Data Analysis and Reporting & Automatic Event Recovery

Real-Life Examples:

Tomáš Heřmánek
Zabbix Certified Trainer

A comprehensive view of monitoring from A to Z
Data Analysis and Reporting

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Data Analysis and Reporting

TASK DEFINITION

Intro
Data Acquisition
Processing Data
Reporting of Monitored Data
Examples of Successful Practices

A comprehensive view of monitoring from A to Z
Data Analysis and Reporting

Intro

- **Monitoring and Performance Evaluation**: Reporting is an essential tool for tracking and evaluating the overall performance of an organization. It provides an overview of the current state and helps identify areas that require attention.

- **SLA Compliance (Service Level Agreement)**: Measurement and Assessment of Service Quality: Reporting enables monitoring and measuring the level of SLA compliance. This is crucial for maintaining the quality of services provided and adhering to agreed-upon service levels.

- **Financial Reporting: Monitoring Financial Health**: Reporting provides critical information for monitoring the financial health of the organization. This includes costs, revenues, profitability, and other financial indicators.

- **Capacity Planning: Resource Optimization**: Reporting on capacity and resource utilization allows the organization to plan and optimize its capacities. This is essential for the efficient allocation of resources and preventing overloads.

- **Identification and Remediation of Weak Points**: Issue Identification and Correction: Reporting is crucial for identifying weak points and issues in various areas of the organization. This enables quick response and the implementation of measures for improvement.
Data Acquistion

**More is Better:** Obtaining data from multiple sources allows for more comprehensive analyses and provides an overall richer perspective. Integrating data from different sources can lead to more complex and accurate results.

**API:**

- **Utilizing APIs** for data acquisition has several advantages. Auditing, securing data transfer over HTTPS, and the ability to restrict access through intermediaries are key aspects in terms of security and access control.
- **API Benefits: Auditing Capability:** APIs offer traceability for each query, facilitating tracking of who is accessing data and when.
- **HTTPS Security:** Data transmission via HTTPS ensures encrypted communication, safeguarding sensitive information from unauthorized access.

**Access Restriction:** APIs allow for setting restrictions on the server side, providing control over where and how far users can retrieve data.

**Easily Limiting User Views:** Choosing an appropriate approach enables easy limitation of how far users can view into the data. This is crucial for maintaining security and protecting sensitive information. Identify areas that require attention.

**Choosing the Right Technology:** Using SQL on a slave server provides efficient and fast access to the database. This method is particularly effective for transactional queries and data manipulation.
Data Analysis and Reporting

Processing Data by Type

- **Financial Data Processing:**
  - Analysing and processing financial data to gain insights into budgetary allocations, expenditures, and revenue streams.
  - Identifying financial trends, cost-saving opportunities, and ensuring compliance with financial objectives.

- **SLA Data Processing:**
  - Evaluating data related to Service Level Agreements (SLAs) to assess the performance of services.
  - Processing SLA metrics to measure and improve service quality, adherence, and customer satisfaction.

- **Capacity Utilization Analysis:**
  - Processing data on resource usage and capacity to optimize operational efficiency.
  - Identifying underutilized or overburdened resources and implementing strategies for optimal capacity utilization.
Data Analysis and Reporting

Processing Data by Type

- **Long-Term Planning and Forecasting:**
  - Conducting data analysis for long-term planning, including forecasting future trends and demands.
  - Utilizing historical data to make informed decisions and strategize for future organizational growth and stability.

- **Goal Achievement Monitoring:**
  - Processing and interpreting data to monitor progress toward organizational goals.
  - Implementing key performance indicators (KPIs) to track and measure success in meeting set objectives.

- **General Data Reading and Processing:**
  - Developing methods for efficient data reading and processing across various types.
  - Implementing data processing techniques that ensure accuracy, reliability, and relevance of information.
Monitored device
Saved raw monitoring data
Data transfer in to reporting DB
Financial Data Processing
General Data Reading and Processing
SLA Data Processing

Reporting of Monitored Data (Python, R, Tableau, Power BI)
# Data Analysis and Reporting - Examples of Successful Practices

## Cancom

### IBB / Backup Report / 11-2023

| Host          | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| cc-mase.com   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |

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*Note: The table above represents the status of IBB backups for the week ending 11-2023, with '✓' indicating a successful backup and '✗' indicating a failed backup.*
## IBB / Capacity Report

Average Component Usage per Host

<table>
<thead>
<tr>
<th>Host</th>
<th>No. of CPU</th>
<th>Avg. CPU Usage</th>
<th>Min. CPU Usage</th>
<th>Max. CPU Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>cc-mase.com</td>
<td>12.00</td>
<td>15.74 %</td>
<td>6.26 %</td>
<td>48.97 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>12.00</td>
<td>9.48 %</td>
<td>1.49 %</td>
<td>51.10 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>12.00</td>
<td>6.92 %</td>
<td>2.71 %</td>
<td>35.82 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>48.00</td>
<td>0.86 %</td>
<td>0.34 %</td>
<td>10.56 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>12.00</td>
<td>6.92 %</td>
<td>1.90 %</td>
<td>54.93 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>10.00</td>
<td>4.75 %</td>
<td>1.18 %</td>
<td>48.75 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>10.00</td>
<td>6.19 %</td>
<td>1.55 %</td>
<td>55.57 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>10.00</td>
<td>5.49 %</td>
<td>0.27 %</td>
<td>51.19 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>16.00</td>
<td>4.60 %</td>
<td>1.79 %</td>
<td>45.76 %</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>16.00</td>
<td>1.03 %</td>
<td>0.60 %</td>
<td>9.34 %</td>
</tr>
</tbody>
</table>
Data Analysis and Reporting - Examples of Successful Practices

Cancom

Availability

<table>
<thead>
<tr>
<th>Availability (%)</th>
<th>31 Hosts</th>
<th>25 Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>99.61</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overview Availability and Events per Host

<table>
<thead>
<tr>
<th>Host</th>
<th>Event Count</th>
<th>Average availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>cc-mase.com</td>
<td>0</td>
<td>100.00</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>0</td>
<td>100.00</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>0</td>
<td>100.00</td>
</tr>
<tr>
<td>cc-mase.com</td>
<td>0</td>
<td>100.00</td>
</tr>
</tbody>
</table>
OFFLINE

Really?

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Data Analysis and Reporting - Examples of Successful Practices

Alza
Data Analysis and Reporting - Examples of Successful Practices

Alza
SAZKA

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VMWare

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VMWare

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Closing Tips

**Enhanced Data Analysis:**
- AI enables more sophisticated and nuanced analysis of large datasets, extracting valuable insights that may be challenging for traditional methods.

**Detection of Anomalies:** (TOP)
- AI models excel in identifying anomalies and outliers in data, helping organizations quickly detect irregularities that may indicate potential issues or opportunities.

**Predictive Analytics:**
- By leveraging AI algorithms, organizations can perform predictive analytics, forecasting future trends and behaviours based on historical data, facilitating proactive decision-making.

**Improved Accuracy and Consistency:** (TOP)
- AI-driven reporting reduces the risk of human errors, enhancing the accuracy and consistency of analyses and reports.
Automatic Event Recovery

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Automatic Event Recovery

**TASK DEFINITION**

- Automation of Monitoring
- Automated escalation
- Remote Notifications

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Automation

Use automation wherever possible, not just in monitoring. For example, network discovery or automatic agent registration can automatically trigger a webhook in Zabbix, facilitating integration with Ansible EDI.

External scripts can handle routine tasks in the background without your direct involvement.

Typically, you have two options: Manual or Automatic.
Automatic Event Recovery

Automation
Automatic Event Recovery

Automation
Automatic Event Recovery

Automation
Automatic Event Recovery

Automation
Automatic Event Recovery

Automation

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Escalation

- Use intelligent escalation with Acknowledge actions.
- Use different users or medias.
- Ensure to select the appropriate event severity!
- Be assertive during nighttime.
Escalation
# Automatic Event Recovery

## Escalation

<table>
<thead>
<tr>
<th>Action</th>
<th>Operations 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>* Default operation step duration</td>
<td>1h</td>
</tr>
</tbody>
</table>

### Operations

<table>
<thead>
<tr>
<th>Steps</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Send message to users:</strong> <a href="mailto:tomas.hermanek@initmax.cz">tomas.hermanek@initmax.cz</a> (Tomáš Hermanek) via all media</td>
</tr>
<tr>
<td>2</td>
<td><strong>Send message to users:</strong> <a href="mailto:alois.zadrazil@initmax.cz">alois.zadrazil@initmax.cz</a> (Alois Zadražil) via all media</td>
</tr>
</tbody>
</table>

### Recovery operations

<table>
<thead>
<tr>
<th>Details</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Notify all involved</strong></td>
<td><strong>Edit</strong> <strong>Remove</strong></td>
</tr>
</tbody>
</table>

### Update operations

<table>
<thead>
<tr>
<th>Details</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Add</strong></td>
</tr>
</tbody>
</table>

- **Pause operations for symptom problems**: ✔
- **Pause operations for suppressed problems**: ✔
- **Notify about canceled escalations**: ✔

* At least one operation must exist.
Remote Notifications

☑ **Most of** monitoring systems have API endpoints for obtaining or adding additional events data.

☑ Many Service Desk systems can optionally **execute scripts**.
Remote Notifications
Remote Notifications

[PROBLEM] Meetup application is DOWN!

Tomáš Heřmánek raised this request via Jira

Description
Problem started at 13:50:20 on 2023.12.18
Problem name: Meetup application is DOWN!
Host: Jira Servicedesk
Severity: Warning
Operational data: Down (0)
Original problem ID: 14513365
https://www.initmax.cz/zabbix-monitoring/
Remote Notifications

Automatic Event Recovery
ZABBIX can’t do ....

Really?

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Monitoring Team

Tomáš
CEO

ZABBIX
PREMIUM PARTNER

ZABBIX
CERTIFIED TRAINER

Tomáš
Developer

Alois
Technical consultant

Marek
Technical consultant

Vojtěch
Technical consultant
THANK YOU & SEE YOU ON EVENT

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