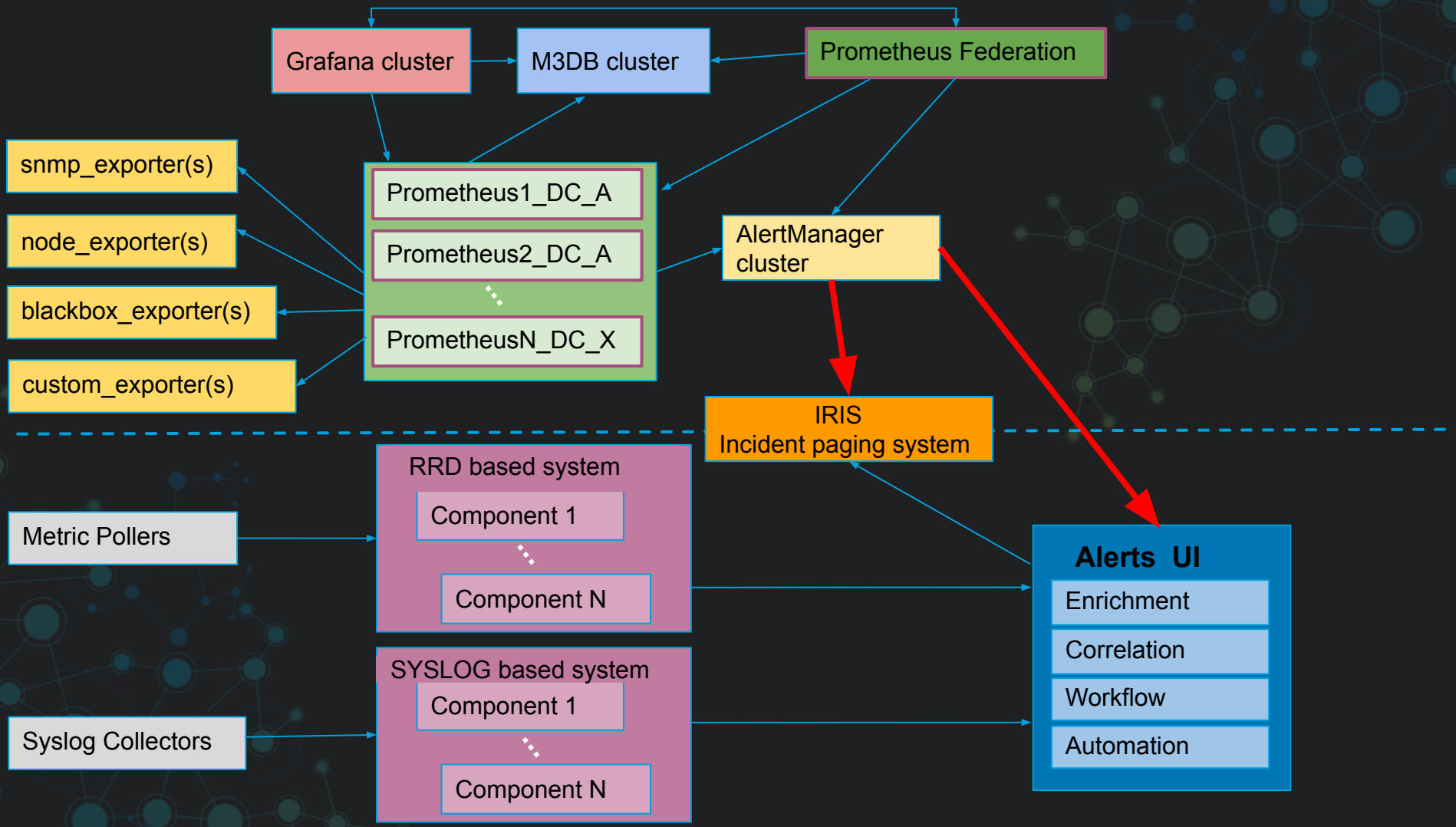
Monitoring Networking Infrastructure with Prometheus ecosystem

PromCon 2019

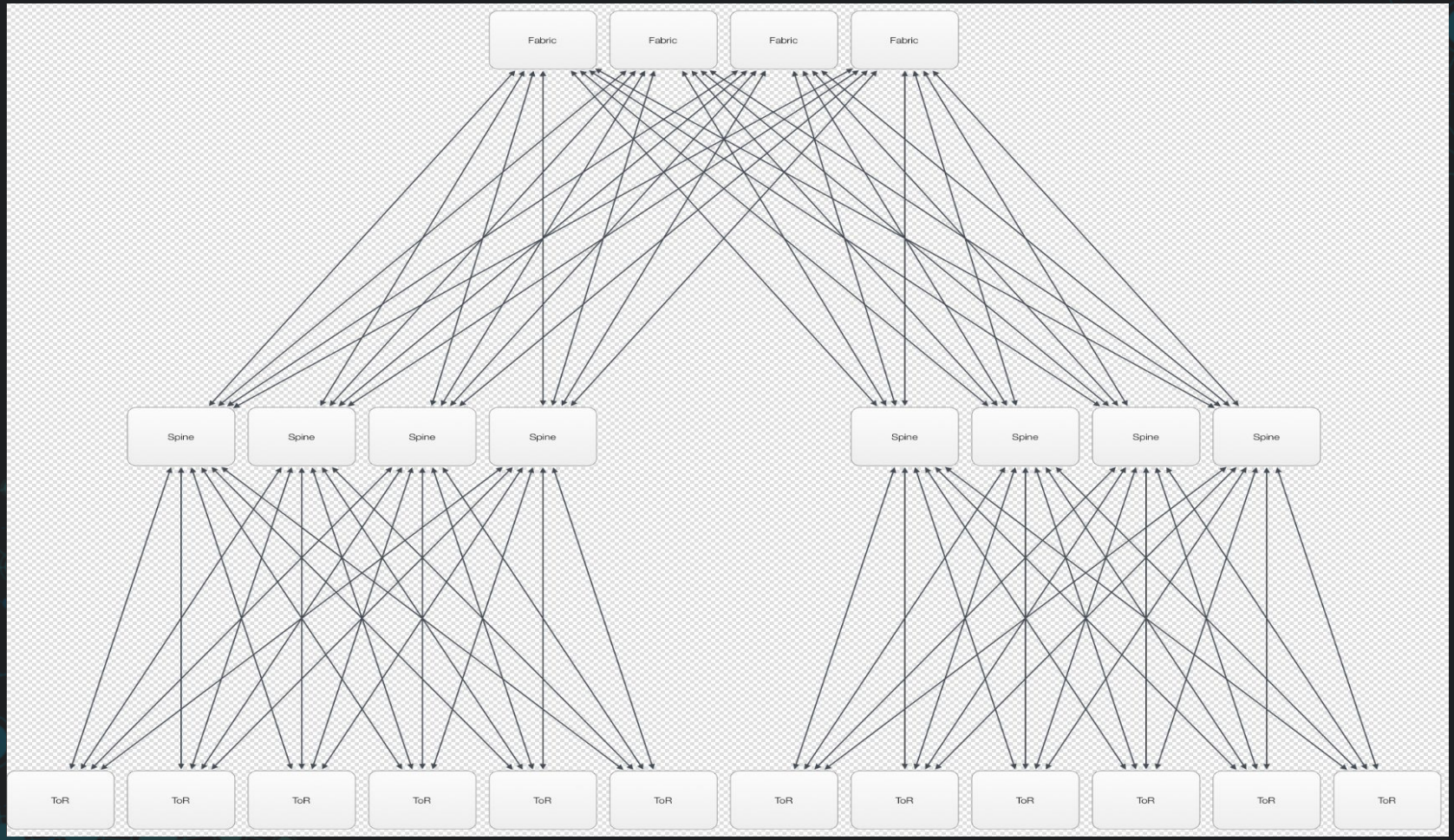
Artem Nedoshepa

Motivation behind implementing Prometheus

- ❑ Usability and self service
- ❑ Rich dimensional data model
- ❑ Flexible and powerful “human readable” PromQL
- ❑ Ease of integration


Grafana cluster
M3DB cluster
Prometheus Federation
snmp_exporter(s)
node_exporter(s)
blackbox_exporter(s)
custom_exporter(s)
Prometheus1_DC_A
Prometheus2_DC_A
PrometheusN_DC_X
AlertManager cluster
IRIS
Incident paging system
RRD based system
Component 1
Component N
Metric Pollers
SYSLOG based system
Component 1
Component N
Syslog Collectors
Alerts UI
Enrichment
Correlation
Workflow
Automation

Attempt to do correlation on the Prometheus side




lldp_mapping{
instance="device_A",
ifName="xe-1/0/0",
job="snmp-lldp-cached",
lldpName="device_A:xe-1/0/0:device_B:Eth1/27",
lldpRemSysName="device_B"}
lldp_mapping{
instance="device_B",
ifName="Eth1/27",
job="snmp-lldp-cached",
lldpName="device_A:xe-1/0/0:device_B:Eth1/27",
lldpRemSysName="device_A"}

```
changes(ifLastChange[5m])) *
on(ifName, instance) group_left(lldpRemSysName, lldpName) (lldp_mapping or
on(ifName, instance) (changes(ifLastChange[5m]) * 0 + 1)  >= 4
```

Alertmanager

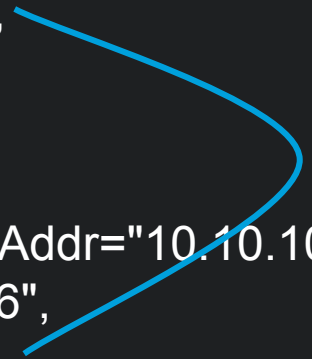
```
  group_by: ['alertname', 'bgp_id', 'lldpName']

inhibit_rules:
- source_match:
    alertname: JobInstanceDown
  target_match_re:
    alertname: Interface.*|BGP.*
  equal: ['lldpRemSysName']
```

Similar concept for bgp events correlation:

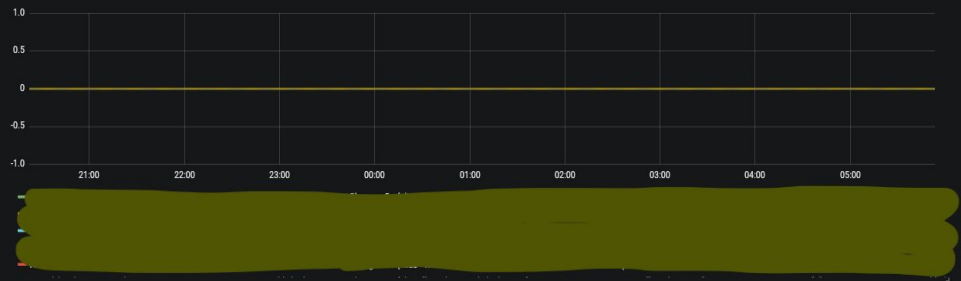
bgp_peer_mapping{BgpPeerLocalAddr="10.10.10.26",
BgpPeerRemoteAddr="10.10.10.25",
bgp_id="10.10.10.25:10.10.10.26",
lldpRemSysName="device_X"}

bgp_peer_mapping{BgpPeerLocalAddr="10.10.10.25",
BgpPeerRemoteAddr="10.10.10.26",
bgp_id="10.10.10.25:10.10.10.26",
lldpRemSysName="device_Y"}



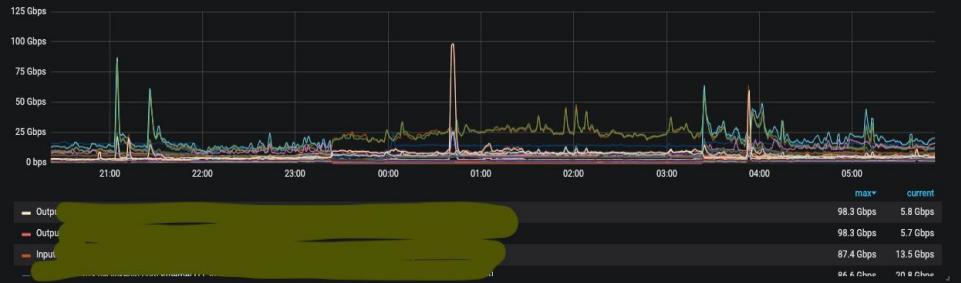
Interface Flaps (flaps in 5 min)

Rate of BGP flaps (flaps in 5 min)



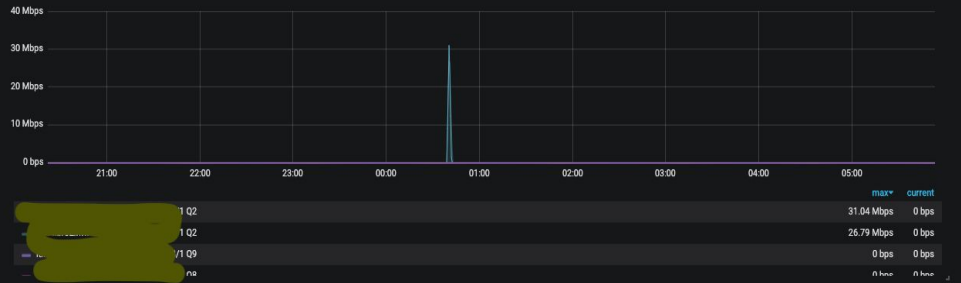
Input and Output errors rate, errors/s

Interface utilization Input and Output rate, b/s

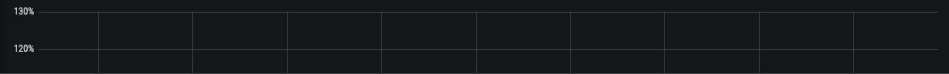


Input and Output discards rate, packets/s

QOS drops



BGP Sessions UP (Established/Configured), %



Rate of BGP Adv/Received prefixes change, s