OPEN JTS – JUNIPER TELEMETRY STACK

09/2023 - DAVID ROY – TME MX

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Why Telemetry ?

SNMP

Collect mode: PULL

Transport Layer: IP / UDP (not reliable)

Port: 161

Application layer: SNMPv1; v2 or v3

Data model: MIB proprietary or standardized

Data format: SMI / ASN-1

Timestamp: Set by collector

Encoding : BER

Security: Community or key with SNMPv3

TELEMETRY gRPC

Collect mode: PUSH - STREAM

Transport Layer: IP / TCP (reliable)

Port : 9339 (configurable)

Application layer: HTTP/2 gRPC

Data model: Vendor specific or Vendor Neutral

Data format: YANG

Timestamp: Set by the router (even LC)

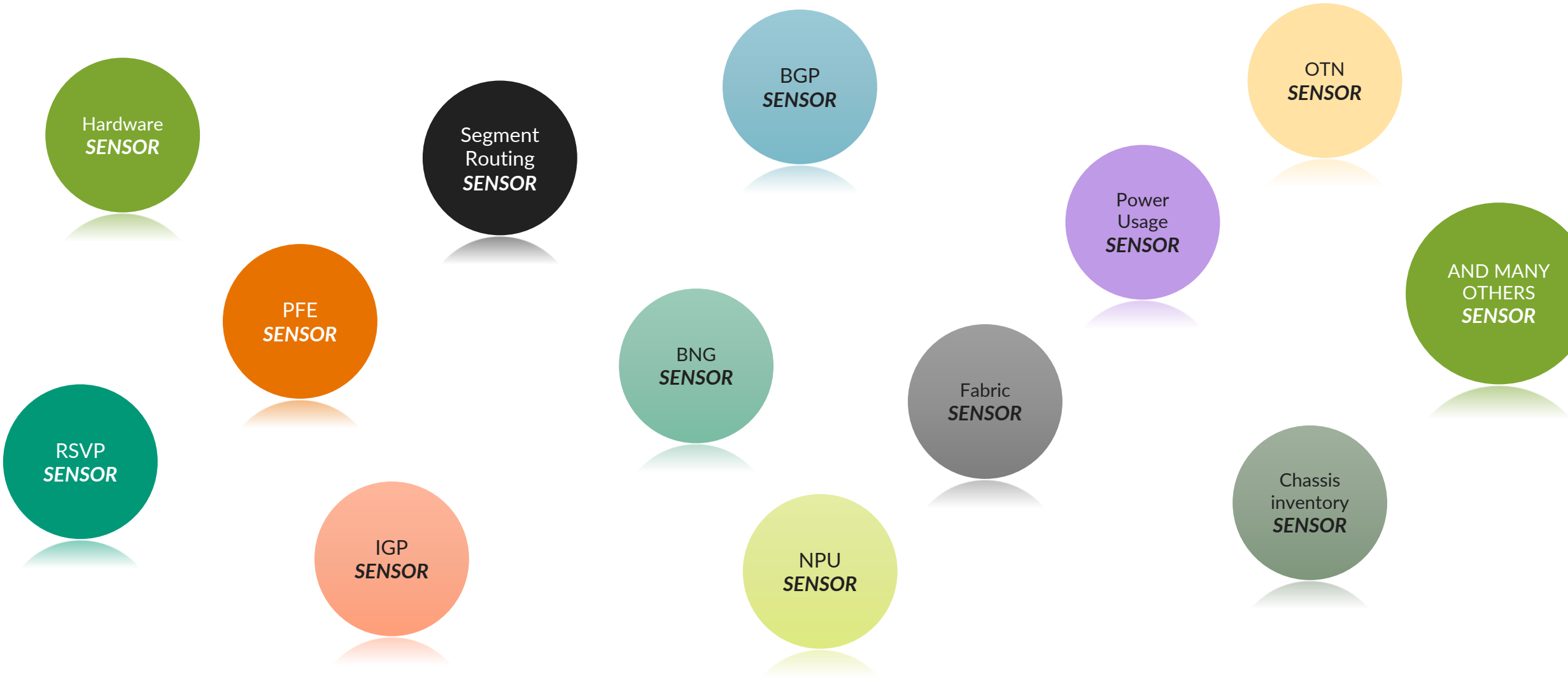
Encoding : ProtoBuf (GPB) or JSON

Security: login/pwd & TLS certificate

AND LAST BUT NOT THE LEAST

MOST OF THE NEW COUNTERS ARE ONLY AVAILABLE VIA TELEMETRY

Juniper supports many sensors…



Visit: https://apps.juniper.net/ydm-explorer/

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Juniper Initiative

Help our customers to discover the power of the Juniper Streaming Telemetry

OpenJTS

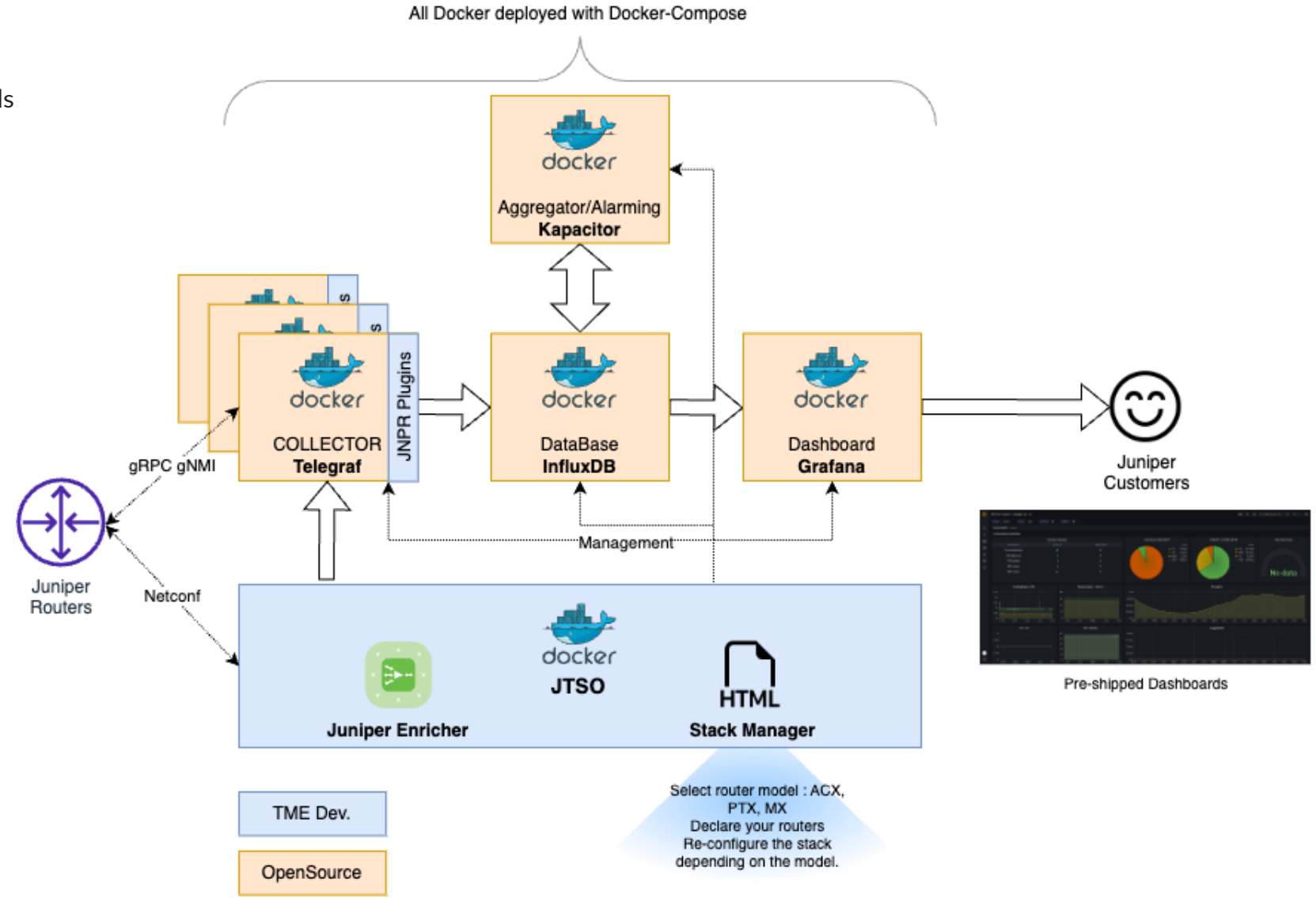
Juniper Telemetry Stack

- A Reboot of the OpenNTI Opensource project but with more features:
- Provide a complete/integrated/simple solution to quickly discover/test the power of Juniper Telemetry Interface
- Build around several OpenSource Tools and some Juniper development.
- For lab/pre-production
- Help discovering Juniper Telemetry Power for the routing portofolio: **ACX, MX, PTX and probably more in a second phase**
- Deploy in one command: Telemetry up and running in few minutes - easy to use!
- Shipped with pre-defined templates and dashbords: nothing to do!
- Easy to evolve – New profiles will be added during the time
- New Code Name for this OpenSource initiative:

OpenJTS Architecture

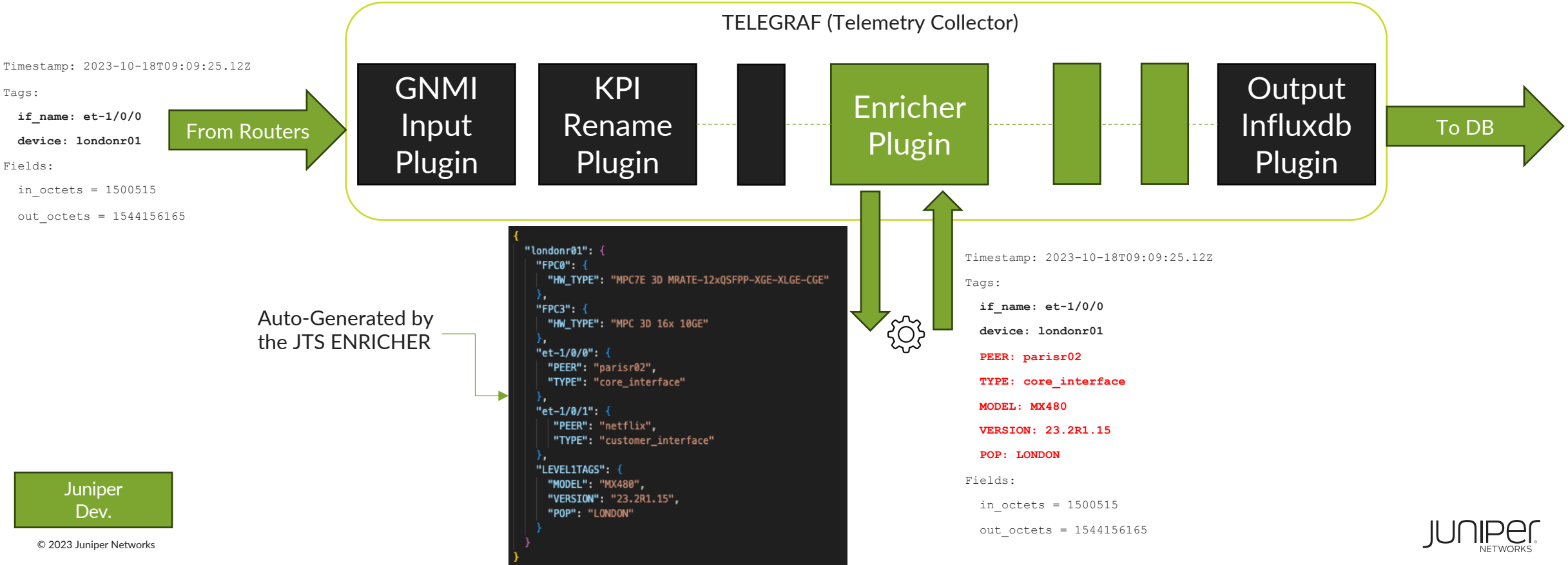
90% OpenSource Tools

10% Juniper dev.



JTS Enricher

- Automatic Enricher base on Netconf
- Collect well-known « show » command
- Format output in JSON files that will be injested by the Telemetry collectors: help to enrich on-the-fly telemetry data. JSON file maybe also modified with additionnal data by third party tool.



Juniper Dev.

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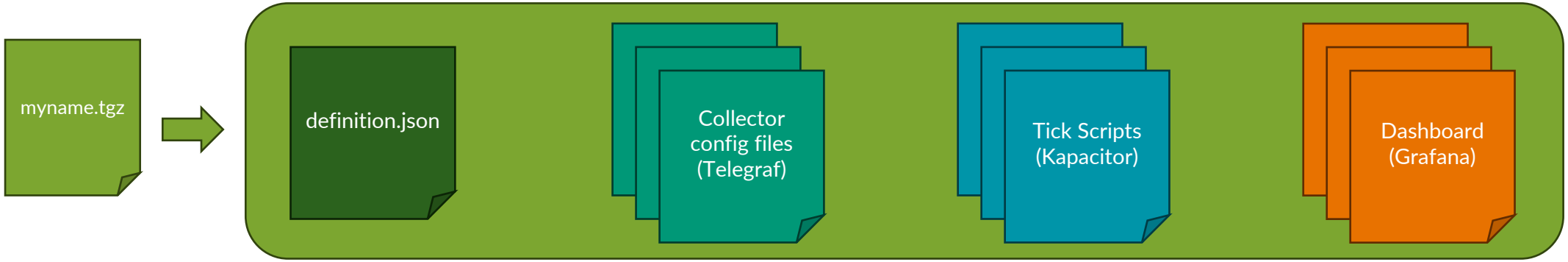
JTS Profile

What is a profile?



definition.json

```
{
  "cheatsheet": "optic.png",
  "description": "This profile provides template for collecting optical data",
  "telegraf": {
    "mx": [ {
      "version": "all",
      "conf": "mx_optic.conf"
      },
      {
        "version": "23.2",
        "conf": "mx_optic.23.2.conf"
      }
    ],
    "ptx":[ {
      "version": "all",
      "conf": "ptx_optic.conf"
      }
    ],
    "acx": [ {
      "version": "all",
      "conf": "acx_optic.conf"
      }
    ]
  },
  "kapacitor": null,
  "grafana": [
    "optic.json"
  ]
}
```

- Just a TGZ file including several files.
- Must follow naming convention
- Design Guide to let anybody make his own profile will be provided.

- **Easy to evolve… Adding profiles without touching the code…**

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OpenJTS up and running

- Steps to play with OpenJTS:
  1. Enable gRPC and Netconf services
  2. git clone https://xxxxxxxx/jts
  3. docker compose up -d
  4. Go to http://xxxxx/jtso.html
     - Fill your routers IP/Name/Credentials info
     - Assign a pre-defined profile to your routers:
       - Optical monitoring profile
       - Health monitoring profile
       - Traffic & CoS monitoring profile
       - BGP monitoring profile

       …
  5. Use pre-shipped Grafana Dashboard
  6. Enjoy your KPI and That's all….

Simple User Guide

Step 1: configure your router(s) - do it only one time

```
# Netconf User
set system login user netconf_user class super-user
set system login user netconf_user authentication encrypted-password “”

#gNMI User
set system login user gnmi_user class super-user
set system login user gnmi_user authentication encrypted-password “”

# Clear Text gRPC
set system services extension-service request-response grpc clear-text port 9339
set system services extension-service request-response grpc max-connections 8
set system services extension-service request-response grpc skip-authentication
# Or TLS encryption gRPC
set system services extension-service request-response grpc ssl port 9339
set system services extension-service request-response grpc ssl local-certificate lcert
set system services extension-service request-response grpc ssl mutual-authentication certificate-authority ca1
set system services extension-service request-response grpc ssl mutual-authentication client-certificate-request require-
certificate-and-verify

# Netconf
set system services netconf ssh
set system services netconf rfc-compliant #optional
```

Simple User Guide

Step 2: Install & Run the stack

Do it only one time

```
dave@ubuntu-02:~$ mkdir -p /opt/JTS

dave@ubuntu-02:$ cd /opt/JTS

dave@ubuntu-02:/opt/JTS$ git clone https://door7302@xxxxxxxxxxxxxxxx/jts.git .

dave@ubuntu-02:/opt/JTS$ cd compose

dave@ubuntu-02:/opt/JTS/compose$ docker compose up -d
[+] Running 8/8
 ✓ Network compose_default  Created
 ✓ Container influxdb       Started
 ✓ Container jtso           Started
 ✓ Container grafana        Started
 ✓ Container kapacitor      Started
 ✓ Container telegraf_ptx   Started
 ✓ Container telegraf_mx    Started
 ✓ Container telegraf_acx   Started
```

Tunning available in the install guide

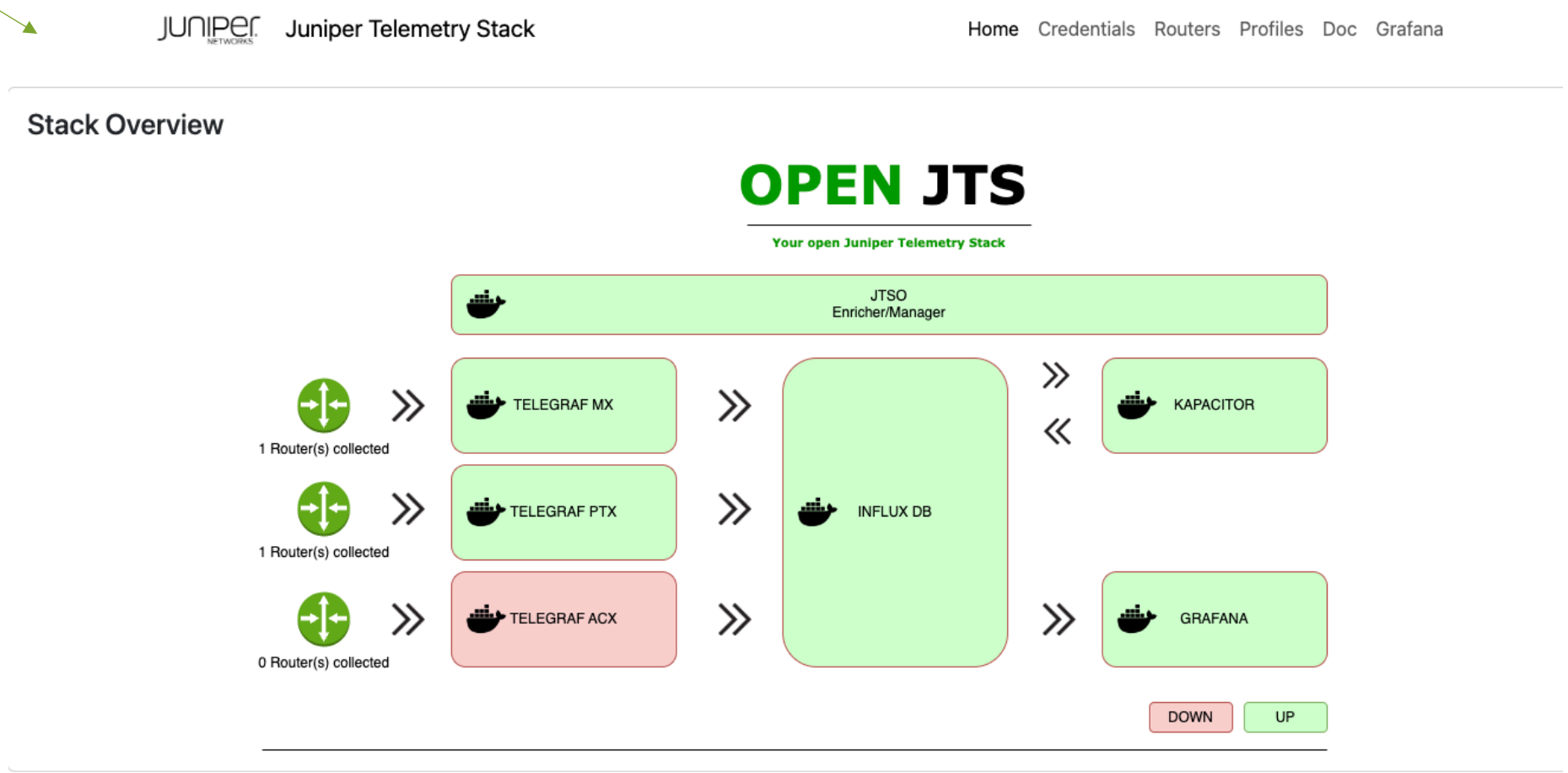
First Time it takes 5 minutes due to Telegraf & JTSO compilation

Then it takes 5 seconds to start

Simple User Guide

Step 3: Configure JTSO – Stack state

HTTP & HTTPS Access



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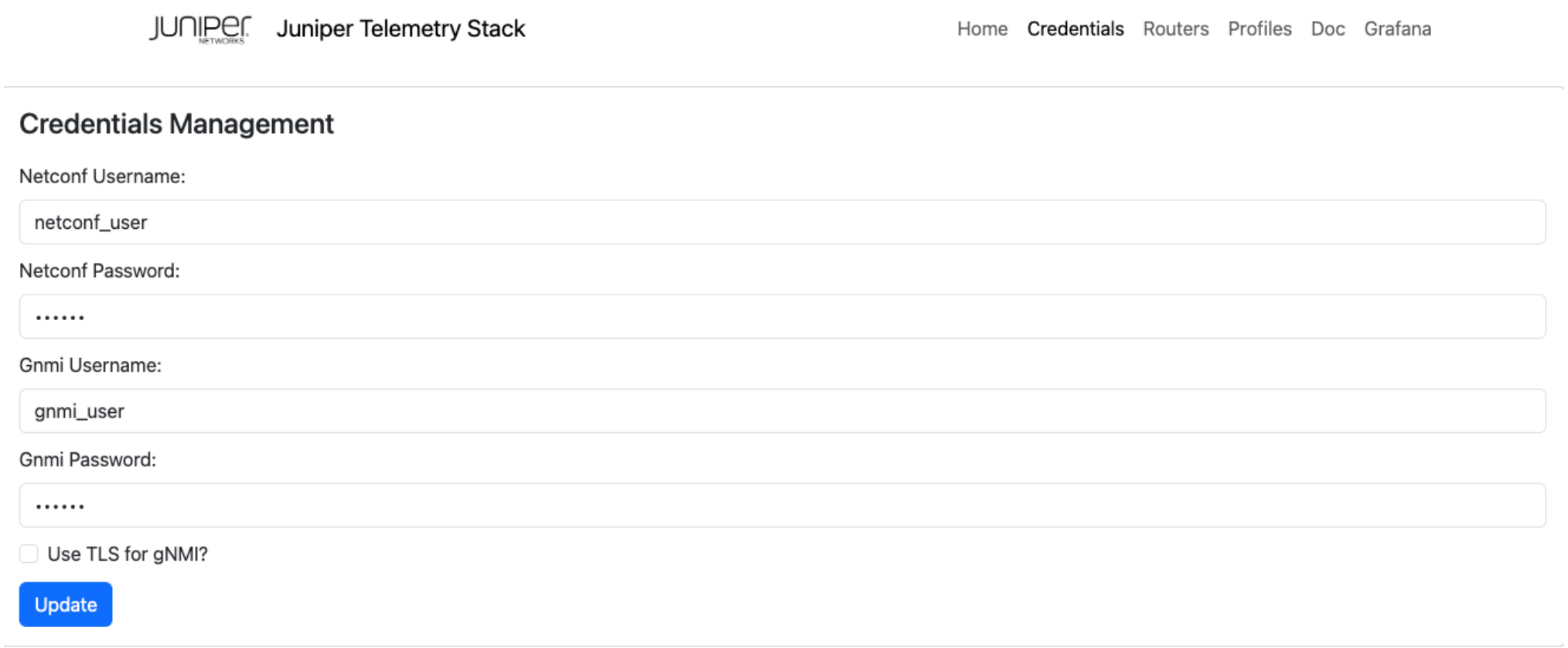
Step 3: Configure JTSO – Set your credentials - gRPC encryption



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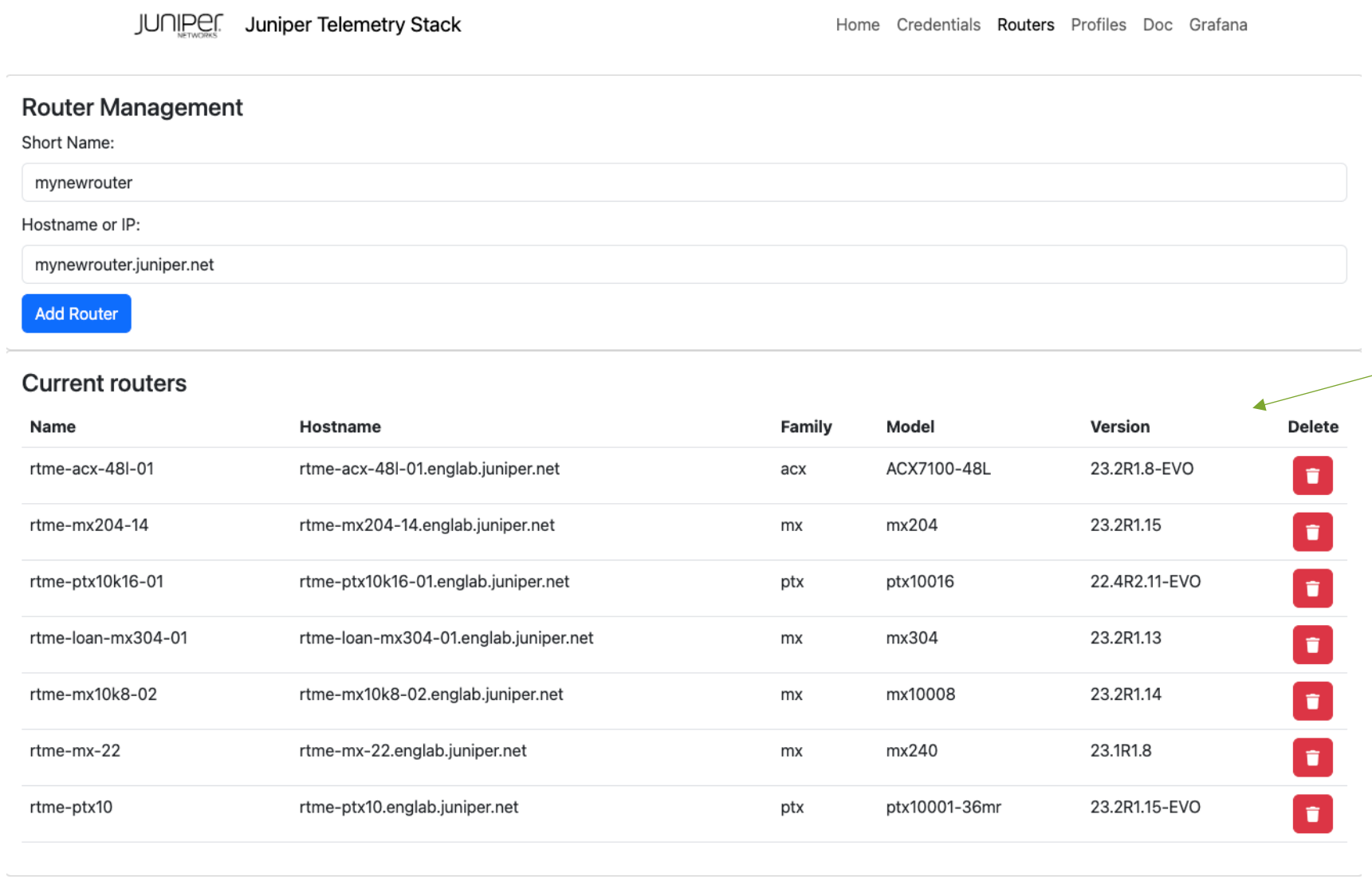
Step 3: Configure JTSO – Add router(s) to inventory



Auto discovery (Netconf) of the family, model and version

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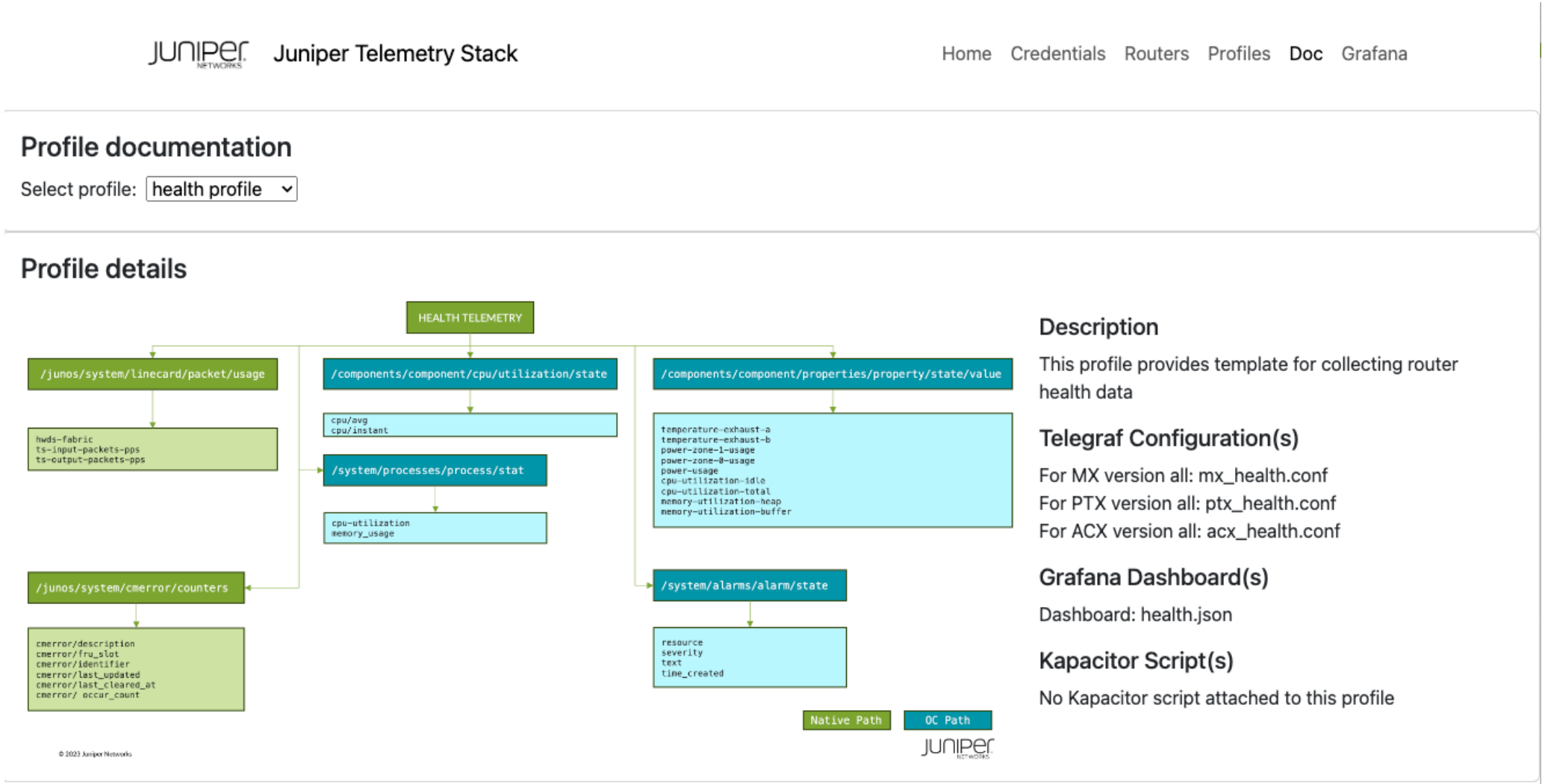
Step 4: Access to profile doc



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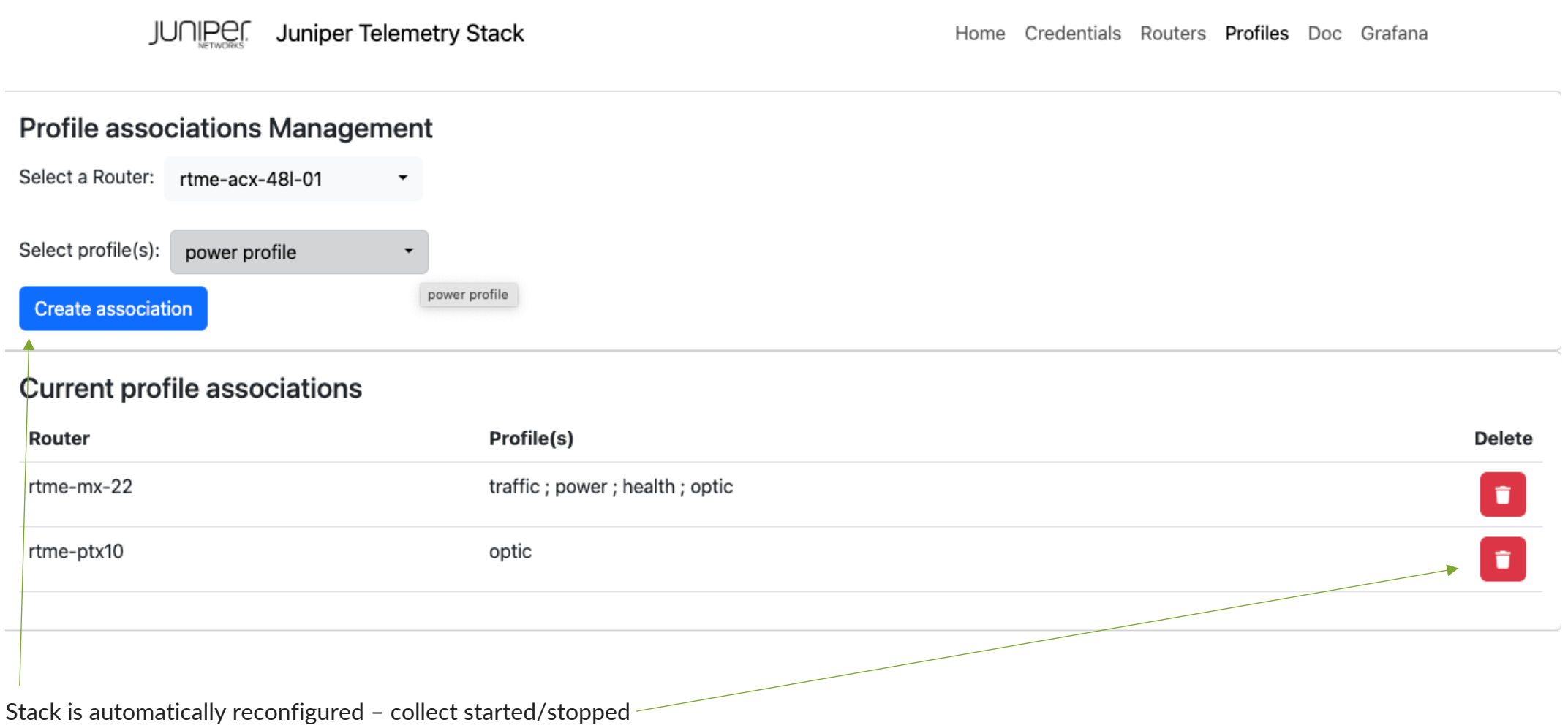
Step 5: Assign router(s) to profile(s)



Stack is automatically reconfigured – collect started/stopped

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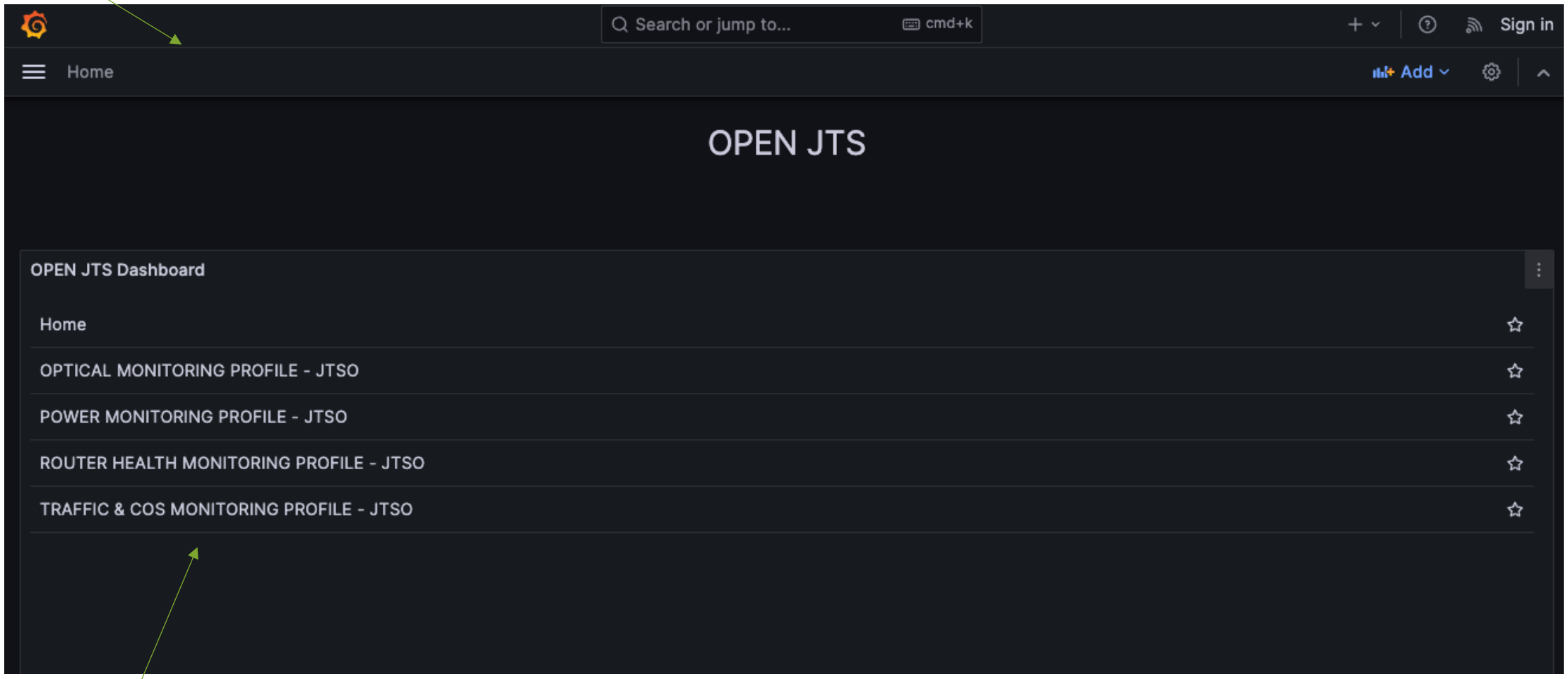
Step 6: Access to Grafana Home

HTTP & HTTPS Access



Dynamically updated depending on the active profile(s)

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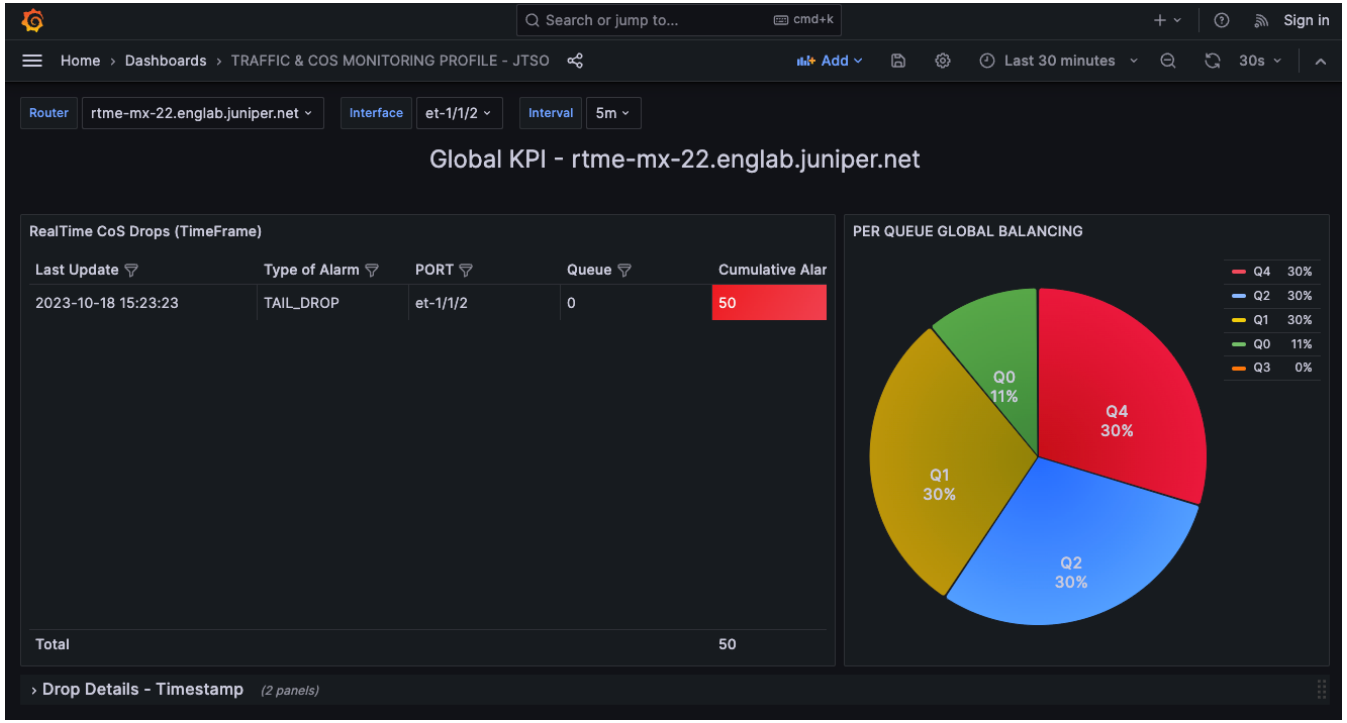
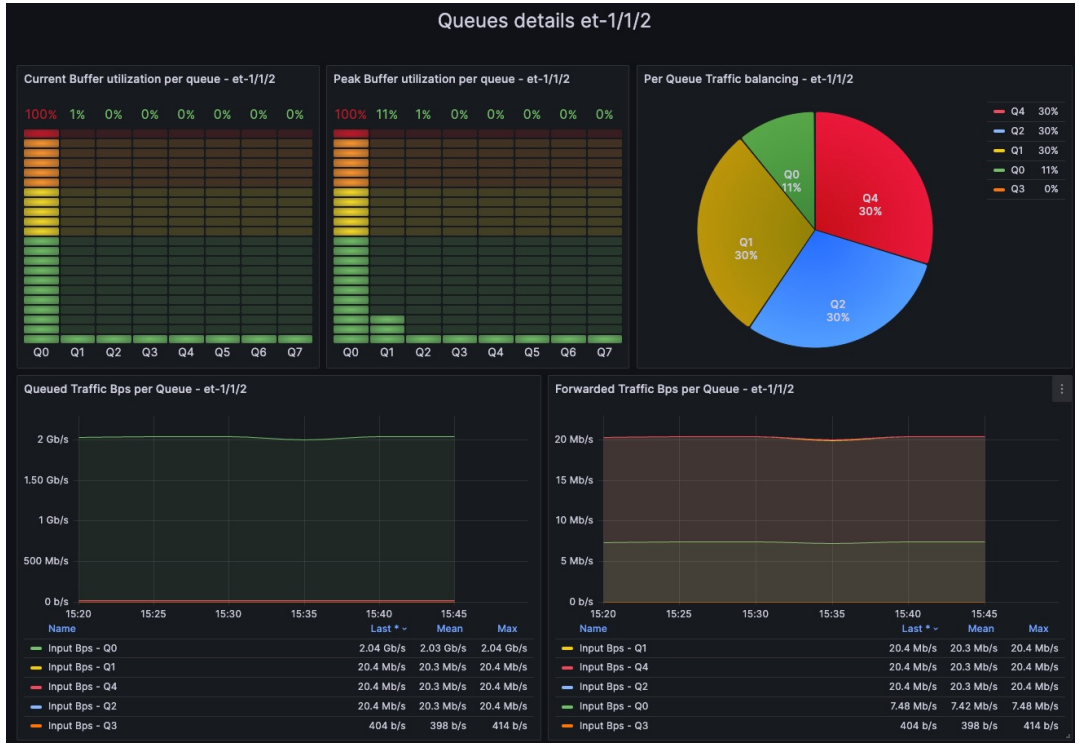
Step 7: Enjoy pre-shipped Dahboards





THANK YOU

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