Oracle performance and availability alerts in Grafana

CERN openlab Summer Student Programme Lightning talks

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Why ?

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Oracle performance and availability alerts **in Grafana**

How ?

How ?

Oracle Database Metrics Exporter

How ?

8.119 V$PGA_TARGET_ADVICE
8.120 V$PGA_TARGET_ADVICE_HISTOGRAM
8.121 V$PGASTAT
8.122 V$PLSQL_DEBUGGABLE_SESSIONS
8.123 V$PQ_SESSTAT
8.124 V$PQ_SLAVE
8.125 V$PQ_SYSSTAT
8.126 V$PQ_TQSTAT
8.127 V$PROCESS
8.128 V$PROCESS_MEMORY
8.129 V$PROCESS_MEMORY_DETAIL
8.130 V$PROCESS_POOL
8.131 V$PROPAGATION_RECEIVER
8.132 V$PROPAGATION_SENDER
8.133 V$PROXY_ARCHIVEDLOG
8.134 V$PROXY_ARCHIVELOG_DETAILS
8.135 V$PROXY_ARCHIVELOG_SUMMARY
8.136 V$PROXY_COPY_DETAILS
8.137 V$PROXY_COPY_SUMMARY
8.138 V$PROXY_DATAFILE
8.139 V$PROXY_PDB_TARGETS
8.140 V$PWFILE_USERS
8.141 V$PX_INSTANCE_GROUP
8.142 V$PX_PROCESS
8.143 V$PX_PROCESS_SYSSTAT

8.121 V$PGASTAT

V$PGASTAT displays PGA memory usage statistics as well as statistics about the automatic PGA memory manager when it is enabled (that is, when PGA_AGGREGATE_TARGET is set). Cumulative values in V$PGASTAT are accumulated since instance startup.

Column	Datatype	Description
NAME	VARCHAR2(64)	Name of the statistic (see Table 8-4)
VALUE	NUMBER	Statistic value
UNIT	VARCHAR2(12)	Unit for the value: • bytes • microseconds • percent
CON_ID	NUMBER	The ID of the container to which the data pertains. Possible values include: • 0: This value is used for rows containing data that pertain to the entire CDB. This value is also used for rows in non-CDBs. • 1: This value is used for rows containing data that pertain to only the root • *n*: Where *n* is the applicable container ID for the rows containing data

Table 8-4 V$PGASTAT Statistics

Statistic Name	Description
aggregate PGA auto target	Amount of PGA memory the Oracle Database can use for work areas running in automatic mode. This amount is dynamically derived from the value of the PGA_AGGREGATE_TARGET initialization parameter and the current work area workload, and continuously adjusted by the Oracle Database. If this value is small compared to the value of PGA_AGGREGATE_TARGET, then a large amount of PGA memory is used by other components of the system (for example, PL/SQL or Java memory) and little is left for work areas. The DBA must ensure that enough PGA memory is left for work areas running in automatic mode.
aggregate PGA target parameter	Current value of the PGA_AGGREGATE_TARGET initialization parameter. If this parameter is not set, then its value is 0 and automatic management of PGA memory is disabled.
bytes processed	Number of bytes processed by memory intensive SQL operators, cumulated since instance startup.
cache hit percentage	A metric computed by the Oracle Database to reflect the performance of the PGA memory component, cumulative since instance startup. A value of 100% means that all work areas executed by the system since instance startup have used an optimal amount of PGA memory. When a work area cannot run optimal, one or more extra passes is performed over the input data. This will reduce the cache hit percentage in proportion to the size of the input data and the number of extra passes performed.
extra bytes read/written	Number of bytes processed during extra passes of the input data, cumulated since instance startup. When a work area cannot run optimal, one or more of these extra passes is performed.

https://docs.oracle.com/en/database/oracle/oracle-database/19/refrn/

How ?

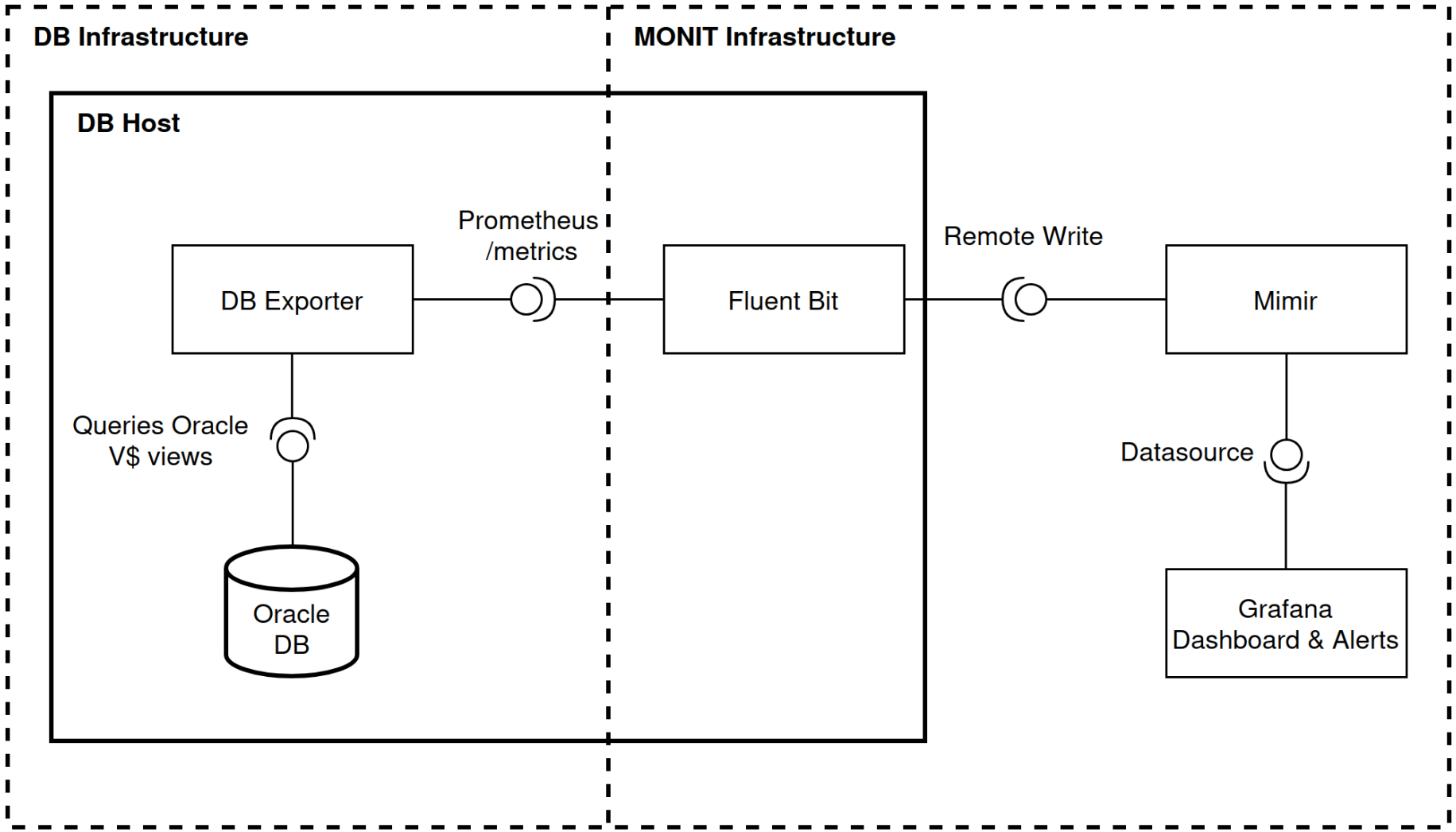
```
[[metric]]
context = "pga"
labels = ["inst_name", "name"]
metricsdesc = {value = "Value for a given stat."}
request = '''
SELECT GV$INSTANCE.instance_name || '@' || GV$INSTANCE.host_name
AS inst_name, name, value FROM GV$PGASTAT
JOIN GV$INSTANCE ON GV$INSTANCE.instance_number=GV$PGASTAT.inst_id
'''
ignorezeroresult = false
```

How ?

Oracle Database Metrics Exporter

Fluent Bit (MONIT)

System Architecture



Monitoring

Monitoring

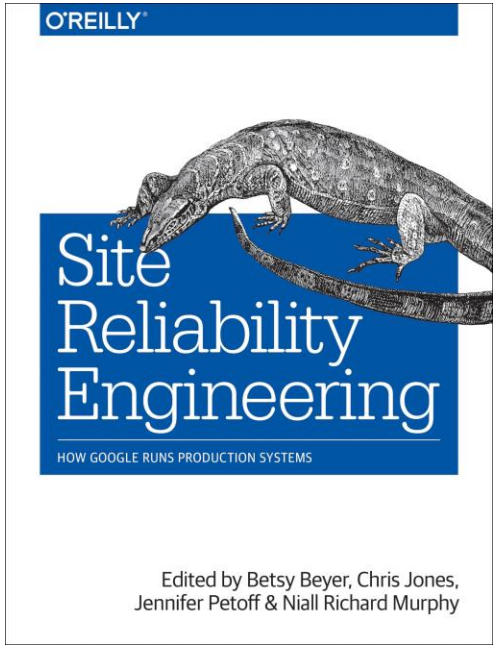
The Four Golden Signals

Latency

Saturation

Errors

Traffic



https://sre.google/sre-book/

Monitoring

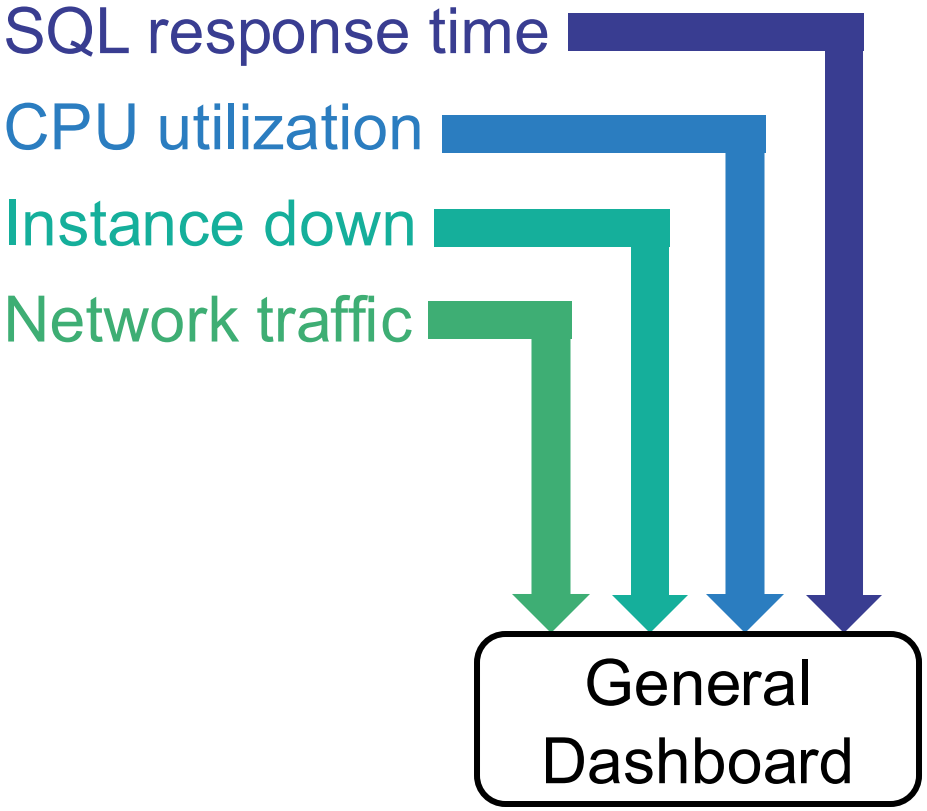
SQL response time

CPU utilization

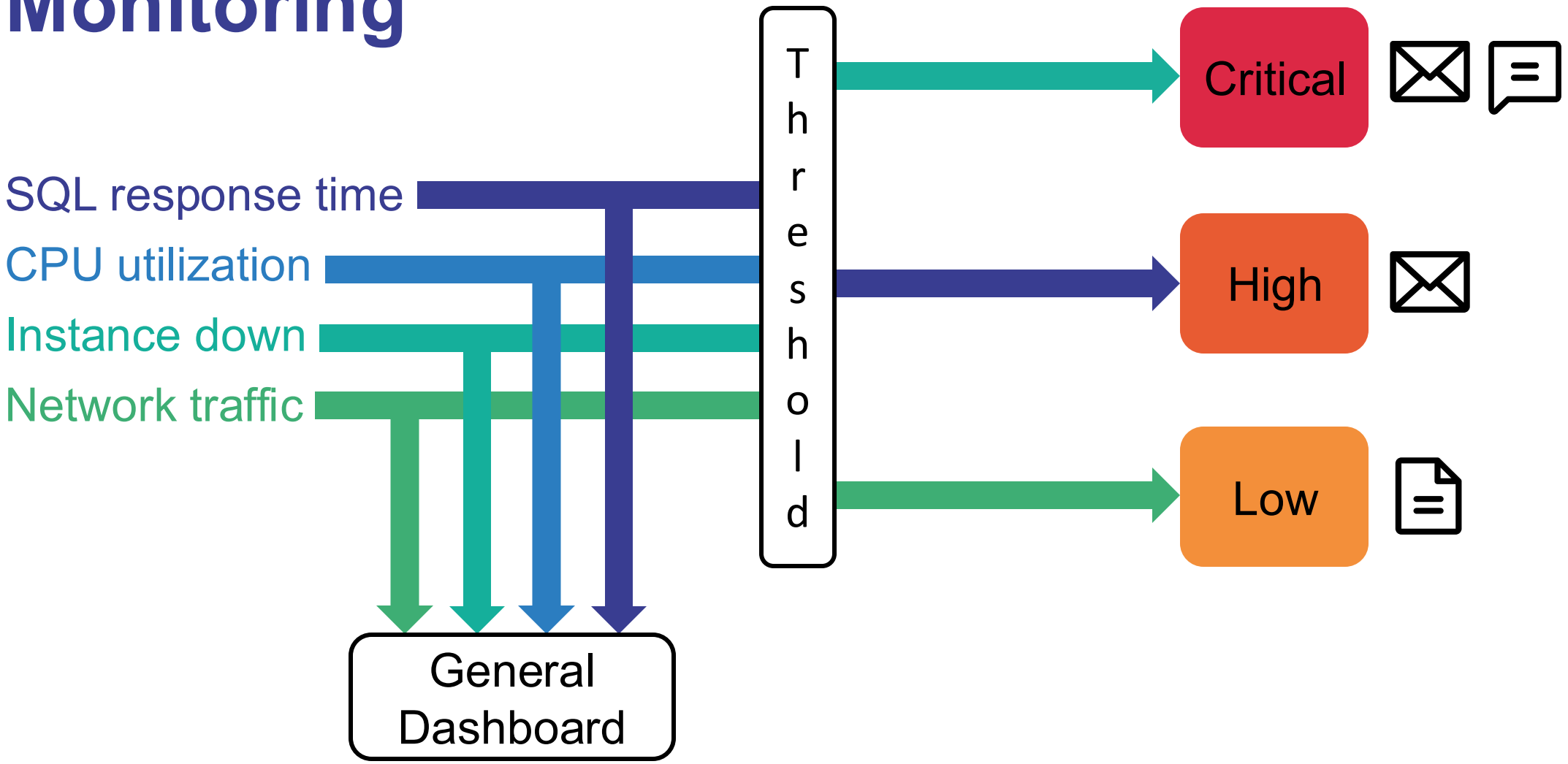
Instance down

Network traffic

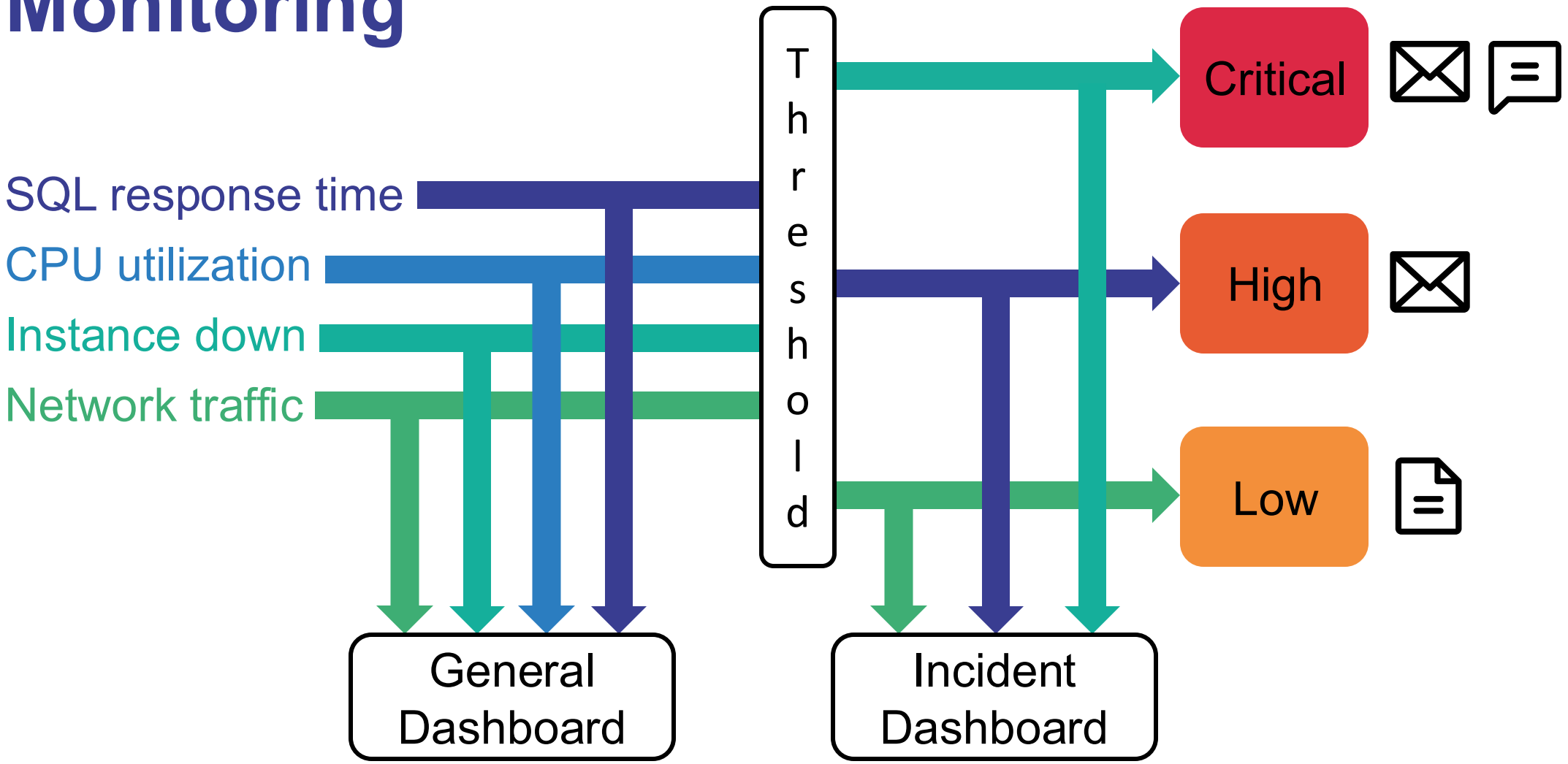
Monitoring


SQL response time
CPU utilization
Instance down
Network traffic
General Dashboard

Monitoring


SQL response time
CPU utilization
Instance down
Network traffic
Threshold
Critical
High
Low
General Dashboard

Monitoring


SQL response time
CPU utilization
Instance down
Network traffic
Threshold
Critical
High
Low
General Dashboard
Incident Dashboard

Interval Auto | Environment Any Environment | Database acatest | Target Any Target | GroupBy Database | EventParameter log file sync | Last 12 hours | Refresh 5s

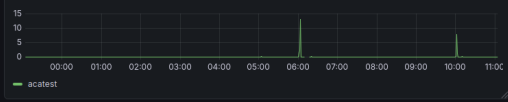
SQL

SQL Execution Time per Second

Current Open Cursors Count

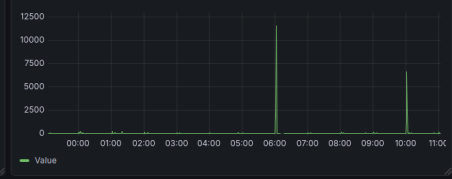
Execute Without Parse Ratio

Parse Failure Count Per Second

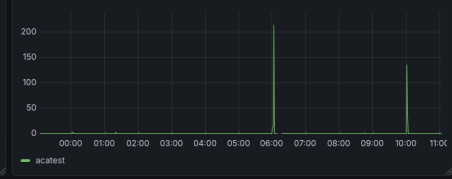


SQL Service Response Time

Open Cursors Per Second



User Commits Per Second



Top SQL by elapsed time running

SQL Text	SQL ID	Elapsed Time
select originating_timestamp, module_id, execution_context_id, message_text from v$diag_alert_ext where originating_ti	9q5jdn81r1s3z	1435 s
SELECT dt.tablespace_name as tablespace, dt.contents as type, dt.block_size * dtum.used_space as bytes, dt.block_siz	gwvsgs914uucj	505 s
select * from (select inst_id, sql_id, elapsed_time / 1000000 as elapsed, substrb(replace(sql_text,',' '),1,55) as sql_text f	297ftus7cqvs0	264 s
select sql_id, sql_exec_id, dbop_name, dbop_exec_id, to_char(sql_exec_start, 'mm:dd:yyyy hh24:mi:ss'), to_char(first_re	6km8p5f8573mr	109 s
select inst_id, name, total_mb*1024*1024 as total, free_mb*1024*1024 as free from gv$asm_diskgroup_stat where exists	3nph4hb9vqcsr	81.4 s
SELECT inst_id, platform_name, 1 as value FROM gv$database GROUP BY inst_id, platform_name	gu39816m1d37k	79.2 s
SELECT KJIRFTRN, KJIRFTNCL, KJIRFTCQL FROM X$KJIRFT ORDER BY KJIRFTCQL DESC	4d7zk5v9nr23t	51.3 s
select CONCAT(GV$INSTANCE.instance_name, '@', GV$INSTANCE.HOST_NAME) as inst_name, name, value from gv$p	dx73fuw15f9mr	35.7 s

Top SQL by disk reads

SQL Text	SQL ID	Disk Reads
begin prvt_hdm.execute_slave_actions; end;	a95n8p4vpxmps	265
WITH ash as (SELECT event_id, sum(fg) as cnt_fg, count(*) as cnt_total FROM (SELECT to_number(decode(ash.event_id, :s	6jqcrabcbrkag	243
UPDATE WRH$_SQL_PLAN SET snap_id = :lah_snap_id WHERE dbid = :dbid AND (SQL_ID, PLAN_HASH_VALUE, CON_DBID)	cnf6gbr8570jd	74
WITH MONITOR_DATA AS (SELECT * FROM TABLE(GV$(CURSOR(SELECT USERENV('instance') AS INST_ID, KEY, NVL2(P.	gzmz63qmyshp5	70
SELECT XMLTYPE(DBMS_REPORT.GET_REPORT_WITH_SUMMARY(:B1)) FROM DUAL	0w26sk6t6gq98	45
BEGIN sys.dbms_auto_report_internal.i_save_report (:rep_ref, :snap_id, :pr_class, :rep_id, :suc); END;	fhf8upax5cxsz	45
select count(1) from dba_autotask_window_clients where window_active='TRUE' and (autotask_status='ENABLED' or optimi	3j6r48zhqrdb3	6
UPDATE WRH$_SQLTEXT SET snap_id = :lah_snap_id WHERE dbid = :dbid AND (SQL_ID, CON_DBID) IN (SELECT STR1_KEW	4g61xrvrmaat8	4

Private › critical

2 normal | 1m

State	Name	Health	Summary	Next evaluation	Actions
Normal	Datasource Down	ok	Oracle exporter availability is below 95% over the last 100 minutes.	in a few seconds	View
Normal	Instance Down	ok	Instance availability is below 95% over the last 100 minutes.	in a few seconds	View

Private › high

6 normal | 5m

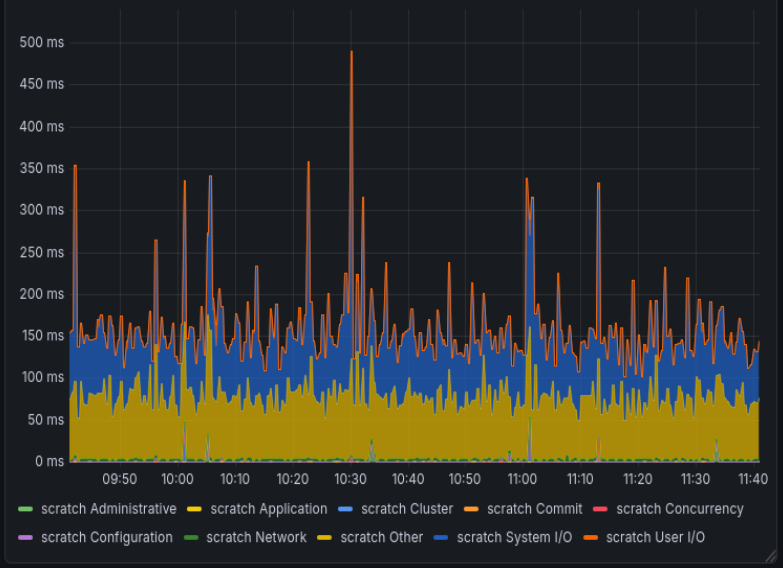
State	Name	Health	Summary	Next evaluation	Actions
Normal	High Swap Activity	ok	Swap activity higher than 1 MB/s for the last 10 minutes.	in 3 minutes	View
Normal	High CPU Utilization	ok	CPU utilization higher than 80% for the last 30 minutes.	in 3 minutes	View
Normal	Process Limit Utilization	ok	Process utilization higher than 90% for the last 30 minutes.	in 3 minutes	View
Normal	Session Limit Utilization	ok	Session utilization higher than 90% for the last 30 minutes.	in 3 minutes	View
Normal	High SQL Service Response Time	ok	SQL service response time higher than 0.8 seconds for the last 30 minutes.	in 3 minutes	View
Normal	High SGA Utilization	ok	SGA memory utilization higher than 90% for the last 30 minutes.	in 3 minutes	View

Private › low

4 normal | 15m

State	Name	Health	Summary	Next evaluation	Actions
Normal	High Amount of User Calls	ok	User Calls higher than 2 standard deviation from last 2 week average for 15 minutes.	in 2 minutes	View
Normal	High Amount of I/O Requests	ok	I/O requests higher than 2 standard deviation from last 2 week average for 15 minutes.	in 2 minutes	View
Normal	High Amount of SQL Executions	ok	Amount of SQL executions higher than 2 standard deviation from last 2 week average for 15 minutes.	in 2 minutes	View

Database Wait Times

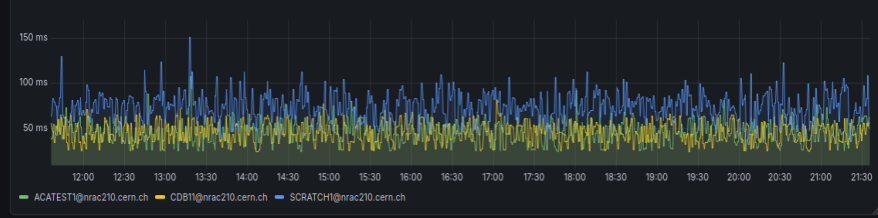


Interval Auto | Environment Any Environment | Database Any Database | Target ACATEST1@nrac210.cern.ch | SCRATCH1@nrac210.cern.ch | CDB11@nrac210.cern.ch | GroupBy Target | EventParameter log file sync | now-24h to now-14h | Refresh 5s

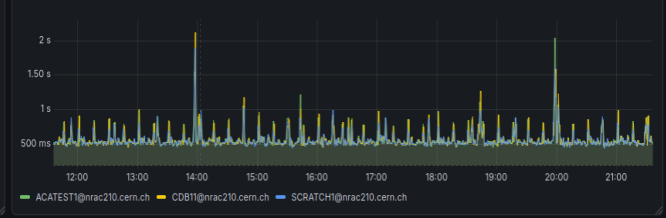
Health (16 panels)

Load

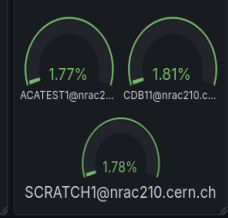
DB Time per Second



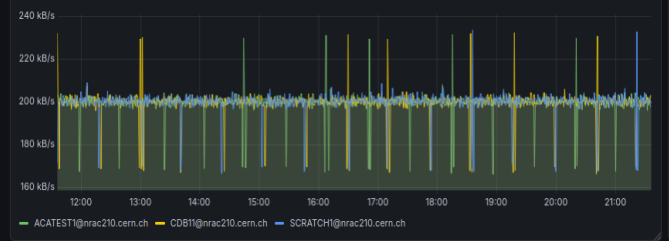
CPU Usage per Second



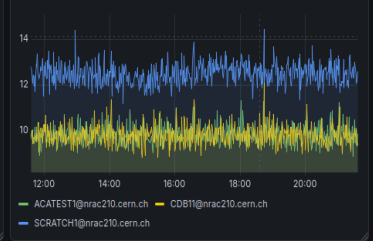
Host CPU Utilization



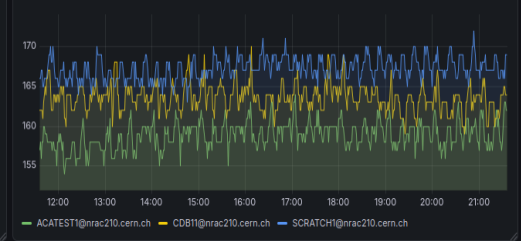
Network Traffic Volume per Second



User Calls Per Second



Current Logons Count



Average Active Sessions

CERN openlab

Q&A

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