

Revolutionizing Application Monitoring: A Review of DizBoard's Unified Dashboard Approach

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ABSTRACT

In today's software landscape, the continuous and flawless operation of applications stands as a pivotal requirement. The genesis of the "DizBoard: Server and Database Manager" project stemmed from a pressing necessity to guarantee the seamless functionality and resilience of client-server applications. This imperative emerged from firsthand encounters with the escalating intricacies inherent in modern application ecosystems.

An exploration of the existing technological milieu unveiled a diverse array of tools and solutions dedicated to application monitoring. However, the discerned need for a unified dashboard catering to databases, web services, and application servers became increasingly apparent. Current fragmented solutions often resulted in monitoring gaps and an absence of holistic insights into overall application health.

The implementation of the "DizBoard: Server and Database Manager" project is geared towards bridging these gaps, addressing limitations highlighted in the literature review. Through a fusion of frontend technologies, Python-backed backend logic, and the automation prowess of shell scripting, this endeavor endeavors to craft a unified dashboard offering real-time visibility into critical components' statuses.

This review paper embarks on a journey to expound upon the aspirations and methodologies driving the "DizBoard" project. It aims not only to present a comprehensive view of application health but also to delineate the voids that prevailing technologies leave. Envisioned as a user-friendly and automated monitoring dashboard, "DizBoard: Server and Database Manager" aspires to redefine the paradigm of application health management. Its ultimate goal is to elevate reliability, proactively address issues, and ultimately augment user satisfaction in the realm of application management.

Keywords: Application Monitoring, Unified Dashboard, Real-time Visibility

I. INTRODUCTION

In the rapidly evolving digital landscape, the operational seamlessness of software applications stands as a linchpin for modern technological advancements. At the forefront of this paradigm shift lies "DizBoard:

Server and Database Manager," a pioneering solution designed to revolutionize application health monitoring. This project emerges as a trailblazer, marking the inception of an era where the primacy of software reliability and performance takes center stage. "DizBoard" signifies a monumental stride toward redefining the management dynamics governing databases, web services, and application servers.

A deeper exploration into its functionalities unveils an ingenious system not merely adept at issue identification, but one that foresees and mitigates concerns, fostering a more robust and dependable digital realm. This proposed system presents a user-centric application, streamlining the intricate monitoring and management of multifaceted software ecosystems. Its implementation diminishes the necessity for extensive human intervention and time investments in overseeing servers, databases, and web services. Empowering even non-technical individuals, this application facilitates monitoring and provides updates across various service domains

By diligently overseeing and managing multifarious facets, the reliability of servers and databases ascends, averting data loss and transactional mishaps. Operating from a singular administrator system, it extends its monitoring reach to numerous services. Swift notifications regarding service failures or disconnections swiftly reach the administrator's system via email or pop messages within the DizBoard application. This meticulous oversight ensures consistent connectivity and operational status across

diverse services, ultimately bolstering the unified reliability of servers and databases. A confluence of diverse technologies underscores its functionality, centring on the critical services integral to system operations. This capability empowers administrators to expeditiously discern and resolve issues, culminating in streamlined issue resolution processes and minimized downtimes.

II. LITERATURE REVIEW

1) Alessandro Tundo, Chiara Castelnovo et.al "Declarative Dashboard Generation" [2020], Complex software systems, known as systems of systems, demand adaptable monitoring solutions for effective control. Current dashboard systems are often challenging to configure and adjust as indicators change. This paper presents our initial work on an automated dashboard generation process that utilizes meta-model layouts to create comprehensive dashboards from operator- selected indicators. Although emphasizing timely actions by operators, the abstract does not elaborate on the specific mechanisms or features in place to ensure the responsiveness of the generated dashboards for prompt decision- making.

2) Jaimesolis-Martinez, Jordanpas Cual Espada et.al "UXJs: Tracking and Analyzing Web Usage Information With a Javascript Oriented Approach" [2020], UXJs offers a new approach to tracking and analyzing user behavior on websites. It focuses on comprehensive data collection, quantitative presentation, and automated statistical analysis, aiming to provide valuable insights to web developers for improving their websites' design and usability. Understanding user behavior within a website is crucial for assessing design, structure, and usability. While mentioning automatic statistical analysis, the abstract does not elaborate on the methodologies or algorithms used, leaving a gap in understanding the robustness and accuracy of the proposed approach.

3) Bong-Hwan Oh, Serdar Vural et.al " A Lightweight Scheme of Active-Port-Aware Monitoring in Software-Defined Networks " [2021], APAM is proposed as a lightweight monitoring mechanism for SDN to address the challenges of heavy monitoring overhead in complex network environments. It achieves dynamic monitoring and adapts to changing network conditions, leading to improved efficiency and accuracy in network monitoring. Existing network monitoring approaches are often heavy, leading to significant monitoring overhead. This becomes problematic in software-based network systems with multiple networks and complex policies. The article introduces a lightweight monitoring mechanism called Active-port Aware Monitoring (APAM).

4) Narongsak Sukma, WasinSrisawat, et.al "An Analysis of Log Management Practices to reduce IT Operational Costs Using Big Data Analytics" [2019], The paper presents a solution that streamlines SOC operations by utilizing Big Data Analytics for log management. This results in significant cost savings, increased efficiency, and improved employee satisfaction, making it a promising approach for modern security operations. The claim of increased work flexibility and reduced stress lacks supporting details, making it difficult to assess the validity and long-term impact of these asserted benefits. This also lacks specifics on the components of the 60% cost reduction, making it challenging to evaluate the accuracy and sustainability of the claimed reduction.

5) Mary Dempsey, Attracta Brennan et.al "A Review of the Most Significant Challenges Impacting Conventional Project Management Success"[2021], This research paper discusses the importance of understanding the success factors and challenges in conventional project management for organizations. The review process identified five significant challenges: communication, control, competence, culture, and complexity, with an emphasis on their interdependence. However, it acknowledges limitations due to database selection and search terms.

It also suggests that combining other project management methods and recommendations can help address these challenges. The study may not cover the full spectrum of project management challenges, potentially overlooking important issues outside the selected scope. The research methodology, including chosen databases and publications, may introduce bias, limiting the diversity of perspectives on project management challenges.

6) Jeanderson Cândido, Maurício Aniche, et.al "Log-based software monitoring: a systematic mapping study" [2021], In modern software development and operations, monitoring is vital for system reliability. Despite available log solutions, challenges persist in effectively using log data. This paper reviews 108 papers, highlighting challenges in both open-source and industrial settings. It suggests that machine learning holds promise for log analysis, efficient log data storage needs more attention, and applying advanced log analysis in DevOps contexts is an open opportunity. The research may not extensively address challenges specific to industry settings, potentially limiting practical insights for practitioners in real-world software development and operations.

7) Mingyi Zhang, Patrick Martin et.al "Workload Management in Database Management System: A Taxonomy (Extended Abstract)" [2018], We explore modern workload management in database systems. We classify existing techniques, covering both commercial databases and recent research. Our analysis identifies key principles, highlights open challenges, and outlines research opportunities. The focus on workload management systems in commercial databases may overlook nuances and challenges unique to non-commercial or specialized database management systems. This paper lacks specific examples or case studies illustrating the practical application of surveyed workload management techniques, potentially limiting the clarity and applicability of the proposed taxonomy.

8) Ford Lumban Gaol, Steven Santoso et.al "Design and development of the application monitoring the

use of server resources for server maintenance.” [2022], In response to the global surge in internet users, websites need to ensure constant web server availability. Web server monitoring involves analyzing server utilization through statistics or graphs, aiding server owners in making availability-related decisions. This study aims to develop a web monitoring program for Java application server data retrieval and storage. The research involves two phases: data gathering (including literature review, surveys, questionnaires, and app analysis) and software development (using the waterfall methodology). The study's outcome is a web application that monitors Java application server resources and sends email alerts for excessive resource usage. The study may lack generalizability, as it focuses specifically on creating a web monitoring program for Java application servers, potentially limiting applicability to other server technologies.

9) Dr Isa Ali Ibrahim, “Client/Server Interface Monitoring and Management” [2015], The widespread internet usage in organizations and cyber cafes poses security threats due to unwanted messages and unauthorized network access. It investigates a cyber cafe time management system to enhance client management and prevent illegal network access. The research, conducted at ATBU's ICT Centre, concludes that a client/server model improves security and cyber cafe time management through enhanced monitoring and control. The study focuses for potentially limiting the generalizability of findings to other cyber cafes with different infrastructures.

III. OBJECTIVES

- 1) Evaluate Existing Solutions: Assess and analyze the current landscape of server and database management tools, highlighting strengths, weaknesses, and gaps.
- 2) User-Centric Design: Develop a user-friendly dashboard that enables both technical and non-technical users to monitor and receive updates on various types of services effortlessly.

3) Compare and Contrast: Conduct a comparative analysis between DizBoard and other solutions, elucidating the distinct advantages and limitations of each.

4) Accessibility for Non-Technical Users: Ensure that the application is accessible and comprehensible for non-technical personnel, enabling them to effectively monitor and understand the status of services.

5) Notification System: Implement a notification system, utilizing email or pop-up messages, to alert administrators promptly about failed or disconnected services for timely intervention.

6) Cross-Service Connectivity: Enable the monitoring of multiple services from a central administrator system, ensuring proper connectivity and working status across various services.

7) Improve operational efficiency: Help businesses and organizations to improve the operational efficiency of their web services by streamlining monitoring and management tasks, providing real-time insights, and automating manual processes.

8) Real-time insights: Provide users with real-time insights into the performance and health of their web services.

IV. LIMITATIONS

1) Dependency on Internet Connectivity: The effectiveness of DizBoard may be compromised in scenarios where the administrator system or servers lack consistent and reliable internet connectivity, hindering real-time monitoring and notification delivery.

2) Scalability Challenges: DizBoard's performance may face limitations in scaling to accommodate a rapidly growing number of monitored services, affecting its ability to handle large-scale applications.

3) Learning Curve: Non-technical users may experience a learning curve when initially using the application, potentially leading to challenges in fully utilizing its features without adequate training.

- 4) Regulatory Compliance: Ensuring compliance with various data privacy laws, industry regulations, and standards might pose challenges, particularly when handling sensitive information.
- 5) Maintenance and Updates: Regular maintenance, bug fixes, and updates to keep DizBoard current and aligned with evolving technologies may demand continuous effort and resources.
- 6) Compatibility and Integration Challenges: Integrating DizBoard with diverse systems, databases, and software environments may pose compatibility challenges, especially with legacy systems or unique setups.
- 7) Security Concerns: Managing security aspects of DizBoard, including data encryption, access control, and protection against cyber threats, might present ongoing challenges due to evolving security landscapes.

V. CONCLUSION

In conclusion, this review delves into the pivotal role envisioned for "DizBoard: Server and Database Manager" within the realm of application management. By addressing the fragmented nature of existing solutions, this project introduces a unified dashboard, promising real-time insights into databases, web services, and application servers. The proactive approach embedded in "DizBoard" heralds a new era of monitoring, enhancing reliability and responsiveness across software ecosystems. This review underscores the transformative potential of "DizBoard," portraying it as a harbinger of streamlined application monitoring practices, where efficiency, reliability, and user-centric experiences converge to redefine the norms of software management.

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