

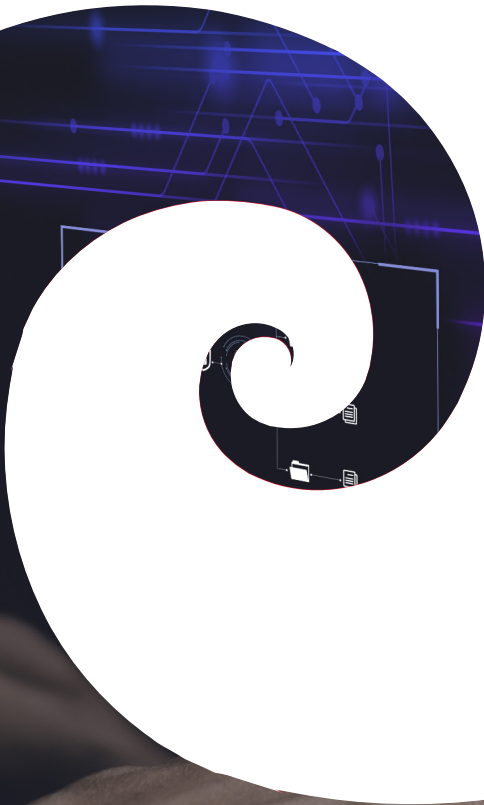
U.S. PATENT - US 11,662,379 B2



GS LAB | GAVS' PATENTED METHOD OF

DETERMINING APPLICATION HEALTH

IN AN IT ENVIRONMENT



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Reactive IT support can deceptively seem cost-effective since it only requires payment for products and services as and when support is required. However, it could prove expensive in the long run due to loss of revenue, loss of productivity, unplanned outages, and lack of visibility into the entire IT infrastructure. On the other hand, proactive support involves constant monitoring and regular maintenance of various aspects of the IT environment, including application health to prevent potential disruption and remediate security vulnerabilities.

Challenges in Detection and Prevention

Assessing the health of applications and analyzing the nature of errors captured can help anticipate performance issues and enhance overall productivity of enterprises. However, managing application health in the IT environment by analyzing exceptional events and network anomalies is a complex challenge in itself. For instance, detection and resolution of exceptional events associated with applications can be contingent upon the length of the software, network traffic, uniqueness or repetitiveness of the events, etc. Additionally, analyzing current performance parameters requires high level of accuracy of data associated with the parameters. Further, obtaining application health information is useful only when the performance is analyzed in real time.

GS Lab | GAVS' Patented Solution

Many earlier solutions have attempted to address some of the challenges. One of them describes a method for monitoring and measuring application performance in computing devices using an index. Another one describes the system and method for application performance monitoring and management. Yet another discusses detecting and determining root causes of mobile application faults and performance bottlenecks. However, these publications do not address the challenges of providing an accurate and real time analysis of application health in an IT environment.

The Application Health Index (AHI) framework developed by GS Lab | GAVS derives the AHI from data collected by the Application Performance Monitoring (APM) capabilities of proprietary AIOps Platform ZIF.

Determining Parameters

Data relating to multiple parameters associated with the devices and servers in the IT environment and network nodes implementing the web application are used. The parameters include at least one parameter from the exceptions, network anomalies, resource performance, and user experience categories.

Calculating Parameter Scores

A score is determined for each of the parameters from the received data. The score represents a measurable value relative to the predefined score of the parameter.

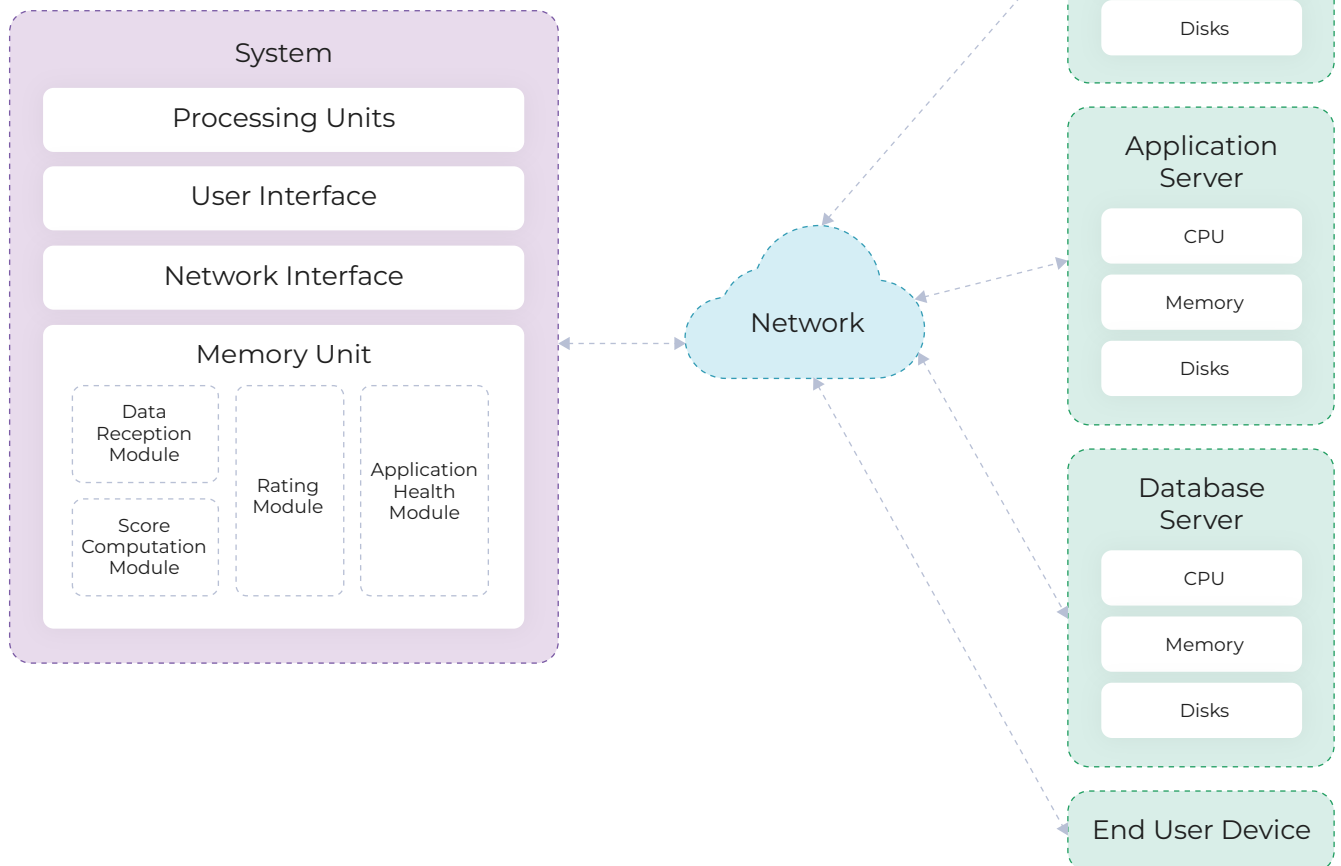
- **The score for the exception parameter** is based on information relating to exceptions at the network nodes, identifying repetitive network exceptions, unique network exceptions, or both; determining a number for lines of code for the unique exceptions, a number for transactions for the repetitive exceptions; and the score as the ratio of the number to the total number.
- **The score for the network anomaly parameter** may be obtained by identifying one or more network anomalies occurring in the network and the number of transactions affected by the anomalies; and determining the score as the percentage of number of transactions affected by the anomalies to the total number of transactions.
- **The score for the resource performance parameter** is determined by receiving data for at least one parameter relating to resource performance in the network; and calculating the score for one or more resource performance parameters as a percentage of the value of the parameter to the total value of the parameter.
- **The score for the user experience parameter** may be calculated by receiving response time of one or more end user devices; comparing the monitored response time with the threshold response time; and determining the score as the ratio of the number of times the monitored response time exceeds the threshold response time to the total number of times measured.



Arriving at the Score Card

A parameter rating is assigned for each of the parameters by comparing the determined scores in a multiple rating scale. The multiple rating scale includes multiple threshold levels for each parameter, which correspond to predetermined range of scores.

A final rating is determined for exceptions, network anomalies, resource performance, and user experience from the parameter ratings. A score card for the health of the web application is automatically generated at near real-time by applying a weight factor for each of the final ratings for the 4 categories. The application health index provides an accurate and near real-time indication of the health of an application by considering a wide variety of parameters for each network node in the IT environment.



Implementation in Proprietary AIOps Platform ZIF

Application Health Index (AHI) is a key feature of ZIF APM (Application Performance Monitoring) which delivers insights that include (but are not limited to):

- 1 360-degree view of the infrastructure of the application environment, which includes the performance analysis of user experience, load balancer, web server, API layer, middle tier, database server, switches, routers, and more
- 2 Clarity on which components of the application are under performing, for instance, if poor performance is due to improper configuration of the web server or improper configuration of the load balancer
- 3 Load distribution - whether the load is properly distributed across all web servers, or if and where there is overloading
- 4 Comparison of performances of portfolio servers, devices against each parameter
- 5 User Experience Index (UEI)
- 6 Anomalies at end user side and server side with full stack trace

Based on SME recommendations, standard inputs are fed into the environment along with threshold limits for each KPI. So, while the customer need not give manual inputs, ZIF APM provides the flexibility to edit thresholds, add new parameters and configure their thresholds.

The output is the AHI score card which includes the details listed above. IT teams and Applications teams will monitor AHI and UEI and act based on SLAs/organizational standards for performance. If lesser than acceptable values, the details in the score card will help diagnose the reasons for performance degradation and enable appropriate resolution.



ZIF is an award-winning AIOps platform for IT Operations. ZIF delivers business outcomes by leveraging unsupervised pattern-based machine learning algorithms. Infrastructure and application telemetry data are aggregated, correlated, and potential failures are predicted. To enable faster resolution and better user experience, ZIF deploys intelligent bots for proactive remediation. Developed by GAVS Technologies (www.gavstech.com), ZIF is available as an on-premise and SaaS solution.

To find out more about ZIF, please visit www.zif.ai or write to inquiry@zif.ai

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