THE SECURED CLOUDS WATCH WEB SERVICE RESOURCES BASED ON PRE-SCHEDULED CHANGES TO RESOURCES IN BIG DATA MANAGEMENT

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Abstract

The Cloud Watch is a cloud web service that lets you collect and monitor performance metrics of your cloud web service resources and applications running on cloud web service with just a few clicks. The cloud web service provides built-in metrics that help users gain insight into various components, while custom metrics can be created with the help of EC2 instances. Cloud Watch generated metrics are free for five-minute monitoring intervals, where one-minute interval metrics are charged. In this paper, the secured clouds watch web service resources was proposed based on pre-scheduled changes to resources in big data management. In addition, The Cloud Watch provides enterprise metrics to help monitor resources, such as the number of EC2 instances, set alarms on critical events, and check traffic patterns. The cloud web service resources can be monitored in real-time with the help of Cloud Watch. Available metrics can be collected and monitored, which can be used to measure applications and resources. Scheduled alerts can send notifications or make pre-scheduled changes to resources.

Keywords:

Cloud, Web Service, Monitor, Interval, Big Data, Management, Critical Event

1. INTRODUCTION

The Cloud Watch collects all metrics and stores them in a repository. Metrics for cloud web service services such as EC2 are collected and sent to Cloud Watch [1]. Cloud Watch stores metrics in the repository and allows the user to retrieve statistics based on available metrics. The Cloud Watch console allows the user to calculate data based on metrics and present the same data graphically in the console [2]. Amazon Cloud Watch allows the user to configure alarms that can change the status of an EC2 machine when certain criteria are met. Cloud Watch can initiate automatic measurement and Simple Notification Service (SNS) on behalf of the user [3]. The cloud web service consists of different regions with multiple Availability Zones. The Cloud Watch cannot aggregate data from different regions [4].

Cloud Watch Events provides a real-time stream of system events that describe changes to cloud web service resources. When specific events occur, they can be sent to one or more target functions. Users can use Cloud Watch events to schedule automated tasks to trigger automatically at specific times with the help of cron or rate expressions [5]. This feature of Cloud Watch allows users to set an alarm on metrics and receive a notification when certain thresholds are exceeded. It can also be used to take automated action based on different predefined events [6]. Cloud Watch logs are used to monitor logs for specific patterns or values, in real-time. With the help of this, users can view the original log data and know the root problem if needed. The Cloud Trail is a cloud service that logs API calls made to an account and delivers the log files to an Amazon S3 bucket [7]. Cloud Trail can track or view all client activity, i.e., API calls executed. Multiple API calls to different services within or across a region are made through the Cloud Trail continuously logs these API calls by creating log files and delivering them to an S3 bucket [8]. Events are stored in JSON format, so they are easily parsed. The Cloud Trail allows organizations to manage, comply, operate, and audit risk. It can record, track and retain account activity associated with activity across IT infrastructure in the cloud [9]. It provides an event history of cloud web service account activity across the entire Management Console, cloud web service SDKs, command-line tools, or other cloud web services. It provides insights to help analyze security, monitor resources, and troubleshoot issues [10].

Additionally, organizations can detect unusual activity on cloud web service accounts and protect themselves from potential damage [11]. As environments become more distributed across cloud services, applications in the cloud depend on different aspects. Transactions take place between multiple servers and services. If there is any performance issue in the background, the hardware may be the culprit, which makes it imperative to monitor the apps [12]. It X-Ray allows developers to debug specially developed applications in a distributed environment. It enables developers to analyze their applications and find the root cause of performance issues that can be resolved immediately [13].

2. RELATED WORKS

Postgre SQL, an open-source relational database system, provides SQL and JSON querying techniques, making it an intelligent and enterprise-grade database system. With a 20-year history of development, Postgre SQL is a premier database used in web and mobile applications [1]. Hence, the list of advanced features makes it one of the most favorite database systems of IT organizations. High transactions and dependencies make it imperative to monitor the database system to ensure security and availability [3]. The Insights Monitoring tool provides real-time operational reports on the health and status of the Postgre SQL database system. Analyze requirements for dynamic graphs, custom statistics series, and performance analysis and server health summarization with Postgre SQL monitoring. On the other hand, we monitor weak performance and identify slow queries [4]. When working with OLTP (Online Transaction Processing), the application becomes unresponsive and provides slow results; this reduces chat rates and painful user experience. OLTP is one of the most common practices to ensure smooth queries [5].

The tools provide real-time visibility into the health of your database systems by gathering metrics from multiple sources, such as operating system logs, application server logs, or custom applications running on top of your database servers [6]. These metrics can be collected in real-time to detect potential problems before they impact production workloads. Additionally, the ability to monitor these metrics allows you to proactively detect

issues that may otherwise go unnoticed until it's too late [7]. Log into MySQL via SSH/MySQL Workbench/etc and view the logs for each table individually. This method requires access to an instance of MySQL running on another server. It can use this method if you use Amazon RDS. If you don't want to pay for AWS services, you don't need to run MySQL instances yourself; Connect to them remotely via SSH. It will back up all tables at once [8]. Although it doesn't provide real-time information, it does allow you to see what happened when the problem occurred. Performing regular full backups with MySQL dump and restoring from these backups. This allows you to restore individual tables without manually creating new tables [9]. However, it doesn't tell you anything about how long it took to complete things. A common way to do this is by directly querying the INFORMATION_SCHEMA views [10]. These views contain metadata such as column names and categories, indexes.

3. PROPOSED MODEL

Break down data silos and achieve end-to-end visibility into your network performance, SNMP data, network flow and log data. Effectively monitor and analyze your network from on-premise to cloud infrastructure. Whether, multi-cloud or hybrid infrastructure, capture your increasingly steaming traffic data to identify anomalies impacting your business goals.

- Metric: Capture important metrics and perform drill-downs.
- Transport: Track usage from ingress to egress through network flow.
- Routing: Fix problems quickly before they affect performance.
- Logs: Analyze the logs of your network devices for actionable insights.

Get unified, scalable observation and analytics powered by machine learning across your hybrid infrastructure, including network devices, virtualization, applications and cloud infrastructure. Gain complete insight into communication between services, application usage patterns, and unusual critical events. Cut through data noise for better insights with machine learning-based alerts. Network Observer is a monitoring tool that monitors the company's entire network and connected devices, alerts the admin team in case of any failure, maintains the good health of the network and keeps it up and running. Monitor network service performance: Improve your network's quality of service by accurately modeling data flow between nodes, identifying anomalies before they become problems.

- Monitor Traffic, Routing and End-User Experience: Quickly detect delayed response times in traffic to client-side applications.
- Record analytics with context: Fix problems quickly before they impact performance.
- Logs: Get real-time insights and trends from millions of network device log entries

As the number of devices in the enterprise increases, it becomes difficult to monitor them and ensure bandwidth usage. This puts a lot of pressure on IT teams to get things right and solve limitations. In such situations, it is good to have Network Observer handy as it is easy and can fix problems before they do any damage and maintain overall network health. As logs are sent, Instant Clustering logs data received in real-time and intelligently reveals log activity trends. This was shown in Fig.3.

- Collect and Correlate: Collect records from heterogeneous environments through agent-based or agent-less collection methods. Communicate your posts and metrics through email, Slack and other channels.
- One-stop solution: A robust agent that collects any type of data or format from any source. One stop solution to install, configure and scale.
- Customization on demand: Comply with legacy recordkeeping reporting policies, auditing or regulation based on your organization's needs.

Smart Network Observer can inform admin teams about the status of all connected devices, their location, bandwidth usage, network health and more. It communicates with network devices via SNMP, and an intelligent alarm system protects the system from damage. Log Analytics is designed to help organizations collect, analyze, monitor, and visualize log data for rapid investigation, remediation, and advanced analytics. Effortless collection methods combine logs with metrics and streaming data for a centralized view with deep context to analyze log events. The database collects the status of the database operation. This function covers the performance of the database and its behavior.

Being one of the key metrics in the monitoring process, reading metrics ensures that the application can access data from the database. Once you start reading data from the database, it is necessary to monitor the performance of writing data to the same database system. If there are any errors while writing/updating anything in the database, it indicates issues like forgery and reliability. That's why it's important to keep the write/update practice consistent to ensure good application health and behavior. Whenever a change occurs in the database, It records it in a write-before-log (WAL) and refreshes the page. In a way, the database is maintained and it is reliable. Once an update is recorded, the database performs a WAL to protect the data. Since the transaction is logged in the WAL, It checks if there is a block in memory. If so, it is updated in memory and marked as dirty. Like most database systems, It depends on various resources to successfully execute operations. Resources like disk, memory, CPU, network bandwidth. System-level resource monitoring can ensure resource availability, and It can access the necessary metrics. In addition, It also collects metrics on resources used. Metrics like resource usage, number of connections, disk usage.

4. RESULTS AND DISCUSSION

It provides a built-in dashboard for cloud web services and monitors service consumption usage. It can help analyze both types of applications in development and production, from a simple three-tier application to a complex application that includes a large number of services. Where cloud web service helps monitor app traces and connected services, Cloud Watch Synthetics helps create canaries. The proposed pre-scheduled changes (PSC) were compared with the existing QOS based dynamic workflow (DWF). Towards mobile cloud computing (TMCC), Handling big data (HBD) and Model-based methods (MBM)

A database monitoring tool is designed and built to have very low maintenance and standardization requirements. It can maintain multiple options, stability and performance. The database monitoring tool is very straightforward to identify problems and issues making every stakeholder's work easier. This was shown in the Table.1.

Table.1. Comparison of Maintenance Management

No of Inputs	DWF	TMCC	HBD	MBM	PSC
1000	43.99	57.24	88.82	40.62	84.57
2000	45.48	59.21	91.24	42.82	86.56
3000	46.28	60.34	91.65	43.62	87.76
4000	48.61	61.55	93.25	44.29	88.24
5000	49.62	61.92	95.57	45.72	89.67
6000	50.26	63.45	96.82	46.81	90.83
7000	50.92	63.95	99.55	47.29	91.60

It monitoring can be customized and extended with minimal effort. The monitoring tools like ours are ideal for new approaches and monitor server hardware health through remote actions to troubleshoot server issues. This was shown in the Table.2,

Table.2. Comparison of Scalable Management

No of Inputs	DWF	TMCC	HBD	MBM	PSC
1000	52.62	60.88	76.22	48.05	89.83
2000	52.95	62.38	76.81	49.92	90.87
3000	54.29	63.49	77.79	50.75	91.00
4000	55.43	63.87	79.00	51.66	91.96
5000	56.48	64.88	80.14	52.58	91.53
6000	57.41	65.95	81.00	53.83	92.39
7000	58.43	66.90	82.00	54.91	92.83

With a high level of compatibility and flexibility, the monitoring tool monitors the health and availability of hosted servers. It monitors resource utilization according to available capacity and expected trends. Additionally, it takes complete care of the server health of the database and uses remote behaviors to work on the necessary server issues. This was shown in the Table.3.

Table.3. Comparison of Flexibility Management

No of Inputs	DWF	TMCC	HBD	MBM	PSC
1000	44.86	52.46	67.12	44.03	89.15
2000	44.53	50.96	66.53	42.16	88.11
3000	43.19	49.85	65.55	41.33	87.98
4000	42.05	49.47	64.34	40.42	87.02
5000	41.00	48.46	63.20	39.50	87.45
6000	40.07	47.39	62.34	38.25	87.16
7000	39.05	46.44	61.34	37.17	86.29

Server Management: It enables intelligent alerts for quick remediation, monitors the availability and health of heterogeneous servers, and simplifies troubleshooting by mapping which applications are active on which virtual machines and which applications are attached to which storage volumes. This was shown in the Table.4.

Table.4. Comparison of Server Management

No of Inputs	DWF	TMCC	HBD	MBM	PSC
1000	53.49	56.10	74.52	51.46	90.41
2000	52.00	54.13	72.10	49.26	88.42
3000	51.20	53.00	71.69	48.46	87.22
4000	48.87	51.79	70.09	47.79	86.74
5000	47.86	51.42	67.77	46.36	85.31
6000	47.22	49.89	66.52	45.27	84.15
7000	46.56	49.39	63.79	44.79	83.38

Additionally, it provides insights into the end-to-end requests that travel through the application and displays a diagram of the underlying components of the application. New next-generation AI Ops provides real-time monitoring and insights into health metrics. A real-time integrated dashboard of the cloud web service environment enables the operations team to monitor the cloud web service ecosystem, and an advanced alert system with a combination of AI and ML sends notifications before any damage occurs within the cloud infrastructure.

5. CONCLUSION

The currently powered database is a smart monitoring tool developed with cutting-edge technologies such as artificial intelligence and machine learning. It monitors the database and evaluates all operations that occur. The monitoring solution ensures a healthy database system and makes it reliable and available all the time. By providing real-time insights into metrics, it ensures all functionality and alerts you to potential errors before they cause any damage. The cloud web service, one of the pioneers in providing cloud services, offers many amazing cloud services on the cloud web service platform. When monitoring cloud web service, there are many different types of activities taking place on the cloud web service infrastructure. Based on the company's usage, operation and infrastructure, a specific monitoring service will be useful. Cloud Watch, Cloud Trail, and X-ray are some of the cloud web service services that help companies monitor their cloud web service infrastructure in the cloud.

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