

## Sophisticated Analytics

- Best-performing methods for each instrument category
- Fast American Monte Carlo for complex derivatives
- Award-winning analytics library trusted by over 700 firms worldwide
- Advanced modeling of dynamic hedging and collateral rules

Calculate credit value adjustment (CVA) for large portfolios intraday, and incremental CVA in real time, including complex derivatives and structured products, utilizing an innovative generic tree implementation “American” Monte Carlo CVA .

Numerix CVA leverages our industry-leading CrossAsset model library along with CompatiBL’s integration technology to deliver a highly flexible, ultra-fast solution for CVA and potential future exposure (PFE).

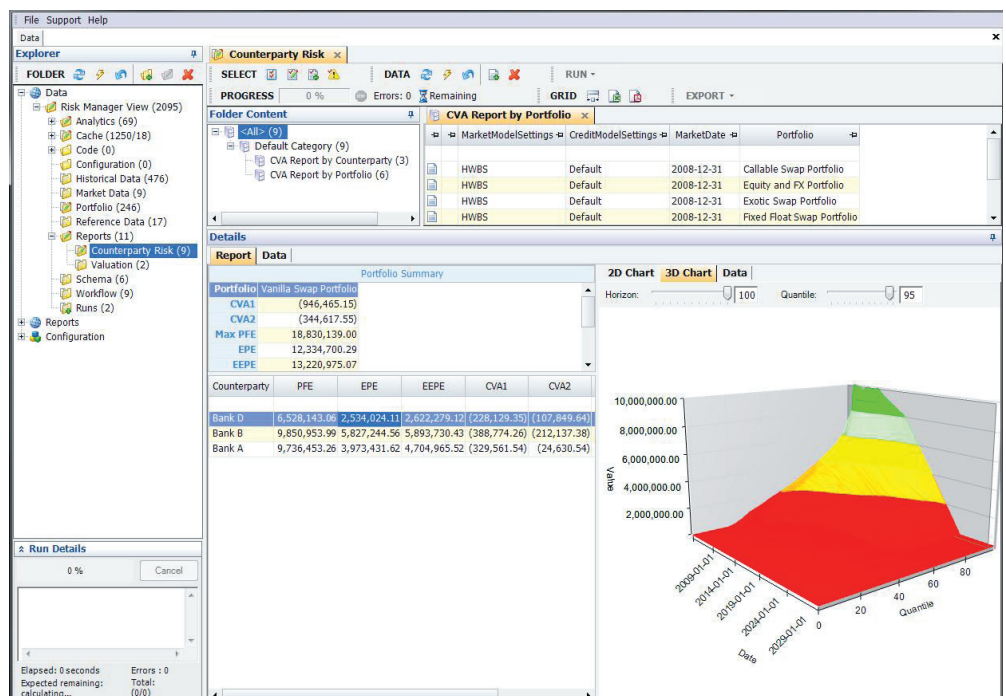
## Key Features

- Unilateral or bilateral CVA with deal price, deal aging, collateral posting and netting agreements
- Stress testing and drill-down based on business unit, instrument type, desk, position, maturity bucket or custom factors
- Easily integrate new trade types, including exotics
- Incremental CVA
- Consistent model calibration for both market scenarios and deal prices
- Import trade, market and reference data from multiple trading and risk systems

## Technical Specifications

- User interface: .NET-rich client
- Backend: .NET/Windows or C++/Linux
- Designed for rapid implementation
- Works with your enterprise file system or database
- Grid-computing capable, pre-integrated with Windows HPC Server
- Embedded code editor for customization
- Import/export via Numerix XML

## Sample CVA Report



## The American Monte Carlo

This highly efficient model uses the same set of paths for both market scenarios and prices, eliminating the need for a “Monte Carlo-on-Monte Carlo” computation, making intraday CVA computations possible.

## About Numerix

Numerix is the leading analytics institution providing cross-asset solutions for structuring, pre-trade price discovery, trade capture, valuation and portfolio management for derivatives and structured products.

## About CompatiBL

CompatiBL provides software and custom development services in the areas of trading, risk management, FpML, complex data management, grid computing and NVIDIA Tesla computing.

For more information, contact:  
[sales@numerix.com](mailto:sales@numerix.com)

## Market Simulation Methodology



OUTPUT: Cube of market data factors vs. path and timestep

**Correlation Model:** Use either principal component analysis or a two-tier model in which primary factors are modeled using a full correlation matrix and secondary factors are correlated to primary factors. The two-tier model is recommended as it reduces correlation measurement noise, resulting in lower CVA-driven volatility of P&L.

**Random Number Generation:** Multi-stream random number generator licensed from the University of Montreal, which is similar to the well-known Numerical Recipes RAN2 algorithm but adds a multi-stream feature essential for CVA calculation.

**Measure Choice:** The model generates two sets of variables – risk-neutral and real-world.

**Market Evolution Model:** Risk-neutral or real-world variables are used for PFE depending on how the calculated exposures will be used. CVA always uses the risk-neutral model.

## Pricing Methodology



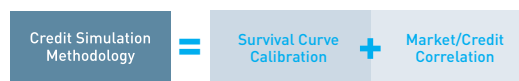
OUTPUT: Cube of properly aged trade values vs. path and timestep

**Pricing Model:** Use cashflow aggregation method for linear instruments, or American Monte Carlo for complex instruments. Existing pricing models can also be used for proprietary trades.

**Deal Aging Model:** Calculates exposure for complex instruments with embedded options and barriers that, if exercised or reached, can significantly alter the risk profile.

**Cashflow Reinvestment:** Simulates how cashflows from the deal are reinvested, including into other instruments bearing counterparty risk.

## Credit Simulation Methodology



OUTPUT: Cube of exposures and credit quality variables for counterparty and your firm vs. path and timestep

**Survival Curve Calibration:** Depending on the type of data available for the counterparty, can use CDS/bond spreads, a rating transition matrix, or comparables, aggregates all rating transitions prior to default, further refined by simulating individual rating transitions adding up to the calibrated survival curve.

**Market-Credit Correlation:** Instead of explicit market variable-credit variable correlation, Numerix CVA uses a single correlation number between counterparty exposure to this firm and counterparty credit that can be accurately measured from historical data with different rating systems and matrices for different counterparties.

**Netting and Collateral:** Basic rules can be defined for offsetting exposures and collateral payments from a single entity, or a custom model can be implemented to return netted and collateralized exposure.

**Credit risk hedging:** Takes into account exposure reduction in the presence of credit derivatives on reference name of the counterparty. Includes full effect of your credit hedges in reducing PFE and CVA.

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