How Much Revenue Does IT Generate?
Correlating Revenue and Application Performance

It's no secret that IT can be seen as a cost center in many organizations today. IT spends millions every year digitizing business processes into online applications and services. Businesses have a fairly good idea of how much money they spend on IT, but very few have visibility into how much revenue IT generates through the applications they build and support.

> "If we've sold less than $1,000 in five minutes, there is probably a problem, even if it's 2 o'clock in the morning. If our sales have flatlined, that's a critical problem. I don't know how to be any clearer."
>
> **Geoff Kramer, Manager of Quality Engineering at Orbitz Worldwide**

Unfortunately, the information required to get this insight is not easy to find, and it can take days or weeks to get answers. Do you know what happens to the revenue when your applications slow down or crash? Does anyone know?

Achieving 99.99% availability is the current benchmark most IT organizations strive to achieve, but even this metric hides the real business impact, which is a poor end user experience or lost revenue. If IT is to be seen as a value center for the business it needs to start correlating IT metrics with business metrics so everyone can speak the same language.

This whitepaper will look at how application monitoring tools can be used to gather performance metrics about IT and the business, enabling real-time visibility into how the business is really performing.

Who Really Cares About Application Performance?

Most consumers interact with a variety of online services every day, such as banking, shopping, booking, gaming, etc. Increasingly these applications are becoming the primary point of consumer interaction with a business, and there is an expectation that these services should always be performant.

Businesses are therefore relying on the performance of the applications that underpin these services. However, "performance" can mean different things to different people: users demand that the application is responsive; development teams look to add performance by releasing new functionalities; IT Operations look to minimize the supporting infrastructure costs while ensuring the availability of the service; and business owners look for the resultant revenue obtained from the services the applications are supporting.

It's clear all of these viewpoints are important, but everyone is focusing on different goals. Since revenue is what drives the business forward, what would happen if you forced IT to manage the applications based on revenue and not availability or uptime?

The Hidden Cost of Application Performance

There have been many research reports on how application response time affects the bottom line of businesses. The best examples out there come from Bing, Google and Yahoo!, who all did their own research internally. Bing found that a page that was 2 seconds slower resulted in a 4.3% drop in revenue per user; Google found that a delay of 400 milliseconds caused a 0.59% drop in searches per user; and Yahoo! discovered that a 400 millisecond delay resulted in a 5-9% drop in full-page traffic. The financial impact of application performance can therefore be significant.

> "With AppDynamics, we now have another lens through which we can see how our application impacts our business and revenue."
>
> **Alex Dziena, Director of Technical Operations at Conductor**

A New Way to Measure Business Impact

The unique nature of every application service makes quantifying the actual revenue impact of poor performance challenging. Business intelligence tools often take hours or days to generate meaningful reports.

What if you could get business performance metrics in real time? Wouldn't it be great to identify business impact and react to it immediately instead of waiting hours, days or even weeks? This capability is possible today by taking advantage of the information carried within every Business Transaction (user request) that passes through your applications.

What's In a Business Transaction?

Users interact with applications by generating actions for the application to execute. These user-generated actions are often referred to as Business Transactions as they represent a meaningful interaction (or transaction) with the business.

EXAMPLES	BUSINESS TRANSACTION
eCommerce store	"Add to Cart"
Insurance Portal	"File a Claim"
Financial Services	"Pay my bill"
B2B IT Company	"Run credit check"

Monitoring the Business Transactions your users execute ensures that you are aware of problems affecting your business as soon as they occur. All too often infrastructure monitoring tools show all systems are available, but your end users are still experiencing errors or stalls. If you monitor the Business Transactions, however, you'll always know when your end users are affected.

Name	Health	Server Time (ms)	Calls	Calls / min	Errors	Error %	Slow Transactions	Very Slow Transactions	Stalled Transactions
Tickets Purchase Process	✅	455	136,907	1,144	646	0.5	1,341	1,117	46

Business Transactions are a digital fingerprint of what is happing inside your business – everything the business cares about is contained within these user requests. By using the right application monitoring solution it is possible to extract and report on this data, providing visibility into the performance of your business in real time.

Let's look at an example where a user, Bob, executes a Business Transaction with the following attributes:

Timestamp	01/02/13 12:56:10
URL request	www.amazon.com/checkout/action.do?type=submit
Transaction name	Checkout
Errors	None
User	Bob Smith
Location	London
Browser	Safari 6.1.3
Browsing device	iOS iPhone
Items in basket	2
Checkout value	$245.99
Response Time	4.731 seconds

"This allows our customers to monitor both the performance and revenue of their checkout and payment processing transactions, so they get a unique and real-time view of their business."

Kevin Van Mondfrans, VP Product Management, Cloud & Managed Services at Layered Technologies

The traditional role of Application Performance Management (APM) tools would be to measure the response time of this transaction and show how it executes across the infrastructure and inside the application. But what if the APM solution could also extract business metrics such as the items in the basket and the checkout value? This would give both IT and business real-time visibility into how application performance affects the business, allowing everyone to be aligned around the same data and the same goals.

In addition, IT can now use these new data points to inform decisions about areas to invest in. Which user devices generate the most revenue? Which browsers generate errors? Which geographies add the most items to their carts? These data points can help IT and the business decide where to invest their resources in the future.

Monitoring Application Revenue and Performance

In the below screenshot from a large eCommerce organization you can clearly see the impact application performance has on revenue. The increased application response time resulted in the loss of almost $40,000 a minute in revenue. However, the impact was minimized due to swift remedial action taken after a proactive business performance alert.
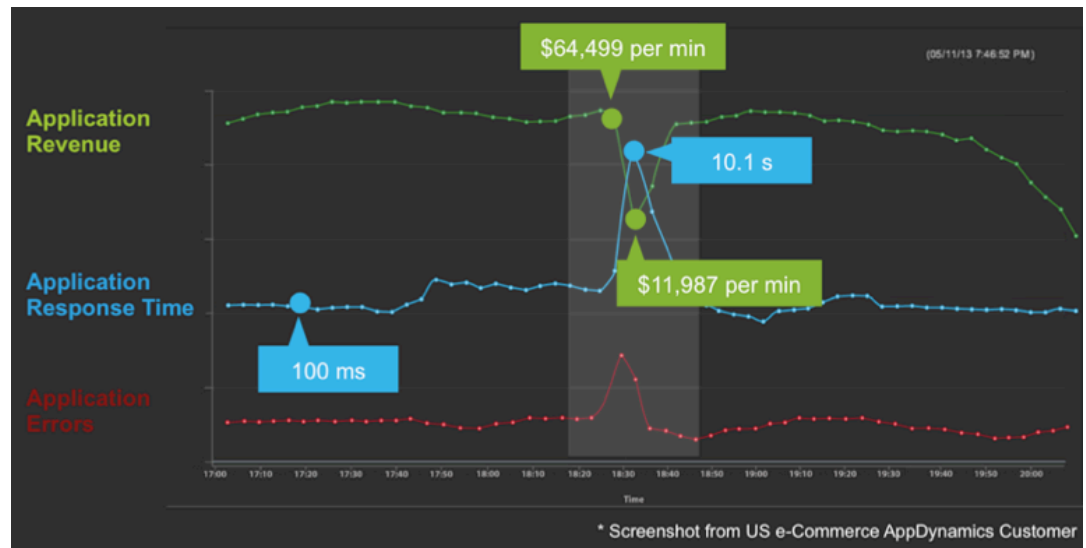
Average sale price of goods per hour correlated with the application response time.

An application performance management (APM) solution provides this unique view by extracting both the response time and dollar value of every transaction that flows through the application. This insight allows IT to see the real revenue impact of slow performance, and more importantly, allows them to drill-down and find the root cause of such business impact.

By trending these business performance metrics over an extended time period, IT can see how the business is performing. Are sales increasing? Is the order value on the rise? Are we maintaining our subscription base, are costs decreasing, etc.? By correlating these data points with IT performance and availability metrics it is possible to isolate the cause before the business is heavily impacted.

Pro-Active Alerting of Business Impact

An APM tool that leverages best practices should also be able to set business and performance thresholds for you based on dynamic baselines. This means being able to set baselines for your application by discovering how each transaction's performance and revenue vary over specified operating periods. Dynamic thresholds observe periodic variations, accounts for them, and sets thresholds accordingly.

By baselining the performance of the business metrics it is also possible to alert on deviations from normal business performance. So instead of waiting for an alert that a server has crashed, preventing you from processing orders, business owners and IT executives could receive proactive alerts that the business is deviating from its normal performance and something is wrong. Pain is immediately quantified, resources can be prioritized, resolutions met quickly and customers impacted minimally.
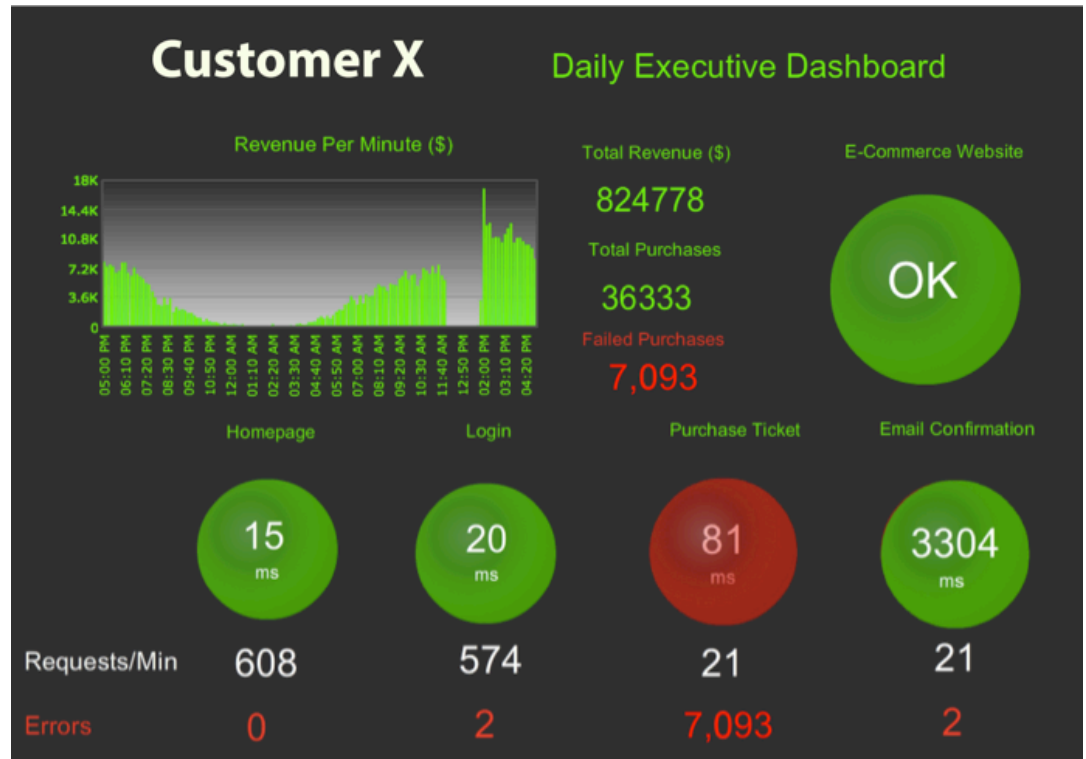
APM customer dashboard that exposes revenue impact on slow application performance.

Summary

As application complexity increases with agile development, service oriented architectures (SOA), mobile technologies and cloud initiatives it's important to keep a focus on what really matters to your business – your application revenue. By giving IT visibility into application revenue in real time they can now be more effective in how they identify, isolate and resolve application issues that affect the business. IT alerts will no longer reflect the health of infrastructure and servers, but the true health of the business. This better aligns development, operations and the business so they can make smarter decisions faster, allowing the business to become more competitive and agile.

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About AppDynamics

AppDynamics is the next-generation application performance management solution that simplifies the management of complex, business-critical apps. No one can stand slow applications—not IT Ops and Dev teams, not the CIO, and definitely not end users. With AppDynamics, no one has to tolerate slow performing apps ever again.
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