

Zabbix 7.0

Unleash the AI Power with Synthetic Monitoring



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The Problem: Traditional Monitoring Falls Short

Traditional monitoring often focuses on “uptime” and “basic metrics”.

*It **fails** to capture the **true user experience**, leaving critical performance issues undetected.*

- **Slow page load times impact conversions and customer satisfaction.**
- **Broken functionalities frustrate users and damage brand reputation.**



The Power of Synthetic Monitoring

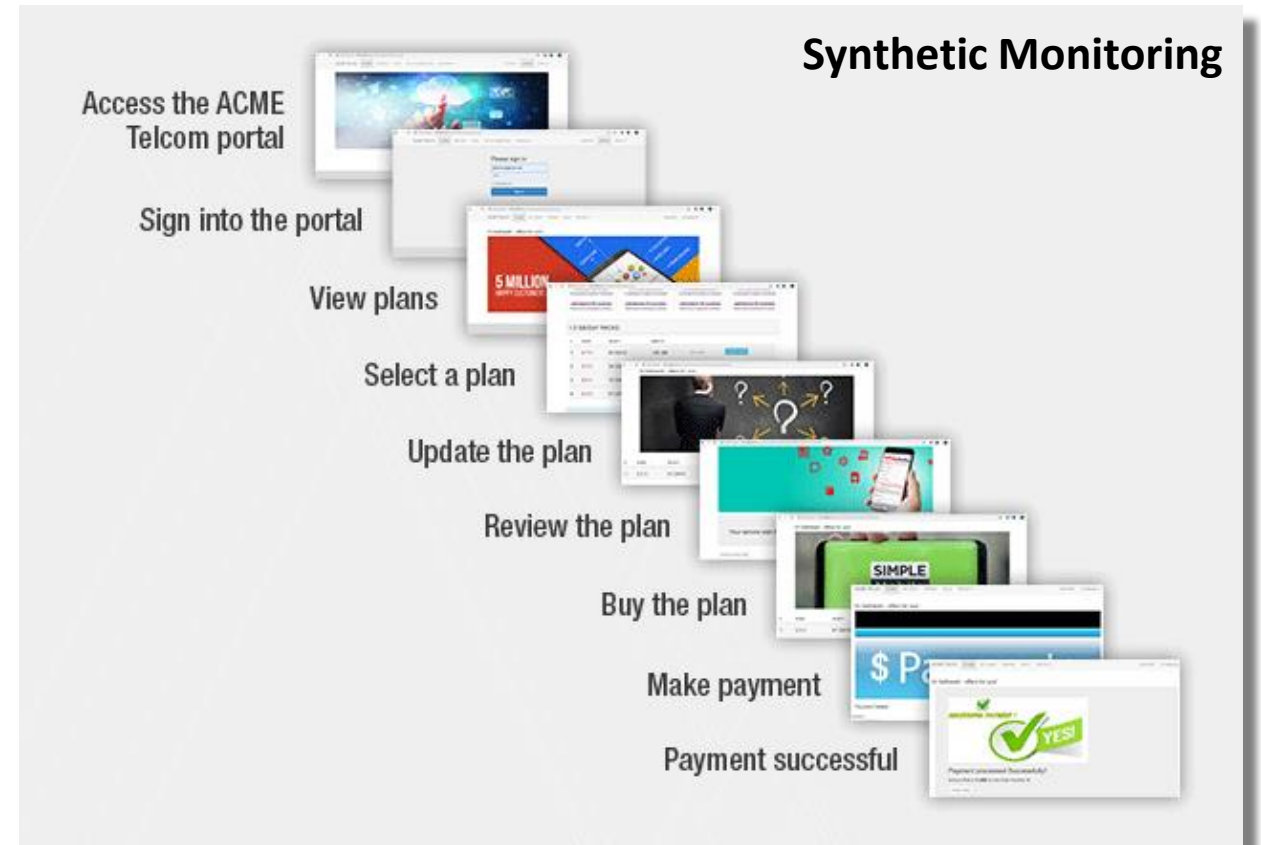
What is it?

A proactive approach to monitoring web applications by simulating real-user interactions to detect issues before they affect end-users.

How it Works

Simulate real-user interactions

- Clicking
- Filling out forms
- Submitting requests



Simulating Real Users, Delivering Actionable Insights

Zabbix 7.0 introduces **Synthetic Monitoring** to *mimic real user interactions with your website.*

To get a **complete picture of how a website performs from the user's point of view.**

- Proactively identify and resolve performance bottlenecks before they impact users.
- Measure key metrics like page load times, rates, and error rates.



Leveraging Cutting-Edge Tools for Powerful Automation

Zabbix “Browser item” implement the **W3C WebDriver Standard** witch lets you control web browsers from another program, allowing you to interact with websites remotely.



Challenges of Integrating Zabbix with WebDriver

- **The WebDriver** (I.e.Selenium) and **Zabbix** are powerful tools for automating web interactions and monitoring IT infrastructure.
- Integrating them can be complex and requires specific skills.
- Instructing **Zabbix** using WebDriver **requires writing JavaScript code**, which can be difficult for non-technical users.

```
var browser, result;

browser = new Browser(Browser.chromeOptions());

try {
    var params = JSON.parse(value); // Parse the JSON string containing pa

    browser.navigate(params.webURL);
    browser.collectPerfEntries("open page");

    var el = browser.findElement("xpath", "//input[@id='name']");
    if (el === null) {
        throw Error("cannot find name input field");
    }
    el.sendKeys(params.username);

    el = browser.findElement("xpath", "//input[@id='password']");
    if (el === null) {
        throw Error("cannot find password input field");
    }
    el.sendKeys(params.password);

    el = browser.findElement("xpath", "//button[@id='enter']");
    if (el === null) {
        throw Error("cannot find login button");
    }
}
```

Technical Challenges and Complexity

- To execute multi-step user scenarios, parsing HTML code is necessary, requiring specific skills to identify the right objects within a complex code structure.
- This adds an extra layer of complexity to the integration process, making it a daunting task for many users.

```
// Get the WebElement corresponding to the Username TextField  
el = browser.findElement("xpath", "//input[@id='name']"); 1
```

```
// Get the WebElement corresponding to the Password TextField  
el = browser.findElement("xpath", "//input[@id='password']"); 2
```

```
el.sendKeys("Admin"); 3
```

```
el.sendKeys("zabbix"); 4
```

Username
Password
 Remember me for 30 days
Sign in

- 1) Find the "Username" text field using xpath
- 2) Find the "Password" field using xpath
- 3) Enter text into the "Username"
- 4) Enter text into the "Password"

Forget Coding, Speak Human

- ***An innovative AI approach*** simplifies **Synthetic Monitoring** creation, allowing users to **define steps in natural language**.
- No need for complex coding or scripting knowledge.

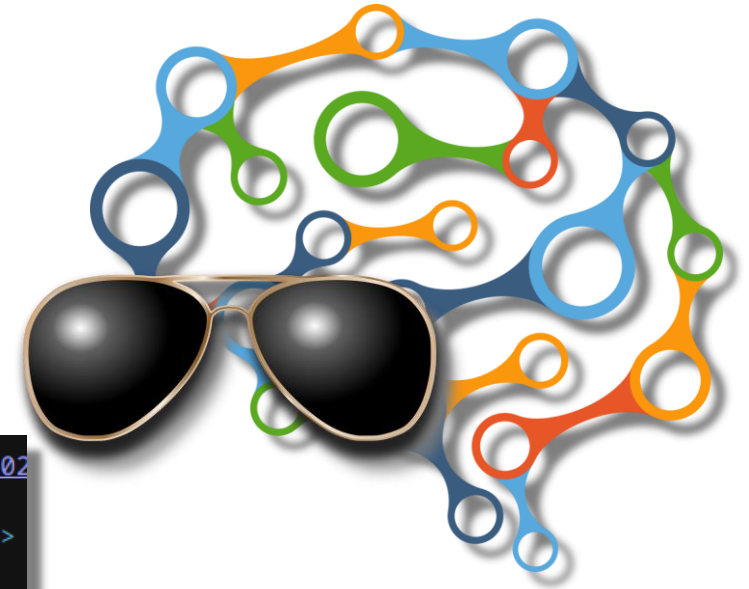
Example:

- Site: `https://www.zabbix.com/`
- Click menu PRODUCT
- Click link INTEGRATIONS
- In the field input with name="search" insert "Cisco Catalyst\n"
- click the link "Cisco Catalyst 3750V2-24FS by SNMP"

The Power of AI at Work

The **AI engine analyzes** the target web page's HTML structure.

It **intelligently identifies** and tags relevant elements based on your **natural language instructions**.



```
<a class="flash mobile-hidden" target="_blank" href="/events/zabbix_summit_2024?utm_campaign=summit_2024" >Zabbix Summit 2024</a>
<!-- Topline banners end -->
<li><a href="https://blog.zabbix.com/">Blog</a></li>
<li><a href="/manuals">Documentation</a></li>
</ul>

<div id="search-icon">
  <a href="#" aria-label="Search"></a>
</div>

<dl class="nav-languages">
  <dt><a class="js_language" href="#languages"><span>English (US)</span></a></dt>
  <dd id="languages" class="hidden">
    <ul>
      <li><a href="/jp/index" data-lang="jp">日本語</a></li>
      <li><a href="/cn/index" data-lang="cn">中文</a></li>
      <li><a href="/ru/index" data-lang='ru'>Русский</a></li>
      <li><a href="/la/index" data-lang='la'>Español&nbsp;(LA)</a></li>
    </ul>
  </dd>
</dl>
```

Bridging the Gap: From Words to Code

The AI uses :

- your instructions (natural language)
- webpage structure (HTML)

to provide a final **Zabbix Browser Item JS code**.

```
var browser, result;
var screenshot = []
browser = new Browser(Browser.chromeOptions());
try {
    browser.navigate("https://www.zabbix.com/")
    browser.collectPerfEntries("page https://www.zabbix.com/")
    browser.setScreenSize(Number(1480), Number(2020));
    browser.setElementWaitTimeout(25000)
    screenshot.push({'title':'step_1','image':browser.getScreenshot()});
    browser.collectPerfEntries("step_1");

    var el = browser.findElement("xpath", "//*[@class='js_nav_anchor nav-anchor with-subnav nav-anchor-active' and @href='/features']");
    if (el === null) {
        throw Error("cannot find xpath //*[@class='js_nav_anchor nav-anchor with-subnav nav-anchor-active' and @href='/features']");
    }
    el.click();
    var el = browser.findElement("xpath", "//*[@href='/integrations']");
    if (el === null) {
        throw Error("cannot find xpath //*[@href='/integrations']");
    }
    el.click();
    screenshot.push({'title':'step_2','image':browser.getScreenshot()});
    browser.collectPerfEntries("step_2");
    var el = browser.findElement("xpath", "//input[@name='search']");
    if (el === null) {
        throw Error("cannot find xpath //input[@name='search']");
    }
    el.sendKeys("Cisco Catalyst\n");
    var el = browser.findElement("xpath", "//*[@text()='Cisco Catalyst 3750V2-24FS by SNMP']");
    if (el === null) {
        throw Error("cannot find xpath //*[@text()='Cisco Catalyst 3750V2-24FS by SNMP']");
    }
}
...

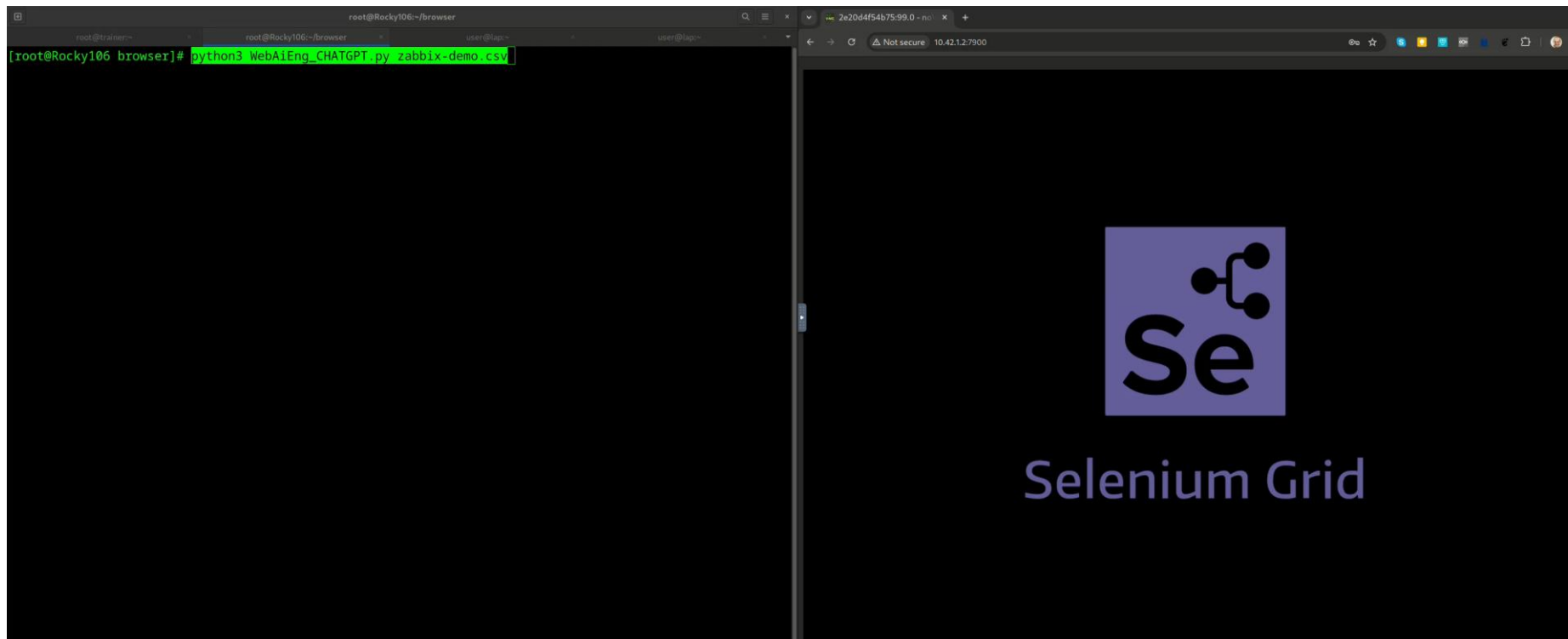
```

Zabbix Javascript



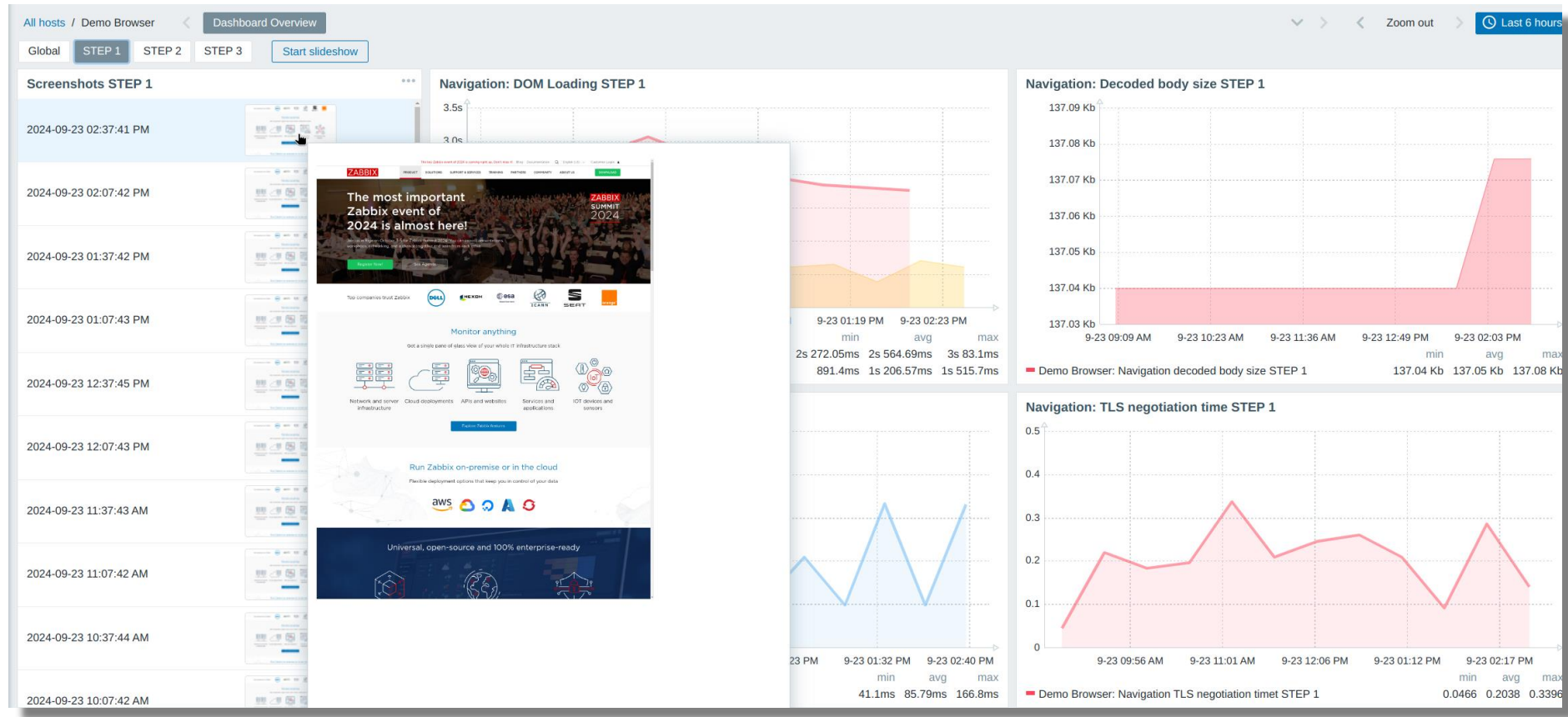
Running the Scenario, Gathering Insights

The generated WebDriver script is executed by Selenium, simulating a real user navigating your website.



Running the Scenario, Gathering Insights

Detailed performance data is collected and visualized in the Zabbix interface.



Experience the Future of Website Monitoring

Zabbix Synthetic Monitoring empowers you with unparalleled insights into your website's performance from a user's perspective.

*Using the “**Quadrata AI**” solution can **improve** the overall experience with a simplified approach.*

...But it's not all...



Why AI is important in monitoring

- AI **CAN** provides *real-time insights* into IT infrastructure operations.
- AI **CAN** offers *predictive analytics* that can foresee and mitigate potential issues before they escalate.
- AI **CAN** enhances *monitoring capabilities*, critical for the success of any organization in today's fast-paced digital landscape.
- AI **CAN** reducing *False Positives*.



Challenges in AI for Metrics Monitoring

- Every environment, host, application, and customer exhibits unique behaviors.
- Training a single AI model to suit all possible monitoring scenarios is difficult.
- General LLM AI models are trained for broad purposes and are not highly effective for specific monitoring tasks.
- These models can provide a brief explanation of problems but lack context from real environment variables.



Current AI Monitoring Solutions

- Most AI monitoring solutions offer limited utility without incorporating real environment variables.
- They can explain issues but fail to provide actionable insights due to a lack of contextual data.

I see the following error on my MySQL database error log: "MySQL server has reached its maximum allowed number of client connections."



hugging-quants/Meta-Llama-3.1-70B-Instruct-GPTQ-INT4

Error: MySQL Server Has Reached Its Maximum Allowed Number of Client Connections

This error occurs when the MySQL server has reached its maximum allowed number of client connections, which is defined by the `max_connections` system variable. When this limit is reached, no new connections can be established until an existing connection is closed.

Causes:

1. **High traffic** : If your application is experiencing high traffic, it may be opening too many connections to the MySQL server, exceeding the `max_connections` limit.
2. **Resource-intensive queries** : Resource-intensive queries can cause connections to remain open for an extended period, preventing new connections from being established.
3. **Connection leaks** : Connection leaks occur when connections are not properly closed after use, causing them to remain open and consume resources.

Solutions:

1. Increase the `max_connections` limit

You can increase the `max_connections` limit by modifying the MySQL configuration file (`my.cnf` or `my.ini`) and restarting the MySQL server.

LLM Multimodal Models with Vision Capabilities



- We propose using **LLM multimodal models with vision capabilities**.
- *These models can analyze multiple graphs simultaneously, providing more **contextual information**.*
- *Multimodal models can **gather context from a single graph dashboard or multiple metrics within a specific timeframe (e.g., 1 day)**.*
- *They offer a multi-hour or multi-day overview of **multiple metrics at once**.*



Initial Test Results

- *Initial tests indicate that this approach can provide **better results** compared to generic LLM models.*
- *The multimodal models can offer **more comprehensive insights** by analyzing multiple metrics over extended periods.*



OpenGVLab/InternVL2-26B 7:14 PM

The provided images show various metrics for a PostgreSQL database named "zabbix_db" over a period from March 3, 2018, at 18:22 to March 5, 2018, at 18:22. Here's an overview of each graph:

1. DB [zabbix_db]: pg_stat_database

- **Database Size** : The database size starts at around 78 GB and increases steadily over time, reaching a peak of 81.7 GB.
- **Locks** : There are several spikes in the number of locks, with the highest peak reaching 20 million.
- **Queries** : The number of queries remains relatively stable, with a slight increase towards the end of the period.
- **Boating Tables** : The number of boating tables fluctuates, with a noticeable peak around 23:00 on March 3, 2018.

2. DB [zabbix_db]: Locks

- **Total Locks** : The total number of locks remains relatively low, with a peak of 1.99K.
- **Access Exclusive Locks** : These are minimal, with a peak of 1.99K.
- **Exclusive Locks** : These are also minimal, with a peak of 1.99K.
- **Row Exclusive Locks** : These are minimal, with a peak of 0.06K.
- **Share Exclusive Locks** : These are minimal, with a peak of 0.11K.
- **Share Locks** : These are minimal, with a peak of 0.

3. DB [zabbix_db]: Size

- **Database Size** : The database size increases steadily from 78.27 GB to 81.7 GB.

4. DB [zabbix_db]: Number of Boating Tables

- **Boating Tables** : The number of boating tables fluctuates, with a peak of 23.



Initial Test Results

Great explained problem conclusions

Summary

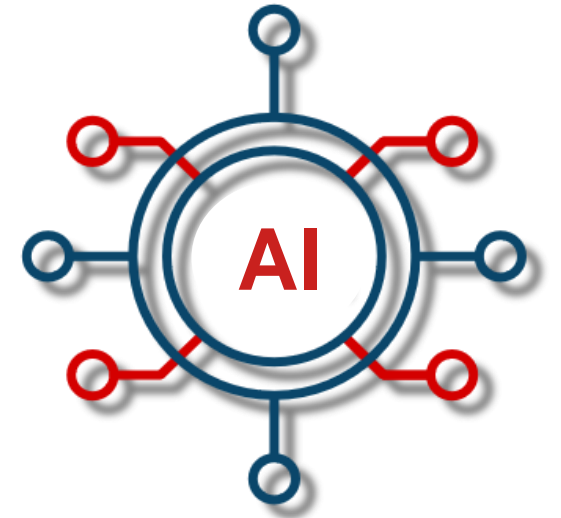
- The database size is steadily increasing.
- There are occasional spikes in locks, particularly around 23:00 on March 3, 2018.
- The number of boating tables fluctuates, with a notable peak.
- Queries and query times are relatively stable, with a significant spike in slow queries around 15:00 on March 4, 2018.
- The slow query count and slow transaction count are minimal, with a peak of 21.

Conclusion

The database is growing in size and experiencing occasional spikes in locks and boating tables, with a notable increase in slow queries around 15:00 on March 4, 2018. The query times and maintenance times are relatively stable, with a significant spike in slow queries indicating potential performance issues that need attention.

Conclusion

- ***AI can be*** a powerful tool for monitoring and metrics, but only when ***used in the right way*** and with the right use cases.
- It's essential to ***move beyond gimmicks*** and leverage AI's capabilities for meaningful insights and improvements.



Thank you!



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