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The Genius of Automated Application Quality Management

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"Intellectuals solve problems; geniuses prevent them."

- Albert Einstein

While Einstein may have been demonstrating his genius long before the advent of the zOS environment, his words still ring true for today's mainframe administrators.

IT organizations are being asked to manage larger, more complex environments, with 24x7 workloads, all while delivering higher resource utilization levels. Its no wonder that highly manual and labor-intensive tasks, such as performance tuning and resource optimization have traditionally been that most IT teams defer them — at least until a critical service disruption occurs. This reactive problem solving approach often costs significantly more as IT organizations divert more resources and time to identify and fix the symptoms rather than prevent them.

Just ask a fireman if they would rather prevent a fire or try to put one out.

The Genius of Visibility

Every day, mainframe administrators are faced with the problem of identifying performance bottlenecks, some of which are devouring CPU capacity at an alarming rate. The symptoms may be easy to recognize, but isolating the root cause and solving it are significantly more daunting (and usually more expensive) tasks.

It is highly likely that in a mainframe environment, a hidden drain on performance will be on the application layer. With traditional mainframe performance management, visibility is limited to the operating system and subsystems. The administrator is basically looking for the proverbial needle in a haystack — and is doing it blindfolded. However, automated application quality management allows for proactive monitoring and tuning over the entire system which has previously been a black box.

The implementation of automated application quality management tools serves as a preventative measure to automatically detect discrepancies in the response times of objects on the application layer with the goal of identifying them before they become a costly problem. Using smart logic, they provide detailed evaluations of computing times, resource utilization trends, and pinpoint potential bottlenecks quickly and accurately allowing for proactive correction and tuning before they become a costly problem to solve.

The Genius of Saving Money

You don't need an analyst firm to tell you that the mainframe isn't going away anytime soon. The economics of most companies IT infrastructure will see to that. But those who watch the industry closely are predicting is massive increases in the demand placed on some of these legacy systems, as companies transition to a Service Oriented Architecture. This combination of new, more demanding requirements on older machines has traditionally meant one thing–-upgrades. Whether it's hardware or software, this is the equivalent of "throwing money at the problem."

Avoiding Upgrades

Under these real circumstances, implementing automatic AQM becomes an even more logical solution to upgrading mainframe-processing power. In contrast to the open systems world, mainframe hardware or software upgrades can be costly. In fact, the majority of money spent on upgrades has shifted from hardware to software costs to a ratio of about 30/70.

If the objective is to avoid any upgrades as long as possible, a cost/benefit analysis of the potential solutions to CPU bottlenecks favors will generally favor optimization measuring and tuning at the application level. An automated AQM solution comprised of a proactive optimization solution at the application level and automated tools for analysis and tuning, can free up 30 to 90 percent of used mainframe resources. Even if a minor hardware upgrade is still required, it's a significant cost savings over a wholesale software and hardware upgrade.

To put this into practical terms, assume your company has a transaction running on the mainframe with average CPU use of only 0.05 seconds. This single transaction may not register as a "problem," so it doesn't appear on your performance radar. However, if this transaction is called 150,000 times per day, half of that during peak time, the result is more than 125 minutes of CPU time daily and 31,250 minutes annually. At a rate of $12 per CPU minute, the annual cost is about $375,000.

Schedule, don't Scramble

Obviously, less CPU usage means a more efficient mainframe, but even the most efficient mainframe will require some regular maintenance and upgrades. A second, often overlooked, benefit of an automated

AQM solution is that it enables scheduling regular maintenance and upgrades, rather than ad hoc upgrades as part of putting out a fire.

The ability to plan upgrades means that you can budget resources, both in terms of financial planning and human capital. This future visibility will make everyone in the company happy, from your CFO to your IT staff.

The Genius of Happy People

Keeping IT talent is a challenge, and the quickest way to lose good people is to assign them to menial troubleshooting tasks, particularly if they were hired to do something else. Implementing a proactive, automated application quality management solution eliminates many of the manual tasks that hold back mainframe performance specialists from reaching their full potential.

Consider the chores you could automate, many of them vital to the enterprise. You can automatically track an entire production batch and online system, detect deviations from normal behavior, collect deep application performance metrics, and highlight areas requiring further investigation.

Happy Tuners
An automated AQM solution proactively tracks applications across an enterprise-wide zOS complex so that analysts do not have to exhaust large amounts of time scanning nightly production batch runs looking for problems, configuring stand-alone measurement tools, and reviewing a litany of reports. A problem that may have taken two engineers as many as eight hours to identify and rectify is now quickly and easily identified, preventing the larger use of fiscal and personnel resources. Your tuning and management staff is now freed up to put their energy into the fine-tuning that you hired them for rather than mundane and frustrating troubleshooting.

In any case, the elimination or reduction of the mundane aspect of the job will benefit your entire IT staff by allowing them to put their talents to their highest and best use. In a competitive IT job market, a happy technology professional is an important asset to any company.

Happy Developers
Your application developers are another group of people who you can keep happy with automated AQM. Instead of building applications "in a vacuum" they can now take into consideration the potential impact their creation will have on the entire mainframe's performance.

No developer is intentionally hoarding systems resources for their project, but because they are not working in a production environment, they may fail to understand the broader ramifications. By using the reporting tools and knowledge acquired from an automated AQM solution, developers and system tuners

can work together to tune applications during development to make sure they will perform at peak efficiency from day one, rather than having to go back and troubleshoot bugs that may be CPU hogs.

It is important to note here that this subject may need to be approached gently to avoid stifling the creativity of the application developer. The tuning professionals will require some "soft skills" to make the case that building applications that require less tweaking will allow the developer to spend more time building applications and less time fixing them.

Happy End-Users

finally, an automated AQM solution will endear the IT department to its applications' end users as well. It is important to note that the optimization process of an automated AQM solution starts in the data center, but is not restricted to it. Automated application quality management can run through the entire company, from the production stages of application development through to the everyday end-user experience.

As noted previously, proactive tuning can eradicate problems that could result in costly shutdowns of mission critical applications that otherwise would have gone unnoticed. A sales support team that cannot access their CRM application because it is down for an otherwise-avoidable upgrade can experience both an efficiency cost and an opportunity cost as sales may be lost or deferred.

The Genius of Efficiency

Citing our earlier example, let us assume that your end-users experience an average response time of 0.9 seconds. Because this meets the SLA of less than 1.0 seconds, it would, again, fly below your performance radar. But with concurrent requests against the database, response time during periods of peak usage is more realistically 2.0 seconds and more. If you're running even half of your 150,000 transactions during peak time, you are looking at just under 23 hours of lost productivity per day (75000 x 1.1 sec) which means a lot more coffee breaks and a lot less end-user productivity.

An often overlooked benefit of automating your AQM is the improvements in response times.
Better system efficiency also means higher throughput. End-users of any mainframe application, from accounting to marketing, will benefit from better performing applications.

Unlike monitoring tools that work at the distributed level, running automated AQM at the mainframe level requires no additional servers as it can run along side your normal mainframe functions without performance disruption.

Conclusion

As Einstein indicated, preventing a problem is far better than solving one. When you optimize your application management you do just that. You also optimize your business processes and improve efficiency and effectiveness across the whole organization.

Automating your application quality management provides visibility and foresight to help prevent into potential issues on the application layer which could tax the company's fiscal, CPU, and personnel resources. Proactively measuring, interpreting, and subsequently implementing tuning adjustments are small changes that can help save large amounts of money, keep your employees happy, and the efficiency of your mainframe, and ultimately your company.

And you don't need to be genius to figure that out.

About the Author: *In his role as Chief Technology Officer for AQM Solutions, a TRILOGexpert Company, Osman Aykut is responsible for the creation, design and implementation of enterprise-wide solutions, R&D, and strategic partnerships with software vendors in the mainframe quality and performance management space*