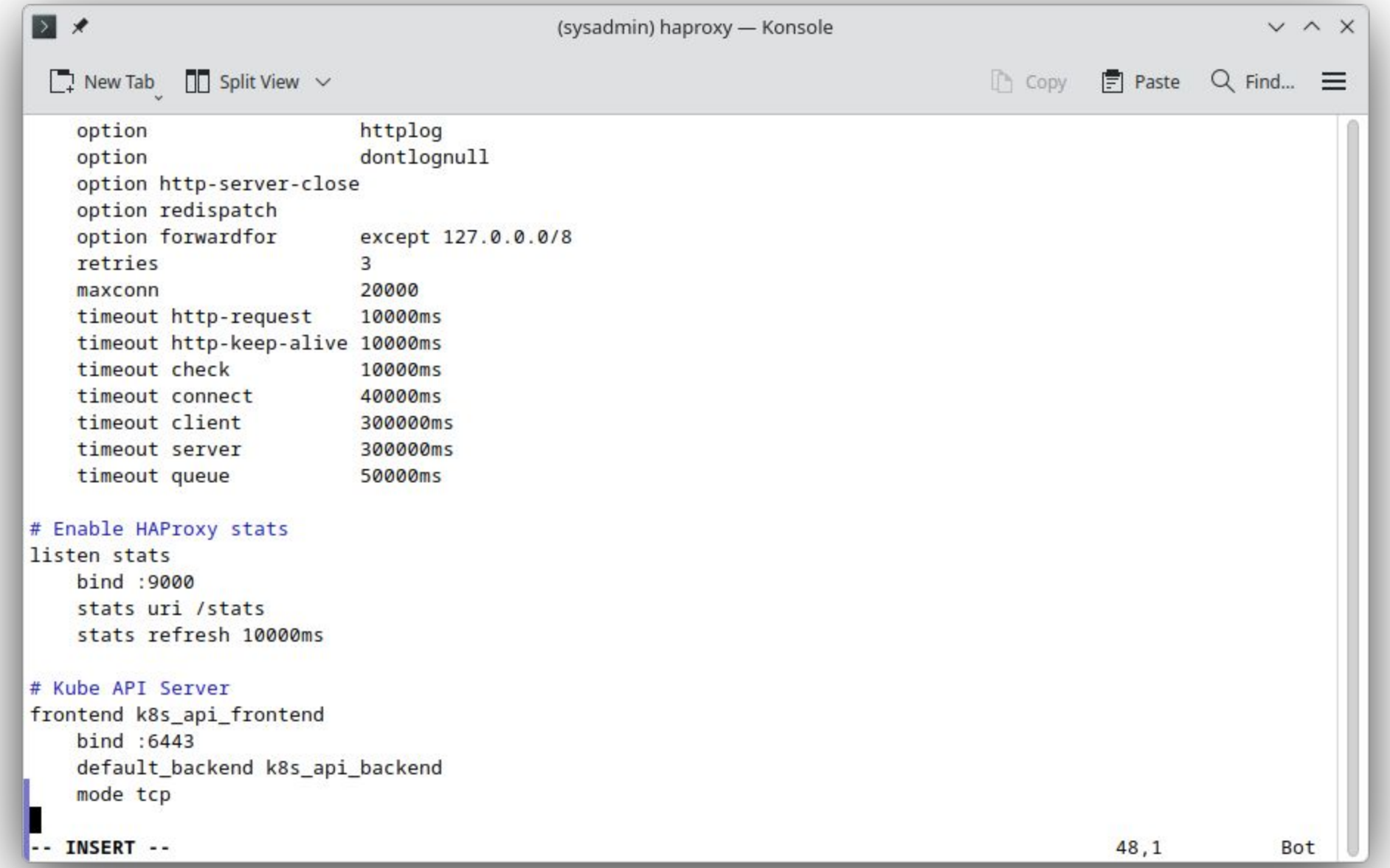

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
Global settings
#---
global
maxconn 20000
log /dev/log local0 info
chroot /var/lib/haproxy
pidfile /var/run/haproxy.pid
user haproxy
group haproxy
daemon
turn on stats unix socket
stats socket /var/lib/haproxy/stats
-- INSERT --
14,1
All

Red Hat

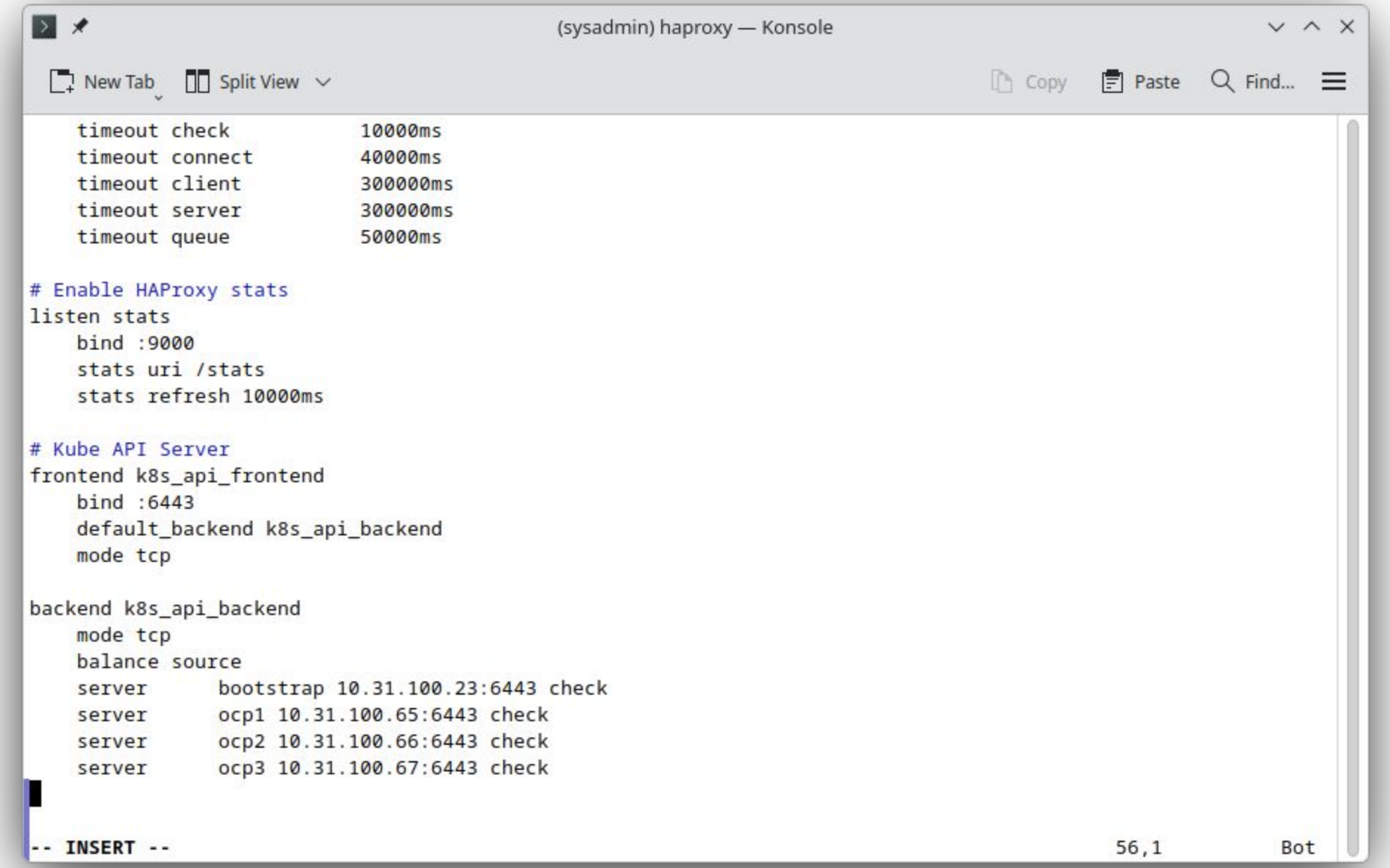

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
daemon
turn on stats unix socket
stats socket /var/lib/haproxy/stats
#---
common defaults that all the 'listen' and 'backend' sections will
use if not designated in their block
#---
defaults
log global
mode http
option httplog
option dontlognull
option http-server-close
option redispatch
option forwardfor except 127.0.0.0/8
retries 3
maxconn 20000
timeout http-request 10000ms
timeout http-keep-alive 10000ms
timeout check 10000ms
timeout connect 40000ms
timeout client 300000ms
timeout server 300000ms
timeout queue 50000ms
-- INSERT --
36,1
Bot


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
common defaults that all the 'listen' and 'backend' sections will
use if not designated in their block
#---
defaults
log global
mode http
option httplog
option dontlognull
option http-server-close
option redispatch
option forwardfor except 127.0.0.0/8
retries 3
maxconn 20000
timeout http-request 10000ms
timeout http-keep-alive 10000ms
timeout check 10000ms
timeout connect 40000ms
timeout client 300000ms
timeout server 300000ms
timeout queue 50000ms
Enable HAProxy stats
listen stats
bind :9000
stats uri /stats
stats refresh 10000ms
-- INSERT --
42,1
Bot

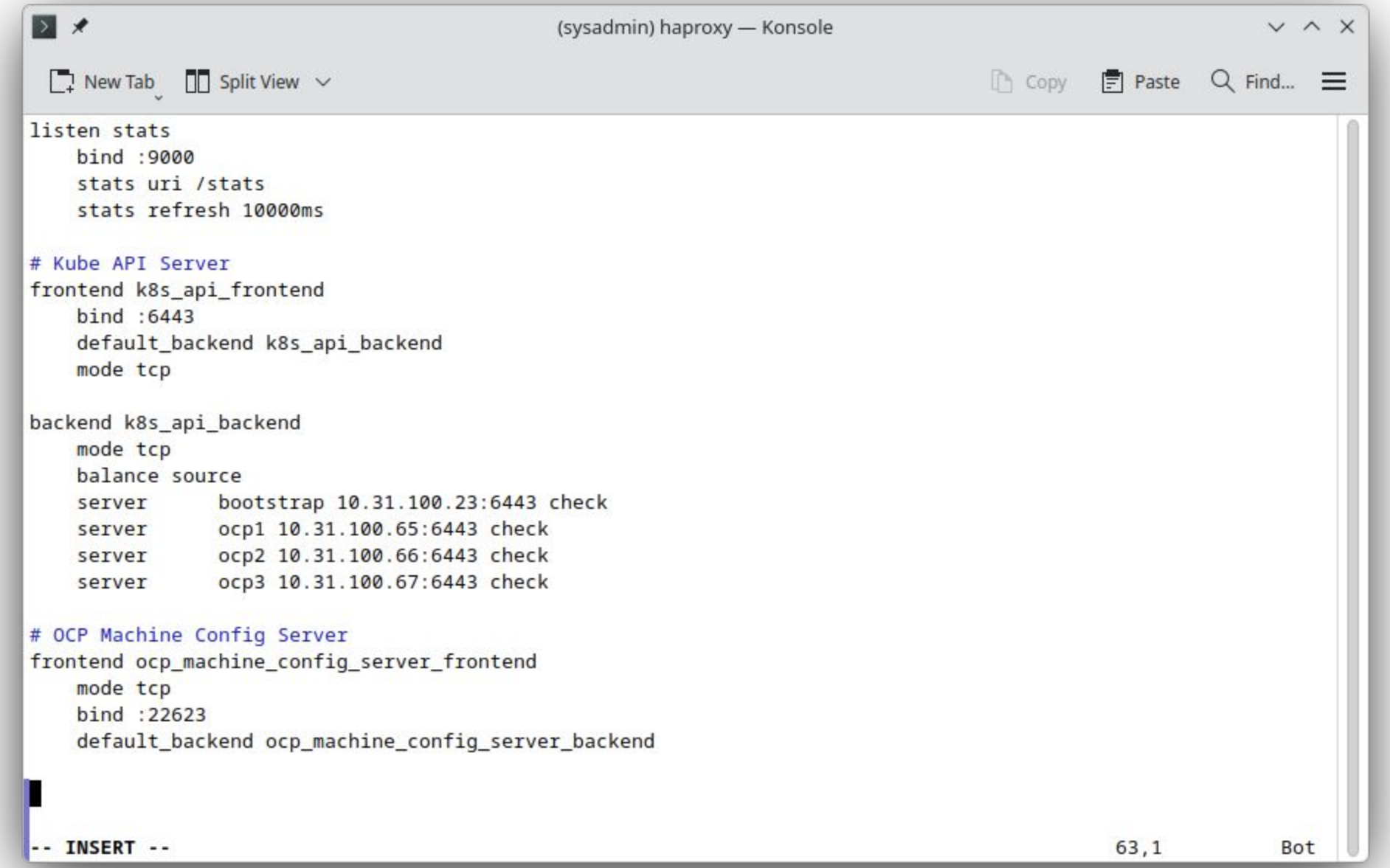
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
option httplog
option dontlognull
option http-server-close
option redispatch
option forwardfor except 127.0.0.0/8
retries 3
maxconn 20000
timeout http-request 10000ms
timeout http-keep-alive 10000ms
timeout check 10000ms
timeout connect 40000ms
timeout client 300000ms
timeout server 300000ms
timeout queue 50000ms
Enable HAProxy stats
listen stats
bind :9000
stats uri /stats
stats refresh 10000ms
Kube API Server
frontend k8s_api_frontend
bind :6443
default_backend k8s_api_backend
mode tcp
-- INSERT --
48,1
Bot

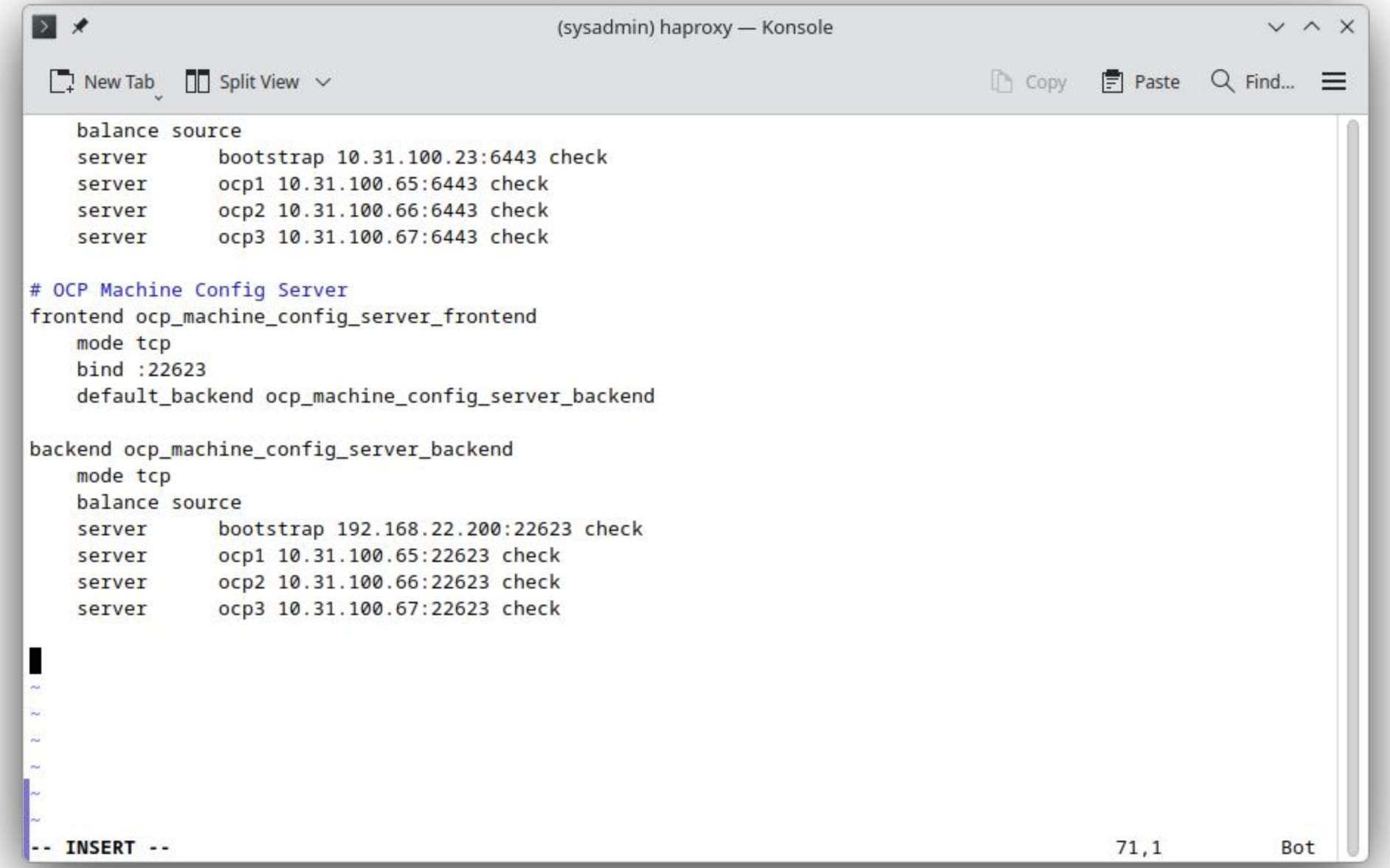
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
timeout check 10000ms
timeout connect 40000ms
timeout client 300000ms
timeout server 300000ms
timeout queue 50000ms
Enable HAProxy stats
listen stats
bind :9000
stats uri /stats
stats refresh 10000ms
Kube API Server
frontend k8s_api_frontend
bind :6443
default_backend k8s_api_backend
mode tcp
backend k8s_api_backend
mode tcp
balance source
server bootstrap 10.31.100.23:6443 check
server ocp1 10.31.100.65:6443 check
server ocp2 10.31.100.66:6443 check
server ocp3 10.31.100.67:6443 check
-- INSERT --
56,1
Bot

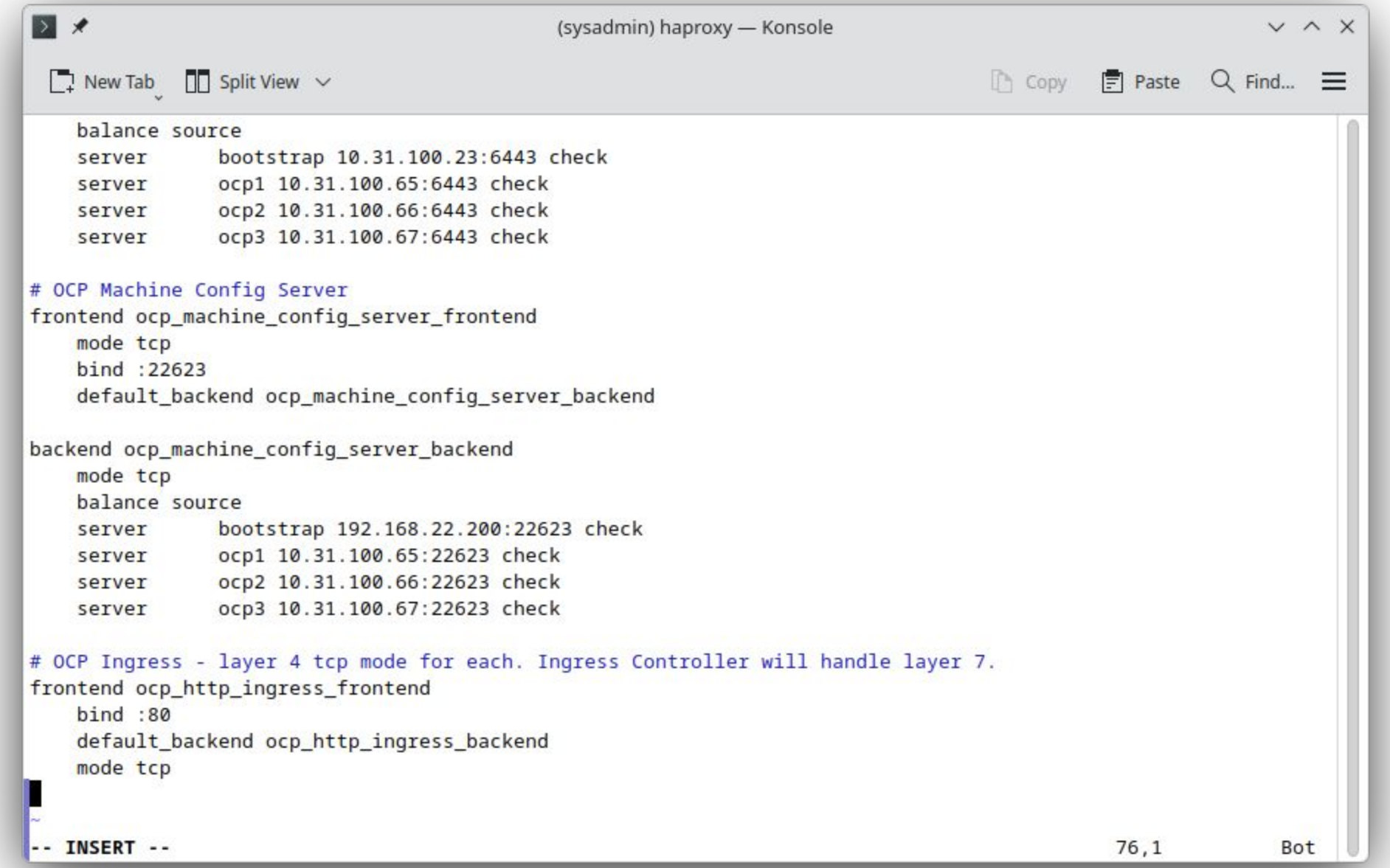
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
listen stats
bind :9000
stats uri /stats
stats refresh 10000ms
Kube API Server
frontend k8s_api_frontend
bind :6443
default_backend k8s_api_backend
mode tcp
backend k8s_api_backend
mode tcp
balance source
server bootstrap 10.31.100.23:6443 check
server ocp1 10.31.100.65:6443 check
server ocp2 10.31.100.66:6443 check
server ocp3 10.31.100.67:6443 check
OCP Machine Config Server
frontend ocp_machine_config_server_frontend
mode tcp
bind :22623
default_backend ocp_machine_config_server_backend
-- INSERT --
63,1
Bot

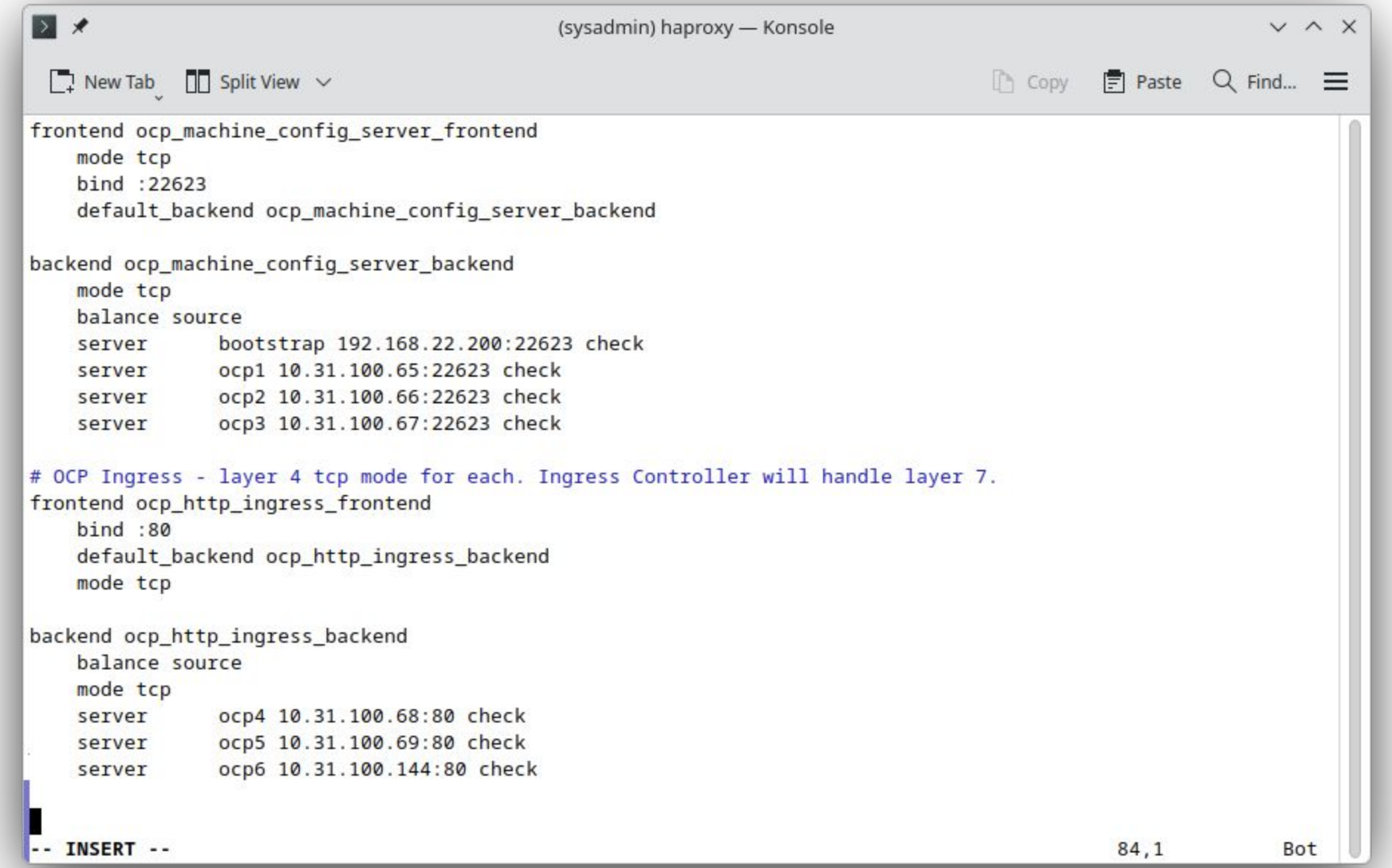
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
balance source
server bootstrap 10.31.100.23:6443 check
server ocp1 10.31.100.65:6443 check
server ocp2 10.31.100.66:6443 check
server ocp3 10.31.100.67:6443 check
OCP Machine Config Server
frontend ocp_machine_config_server_frontend
mode tcp
bind :22623
default_backend ocp_machine_config_server_backend
backend ocp_machine_config_server_backend
mode tcp
balance source
server bootstrap 192.168.22.200:22623 check
server ocp1 10.31.100.65:22623 check
server ocp2 10.31.100.66:22623 check
server ocp3 10.31.100.67:22623 check
-- INSERT --
71,1
Bot

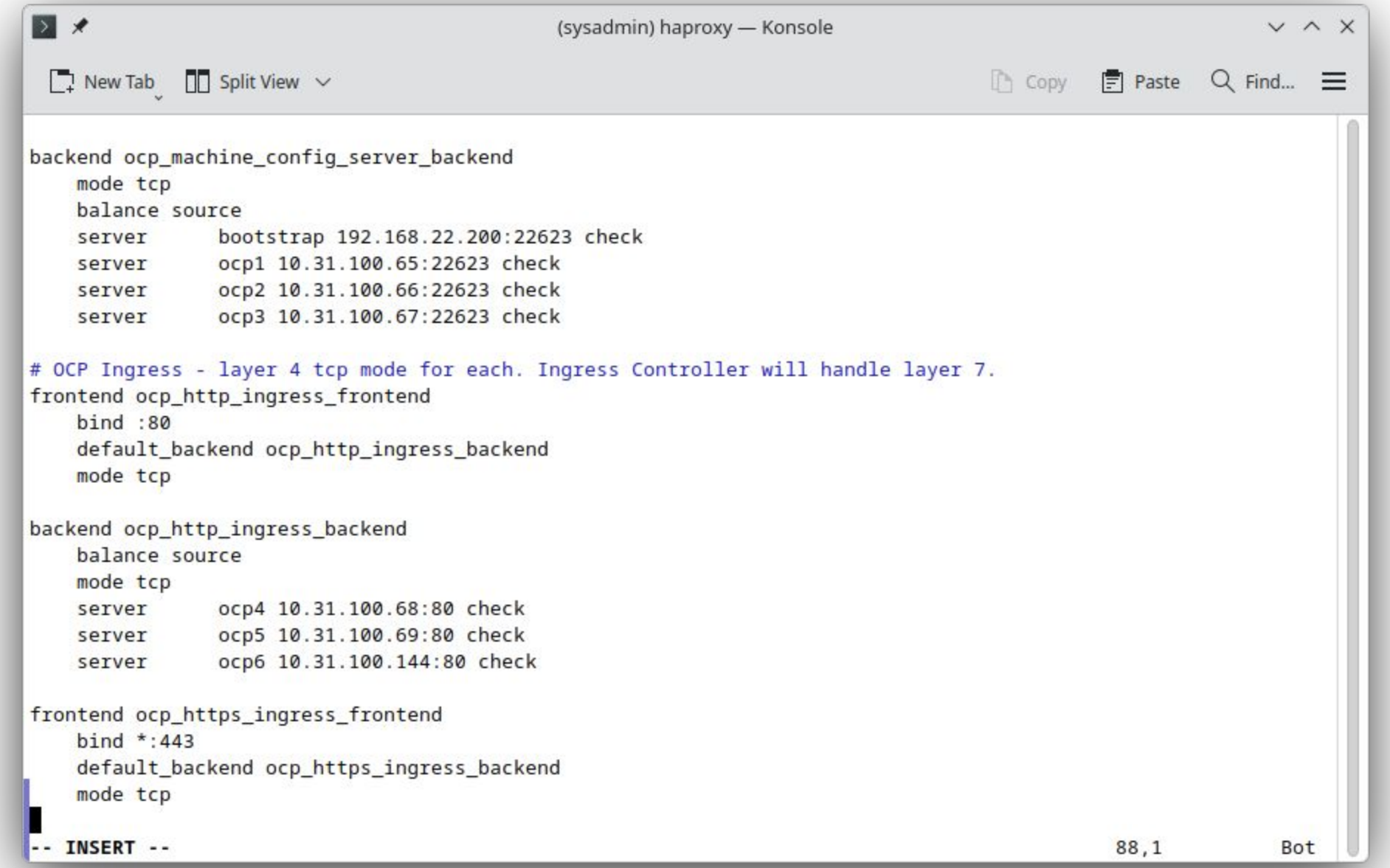
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
balance source
server bootstrap 10.31.100.23:6443 check
server ocp1 10.31.100.65:6443 check
server ocp2 10.31.100.66:6443 check
server ocp3 10.31.100.67:6443 check
OCP Machine Config Server
frontend ocp_machine_config_server_frontend
mode tcp
bind :22623
default_backend ocp_machine_config_server_backend
backend ocp_machine_config_server_backend
mode tcp
balance source
server bootstrap 192.168.22.200:22623 check
server ocp1 10.31.100.65:22623 check
server ocp2 10.31.100.66:22623 check
server ocp3 10.31.100.67:22623 check
OCP Ingress - layer 4 tcp mode for each. Ingress Controller will handle layer 7.
frontend ocp_http_ingress_frontend
bind :80
default_backend ocp_http_ingress_backend
mode tcp
-- INSERT --
76,1
Bot

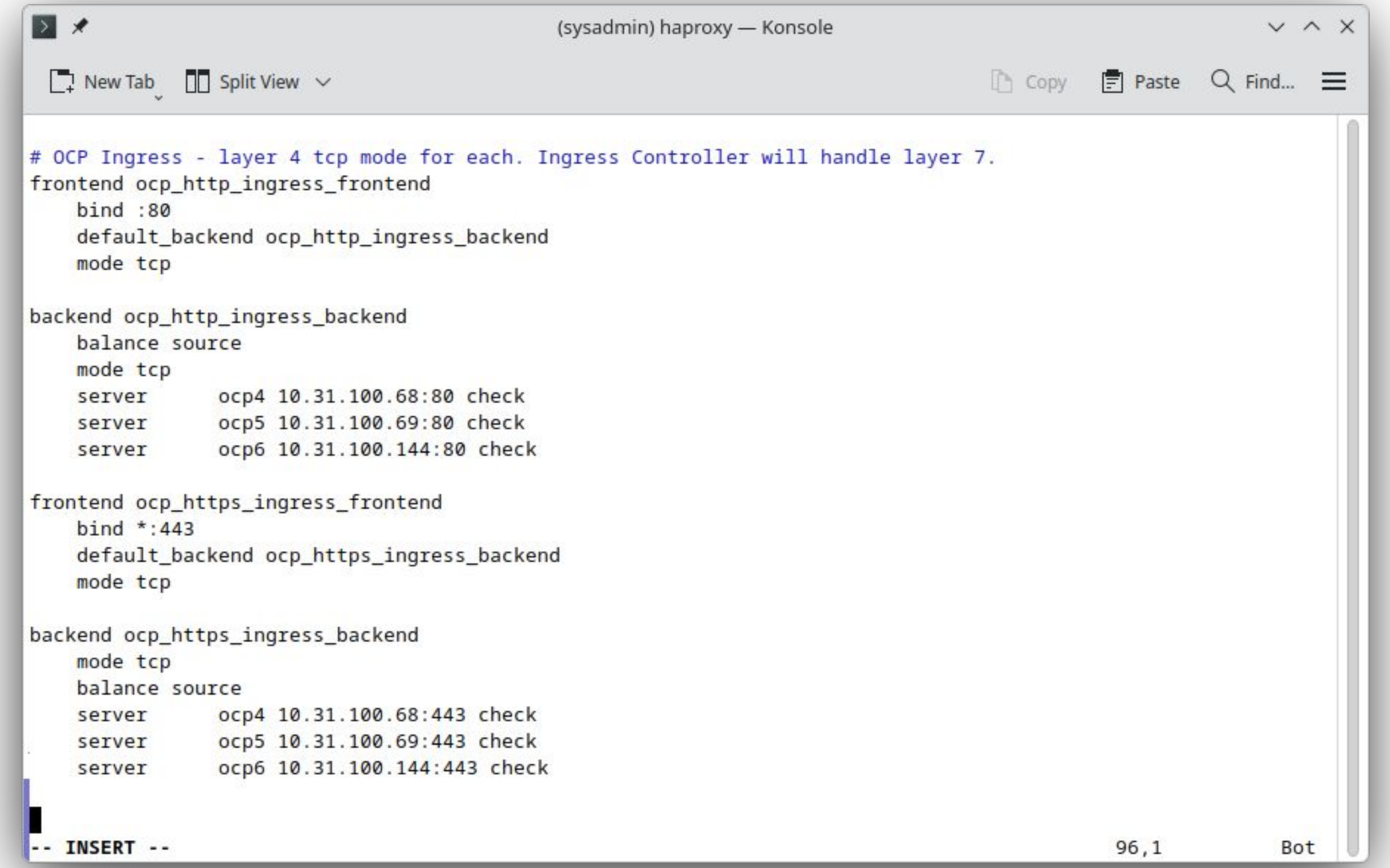
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
frontend ocp_machine_config_server_frontend
mode tcp
bind :22623
default_backend ocp_machine_config_server_backend
backend ocp_machine_config_server_backend
mode tcp
balance source
server bootstrap 192.168.22.200:22623 check
server ocp1 10.31.100.65:22623 check
server ocp2 10.31.100.66:22623 check
server ocp3 10.31.100.67:22623 check
OCP Ingress - layer 4 tcp mode for each. Ingress Controller will handle layer 7.
frontend ocp_http_ingress_frontend
bind :80
default_backend ocp_http_ingress_backend
mode tcp
backend ocp_http_ingress_backend
balance source
mode tcp
server ocp4 10.31.100.68:80 check
server ocp5 10.31.100.69:80 check
server ocp6 10.31.100.144:80 check
-- INSERT --
84,1
Bot

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
backend ocp_machine_config_server_backend
mode tcp
balance source
server bootstrap 192.168.22.200:22623 check
server ocp1 10.31.100.65:22623 check
server ocp2 10.31.100.66:22623 check
server ocp3 10.31.100.67:22623 check
OCP Ingress - layer 4 tcp mode for each. Ingress Controller will handle layer 7.
frontend ocp_http_ingress_frontend
bind :80
default_backend ocp_http_ingress_backend
mode tcp
backend ocp_http_ingress_backend
balance source
mode tcp
server ocp4 10.31.100.68:80 check
server ocp5 10.31.100.69:80 check
server ocp6 10.31.100.144:80 check
frontend ocp_https_ingress_frontend
bind *:443
default_backend ocp_https_ingress_backend
mode tcp
-- INSERT --
88,1
Bot

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
OCP Ingress - layer 4 tcp mode for each. Ingress Controller will handle layer 7.
frontend ocp_http_ingress_frontend
bind :80
default_backend ocp_http_ingress_backend
mode tcp
backend ocp_http_ingress_backend
balance source
mode tcp
server ocp4 10.31.100.68:80 check
server ocp5 10.31.100.69:80 check
server ocp6 10.31.100.144:80 check
frontend ocp_https_ingress_frontend
bind *:443
default_backend ocp_https_ingress_backend
mode tcp
backend ocp_https_ingress_backend
mode tcp
balance source
server ocp4 10.31.100.68:443 check
server ocp5 10.31.100.69:443 check
server ocp6 10.31.100.144:443 check
-- INSERT --
96,1
Bot

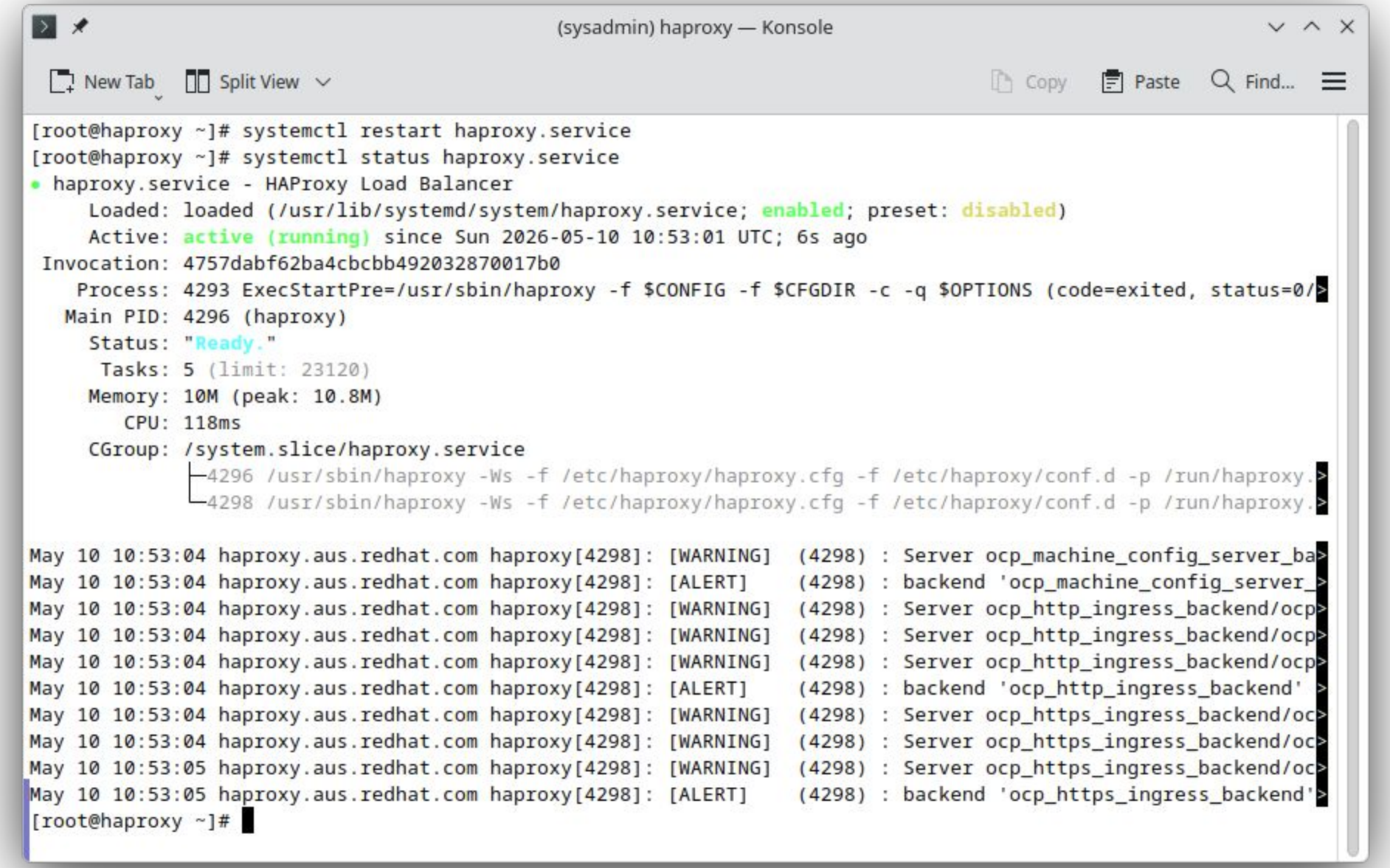
Red Hat

HAProxy Service

Install and configure

Open the firewall ports

```
firewall-cmd --zone=internal --add-service=http --permanent

firewall-cmd --zone=external --add-service=http --permanent

firewall-cmd --zone=internal --add-service=https --permanent

firewall-cmd --zone=external --add-service=https --permanent

firewall-cmd --zone=internal --add-port=6443/tcp --permanent

firewall-cmd --zone=external --add-port=6443/tcp --permanent

firewall-cmd --zone=internal --add-port=22623/tcp --permanent

firewall-cmd --zone=external --add-port=9000/tcp --permanent

firewall-cmd --reload
```


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# systemctl restart haproxy.service
[root@haproxy ~]# systemctl status haproxy.service
● haproxy.service - HAProxy Load Balancer
Loaded: loaded (/usr/lib/systemd/system/haproxy.service; enabled; preset: disabled)
Active: active (running) since Sun 2026-05-10 10:53:01 UTC; 6s ago
Invocation: 4757dabf62ba4cbcbb492032870017b0
Process: 4293 ExecStartPre=/usr/sbin/haproxy -f $CONFIG -f $CFGDIR -c -q $OPTIONS (code=exited, status=0/
Main PID: 4296 (haproxy)
Status: "Ready."
Tasks: 5 (limit: 23120)
Memory: 10M (peak: 10.8M)
CPU: 118ms
CGroup: /system.slice/haproxy.service
├─4296 /usr/sbin/haproxy -Ws -f /etc/haproxy/haproxy.cfg -f /etc/haproxy/conf.d -p /run/haproxy.
└─4298 /usr/sbin/haproxy -Ws -f /etc/haproxy/haproxy.cfg -f /etc/haproxy/conf.d -p /run/haproxy.
May 10 10:53:04 haproxy.aus.redhat.com haproxy[4298]: [WARNING] (4298) : Server ocp_machine_config_server_ba
May 10 10:53:04 haproxy.aus.redhat.com haproxy[4298]: [ALERT] (4298) : backend 'ocp_machine_config_server_
May 10 10:53:04 haproxy.aus.redhat.com haproxy[4298]: [WARNING] (4298) : Server ocp_http_ingress_backend/ocp
May 10 10:53:04 haproxy.aus.redhat.com haproxy[4298]: [WARNING] (4298) : Server ocp_http_ingress_backend/ocp
May 10 10:53:04 haproxy.aus.redhat.com haproxy[4298]: [WARNING] (4298) : Server ocp_http_ingress_backend/ocp
May 10 10:53:04 haproxy.aus.redhat.com haproxy[4298]: [ALERT] (4298) : backend 'ocp_http_ingress_backend'
May 10 10:53:04 haproxy.aus.redhat.com haproxy[4298]: [WARNING] (4298) : Server ocp_https_ingress_backend/oc
May 10 10:53:04 haproxy.aus.redhat.com haproxy[4298]: [WARNING] (4298) : Server ocp_https_ingress_backend/oc
May 10 10:53:05 haproxy.aus.redhat.com haproxy[4298]: [WARNING] (4298) : Server ocp_https_ingress_backend/oc
May 10 10:53:05 haproxy.aus.redhat.com haproxy[4298]: [ALERT] (4298) : backend 'ocp_https_ingress_backend'
[root@haproxy ~]#

Red Hat

HAProxy version 3.0.5-8e879a5, released 2024/09/19

Statistics Report for pid 4298

> General process information

pid = 4298 (process #1, nbproc = 1, nbthread = 4)
uptime = 0d 0h03m05s; warnings = 26
system limits: memmax = unlimited; ulimit-n = 40053
maxsock = 40053; **maxconn** = 20000; **reached** = 0; **maxpipes** = 0
current conns = 2; current pipes = 0/0; conn rate = 2/sec; bit rate = 1.903 kbps
Running tasks: 0/42 (0 niced); idle = 100 %

- active UP
- active UP, going down
- active DOWN, going up
- active or backup DOWN
- active or backup DOWN for maintenance (MAINT)
- active or backup SOFT STOPPED for maintenance
- backup UP
- backup UP, going down
- backup DOWN, going up
- not checked

Note: "NOLB"/"DRAIN" = UP with load-balancing disabled.

Display option:

- Scope :
- Hide 'DOWN' servers
- Disable refresh
- Refresh now
- CSV export
- JSON export (schema)

External resources:

- Primary site
- Updates (v3.0)
- Online manual

stats

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
Frontend				2	6	-	2	4	20 000	27			840	104 916	0	0	23					OPEN								
Backend	0	0		0	0		0	0	2 000	0	0	0s	840	104 916	0	0		0	0	0	0	3m5s UP		0/0	0	0		0		

k8s_api_frontend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
Frontend				0	0	-	0	0	20 000	0			0	0	0	0	0					OPEN								

k8s_api_backend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
bootstrap	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	3m5s DOWN	L4CON in 0ms	1/1	Y	-	1	1	3m5s	-
ocp1	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	3m3s DOWN	* L4TOUT in 2002ms	1/1	Y	-	1	1	3m3s	-
ocp2	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	3m3s DOWN	* L4TOUT in 2002ms	1/1	Y	-	1	1	3m3s	-
ocp3	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	3m3s DOWN	* L4TOUT in 2000ms	1/1	Y	-	1	1	3m3s	-
Backend	0	0		0	0		0	0	2 000	0	0	?	0	0	0	0		0	0	0	0	3m3s DOWN		0/0	0	0		1	3m3s	

ocp_machine_config_server_frontend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
Frontend				0	0	-	0	0	20 000	0			0	0	0	0	0					OPEN								

ocp_machine_config_server_backend

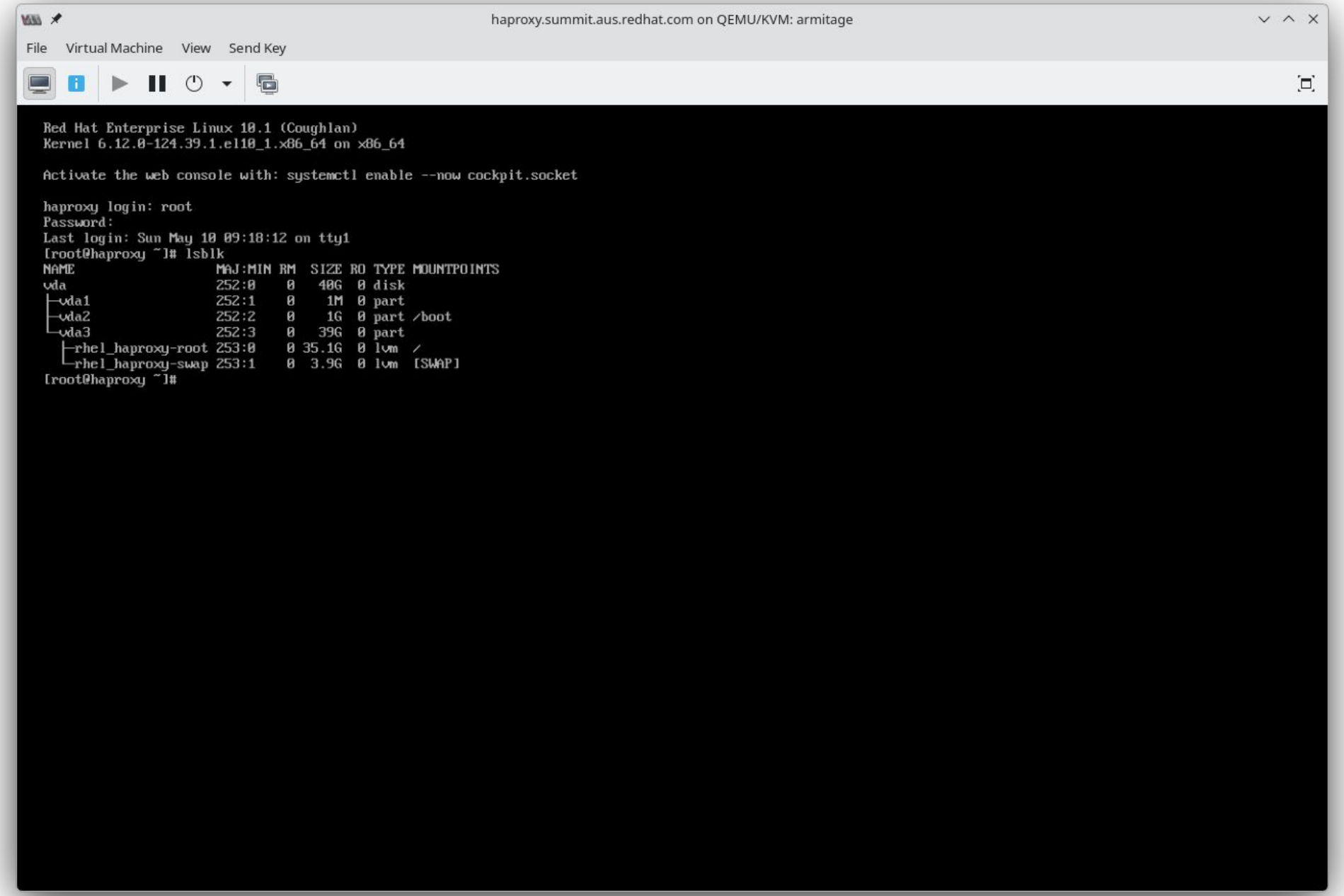
	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
bootstrap	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	3m3s DOWN	* L4TOUT in 2001ms	1/1	Y	-	1	1	3m3s	-
ocp1	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	3m3s DOWN	* L4TOUT in 2002ms	1/1	Y	-	1	1	3m3s	-
ocp2	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	3m2s DOWN	* L4TOUT in 2001ms	1/1	Y	-	1	1	3m2s	-
ocp3	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	3m2s DOWN	* L4TOUT in 2001ms	1/1	Y	-	1	1	3m2s	-
Backend	0	0		0	0		0	0	2 000	0	0	?	0	0	0	0		0	0	0	0	3m2s DOWN		0/0	0	0		1	3m2s	

NFS Server

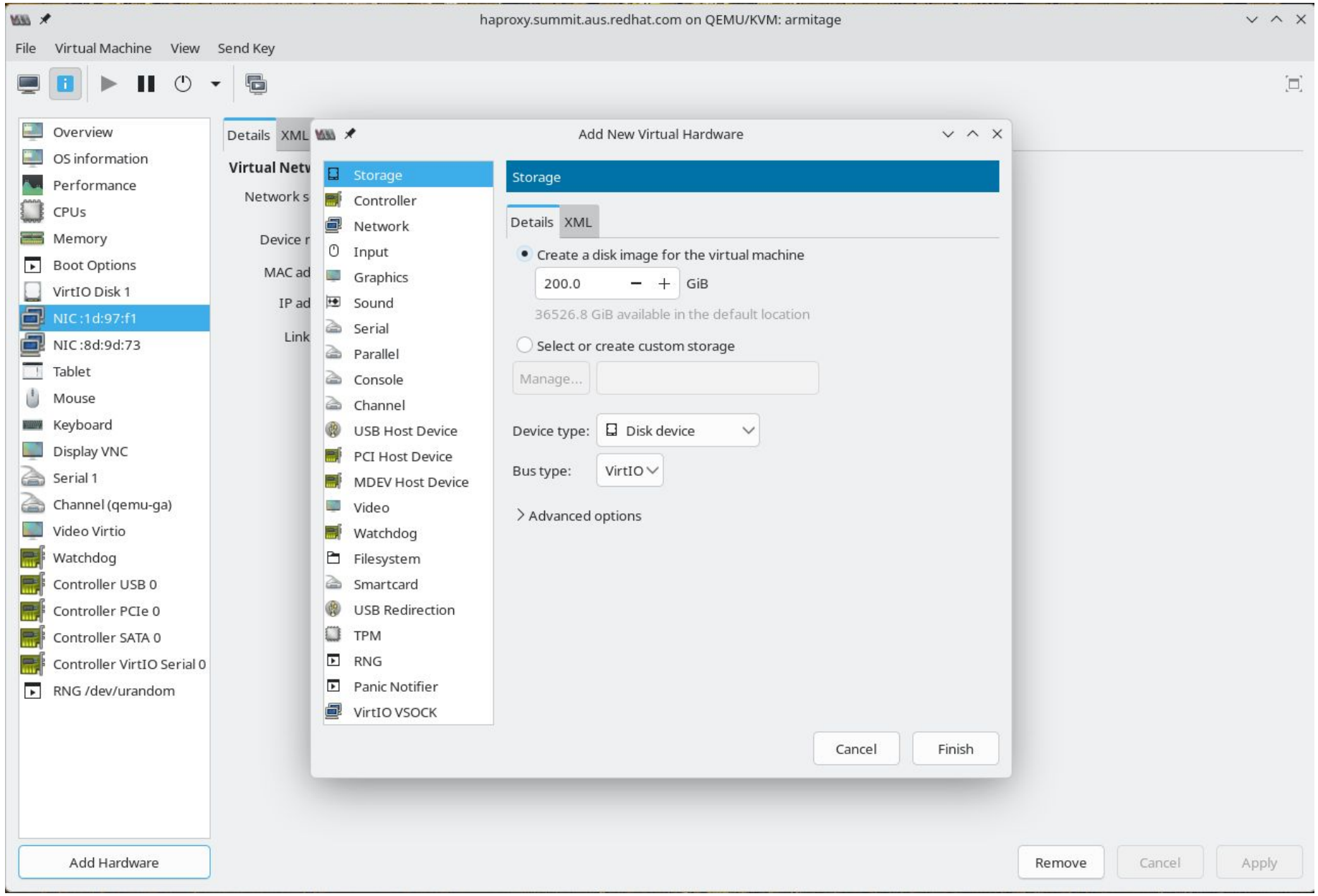
NFS Server

Storage for the OpenShift registry

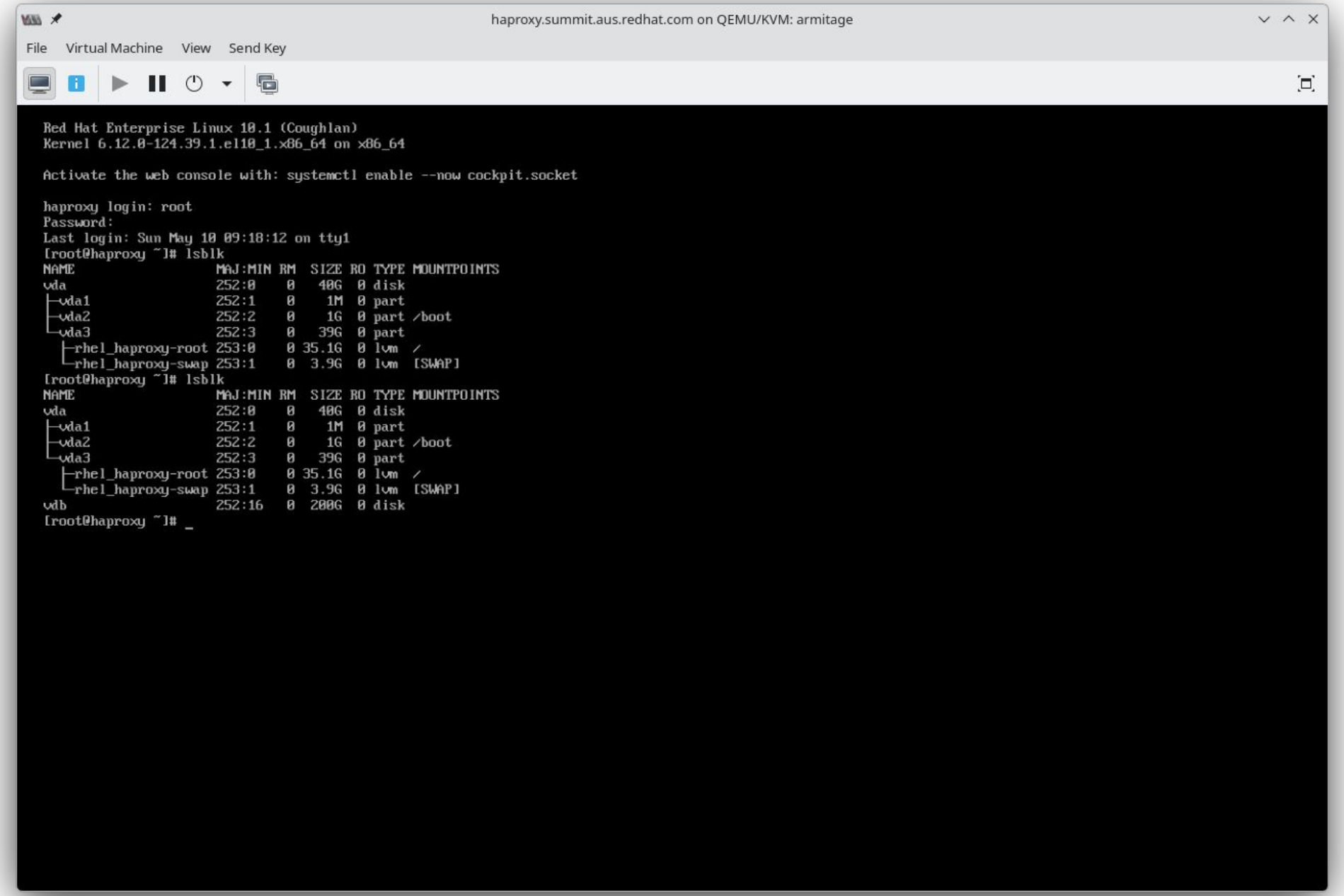
Since the HAProxy machine is available to the private network, I added a 200Gb drive, formatted it, and am sharing it via NFS


haproxy.summit.aus.redhat.com on QEMU/KVM: armitage
File
Virtual Machine
View
Send Key
Red Hat Enterprise Linux 10.1 (Coughlan)
Kernel 6.12.0-124.39.1.el10_1.x86_64 on x86_64
Activate the web console with: systemctl enable --now cockpit.socket
haproxy login: root
Password:
Last login: Sun May 10 09:18:12 on tty1
[root@haproxy ~]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
vda 252:0 0 40G 0 disk
├─vda1 252:1 0 1M 0 part
├─vda2 252:2 0 1G 0 part /boot
└─vda3 252:3 0 39G 0 part
├─rhel_haproxy-root 253:0 0 35.1G 0 lvm /
└─rhel_haproxy-swap 253:1 0 3.9G 0 lvm [SWAP]
[root@haproxy ~]#

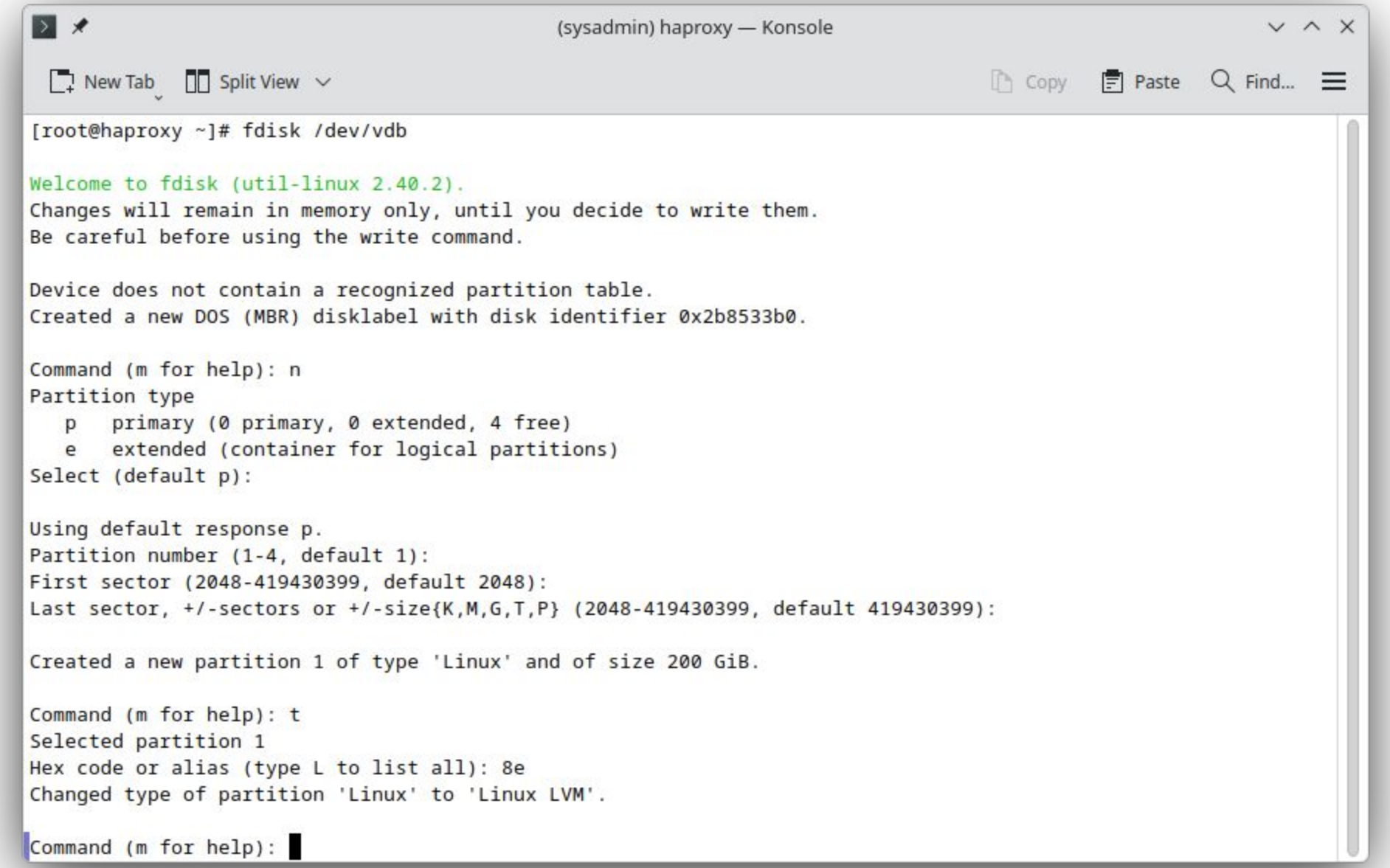
Red Hat


haproxy.summit.aus.redhat.com on QEMU/KVM: armitage
File
Virtual Machine
View
Send Key
Overview
OS information
Performance
CPUs
Memory
Boot Options
VirtIO Disk 1
NIC :1d:97:f1
NIC :8d:9d:73
Tablet
Mouse
Keyboard
Display VNC
Serial 1
Channel (qemu-ga)
Video Virtio
Watchdog
Controller USB 0
Controller PCIe 0
Controller SATA 0
Controller VirtIO Serial 0
RNG /dev/urandom
Add Hardware
Details
XML
Virtual Netv
Network s
Device r
MAC ad
IP ad
Link
Add New Virtual Hardware
Storage
Controller
Network
Input
Graphics
Sound
Serial
Parallel
Console
Channel
USB Host Device
PCI Host Device
MDEV Host Device
Video
Watchdog
Filesystem
Smartcard
USB Redirection
TPM
RNG
Panic Notifier
VirtIO VSOCK
Storage
Details
XML
Create a disk image for the virtual machine
200.0
GiB
36526.8 GiB available in the default location
Select or create custom storage
Manage...
Device type:
Disk device
Bus type:
VirtIO
Advanced options
Cancel
Finish
Remove
Cancel
Apply

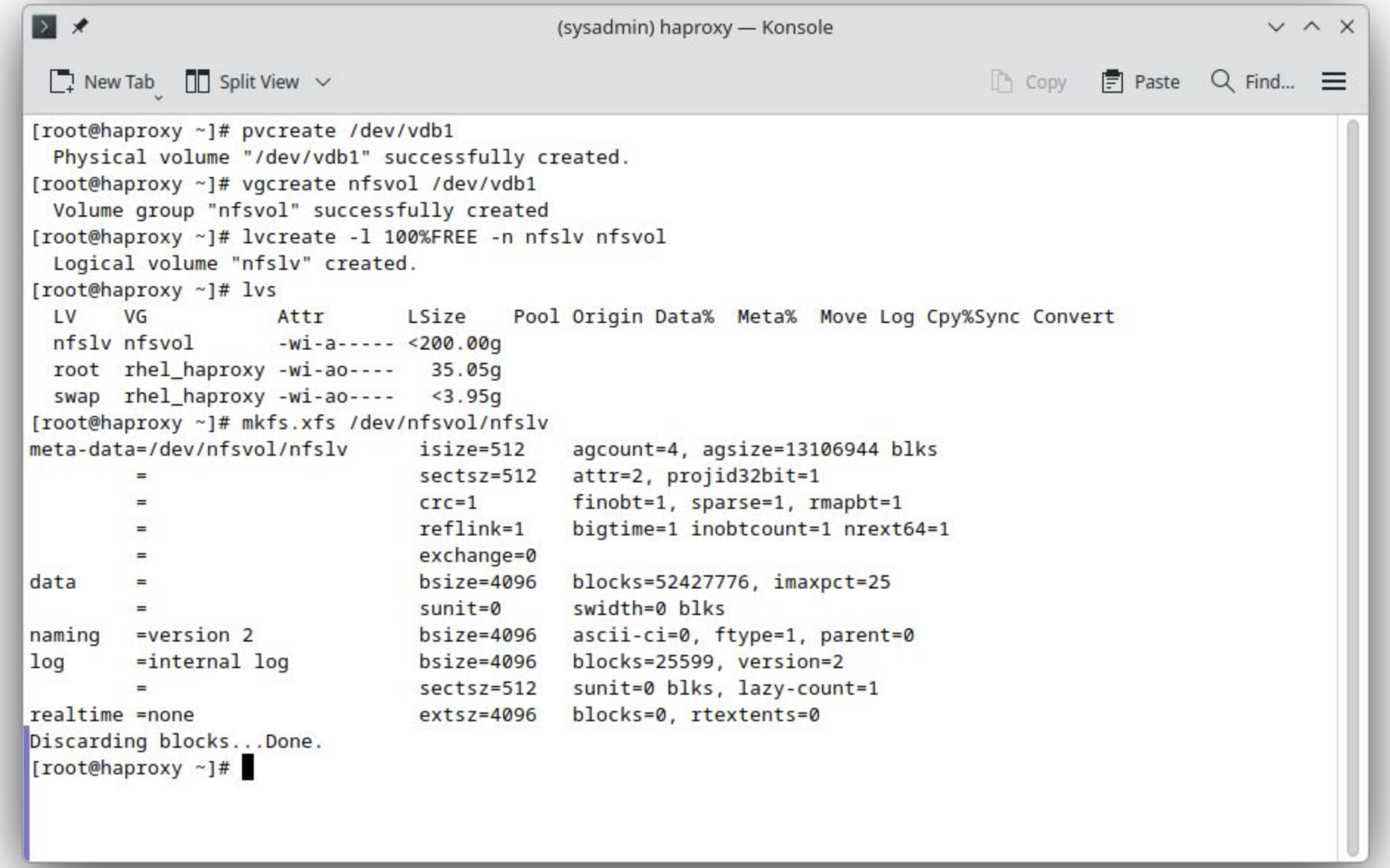
Red Hat


haproxy.summit.aus.redhat.com on QEMU/KVM: armitage
File
Virtual Machine
View
Send Key
Red Hat Enterprise Linux 10.1 (Coughlan)
Kernel 6.12.0-124.39.1.el10_1.x86_64 on x86_64
Activate the web console with: systemctl enable --now cockpit.socket
haproxy login: root
Password:
Last login: Sun May 10 09:18:12 on tty1
[root@haproxy ~]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
vda 252:0 0 40G 0 disk
├─vda1 252:1 0 1M 0 part
├─vda2 252:2 0 1G 0 part /boot
└─vda3 252:3 0 39G 0 part
├─rhel_haproxy-root 253:0 0 35.1G 0 lvm /
└─rhel_haproxy-swap 253:1 0 3.9G 0 lvm [SWAP]
[root@haproxy ~]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
vda 252:0 0 40G 0 disk
├─vda1 252:1 0 1M 0 part
├─vda2 252:2 0 1G 0 part /boot
└─vda3 252:3 0 39G 0 part
├─rhel_haproxy-root 253:0 0 35.1G 0 lvm /
└─rhel_haproxy-swap 253:1 0 3.9G 0 lvm [SWAP]
vdb 252:16 0 200G 0 disk
[root@haproxy ~]#

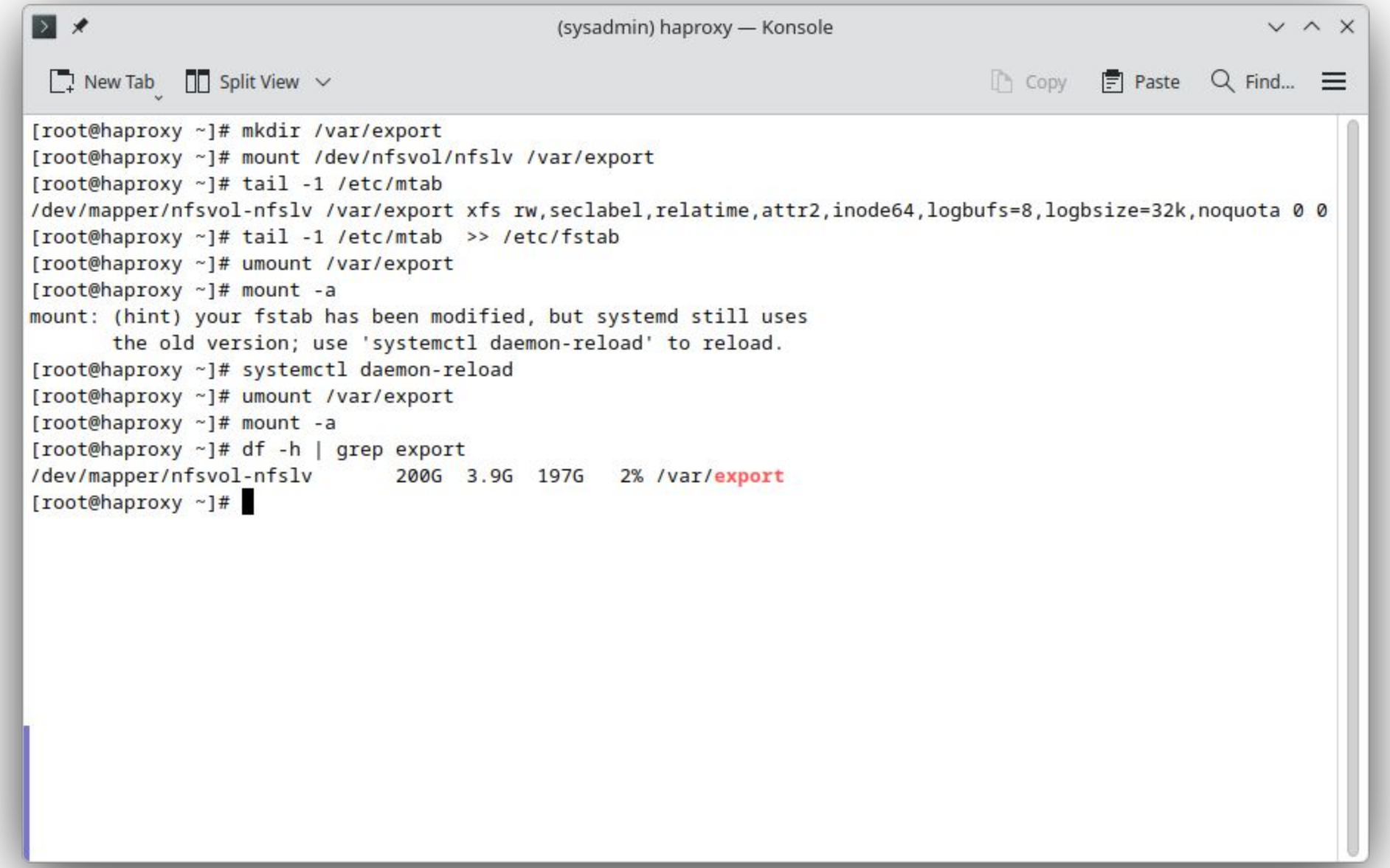
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# fdisk /dev/vdb
Welcome to fdisk (util-linux 2.40.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0x2b8533b0.
Command (m for help): n
Partition type
p primary (0 primary, 0 extended, 4 free)
e extended (container for logical partitions)
Select (default p):
Using default response p.
Partition number (1-4, default 1):
First sector (2048-419430399, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-419430399, default 419430399):
Created a new partition 1 of type 'Linux' and of size 200 GiB.
Command (m for help): t
Selected partition 1
Hex code or alias (type L to list all): 8e
Changed type of partition 'Linux' to 'Linux LVM'.
Command (m for help):

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# pvcreate /dev/vdb1
Physical volume "/dev/vdb1" successfully created.
[root@haproxy ~]# vgcreate nfsvol /dev/vdb1
Volume group "nfsvol" successfully created
[root@haproxy ~]# lvcreate -l 100%FREE -n nfslv nfsvol
Logical volume "nfslv" created.
[root@haproxy ~]# lvs
LV VG Attr LSize Pool Origin Data% Meta% Move Log Cpy%Sync Convert
nfslv nfsvol -wi-a----- <200.00g
root rhel_haproxy -wi-ao---- 35.05g
swap rhel_haproxy -wi-ao---- <3.95g
[root@haproxy ~]# mkfs.xfs /dev/nfsvol/nfslv
meta-data=/dev/nfsvol/nfslv isize=512 agcount=4, agsize=13106944 blks
= sectsz=512 attr=2, projid32bit=1
= crc=1 finobt=1, sparse=1, rmapbt=1
= reflink=1 bigtime=1 inobtcount=1 nrext64=1
= exchange=0
data = bsize=4096 blocks=52427776, imaxpct=25
= sunit=0 swidth=0 blks
naming =version 2 bsize=4096 ascii-ci=0, ftype=1, parent=0
log =internal log bsize=4096 blocks=25599, version=2
= sectsz=512 sunit=0 blks, lazy-count=1
realtime =none extsz=4096 blocks=0, rtextents=0
Discarding blocks...Done.
[root@haproxy ~]#

Red Hat

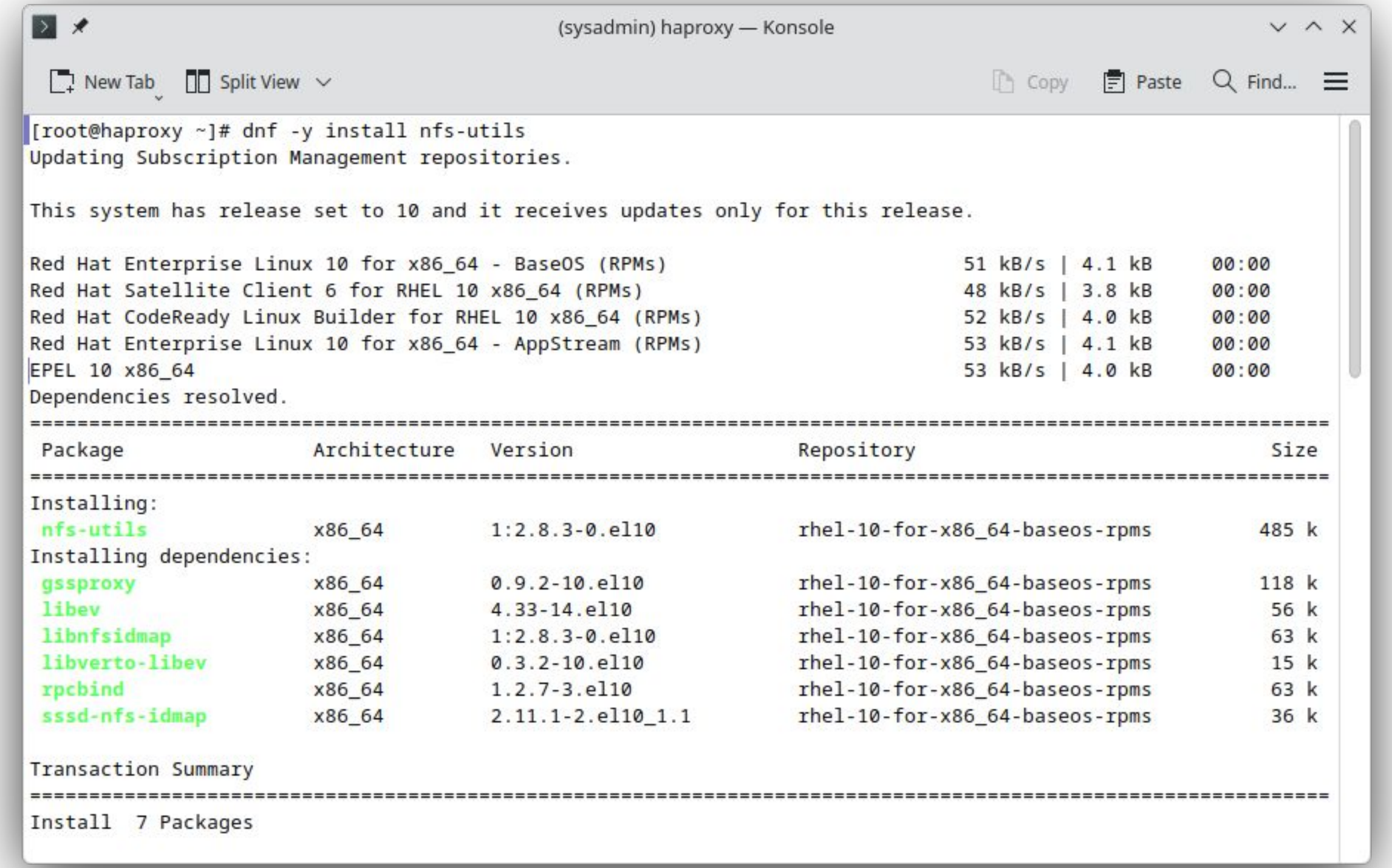

(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# mkdir /var/export
[root@haproxy ~]# mount /dev/nfsvol/nfslv /var/export
[root@haproxy ~]# tail -1 /etc/mtab
/dev/mapper/nfsvol-nfslv /var/export xfs rw,seclabel,relatime,attr2,inode64,logbufs=8,logbsize=32k,noquota 0 0
[root@haproxy ~]# tail -1 /etc/mtab >> /etc/fstab
[root@haproxy ~]# umount /var/export
[root@haproxy ~]# mount -a
mount: (hint) your fstab has been modified, but systemd still uses
the old version; use 'systemctl daemon-reload' to reload.
[root@haproxy ~]# systemctl daemon-reload
[root@haproxy ~]# umount /var/export
[root@haproxy ~]# mount -a
[root@haproxy ~]# df -h | grep export
/dev/mapper/nfsvol-nfslv 200G 3.9G 197G 2% /var/export
[root@haproxy ~]#

Red Hat

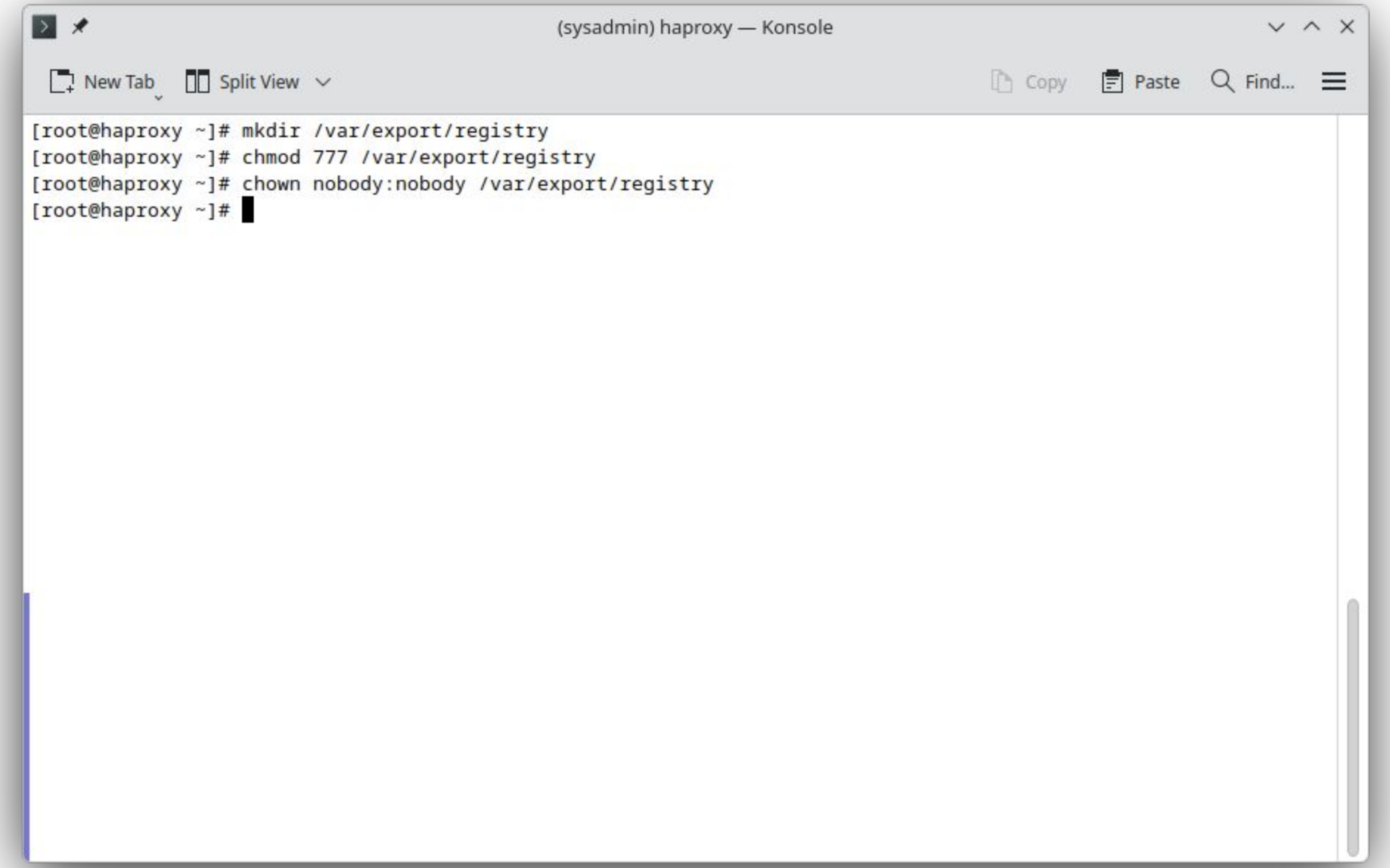
NFS Server

Storage for the OpenShift registry

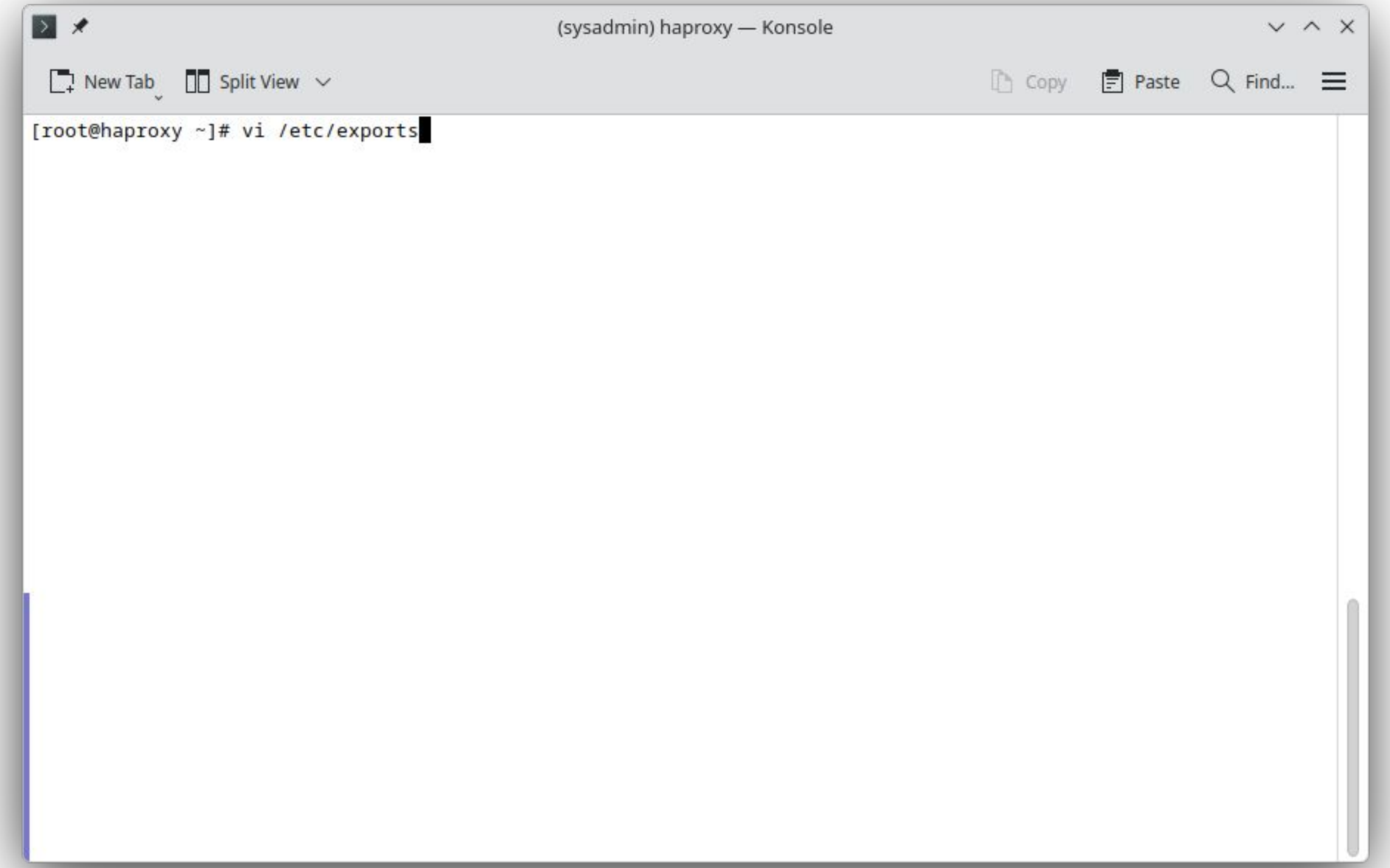
Now we install nfs-utils and configure the export


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# dnf -y install nfs-utils
Updating Subscription Management repositories.
This system has release set to 10 and it receives updates only for this release.
Red Hat Enterprise Linux 10 for x86_64 - BaseOS (RPMs) 51 kB/s | 4.1 kB 00:00
Red Hat Satellite Client 6 for RHEL 10 x86_64 (RPMs) 48 kB/s | 3.8 kB 00:00
Red Hat CodeReady Linux Builder for RHEL 10 x86_64 (RPMs) 52 kB/s | 4.0 kB 00:00
Red Hat Enterprise Linux 10 for x86_64 - AppStream (RPMs) 53 kB/s | 4.1 kB 00:00
EPEL 10 x86_64 53 kB/s | 4.0 kB 00:00
Dependencies resolved.
Package Architecture Version Repository Size
Installing:
nfs-utils x86_64 1:2.8.3-0.el10 rhel-10-for-x86_64-baseos-rpms 485 k
Installing dependencies:
gssproxy x86_64 0.9.2-10.el10 rhel-10-for-x86_64-baseos-rpms 118 k
libev x86_64 4.33-14.el10 rhel-10-for-x86_64-baseos-rpms 56 k
libnfsidmap x86_64 1:2.8.3-0.el10 rhel-10-for-x86_64-baseos-rpms 63 k
libverto-libev x86_64 0.3.2-10.el10 rhel-10-for-x86_64-baseos-rpms 15 k
rpcbind x86_64 1.2.7-3.el10 rhel-10-for-x86_64-baseos-rpms 63 k
sssd-nfs-idmap x86_64 2.11.1-2.el10_1.1 rhel-10-for-x86_64-baseos-rpms 36 k
Transaction Summary
Install 7 Packages

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# mkdir /var/export/registry
[root@haproxy ~]# chmod 777 /var/export/registry
[root@haproxy ~]# chown nobody:nobody /var/export/registry
[root@haproxy ~]#

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# vi /etc/exports

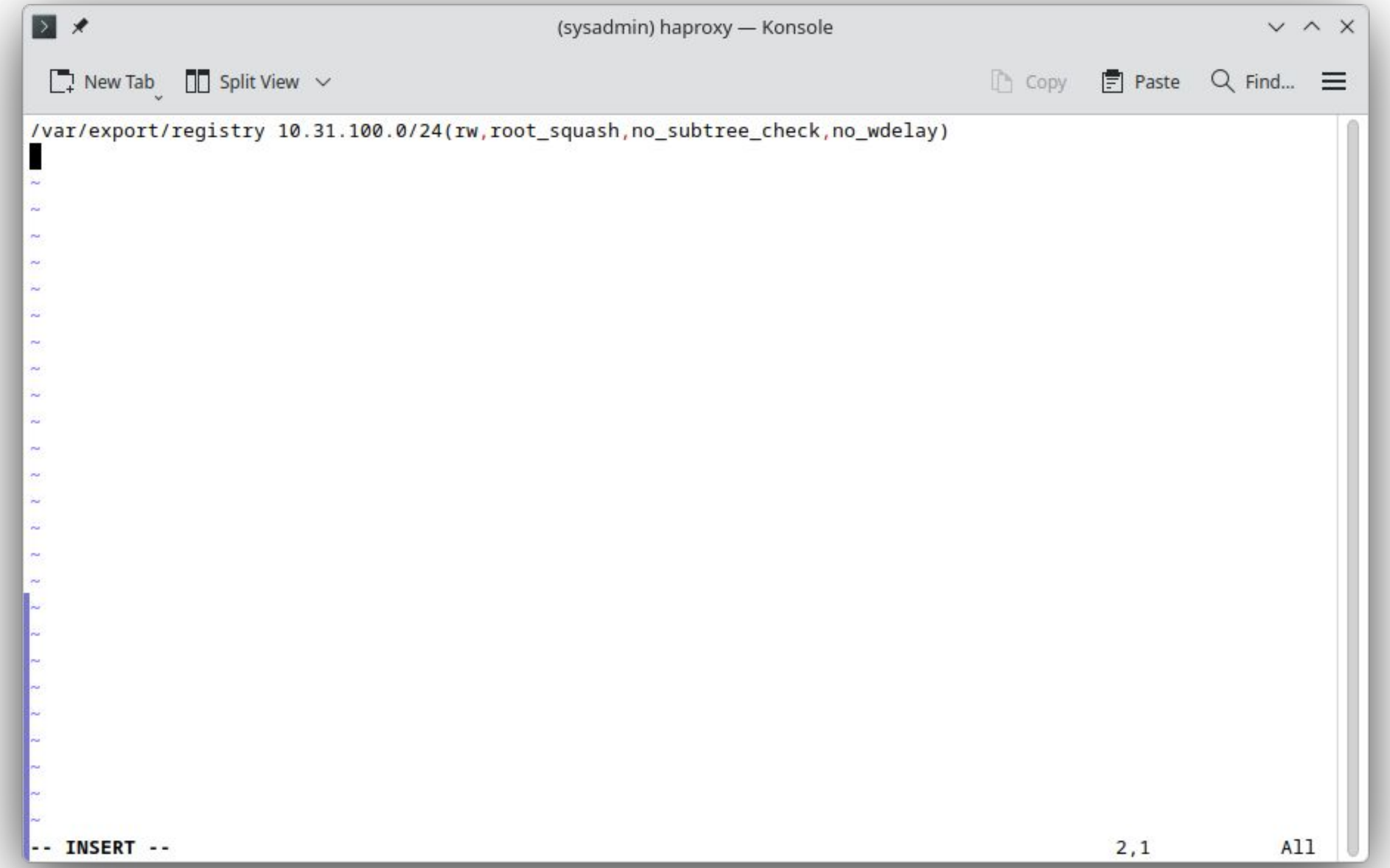
Red Hat

NFS Server

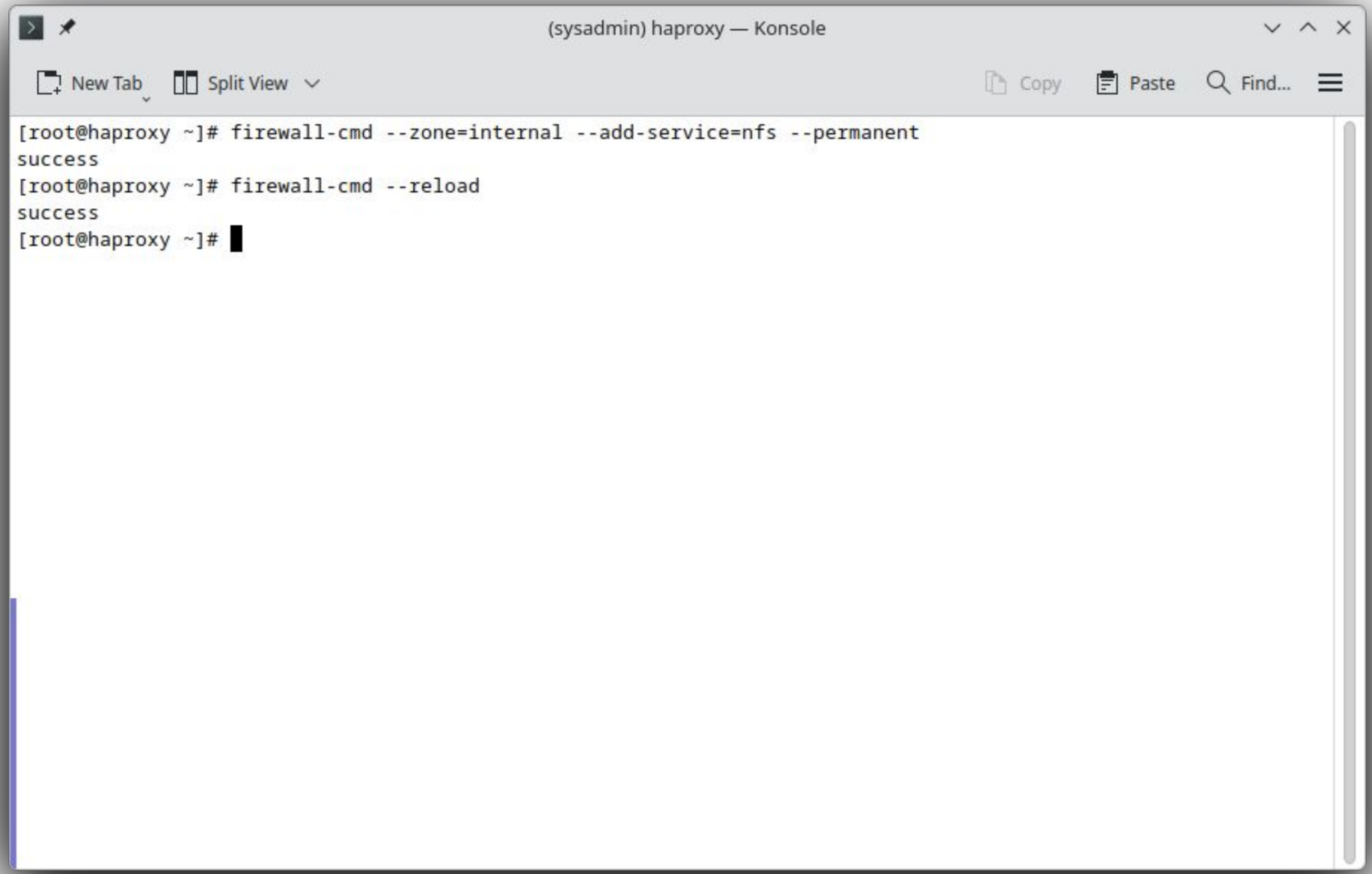
Storage for the OpenShift registry

The export needs to be shared with specific settings

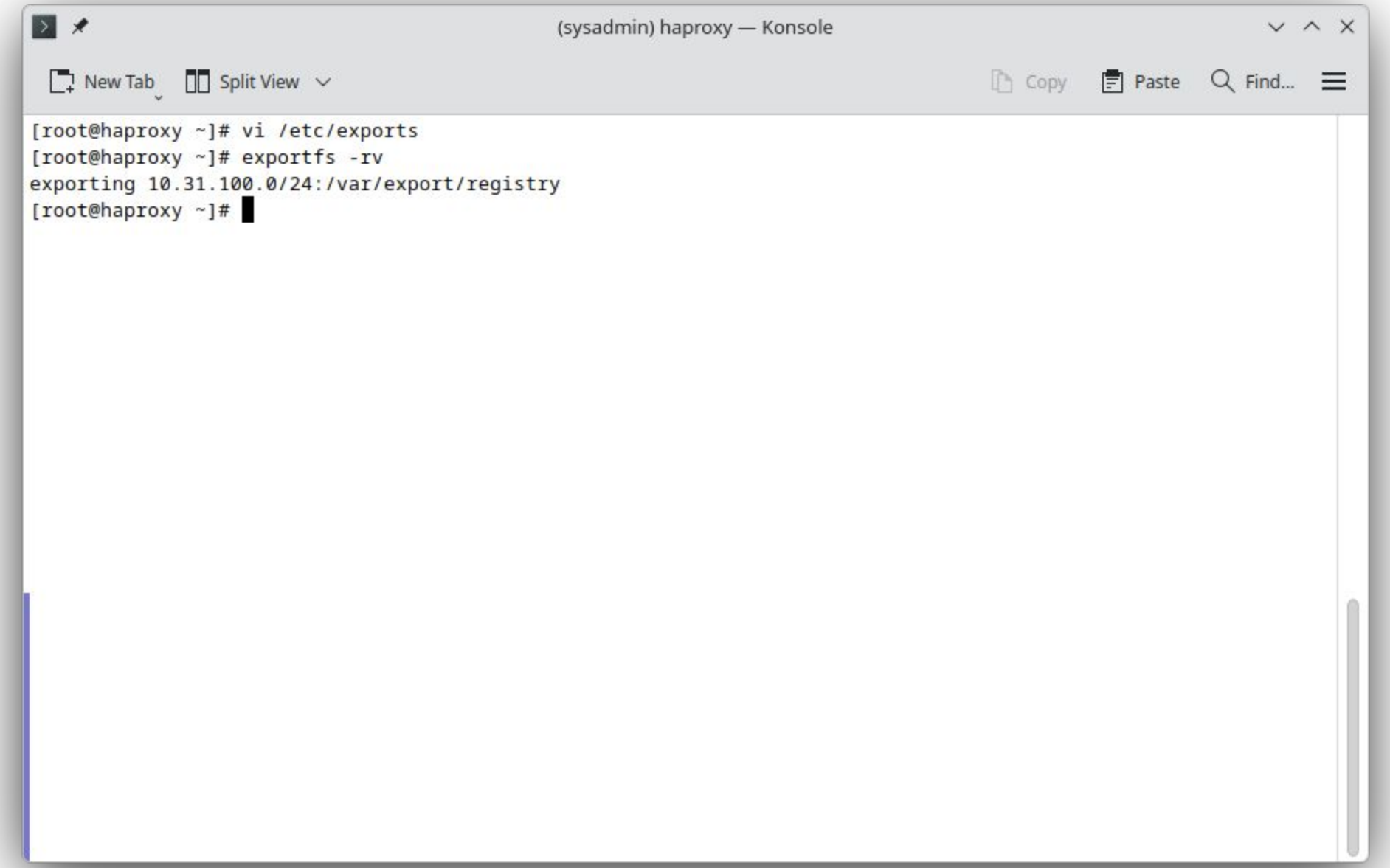
```
rw,root_squash,no_subtree_check,no_wdelay
```


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
/var/export/registry 10.31.100.0/24(rw,root_squash,no_subtree_check,no_wdelay)
-- INSERT --
2,1
All

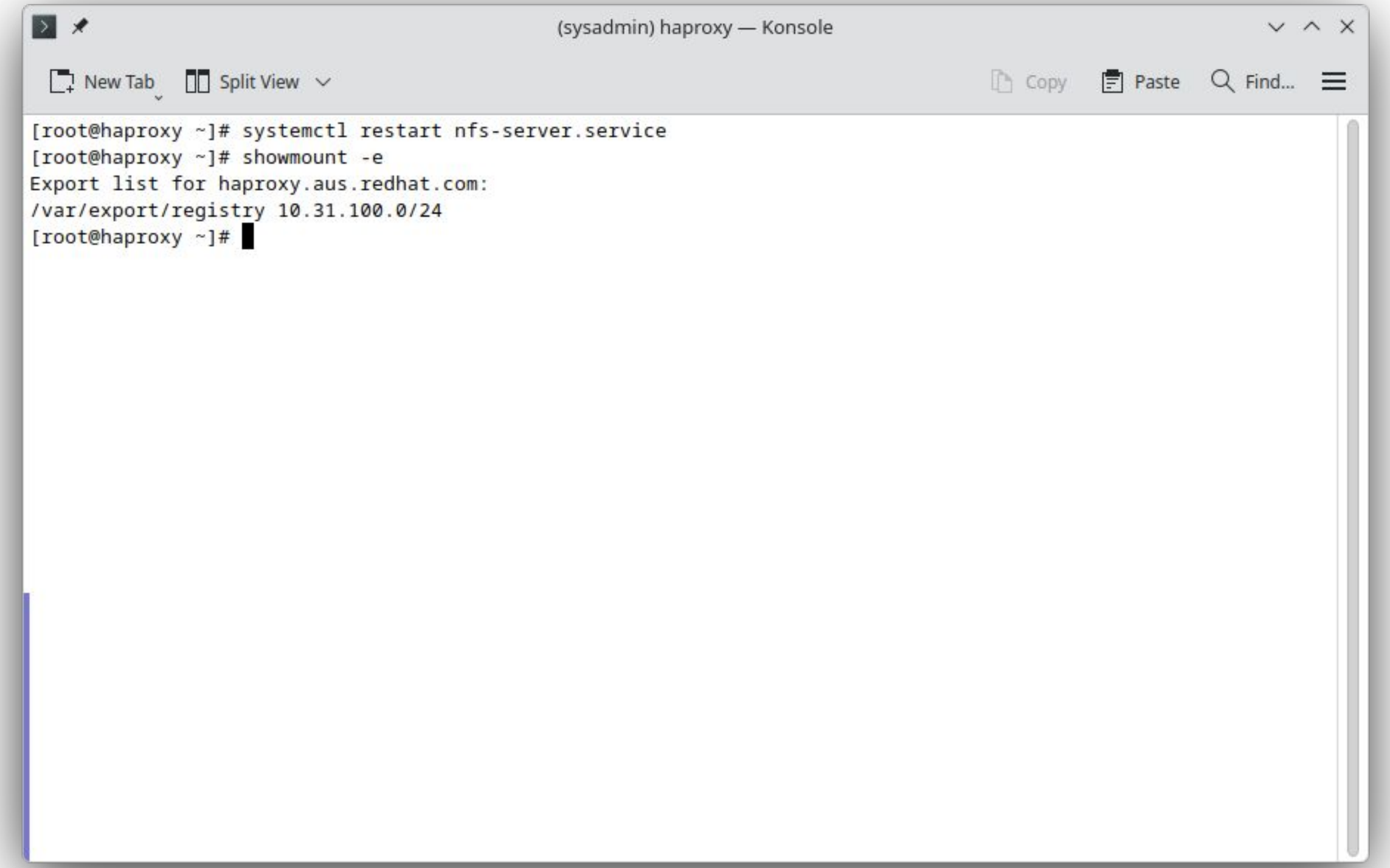
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# firewall-cmd --zone=internal --add-service=nfs --permanent
success
[root@haproxy ~]# firewall-cmd --reload
success
[root@haproxy ~]#

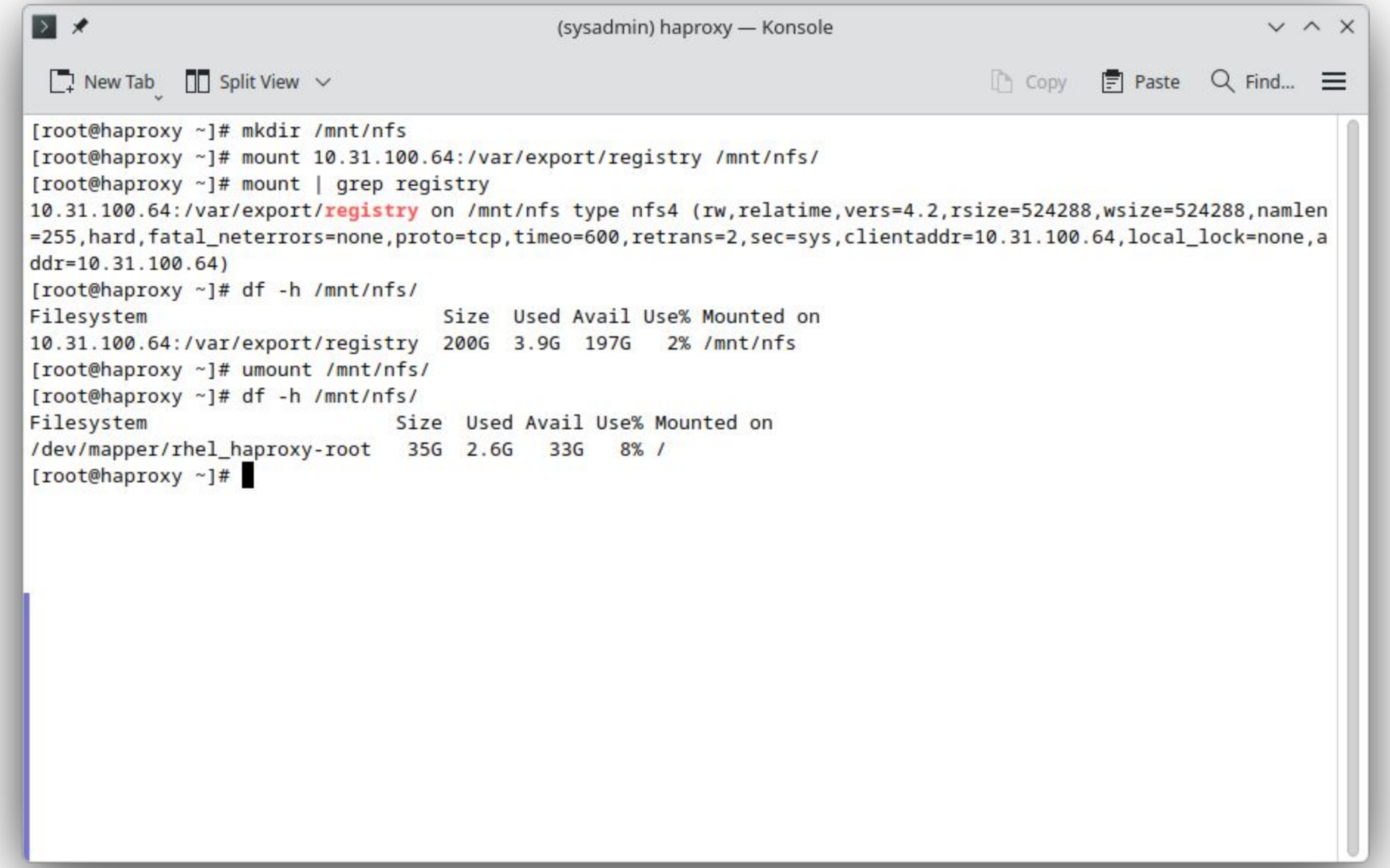
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# vi /etc/exports
[root@haproxy ~]# exportfs -rv
exporting 10.31.100.0/24:/var/export/registry
[root@haproxy ~]#

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# systemctl restart nfs-server.service
[root@haproxy ~]# showmount -e
Export list for haproxy.aus.redhat.com:
/var/export/registry 10.31.100.0/24
[root@haproxy ~]#

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# mkdir /mnt/nfs
[root@haproxy ~]# mount 10.31.100.64:/var/export/registry /mnt/nfs/
[root@haproxy ~]# mount | grep registry
10.31.100.64:/var/export/registry on /mnt/nfs type nfs4 (rw,relatime,vers=4.2,rsize=524288,wsize=524288,namlen
=255,hard,fatal_neterrors=none,proto=tcp,timeo=600,retrans=2,sec=sys,clientaddr=10.31.100.64,local_lock=none,a
ddr=10.31.100.64)
[root@haproxy ~]# df -h /mnt/nfs/
Filesystem Size Used Avail Use% Mounted on
10.31.100.64:/var/export/registry 200G 3.9G 197G 2% /mnt/nfs
[root@haproxy ~]# umount /mnt/nfs/
[root@haproxy ~]# df -h /mnt/nfs/
Filesystem Size Used Avail Use% Mounted on
/dev/mapper/rhel_haproxy-root 35G 2.6G 33G 8% /
[root@haproxy ~]#

Red Hat

Download Client and Installer

Client and Installer

Get them from https://console.redhat.com/openshift

- You can also get the upstream tools from the OKD project

OpenShift

Overview

Fleet management

Cloud console settings

Resources

Learning Resources

Downloads

Releases

Assisted Installer

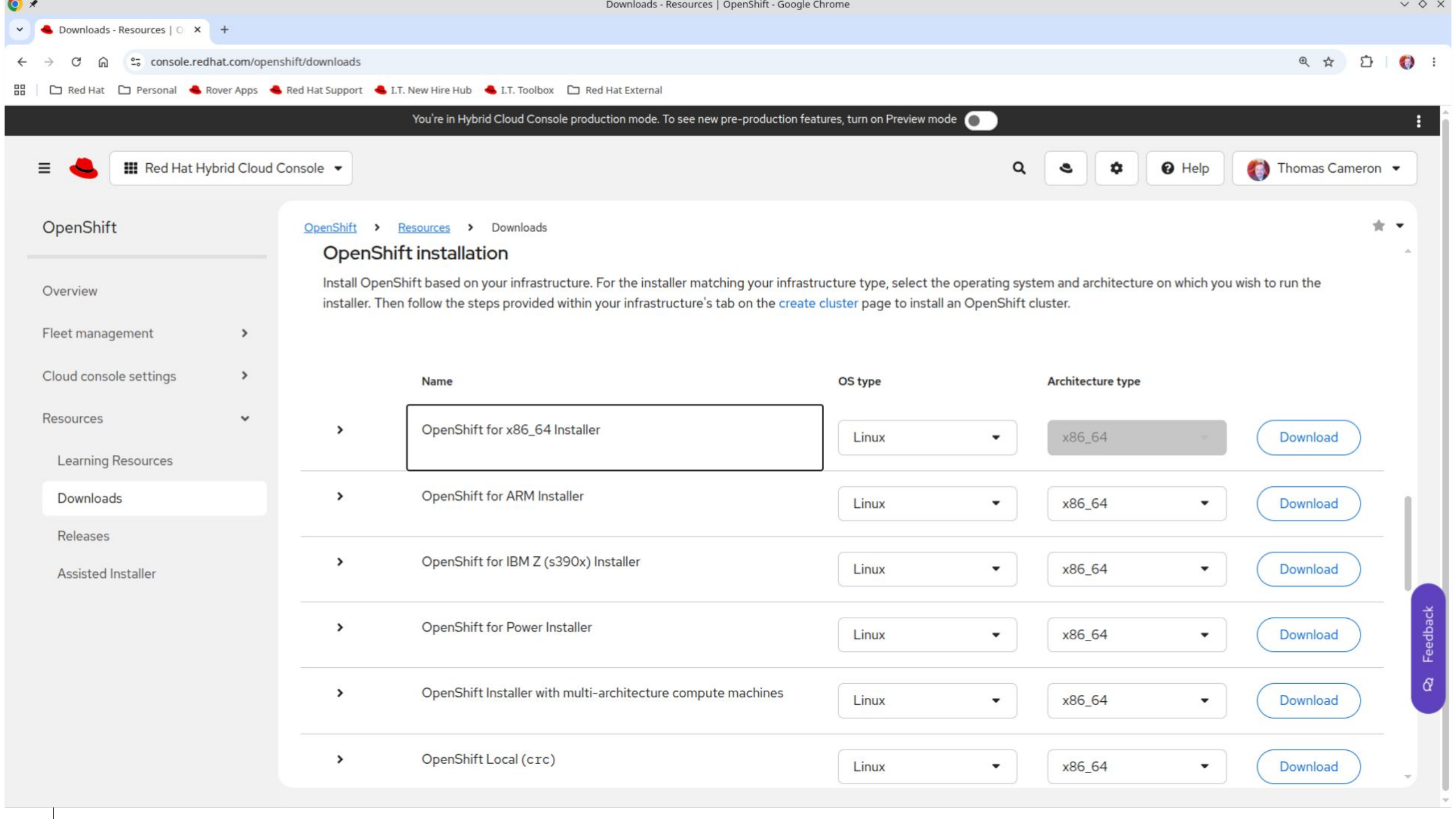
Downloads

All categories | Expand all

Command-line interface (CLI) tools

Download command line tools to manage and work with OpenShift from your terminal.

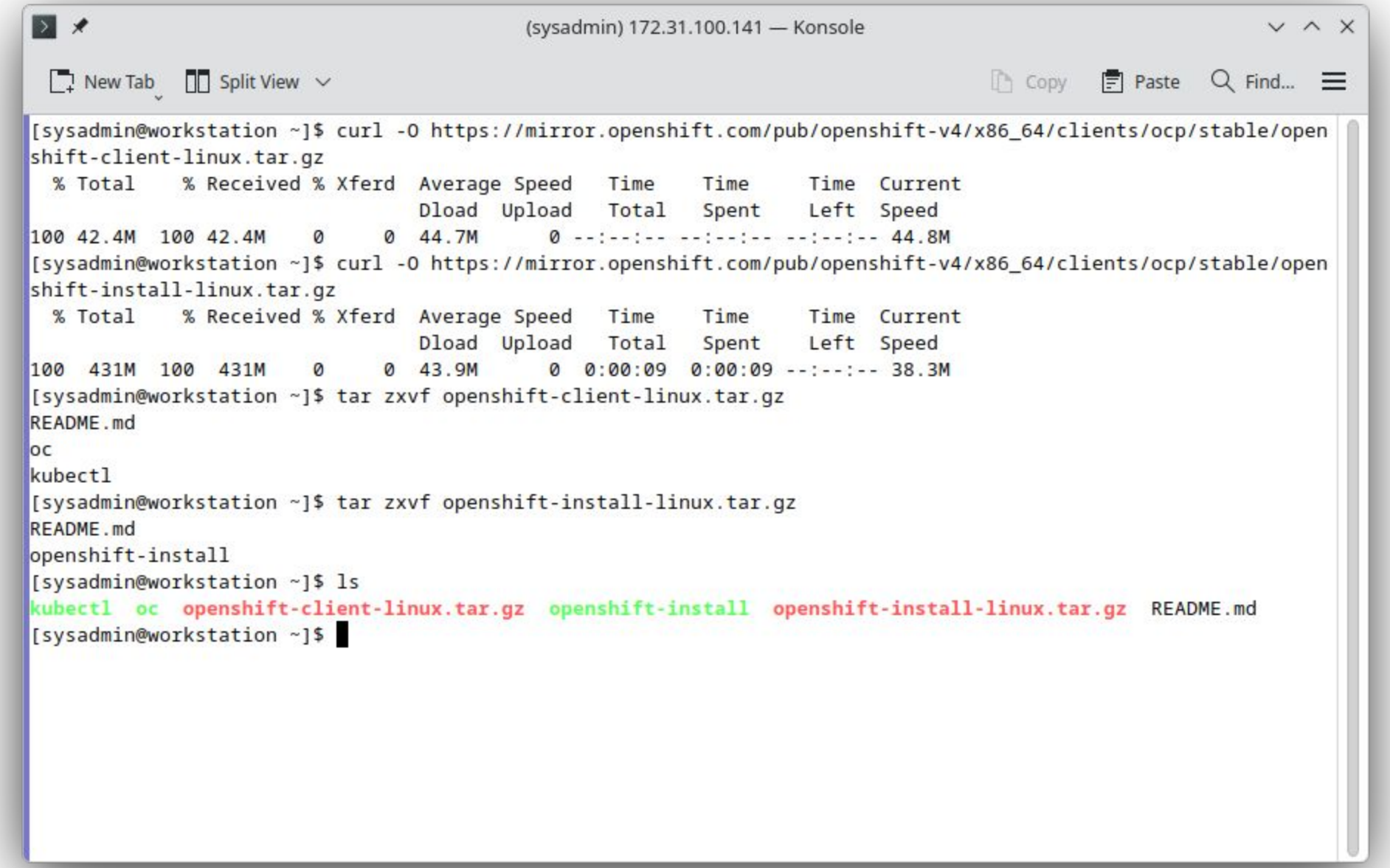
Name	OS type	Architecture type	
OpenShift command-line interface (oc)	Linux	x86_64	Download
OpenShift Cluster Manager API command-line interface (ocm) Developer Preview	Linux	x86_64	Download
Red Hat OpenShift Service on AWS command-line interface (rosa)	Linux	x86_64	Download
Knative command-line interface for OpenShift Serverless (kn)			

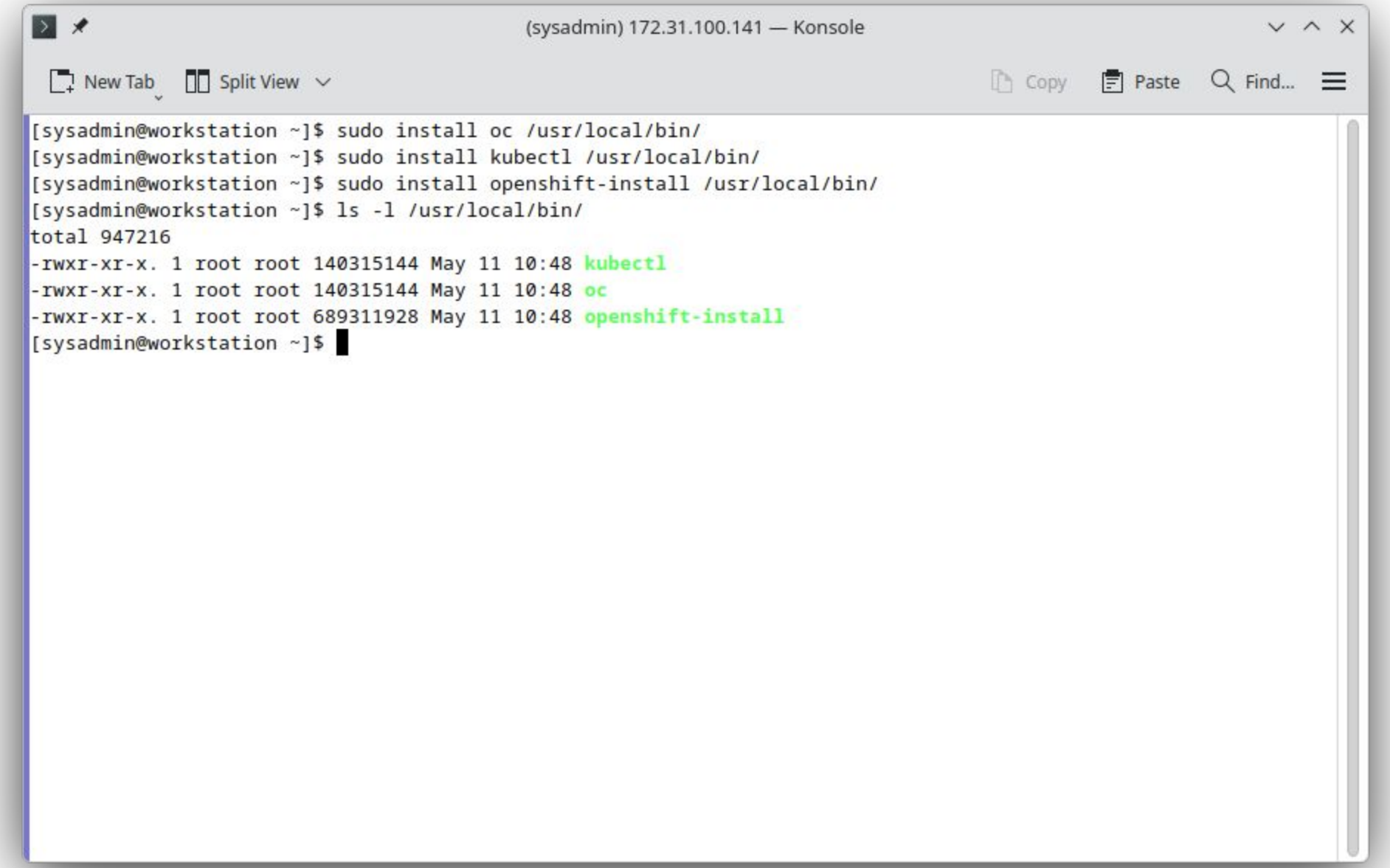

Downloads - Resources | OpenShift - Google Chrome
Downloads - Resources |
console.redhat.com/openshift/downloads
Red Hat
Personal
Rover Apps
Red Hat Support
I.T. New Hire Hub
I.T. Toolbox
Red Hat External
You're in Hybrid Cloud Console production mode. To see new pre-production features, turn on Preview mode
Red Hat Hybrid Cloud Console
Help
Thomas Cameron
OpenShift
Overview
Fleet management
Cloud console settings
Resources
Learning Resources
Downloads
Releases
Assisted Installer
OpenShift
Resources
Downloads
OpenShift installation
Install OpenShift based on your infrastructure. For the installer matching your infrastructure type, select the operating system and architecture on which you wish to run the installer. Then follow the steps provided within your infrastructure's tab on the create cluster page to install an OpenShift cluster.
Name
OS type
Architecture type
OpenShift for x86_64 Installer
Linux
x86_64
Download
OpenShift for ARM Installer
Linux
x86_64
Download
OpenShift for IBM Z (s390x) Installer
Linux
x86_64
Download
OpenShift for Power Installer
Linux
x86_64
Download
OpenShift Installer with multi-architecture compute machines
Linux
x86_64
Download
OpenShift Local (crc)
Linux
x86_64
Download
Feedback

Client and Installer

Get them from https://console.redhat.com/openshift

- Note that this is on a workstation machine


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ curl -O https://mirror.openshift.com/pub/openshift-v4/x86_64/clients/ocp/stable/openshift-client-linux.tar.gz
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 42.4M 100 42.4M 0 0 44.7M 0 --:--:-- --:--:-- --:--:-- 44.8M
[sysadmin@workstation ~]$ curl -O https://mirror.openshift.com/pub/openshift-v4/x86_64/clients/ocp/stable/openshift-install-linux.tar.gz
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 431M 100 431M 0 0 43.9M 0 0:00:09 0:00:09 --:--:-- 38.3M
[sysadmin@workstation ~]$ tar zxvf openshift-client-linux.tar.gz
README.md
oc
kubectl
[sysadmin@workstation ~]$ tar zxvf openshift-install-linux.tar.gz
README.md
openshift-install
[sysadmin@workstation ~]$ ls
kubectl oc openshift-client-linux.tar.gz openshift-install openshift-install-linux.tar.gz README.md
[sysadmin@workstation ~]$

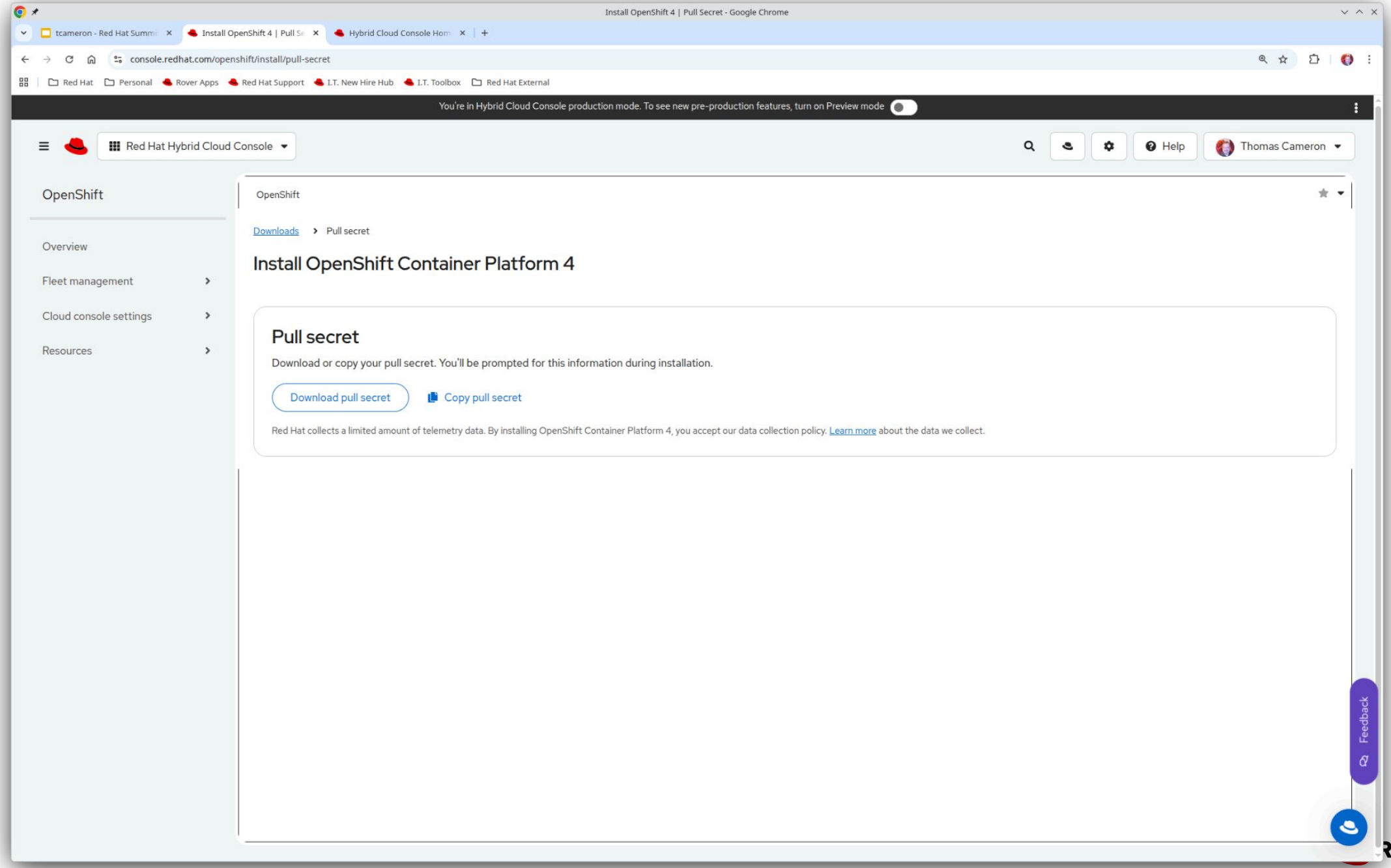

(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ sudo install oc /usr/local/bin/
[sysadmin@workstation ~]$ sudo install kubectl /usr/local/bin/
[sysadmin@workstation ~]$ sudo install openshift-install /usr/local/bin/
[sysadmin@workstation ~]$ ls -l /usr/local/bin/
total 947216
-rwxr-xr-x. 1 root root 140315144 May 11 10:48 kubectl
-rwxr-xr-x. 1 root root 140315144 May 11 10:48 oc
-rwxr-xr-x. 1 root root 689311928 May 11 10:48 openshift-install
[sysadmin@workstation ~]$

Start the Installation

Get You Pull Secret

This registers your cluster to Red Hat

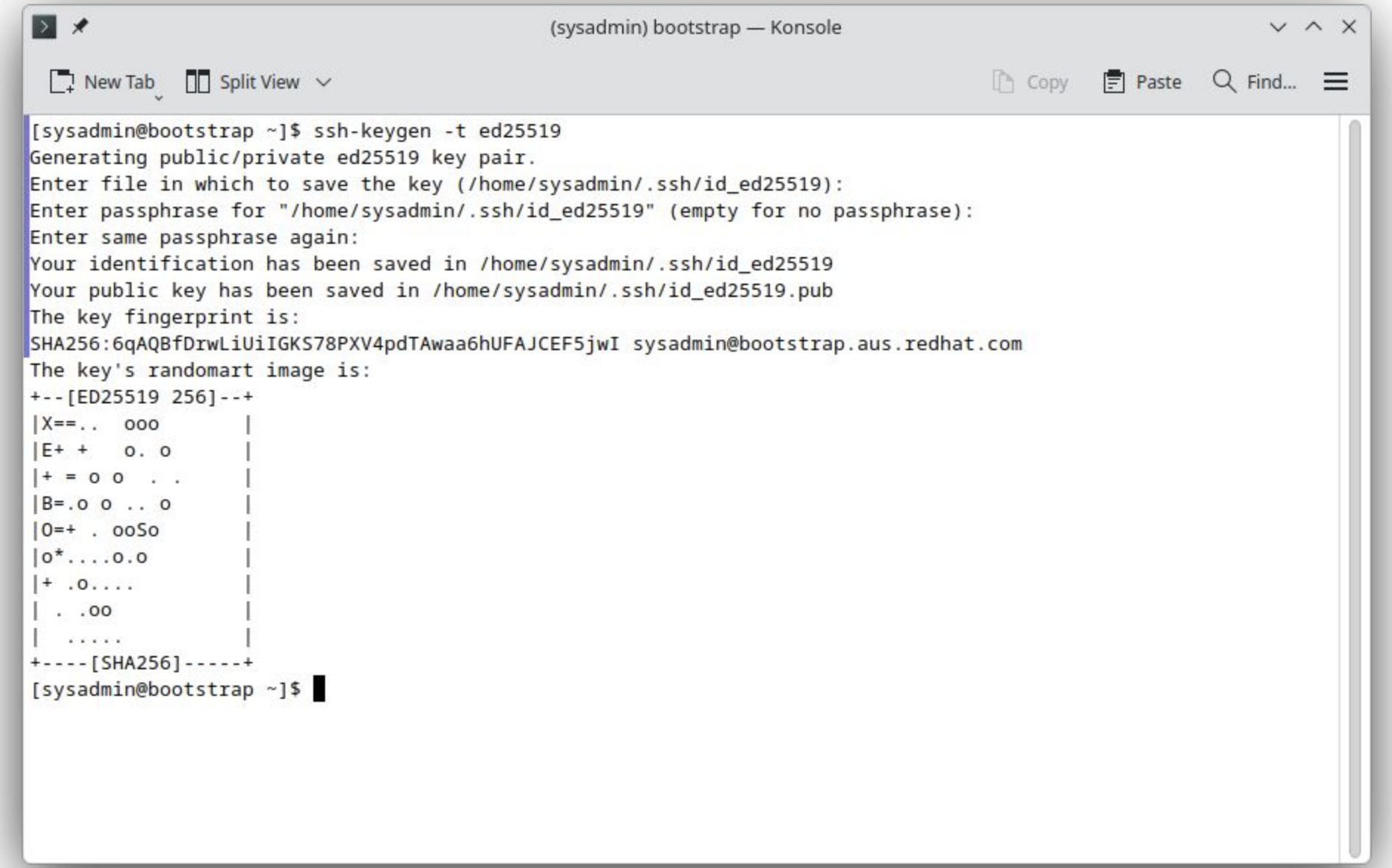
- https://console.redhat.com/openshift/install/pull-secret


Install OpenShift 4 | Pull Secret - Google Chrome
console.redhat.com/openshift/install/pull-secret
You're in Hybrid Cloud Console production mode. To see new pre-production features, turn on Preview mode
Red Hat Hybrid Cloud Console
Help
Thomas Cameron
OpenShift
Overview
Fleet management
Cloud console settings
Resources
OpenShift
Downloads
Pull secret
Install OpenShift Container Platform 4
Pull secret
Download or copy your pull secret. You'll be prompted for this information during installation.
Download pull secret
Copy pull secret
Red Hat collects a limited amount of telemetry data. By installing OpenShift Container Platform 4, you accept our data collection policy. Learn more about the data we collect.
Feedback

Create an SSH Key

This is the key you can use to ssh into your OpenShift nodes

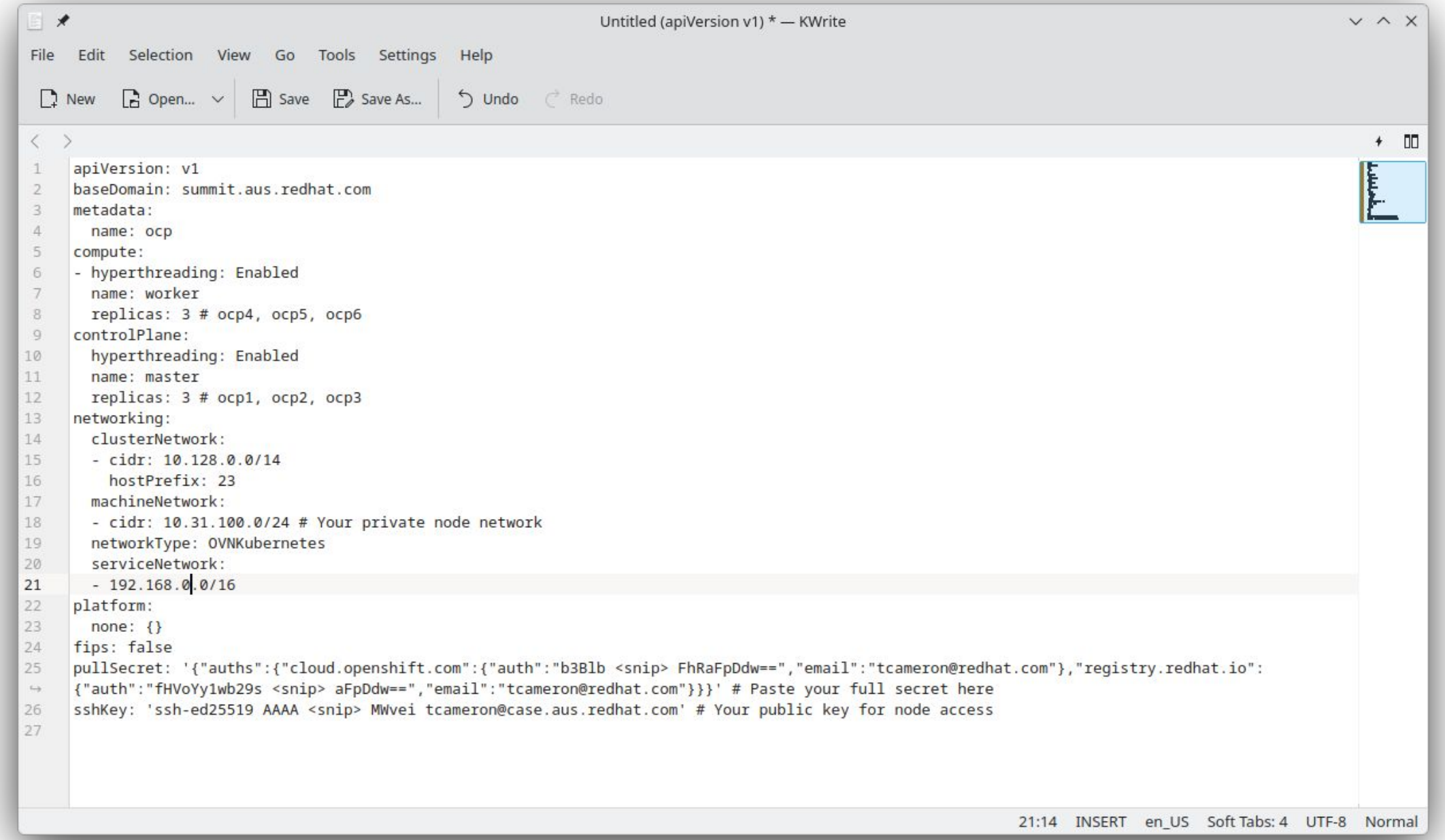
- I use ed25519 to create my key


(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@bootstrap ~]$ ssh-keygen -t ed25519
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/sysadmin/.ssh/id_ed25519):
Enter passphrase for "/home/sysadmin/.ssh/id_ed25519" (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/sysadmin/.ssh/id_ed25519
Your public key has been saved in /home/sysadmin/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:6qAQBfDrwLiUiIGKS78PXV4pdTAwaa6hUFAJCEF5jwI sysadmin@bootstrap.aus.redhat.com
The key's randomart image is:
+--[ED25519 256]--+
|X==.. ooo |
|E+ +   o. o |
|+ = o o . . |
|B=.o o .. o |
|O=+ . ooSo |
|o*....o.o |
|+ .o.... |
| . .oo |
| ..... |
+----[SHA256]-----+
[sysadmin@bootstrap ~]$

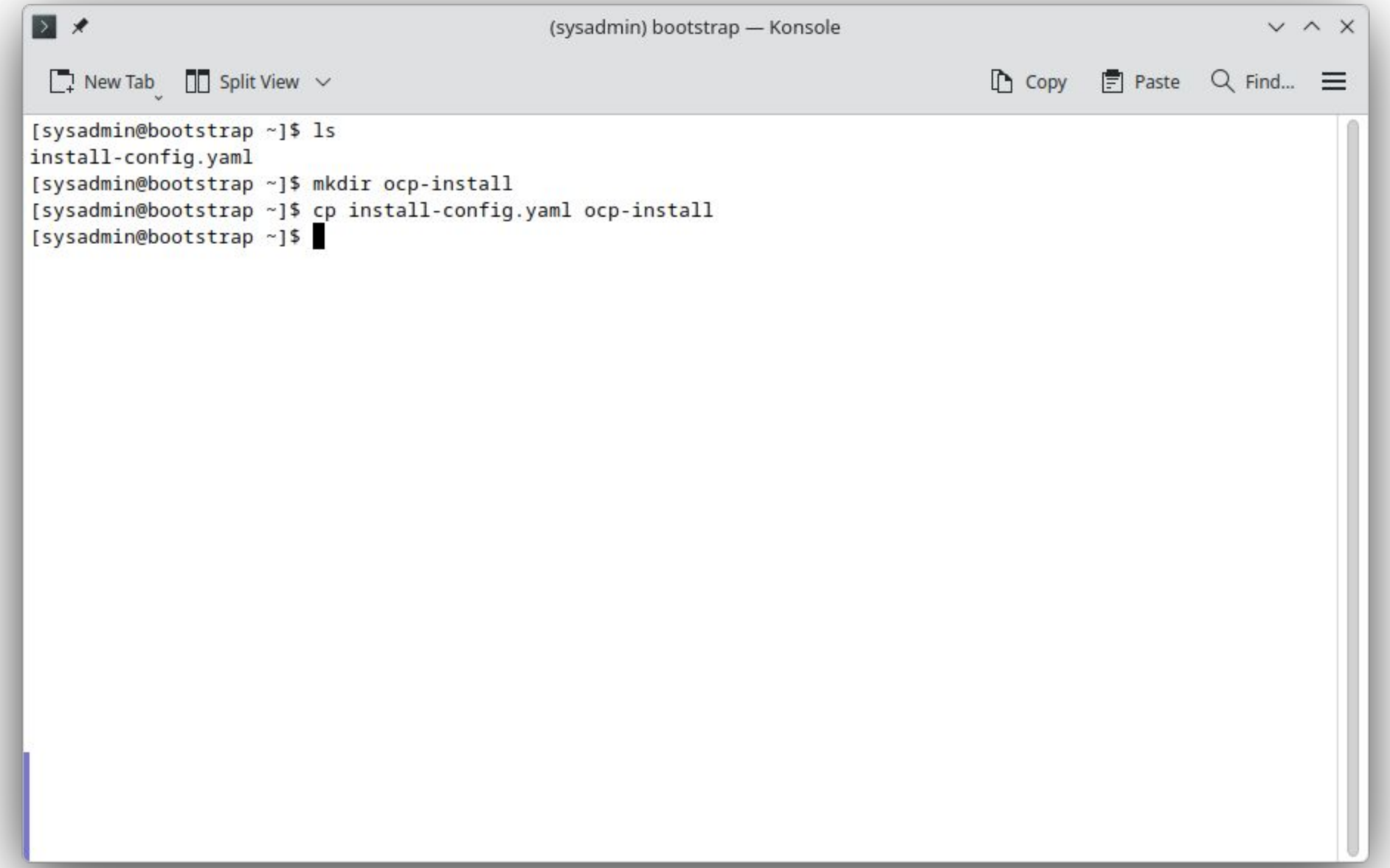
Create Your Installation

You can create an install-config.yaml

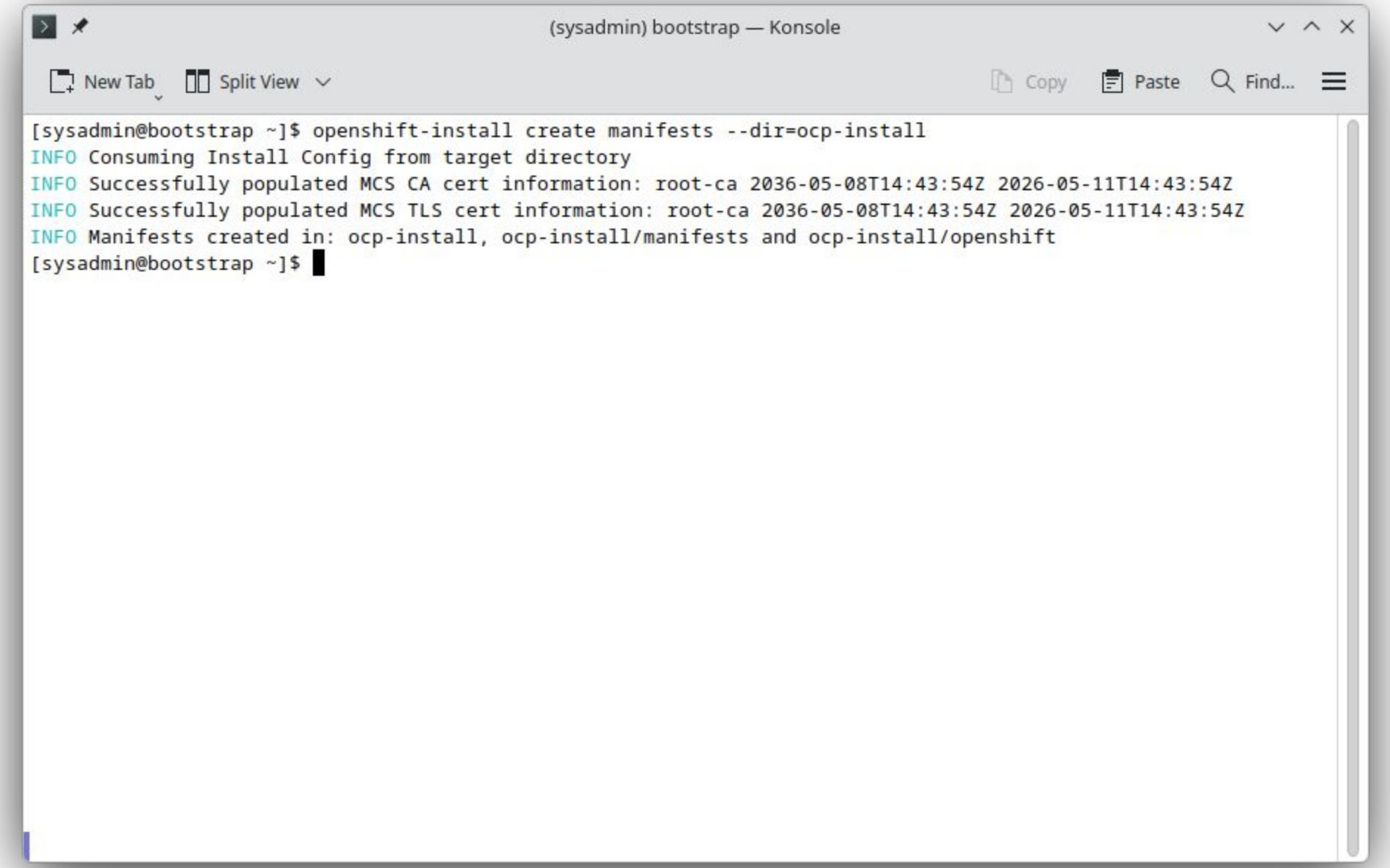
- I used a really simple one. It's in my github repo
- **NOTE**: when you run the installer, it will nuke your install-config.yaml file! COPY it, don't MOVE it to your installation directory!


Untitled (apiVersion v1) * — KWrite
File Edit Selection View Go Tools Settings Help
New Open... Save Save As... Undo Redo
apiVersion: v1
baseDomain: summit.aus.redhat.com
metadata:
name: ocp
compute:
- hyperthreading: Enabled
name: worker
replicas: 3 # ocp4, ocp5, ocp6
controlPlane:
hyperthreading: Enabled
name: master
replicas: 3 # ocp1, ocp2, ocp3
networking:
clusterNetwork:
- cidr: 10.128.0.0/14
hostPrefix: 23
machineNetwork:
- cidr: 10.31.100.0/24 # Your private node network
networkType: OVNKubernetes
serviceNetwork:
- 192.168.0.0/16
platform:
none: {}
fips: false
pullSecret: '{"auths":{"cloud.openshift.com":{"auth":"b3Blb <snip> FhRaFpDdw==","email":"tcameron@redhat.com"},"registry.redhat.io":
{"auth":"fHVoYy1wb29s <snip> aFpDdw==","email":"tcameron@redhat.com"}}}' # Paste your full secret here
sshKey: 'ssh-ed25519 AAAA <snip> MWvei tcameron@case.aus.redhat.com' # Your public key for node access
21:14 INSERT en_US Soft Tabs: 4 UTF-8 Normal

Red Hat


(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@bootstrap ~]$ ls
install-config.yaml
[sysadmin@bootstrap ~]$ mkdir ocp-install
[sysadmin@bootstrap ~]$ cp install-config.yaml ocp-install
[sysadmin@bootstrap ~]$

Red Hat

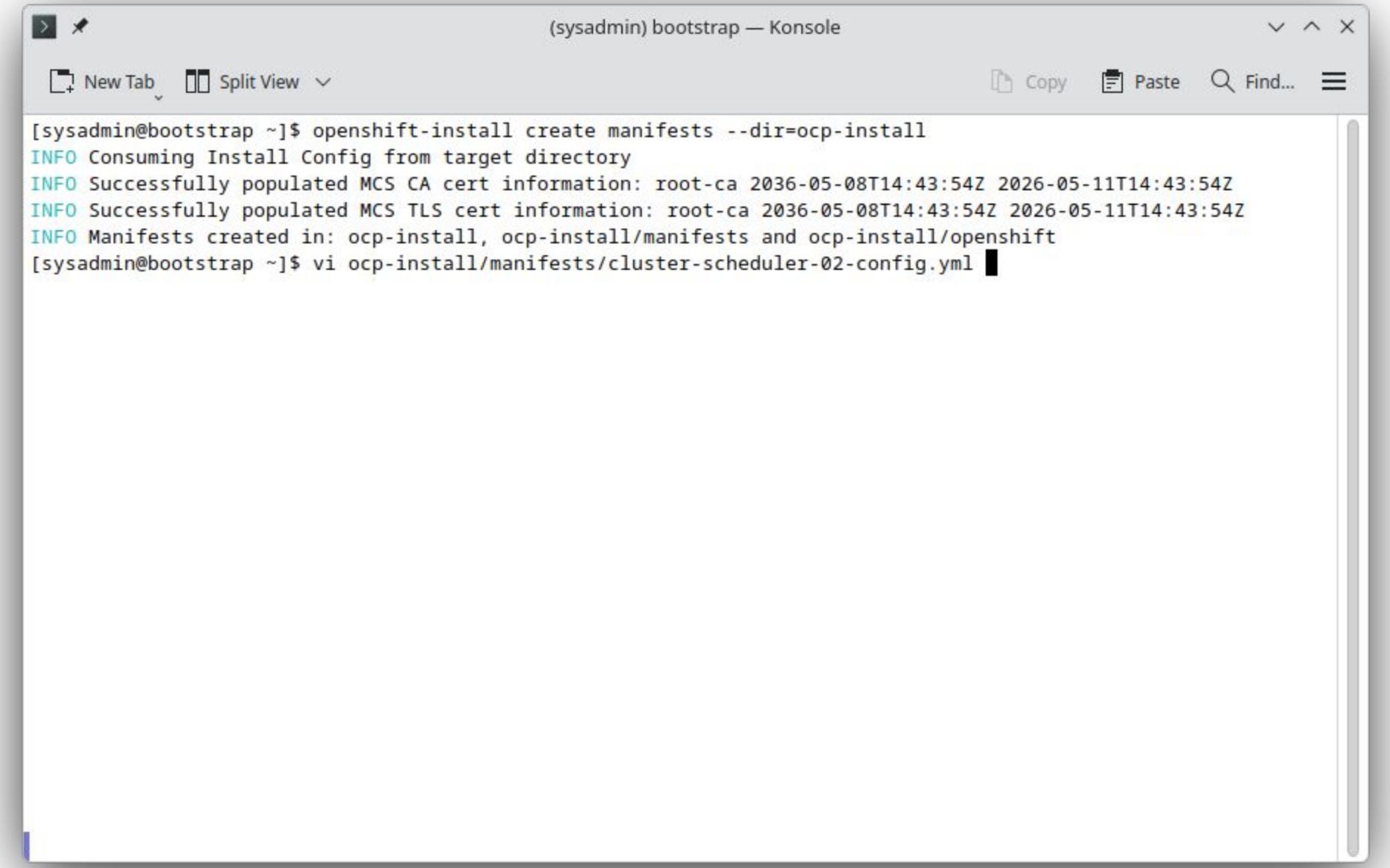

(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@bootstrap ~]$ openshift-install create manifests --dir=ocp-install
INFO Consuming Install Config from target directory
INFO Successfully populated MCS CA cert information: root-ca 2036-05-08T14:43:54Z 2026-05-11T14:43:54Z
INFO Successfully populated MCS TLS cert information: root-ca 2036-05-08T14:43:54Z 2026-05-11T14:43:54Z
INFO Manifests created in: ocp-install, ocp-install/manifests and ocp-install/openshift
[sysadmin@bootstrap ~]$

Red Hat

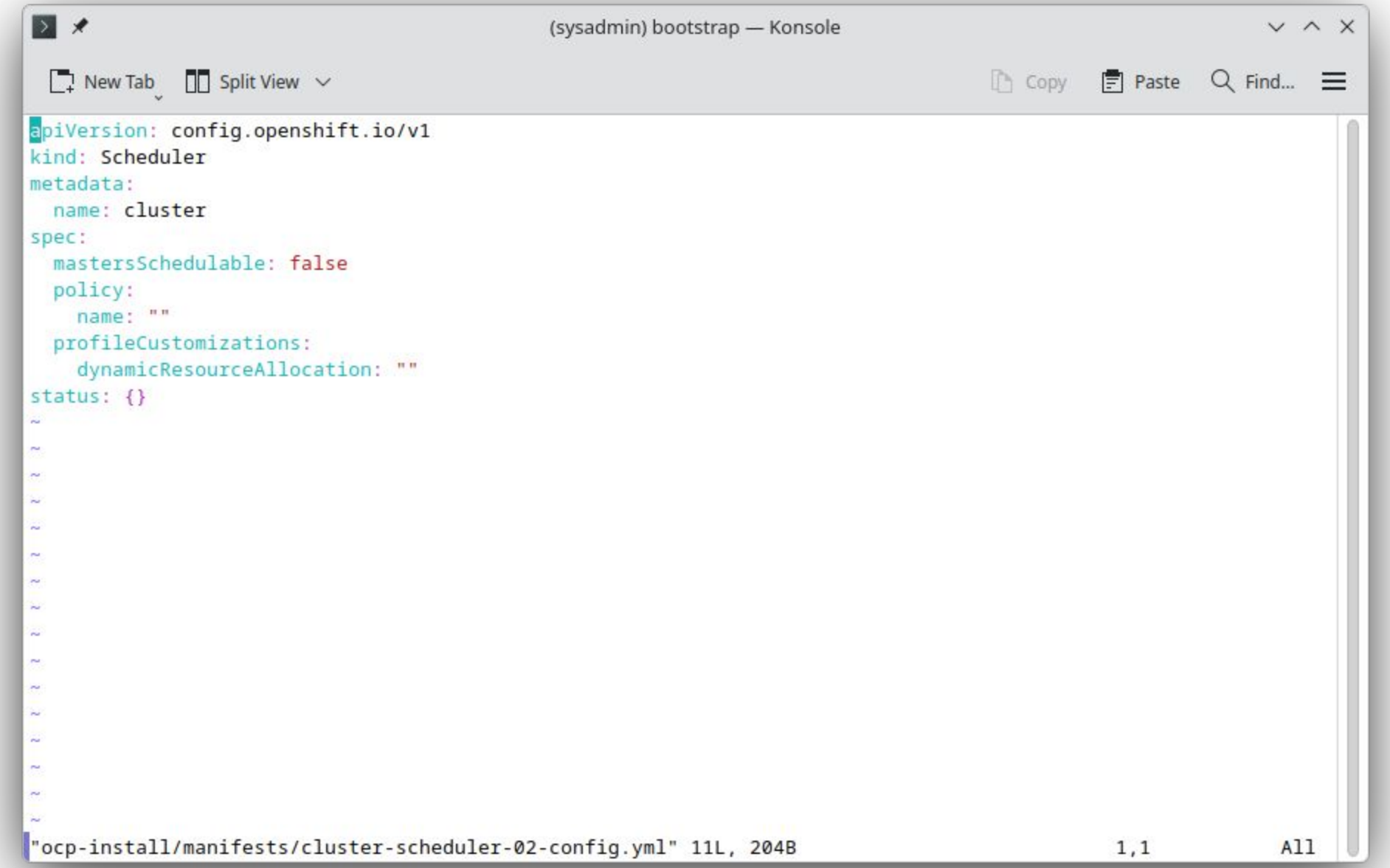
Set the Control Plane to Schedulable

By default, they are not

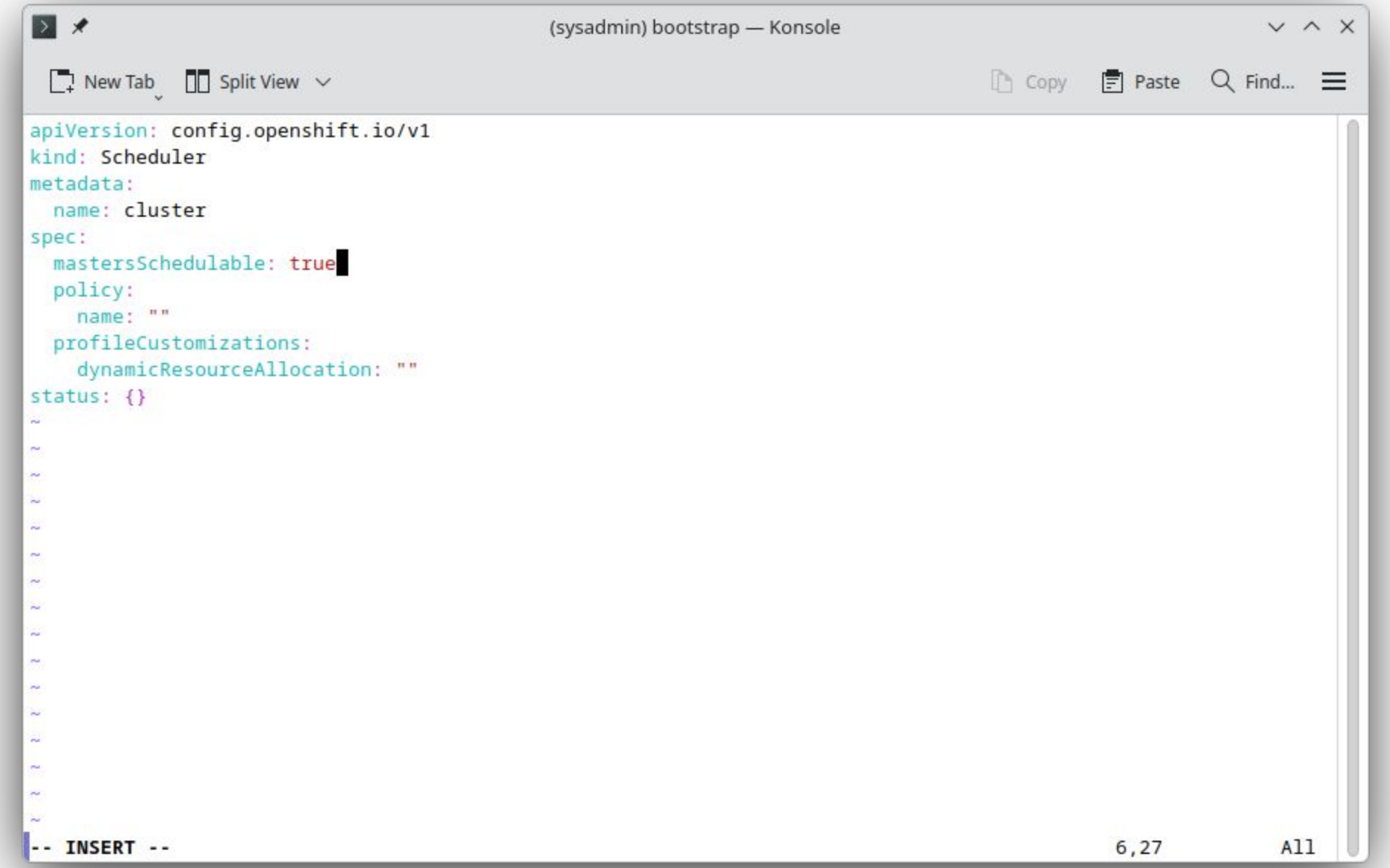
- Edit the manifests/cluster-scheduler-02-config.yml file


(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@bootstrap ~]$ openshift-install create manifests --dir=ocp-install
INFO Consuming Install Config from target directory
INFO Successfully populated MCS CA cert information: root-ca 2036-05-08T14:43:54Z 2026-05-11T14:43:54Z
INFO Successfully populated MCS TLS cert information: root-ca 2036-05-08T14:43:54Z 2026-05-11T14:43:54Z
INFO Manifests created in: ocp-install, ocp-install/manifests and ocp-install/openshift
[sysadmin@bootstrap ~]$ vi ocp-install/manifests/cluster-scheduler-02-config.yml

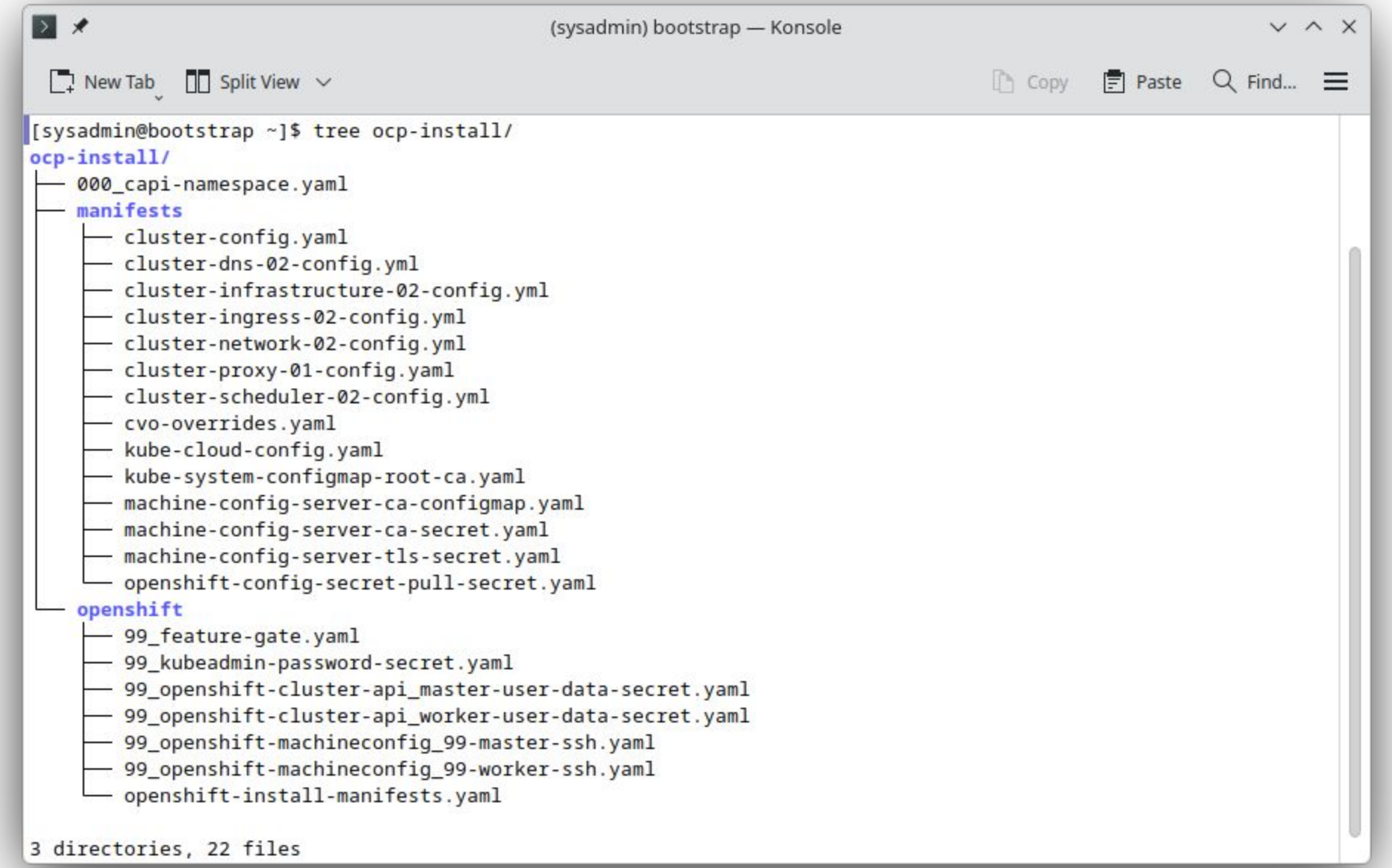
Red Hat


(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
apiVersion: config.openshift.io/v1
kind: Scheduler
metadata:
name: cluster
spec:
mastersSchedulable: false
policy:
name: ""
profileCustomizations:
dynamicResourceAllocation: ""
status: {}
"ocp-install/manifests/cluster-scheduler-02-config.yml" 11L, 204B
1,1
All

Red Hat


(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
apiVersion: config.openshift.io/v1
kind: Scheduler
metadata:
name: cluster
spec:
mastersSchedulable: true
policy:
name: ""
profileCustomizations:
dynamicResourceAllocation: ""
status: {}
-- INSERT --
6,27
All

Red Hat

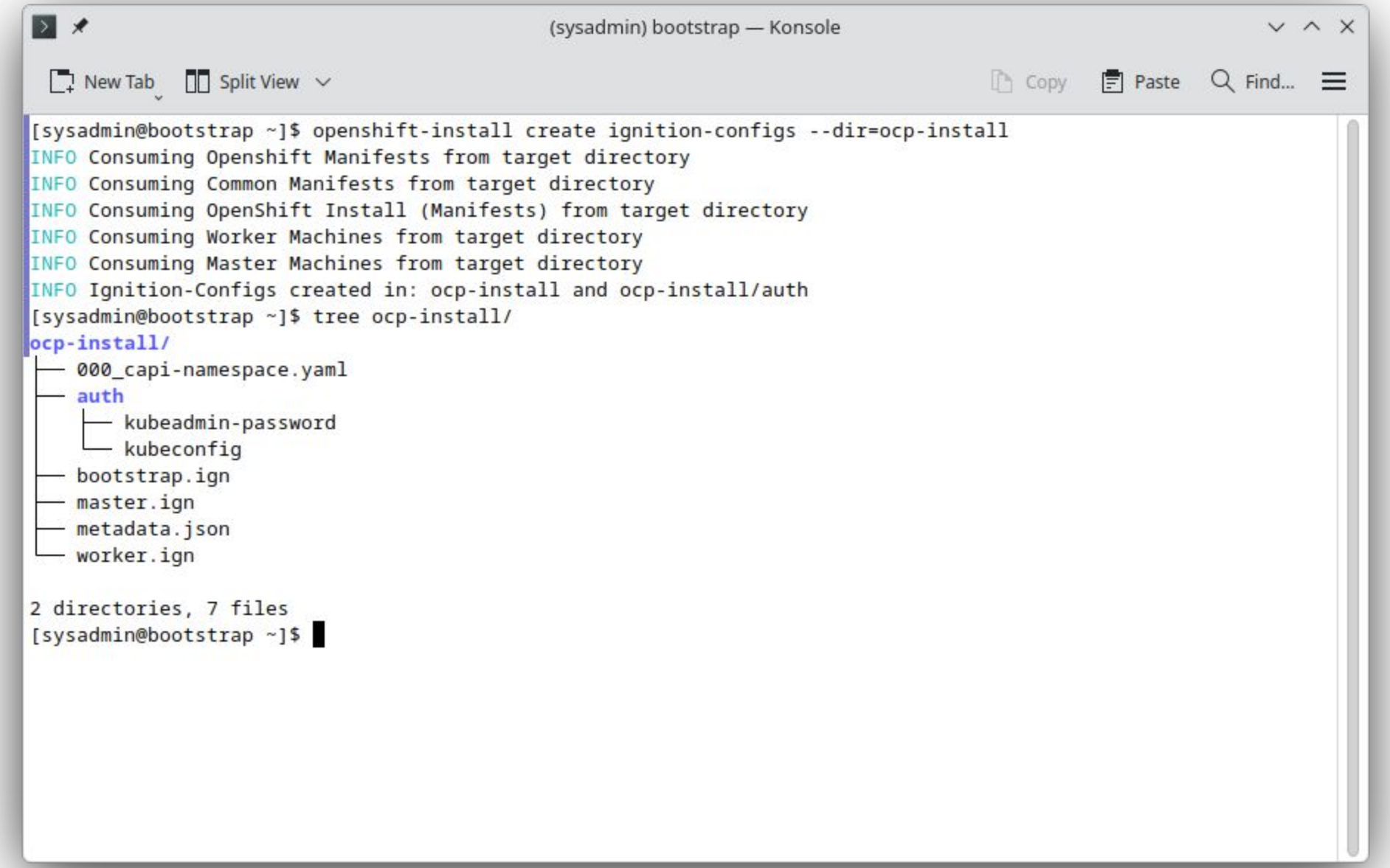

(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@bootstrap ~]$ tree ocp-install/
ocp-install/
├── 000_capi-namespace.yaml
├── manifests
│   ├── cluster-config.yaml
│   ├── cluster-dns-02-config.yml
│   ├── cluster-infrastructure-02-config.yml
│   ├── cluster-ingress-02-config.yml
│   ├── cluster-network-02-config.yml
│   ├── cluster-proxy-01-config.yaml
│   ├── cluster-scheduler-02-config.yml
│   ├── cvo-overrides.yaml
│   ├── kube-cloud-config.yaml
│   ├── kube-system-configmap-root-ca.yaml
│   ├── machine-config-server-ca-configmap.yaml
│   ├── machine-config-server-ca-secret.yaml
│   ├── machine-config-server-tls-secret.yaml
│   └── openshift-config-secret-pull-secret.yaml
└── openshift
    ├── 99_feature-gate.yaml
    ├── 99_kubeadmin-password-secret.yaml
    ├── 99_openshift-cluster-api_master-user-data-secret.yaml
    ├── 99_openshift-cluster-api_worker-user-data-secret.yaml
    ├── 99_openshift-machineconfig_99-master-ssh.yaml
    ├── 99_openshift-machineconfig_99-worker-ssh.yaml
    └── openshift-install-manifests.yaml
3 directories, 22 files

Red Hat

Create The Ignition Files

These will be used by the installer

- openshift-install create ignition-configs --dir=ocp-install
- Note that it deletes and creates stuff!

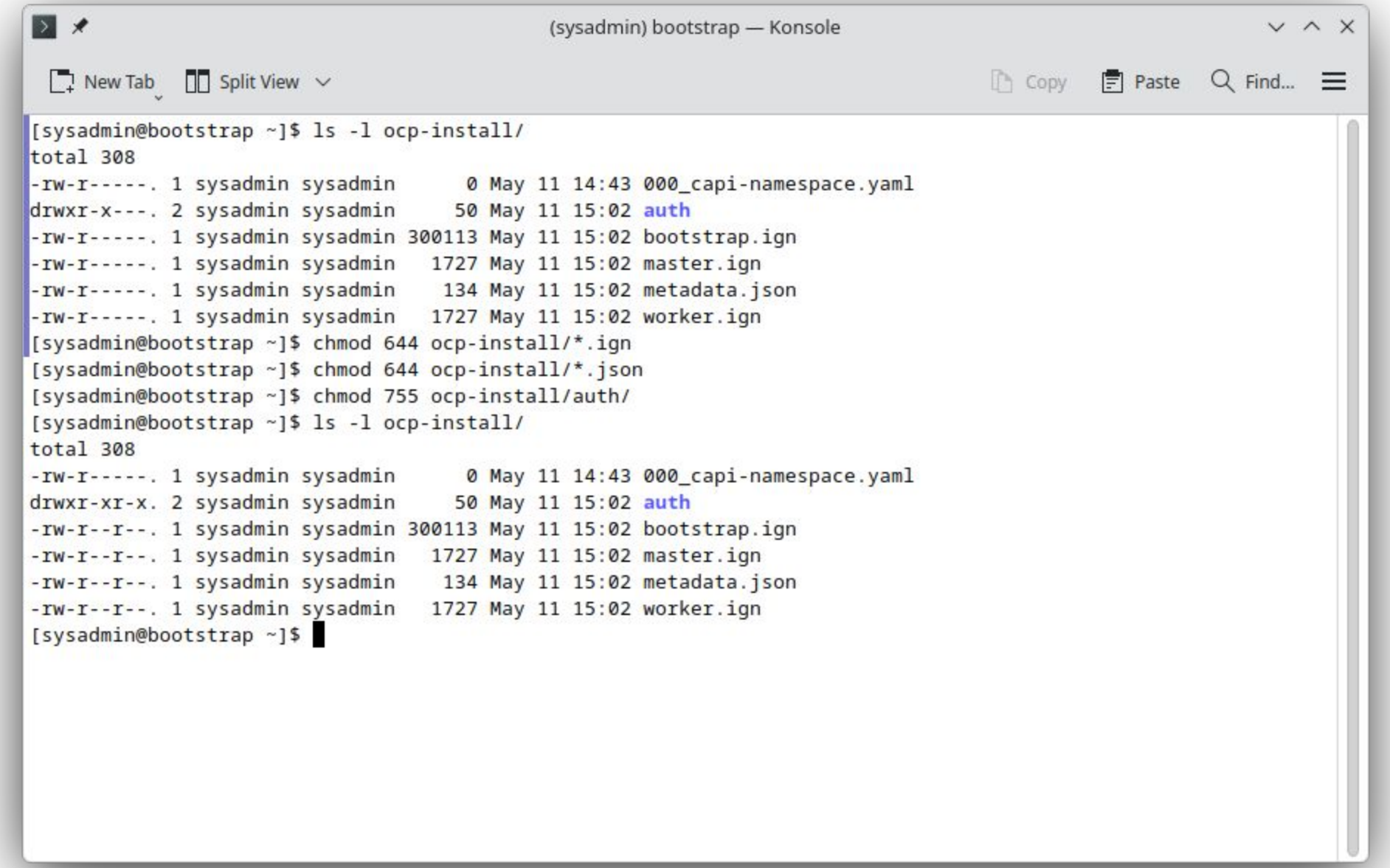

(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@bootstrap ~]$ openshift-install create ignition-configs --dir=ocp-install
INFO Consuming Openshift Manifests from target directory
INFO Consuming Common Manifests from target directory
INFO Consuming OpenShift Install (Manifests) from target directory
INFO Consuming Worker Machines from target directory
INFO Consuming Master Machines from target directory
INFO Ignition-Configs created in: ocp-install and ocp-install/auth
[sysadmin@bootstrap ~]$ tree ocp-install/
ocp-install/
├── 000_capi-namespace.yaml
├── auth
│   ├── kubeadmin-password
│   └── kubeconfig
├── bootstrap.ign
├── master.ign
├── metadata.json
└── worker.ign
2 directories, 7 files
[sysadmin@bootstrap ~]$

Red Hat

Fix The Permissions

When you copy the files, they may not be world-readable

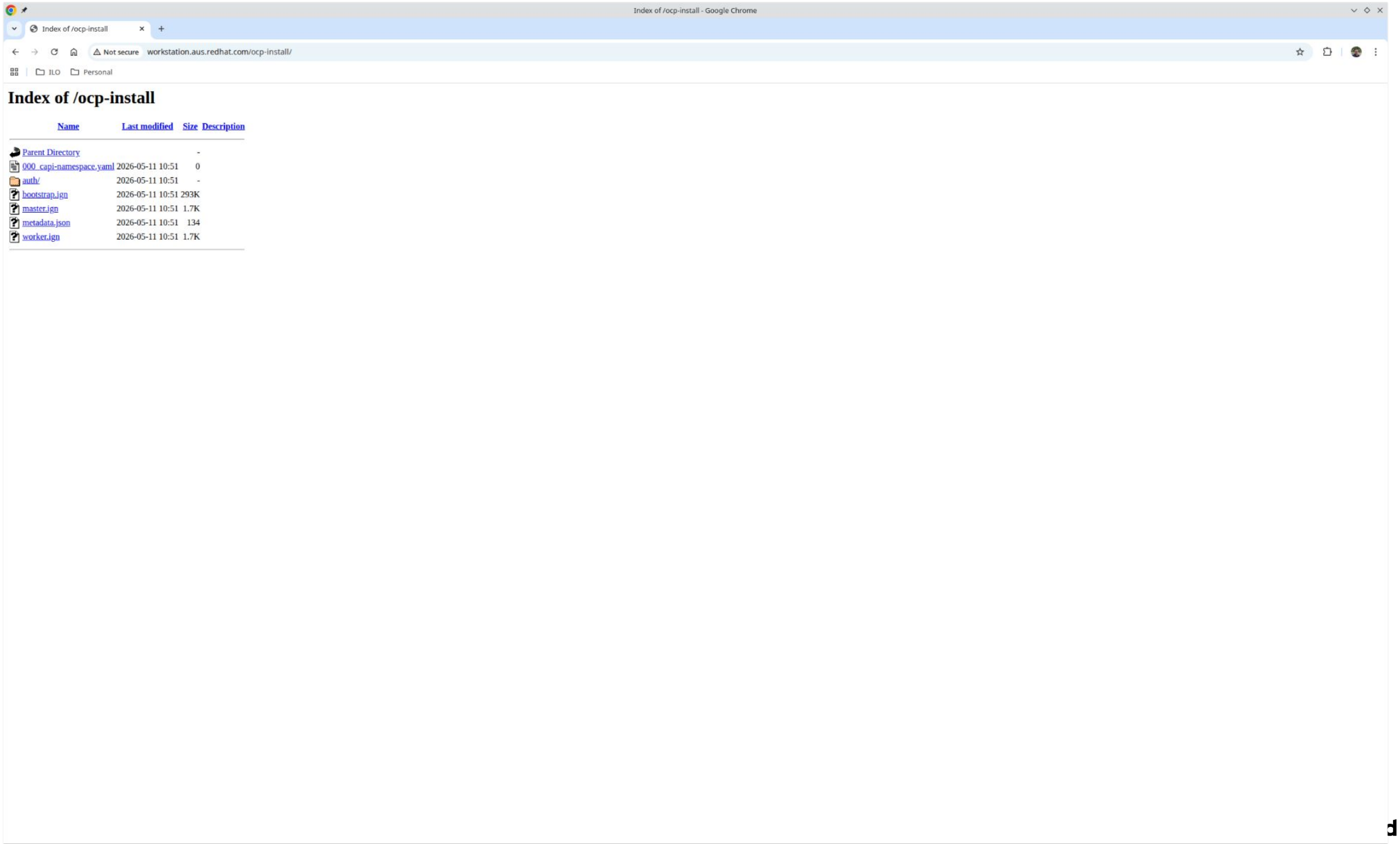
- Check the permissions on the files


(sysadmin) bootstrap — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@bootstrap ~]$ ls -l ocp-install/
total 308
-rw-r-----. 1 sysadmin sysadmin   0 May 11 14:43 000_capi-namespace.yaml
drwxr-x---. 2 sysadmin sysadmin   50 May 11 15:02 auth
-rw-r-----. 1 sysadmin sysadmin 300113 May 11 15:02 bootstrap.ign
-rw-r-----. 1 sysadmin sysadmin   1727 May 11 15:02 master.ign
-rw-r-----. 1 sysadmin sysadmin   134 May 11 15:02 metadata.json
-rw-r-----. 1 sysadmin sysadmin   1727 May 11 15:02 worker.ign
[sysadmin@bootstrap ~]$ chmod 644 ocp-install/*.ign
[sysadmin@bootstrap ~]$ chmod 644 ocp-install/*.json
[sysadmin@bootstrap ~]$ chmod 755 ocp-install/auth/
[sysadmin@bootstrap ~]$ ls -l ocp-install/
total 308
-rw-r-----. 1 sysadmin sysadmin   0 May 11 14:43 000_capi-namespace.yaml
drwxr-xr-x. 2 sysadmin sysadmin   50 May 11 15:02 auth
-rw-r--r--. 1 sysadmin sysadmin 300113 May 11 15:02 bootstrap.ign
-rw-r--r--. 1 sysadmin sysadmin   1727 May 11 15:02 master.ign
-rw-r--r--. 1 sysadmin sysadmin   134 May 11 15:02 metadata.json
-rw-r--r--. 1 sysadmin sysadmin   1727 May 11 15:02 worker.ign
[sysadmin@bootstrap ~]$

Share The Installation Files

I put them on the workstation machine

- It is connected to both networks
- I installed httpd and started it
- I copied the installation content to /var/www/html

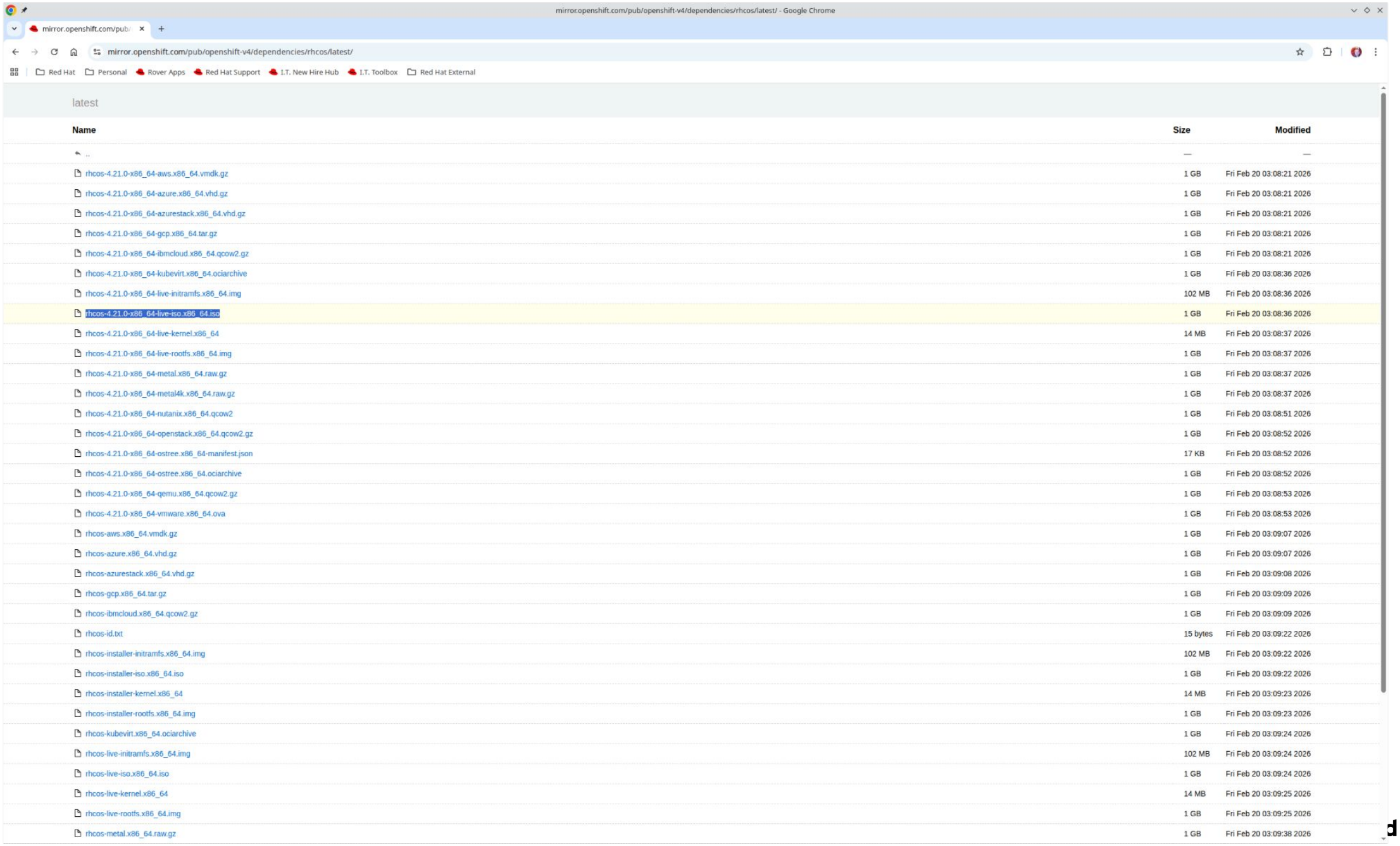

Index of /ocp-install - Google Chrome
Index of /ocp-install
Not secure
workstation.aus.redhat.com/ocp-install/
ILO
Personal
Index of /ocp-install
Name
Last modified
Size
Description
Parent Directory -
000_capi-namespace.yaml 2026-05-11 10:51 0
auth/ 2026-05-11 10:51 -
bootstrap.ign 2026-05-11 10:51 293K
master.ign 2026-05-11 10:51 1.7K
metadata.json 2026-05-11 10:51 134
worker.ign 2026-05-11 10:51 1.7K

Download The CoreOS ISO

You can get them from

https://mirror.openshift.com/pub/openshift-v4/dependencies/rhcos/latest/

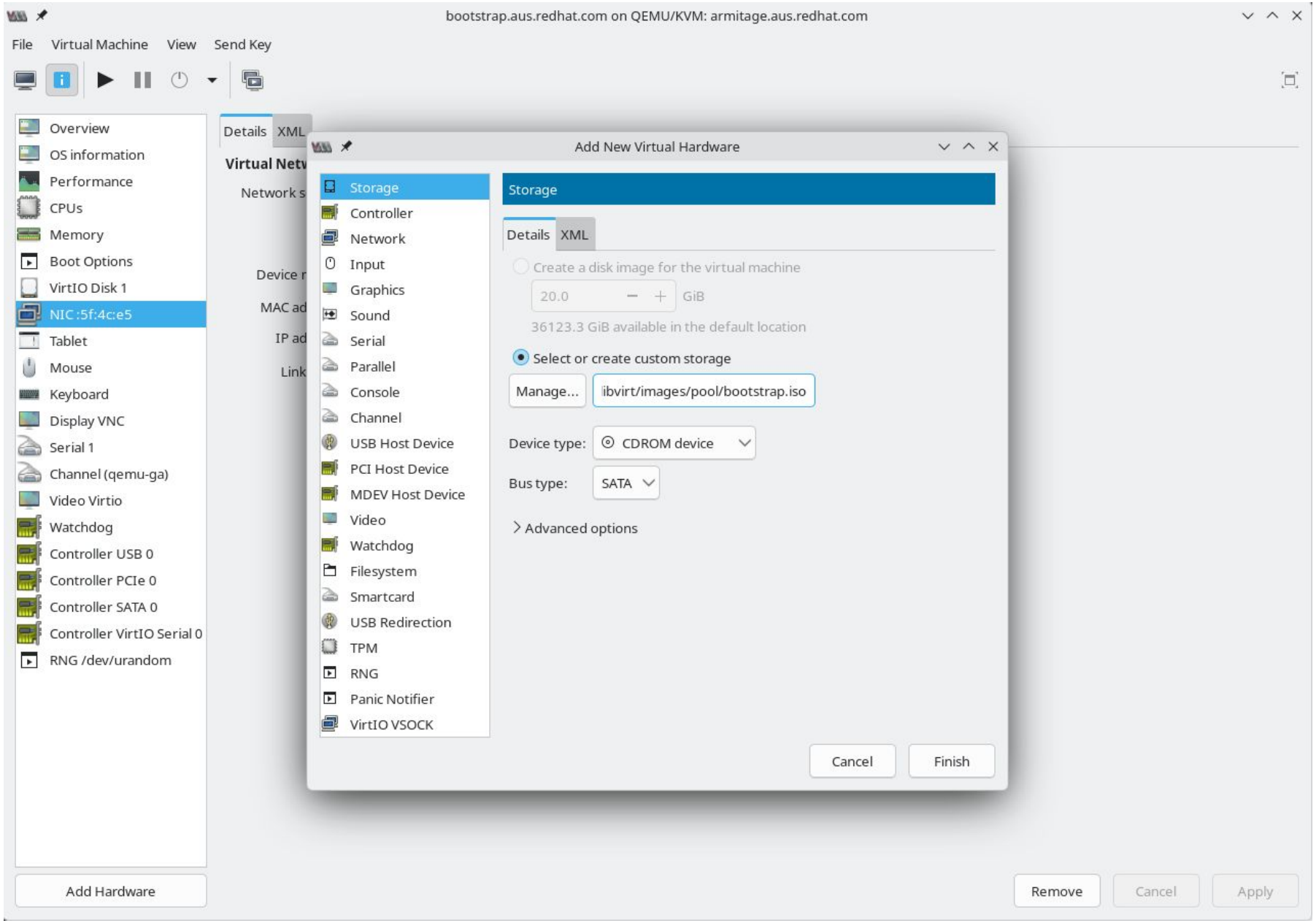
- I downloaded it to my hypervisor


mirror.openshift.com/pub/openshift-v4/dependencies/rhcos/latest/ - Google Chrome
mirror.openshift.com/pub/
mirror.openshift.com/pub/openshift-v4/dependencies/rhcos/latest/
Red Hat
Personal
Rover Apps
Red Hat Support
I.T. New Hire Hub
I.T. Toolbox
Red Hat External
latest
Name
Size
Modified
..
—
—
rhcos-4.21.0-x86_64-aws.x86_64.vmdk.gz 1 GB Fri Feb 20 03:08:21 2026
rhcos-4.21.0-x86_64-azure.x86_64.vhd.gz 1 GB Fri Feb 20 03:08:21 2026
rhcos-4.21.0-x86_64-azurestack.x86_64.vhd.gz 1 GB Fri Feb 20 03:08:21 2026
rhcos-4.21.0-x86_64-gcp.x86_64.tar.gz 1 GB Fri Feb 20 03:08:21 2026
rhcos-4.21.0-x86_64-ibmcloud.x86_64.qcow2.gz 1 GB Fri Feb 20 03:08:21 2026
rhcos-4.21.0-x86_64-kubevirt.x86_64.ociarchive 1 GB Fri Feb 20 03:08:36 2026
rhcos-4.21.0-x86_64-live-initramfs.x86_64.img 102 MB Fri Feb 20 03:08:36 2026
rhcos-4.21.0-x86_64-live-iso.x86_64.iso 1 GB Fri Feb 20 03:08:36 2026
rhcos-4.21.0-x86_64-live-kernel.x86_64 14 MB Fri Feb 20 03:08:37 2026
rhcos-4.21.0-x86_64-live-rootfs.x86_64.img 1 GB Fri Feb 20 03:08:37 2026
rhcos-4.21.0-x86_64-metal.x86_64.raw.gz 1 GB Fri Feb 20 03:08:37 2026
rhcos-4.21.0-x86_64-metal4k.x86_64.raw.gz 1 GB Fri Feb 20 03:08:37 2026
rhcos-4.21.0-x86_64-nutanix.x86_64.qcow2 1 GB Fri Feb 20 03:08:51 2026
rhcos-4.21.0-x86_64-openstack.x86_64.qcow2.gz 1 GB Fri Feb 20 03:08:52 2026
rhcos-4.21.0-x86_64-ostree.x86_64-manifest.json 17 KB Fri Feb 20 03:08:52 2026
rhcos-4.21.0-x86_64-ostree.x86_64.ociarchive 1 GB Fri Feb 20 03:08:52 2026
rhcos-4.21.0-x86_64-qemu.x86_64.qcow2.gz 1 GB Fri Feb 20 03:08:53 2026
rhcos-4.21.0-x86_64-vmware.x86_64.ova 1 GB Fri Feb 20 03:08:53 2026
rhcos-aws.x86_64.vmdk.gz 1 GB Fri Feb 20 03:09:07 2026
rhcos-azure.x86_64.vhd.gz 1 GB Fri Feb 20 03:09:07 2026
rhcos-azurestack.x86_64.vhd.gz 1 GB Fri Feb 20 03:09:08 2026
rhcos-gcp.x86_64.tar.gz 1 GB Fri Feb 20 03:09:09 2026
rhcos-ibmcloud.x86_64.qcow2.gz 1 GB Fri Feb 20 03:09:09 2026
rhcos-id.txt 15 bytes Fri Feb 20 03:09:22 2026
rhcos-installer-initramfs.x86_64.img 102 MB Fri Feb 20 03:09:22 2026
rhcos-installer-iso.x86_64.iso 1 GB Fri Feb 20 03:09:22 2026
rhcos-installer-kernel.x86_64 14 MB Fri Feb 20 03:09:23 2026
rhcos-installer-rootfs.x86_64.img 1 GB Fri Feb 20 03:09:23 2026
rhcos-kubevirt.x86_64.ociarchive 1 GB Fri Feb 20 03:09:24 2026
rhcos-live-initramfs.x86_64.img 102 MB Fri Feb 20 03:09:24 2026
rhcos-live-iso.x86_64.iso 1 GB Fri Feb 20 03:09:24 2026
rhcos-live-kernel.x86_64 14 MB Fri Feb 20 03:09:25 2026
rhcos-live-rootfs.x86_64.img 1 GB Fri Feb 20 03:09:25 2026
rhcos-metal.x86_64.raw.gz 1 GB Fri Feb 20 03:09:38 2026

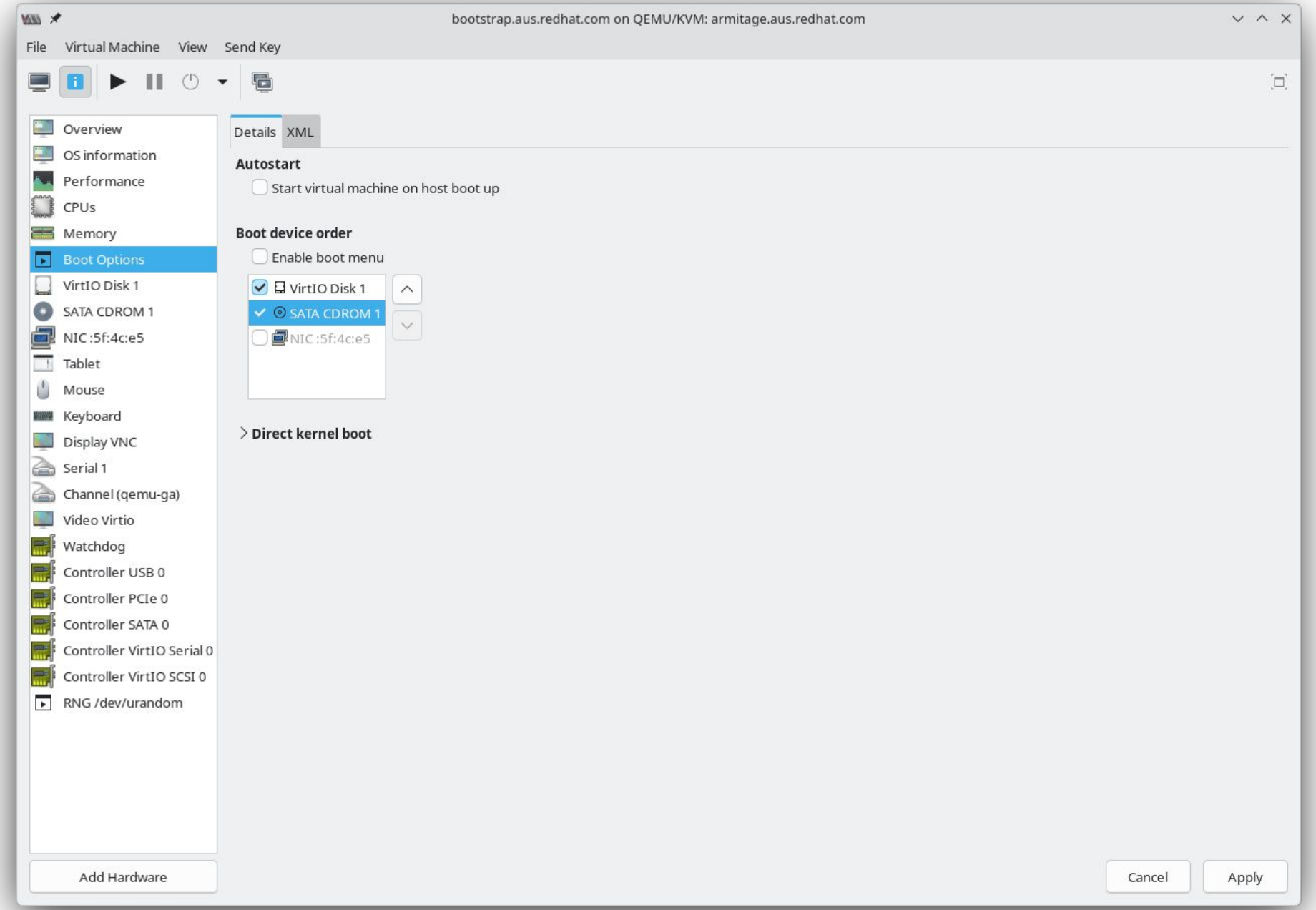
Mount the ISO On Each Machine

I created links from the download for each machine

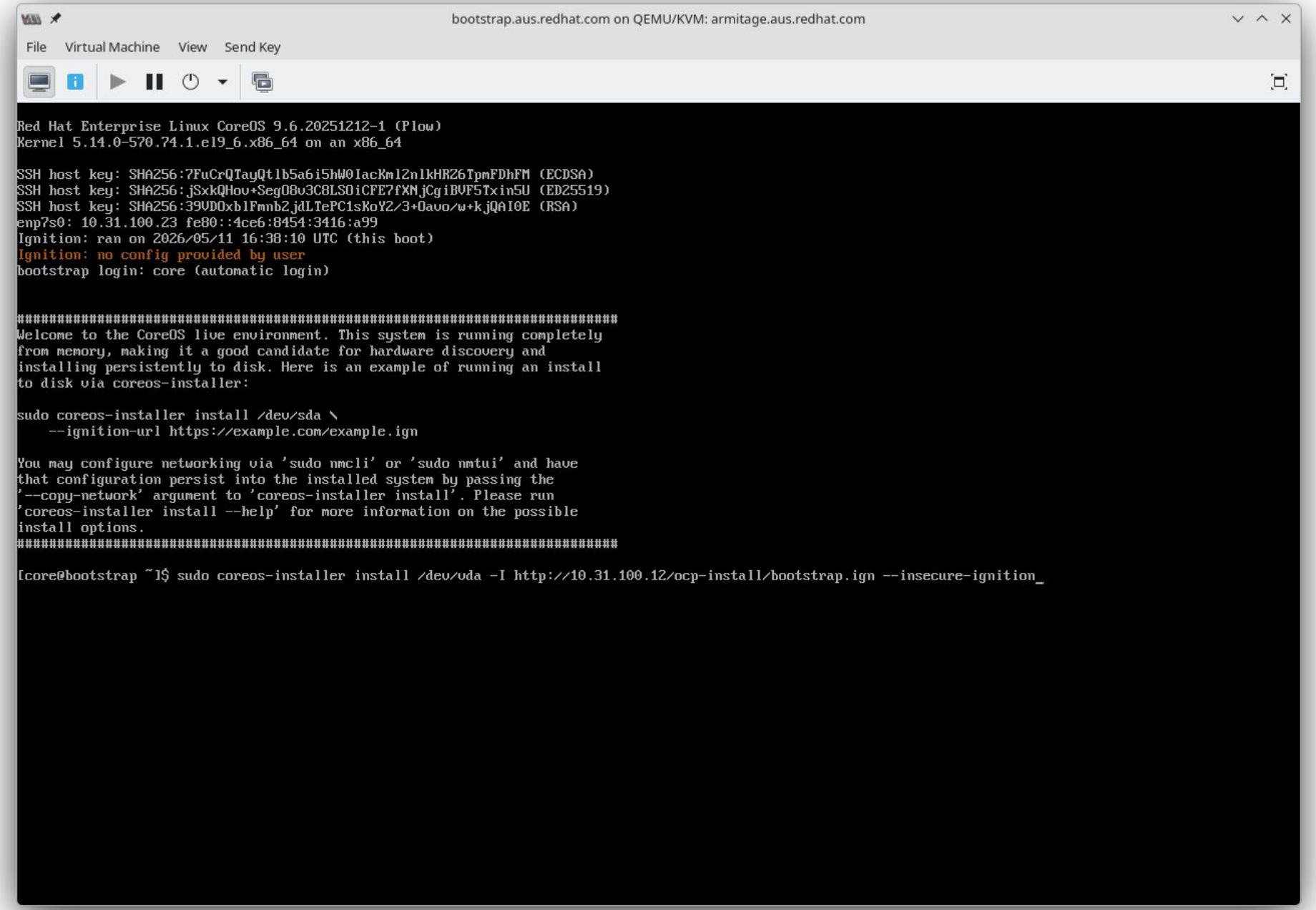
- Mount it and make set the machine to boot off it


bootstrap.aus.redhat.com on QEMU/KVM: armitage.aus.redhat.com
File
Virtual Machine
View
Send Key
Overview
OS information
Performance
CPUs
Memory
Boot Options
VirtIO Disk 1
NIC :5f:4c:e5
Tablet
Mouse
Keyboard
Display VNC
Serial 1
Channel (qemu-ga)
Video Virtio
Watchdog
Controller USB 0
Controller PCIe 0
Controller SATA 0
Controller VirtIO Serial 0
RNG /dev/urandom
Add Hardware
Details
XML
Add New Virtual Hardware
Storage
Controller
Network
Input
Graphics
Sound
Serial
Parallel
Console
Channel
USB Host Device
PCI Host Device
MDEV Host Device
Video
Watchdog
Filesystem
Smartcard
USB Redirection
TPM
RNG
Panic Notifier
VirtIO VSOCK
Storage
Details
XML
Create a disk image for the virtual machine
20.0
GiB
36123.3 GiB available in the default location
Select or create custom storage
Manage...
ibvirt/images/pool/bootstrap.iso
Device type:
CDROM device
Bus type:
SATA
Advanced options
Cancel
Finish
Remove
Cancel
Apply

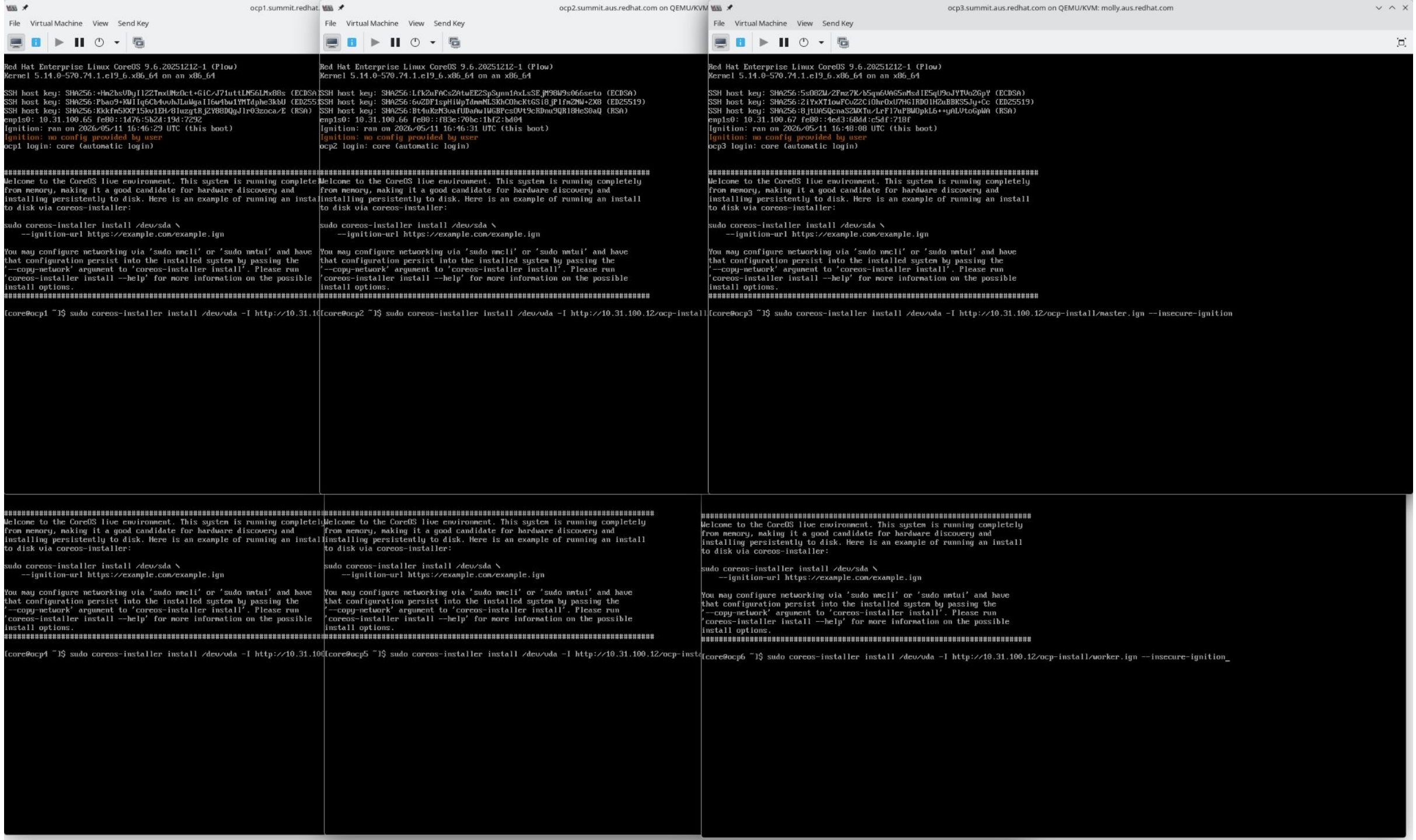
Red Hat


bootstrap.aus.redhat.com on QEMU/KVM: armitage.aus.redhat.com
File
Virtual Machine
View
Send Key
Overview
OS information
Performance
CPUs
Memory
Boot Options
VirtIO Disk 1
SATA CDROM 1
NIC :5f:4c:e5
Tablet
Mouse
Keyboard
Display VNC
Serial 1
Channel (qemu-ga)
Video Virtio
Watchdog
Controller USB 0
Controller PCIe 0
Controller SATA 0
Controller VirtIO Serial 0
Controller VirtIO SCSI 0
RNG /dev/urandom
Add Hardware
Details
XML
Autostart
Start virtual machine on host boot up
Boot device order
Enable boot menu
VirtIO Disk 1
SATA CDROM 1
NIC :5f:4c:e5
Direct kernel boot
Cancel
Apply

Red Hat


bootstrap.aus.redhat.com on QEMU/KVM: armitage.aus.redhat.com
File
Virtual Machine
View
Send Key
Red Hat Enterprise Linux CoreOS 9.6.20251212-1 (Plow)
Kernel 5.14.0-570.74.1.el9_6.x86_64 on an x86_64
SSH host key: SHA256:7FuCrQTayQtlb5a6i5hW0IacKml2nlkHRZ6TpmFDhFM (ECDSA)
SSH host key: SHA256:jSxkQHov+SegO8v3C8LSOiCFE7fXNjCgiBVF5Txin5U (ED25519)
SSH host key: SHA256:39VDOxblFmnb2jdLTePC1sKoY2/3+Oavo/w+kjQAl0E (RSA)
enp7s0: 10.31.100.23 fe80::4ce6:8454:3416:a99
Ignition: ran on 2026/05/11 16:38:10 UTC (this boot)
Ignition: no config provided by user
bootstrap login: core (automatic login)
Welcome to the CoreOS live environment. This system is running completely
from memory, making it a good candidate for hardware discovery and
installing persistently to disk. Here is an example of running an install
to disk via coreos-installer:
sudo coreos-installer install /dev/sda \
--ignition-url https://example.com/example.ign
You may configure networking via 'sudo nmcli' or 'sudo nmtui' and have
that configuration persist into the installed system by passing the
'--copy-network' argument to 'coreos-installer install'. Please run
'coreos-installer install --help' for more information on the possible
install options.
[core@bootstrap ~]$ sudo coreos-installer install /dev/vda -I http://10.31.100.12/ocp-install/bootstrap.ign --insecure-ignition_

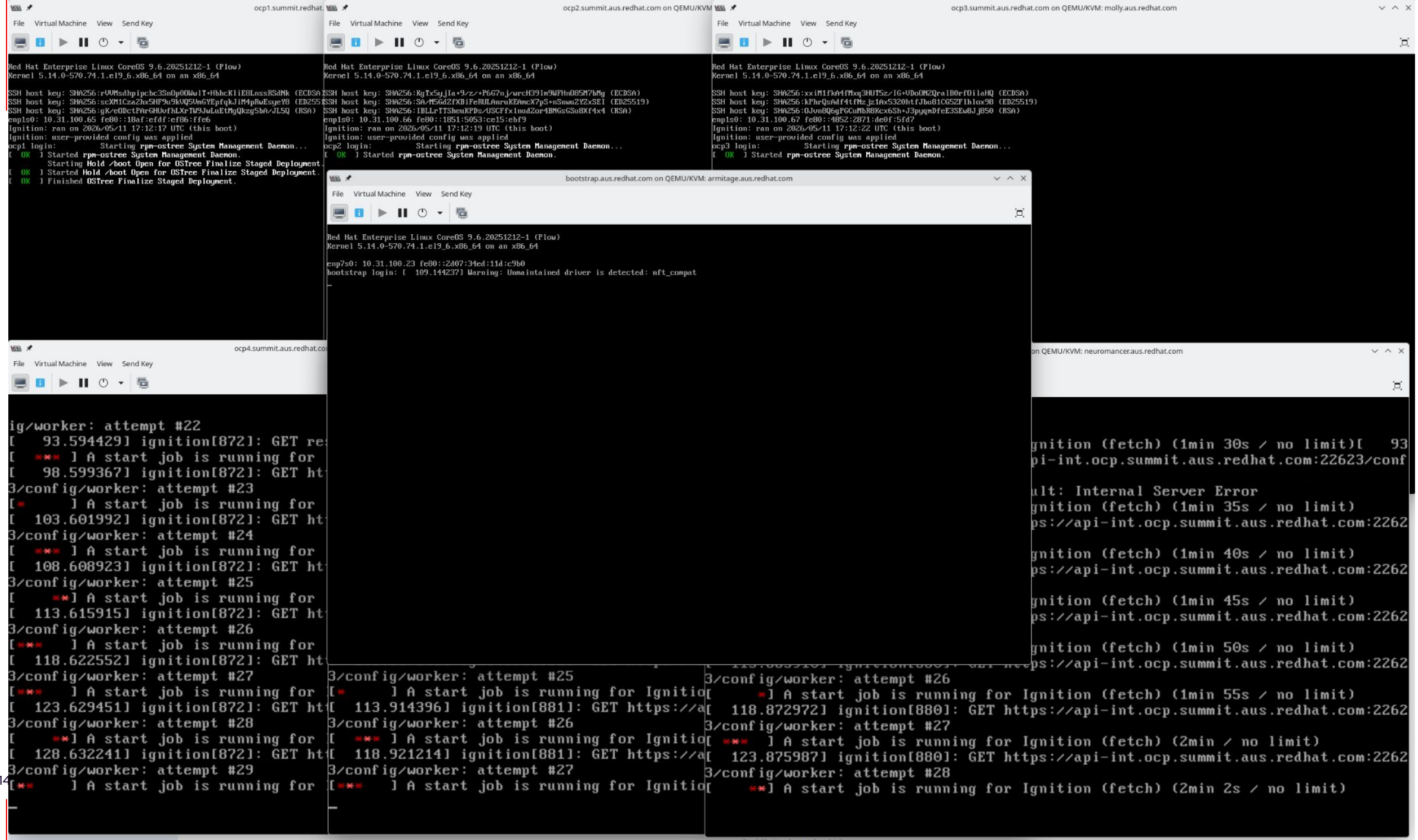
Red Hat


ocp1.summit.redhat
ocp2.summit.aus.redhat.com on QEMU/KVM
ocp3.summit.aus.redhat.com on QEMU/KVM: molly.aus.redhat.com
File Virtual Machine View Send Key
Red Hat Enterprise Linux CoreOS 9.6.20251212-1 (Plow)
Kernel 5.14.0-570.74.1.el9_6.x86_64 on an x86_64
SSH host key: SHA256:+Hm2bsVDyIl2ZTmxUMzOct+GiC/J71uttLM56LMx88s (ECDSA)
SSH host key: SHA256:Pbao9+KWIIq6Cb4vvhJLuWqaII6w4bw1YMTdphe3kbU (ED255
SSH host key: SHA256:KkkfmSKXP15kv1EH/8IuzgtRjZY88DQgJlr03zoca/E (RSA)
enp1s0: 10.31.100.65 fe80::1d76:5b2d:19d:7292
Ignition: ran on 2026/05/11 16:46:29 UTC (this boot)
Ignition: no config provided by user
ocp1 login: core (automatic login)
Welcome to the CoreOS live environment. This system is running complete
from memory, making it a good candidate for hardware discovery and
installing persistently to disk. Here is an example of running an insta
to disk via coreos-installer:
sudo coreos-installer install /dev/sda \
--ignition-url https://example.com/example.ign
You may configure networking via 'sudo nmcli' or 'sudo nmtui' and have
that configuration persist into the installed system by passing the
'--copy-network' argument to 'coreos-installer install'. Please run
'coreos-installer install --help' for more information on the possible
install options.
[core@ocp1 ~]$ sudo coreos-installer install /dev/vda -I http://10.31.10
SSH host key: SHA256:Lfk2uFACs2AtwEE2SpSynn1AxLsSEjM98W9s066seto (ECDSA)
SSH host key: SHA256:6vZDF1spHiWpTdmmMLSKhCOhcKtGSi8jP1fmZMW+2X8 (ED25519)
SSH host key: SHA256:Bt4uKzN3uafUDaAwlWGBPcsOVt9cRDnu9QR18HeS0aQ (RSA)
enp1s0: 10.31.100.66 fe80::f83e:70bc:1bf2:bd04
Ignition: ran on 2026/05/11 16:46:31 UTC (this boot)
Ignition: no config provided by user
ocp2 login: core (automatic login)
Welcome to the CoreOS live environment. This system is running completely
from memory, making it a good candidate for hardware discovery and
installing persistently to disk. Here is an example of running an install
to disk via coreos-installer:
sudo coreos-installer install /dev/sda \
--ignition-url https://example.com/example.ign
You may configure networking via 'sudo nmcli' or 'sudo nmtui' and have
that configuration persist into the installed system by passing the
'--copy-network' argument to 'coreos-installer install'. Please run
'coreos-installer install --help' for more information on the possible
install options.
[core@ocp2 ~]$ sudo coreos-installer install /dev/vda -I http://10.31.100.12/ocp-install
SSH host key: SHA256:5sOB2W/2Fmz7K/b5qn6VAG5nMsdIE5qU9oJYTVo2GpY (ECDSA)
SSH host key: SHA256:2iYxXT1owFCvZ2CiOhrOxU7HGIRDOlHZuBBKS5Jy+Cc (ED25519)
SSH host key: SHA256:8jtUA5QcnaS2WXTu/LrFl7uPBWOpkL6++yALVtoGpWA (RSA)
enp1s0: 10.31.100.67 fe80::4ed3:68dd:c5df:718f
Ignition: ran on 2026/05/11 16:48:08 UTC (this boot)
Ignition: no config provided by user
ocp3 login: core (automatic login)
Welcome to the CoreOS live environment. This system is running completely
from memory, making it a good candidate for hardware discovery and
installing persistently to disk. Here is an example of running an install
to disk via coreos-installer:
sudo coreos-installer install /dev/sda \
--ignition-url https://example.com/example.ign
You may configure networking via 'sudo nmcli' or 'sudo nmtui' and have
that configuration persist into the installed system by passing the
'--copy-network' argument to 'coreos-installer install'. Please run
'coreos-installer install --help' for more information on the possible
install options.
[core@ocp3 ~]$ sudo coreos-installer install /dev/vda -I http://10.31.100.12/ocp-install/master.ign --insecure-ignition
Welcome to the CoreOS live environment. This system is running completely
from memory, making it a good candidate for hardware discovery and
installing persistently to disk. Here is an example of running an install
to disk via coreos-installer:
sudo coreos-installer install /dev/sda \
--ignition-url https://example.com/example.ign
You may configure networking via 'sudo nmcli' or 'sudo nmtui' and have
that configuration persist into the installed system by passing the
'--copy-network' argument to 'coreos-installer install'. Please run
'coreos-installer install --help' for more information on the possible
install options.
[core@ocp4 ~]$ sudo coreos-installer install /dev/vda -I http://10.31.100
Welcome to the CoreOS live environment. This system is running completely
from memory, making it a good candidate for hardware discovery and
installing persistently to disk. Here is an example of running an install
to disk via coreos-installer:
sudo coreos-installer install /dev/sda \
--ignition-url https://example.com/example.ign
You may configure networking via 'sudo nmcli' or 'sudo nmtui' and have
that configuration persist into the installed system by passing the
'--copy-network' argument to 'coreos-installer install'. Please run
'coreos-installer install --help' for more information on the possible
install options.
[core@ocp5 ~]$ sudo coreos-installer install /dev/vda -I http://10.31.100.12/ocp-inst
Welcome to the CoreOS live environment. This system is running completely
from memory, making it a good candidate for hardware discovery and
installing persistently to disk. Here is an example of running an install
to disk via coreos-installer:
sudo coreos-installer install /dev/sda \
--ignition-url https://example.com/example.ign
You may configure networking via 'sudo nmcli' or 'sudo nmtui' and have
that configuration persist into the installed system by passing the
'--copy-network' argument to 'coreos-installer install'. Please run
'coreos-installer install --help' for more information on the possible
install options.
[core@ocp6 ~]$ sudo coreos-installer install /dev/vda -I http://10.31.100.12/ocp-install/worker.ign --insecure-ignition_

Reboot

Once the initial installation is done

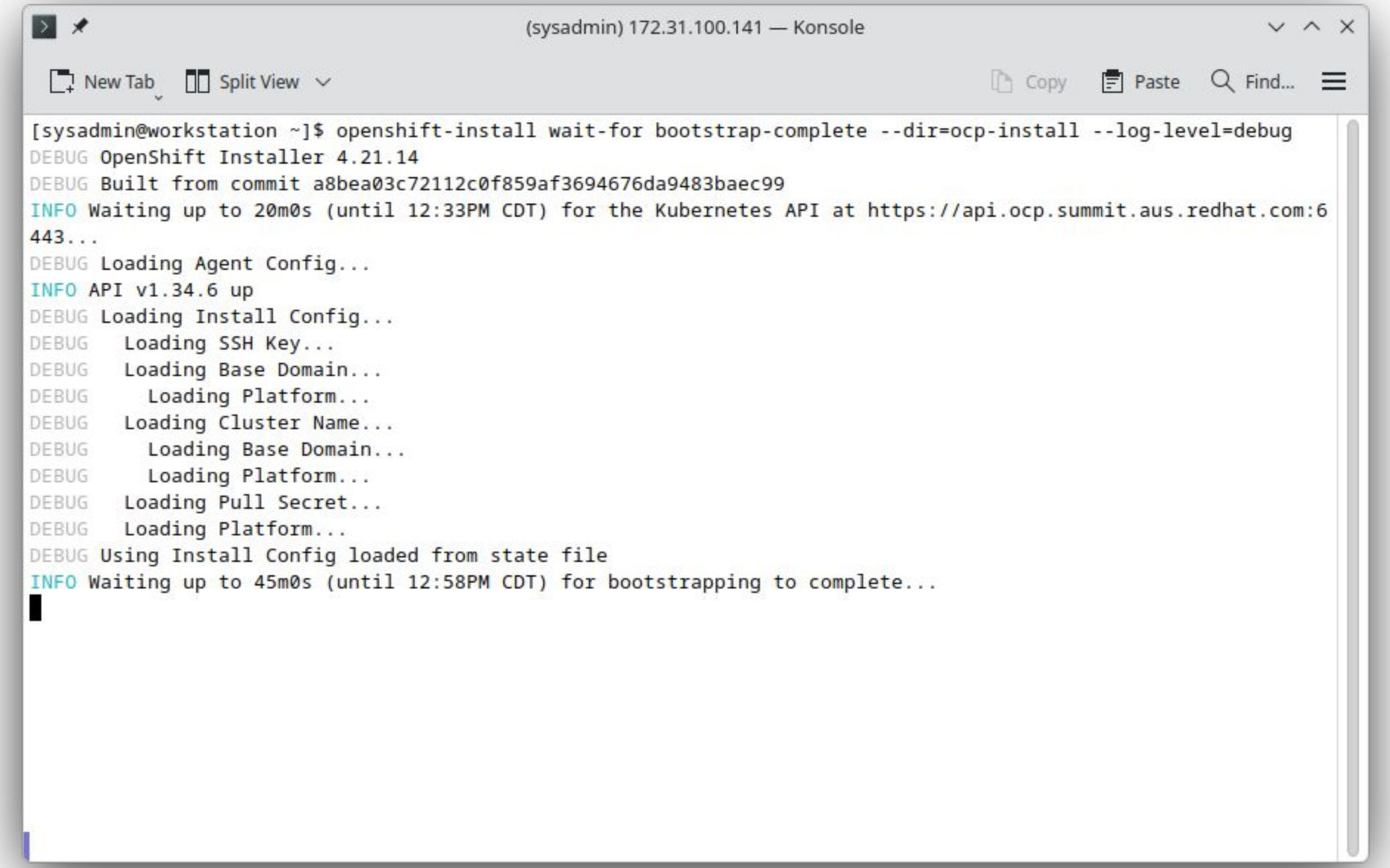
- Reboot the machines once they complete the **initial** installation


ocp1.summit.redhat.
File Virtual Machine View Send Key
Red Hat Enterprise Linux CoreOS 9.6.20251212-1 (Plow)
Kernel 5.14.0-570.74.1.el9_6.x86_64 on an x86_64
SSH host key: SHA256:rVVMsdhpipcbc3SnOp0OWwlT+HbhcKliE8LnssRSdMk (ECDSA
SSH host key: SHA256:scXM1CzaZhx5HF9u9kVQ5VmGYEpfqkJiM4pRwEsyeY8 (ED255
SSH host key: SHA256:gK/eODctPArGHUvfhLXrTW9JwLuEtMgQkzg5bA/JL5Q (RSA)
enp1s0: 10.31.100.65 fe80::18af:efdf:ef86:ffe6
Ignition: ran on 2026/05/11 17:12:17 UTC (this boot)
Ignition: user-provided config was applied
ocp1 login:
[OK] Started rpm-ostree System Management Daemon.
Starting Hold /boot Open for OSTree Finalize Staged Deployment.
[OK] Started Hold /boot Open for OSTree Finalize Staged Deployment.
[OK] Finished OSTree Finalize Staged Deployment.
ocp2.summit.aus.redhat.com on QEMU/KVM
File Virtual Machine View Send Key
Red Hat Enterprise Linux CoreOS 9.6.20251212-1 (Plow)
Kernel 5.14.0-570.74.1.el9_6.x86_64 on an x86_64
SSH host key: SHA256:KgTx5yjIa+9/z/+P6G7nj/urcH39Im9WFHnO85M7bMg (ECDSA)
SSH host key: SHA256:SA/M5Gd2fXBiFeRULAnruKEAmcX7pS+nSnwu2Y2xSEI (ED25519)
SSH host key: SHA256:IBLLrTTSheuKPDs/USCffxlnud2or4BMGsGSu8Xf4x4 (RSA)
enp1s0: 10.31.100.66 fe80::1851:5053:ce15:ebf9
Ignition: ran on 2026/05/11 17:12:19 UTC (this boot)
Ignition: user-provided config was applied
ocp2 login:
[OK] Started rpm-ostree System Management Daemon.
ocp3.summit.aus.redhat.com on QEMU/KVM: molly.aus.redhat.com
File Virtual Machine View Send Key
Red Hat Enterprise Linux CoreOS 9.6.20251212-1 (Plow)
Kernel 5.14.0-570.74.1.el9_6.x86_64 on an x86_64
SSH host key: SHA256:xxiM1fkA4fMxq3HUT5z/1G+VDoOM2QralBOrfOilaHQ (ECDSA)
SSH host key: SHA256:kPhrQsAdf4tfMzjz1Ax5320htfJbu81CG5ZFlhlox98 (ED25519)
SSH host key: SHA256:OJvn8Q6gPGCuMbR8Kcx6Sh+J3pyqmDfeE3SEw8Jj850 (RSA)
enp1s0: 10.31.100.67 fe80::4852:2871:de0f:5fd7
Ignition: ran on 2026/05/11 17:12:22 UTC (this boot)
Ignition: user-provided config was applied
ocp3 login:
[OK] Started rpm-ostree System Management Daemon.
bootstrap.aus.redhat.com on QEMU/KVM: armitage.aus.redhat.com
File Virtual Machine View Send Key
Red Hat Enterprise Linux CoreOS 9.6.20251212-1 (Plow)
Kernel 5.14.0-570.74.1.el9_6.x86_64 on an x86_64
enp7s0: 10.31.100.23 fe80::2d07:34ed:11d:c9b0
bootstrap login: [109.144237] Warning: Unmaintained driver is detected: nft_compat
ocp4.summit.aus.redhat.co
File Virtual Machine View Send Key
ig/worker: attempt #22
[93.594429] ignition[872]: GET re
[***] A start job is running for
[98.599367] ignition[872]: GET ht
3/config/worker: attempt #23
[*] A start job is running for
[103.601992] ignition[872]: GET ht
3/config/worker: attempt #24
[***] A start job is running for
[108.608923] ignition[872]: GET ht
3/config/worker: attempt #25
[**] A start job is running for
[113.615915] ignition[872]: GET ht
3/config/worker: attempt #26
[***] A start job is running for
[118.622552] ignition[872]: GET ht
3/config/worker: attempt #27
[***] A start job is running for
[123.629451] ignition[872]: GET ht
3/config/worker: attempt #28
[**] A start job is running for
[128.632241] ignition[872]: GET ht
3/config/worker: attempt #29
[**] A start job is running for
3/config/worker: attempt #25
[*] A start job is running for Ignitio
[113.914396] ignition[881]: GET https://a
3/config/worker: attempt #26
[***] A start job is running for Ignitio
[118.921214] ignition[881]: GET https://a
3/config/worker: attempt #27
[***] A start job is running for Ignitio
on QEMU/KVM: neuromancer.aus.redhat.com
gnition (fetch) (1min 30s / no limit)[93
pi-int.ocp.summit.aus.redhat.com:22623/conf
ult: Internal Server Error
gnition (fetch) (1min 35s / no limit)
ps://api-int.ocp.summit.aus.redhat.com:2262
gnition (fetch) (1min 40s / no limit)
ps://api-int.ocp.summit.aus.redhat.com:2262
gnition (fetch) (1min 45s / no limit)
ps://api-int.ocp.summit.aus.redhat.com:2262
gnition (fetch) (1min 50s / no limit)
ps://api-int.ocp.summit.aus.redhat.com:2262
3/config/worker: attempt #26
[**] A start job is running for Ignition (fetch) (1min 55s / no limit)
[118.872972] ignition[880]: GET https://api-int.ocp.summit.aus.redhat.com:2262
3/config/worker: attempt #27
[***] A start job is running for Ignition (fetch) (2min / no limit)
[123.875987] ignition[880]: GET https://api-int.ocp.summit.aus.redhat.com:2262
3/config/worker: attempt #28
[**] A start job is running for Ignition (fetch) (2min 2s / no limit)
Gemini is AI and can make mistakes.

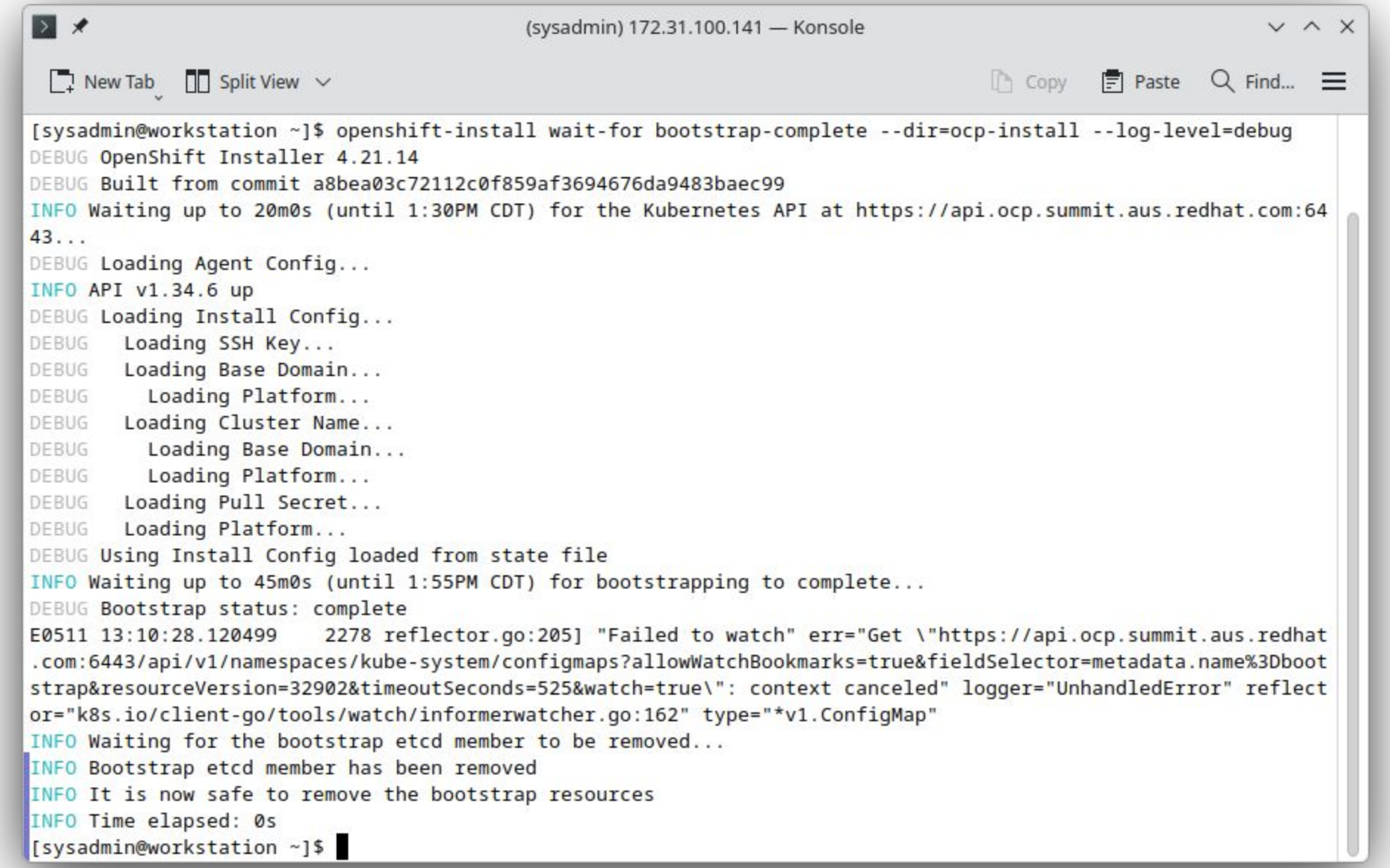
Watch the bootstrap

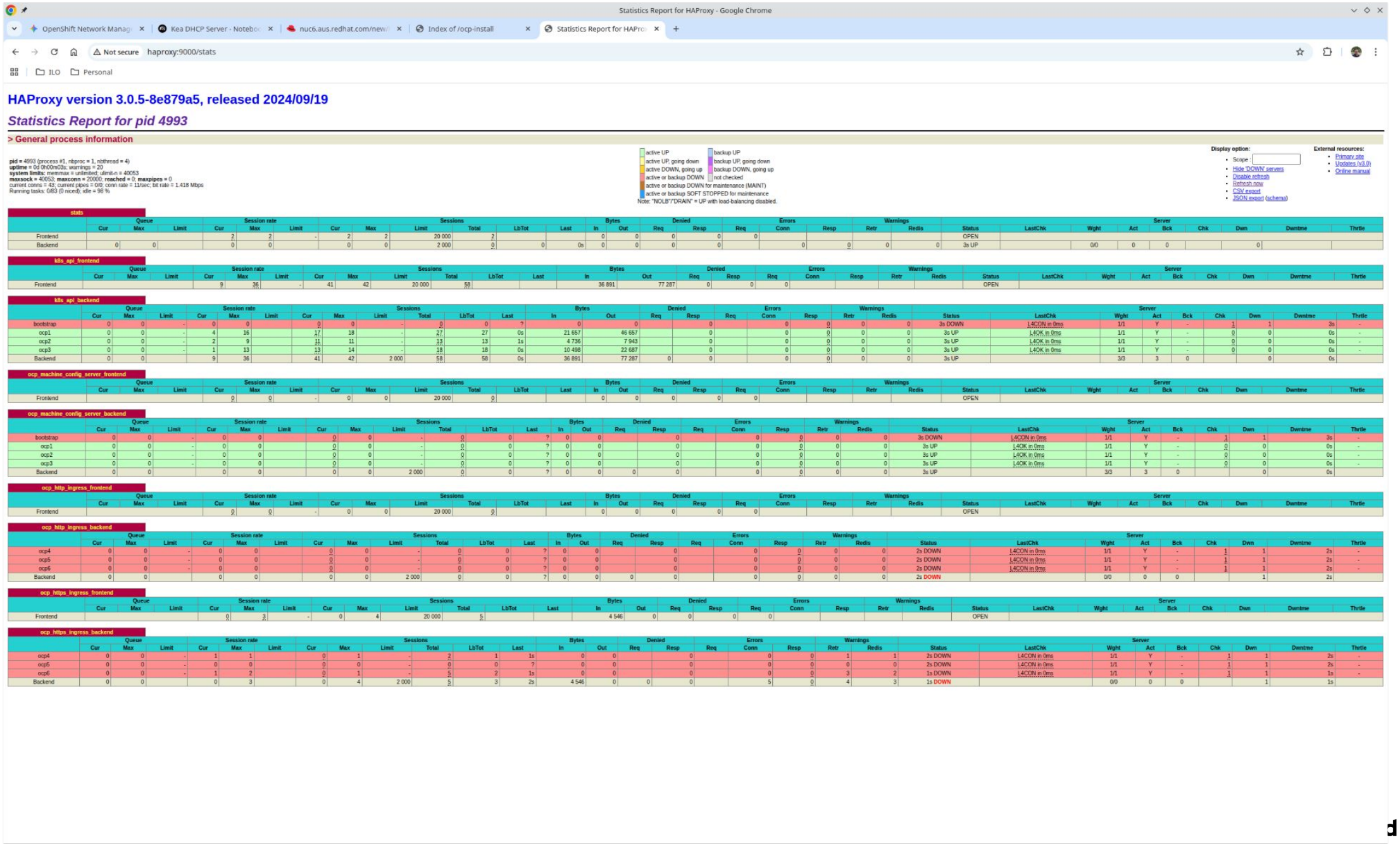
Run this command on your workstation

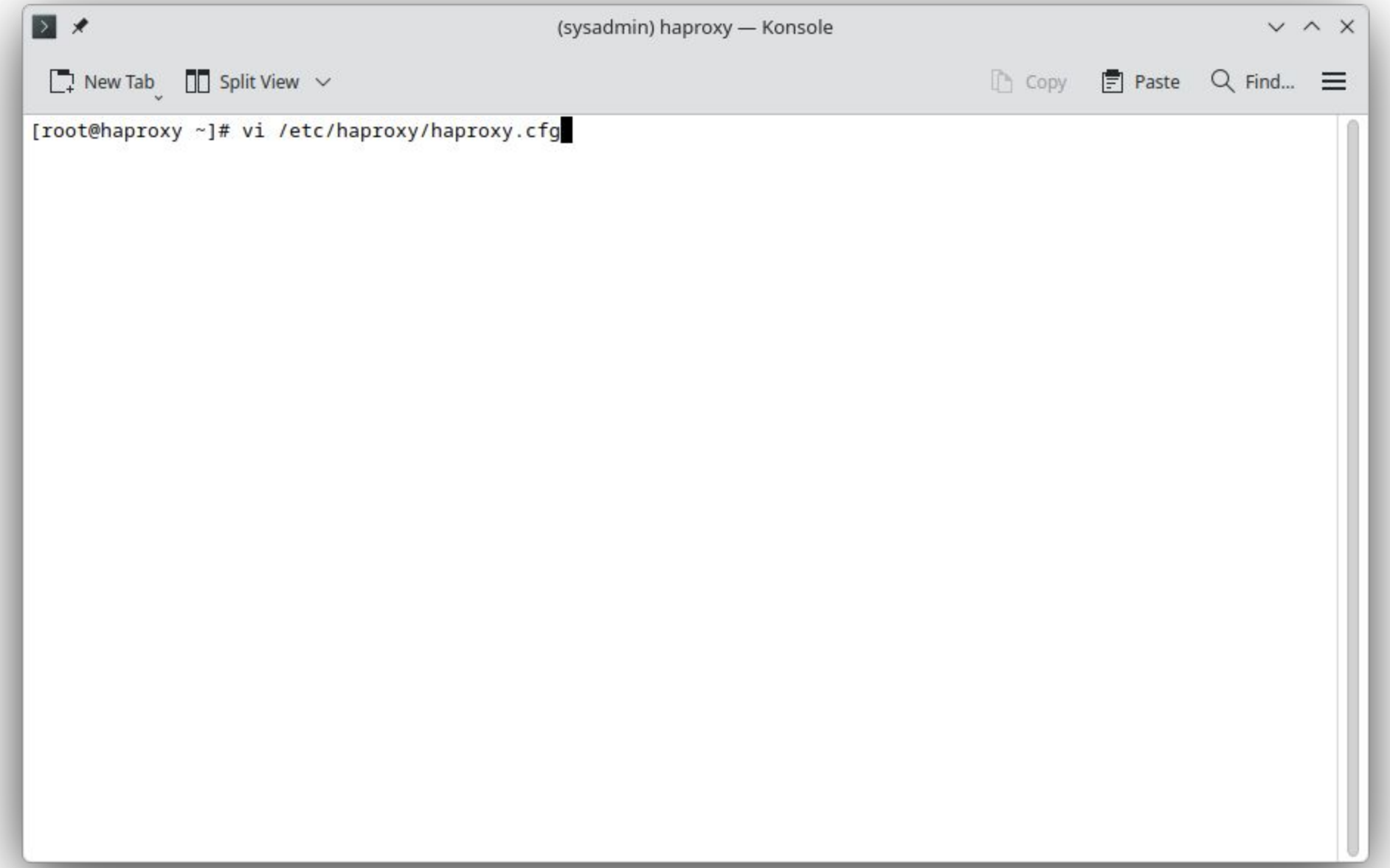
- `openshift-install wait-for bootstrap-complete --dir=ocp-install --log-level=debug`
- You'll want to take a break for this!


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ openshift-install wait-for bootstrap-complete --dir=ocp-install --log-level=debug
DEBUG OpenShift Installer 4.21.14
DEBUG Built from commit a8bea03c72112c0f859af3694676da9483baec99
INFO Waiting up to 20m0s (until 12:33PM CDT) for the Kubernetes API at https://api.ocp.summit.aus.redhat.com:6
443...
DEBUG Loading Agent Config...
INFO API v1.34.6 up
DEBUG Loading Install Config...
DEBUG Loading SSH Key...
DEBUG Loading Base Domain...
DEBUG Loading Platform...
DEBUG Loading Cluster Name...
DEBUG Loading Base Domain...
DEBUG Loading Platform...
DEBUG Loading Pull Secret...
DEBUG Loading Platform...
DEBUG Using Install Config loaded from state file
INFO Waiting up to 45m0s (until 12:58PM CDT) for bootstrapping to complete...

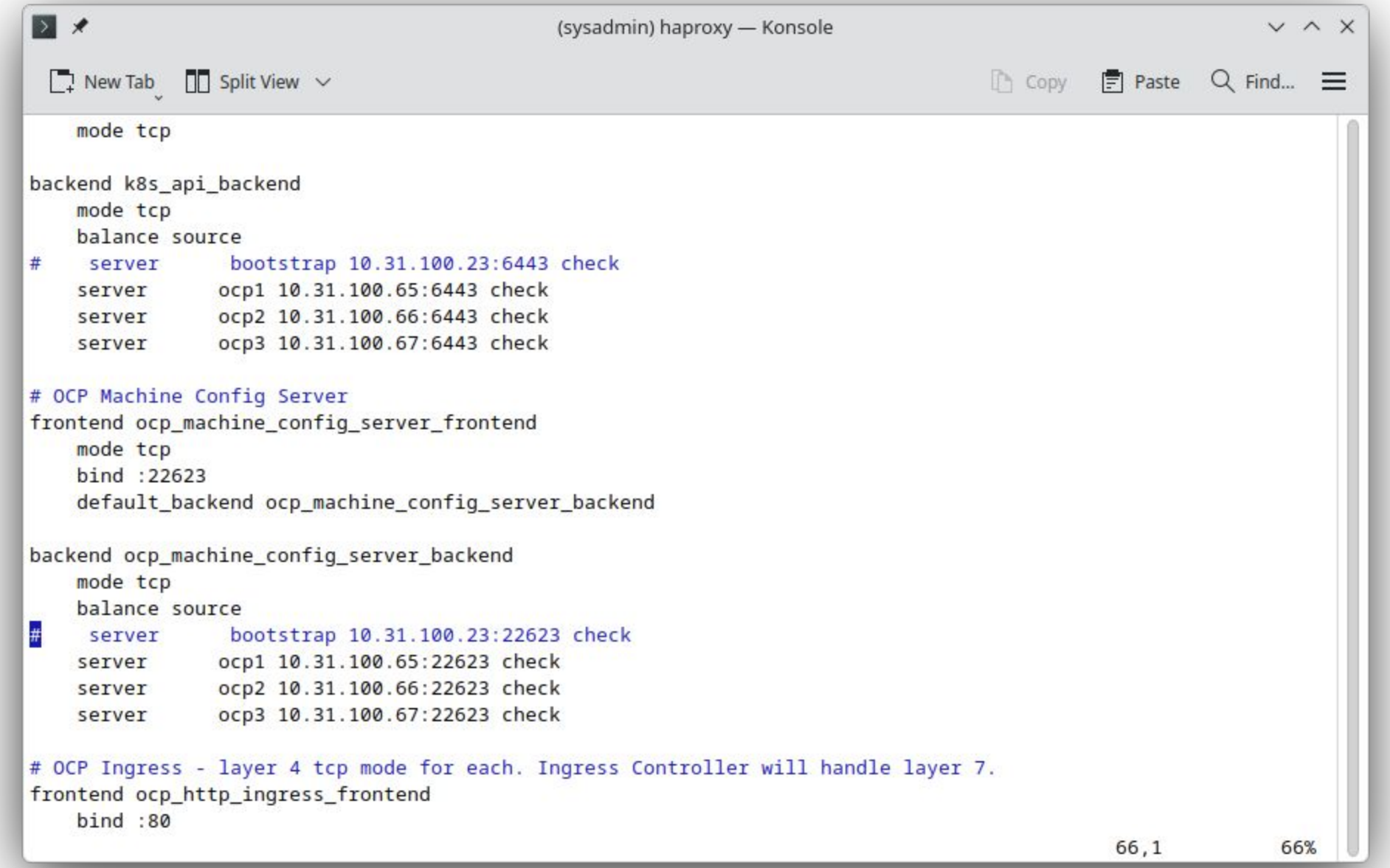
Red Hat


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ openshift-install wait-for bootstrap-complete --dir=ocp-install --log-level=debug
DEBUG OpenShift Installer 4.21.14
DEBUG Built from commit a8bea03c72112c0f859af3694676da9483baec99
INFO Waiting up to 20m0s (until 1:30PM CDT) for the Kubernetes API at https://api.ocp.summit.aus.redhat.com:6443...
DEBUG Loading Agent Config...
INFO API v1.34.6 up
DEBUG Loading Install Config...
DEBUG Loading SSH Key...
DEBUG Loading Base Domain...
DEBUG Loading Platform...
DEBUG Loading Cluster Name...
DEBUG Loading Base Domain...
DEBUG Loading Platform...
DEBUG Loading Pull Secret...
DEBUG Loading Platform...
DEBUG Using Install Config loaded from state file
INFO Waiting up to 45m0s (until 1:55PM CDT) for bootstrapping to complete...
DEBUG Bootstrap status: complete
E0511 13:10:28.120499 2278 reflector.go:205] "Failed to watch" err="Get \"https://api.ocp.summit.aus.redhat.com:6443/api/v1/namespaces/kube-system/configmaps?allowWatchBookmarks=true&fieldSelector=metadata.name%3Dbootstrap&resourceVersion=32902&timeoutSeconds=525&watch=true\": context canceled" logger="UnhandledError" reflector="k8s.io/client-go/tools/watch/informerwatcher.go:162" type="*v1.ConfigMap"
INFO Waiting for the bootstrap etcd member to be removed...
INFO Bootstrap etcd member has been removed
INFO It is now safe to remove the bootstrap resources
INFO Time elapsed: 0s
[sysadmin@workstation ~]$

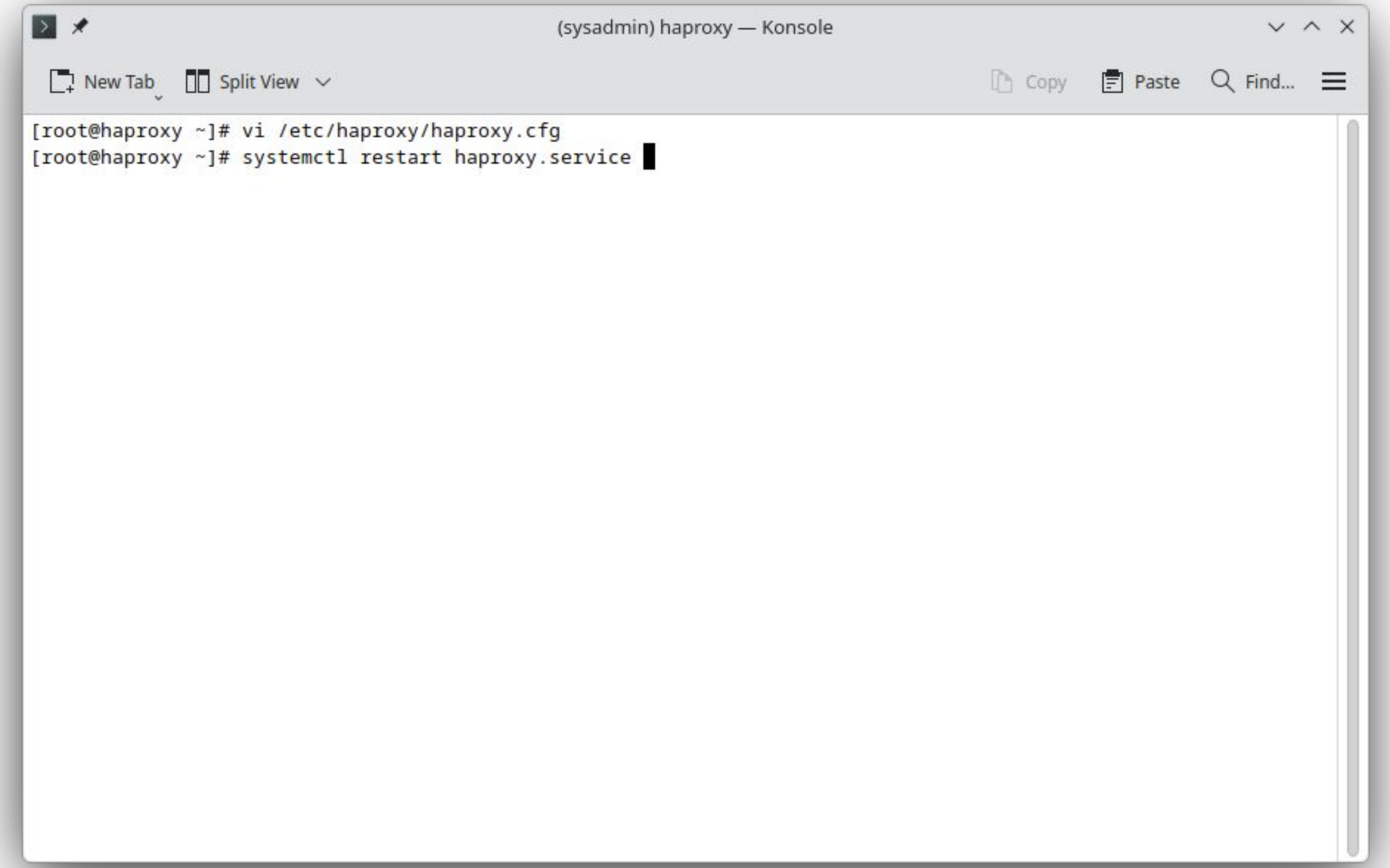

Statistics Report for HAProxy - Google Chrome
OpenShift Network Manag
Kea DHCP Server - Noteboo
nuc6.aus.redhat.com/new/
Index of /ocp-install
Statistics Report for HAPro
Not secure
haproxy:9000/stats
ILO
Personal
HAProxy version 3.0.5-8e879a5, released 2024/09/19
Statistics Report for pid 4993
> General process information
pid = 4993 (process #1, nbproc = 1, nbthread = 4)
uptime = 0d 0h00m03s; warnings = 20
system limits: memmax = unlimited; ulimit-n = 40053
maxsock = 40053; maxconn = 20000; reached = 0; maxpipes = 0
current conns = 43; current pipes = 0/0; conn rate = 11/sec; bit rate = 1.418 Mbps
Running tasks: 0/83 (0 niced); idle = 98 %
active UP
active UP, going down
active DOWN, going up
active or backup DOWN
active or backup DOWN for maintenance (MAINT)
active or backup SOFT STOPPED for maintenance
backup UP
backup UP, going down
backup DOWN, going up
not checked
Note: "NOLB"/"DRAIN" = UP with load-balancing disabled.
Display option:
Scope :
Hide 'DOWN' servers
Disable refresh
Refresh now
CSV export
JSON export (schema)
External resources:
Primary site
Updates (v3.0)
Online manual
stats
kils_api_frontend
kils_api_backend
ocp_machine_config_server_frontend
ocp_machine_config_server_backend
ocp_http_ingress_frontend
ocp_http_ingress_backend
ocp_https_ingress_frontend
ocp_https_ingress_backend


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# vi /etc/haproxy/haproxy.cfg

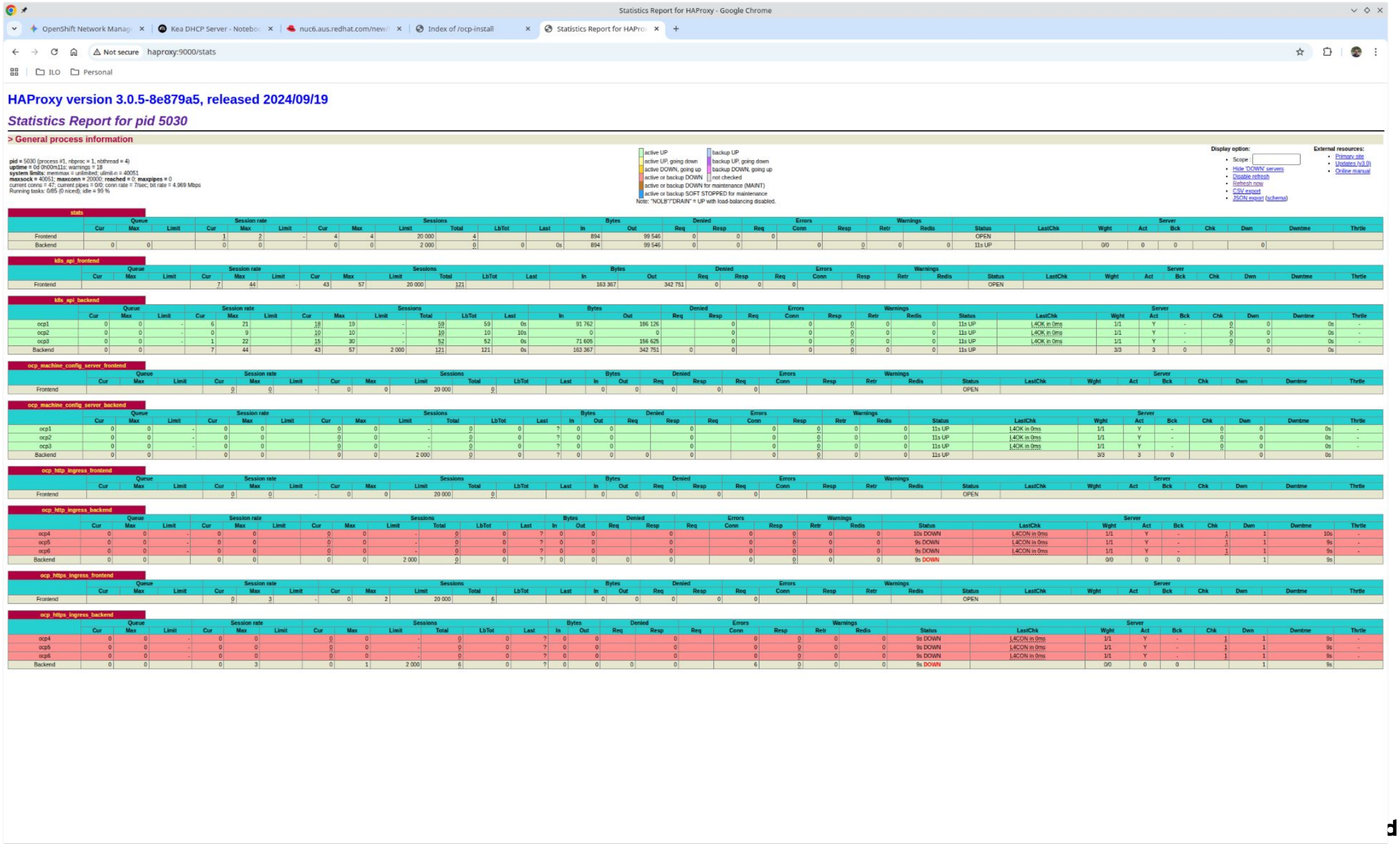
Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
mode tcp
backend k8s_api_backend
mode tcp
balance source
server bootstrap 10.31.100.23:6443 check
server ocp1 10.31.100.65:6443 check
server ocp2 10.31.100.66:6443 check
server ocp3 10.31.100.67:6443 check
OCP Machine Config Server
frontend ocp_machine_config_server_frontend
mode tcp
bind :22623
default_backend ocp_machine_config_server_backend
backend ocp_machine_config_server_backend
mode tcp
balance source
server bootstrap 10.31.100.23:22623 check
server ocp1 10.31.100.65:22623 check
server ocp2 10.31.100.66:22623 check
server ocp3 10.31.100.67:22623 check
OCP Ingress - layer 4 tcp mode for each. Ingress Controller will handle layer 7.
frontend ocp_http_ingress_frontend
bind :80
66,1 66%

Red Hat


(sysadmin) haproxy — Konsole
New Tab
Split View
Copy
Paste
Find...
[root@haproxy ~]# vi /etc/haproxy/haproxy.cfg
[root@haproxy ~]# systemctl restart haproxy.service

Red Hat

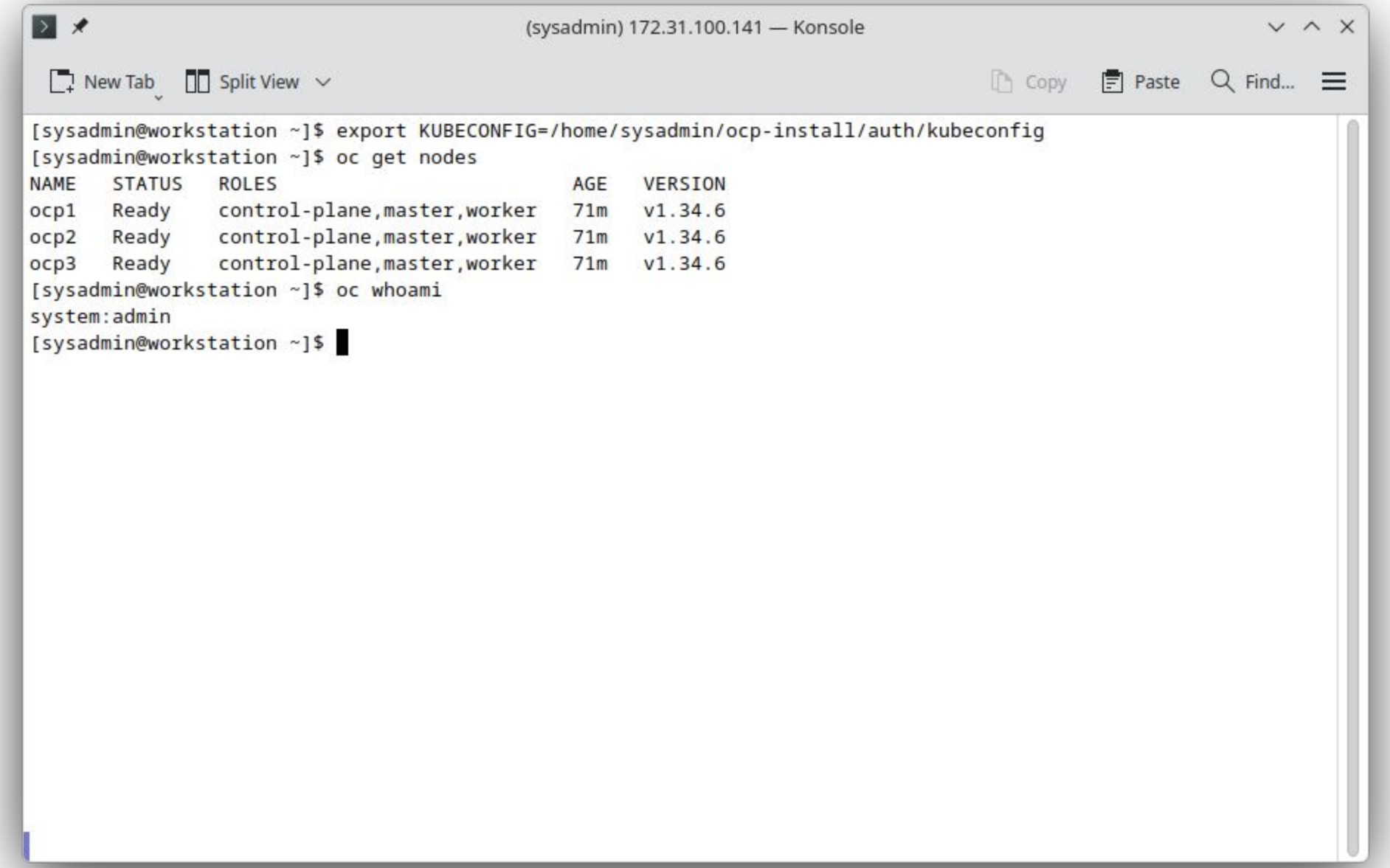

Statistics Report for HAProxy - Google Chrome
Not secure haproxy:9000/stats
HAProxy version 3.0.5-8e879a5, released 2024/09/19
Statistics Report for pid 5030
> General process information
pid = 5030 (process #1, nbproc = 1, nbthread = 4)
uptime = 0d 0h00m11s; warnings = 18
system limits: memmax = unlimited; ulimit-n = 40051
maxsock = 40051; maxconn = 20000; reached = 0; maxpipes = 0
current conns = 47; current pipes = 0/0; conn rate = 7/sec; bit rate = 4.969 Mbps
Running tasks: 0/85 (0 niced); idle = 99 %
active UP
active UP, going down
active DOWN, going up
active or backup DOWN
active or backup DOWN for maintenance (MAINT)
active or backup SOFT STOPPED for maintenance
backup UP
backup UP, going down
backup DOWN, going up
not checked
Note: "NOLB"/"DRAIN" = UP with load-balancing disabled.
Display option:
Scope :
Hide 'DOWN' servers
Disable refresh
Refresh now
CSV export
JSON export (schema)
External resources:
Primary site
Updates (v3.0)
Online manual
stats
kls_api_frontend
kls_api_backend
ocp_machine_config_server_frontend
ocp_machine_config_server_backend
ocp_http_ingress_frontend
ocp_http_ingress_backend
ocp_https_ingress_frontend
ocp_https_ingress_backend

Post Install

Set Up Access

To talk to the cluster, set your KUBECONFIG variable

- `export KUBECONFIG=/home/sysadmin/ocp-install/auth/kubeconfig`
- Then make sure you can “see” the cluster


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ export KUBECONFIG=/home/sysadmin/ocp-install/auth/kubeconfig
[sysadmin@workstation ~]$ oc get nodes
NAME STATUS ROLES AGE VERSION
ocp1 Ready control-plane,master,worker 71m v1.34.6
ocp2 Ready control-plane,master,worker 71m v1.34.6
ocp3 Ready control-plane,master,worker 71m v1.34.6
[sysadmin@workstation ~]$ oc whoami
system:admin
[sysadmin@workstation ~]$

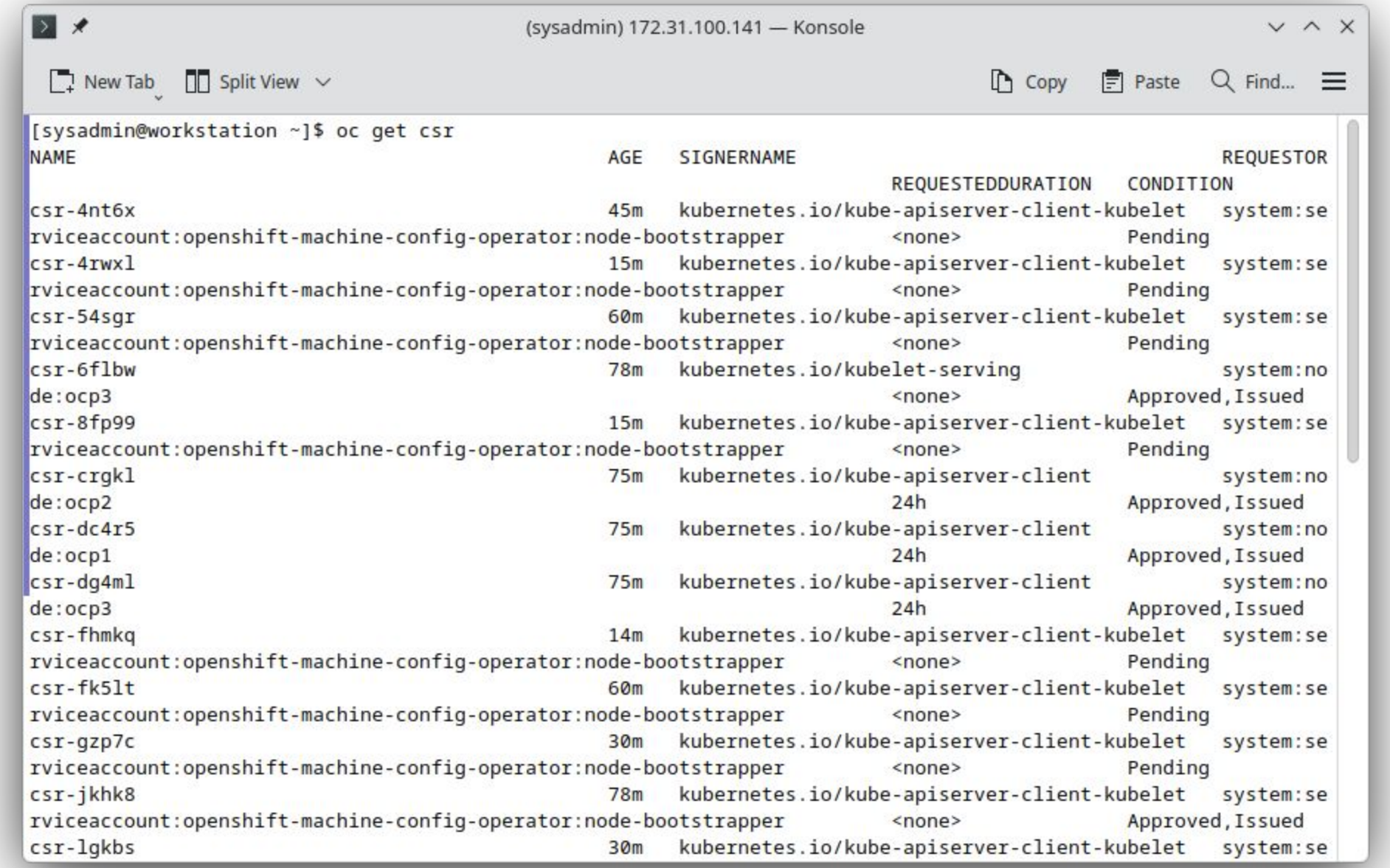
Red Hat

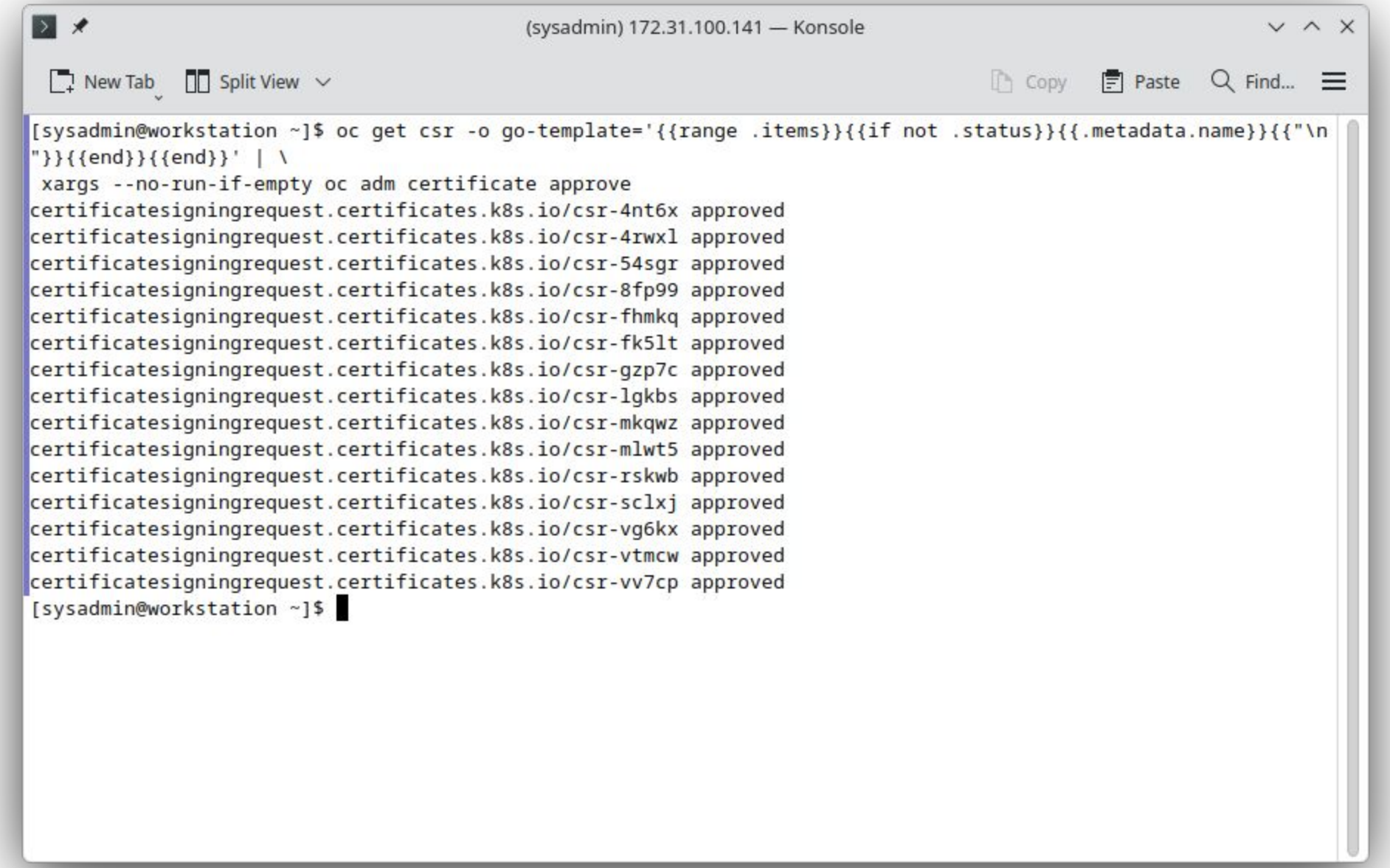
Approve All The Certificate Signing Requests

As the cluster comes up, it creates a ton of self signed certificates

- So a human needs to approve the requests
- We'll be pretty ham-handed and approve all of them

```
oc get csr -o go-template='{{range .items}}{{if not .status}}{{.metadata.name}}{{"\n"}}{{end}}{{end}}' | \
 xargs --no-run-if-empty oc adm certificate approve
```

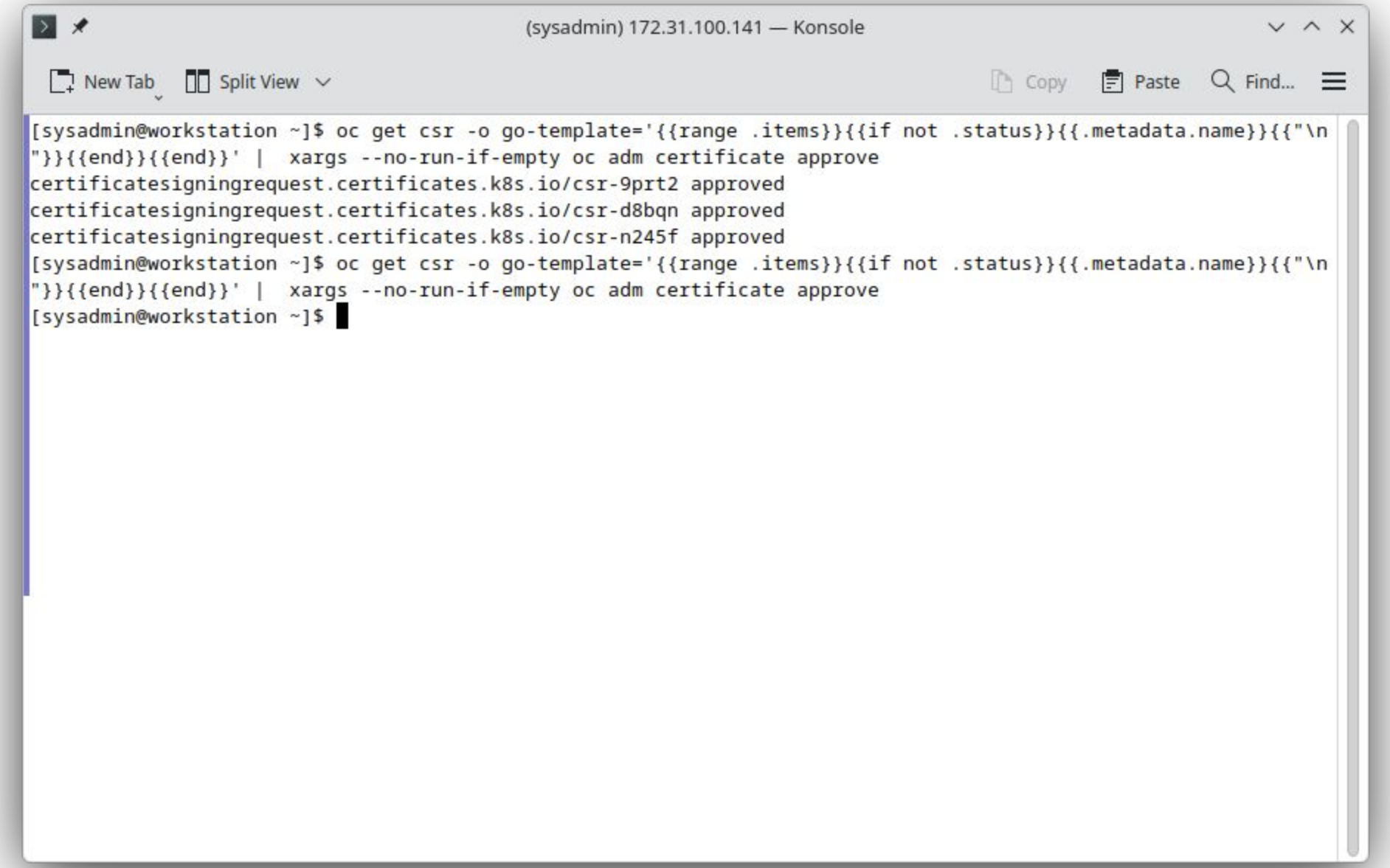

(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ oc get csr
NAME AGE SIGNERNAME REQUESTOR
REQUESTEDDURATION CONDITION
csr-4nt6x 45m kubernetes.io/kube-apiserver-client-kubelet system:se
rviceaccount:openshift-machine-config-operator:node-bootstrapper <none> Pending
csr-4rwxl 15m kubernetes.io/kube-apiserver-client-kubelet system:se
rviceaccount:openshift-machine-config-operator:node-bootstrapper <none> Pending
csr-54sgr 60m kubernetes.io/kube-apiserver-client-kubelet system:se
rviceaccount:openshift-machine-config-operator:node-bootstrapper <none> Pending
csr-6flbw 78m kubernetes.io/kubelet-serving system:no
de:ocp3 <none> Approved,Issued
csr-8fp99 15m kubernetes.io/kube-apiserver-client-kubelet system:se
rviceaccount:openshift-machine-config-operator:node-bootstrapper <none> Pending
csr-crgkl 75m kubernetes.io/kube-apiserver-client system:no
de:ocp2 24h Approved,Issued
csr-dc4r5 75m kubernetes.io/kube-apiserver-client system:no
de:ocp1 24h Approved,Issued
csr-dg4ml 75m kubernetes.io/kube-apiserver-client system:no
de:ocp3 24h Approved,Issued
csr-fhmkq 14m kubernetes.io/kube-apiserver-client-kubelet system:se
rviceaccount:openshift-machine-config-operator:node-bootstrapper <none> Pending
csr-fk5lt 60m kubernetes.io/kube-apiserver-client-kubelet system:se
rviceaccount:openshift-machine-config-operator:node-bootstrapper <none> Pending
csr-gzp7c 30m kubernetes.io/kube-apiserver-client-kubelet system:se
rviceaccount:openshift-machine-config-operator:node-bootstrapper <none> Pending
csr-jkhk8 78m kubernetes.io/kube-apiserver-client-kubelet system:se
rviceaccount:openshift-machine-config-operator:node-bootstrapper <none> Approved,Issued
csr-lgkbs 30m kubernetes.io/kube-apiserver-client-kubelet system:se

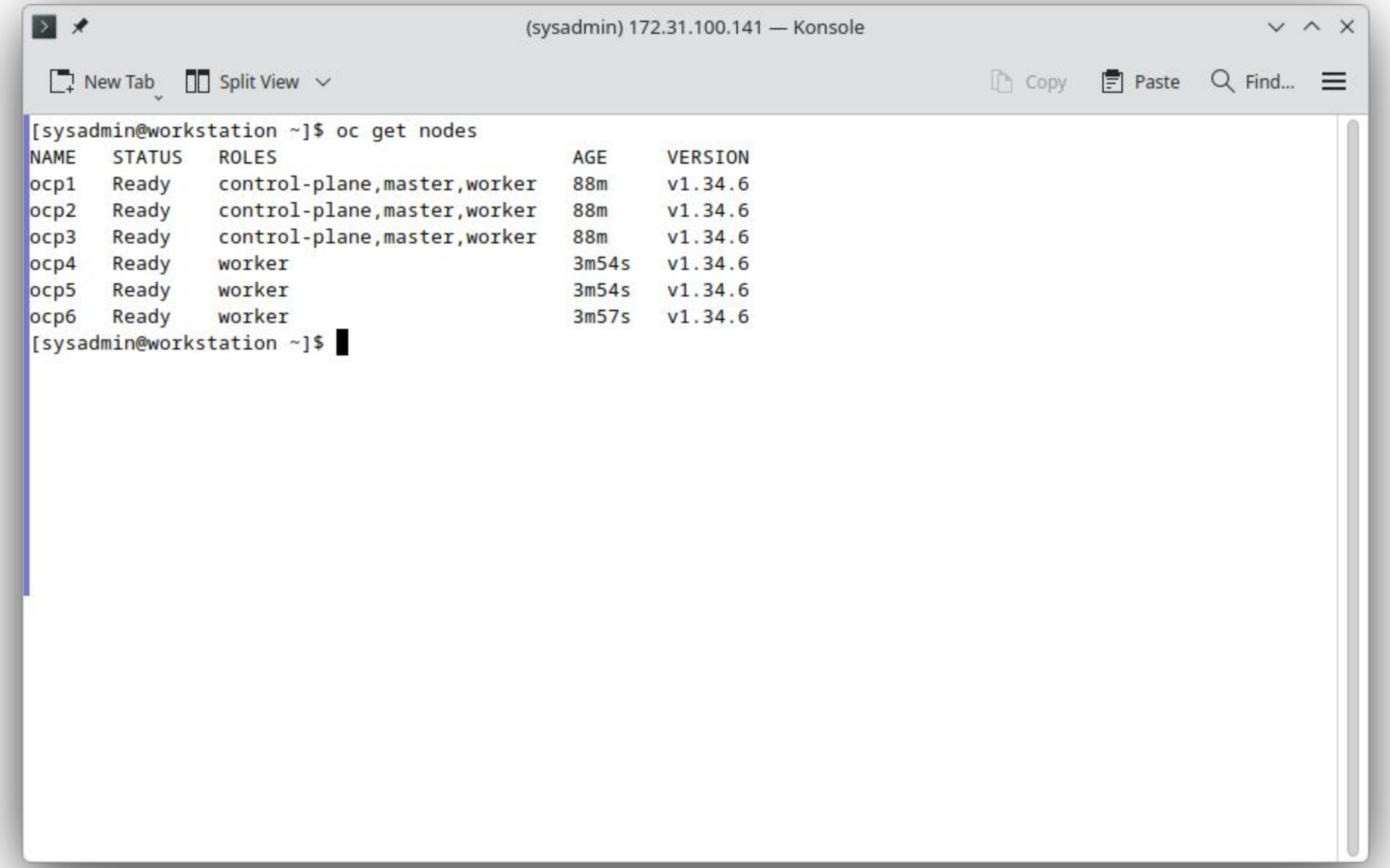

(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ oc get csr -o go-template='{{range .items}}{{if not .status}}{{.metadata.name}}{{"\n
"}}{{end}}{{end}}' | \
xargs --no-run-if-empty oc adm certificate approve
certificatesigningrequest.certificates.k8s.io/csr-4nt6x approved
certificatesigningrequest.certificates.k8s.io/csr-4rwxl approved
certificatesigningrequest.certificates.k8s.io/csr-54sgr approved
certificatesigningrequest.certificates.k8s.io/csr-8fp99 approved
certificatesigningrequest.certificates.k8s.io/csr-fhmkq approved
certificatesigningrequest.certificates.k8s.io/csr-fk5lt approved
certificatesigningrequest.certificates.k8s.io/csr-gzp7c approved
certificatesigningrequest.certificates.k8s.io/csr-lgkbs approved
certificatesigningrequest.certificates.k8s.io/csr-mkqwz approved
certificatesigningrequest.certificates.k8s.io/csr-mlwt5 approved
certificatesigningrequest.certificates.k8s.io/csr-rskwb approved
certificatesigningrequest.certificates.k8s.io/csr-sclxj approved
certificatesigningrequest.certificates.k8s.io/csr-vg6kx approved
certificatesigningrequest.certificates.k8s.io/csr-vtmcw approved
certificatesigningrequest.certificates.k8s.io/csr-vv7cp approved
[sysadmin@workstation ~]$

Approve All The Certificate Signing Requests

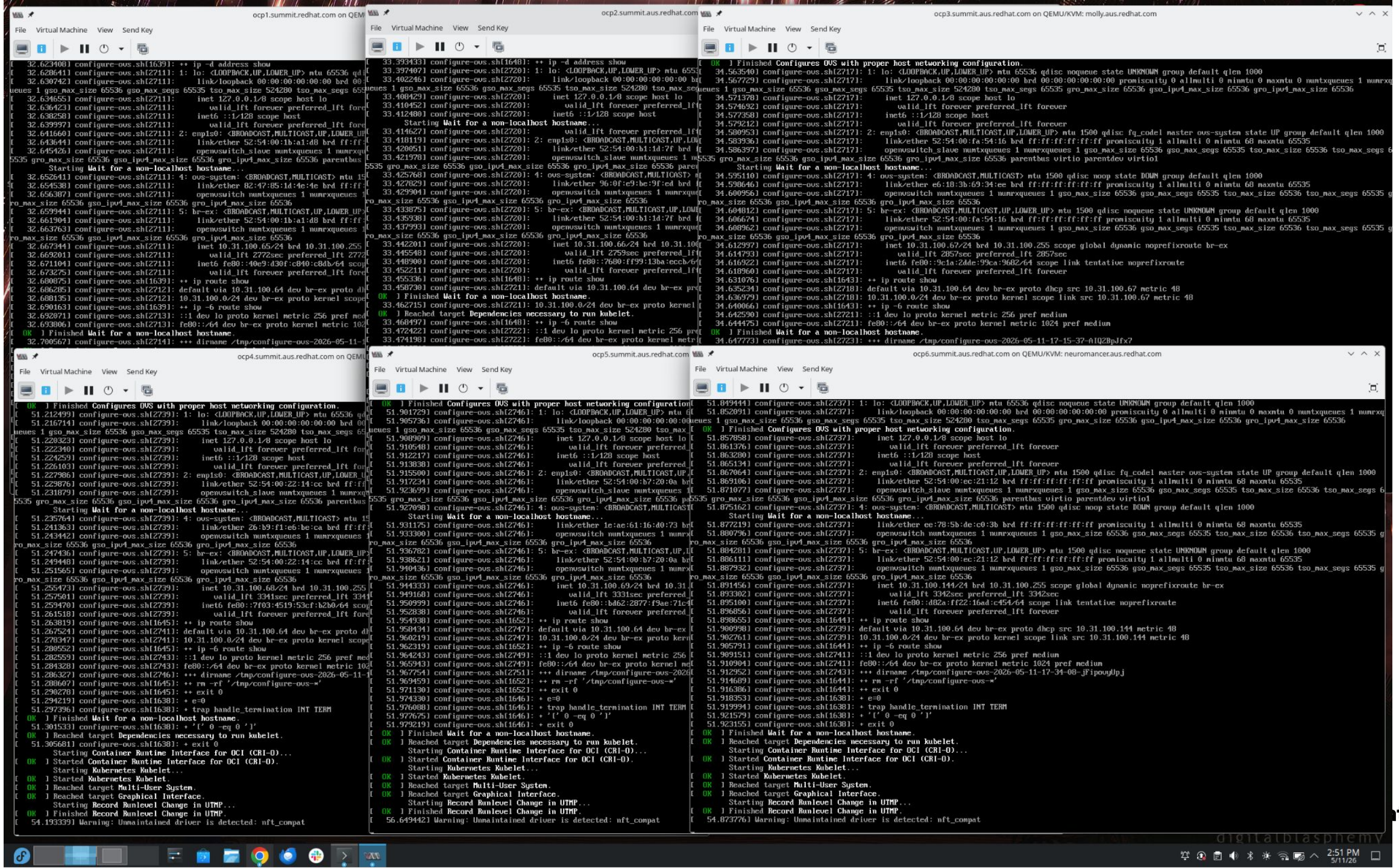
As the cluster comes up, it creates a ton of self signed certificates

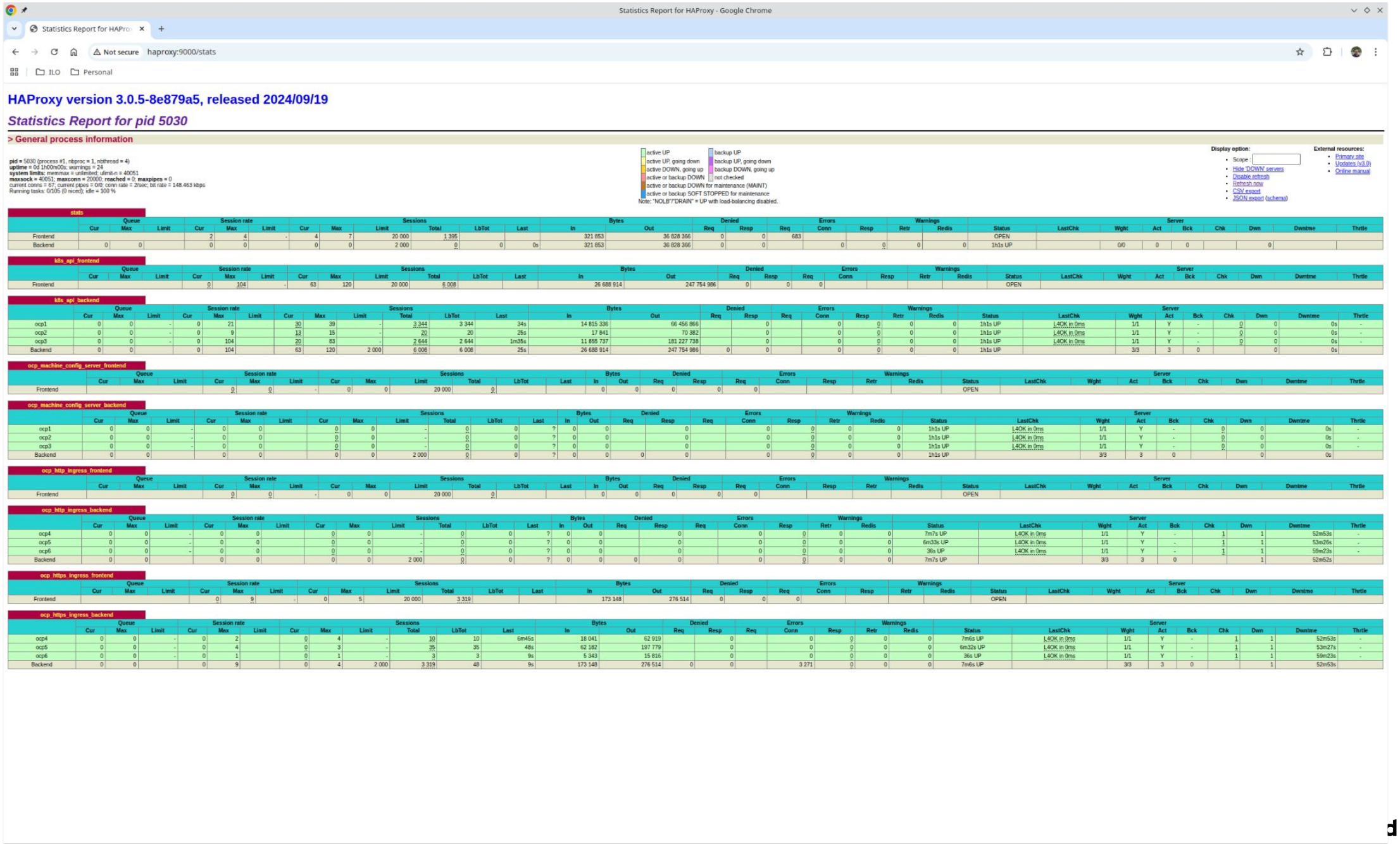
- Do this until all are approved


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ oc get csr -o go-template='{{range .items}}{{if not .status}}{{.metadata.name}}{{"\n
"}}{{end}}{{end}}' | xargs --no-run-if-empty oc adm certificate approve
certificatesigningrequest.certificates.k8s.io/csr-9prt2 approved
certificatesigningrequest.certificates.k8s.io/csr-d8bqn approved
certificatesigningrequest.certificates.k8s.io/csr-n245f approved
[sysadmin@workstation ~]$ oc get csr -o go-template='{{range .items}}{{if not .status}}{{.metadata.name}}{{"\n
"}}{{end}}{{end}}' | xargs --no-run-if-empty oc adm certificate approve
[sysadmin@workstation ~]$


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ oc get nodes
NAME STATUS ROLES AGE VERSION
ocp1 Ready control-plane,master,worker 88m v1.34.6
ocp2 Ready control-plane,master,worker 88m v1.34.6
ocp3 Ready control-plane,master,worker 88m v1.34.6
ocp4 Ready worker 3m54s v1.34.6
ocp5 Ready worker 3m54s v1.34.6
ocp6 Ready worker 3m57s v1.34.6
[sysadmin@workstation ~]$

Red Hat


ocp1.summit.redhat.com on QEMU
ocp2.summit.aus.redhat.com
ocp3.summit.aus.redhat.com on QEMU/KVM: molly.aus.redhat.com
ocp4.summit.aus.redhat.com on QEMU
ocp5.summit.aus.redhat.com
ocp6.summit.aus.redhat.com on QEMU/KVM: neuromancer.aus.redhat.com
File Virtual Machine View Send Key
[OK] Finished Configures OVS with proper host networking configuration.
Starting Wait for a non-localhost hostname...
[OK] Finished Wait for a non-localhost hostname.
[OK] Reached target Dependencies necessary to run kubelet.
Starting Container Runtime Interface for OCI (CRI-O)...
[OK] Started Container Runtime Interface for OCI (CRI-O).
Starting Kubernetes Kubelet...
[OK] Started Kubernetes Kubelet.
[OK] Reached target Multi-User System.
[OK] Reached target Graphical Interface.
Starting Record Runlevel Change in UTMP...
[OK] Finished Record Runlevel Change in UTMP.
[54.193339] Warning: Unmaintained driver is detected: nft_compat
[56.649442] Warning: Unmaintained driver is detected: nft_compat
[54.873776] Warning: Unmaintained driver is detected: nft_compat
2:51 PM
5/11/26



HAProxy version 3.0.5-8e879a5, released 2024/09/19

Statistics Report for pid 5030

> General process information

pid = 5030 (process #1, nbproc = 1, nbthread = 4)
uptime = 0d 1h00m00s; warnings = 24
system limits: memmax = unlimited; ulimit-n = 40051
maxsock = 40051; **maxconn** = 20000; **reached** = 0; **maxpipes** = 0
current conns = 67; current pipes = 0/0; conn rate = 2/sec; bit rate = 148.463 kbps
Running tasks: 0/105 (0 niced); idle = 100 %

active UP
active UP, going down
active DOWN, going up
active or backup DOWN
active or backup DOWN for maintenance (MAINT)
active or backup SOFT STOPPED for maintenance
backup UP
backup UP, going down
backup DOWN, going up
not checked
Note: "NOLB"/"DRAIN" = UP with load-balancing disabled.

Display option:
- Scope :
- Hide 'DOWN' servers
- Disable refresh
- Refresh now
- CSV export
- JSON export (schema)

External resources:
- Primary site
- Updates (v3.0)
- Online manual

stats

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
Frontend				2	4	-	4	7	20 000	1 395			321 853	36 828 366	0	0	0	683				OPEN								
Backend	0	0		0	0		0	0	2 000	0	0	0s	321 853	36 828 366	0	0		0	0	0	0	1h1s UP		0/0	0	0		0		

k8s_api_frontend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
Frontend				0	104	-	63	120	20 000	6 008			26 688 914	247 754 986	0	0	0					OPEN								

k8s_api_backend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
ocp1	0	0	-	0	21		30	39	-	3 344	3 344	34s	14 815 336	66 456 866		0		0	0	0	0	1h1s UP	L4OK in 0ms	1/1	Y	-	0	0	0s	-
ocp2	0	0	-	0	9		13	15	-	20	20	25s	17 841	70 382		0		0	0	0	0	1h1s UP	L4OK in 0ms	1/1	Y	-	0	0	0s	-
ocp3	0	0	-	0	104		20	83	-	2 644	2 644	1m35s	11 855 737	181 227 738		0		0	0	0	0	1h1s UP	L4OK in 0ms	1/1	Y	-	0	0	0s	-
Backend	0	0		0	104		63	120	2 000	6 008	6 008	25s	26 688 914	247 754 986	0	0		0	0	0	0	1h1s UP		3/3	3	0		0	0s	

ocp_machine_config_server_frontend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
Frontend				0	0	-	0	0	20 000	0			0	0	0	0	0					OPEN								

ocp_machine_config_server_backend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
ocp1	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	1h1s UP	L4OK in 0ms	1/1	Y	-	0	0	0s	-
ocp2	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	1h1s UP	L4OK in 0ms	1/1	Y	-	0	0	0s	-
ocp3	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	1h1s UP	L4OK in 0ms	1/1	Y	-	0	0	0s	-
Backend	0	0		0	0		0	0	2 000	0	0	?	0	0	0	0		0	0	0	0	1h1s UP		3/3	3	0		0	0s	

ocp_http_ingress_frontend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
Frontend				0	0	-	0	0	20 000	0			0	0	0	0	0					OPEN								

ocp_http_ingress_backend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
ocp4	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	7m7s UP	L4OK in 0ms	1/1	Y	-	1	1	52m53s	-
ocp5	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	6m33s UP	L4OK in 0ms	1/1	Y	-	1	1	53m26s	-
ocp6	0	0	-	0	0		0	0	-	0	0	?	0	0		0		0	0	0	0	36s UP	L4OK in 0ms	1/1	Y	-	1	1	59m23s	-
Backend	0	0		0	0		0	0	2 000	0	0	?	0	0	0	0		0	0	0	0	7m7s UP		3/3	3	0		1	52m52s	

ocp_https_ingress_frontend

	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
Frontend				0	9	-	0	5	20 000	3 319			173 148	276 514	0	0	0					OPEN								

ocp_https_ingress_backend

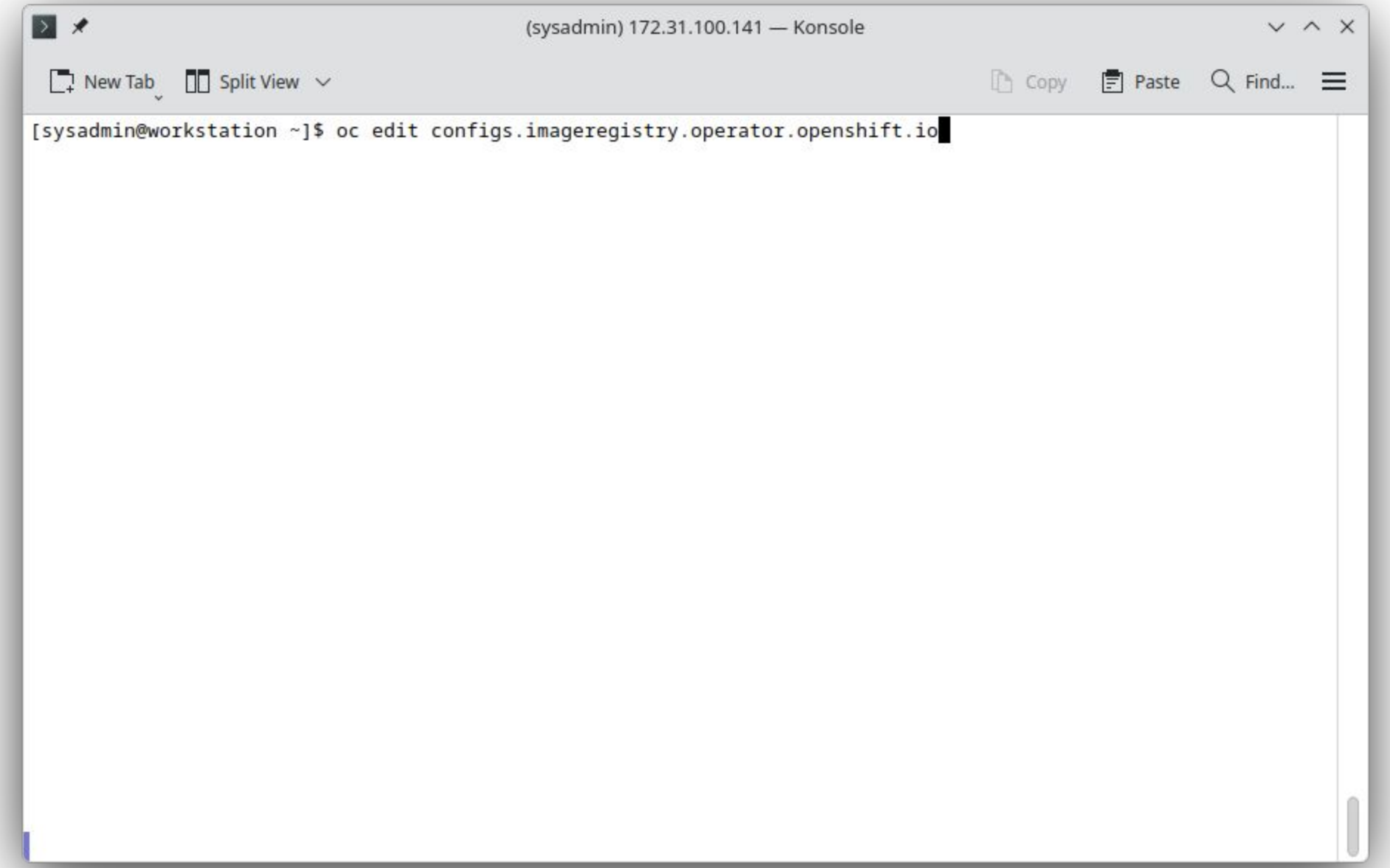
	Queue			Session rate			Sessions						Bytes		Denied		Errors			Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Resp	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Chk	Dwn	Dwntme	Thrtle
ocp4	0	0	-	0	2		0	4	-	10	10	6m45s	18 041	62 919		0		0	0	0	0	7m6s UP	L4OK in 0ms	1/1	Y	-	1	1	52m53s	-
ocp5	0	0	-	0	4		0	3	-	35	35	48s	62 182	197 779		0		0	0	0	0	6m32s UP	L4OK in 0ms	1/1	Y	-	1	1	53m27s	-
ocp6	0	0	-	0	1		0	1	-	3	3	9s	5 343	15 816		0		0	0	0	0	36s UP	L4OK in 0ms	1/1	Y	-	1	1	59m23s	-
Backend	0	0		0	9		0	4	2 000	3 319	48	9s	173 148	276 514	0	0		3 271	0	0	0	7m6s UP		3/3	3	0		1	52m53s	

Set Up NFS

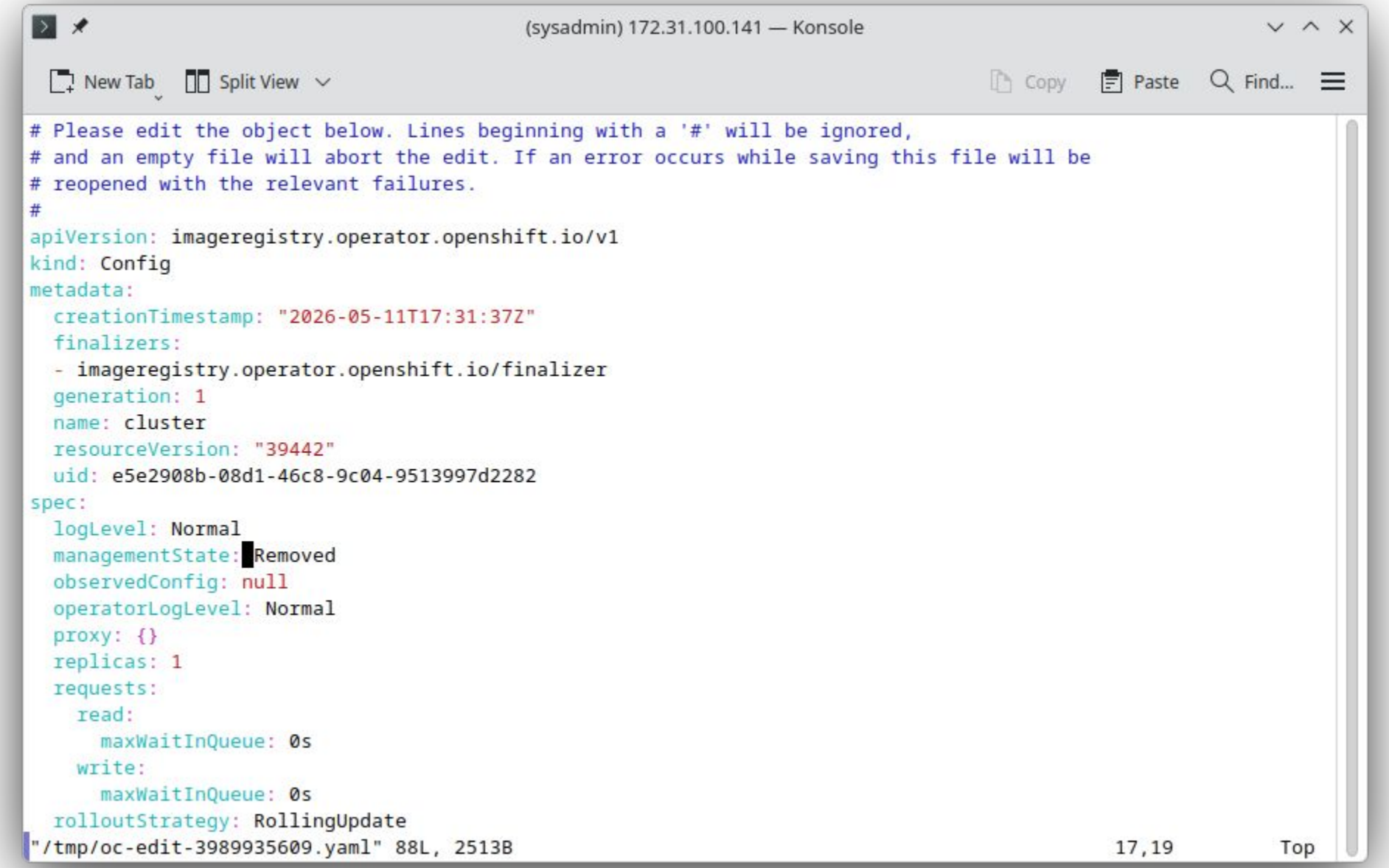
Tell OpenShift about Your Storage

Edit configs.imageregistry.operator.openshift.io

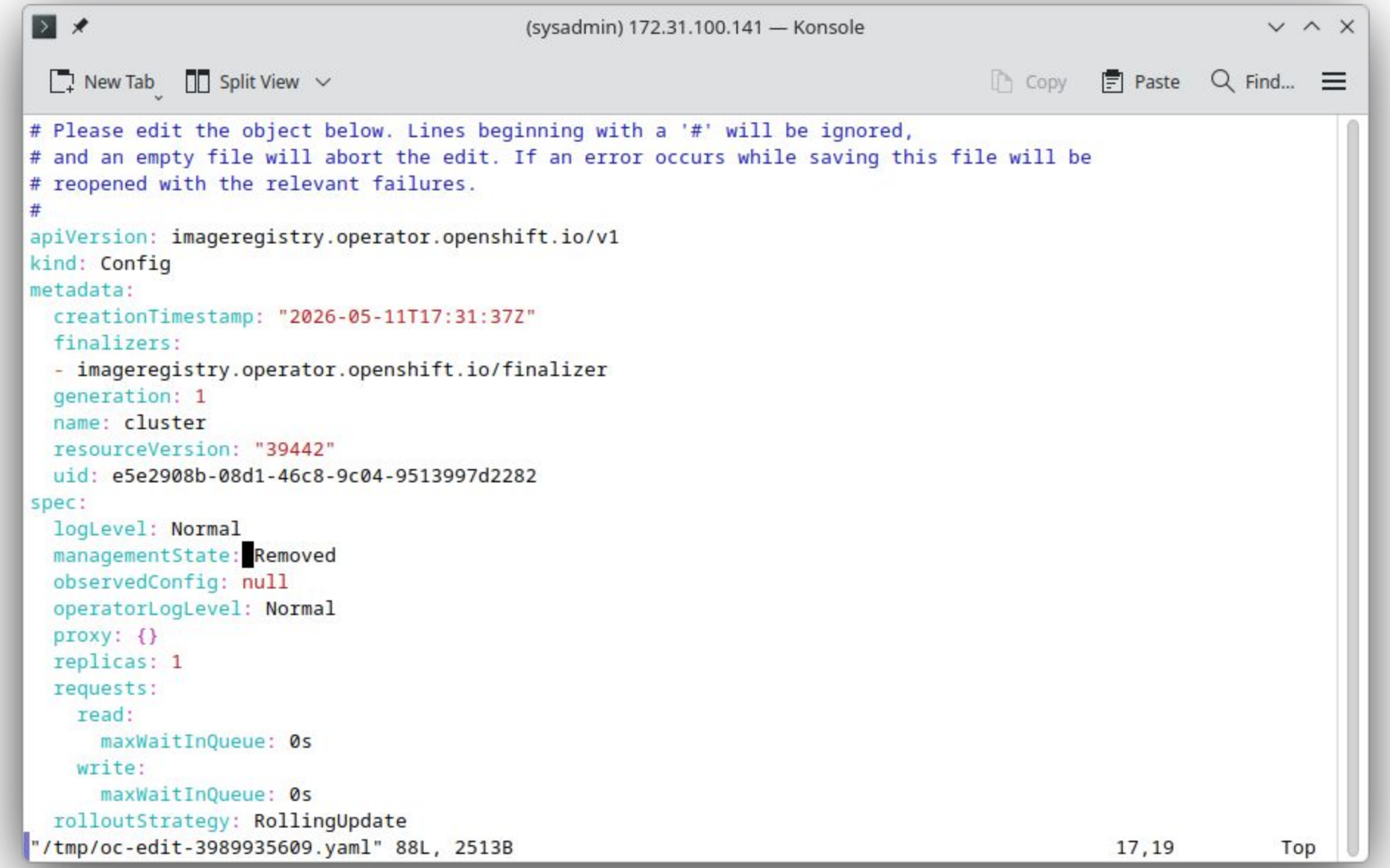
- `oc edit configs.imageregistry.operator.openshift.io`


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ oc edit configs.imageregistry.operator.openshift.io

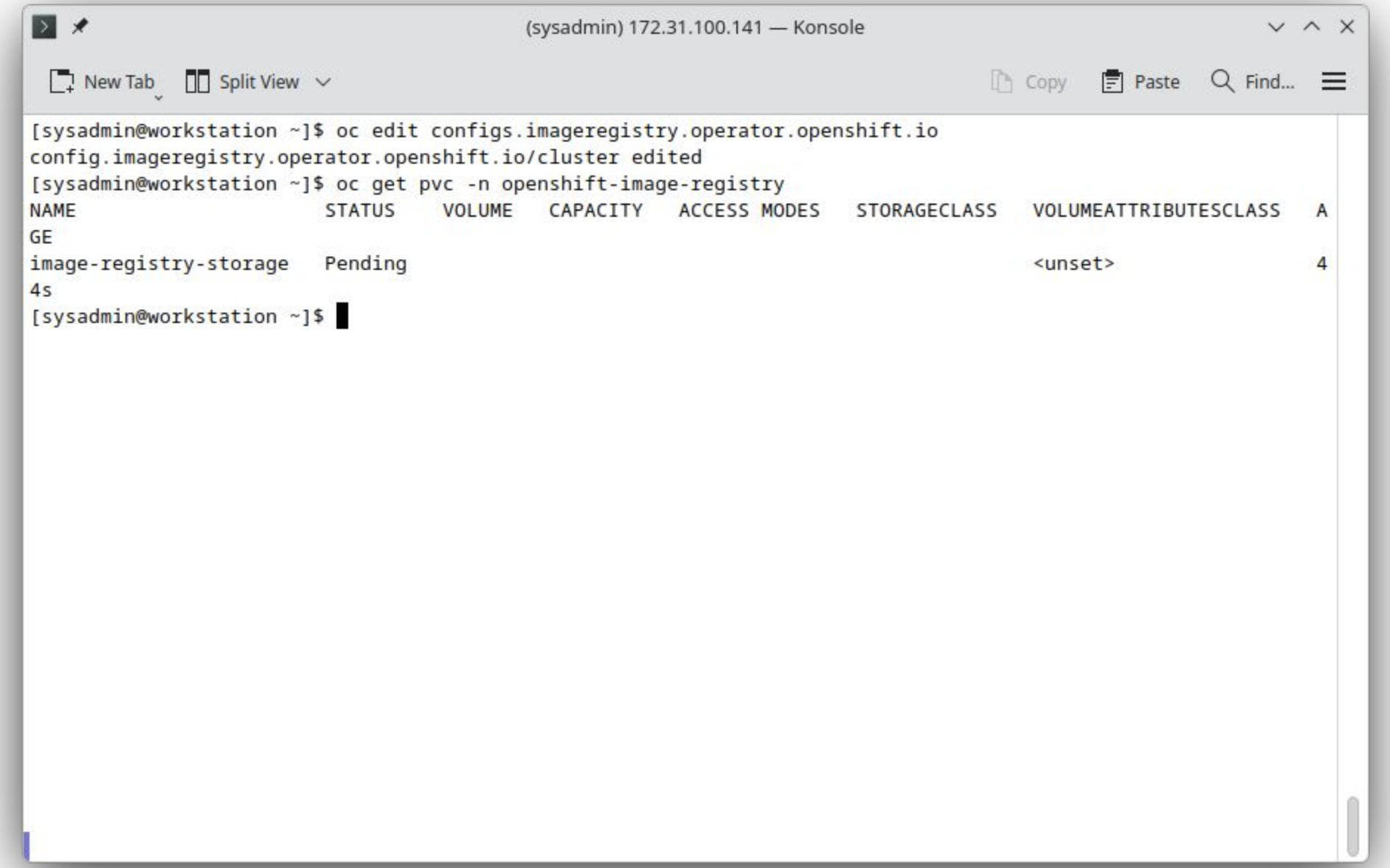
Red Hat

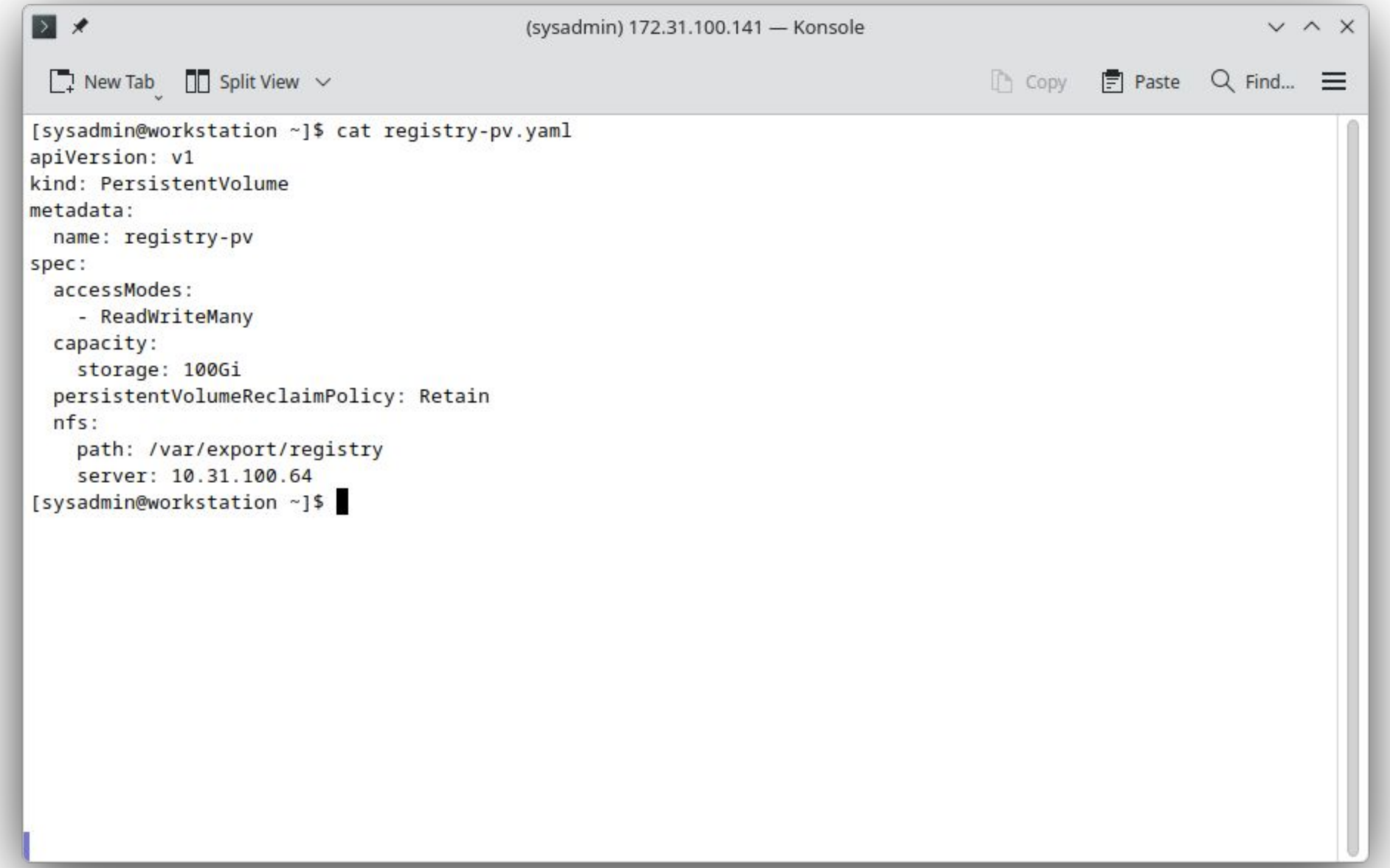

(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
Please edit the object below. Lines beginning with a '#' will be ignored,
and an empty file will abort the edit. If an error occurs while saving this file will be
reopened with the relevant failures.
#
apiVersion: imageregistry.operator.openshift.io/v1
kind: Config
metadata:
creationTimestamp: "2026-05-11T17:31:37Z"
finalizers:
- imageregistry.operator.openshift.io/finalizer
generation: 1
name: cluster
resourceVersion: "39442"
uid: e5e2908b-08d1-46c8-9c04-9513997d2282
spec:
logLevel: Normal
managementState: Removed
observedConfig: null
operatorLogLevel: Normal
proxy: {}
replicas: 1
requests:
read:
maxWaitInQueue: 0s
write:
maxWaitInQueue: 0s
rolloutStrategy: RollingUpdate
"/tmp/oc-edit-3989935609.yaml" 88L, 2513B
17,19
Top

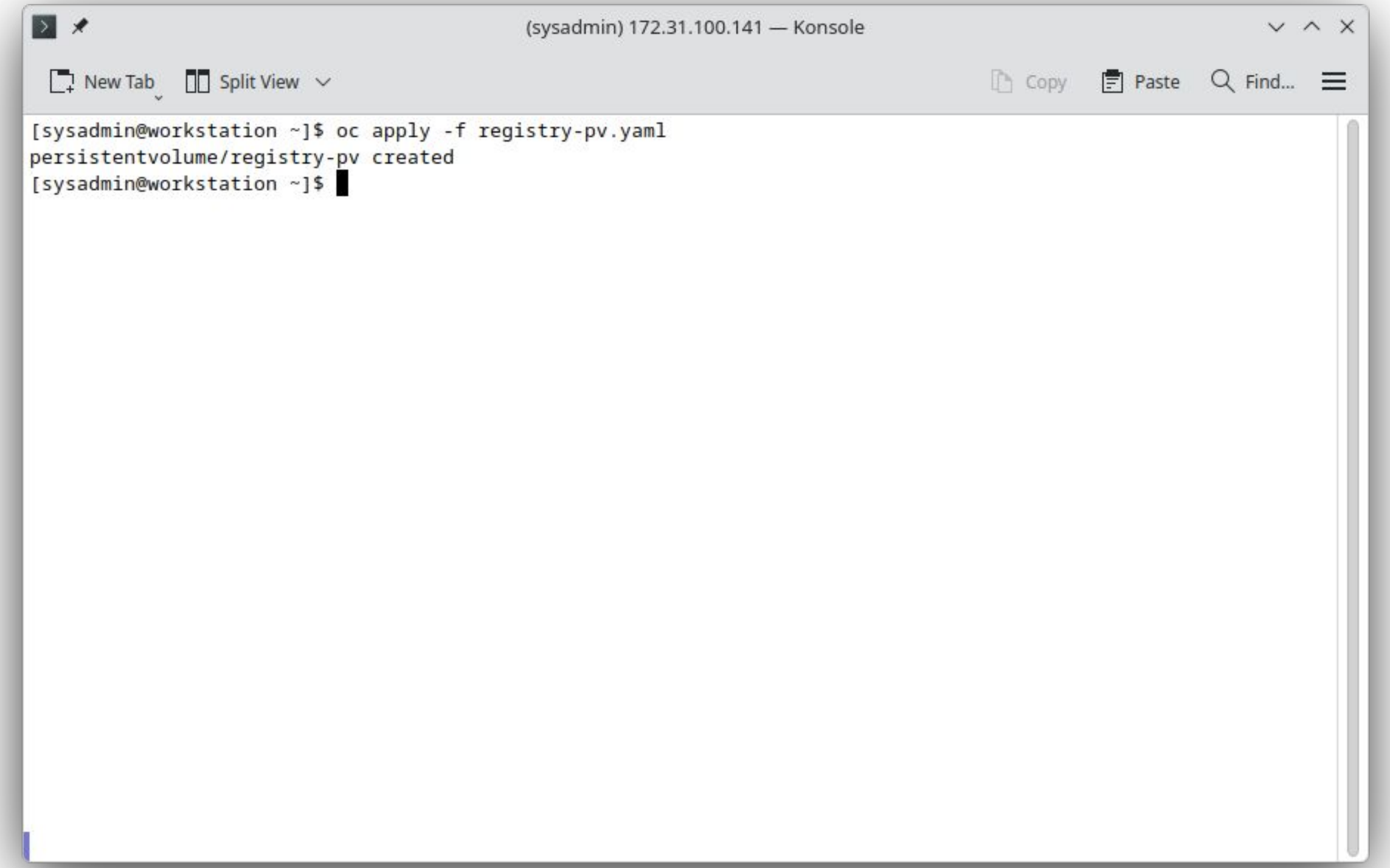
Red Hat


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
Please edit the object below. Lines beginning with a '#' will be ignored,
and an empty file will abort the edit. If an error occurs while saving this file will be
reopened with the relevant failures.
#
apiVersion: imageregistry.operator.openshift.io/v1
kind: Config
metadata:
creationTimestamp: "2026-05-11T17:31:37Z"
finalizers:
- imageregistry.operator.openshift.io/finalizer
generation: 1
name: cluster
resourceVersion: "39442"
uid: e5e2908b-08d1-46c8-9c04-9513997d2282
spec:
logLevel: Normal
managementState: Removed
observedConfig: null
operatorLogLevel: Normal
proxy: {}
replicas: 1
requests:
read:
maxWaitInQueue: 0s
write:
maxWaitInQueue: 0s
rolloutStrategy: RollingUpdate
"/tmp/oc-edit-3989935609.yaml" 88L, 2513B
17,19
Top

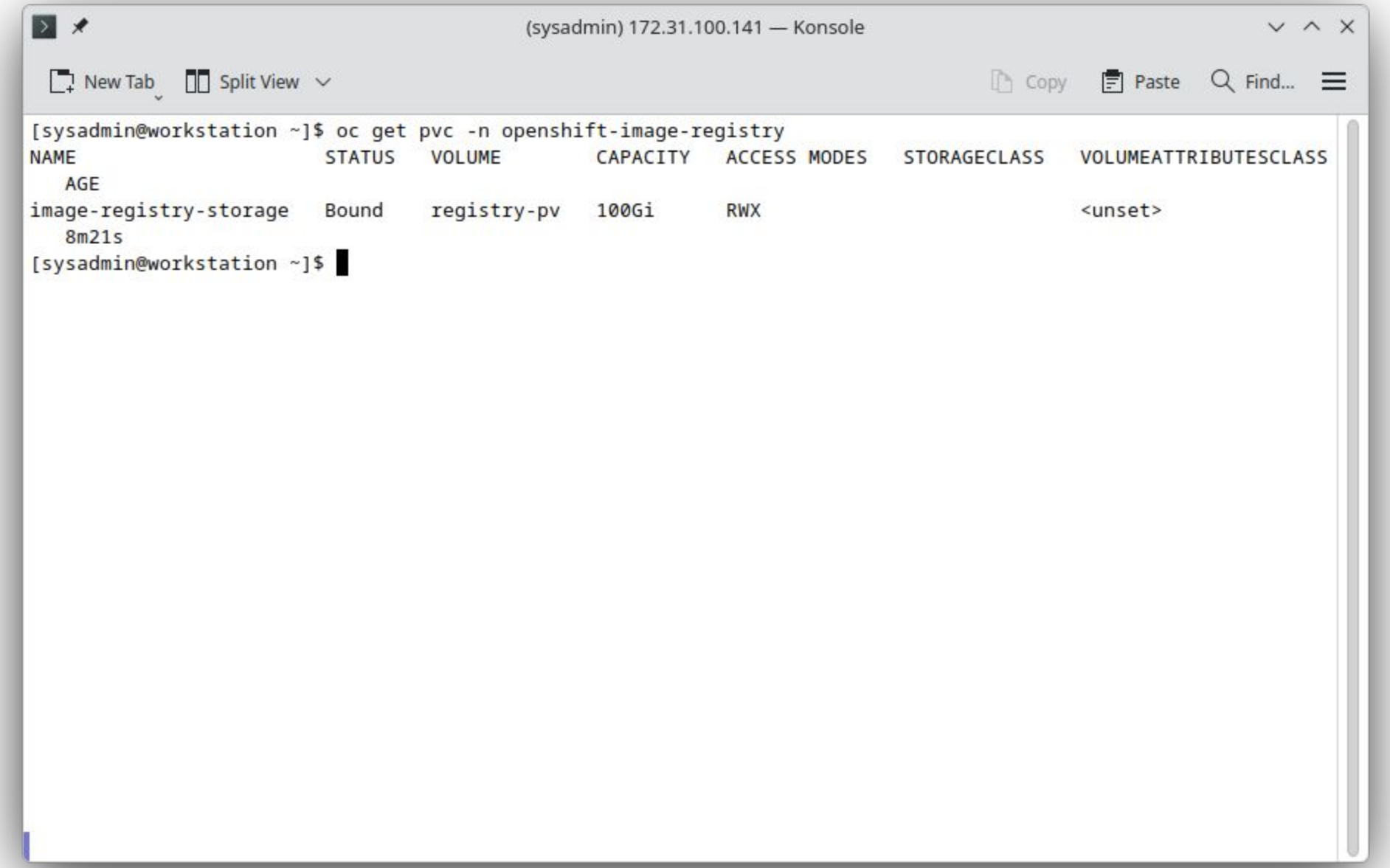
Red Hat


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ oc edit configs.imageregistry.operator.openshift.io
config.imageregistry.operator.openshift.io/cluster edited
[sysadmin@workstation ~]$ oc get pvc -n openshift-image-registry
NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS VOLUMEATTRIBUTESCLASS A
GE
image-registry-storage Pending <unset> 4
4s
[sysadmin@workstation ~]$


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ cat registry-pv.yaml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: registry-pv
spec:
  accessModes:
    - ReadWriteMany
  capacity:
    storage: 100Gi
  persistentVolumeReclaimPolicy: Retain
  nfs:
    path: /var/export/registry
    server: 10.31.100.64
[sysadmin@workstation ~]$

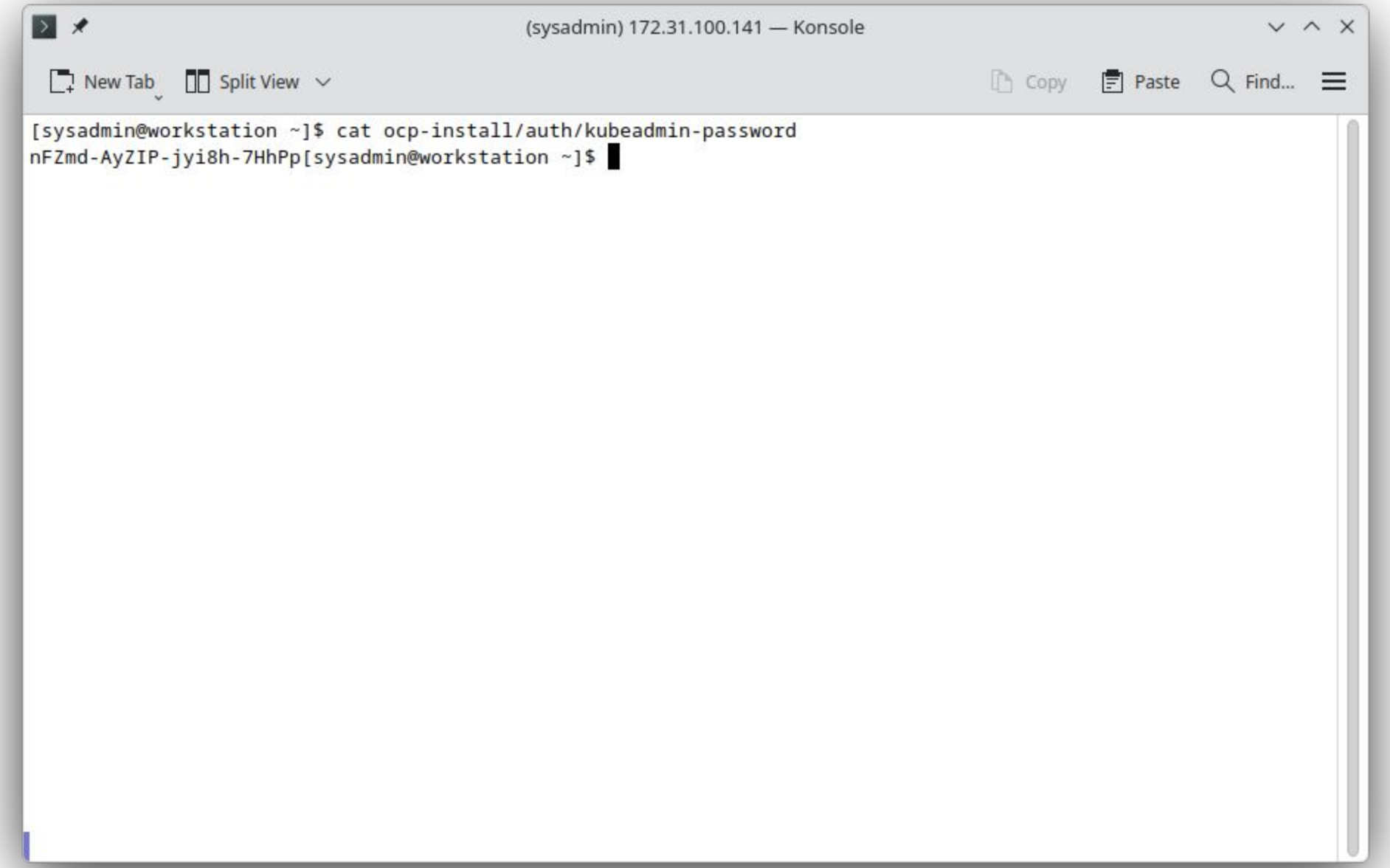

(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ oc apply -f registry-pv.yaml
persistentvolume/registry-pv created
[sysadmin@workstation ~]$

Red Hat

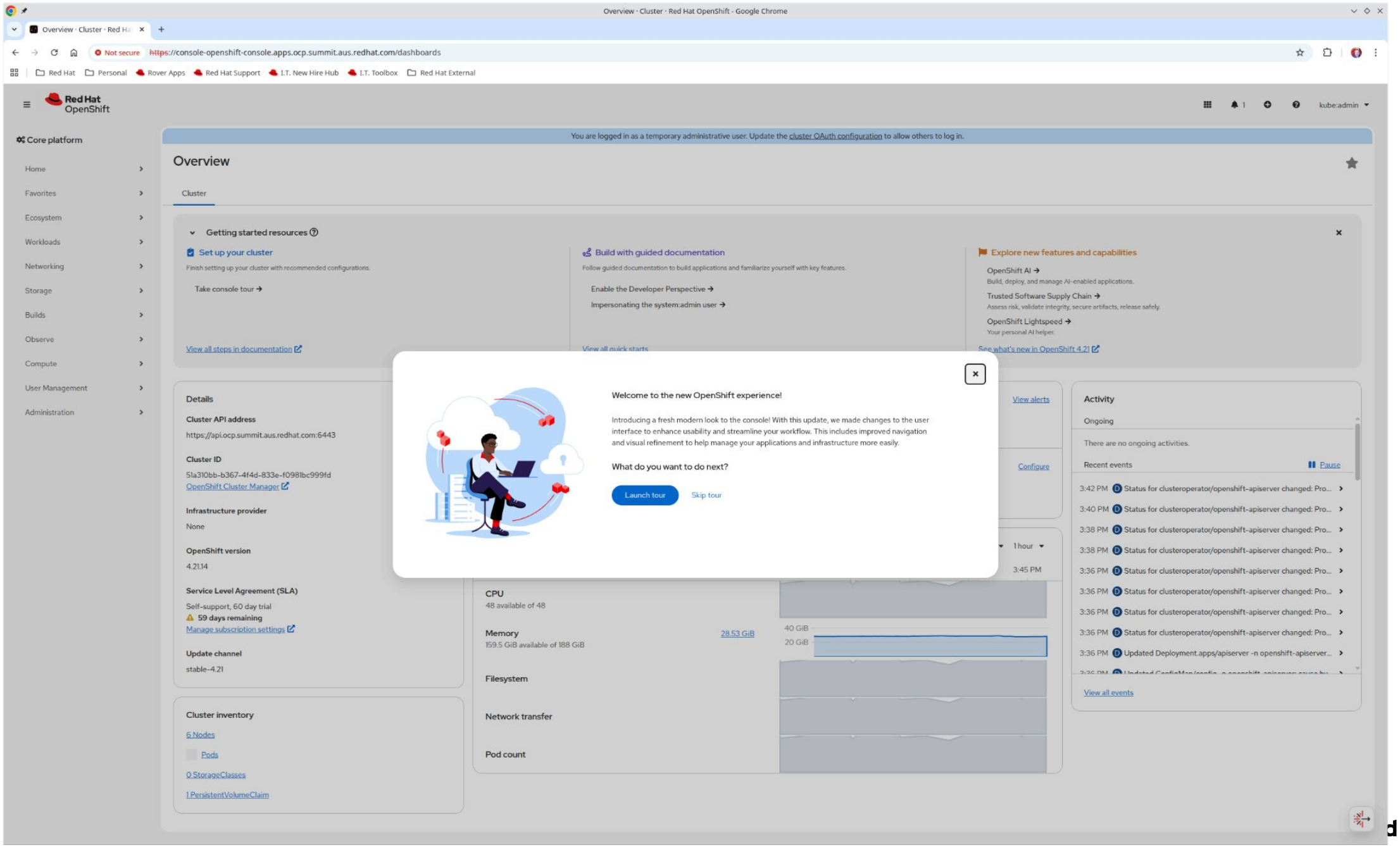

(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ oc get pvc -n openshift-image-registry
NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS VOLUMEATTRIBUTESCLASS
AGE
image-registry-storage Bound registry-pv 100Gi RWX <unset>
8m21s
[sysadmin@workstation ~]$

Red Hat

Log In!


(sysadmin) 172.31.100.141 — Konsole
New Tab
Split View
Copy
Paste
Find...
[sysadmin@workstation ~]$ cat ocp-install/auth/kubeadmin-password
nFZmd-AyZIP-jyi8h-7HhPp[sysadmin@workstation ~]$

Red Hat


Overview · Cluster · Red Hat OpenShift - Google Chrome
Not secure https://console-openshift-console.apps.ocp.summit.aus.redhat.com/dashboards
Red Hat OpenShift
kube:admin
Core platform
Home
Favorites
Ecosystem
Workloads
Networking
Storage
Builds
Observe
Compute
User Management
Administration
You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.
Overview
Cluster
Getting started resources
Set up your cluster
Finish setting up your cluster with recommended configurations.
Take console tour
View all steps in documentation
Build with guided documentation
Follow guided documentation to build applications and familiarize yourself with key features.
Enable the Developer Perspective
Impersonating the system:admin user
View all quick starts
Explore new features and capabilities
OpenShift AI
Build, deploy, and manage AI-enabled applications.
Trusted Software Supply Chain
Assess risk, validate integrity, secure artifacts, release safely.
OpenShift Lightspeed
Your personal AI helper.
See what's new in OpenShift 4.21
Welcome to the new OpenShift experience!
Introducing a fresh modern look to the console! With this update, we made changes to the user interface to enhance usability and streamline your workflow. This includes improved navigation and visual refinement to help manage your applications and infrastructure more easily.
What do you want to do next?
Launch tour
Skip tour
Details
Cluster API address
https://api.ocp.summit.aus.redhat.com:6443
Cluster ID
51a310bb-b367-4f4d-833e-f0981bc999fd
OpenShift Cluster Manager
Infrastructure provider
None
OpenShift version
4.21.14
Service Level Agreement (SLA)
Self-support, 60 day trial
59 days remaining
Manage subscription settings
Update channel
stable-4.21
Cluster inventory
6 Nodes
Pods
0 StorageClasses
1 PersistentVolumeClaim
View alerts
Configure
1 hour
3:45 PM
CPU
48 available of 48
Memory
159.5 GiB available of 188 GiB
28.53 GiB
40 GiB
20 GiB
Filesystem
Network transfer
Pod count
Activity
Ongoing
There are no ongoing activities.
Recent events
Pause
3:42 PM Status for clusteroperator/openshift-apiserver changed: Pro...
3:40 PM Status for clusteroperator/openshift-apiserver changed: Pro...
3:38 PM Status for clusteroperator/openshift-apiserver changed: Pro...
3:38 PM Status for clusteroperator/openshift-apiserver changed: Pro...
3:36 PM Status for clusteroperator/openshift-apiserver changed: Pro...
3:36 PM Status for clusteroperator/openshift-apiserver changed: Pro...
3:36 PM Status for clusteroperator/openshift-apiserver changed: Pro...
3:36 PM Status for clusteroperator/openshift-apiserver changed: Pro...
3:36 PM Updated Deployment.apps/apiserver -n openshift-apiserver...
View all events

Red Hat Summit

Thank you

 linkedin.com/company/red-hat

 facebook.com/redhatinc

 youtube.com/user/RedHatVideos

 twitter.com/RedHat

Red Hat