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Enterprise class SQL Server monitoring in
distributed production environments with high
number of servers

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About myself

- DBA and DBD since early 2000`s
- Managed distributed DB teams up to 20 people
- Worked with DELL EMC, Microsoft, Spar, McDonald`s
- High load OLTP databases, DWH
- Industries: telecom, fintech, adtech, retail, cloud

Statement of the problem

- Database monitoring in general

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- Service models (managed service) and service providers and what they use

Comparison of existing solutions

- Monitoring
- Tuning
- SQL Server
- Windows
- Network
- Reporting
- Alerting
- Advice



Features

- Historical monitoring data

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- Close to real-time

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Features

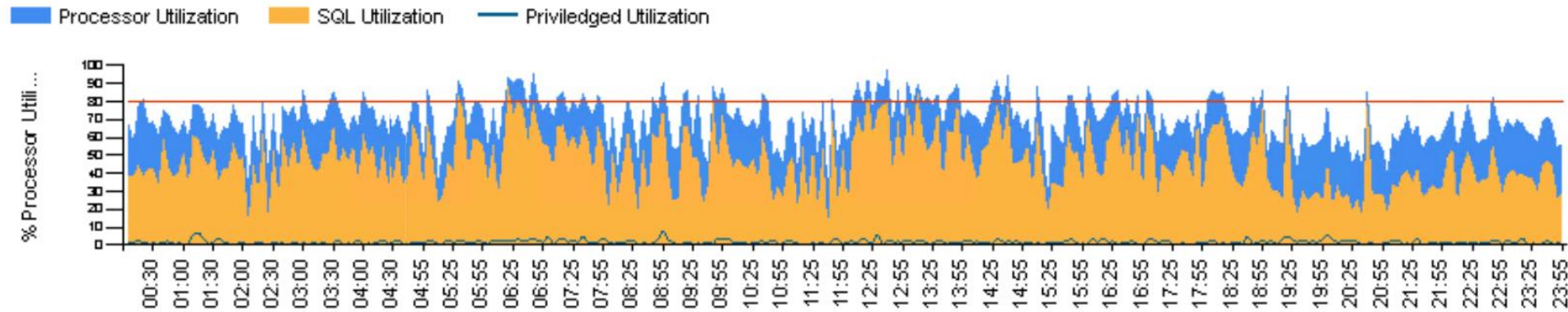
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- Alerts via email
- Customizable thresholds

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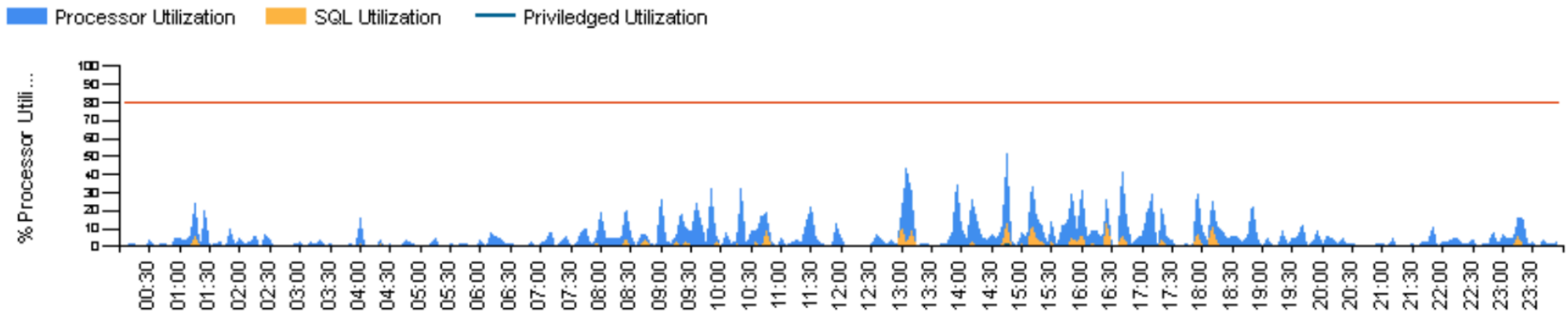
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- Close to real-time
- Alerts via email
- Customizable thresholds
- Advanced SQL Server features monitoring

CPU load

Processor Utilization Trend

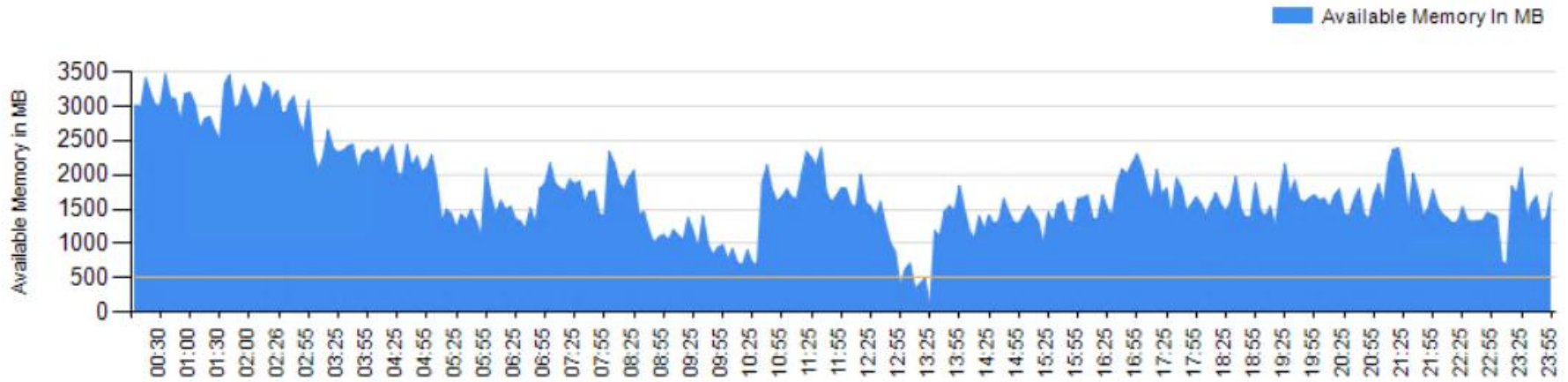


Processor Utilization Trend



Memory consumption

Available Memory Trend



Further plans

- Windows monitoring

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- Other RDBMS (PostgreSQL, MySQL, Oracle)

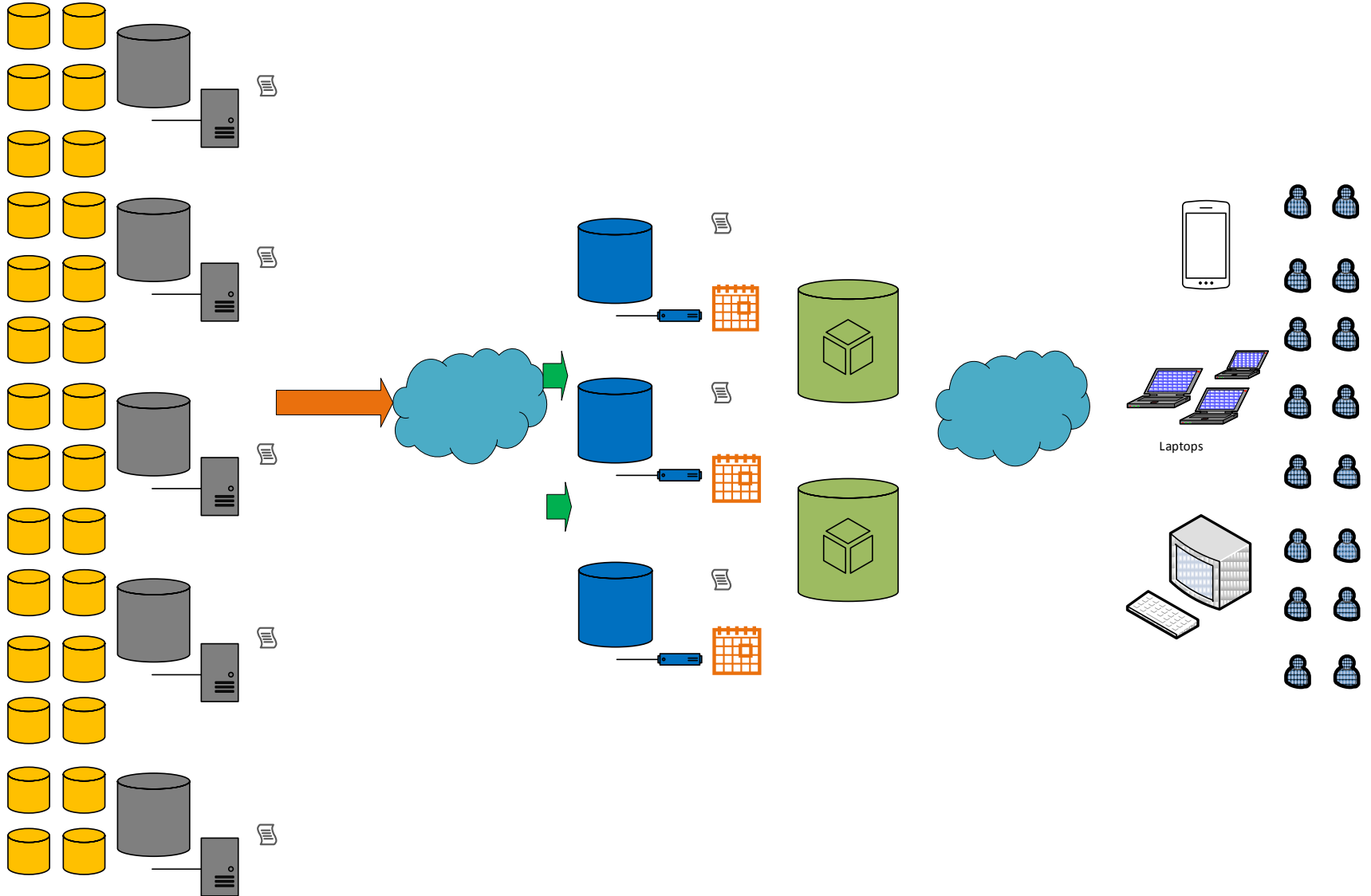
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- Windows monitoring
- Other RDBMS (PostgreSQL, MySQL, Oracle)
- Linux
- AI, Data mining

Architecture



Problems solved

- More than 100 counters
 - Machine Metrics
 - SQL Server metrics
 - Database metrics
 - High Availability metrics (AO, Logshipping, Mirroring)
 - BI metrics (SSRS, SSAS)

Problems solved

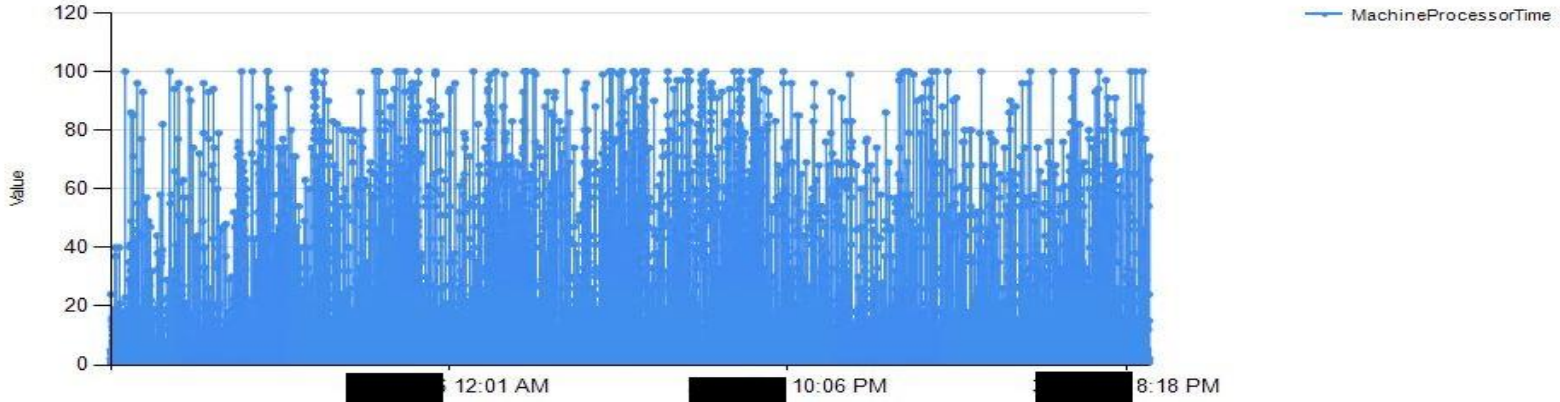
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Problems solved

- More than 100 counters
- Trend analysis and prediction
- Ability to drill down from high level problem to root cause

Автоматический мониторинг загрузки процессора на сервере

Counters on server: ██████████



Activity Report

Server Name	SQL Query	Database Name	Program Name	dd hh mm ss mss	Session ID	Login Name	Wait Info
SQLCLUSTER2	<?query -- sp_server_diagnostics --?>	master	Microsoft® Windows® Operating System	00 00:12:27.426	52	NT AUTHORITY\SYSTEM	(263ms) SP_SERVER_DIAGNOSTICS_SLEEP
SQLCLUSTER2	<?query -- select p.██████████ , p.██████████ , p.employeeid , p.lastupdated , sourcetype = case when p.[source] = 1 then 'O' + ██████████ 'nber' else '██████████'Number' end , createuser = 'DailyJob' , createdate = getdate() into #██████████numbers ██████████sprogram from Invent ██████████bers p (nolock) where exists (select 1 from ██████████ Services_Subscriptio ██████████mployeeID m (nolock) where AddonID = 14 and SubscriptionStatus IN ('O ██████████', 'Trial') and AddOnStatus != 'Expired' and m.employee_id = p.employeeid and not exists(select * from ██████████teparts where p.██████████teparts.employeeid = p.employeeid)) and p.[source] = 1 --?>	██████████	SQLAgent - TSQL JobStep (Job 0x24DEEF4FFC29D441B E932B23300438C3 : Step 1)	00 00:02:05.300	87	██████████erver	(28ms)PAGEIOLATCH_SH:Inventory:1 (*)
SQLCLUSTER2		master	Microsoft SQL Server	00 00:02:01.550	77	LinkedServer	
SQLCLUSTER2		master	Microsoft SQL Server	00 00:01:56.993	76	LinkedServer	
SQLCLUSTER2	<?query -- begin tran --?>	██████████ Services	SQLCLUST ██████████ts ██████████MS_Tables_2	00 00:00:04.826	70	██████████erver	
SQLCLUSTER2	<?query -- begin tran --?>	██████████ Services	SQLCLUSTE ██████████a	00 00:00:04.313	71	██████████erver	

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- More than 100 counters
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- Ability to drill down from high level problem to root cause
- Meet growing business needs

Business value

- Operations throughput

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- Decision making

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- Examples: DELL EMC, VIVA, Spar, Stock market Brokers

Real life cases

- Examples: DELL EMC, VIVA, Spar, Stock market Brokers
- DELL EMC From Nagios and basic alerts to comprehensive DB monitoring
- VIVA From basic alerts
- Spar From no monitoring
- Stock market brokers From SCOM
- WallMart from no monitoring

Nagios case detailed (DELL EMC)

- **Before**
 - Only basic monitoring
- **After**
 - Comprehensive monitoring

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- Authors

Questions



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<https://ru.linkedin.com/in/romandimenko>
- Early adopters are welcome

Thank you!