WHITEPAPER

Zero Incident Framework ™

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Prologue

The support functions in any organization are known more by their failures than their success. Imagine a scenario where a new user joins, given a laptop with his login name and one time use password, a user guide with the clear instructions on how and when to use what applications which are additionally intuitive by default, all polices and processes available on a hot button on the desktop, a comprehensive directory of employees in outlook, phones with his name and extension clearly displayed, his laptop and all applications run as he has expected on all days and as much as you can add to this fantasy. The user will never come to know of existence of IT function in the organization. He/she will come to know of it when he searches the phone number of IT helpdesk, which he would do when he is met with an 'incident'.

The IT helpdesk would be very happy to be called for anything other than resolving an incident. Not that they don't want to resolve an incident, but they want to avoid an incident because they know each incident is a disruption to users' work. The helpdesk and the IT managers would be very happy to be unknown for that matter.

But is it possible to create an environment where a user would never need to call helpdesk? Is that 'Zero Incident' a reality or fiction?

Incident Reduction

On an average, according to MetricNet, a leader in IT Service and support benchmarking solutions, a user experiences about 0.30 to 0.72 incidents (excludes service requests) depending on the industry they work for. These incidents account 2.67 hours of non-availability of IT resources in a month for each user. This down time has been derived from (i) Gartner report on "Key metrics for IT Service and support" and "Vendor survey analysis: Benchmarking Hardware support operations" and (ii) Historic data on average resolution time.

Out of this, 15 to 20% of the incidents are caused at Deskside by the end user devices. The devices and applications at data center cause all the rest.

These incidents cause a loss of 1.52mn USD for an organization of 100mn revenue. Should we not work towards reducing these incidents towards zero or near zero and thereby reduce the losses?

Traditional Methods

The industry traditionally has been doing few things like 'Problem Management' to reduce the incidents. As part of the 'problem management', they use tools like Pareto chart to find out the top three root causes that had created 80% of the incidents and eliminate those root cause.

Some have implemented 'self-healing' tools in the end user devices that proactively detect potential incidents and resolve them before they occur.

Some even though reactive, have provided 'self-service' tools like updated knowledge base and self-serving utilities. Few others have even implemented VDI to eliminate the desk side incidents.

But all the above have helped the IT team to reduce incidents by few decimals and have not yielded significant change or shift towards 'zero incidents'. The problem lies beneath all of these.

Who Creates Incidents – Man or Machine?

We being human, always look outside for cause for failures. We all have been thinking that the machines cause incidents, but they don't.

Machines are programmed by humans to do certain actions. They behave and react according to what humans have programmed them. Unlike humans, machines do not possess the intelligence to think on their own and behave differently. They fail because we have programmed them to fail. They run without any breakdown because they are programmed to run so. Hence most of the incidents that the users experience everyday are the result of these defective codes sowed into the system. How can we protect the systems from these defective codes?

Instrumentation

One of the best practices in software programming is to add hooks into the code so that the internal functioning i.e. events, traces and exceptions, of the application is captured. It must also be recorded while the application runs. This is called instrumentation.

Applications equipped with full instrumentation capability, provide more insights into their functioning than typical monitoring tools. They help predict issues with performance and availability well in advance.

In reality, most programmers do not follow this best practice while coding. Therefore, many applications run with very little or no instrumentation, thus depriving application administrators of valuable inputs that can help manage their application.

However, there are ways to add instrumentation codes non-intrusively into the application while running. The instrumentation agents which are of very small foot prints, run along with the application in the same server and generate logs that (I) indicate the health of the application (Business application, Database, middleware and OS) and the hardware, (ii) are quite rich and insightful enough to predict accurate and useful predictions and (iii) are not provided by ay monitoring tools. These logs are fed into a predictive engine for predictive analysis and real time detection of events.

Real User Monitoring

Real User Monitoring (RUM) is a collection of technologies that capture and analyze every transaction of every user of web application. It provides complete path of a transaction that makes it easy for administrators to identify the problem and the resolution quickly. It can even report problems that would not normally be reported by end users.

When the user accesses a web application, it downloads a small script into the end user workstation. RUM agents run on the end user devices and collect logs on the performance of the application, hardware resources and user behavior. These logs are sent to predictive engine for analysis of performance and alerting helpdesk of abnormal behavior.

Real-time and Predictive Engine

This tool is capable of reading the logs sent by Instrumentation and RUM agents 'on the fly', apply the predictive algorithm and create 'opportunities'

for proactive healing. This tool is also capable of reading the data and acting on it 'real time'. The real strength of this tool comes from its capability to detect even non-obvious events and trends that would brew over a period of time and result in severity incident later. It is made possible because this tool reads the data generated from the lowest level. Though this tool can read the data from the existing monitoring tools, those data becomes redundant because the logs generated by the instrumentation and RUM tools are superset of the data generated by these monitoring tools.

This is the core of the 'Zero Incidents Framework ™' as the target of 'zero incidents' is entirely dependent on the capability of this tool to predict all low, medium and high impact failures and alert the support team.

This tool also provides an intuitive dashboard to display the statistics of the events generated, analyzed, alerted and acted from the cradle to the grave.

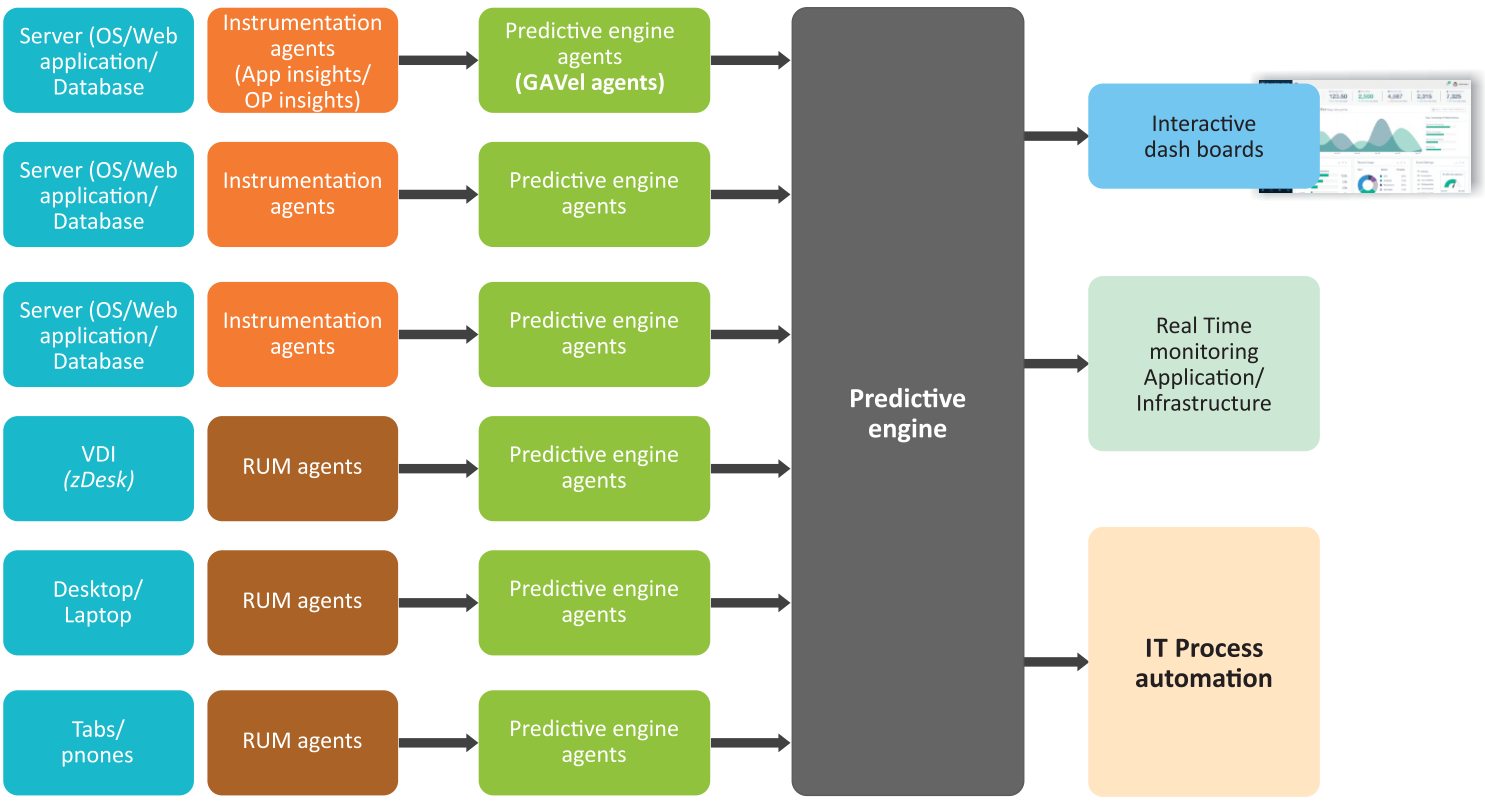
IT Process Automation

This is an IT Process Automation tool that takes care of executing a defined task after getting triggers from Predictive engine. This tool is simple enough to automate routine and mundane tasks, execute complex activities involving dependencies from multiple applications, easy and administrator-friendly enough to create complex workflows easily and quickly and rich enough to come with pre-built workflows for executing most of IT operations. This completes the whole life cycle of an event that was generated using instrumentation and RUM agents, analyzed and detected by predictive engine and resolved by this automation tool. It does not require any agents to be installed or any server.

Virtual Desktops

Virtual desktops help to reduce 10 to 15% of the incidents happening at end user devices by replacing the complex (relatively) desktops with dummy (if we can call them so) thin clients that do not have any compute or storage, no moving parts and anything that can threaten to fail.

ZIF – An Illustration



Is ZIF Practical?

Achieving zero incident status is a journey that must be implemented over a period of time. It is important to consider whether this framework can withstand the onslaught of newer technologies and artificial trends in the IT world and continue to be viable for many years to come. The Zero Incident Framework ™ has the ability to adapt to changes in emerging technologies. This is because the data required for zero Incidents are captured and read at the source of the system and not at the layers above. New adaptors to read the data from new systems based on new technologies can be built quickly as this will fall into the category of a 'run' activity rather than a 'build' activity. So it is denitely practical and achievable.

GAVS Technologies has built the necessary tools required to implement ZIF in a completely eco-friendly way. It has a set of instrumentation and RUM tools, GAVel for AIOps, zMan for IT Process Automation and zDesk for Virtual Desktops. These tools run with the existing tools and hence making the investments already made on these tools non-redundant. GAVS can plot a journey of ZIF for the customer with the above 'plug and play' components.

About GAVS

GAVS Technologies (GAVS) is a global IT services & solutions provider enabling enterprises in their digital transformation journey through infrastructure solutions. GAVS services and solutions are aligned with strategic technology trends to enable enterprises take advantage of Bimodal IT trend managing current operations, transforming them through IT Operation analytics, automation, cloud orchestration and DevOps.

GAVS has been recognized as a Cool Vendor by Gartner in Cool Vendors in ITSM 2.0, 2016 and positioned as an Aspirant in Everest Group PEAK Matrix ™ for Healthcare Provider IT Services. GAVS was also rated as a prominent India-based Remote Infrastructure Management player & one of the key small players serving the mid-market & enterprise clients in North America by Gartner.

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