

CERN network statistics monitoring

netstat.cern.ch

Mantas Stankevičius IT-CS-CE

2020-04-27

HL-LHC Data Challenge Monitoring: Mini-Workshop

Contents

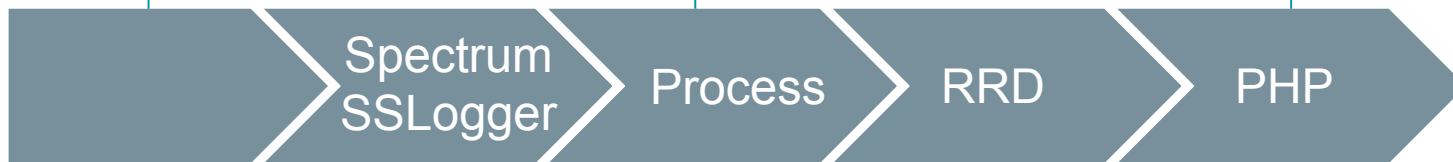
- Netstat. Overview of a current monitoring system
- Data volume
- Challenges and limitations
- Motivation for modernization
- Netstat 2: Ongoing upgrade and modernization
- Some examples

Netstat

Network devices

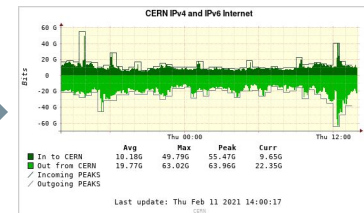
Process sends data to RRD daemon which writes into RRD files

PHP script reads RRD and plots static chart



SSLogger uses SNMP to collect data from devices. Data is stored into text files

RRD files are stored on filesystem



Data volume

Current

Monitoring **only router** traffic

~260 of devices

Data rate: ~25k samples every 5 mins

(~7M of samples per day)

Upgrade

Monitoring **both router and switch** traffic

Additional ~4000 devices

Data rate: ~500k samples every 5 mins

(~150M of samples per day)

Monitored metrics:

- Device: temperature, cpu, memory, ...
- Interface: bandwidth, errors, drops, ...

Can monitor everything what is available via SNMP

Challenges and limitations

Scaling:

- Each monitored item (interface) has its own RRD file
- Adding nearly 500k monitored items heavily impacts IO

Repopulation of missing data is almost impossible

Current front-end was not designed to support gazillions of monitored items

Motivation

Use **CERN centrally supported tools** for storage and visualization

Having data in central place allows to correlate network statistics with other sources of information

Network traffic statistics will be available for users. Source of data for studies for network traffic analysis [1]

Grafana dashboard management is more user friendly than RRDtool

Dynamic charts are superior to static charts

[1] <https://twiki.cern.ch/twiki/bin/view/CS/Public/ItcsNoted>

Netstat 2.0

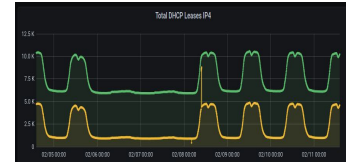
Network devices

Producer sends data to MONIT via AMQ

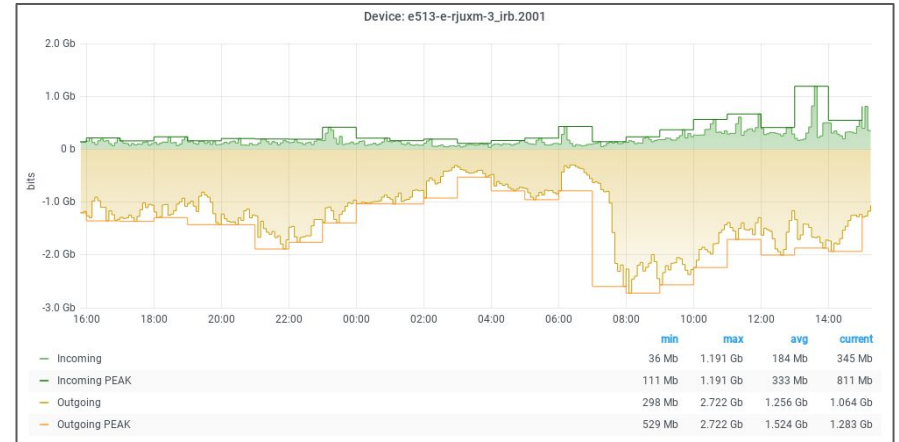
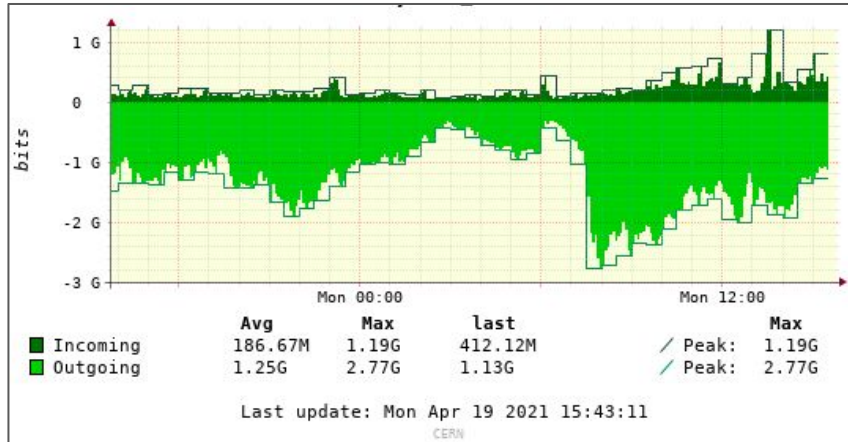
Grafana to visualize and correlate data



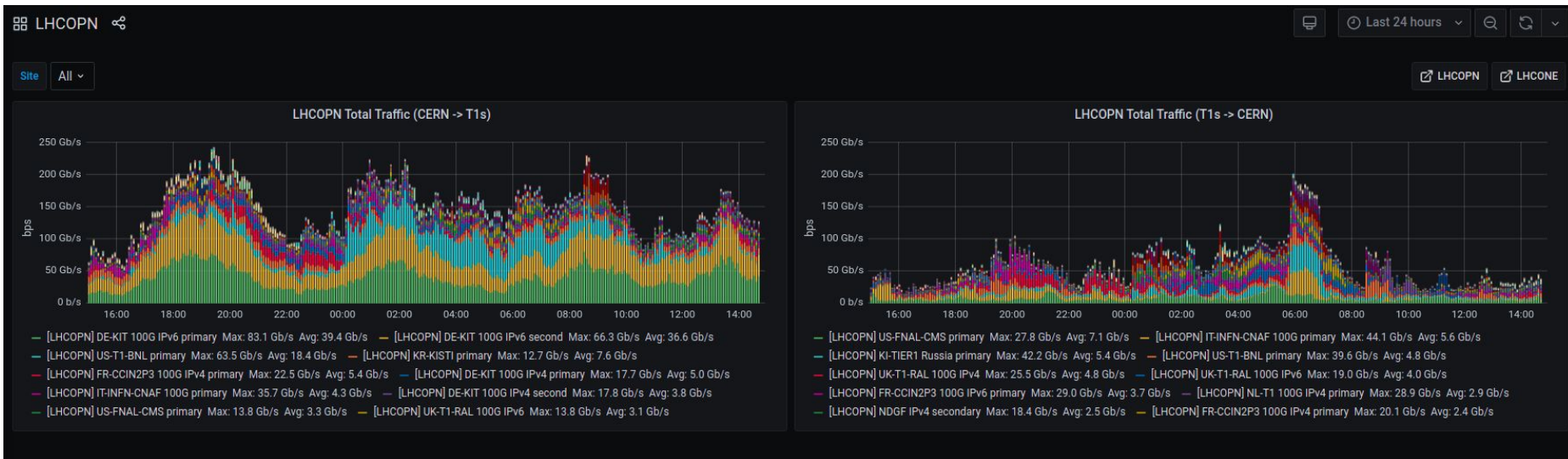
SSLogger uses SNMP to collect data from devices. Data is stored into text files.



RRD vs Grafana



LHCOPN, LHCONE, ...



<https://monit-grafana-open.cern.ch/d/000000523/home?orgId=16>

Plans

Monitor all switches at CERN

- We want to start with “small” amount of devices, get feedback and improve
- We offer possibility for a project to monitor network traffic to/from their devices

Long term:

- Look for alternative open source tools to replace commercial software
- User friendly tool to work with SNMP MIBs
 - Define which OIDs to be monitored for each monitored device.