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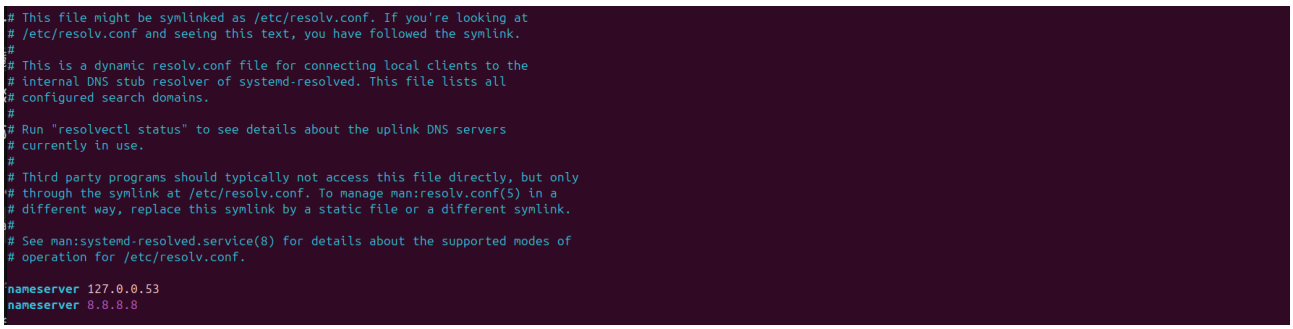
Fawry Assessment
Task 2

Your internal web dashboard (hosted on internal.example.com) is suddenly unreachable from multiple systems. The service seems up, but users get “host not found” errors. You suspect a DNS or network misconfiguration. Your task is to troubleshoot, verify, and restore connectivity to the internal service.

1. Verify DNS Resolution:

in /etc/resolv.conf, All DNS servers that host check for DNS resolution.
It contains Local DNS servers like 192.168.1.1 and Global DNS Servers like 8.8.8.8

in /etc/resolv.conf



we can ping on the service two times:
→ by IP address
→ by domain

if IP address ping succeed but domain is not then this is a DNS resolution problem
If IP address ping was failed then this is the server problem itself.

2. Diagnose Service Reachability:

3. Trace the Issue – List All Possible Causes

*** DNS Problem or Reachability**

→ if pinging on server using IP address but domain is not, then the problem must be in the local DNS server , we need to make sure that it’s working.

*** Service Problem**
- The web service is not running or listening on a wrong port.
- The web server is down or misconfigured.
- The firewall is blocking the service port.

4. Propose and Apply Fixes

*** Solve DNS Problem or Reachability**

IN DNS SERVER ITSELF in this case I can't write commands because I don't have a local DNS server

- We need to make sure that the local DNS server is working well.

→ SSH on the DNS server and check the DNS service , configurations and opened ports.

- We need to check DNS server IP address and check if it's reachable.

- We need to check that DNS service contains the right records like (internal.example.com – Internal_IP_address) → DNS records themselves exist

IF WE CHECKED ALL OF THAT , SO DNS SERVER ITSELF HAS NO PROBLEMS.

IN Other SERVERS

- We need to check if these servers are connecting to DNS server correctly → using nmcli

if servers are attached to a wrong DNS IP address → insert the correct DNS IP address in the connection

```
amir-mamdouh@marmoush:~/Desktop/fawry_task$ nmcli connection show --active
NAME            UUID                                  TYPE      DEVICE
Thomas          bf6704f4-4a69-4634-970c-e5383491acce  wifi      wlp3s0
prod0           6313abbe-e878-48f1-b44a-0e6ee3f4c6f5  bridge    docker0
br-90be26efcc81  b0a931d1-1db4-4151-b0ad-dd91a400cee8  bridge    br-90be26efcc81
lo              b969e11d-0a66-46de-836d-6b3520d69709  loopback  lo
amir-mamdouh@marmoush:~/Desktop/fawry_task$ nmcli connection show "Thomas" | grep 'ipv4.dns'
ipv4.dns:                               8.8.8.8
ipv4.dns-search:                        --
ipv4.dns-options:                       --
ipv4.dns-priority:                      0
amir-mamdouh@marmoush:~/Desktop/fawry_task$ nmcli
agent       connection  device      general     help        monitor     networking  radio
amir-mamdouh@marmoush:~/Desktop/fawry_task$ nmcli connection
add      clone    delete   down     edit     export   help     import   load     migrate  modify   monitor  reload   show     up
amir-mamdouh@marmoush:~/Desktop/fawry_task$ nmcli connection modify
Amir            filename        id              Mamdouh         Ngng            OPPO\ Reno8\ T   prod0           --temporary     uuid            wifi-connection
br-90be26efcc81  help            lo              netplan-enp2s0  NTI_Guest       path            SMRC            Thomas          WE_533ED8       zambrota
amir-mamdouh@marmoush:~/Desktop/fawry_task$ nmcli connection modify Thomas ipv
ipv4.addresses                  ipv4.dhcp-vendor-class-identifier  ipv4.replace-local-rule           ipv6.dhcp-iaid                  ipv6.may-fail
ipv4.auto-route-ext-gw          ipv4.dns                           ipv4.required-timeout             ipv6.dhcp-pd-hint               ipv6.method
ipv4.dad-timeout                ipv4.dns-options                   ipv4.route-metric                 ipv6.dhcp-send-hostname         ipv6.mtu
ipv4.dhcp-client-id             ipv4.dns-priority                  ipv4.routes                       ipv6.dhcp-timeout               ipv6.never-default
ipv4.dhcp-dscp                  ipv4.dns-search                    ipv4.route-table                  ipv6.dns                        ipv6.ra-timeout
ipv4.dhcp-fqdn                  ipv4.gateway                       ipv4.routing-rules                ipv6.dns-options                ipv6.replace-local-rule
ipv4.dhcp-hostname              ipv4.ignore-auto-dns               ipv6.addresses                    ipv6.dns-priority               ipv6.required-timeout
ipv4.dhcp-hostname-flags        ipv4.ignore-auto-routes            ipv6.addr-gen-mode                ipv6.dns-search                 ipv6.route-metric
ipv4.dhcp-iaid                  ipv4.link-local                    ipv6.auto-route-ext-gw            ipv6.gateway                    ipv6.routes
ipv4.dhcp-reject-servers        ipv4.may-fail                      ipv6.dhcp-duid                    ipv6.ignore-auto-dns            ipv6.route-table
ipv4.dhcp-send-hostname         ipv4.method                        ipv6.dhcp-hostname                ipv6.ignore-auto-routes         ipv6.routing-rules
ipv4.dhcp-timeout               ipv4.never-default                 ipv6.dhcp-hostname-flags          ipv6.ip6-privacy                ipv6.token
amir-mamdouh@marmoush:~/Desktop/fawry_task$ nmcli connection modify Thomas ipv4.dns
ipv4.dns          ipv4.dns-options   ipv4.dns-priority  ipv4.dns-search
amir-mamdouh@marmoush:~/Desktop/fawry_task$ nmcli connection modify Thomas ipv4.dns +192.1.1.3
Error: Failed to modify connection 'Thomas': ipv4.dns: 1. DNS server address is invalid
amir-mamdouh@marmoush:~/Desktop/fawry_task$ # you need to add your real local dns IP address
amir-mamdouh@marmoush:~/Desktop/fawry_task$
```

IF WE CHECKED ALL OF THAT , SO CONNECTION BETWEEN LOCAL SERVERS AND DNS SERVER HAS NO PROBLEM.

*** Check and Solve Service Problem**

check if the service is up and running

```
amir-mamdouh@marmoush:~/Desktop/fawry_task$ sudo systemctl status apache2
○ apache2.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
     Active: inactive (dead) since Mon 2025-04-28 11:57:37 EEST; 3s ago
   Duration: 1min 22ms
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 167286 ExecStop=/usr/sbin/apachectl graceful-stop (code=exited, status=0/SUCCESS)
   Main PID: 165554 (code=exited, status=0/SUCCESS)
        CPU: 115ms

Apr 28 11:56:36 marmoush systemd[1]: Starting apache2.service - The Apache HTTP Server...
Apr 28 11:56:36 marmoush apachectl[165553]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using >
Apr 28 11:56:36 marmoush systemd[1]: Started apache2.service - The Apache HTTP Server.
Apr 28 11:57:36 marmoush systemd[1]: Stopping apache2.service - The Apache HTTP Server...
Apr 28 11:57:37 marmoush apachectl[167288]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using >
Apr 28 11:57:37 marmoush systemd[1]: apache2.service: Deactivated successfully.
Apr 28 11:57:37 marmoush systemd[1]: Stopped apache2.service - The Apache HTTP Server.
amir-mamdouh@marmoush:~/Desktop/fawry_task$ sudo systemctl start apache2
amir-mamdouh@marmoush:~/Desktop/fawry_task$
```

check if the service is listening on the port → from apache2 configurations

```
amir-mamdouh@marmoush:~/Desktop/fawry_task$ sudo cat /etc/apache2/ports.conf
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 80

<IfModule ssl_module>
        Listen 443
</IfModule>

<IfModule mod_gnutls.c>
        Listen 443
</IfModule>
```

check if our server is listening on port 80

```
amir-mamdouh@marmoush:~/Desktop/fawry_task$ netstat -tln  | grep 80
tcp6       0      0 :::80                   :::*                    LISTEN
tcp6       0      0 fe80::ecee:eeff:feee:53 :::*                    LISTEN
```

check if firewall is blocking this service

```
amir-mamdouh@marmoush:~/Desktop/fawry_task$ sudo ufw status
Status: active

To                         Action      From
--                         ------      ----
80/tcp                     ALLOW       Anywhere
Anywhere on vxlan.calico   ALLOW       Anywhere
Anywhere on cali+          ALLOW       Anywhere
22                         ALLOW       Anywhere
80/tcp (v6)                ALLOW       Anywhere (v6)
Anywhere (v6) on vxlan.calico ALLOW       Anywhere (v6)
Anywhere (v6) on cali+     ALLOW       Anywhere (v6)
22 (v6)                    ALLOW       Anywhere (v6)

Anywhere                   ALLOW OUT   Anywhere on vxlan.calico
Anywhere                   ALLOW OUT   Anywhere on cali+
Anywhere (v6)              ALLOW OUT   Anywhere (v6) on vxlan.calico
Anywhere (v6)              ALLOW OUT   Anywhere (v6) on cali+
```

run the service port

```
amir-mamdouh@marmoush:~/Desktop/fawry_task$ sudo sh -c 'echo "Hello Fawry Devops Team" > /var/www/html/index.html '
amir-mamdouh@marmoush:~/Desktop/fawry_task$ curl localhost:80
Hello Fawry Devops Team
```

ALL PROBLEMS MUST BE SOLVED.

BONUS

- Add the domain inside /etc/hosts for test

```
amir-mamdouh@marmoush:~/Desktop/fawry_task$ hostname -i
fd9c:69d1:74fa:2100:60ce:902b:1b58:ce79 fd9c:69d1:74fa:2100:bab6:c4d0:b3de:1d66 fc00:f853:ccd:e793::1 192.168.1.14 172.17.0.1 172.18.0.1 fe80::175f:a6a3:3c7d:2e2b fe80::42:f0ff:fe4c:83
b0 fe80::60c3:e8ff:fe5d:14d1 fe80::ecee:eeff:feee:eeee fe80::ecee:eeff:feee:eeee fe80::ecee:eeff:feee:eeee fe80::ecee:eeff:feee:eeee fe80::ecee:eeff:feee:eeee fe80::ecee:eeff:feee:eeee
amir-mamdouh@marmoush:~/Desktop/fawry_task$ sudo bash -c 'echo 192.168.1.14 internal.example.com >> /etc/hosts'
```

change the listening port to 100 and try

```
amir-mamdouh@marmoush:/usr/share/nginx$ sudo cat /etc/apache2/ports.conf
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 100

<IfModule ssl_module>
        Listen 443
</IfModule>

<IfModule mod_gnutls.c>
        Listen 443
</IfModule>
amir-mamdouh@marmoush:/usr/share/nginx$ curl internal.example.com:100
Hello Fawry Devops Team
```

- persist DNS server settings using nmcli.

```
amir-mamdouh@marmoush:/usr/share/nginx$ nmcli connection show
NAME             UUID                                  TYPE      DEVICE
Thomas           bf6704f4-4a69-4634-970c-e5383491acce  wifi      wlp3s0
prod0            6313abbe-e878-48f1-b44a-0e6ee3f4c6f5  bridge    docker0
br-90be26efcc81  b0a931d1-1db4-4151-b0ad-dd91a400cee8  bridge    br-90be26efcc81
lo               b969e11d-0a66-46de-836d-6b3520d69709  loopback  lo
Amir             0710890f-b55e-465d-886f-1a79c9424549  wifi      --
Mamdouh          c3f2bb8e-4f23-4543-a480-643e959a3faa  wifi      --
netplan-enp2s0   7ea6f90b-3495-3533-948a-ef0035687c34  ethernet  --
Ngng             b4388528-aea5-498e-a8b4-97ac3bd9d4f4  wifi      --
NTI_Guest        2d80f3a7-f052-424a-bb08-08c5d3929194  wifi      --
OPPO Reno8 T     f6057861-8d5b-47d9-821c-562a4cbc89dd  wifi      --
prod0            06c44c03-91d4-4763-9045-0b13d002d3dc  ethernet  --
prod0            a06fa3cf-436e-4981-be1f-da9b50c35cb0  ethernet  --
prod0            b98daa8d-e0f2-43bc-ac81-facb0b659bc7  ethernet  --
SMRC             5b1dd6a5-1472-46b0-acc2-ba6227009e9e  wifi      --
WE_533ED8        add06c3d-f60f-48be-a21e-628ed08de7a9  wifi      --
wifi-connection  76dee3c3-88bc-49b6-8c73-65a1acd4e417  wifi      --
zambrota         899adfd8-77e0-4940-87e2-db41d91b98a2  wifi      --
amir-mamdouh@marmoush:/usr/share/nginx$ sudo nmcli connection modify "Thomas" ipv4.dns "192.168.1.1"
amir-mamdouh@marmoush:/usr/share/nginx$ sudo nmcli connection modify "Thomas" ipv4.dns "192.168.1.1 8.8.8.8"
amir-mamdouh@marmoush:/usr/share/nginx$ sudo nmcli connection down "Thomas" && sudo nmcli connection up "Thomas"
Connection 'Thomas' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/6)
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/7)
```