Workshop 4 - Daniel Ramirez Gomez

martes, 13 de febrero de 2024   5:40 p. m.

For this workshop, the goal is to change the connection to Consul to improve efficiency and name resolution on our local network. To achieve this, a series of commands were executed, which are explained below.

First, the dnsmasq service is installed, which provides various functionalities, including serving as a DNS server for name resolution. It is installed with the following command:

sudo apt install dnsmasq

Initially, there is an issue with port 53, as seen in the image. This problem arises because systemd-resolved also handles DNS resolutions and listens on port 53. Therefore, if both dnsmasq and the other service are running simultaneously, a port conflict will occur.

As a solution to this, it was decided to stop the systemd-resolved service using the following commands:

sudo systemctl stop systemd-resolved
sudo systemctl disable systemd-resolved

Next, the Vim editor is used to modify the resolv.conf file. This file is used to configure the DNS server in the local environment. The nameserver line was modified to point locally, specifically to 127.0.0.1.

Now, navigate to the dnsmasq directory to edit the configuration file dnsmasq.d, and add a file named 10-consul. This file is used to define how the names of services registered in Consul will be resolved. In this file, add the line:

server=/consul/127.0.0.1#8600

This indicates that DNS requests for the consul domain will be redirected to the local DNS server at IP address 127.0.0.1 with port 8600.
Now restart dnsmasq and check its status.

```
root@ubuntu:/etc/dnsmasq.d# sudo systemctl restart dnsmasq
root@ubuntu:/etc/dnsmasq.d# sudo systemctl status dnsmasq
● dnsmasq.service - dnsmasq - A lightweight DHCP and caching DNS server
     Loaded: loaded (/lib/systemd/system/dnsmasq.service; enabled; vendor preset: enabled)
     Active: active (running) since Tue 2024-02-13 16:55:35 PST; 7s ago
    Process: 57716 ExecStartPre=/usr/sbin/dnsmasq --test (code=exited, status=0/SUCCESS)
    Process: 57717 ExecStart=/etc/init.d/dnsmasq systemd-exec (code=exited, status=0/SUCCESS)
    Process: 57726 ExecStartPost=/etc/init.d/dnsmasq systemd-start-resolvconf (code=exited, status=0/SUCCESS)
   Main PID: 57725 (dnsmasq)
      Tasks: 1 (limit: 6911)
     Memory: 1.6M
     CGroup: /system.slice/dnsmasq.service
             └─57725 /usr/sbin/dnsmasq -x /run/dnsmasq/dnsmasq.pid -u dnsmasq -7 /etc/dnsmasq.d,.dpkg-dist,.dpkg-old,.dpkg-new --local-service --trust-anchor=.,20326,8,2,e06d44b80b8f1d39a95c0b0d7c65d084⬛

Feb 13 16:55:35 ubuntu dnsmasq[57716]: dnsmasq: syntax check OK.
Feb 13 16:55:35 ubuntu dnsmasq[57725]: started, version 2.80 cachesize 150
Feb 13 16:55:35 ubuntu dnsmasq[57725]: DNS service limited to local subnets
Feb 13 16:55:35 ubuntu dnsmasq[57725]: compile time options: IPv6 GNU-getopt DBus i18n IDN DHCP DHCPv6 no-Lua TFTP conntrack ipset auth nettlehash DNSSEC loop-detect inotify dumpfile
Feb 13 16:55:35 ubuntu dnsmasq[57725]: using nameserver 127.0.0.1#8600 for domain consul
Feb 13 16:55:35 ubuntu dnsmasq[57725]: reading /etc/resolv.conf
Feb 13 16:55:35 ubuntu dnsmasq[57725]: using nameserver 127.0.0.1#8600 for domain consul
Feb 13 16:55:35 ubuntu dnsmasq[57725]: ignoring nameserver 127.0.0.1 - local interface
Feb 13 16:55:35 ubuntu dnsmasq[57725]: read /etc/hosts - 7 addresses
Feb 13 16:55:35 ubuntu systemd[1]: Started dnsmasq - A lightweight DHCP and caching DNS server.
lines 1-22/22 (END)
```

Now, as the final step, execute DNS queries to verify that the names of Consul services are resolved correctly using:

dig app-config.service.consul

```
root@ubuntu:/etc/dnsmasq.d# dig app-config.service.consul

; <<>> DiG 9.16.1-Ubuntu <<>> app-config.service.consul
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 56396
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
;; QUESTION SECTION:
;app-config.service.consul.      IN      A

;; ANSWER SECTION:
app-config.service.consul. 0    IN      A       172.18.0.7

;; Query time: 3 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Tue Feb 13 16:56:09 PST 2024
;; MSG SIZE  rcvd: 70

root@ubuntu:/etc/dnsmasq.d# 
```

dig app-invoice.service.consul

```
root@ubuntu:/etc/dnsmasq.d# dig app-invoice.service.consu

; <<>> DiG 9.16.1-Ubuntu <<>> app-invoice.service.consu
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: REFUSED, id: 4962
;; flags: qr rd ra ad; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
;; QUESTION SECTION:
;app-invoice.service.consu.      IN      A

;; Query time: 0 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Tue Feb 13 16:56:29 PST 2024
;; MSG SIZE  rcvd: 54

root@ubuntu:/etc/dnsmasq.d# 
```

dig app-pay.service.consul

```
root@ubuntu:/etc/dnsmasq.d# dig app-pay.service.consul

; <<>> DiG 9.16.1-Ubuntu <<>> app-pay.service.consul
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 41136
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
;; QUESTION SECTION:
;app-pay.service.consul.                IN      A

;; ANSWER SECTION:
app-pay.service.consul. 0       IN      A       172.18.0.9

;; Query time: 3 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Tue Feb 13 16:56:47 PST 2024
;; MSG SIZE  rcvd: 67

root@ubuntu:/etc/dnsmasq.d#
```

dig app-transaction.service.consul

```
root@ubuntu:/etc/dnsmasq.d# dig app-transaction.service.consul

; <<>> DiG 9.16.1-Ubuntu <<>> app-transaction.service.consul
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 36076
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
;; QUESTION SECTION:
;app-transaction.service.consul.        IN      A

;; ANSWER SECTION:
app-transaction.service.consul. 0 IN    A       172.18.0.10

;; Query time: 0 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Tue Feb 13 16:57:00 PST 2024
;; MSG SIZE  rcvd: 75
```

We can also see all the services up in Consul.

Services 5 total

| Q Search | Search Across ∨ | Health Status ∨ | Service Type ∨ |

- ✅ **consul**
  1 instance

- ✅ **app-config**
  1 instance 🏷 secure=false

- ✅ **app-invoice**
  1 instance 🏷 secure=false

- ✅ **app-pay**
  1 instance 🏷 secure=false

- ✅ **app-transaction**
  1 instance 🏷 secure=false