

Содержание

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Architecture of the monitoring system

```
flowchart TB
    subgraph DataPlane ["Data Plane"]
        IPSEC["IPSec ESP IKEv2 SA / Child SA Kernel xfrm"]
        GTPU["GTP-U Tunneller S2b Data ePDG ↔ PGW"]
    end
    subgraph ControlPlane ["Control Plane"]
        IKE["IKEv2 SWu EAP-AKA' auth"]
        DIAM["Diameter Client SWx/SWm/S6b"]
        GTPC["GTPv2-C S2b to PGW/SMF"]
        CTRL["ePDG Controller Attach/Detach FSM"]
    end
    subgraph Collection ["Metrics Collection"]
        PROMEXP["fast-epdg /metrics endpoint :9817"]
    end
    subgraph Storage ["Storage"]
        PROM["Prometheus TSDB 15-day retention"]
    end
    subgraph Visualization ["Visualization"]
        GRAF["Grafana 4 дашборда, 35+ панелей"]
    end
    subgraph Alerting ["Alerting"]
        AM["Alertmanager Routing / Inhibition"]
        EMAIL["Email SMTP"]
        SNMPGW["SNMP Trap Sender Webhook → Trap gateway"]
        NMS["Внешняя NMS SNMP v2c UDP/162"]
        WH["Webhooks Telegram / PagerDuty"]
    end
    IKE --> PROMEXP
    IPSEC --> PROMEXP
    GTPC --> PROMEXP
    GTPU --> PROMEXP
    DIAM --> PROMEXP
    CTRL --> PROMEXP
    PROMEXP --> PROM
    PROM --> GRAF
    PROM --> AM
    AM --> EMAIL
    AM --> SNMPGW
    AM --> NMS
    AM --> WH
```

Four-level monitoring architecture

Level	Component	Technology
Collection	Built-in /metrics endpoint fast-epdg	Prometheus text format over HTTP
Storage	Prometheus TSDB	Local storage, 15-day storage by default
Visualization	Grafana + JSON support	Autodownload 4 dashboards
Alerting	Alertmanager + SNMP Trap Sender	PromQL rules → webhook → SNMP v2c trap