

### Top Ten Reasons to Implement Automated Application Quality Management

By Osman Aykut

Automated application quality management (AQM) is a collection of processes and tools designed to enable predictable, measurable, and - perhaps most important - optimal application performance and availability. AQM came about when it was recognized no single management product, or suite of products could solely assure application quality.

A different approach emerged as a combination of precisely-engineered processes and the deliberate deployment of suites of critical application tools. Evolving alongside other IT disciplines - including infrastructure quality management (IQM) and data quality management (DQM) - AQM is an emerging approach geared towards the next-generation IT initiatives. This article explores 10 reasons why companies should consider implementing AQM in their IT environments.

#### One: Your Mainframe Isn't Going Anywhere

It's no secret - even with all the advances in distributed computing, service oriented architecture (SOA), and server technology--the mainframe will continue to be the heart and soul of the world's biggest and best companies for years to come. Several market research firms even predict a slight increase in the mainframe market over the next five years. Analysts also predict a significant demand on existing machines.

In the past, the combination of new, more demanding requirements and older machines meant one thing - upgrades. Automated AQM, while new, works because it helps get the most performance out of existing machines and avoids the traditional solution of "throwing money at the problem."

#### Two: Processing Power Doesn't Come Cheap

Implementing automatic AQM becomes an even more logical solution when you consider the costs associated with upgrading mainframe processing power. In contrast to the open-systems world, mainframe upgrades can be very costly, regardless of whether it's a hardware or software upgrade. By some estimates, the majority of money spent on upgrades has shifted from hardware costs to software costs by a ratio of about 30/70. Either way, the objective is to avoid any upgrades for as long as possible. In most cases, a cost/benefit analysis of the potential solutions for CPU bottlenecks will favor optimization, measuring, and tuning at the application level over upgrades. An automated AQM solution--comprised of a proactive optimization solution at the application level and automated tools for analysis and tuning--can free up anywhere from 30 percent to 90 percent of used mainframe resources.

To put this into practical terms, let's assume your company has a transaction running on the mainframe with an average CPU usage of only 0.05 seconds. This single transaction may not register as a "problem," therefore it doesn't appear on your performance radar. However, if this transaction is called 150,000 times per day--50 percent of that during the peak time--the result is over 125 minutes of CPU time daily, or more than 31,250 minutes per year. At a rate of \$12 per CPU minute, the annualized accounting cost can be in the neighborhood of \$375,000.

#### Three: Schedule Upgrades Rather Than Scrambling For Them

Obviously, less CPU usage means a more efficient mainframe, but even the most efficient mainframe requires some regular maintenance and upgrades. A second, often overlooked benefit of an automated AQM solution is it provides the IT management the luxury of scheduling regular maintenance and upgrades, rather than doing ad hoc upgrades as part of an emergency trouble shooting exercise.

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

#### **Four: Tuning Applications Is Much Easier Than Finding IT 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 AQM 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.

An automated AQM solution proactively tracks applications across an enterprise-wide z/OS complex so analysts don't 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 can now quickly and easily be identified, preventing the larger use of fiscal and personnel resources. Tuning and management staff is now freed up to put their energy into the fine-tuning 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.

#### **Five: Improved 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).

It's highly likely, 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 OS and subsystems. The administrator is basically looking for the proverbial needle in a haystack - and is doing it blindfolded. However, automated AQM allows for proactive monitoring and tuning over the entire system, which has previously been a black box.

#### **Six: Fire Prevention, Not Firefighting**

With demands on today's mainframe greater than ever, IT organizations are asked to manage larger, more complex environments, with 24x7 workloads, all while delivering higher resource utilization levels. Performance tuning and resource optimization, crucial to maintaining an efficient mainframe environment, have traditionally been highly manual and so labor-intensive most IT teams defer them - at least until a critical service disruption occurs. This reactive "firefighting" approach often costs significantly more as IT organizations divert more resources and time to identify and fix the symptoms rather than prevent them.

Any fireman will tell you preventing a fire is a lot more appealing than trying to put one out. The implementation of automated AQM 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 flare up and become full-blown infernos.

#### **Seven: Build Better Mousetraps**

Your application designers are another group who can benefit from automated AQM. Instead of building applications in isolation, they can now take into consideration the potential impact their creation will have on the entire mainframe performance. No designer is intentionally hoarding systems resources for their project, but because they aren't 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'll perform at peak efficiency from day one, rather than having to go back and troubleshoot bugs that may be CPU hogs.

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

### **Eight: Productive Users = Productive Companies**

Not only will an AQM solution render you a hero to the bean counters and your employees, it will endear the IT department to its applications' end users as well. It's important to note the optimization process of an automated AQM solution starts in the data center, but is not restricted to it. Automated AQM 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 can't access their customer resource management (CRM) application because it's down for an otherwise-avoidable upgrade can experience both an efficiency cost and an opportunity cost as sales may be lost or deferred.

### **Nine: Better Response Times, Better Results**

Citing an earlier example, let's assume 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.

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

### **Ten: Automated Mainframe AQM Can Run In A Production Environment**

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

### **In Conclusion**

When you are optimizing your application management, you also optimize your business processes and improve efficiency and effectiveness across the whole organization. No matter which of these reasons you can identify most with, measuring, interpreting and subsequently implementing tuning adjustments allows you to make small changes that can save large amounts of money and greatly improve productivity. The key benefit of automating your AQM is visibility and foresight into potential issues on the application layer which could potentially tax the company's fiscal, CPU, and personnel resources.

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