



## Bank of America avoids gridlock in credit-risk scoring, forecasts using SAS®

Modeling portfolio credit risk is a fundamental function in banking today. Loan products, such as lines of credit, mortgages and credit cards, entail a high degree of risk for banks, and on a large scale, especially in turbulent economic periods – defaults produce difficult situations and huge implications for both the lender and the borrower. Banks regularly employ credit-risk management processes to monitor and assess credit portfolios, to make certain estimates, and to understand their risk position and value of assets at any given time. In today's complex and ever-changing financial system, powerful, rigorous and accurate credit-risk management processes and technology play a critical role in mitigating a lending institution's exposure.

### Industry

Financial Services

### Business Issue

The Corporate Investments Group needed to reduce processing time for credit-risk modeling, scoring and loss forecasting and increase ad hoc analysis time, while ensuring business continuity and guaranteed uptime for these mission-critical functions.

### Solution

SAS® for Enterprise Risk Management on SAS® Grid Computing and SAS® Scalable Performance Data Server® on a 112-core IBM BladeCenter® grid and IBM's XIV® Storage System.

### Benefits

The solution has reduced the banking group's probability of loan default calculation time from 96 hours to just four and reduced its scoring routine of 400,000 loans from three hours to 10 minutes. Processing time for any given project has been reduced by 90 percent, is three times faster, yields timely decisions around defaults, helps minimize losses and can handle new growth opportunities for the bank's loan portfolio.

### Partners

IBM

Bank of America is one of the world's largest financial institutions, serving individual consumers, small- and middle-market businesses and large corporations with a full range of banking, investing, asset management and other financial and risk management products and services.

With approximately 59 million consumer and small business relationships, 6,000 retail banking offices and more than 18,000 ATMs, Bank of America is among the world's leading wealth management companies and is a global leader in corporate and investment banking and trading across a broad range of asset classes.

The Corporate Investments Group (CIG) manages Bank of America's available-for-sale portfolio and is responsible for modeling and calculating the probability of default (PD) on the 9.5 million mortgages it services. In addition, the group calculates the market value, prepayment speeds and sensitivity to changes in interest rates and hedges these risks for the \$19 billion mortgage-service-rights asset. Recently, CIG began assisting with the task of forecasting loan losses for the bank's credit card portfolio.

### The need for speed

CIG had been using analytics from SAS for credit-risk modeling for many years, but with the addition of the credit-card loss forecasting responsibility, it was forced to reassess its use of an internal shared-services environment to run its modeling and calculation processes. Doing so would help reduce processing

time, increase access and availability of resources for ad hoc analysis, while ensuring business continuity for this mission-critical function of the bank's business.

"We needed a solution that addressed today's business problems, as well as a solution with the flexibility for any future business requirements," says Russell Condrich, Senior Vice President, Corporate Investment Group. "Processing large, multi-terabyte data sets in a quick, efficient manner was a key requirement for us and SAS performed flawlessly. Without SAS, processing times would be longer, hedging decisions would be delayed and, ultimately, the bank would be behind the market."

### SAS® and IBM show results

To meet its performance requirements, the group moved its processing to a dedicated platform comprising SAS® for Enterprise Risk Management on SAS Grid Computing, SAS Scalable Performance Data Server on a 112-core IBM BladeCenter® grid and IBM's XIV® Storage System. The initiative has already produced considerable results, such as reducing the bank's probability of default calculation time from 96 hours to just four. Processing time for ad hoc jobs has been reduced by 90 percent and, according to the CIG, they are processing at three times the speed of the previous environment.

The platform pulls data from eight systems of record (SOR), amounting to hundreds of millions of records, or 30

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Senior Vice President, Corporate Investment Group

terabytes of source data, and allows the SAS environment to consume 3.9GB of I/O throughput per second from IBM's XIV storage environment. Approximately 30 users now have unfettered access to the environment, as opposed to the shared services environment of the past, in which user time was competitive and response times varied dramatically due to the high number of jobs being executed.

#### **'Unparalleled' performance**

“We now have an environment that provides users with a robust platform on which to schedule and prioritize jobs, based on duration or computational requirements, so that ad hoc usage is not competing with scheduled work,” says Stephen Lange, Managing Director, Corporate Investments Group. “This advanced grid platform is giving us unparalleled performance. SAS is indispensable for its unique way of handling large data sets.”

As an example, Lange adds, “we have to score a particular portfolio of 400,000 loans with our suite of models, using multiple scenarios, and we need to run it over the 360 months of the mortgages' life. That process used to take three

hours; now it takes 10 minutes because of the parallelization capabilities of the grid. The ability to go from three hours to 10 minutes on a job demonstrates a tremendous increase in our ability to deliver information and make decisions.

“The bank has a strong desire to enable loss forecasting as accurately and quickly as possible, right up to the senior executive layers of the organization,” says Lange. “The only way we can do that is to have sufficient IT resources to score loans and appropriately assess risks. The partnership between SAS, IBM and our internal technology group has provided a platform for us to demonstrate risk management leadership.”



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