



# Streamování telemetrie, datové modely a TSDB

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NIX.CZ



Time Series Database



Datové modely (zdroje)



Evoluce v NIX.CZ



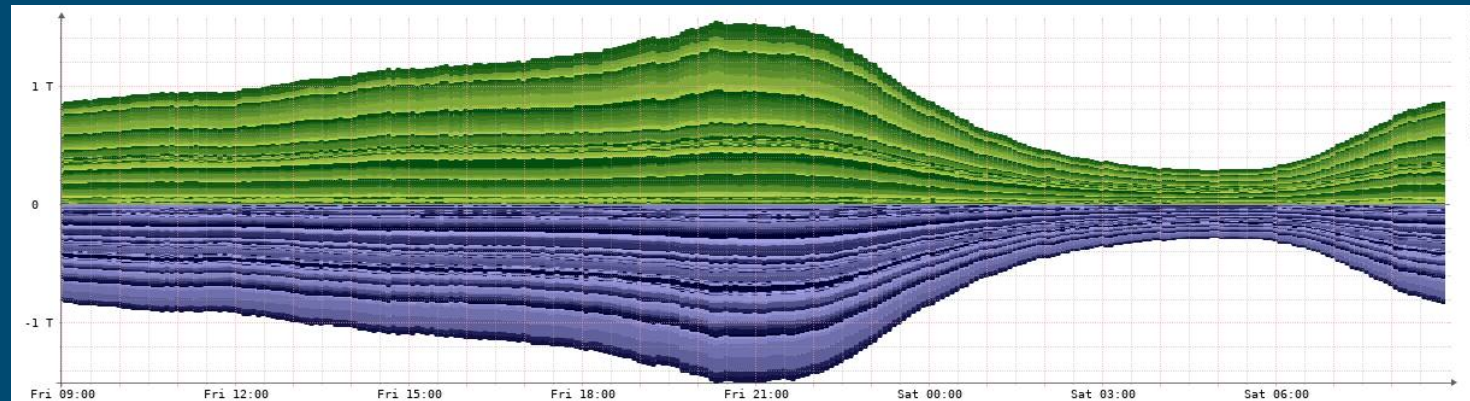
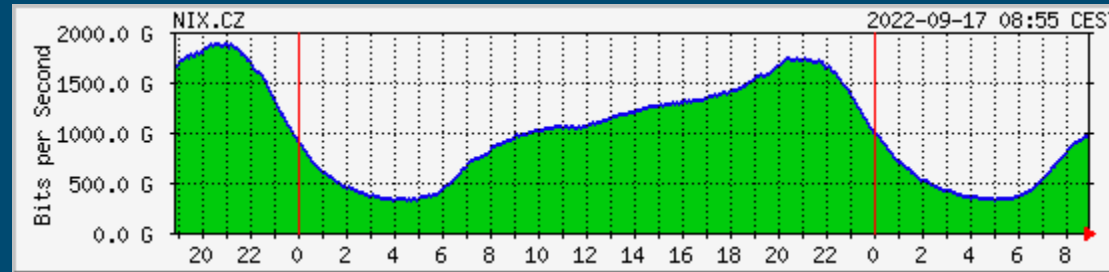
Migrace CZ DME API



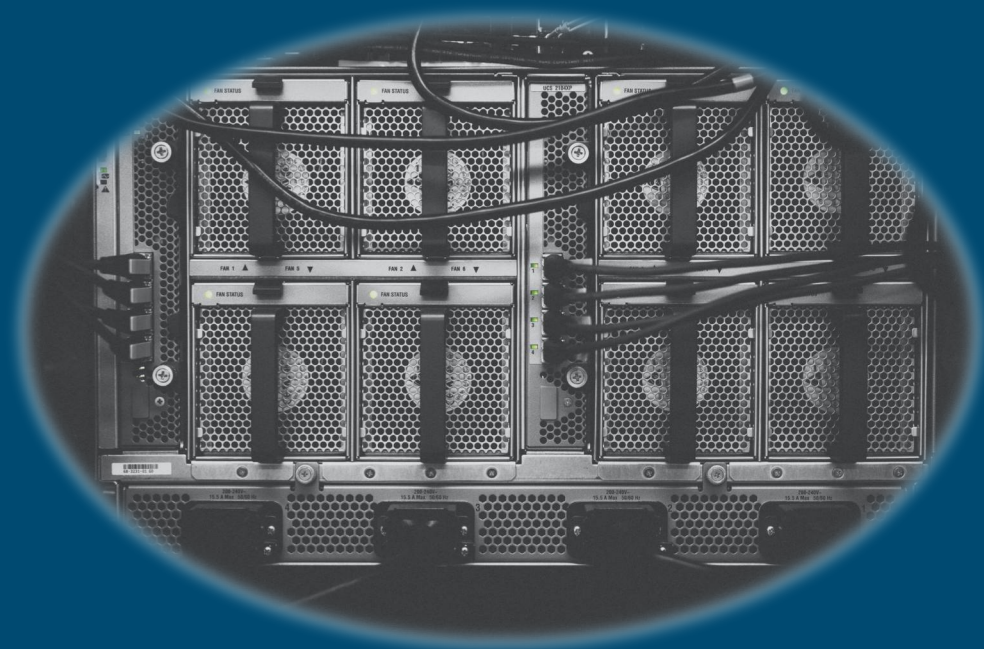
Streamování telemetrie



# Time Series Database



# Time Series Database



**Datové modely (zdroje)**

Datově modelovaný „univerzální“ jazyk

Snaha o  
standardizaci

Výrobci udržují specifické „deviation“

Yet Another Next generation

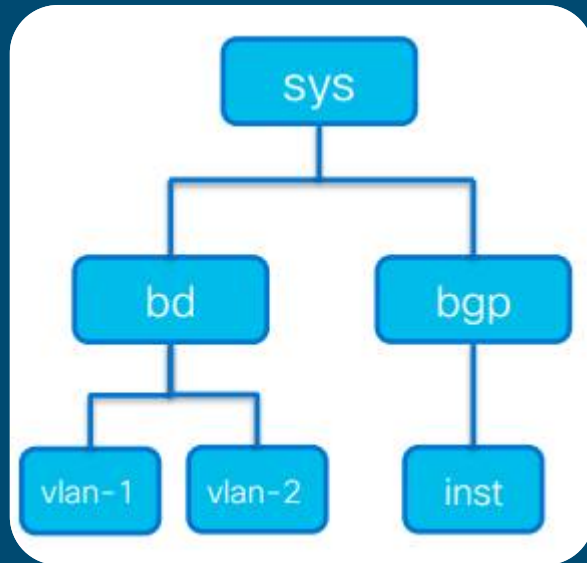
openconfig-interfaces:interfaces/interface/state/oper-status

 *model name*  
 *container*  
 *list*  
 *leaf*

# Yet Another Next generation

# Stromová struktura

Kořen stromu „sys“



Zápis  
„sys/bgp/inst“

Cisco DME



# Konfigurace pomocí objektů

/api/mo/sys/snmp/inst.json

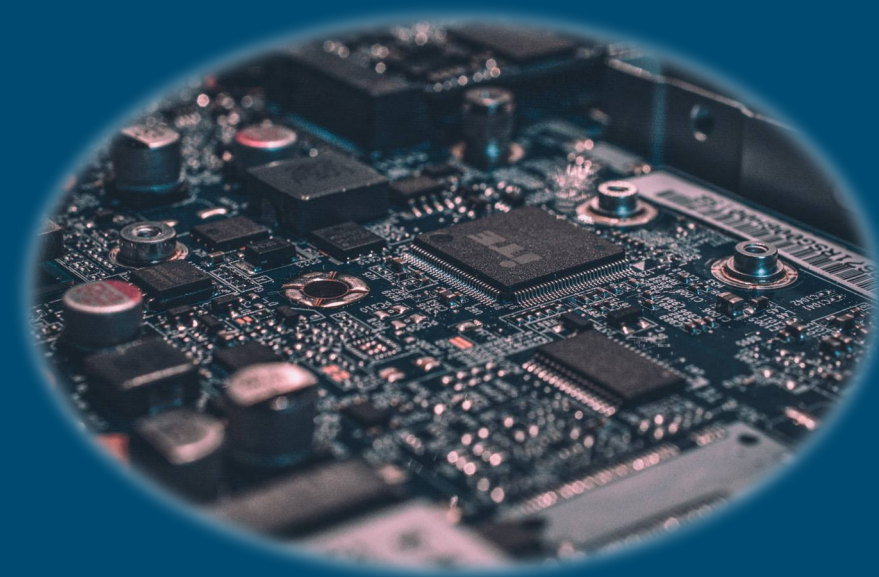
```
{
  "snmpInst": {
    "children": [
      {
        "snmpHost": {
          "attributes": {
            "commName": „community“,
            "hostName": "192.168.1.1",
            "notifType": "traps",
            "udpPortID": 162,
            "version": "v1"
          }
        }
      }
    ]
  }
}
```

```
{
  "snmpInst": {
    "children": [
      {
        "snmpHost": {
          "attributes": {
            "commName": „community“,
            "hostName": „192.168.1.1“,
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            "version": "v1"
          }
        }
      }
    ]
  }
}
```

Cisco DME



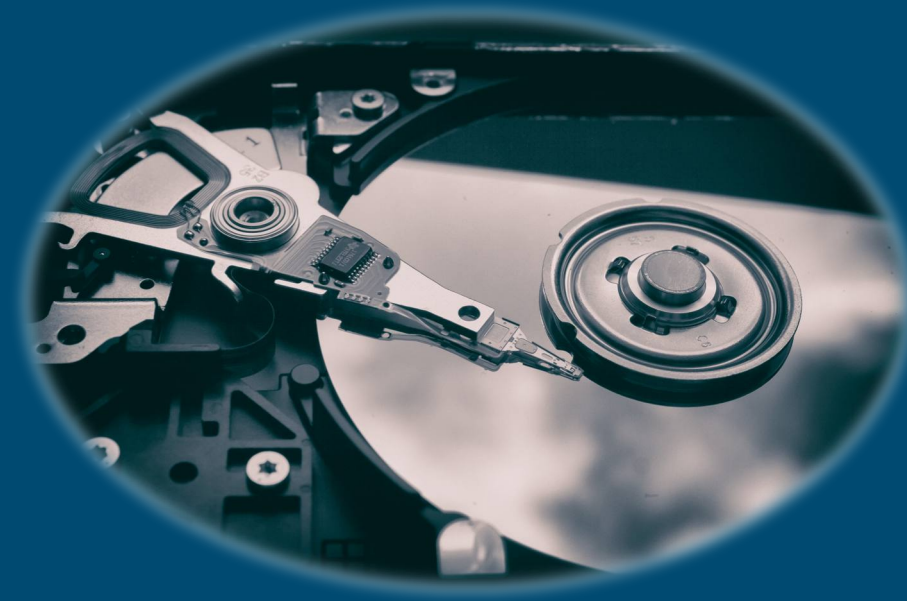
Evolve v NIX.CZ



Migrace CZ DME API



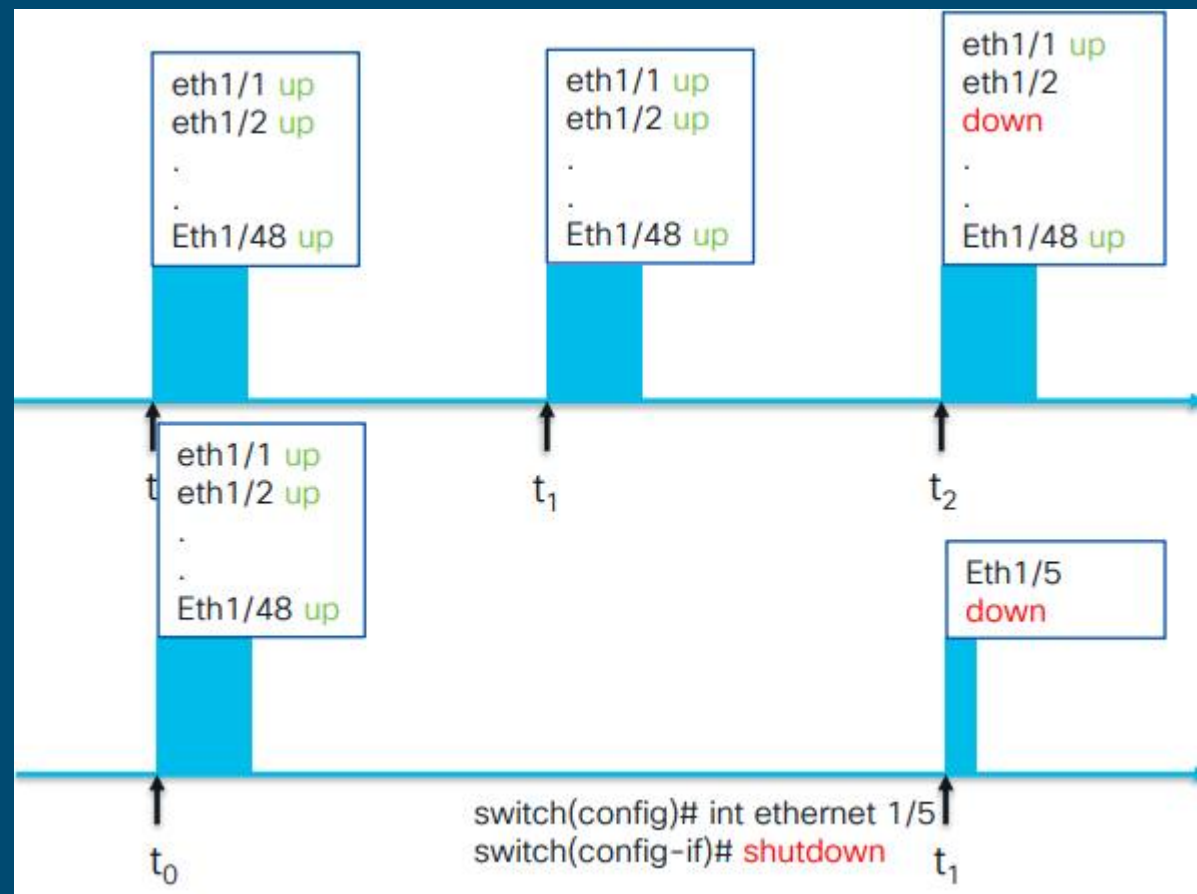
# Streamování telemetrie



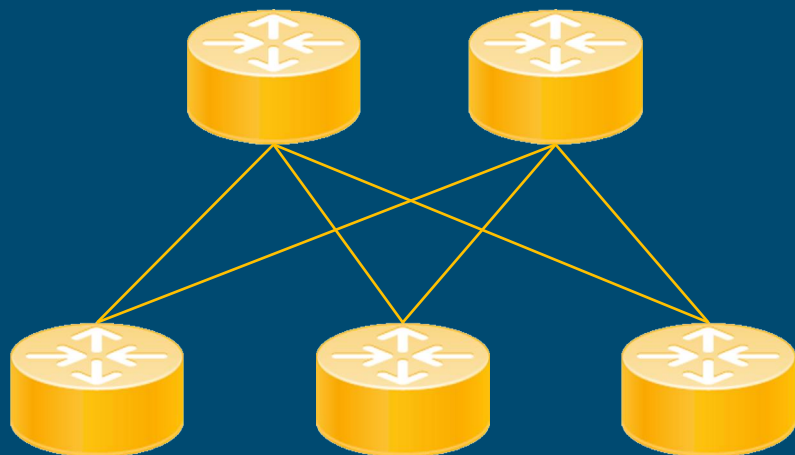
**Streamování telemetrie**

# Vzorkování

Na základě události



# Druhy telemetrie



Jaký je stav BGP?  
Jaké jsou stavy čítačů rozhraní?  
Jaké jsou stavy rozhraní?  
Běží OSPF?

# Proč potřebujeme telemetrii?



<https://www.ciscolive.com/c/dam/r/ciscolive/global-event/docs/2022/pdf/BRKDCN-2991.pdf>

# Proč potřebujeme telemetrii?



```
telemetry
  destination-group 100
    ip address 192.168.1.1 port 57000 protocol gRPC encoding GPB
    use-chunking size 4096
  sensor-group 100
    path sys/intf depth unbounded
  subscription 600
    dst-grp 100
    snsr-grp 100 sample-interval 10000
```

# Konfigurace telemetrie

```
path sys/bgp query-condition
```

```
query-target=subtree&target-subtree-class=
```

```
bgpDom , bgpPeer , bgpPeerAf , bgpDomAf , bgpPeerAfEntry , bgpOperRtctrlL3 , bgpOperRttP , bgpOperRttEntry , bgpOperAfCtrl
```

# Výběr podstromu tříd

```
path sys/bd/bd-[vlan-100] depth 0
```

```
filter-condition eq(l2BD.operSt, "down")
```

# Detekce událostí

sys/intf(100) :

GPB Encoded Data size in bytes (Cur/Min/Max) :

434528/434455/446008

Collection Time in ms (Cur/Min/Max) : 375/1/538

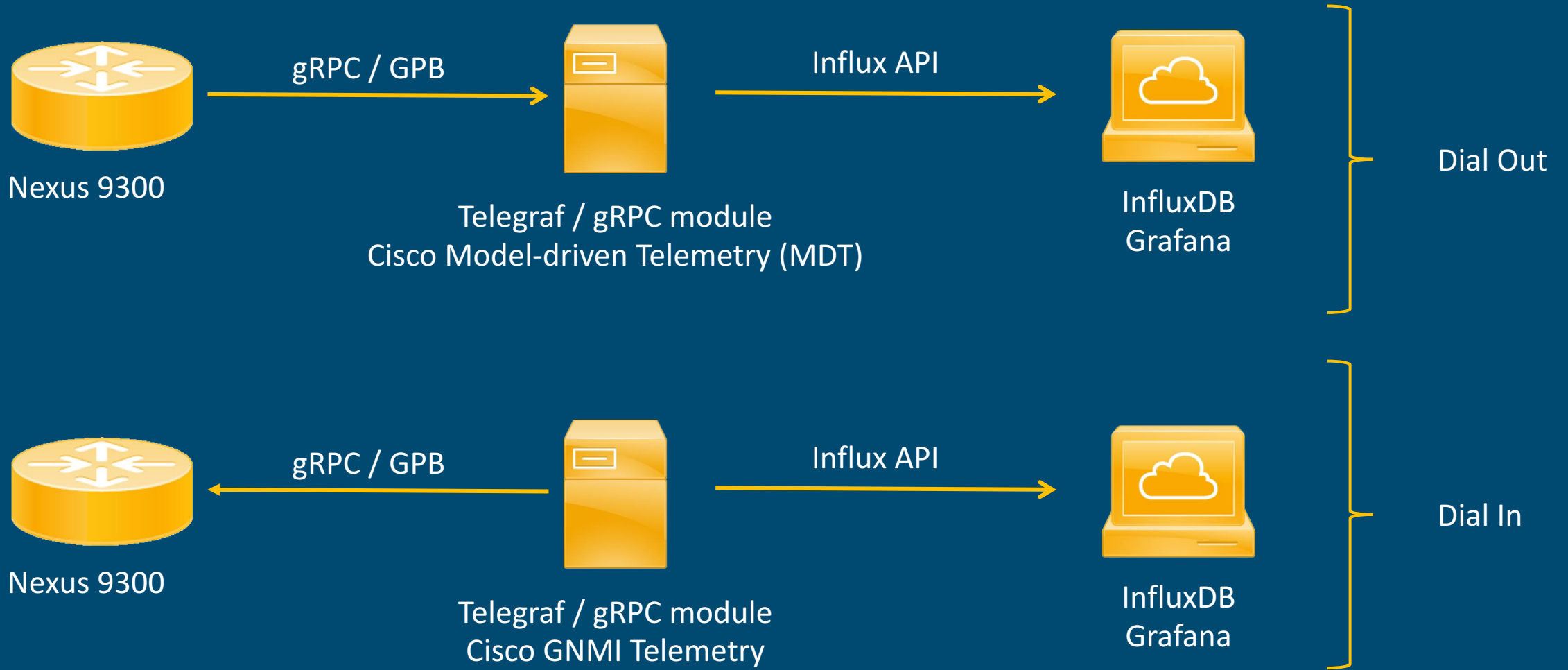
Encoding Time in ms (Cur/Min/Max) : 139/129/295

Transport Time in ms (Cur/Min/Max) : 1/1/63

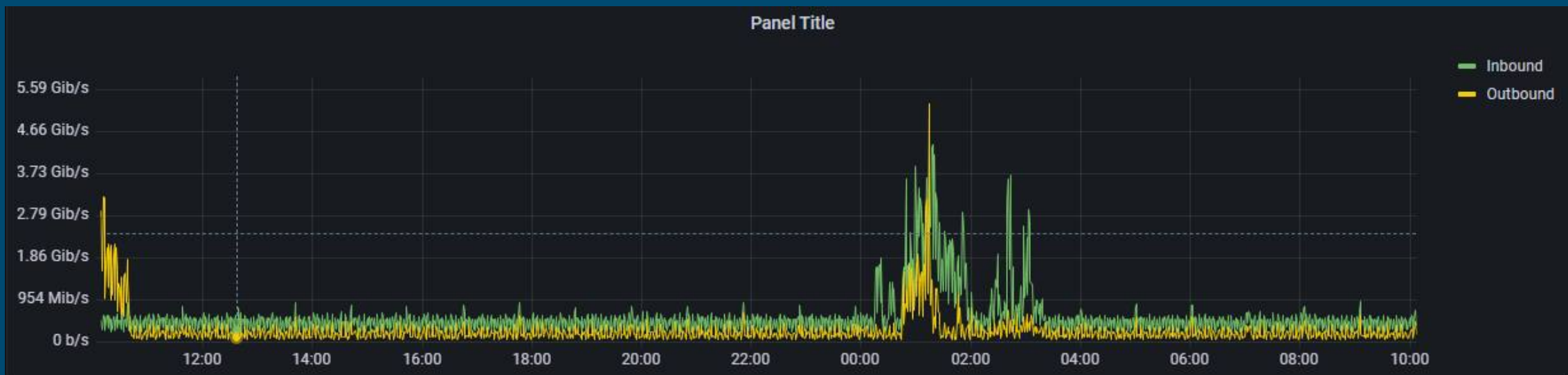
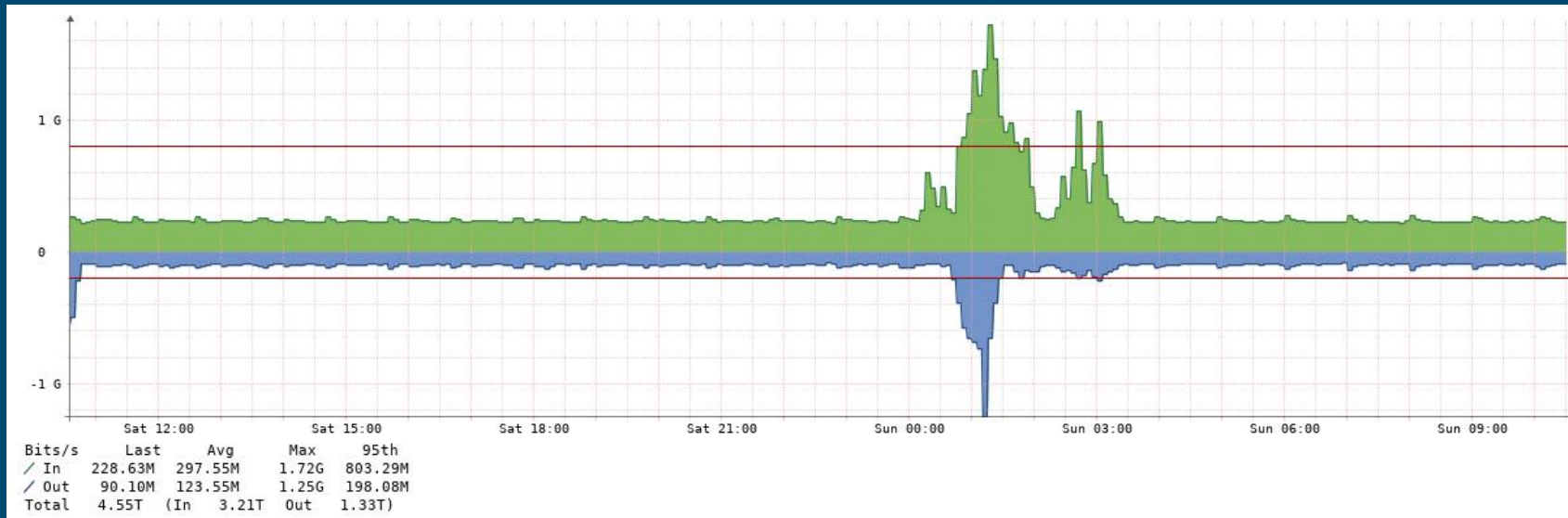
Streaming Time in ms (Cur/Min/Max) : 525/1/753

rmonIfIn,rmonIfOut,rmonIfHCIn,rmonIfHCOut,rmonEtherStats,pcAggrIf,ethpmPhysIf,pcAggrIfExtended,eqptFcotDomStats

Provoz

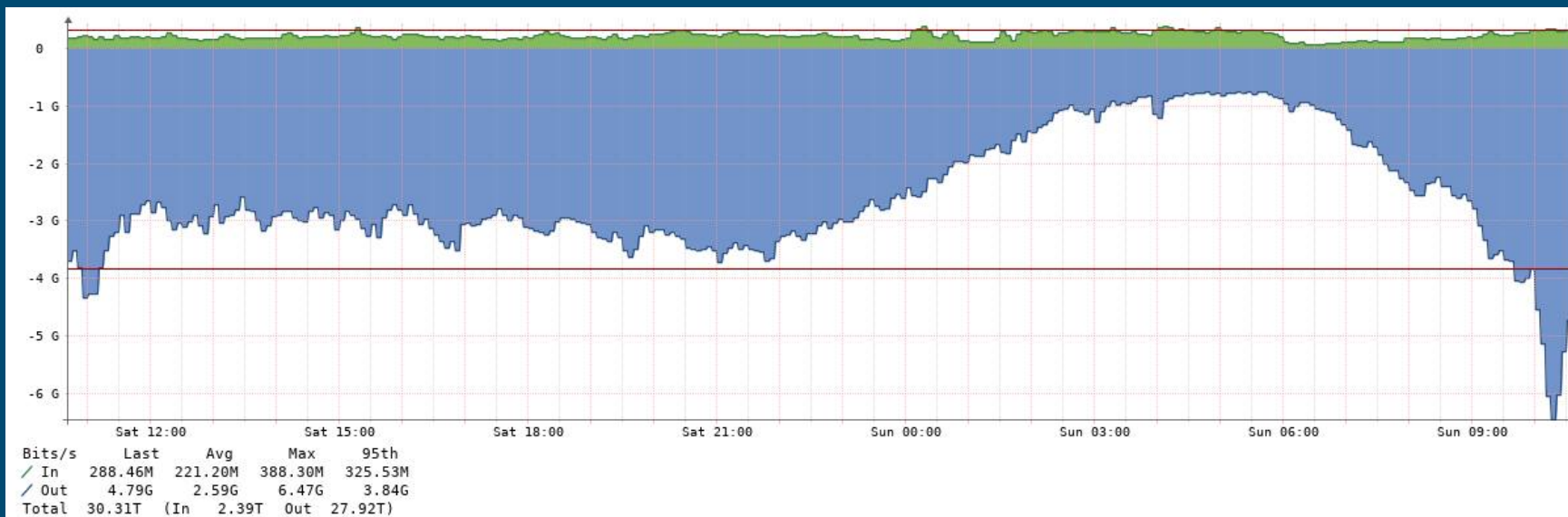


Konečně streamujeme...



# Porovnání dat

Provoz bit/s



Discards p/s



# Porovnání dat



Závěr