



Overview

The need

To gain competitive advantage, Societe Generale's traders must be able to assess the risk of each trade before they make it – creating a need to estimate CVA and other risk metrics in real time across the bank.

The solution

Societe Generale set up a centralized CVA desk that uses sophisticated IBM simulation engines and risk analytics to support every line of business with accurate, automated, real-time pricing of CVA for standard products.

The benefit

Real-time CVA pricing enables traders to compute the right price for counterparty risk on each trade and hedge their positions more effectively at lower cost. This set-up and architecture has helped to achieve a significant reduction in capital under Basel III.

Societe Generale

Leading industry practices for real-time identification of risk-efficient trades with a centralized CVA desk

Starting with the 2007-9 financial crisis, which exposed the fallacy in the idea that any market participant is “too big to fail”, banks and their traders have recognized a need to get smarter about counterparty credit risk. As a result, concepts such as credit valuation adjustment (CVA) have evolved from a useful accounting measure into a pricing measure for traders and a key aspect of Basel III compliance.

Societe Generale wanted to take this evolution one step further. It realized the potential of CVA and similar measures to give its traders real-time insight into counterparty credit risk, helping them identify trades that would reduce the bank's overall exposure – and offer more competitive pricing to low-risk counterparties. To achieve this, traders would need to be able to access accurate CVA pricing at the touch of a button, with response times of just a few seconds.

Working with IBM, the bank created a centralized CVA desk solution powerful enough to perform millions of simulations to automate the pricing of each of its standard products, as well as flexible enough to price more exotic trades. As a result, Societe Generale has been able to improve its capital consumption and significantly reduce its Basel III capital requirements.

Real-time risk analytics is transforming the careers of CVA specialists within Societe Generale. “Now that we have a fully automated platform for pricing, the CVA desk can play a more active and strategic role in managing and hedging counterparty risk,” says Keyvan Silvain, Head of the CVA desk in Paris.



Solution components

Software

- IBM® Algo® Integrated Market and Credit Risk
- IBM Platform Symphony®

Services

- IBM Business Analytics Software Services
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Setting the scene

Societe Generale is one of the largest European financial services groups, with more than 154,000 employees in 76 countries. It works with 32 million clients throughout the world, offering advice and services to individual, corporate and institutional customers across retail banking, corporate and investment banking, private banking, asset management and securities services.

As one of the pioneers in derivatives, Societe Generale has set a standard for the rest of the industry in its adoption of sophisticated risk analytics and simulation technologies. Since 2004, it has been using IBM® Algorithmics® solutions to support a wide range of risk management activities.

Keyvan Silvain, Head of CVA Desk in Paris, comments: “I have been working with IBM Algorithmics software since about 2007, especially on improving our regulatory capital framework, getting our internal models validated and looking at PFE, EEPE and also VaR on CVA for Basel III.”

Moving CVA into the front office

Once Societe Generale had a firm grasp on CVA from a regulatory and accounting perspective, it decided to shift its focus more towards the front office. Centralizing management of CVA across the whole bank would provide a single, coherent approach and ensure efficient counterparty risk management, while also giving traders new insight into each trade, and incentivizing them to reduce the bank’s risk profile wherever possible.

“The initiative came from the head of the trading floor, to develop a centralized desk for CVA pricing and trading,” says Keyvan Silvain. “We hired new specialists and brought in experts from other teams within the bank, and we now have an automated CVA desk that has the objective of managing CVA, optimizing the capital, cost and risk, and actively managing the risk.

“As one of the first derivatives banks in the world, we have many derivatives products that require complex pricing. Since we already had a long relationship with IBM Algorithmics software, we wanted to keep what we had built in the past and integrate it with our own systems to support a completely integrated process for counterparty risk pricing calculations.”

“It was important for us to be able to work with IBM, because they are one of the few major technology vendors that have expertise and experience in performance and computation for pricing counterparty risk.”

— Keyvan Silvain, Head of CVA Desk in Paris, Societe Generale

Leading industry practices for CVA management

Working in close partnership with IBM, Societe Generale developed a CVA desk implementation that is seen as a leading standard for the banking industry.

“It was important for us to be able to work with IBM, because they are one of the few major technology vendors that have expertise and experience in performance and computation for pricing counterparty risk,” says Keyvan Silvain. “Moreover, the fact that they are working with other leading banks on the same issues means that we gain a better view of best practices across the whole market, and ensure that we are evolving in the right way while maintaining our position at the forefront of the industry.”

Kai Pohl, Senior CVA Trader, comments: “A state-of-the-art CVA desk will be able to see all the risks that are inherent in that portfolio and relies heavily on simulation engines. Therefore, good and powerful IT systems are extremely important. You need to have sophisticated modeling and optimization techniques to fulfill the demands of modern derivatives pricing for the IT environment of a bank.

“This is the great benefit of working with a company like IBM: we can bring those things together and build something that no other bank has currently. Banks will continue to evolve, which will have an impact on how CVA will operate, and will show us new risks that we will have to manage. The bank that has implemented a sophisticated way of dealing with those new rules, and is nimble and can change and react to any future changes in the regulations which no doubt there will be, will have an advantage.”

The solution supporting Societe Generale’s CVA desk depends on the IBM Algo® Integrated Market and Credit Risk solution, which is part of the IBM Algo One® framework for building dynamic risk systems.

The solution enables the CVA desk to run sophisticated incremental Monte Carlo simulations to calculate CVA pricing by looking at the overall effect of each potential trade on the total counterparty risk profile of the whole bank. This is a hugely computationally intensive task, which requires the bank to utilize a high-performance computing architecture, managed by IBM Platform Symphony® software, to handle the workload and deliver the results at the speed required by traders.

“As of today, we believe we have pricing that is fair and accurate, even for our exotic products. We have integrated wrong-way risk for pricing, and we can compute CVA quickly and competitively on most of our products.”

— Keyvan Silvain, Head of CVA Desk in Paris, Societe Generale

Incentivizing traders to optimize risk and reward with proactive CVA pricing

With the automated CVA pricing solution, when traders are pricing trades of standard products, they can identify risk-reducing trades and offer better prices to lower-risk counterparties. Even for more exotic trades, where instant CVA pricing is not currently possible, the solution provides a consistent, reliable, robust and rapid method that the CVA desk can use to calculate a fair and accurate price.

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Significant ROI by reducing regulatory capital requirements

He adds: “One of our big objectives at Societe Generale in 2013 was to optimize the cost of capital with Basel III, so we have mainly focused on hedging our CVA, and we have made a very good return on our investment. The capital optimization was very significant, and we have reduced our capital for VaR on CVA considerably with our hedging positions.”

Building for the future

Following the success of the initial implementations in London and Paris, Societe Generale is planning to increase the size of its CVA desk, bringing more trading, pricing and funding specialists on board at its new five-story trading facility in Paris, and providing local resources to support its operations in the US and Asia.

“We are looking to offer pricing services on a full worldwide scale, and we believe investment in the desks will grow significantly over the next couple of years,” says Keyvan Silvain. “For almost a year now, we have also been looking to extend the CVA desk to provide a centralized platform for calculating additional valuation adjustments [AVAs] too, like kCVA, CollVA, and so on. Furthermore, with increasing focus on other measures such as funding valuation adjustment [FVA], it is likely that we will move towards an ‘xVA’ desk this year.”

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He concludes: “The CVA desk is now the core of our system to optimize counterparty risk, but we need to go further: we need to have every product priced in order to have full coverage of the transactions on a daily basis. This is important for our performance objectives, in order to compute sensitivity frequently, and manage our trading position and our risk even more effectively. We need to have a really reliable and flexible real-time platform for our pricing system in order to be competitive in the market.”

Through its partnership with IBM and its ongoing adoption of IBM Algorithmics software, Societe Generale will continue to collaborate in developing new risk management solutions that help it meet these objectives.

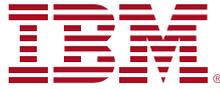
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Business Analytics solutions enable companies to identify and visualize trends and patterns in areas, such as customer analytics, that can have a profound effect on business performance. They can compare scenarios, anticipate potential threats and opportunities, better plan, budget and forecast resources, balance risks against expected returns and work to meet regulatory requirements. By making analytics widely available, organizations can align tactical and strategic decision-making to achieve business goals.

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