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Monitoring SQL Server Without Breaking the Bank

Organizers

Sponsors

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Agenda

- What we need
  - What the market offers
  - What SQL Server offers
  - What the community offers
- The TICK stack
- How you do it

What we need

Monitoring

- Troubleshooting

    What happened tonight at 03:40?

- Tune performance

    Which queries consume most resources?

- Capacity Planning

    How fast are my databases growing?

- Baselining

    Is the system behaving normally?

- Alerting

    Hey, look: something's wrong here!

What the market offers

Buy a product

- Big value

- Big money $$

SentryOne

solarwinds

Quest

IDERA

ApexSQL

redgate

What SQL Server offers

Use SQL Server built-in tools

- SQLTrace
- Extended Events
- Alerts
- Activity Monitor
- SSMS Reports
- Data Collector

Microsoft® SQL Server®

SQL Server Data Collector

PROS:

- Included in SQL Server
- Offers some reports
- Good for troubleshooting

CONS:

- Unreliable
- Slow
- No alerting
- Hard to customize/extend
- Deprecated

What the community offers

Generic monitoring tools

Complete solutions

- Nagios
- Zabbix
- Cacti

Tools

- Elasticsearch
- Kibana

SQL Server monitoring tools

Complete solutions

- SQLWatch
- TICK stack

Tools

- dbatools
- ExtendedTSQLCollector
- XESmartTarget

The TICK stack

The TICK stack

influxdata

Open source
Cross platform

telegraf
influxdb
chronograf
Kapacitor

influxdb

Time series database

Written in GO

Designed to store time series data

Offers two query languages

- InfluxQL   - similar to SQL
- Flux   - inspired by Javascript / LINQ

telegraf

Data collection agent

Can monitor several information sources:

- Operating system
- Databases
- Network
- Message Queues
- Apps
- ...

Works with *plugins*

Over 100 plugins

- Apache
- Cassandra
- Docker
- Elasticsearch
- Graylog
- ....
- SQL Server!

chronograf

Administration interface for Influxdb

User Interface for Kapacitor

Can be used to explore data

Can create dashboards to visualize data

Can set up and manage alerts in Kapacitor

Kapacitor

Data processing engine

Can publish data to topics

Handlers subscribe to topics and perform actions

Alerts can be sent to several channels, using *plugins*

- Email

- Slack

- ...

Grafana

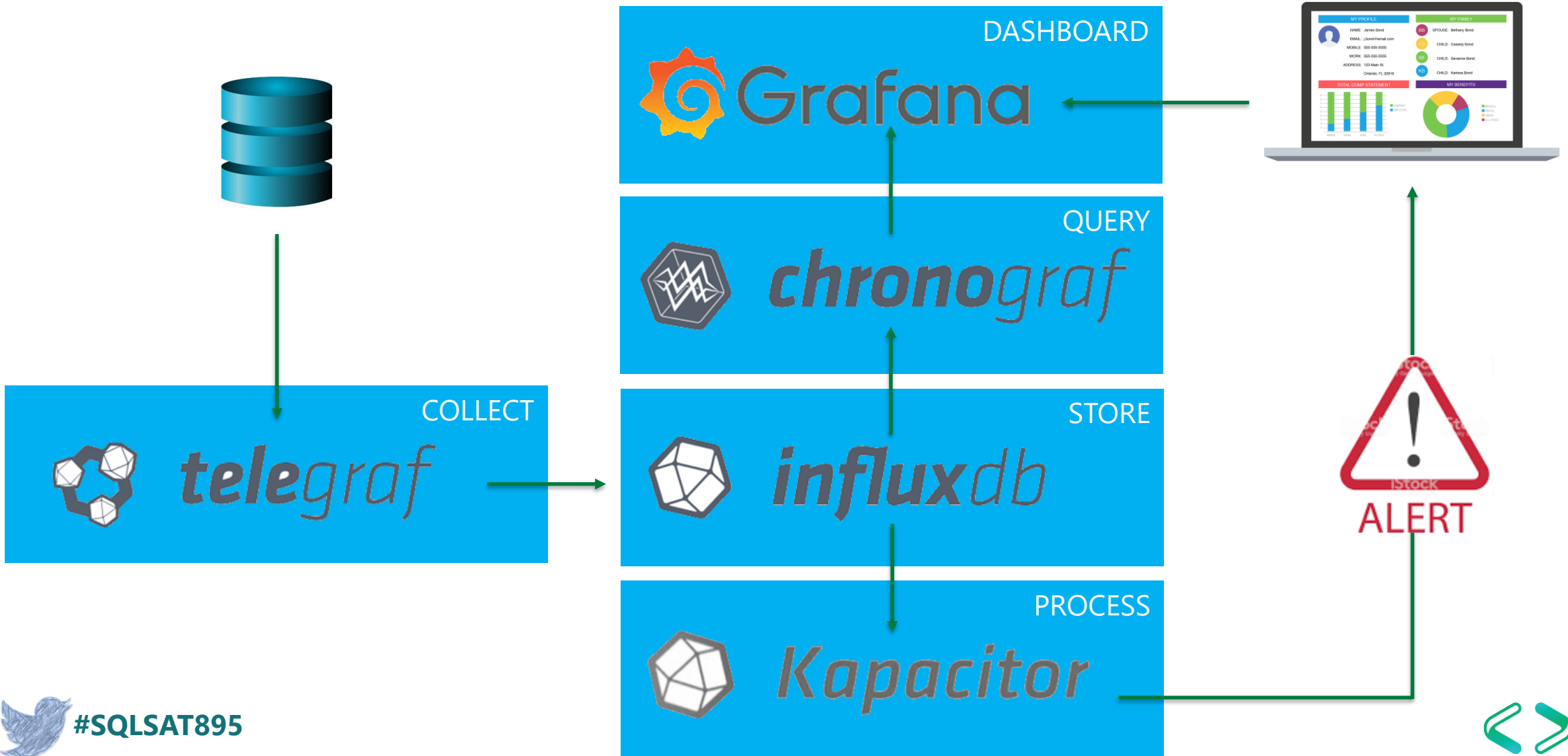Monitoring / analytics platform

Native Influxdb support

More data sources supported via *plugins*

Easy dashboard creation

Multiple built-in / community dashboards

Architecture

DASHBOARD

QUERY

COLLECT

STORE

PROCESS

#SQLSAT895

How you do it

influxdb

1. Download Influxdb
2. Unzip the archive (`c:\tick` maybe?)
3. Run `influxD.exe`
   - Open port in FW (default 8086)
   - Run it as a service maybe?

NSSM - the Non-Sucking Service Manager

Ever used srvany? You get why NSSM then…

1. Download NSSM
2. Unzip the archive (`c:\tick` maybe?)
3. `nssm install influxdb`

telegraf

1. Download Telegraf
2. Unzip the archive (`c:\tick` maybe?)
3. Generate and edit the config file
   - Log
   - Input
   - Output

chronograf

1. Download Chronograf

2. Unzip the archive

3. Install as a service

4. Open in browser

    • Create a connection

    • Create dashboards

    • Explore the data

influxdb

Influx DB entity	SQL DB entity
Measurements	Tables
Tags	Columns (indexed)
Fields	Columns (not indexed)
Points	Rows

- **Tags** are indexed, and are used **to filter and aggregate data**
  => view CPU usage (the Field) **by host** (the context)
- **Fields** are not indexed and should **only be aggregated.**
  A field should **represent a metric**.
  => CPU usage

1. Download Grafana
2. Unzip the archive
3. Install as a service
4. Open in browser

- Create a connection to Influxdb
- Create (or downlad) dashboards
- Explore the data

Grafana

1. Configure alerts by dashboard

2. Multiple channels available

   - Email
   - Slack
   - Teams
   - Telegram
   - ...

New Notification Channel

Name	
Type	Email ▾
Default (send on all alerts)	
Include image	
Disable Resolve Message	
Send reminders	

Pushover
webhook
HipChat
Kafka REST Proxy
Sensu
Telegram
VictorOps
DingDing
Email
Google Hangouts Chat
PagerDuty
Slack
Threema Gateway
Prometheus Alertmanager
Discord
LINE
OpsGenie
Microsoft Teams

Email addresses

You can enter multiple email addresses using a ";" separator

Continuous Queries

- Scheduled queries in InfluxQL
- Provide downsampling and aggregation of data
- Can write to a different retention policy

```
CREATE CONTINUOUS QUERY "cq_basic" ON "transportation"
BEGIN
    SELECT mean("passengers") INTO "average_passengers"
    FROM "bus_data" GROUP BY time(1h)
END
```

TICK stack: recap

✓ Troubleshooting

Grafana dashboards, standard sqlserver dashboard + custom dashboards

✓ Tune performance

Grafana dashboards, standard sqlserver dashboard + custom dashboards

✓ Capacity Planning

Influxdb continuous queries, custom Grafana dashboards

✓ Baselining

Influxdb continuous queries, custom Grafana dashboards

✓ Alerting

Kapacitor or Grafana

Resources

- Influxdb, Telegraf, Chronograf, Kapacitor
- https://www.influxdata.com/
- NSSM - Non Sucking Service Manager
- https://nssm.cc
- Grafana
- https://grafana.com

Thanks!