HARRY MACCORD
IT DIRECTOR, ETS BRANDS
APPLICATION MANAGEMENT

THE RIGHT TOOLS

Educational Testing Service streamlines application calls and improves PCI compliance

By Jim Utsler ➤ Photography by JJ Sulin

A hammer, a wrench and a screwdriver are about all some people have in their toolbox. That same concept unfortunately appiles to many data centers. Application developers are a hardworking bunch, but they may not have the proper tools available to meet the needs of an ever-changing service delivery environment.

This is especially true now that data requests—to multiple databases—can come from everywhere, such as a customer service representative's desk, over the internet or via a mobile device. And people expect fast responses in both directions. Credit card processing, for example, shouldn't wait until a nightly batch job before it's completed. This opens the door to too many security exposures.

These are some of the reasons Educational Testing Service (ETS) got a bigger toolbox—one that includes Ivory Service Architect from GT Software, which allows ETS to take advantage of simple web service calls to process data requests in a more timely fashion. Credit card information, for example, is no longer left in batch-job limbo. Instead, those requests are quickly sent to processors as web services for immediate approvals, with a transaction ID as the only trail left behind.

"I have a background in the financial industry, so when we got together with our internal security team and began going over all of our systems, we said, 'Wow. We're really not in compliance with PCI,' " recalls Harry MacCord, IT director, ETS brands application management. "We were storing all of this information, waiting for batch processing. This was a huge vulnerability we needed to address. Ivory Service Architect essentially did that for us."

A DISCONNECT

Based in Princeton, New Jersey, nonprofit ETS specializes in the development, administration and scoring of a variety of educational tests, including the Test of English as a Foreign Language, the Test of English for International Communication, the Graduate Record Examination and the Praxis Series assessments, which measure teacher candidates' knowledge and skills and are used for the licensing and certification processes. Testing takes place at over 9,000 locations in more than 180 countries, with over 50 million tests processed every year. The organization also produces a comprehensive list of associated study materials.

UP CLOSE

CUSTOMER: Educational Testing Service

HEADQUARTERS: Princeton, New Jersey

BUSINESS: Development and management of academic testing offerings

CHALLENGE: Sharing data between applications and application operating environments, and ensuring PCI compliance

SOLUTION: Using GT Software's Ivory Service Architect to develop a web services infrastructure that eases data exchanges and eliminates credit card batch processing

HARDWARE: IBM zEnterprise 114

SOFTWARE: GT Software's Ivory Service Architect, IBM DB2 for z/OS and IBM MQSeries

"We bring in subject matter experts in different fields to help create the tests," MacCord explains. "So, if the subject is going to be social studies, we'll have teachers across the country develop test items. Statisticians validate those items, making sure they're not culturally biased. The tests are then administered—as paper or electronically in multiple formats—and scored, and results are sent to the clients."

ETS' mainframe—an IBM zEnterprise* 114—is its core operating environment, processing database and application requests from both clients and test-takers using applications running on other distributed platforms. Of course, processing these requests can be done in many ways, including FTP and via tools such as IBM MQSeries*, but they can be problematic when it comes to real-time application-to-database requests. FTP, for example, only supports batch processing, and MQSeries is designed for near-time processing, which results in performance lags.

Nearly four years ago, prior to MacCord coming on board, ETS tried to get around these limitations by employing a web services architecture, but the solution didn't support the organization's 50-50 mix of IBM CICS* and CA IDMS, depending on application requirements.

"ETS stopped using it at that time because it didn't play well with IDMS. Going forward, the company decided to use FTP and MQ," MacCord explains. "But that caused another issue. Although the mainframe developers were familiar with both of these tools, the web developers weren't. They're more comfortable with web services and object calls. So, there was a disconnect between the two teams."

PCI compliance was another issue. Because credit card data—which largely comes from

Advancing quality and equity in education since 1947

ETS developed a web services infrastructure for test-takers and clients.

"From the mainframe developers' standpoint, all they had to do was write data to a copy book interface."

—Harry MacCord, IT director, ETS brands application management

test-takers and consumers of the organization's preparation materials—was being stored for eventual batch processing, it was open to potential abuse. ETS considered two options to address this:

1. Upgrades to both of its data store models, including IBM DB2* for z/OS* and IDMS
2. Massive alterations to enable PCI-compliant encryption, an expensive proposition

JUST ANOTHER INTERFACE

After dismissing that tactic, ETS took a deeper look at the web-services architecture. Although this meant a return to web services, which had earlier failed,

ETS testing takes place at over
9,000
locations in more than
180
countries, with over
50 million
tests procesed every year

the organization was convinced it could find a more suitable tool to address its previous issues. This would also allow for all of its mainframe applications to have greater connectivity with distributed applications and improve their functionality throughout the organization.

Based on his prior experience in the financial industry—and having worked with web services within that environment—MacCord knew web services were the way to go. The only outstanding issue was finding the proper tool to ease implementation. After reaching out to several vendors in the web services space, ETS put a call out for proofs of concept, which were completed in early 2013. Based on that, MacCord and his team

subsequently recommended and licensed Ivory Service Architect. One of its key selling points is its native support of both CICS and IDMS applications.

"From the mainframe developers' standpoint, all they had to do was write data to a copy book interface," MacCord says. "When COBOL programs execute, they move data in and out of that copy book, which so happens to be Ivory Service Architect. That tool then takes care of, for example, EBCDIC-to-ASCII conversions, XML transformations and the capability to do inbound and outbound Simple Object Access Protocol and representational state transfer web services with enhanced security credentials. It's all done within that one application."

Because the web and mainframe developers have a common interface—a bridge between the mainframe and web worlds—they're now essentially speaking the same language, and it no longer matters if calls are coming to or from COBOL, C# or Java* applications. They're transparent.

Perhaps more importantly, PCI compliance rules are no longer an issue. Rather than relying on batch-job processing, ETS can now exchange data with its credit card service providers using real-time service calls. The only data left behind are transaction IDs, making the organization's data store environment more secure.

RIGHT TOOL, RIGHT JOB

This new Ivory Service Architect paradigm has become so successful that when architectural meetings take place, many developers suggest using web services. MacCord sometimes has to calm the room, telling them that, depending on the type and amount of the workload, they may want to use a different tool.

As he puts it: "A hammer has a purpose. A wrench has a purpose. And a screwdriver has a purpose. You just have to learn when and where they're applicable; web services are good for some jobs but not others." **Z**

———————————————

Jim Utsler is a senior writer for *IBM Systems Magazine* and has been covering technology for more than 20 years.