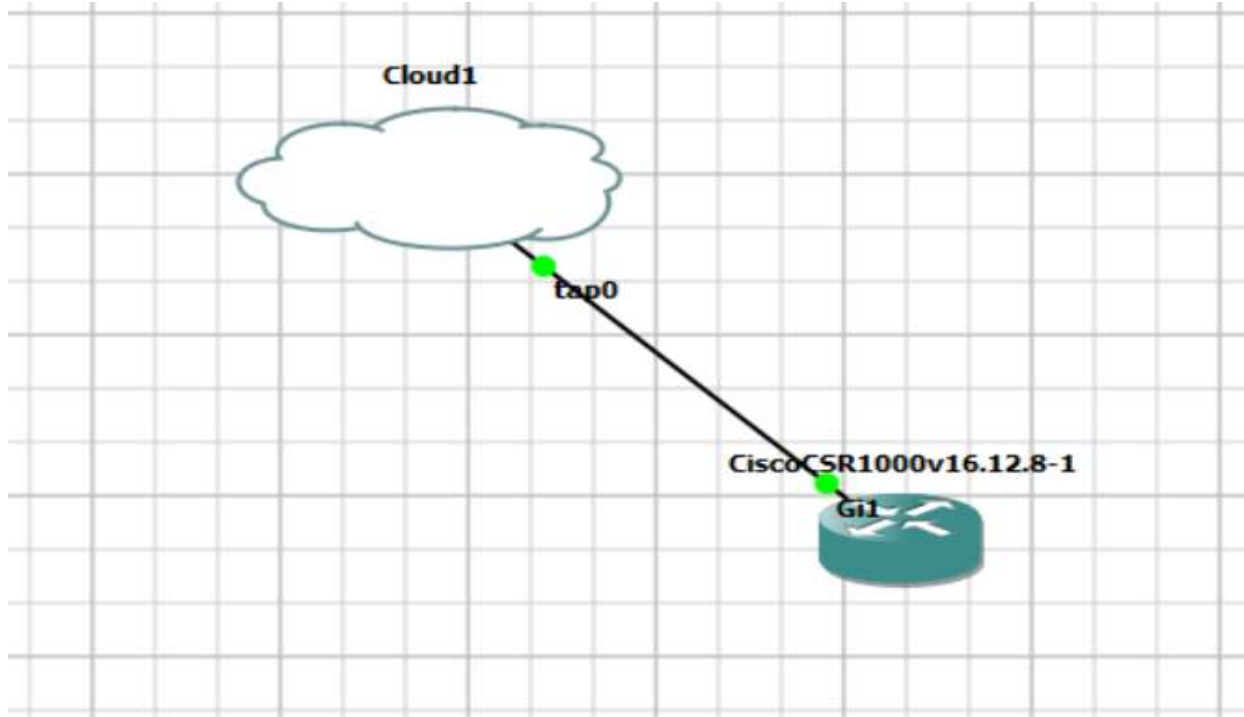


OBSERVABILITY LAB(15-07)

LAB: Enable the Telemetry configuration on Cisco Router, Telegraf will receive the stats and store in Influx DB , Grafana will be used to display the stats.

Step1 : Network Topology:



DHCP server will assign the IP address on Router:

```
g Wizard>ip int br
Interface          IP-Address      OK? Method Status        Protocol
GigabitEthernet1   172.20.0.112    YES DHCP    up            up
GigabitEthernet2   unassigned      YES unset    down          down
GigabitEthernet3   unassigned      YES unset    down          down
GigabitEthernet4   unassigned      YES unset    down          down
Router#
```

Step 2: Configure the router for Yang-Management process

```
user admin privilege 15 secret cisco123
aaa new-model
aaa authentication login default local
aaa authorization exec default local
Netconf-yang
```

Show platform software yang-management process

```
Router#sh platform software yang-management process
confd          : Running
nesd           : Running
syncfd         : Running
ncsshd         : Running
dmiauthd       : Running
nginx          : Running
ndbmand        : Running
pubd           : Running

Router#_
```

Step 3: Configure the Telemetry on router for CPU, Memory, and Interface Login to below URL:

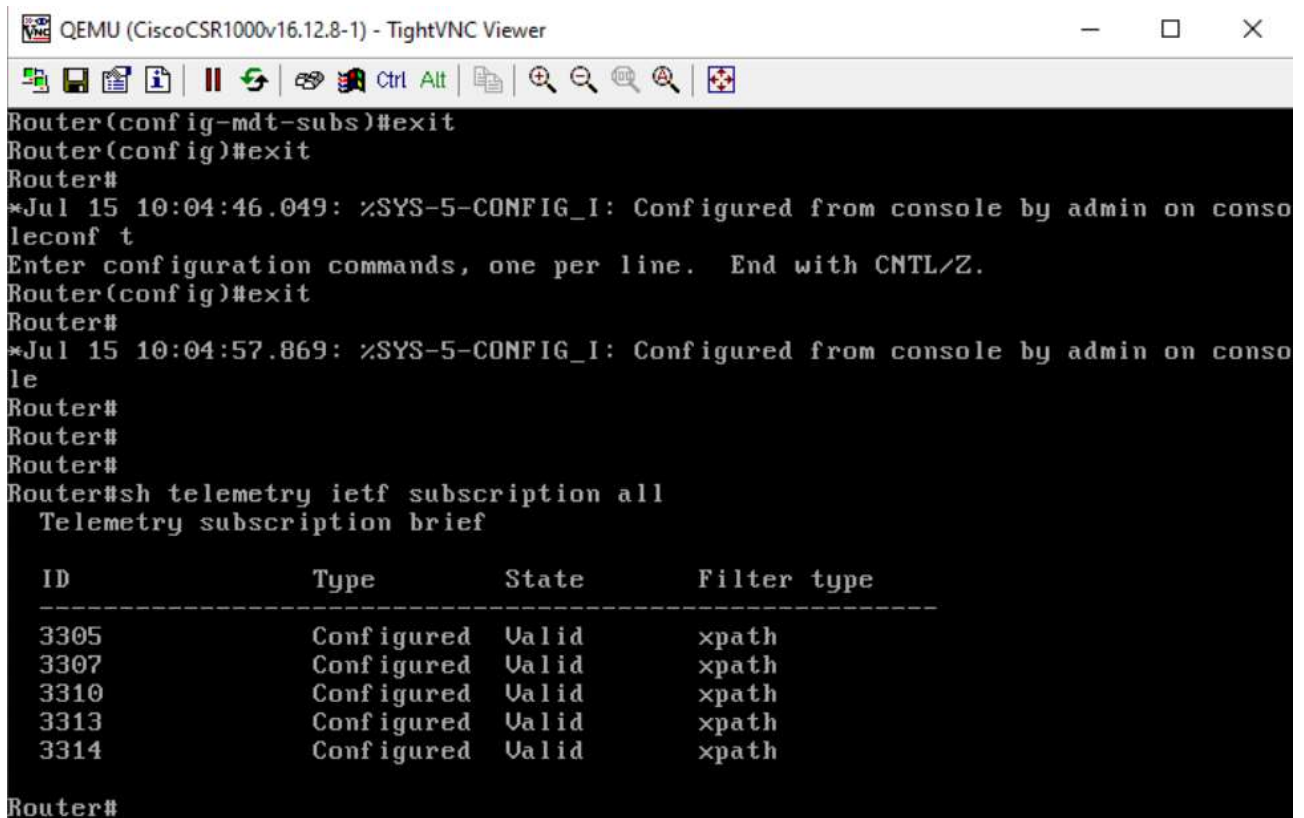
<https://github.com/jeremycohoe/cisco-ios-xe-mdt/blob/master/cat9k-174-device-health-dashboa>

Configure the Telemetry for IETF 3305, 3307, 3310, 3313, 3314 as per the commands described on above URL

Source IP address: Ip address of router (check show ip interface br)

Receiver IP: 172.20.0.11 (Telegraf IP address)

Post configuration, check the status of Telemetry on router as per below



```
QEMU (CiscoCSR1000v16.12.8-1) - TightVNC Viewer

Router(config-mdt-sub)#exit
Router(config)#exit
Router#
*Jul 15 10:04:46.049: %SYS-5-CONFIG_I: Configured from console by admin on console
leconf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#exit
Router#
*Jul 15 10:04:57.869: %SYS-5-CONFIG_I: Configured from console by admin on console
le
Router#
Router#
Router#
Router#sh telemetry ietf subscription all
  Telemetry subscription brief

  ID                Type        State        Filter type
  ----
  3305              Configured  Valid        xpath
  3307              Configured  Valid        xpath
  3310              Configured  Valid        xpath
  3313              Configured  Valid        xpath
  3314              Configured  Valid        xpath

Router#
```


Go to path: `cd /opt/others/telegraf`

Check the telegraf and influxdb container configuration

```
gns3@gns3vm: ~  
GNS3 2.2.43  
x x Information Display VM information  
x x Channel Select the release channel  
x x Upgrade Upgrade the GNS3 VM  
x x Shell Open a shell  
x x Log Show the GNS3 server log  
x x Test Check Internet connection  
x x Qemu Switch Qemu version  
x x Security Configure server authentication  
x x Keyboard Change keyboard layout  
x x Console Change console settings (font size etc.)  
x x Configure Edit server configuration (advanced users ONLY)  
gns3@gns3vm:~$  
gns3@gns3vm:~$ k  
gns3@gns3vm:~$ e  
gns3@gns3vm:~$  
gns3@gns3vm:~$ cd/opt/others/telegraf  
< OK > <Cancel>
```

```
gns3@gns3vm: /opt/others/telegraf  
gns3@gns3vm:~$ cd /opt/others/telegraf  
gns3@gns3vm:/opt/others/telegraf$ cat docker-compose.yml  
version: '3.6'  
services:  
  telegraf:  
    image: telegraf:1.18-alpine  
    volumes:  
      - ./telegraf_etc/telegraf.conf:/etc/telegraf/telegraf.conf:ro  
    depends_on:  
      - influxdb  
    links:  
      - influxdb  
    ports:  
      - '57500:57500'  
  
  influxdb:  
    image: influxdb:1.8-alpine  
    env_file: configuration.env  
    ports:  
      - '8086:8086'  
    volumes:  
      - ./:/imports  
      - ./influxdb_data:/var/lib/influxdb  
gns3@gns3vm:/opt/others/telegraf$
```



```
gns3@gns3vm: /opt/others/telegraf
- '8086:8086'
volumes:
- ./:/imports
- ./influxdb_data:/var/lib/influxdb
gns3@gns3vm:/opt/others/telegraf$ cat telegraf_etc/telegraf.conf
# Global Agent Configuration
[agent]
hostname = "cisco_mdt"
flush_interval = "5s"
interval = "5s"

# gRPC Dial-Out Telemetry Listener
[[inputs.cisco_telemetry_mdt]]
transport = "grpc"
service_address = ":57500"

# Output Plugin InfluxDB
[[outputs.influxdb]]
database = "mdt_grpc"
urls = [ "http://172.20.0.11:8086" ]

[[outputs.file]]
files = [ "/tmp/telegraf-grpc.log" ]
gns3@gns3vm:/opt/others/telegraf$
```

Run the container as per below
Docker-compose up -d

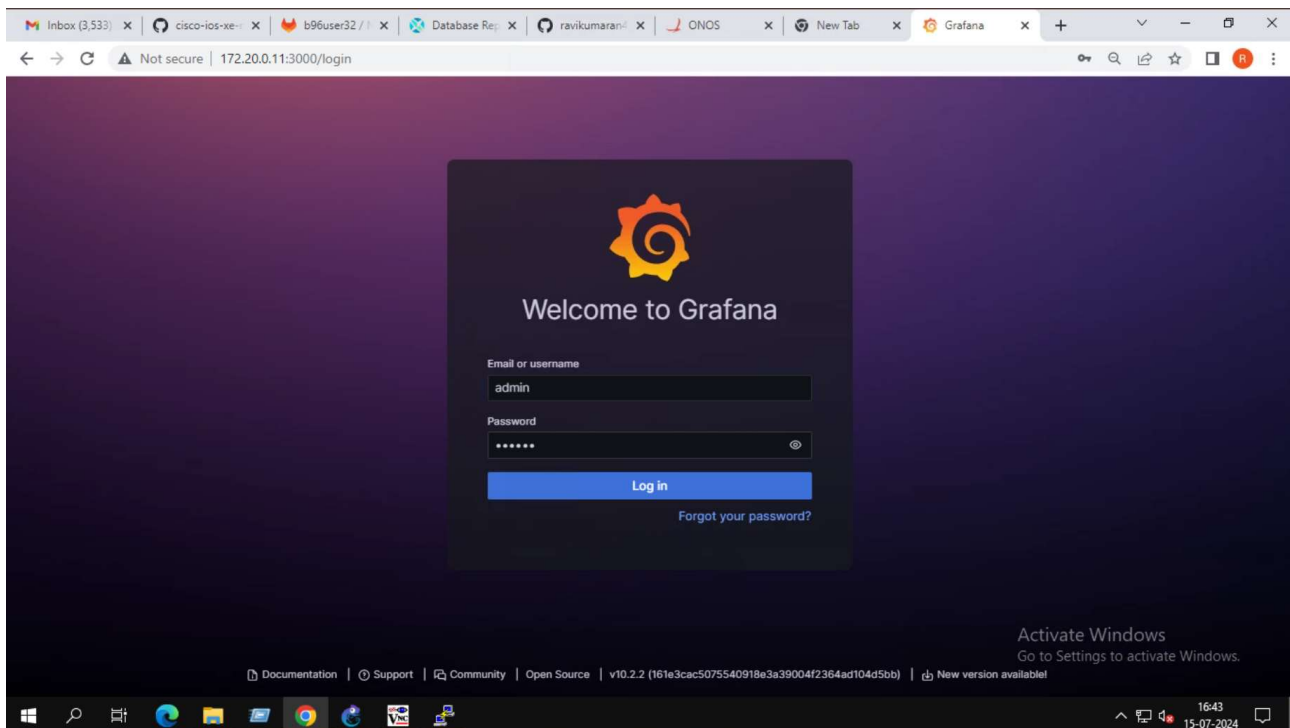
```
gns3@gns3vm: /opt/others/telegraf

# gRPC Dial-Out Telemetry Listener
[[inputs.cisco_telemetry_mdt]]
transport = "grpc"
service_address = ":57500"

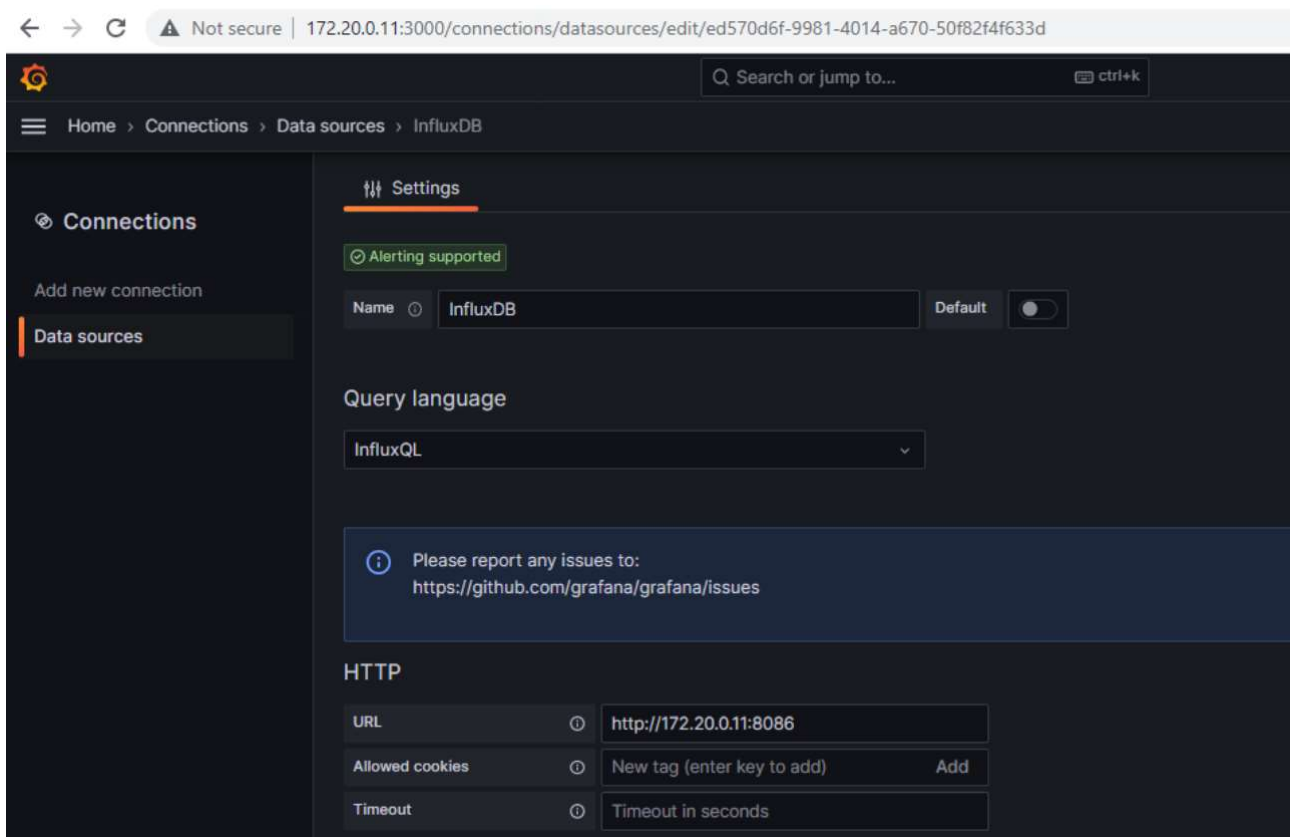
# Output Plugin InfluxDB
[[outputs.influxdb]]
database = "mdt_grpc"
urls = [ "http://172.20.0.11:8086" ]

[[outputs.file]]
files = [ "/tmp/telegraf-grpc.log" ]
gns3@gns3vm:/opt/others/telegraf$ docker-compose up -d
[+] Building 0.0s (0/0)                                docker:default
[+] Running 2/2
  ✓ Container telegraf-influxdb-1 Start...             0.0s
  ✓ Container telegraf-telegraf-1 Start...             0.0s
gns3@gns3vm:/opt/others/telegraf$ docker-compose up -d
[+] Building 0.0s (0/0)                                docker:default
[+] Running 2/0
  ✓ Container telegraf-influxdb-1 Runni...             0.0s
  ✓ Container telegraf-telegraf-1 Runni...             0.0s
gns3@gns3vm:/opt/others/telegraf$
```

Step 5: Login to Grafana: 172.20.0.11:3000 (admin/mypass)



Import the InfluxDB database Connection/ data source



Database	mdt_grpc
User	
Password	Password
HTTP Method	GET
Min time interval	5
Max series	1000

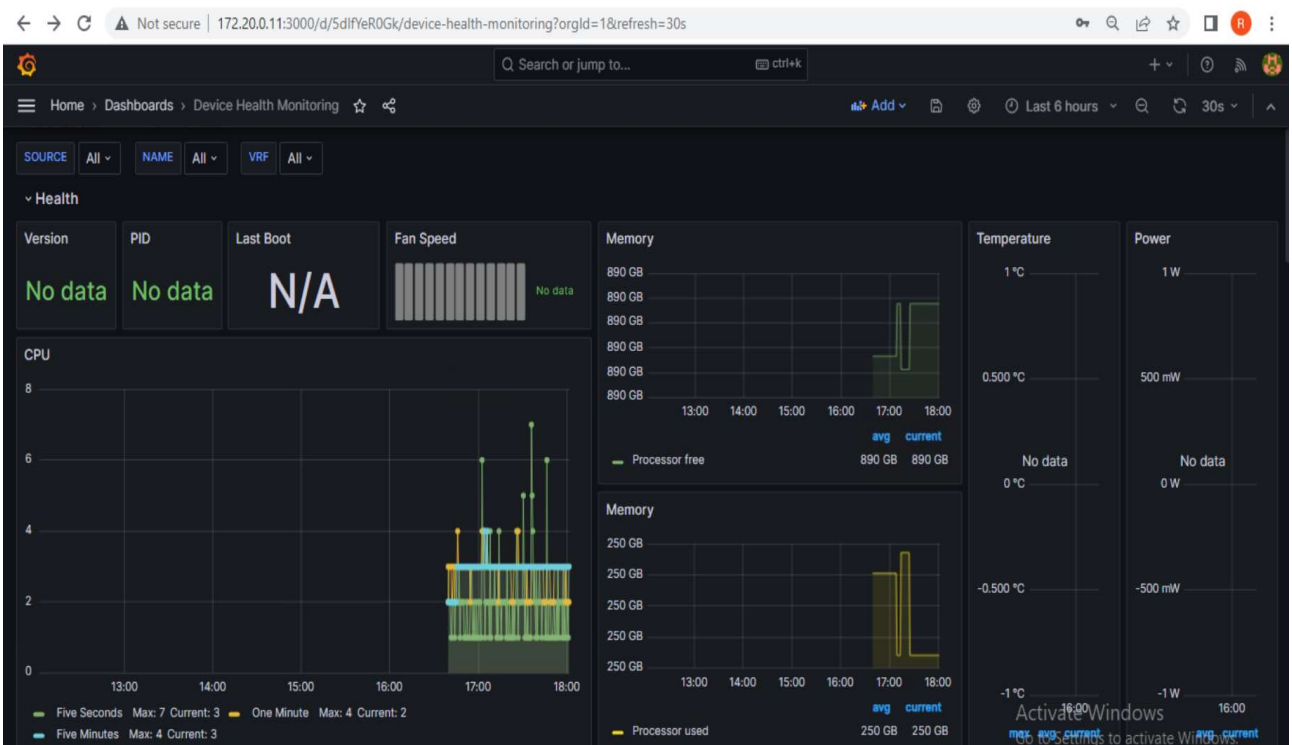
Delete
Save & test

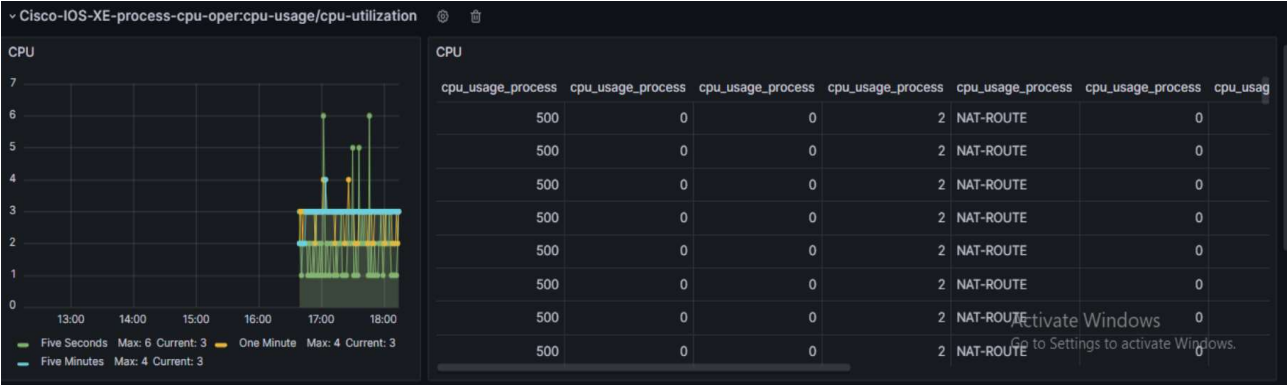
Import the Dashboard:

<https://grafana.com/grafana/dashboards/13462-device-health-monitoring/>

Copy to clipboard:

Go to Grafana: Dashboard/import





Cisco-IOS-XE-interfaces-oper:interfaces/interface + Charts

Interface Stats

admin_status	bia_address	ether_state/auto	ether_state/enab	ether_state/nego	ether_state/nego	ether_stats/dot3	ether_stats/dot3	ether_stats/dot3	ether_stats/dot3
if-state-up	00:00:00:00:00:00								
if-state-up	0c:45:6a:a4:00:01	true	false	full-duplex	speed-1gb	0	0	0	0
if-state-up	0c:45:6a:a4:00:02	true	false	full-duplex	speed-1gb	0	0	0	0
if-state-up	0c:45:6a:a4:00:03	true	false	full-duplex	speed-1gb	0	0	0	0
if-state-up	0c:45:6a:a4:00:00	true	false	full-duplex	speed-1gb	0	0	0	0



```
Router#sh telemetry internal connection
Telemetry connection

Peer Address      Port  URF Source Address  Transport  State      Profile
-----
172.20.0.11      57500  0 172.20.0.112     grpc-tcp   Active
Router#
```