



IBM Algo Risk Service on Cloud

Overview

IBM® Algo Risk Service on Cloud extensions are optional service extensions that complement and augment the award-winning Algo Risk Service on Cloud, enhancing its already powerful functionality and offering clients the flexibility to customize the service even further. Extensions give clients of Algo Risk Service on Cloud access to a range of optimization, analysis and reporting tools, managed and supported by IBM's industry-leading engineers and risk practitioners, in an environment customized to each client's specific business requirements. The following extensions to Algo Risk Service on Cloud are available:

IBM® Algo Risk Service Optimizer on Cloud

Algo Risk Service Optimizer on Cloud offers clients a flexible optimization framework and interactive risk dashboard, enabling the construction and modeling of optimization problem sets with detailed analyses of results that can be shared across an organization.

Algo Risk Service Optimizer on Cloud enables clients, with access to the Algo Risk Application, to interactively rebalance portfolios with respect to multiple desired investment objectives under a wide range of hard and soft constraints. The flexibility of this extension's risk dashboard enables clients to configure the display of functions, analytics and views depending on the task at hand, supporting seamless navigation and clarity in the determination of key contributors to overall risk.



This extension supports clients' construction and analysis of optimization problem sets, enabling them to:

- Define multiple objective functions (e.g. maximize return, minimize variance, minimize tracking error, minimize regret, etc.).
- Apply global constraints (e.g. trade restrictions, bounds on group allocations and risk measures, maximum number of trades, etc.).
- Generate virtual portfolios or benchmarks containing the optimization results.

Algo Risk Service Optimizer on Cloud is a powerful yet cost-effective means of meeting the diverse risk and optimization requirements of multiple audiences across the enterprise, enabling clients to share optimization problem results with others in the organization who use the Algo Risk Application but, who do not have access to this extension. Algo Risk Service Optimizer on Cloud enables users throughout the organization to download optimization results to their standard Algo Risk Application environments and use its rich functionality to analyze the portfolio.

Key benefits

Algo Risk Service Optimizer on Cloud enables the solution of many specific problems faced by asset managers and owners. This extension:

- Enables production of efficient frontiers of optimal portfolios.
- Generates allocation or specific trade ideas to match attributes of a benchmark or target, such as duration, and achieve various risk and return tradeoff levels.
- Supports construction of liquidation strategies.
- Enables the replication of cash flows, from insurance or pension plan liabilities, or from other assets such as mortgage backed securities.
- Supports optimization results being used to determine proxies for real estate, private equity, or other non-liquid assets.

IBM® Algo Risk Service Custom Scenario on Cloud

Algo Risk Service Custom Scenario on Cloud offers clients the capability to create, implement, and update scenarios tailored to their risk profiles and changing market conditions, supported by IBM professionals.

This edition, available to Algo Risk Service on Cloud clients who subscribe to the interactive Algo Risk Application and/or the standalone IBM® Algo Risk Service Advanced Reporting on Cloud extension, represents a sophisticated, customized enhancement of the standard scenarios available.

This extension enables scenario creation and analysis under two broad categories, depending on the specific requirements of each client:

1. Stress test scenarios, or different forms of user-defined scenarios, can be dictated by the client or developed jointly with IBM professionals. Diverse client requirements are supported by scenarios covering a wide spectrum of possibilities, including:
 - Conditional scenarios, such as moving the price of oil to determine the portfolio's sensitivity to this movement (even though there is no direct exposure).
 - Building libraries of different yield curve movements.
 - Single name stress tests across different product types associated to that name.
 - Specifying particular periods to replay as a "stress test".

2. Statistical scenarios, historical or Monte Carlo, are typically used by clients for Value at Risk (VaR). These scenarios are developed with a flexible and sophisticated functionality that supports:

- Changing the methodology of scenario generation.
- Increasing the number of scenarios or time steps.
- Extending the amount of historical data used for scenario generation.
- Specifying interest rate models, or index movement parameters.
- Changing look back periods or decay factors, segmenting risk factors (i.e., Monte Carlo Interest Rate only scenarios), or using different scenario weighting schemes.

Key benefits

This extension presents a number of key benefits to clients, including:

- Enabling access to powerful and advanced functionality for the generation of customized scenarios.
- Offering custom scenarios designed to reflect the true risk profile and portfolio of each client.
- Supporting accurate determination of relevant scenarios with advice from experienced IBM professionals.

IBM® Algo Risk Service Counterparty Credit Risk Exposure on Cloud

Algo Risk Service Counterparty Credit Risk Exposure on Cloud offers clients the capacity to model long-term credit scenarios and analyze different exposure outputs to assess credit exposure to counterparties. This extension enables the monitoring, measuring and management of counterparty credit risk, with clients being able to see the impact of changes in portfolio composition on both market and credit exposure.

Algo Risk Service Counterparty Credit Risk Exposure on Cloud provides clients access to a range of IBM's advanced technologies, including capabilities to compute exposures, and to build consistent long-term scenario sets that are used as input to compute Potential Future Exposure.

This extension will work from specific credit scenarios, enabling clients to dissect the portfolio into specific views of credit exposure to counterparties. Counterparty Credit Exposure is configured to run on a subset of an overall portfolio (OTC transactions), with this smaller set of securities being simulated across more scenarios and longer time horizons to determine robust Potential Future Exposures. Risk analytics will be calculated monthly.

Key benefits

Algo Risk Service Counterparty Credit Risk Exposure on Cloud presents a wide range of advantages to subscribers. This extension:

- Offers additional aggregations to allow for the creation of specific credit views.
- Provides market and credit views within the same application, including “what-if” access to changes in portfolio composition and capability to view the impact on both market and credit exposure.
- Helps maximize efficiencies, as the extension's consistent data framework with the market risk system means that limited additional input information is required.
- Introduces a new set of output attributes specifically designed for the Credit Exposure extension, such as Margin Threshold and Net Peak Exposure.

- Enables clients to address key credit exposure issues, including:
 - Identifying where large exposures exist in the firm, across counterparties by region and fund, and how overnight changes might affect those exposures.
 - Determining how large potential losses are due to credit exposures.
 - Assessing the effectiveness of credit mitigation techniques and if there is additional facility to trade with a counterparty.
 - Determining where and when the potential collateral will need to be called.
 - Monitoring and setting credit exposure limits and reporting on exposure profiles through time and on different tenors.
 - Viewing the impact of particular stress tests on the credit exposure.
 - Supporting what-if analyses, such as changing netting agreements on the fly, to view the impact on credit exposure outputs.

Algo Risk Service Advanced Reporting on Cloud

Algo Risk Service Advanced Reporting on Cloud offers clients the capacity to create pre-formatted risk reports with layout, style and content that can be customized to each client's investment and risk reporting needs.

This extension, available with or without subscription to the interactive Algo Risk Application, enables clients to select from a set of predetermined reports with the ability to generate custom reports. Clients have the flexibility to configure the time and frequency of report outputs, and to brand the reports with their own logos. This extension also offers the option to have customized reports generated by IBM professionals, at a standard rate reflecting time and material costs.

The publication of reports is supported in the widely-accessible PDF format.

The following is an illustration of one of many reporting option formats available:

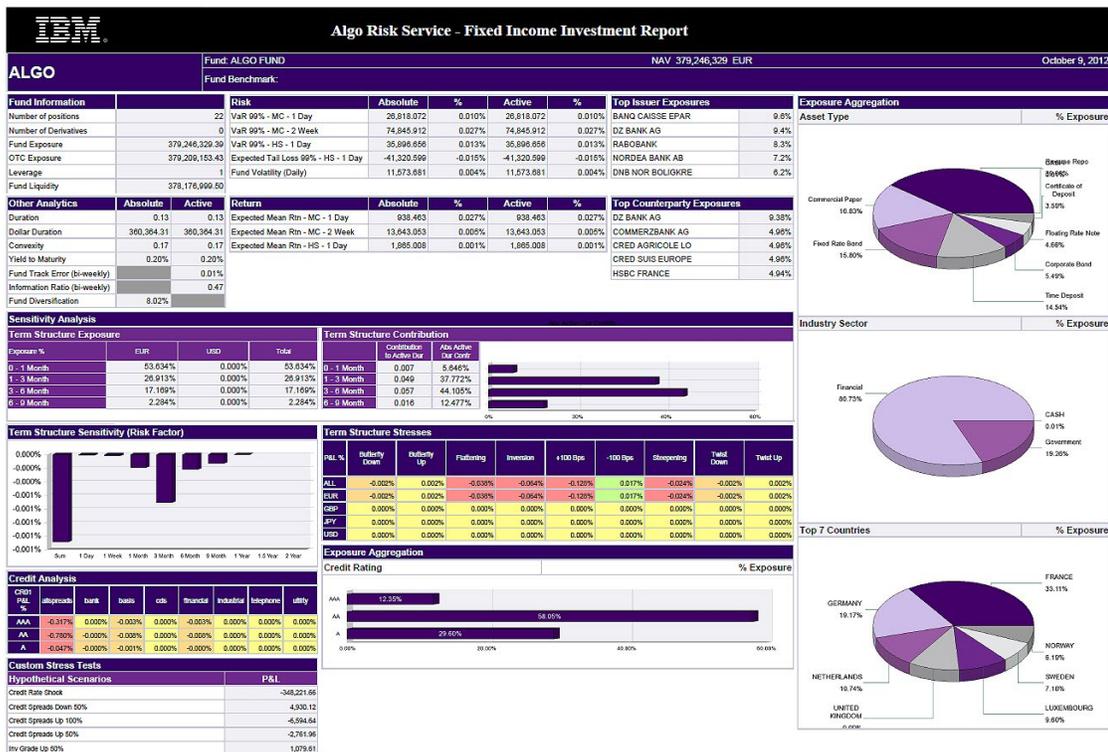


Figure 1: Algo Risk Service Advanced Reporting on Cloud illustration.

Key benefits

Algo Risk Service Advanced Reporting on Cloud offers a number of benefits to clients. This extension:

- Purpose driven standard reporting set geared towards internal and external stakeholders across buy-side capital market institutions e.g. Asset Managers, Pensions, Insurers, Asset Servicers, Hedge Funds etc.
- The standard reporting set is designed to improve customer interaction, regulatory reporting as well as more effectively leveraging information and unlocking its value for smarter decisions and closer investment monitoring.
- Standard reports can be customized by Algo Risk Service on Cloud consultants to reflect organizational or audience specific needs or branding requirements.
- Reports can be distributed in large volumes in regular static formats such as PDF, with the flexibility to nominate the time and frequency of their delivery.

IBM® Algo Risk Service Intra-day Processing on Cloud

Algo Risk Service Intra-day Processing on Cloud offers clients the flexibility to request updates of portfolios and risk analytics for an agreed period (e.g., hourly) that is shorter than the standard overnight Algo Risk Service on Cloud batch process.

This extension is available to subscribers of the interactive Algo Risk Application and/or the Algo Risk Service Advanced Reporting on Cloud extension, and reflects the increasing speed and complexity of global markets. The standard Algo Risk Service on Cloud provides clients with a single, overnight batch process that retrieves and maps data, and simulates risk analytics at the individual security level.

The Algo Risk Service Intra-day Processing on Cloud extension offers clients the option to run this process more frequently to accommodate portfolio reconciliation, updated trading activity, or regional time zone issues.

This extension enables clients to incrementally process newly-created positions, or to schedule polling of the upload site for data for rapid processing throughout the day. This extension offers clients the critical advantage of enhanced intra-day updates of portfolios and risk profiles.

Key benefits

Algo Risk Service Intra-day Processing on Cloud offers clients a number of key market advantages. This extension:

- Enables rapid, intra-day response to changes in the risk profile of a firm or portfolio, which is a fundamental need in today's global markets characterized by sustained volatility.
- Accommodates portfolio reconciliation with its incremental process accounting for changes in the "grace period" after books are closed.
- Supports a global portfolio that might require analyzing risk in various regions, across North America, Europe and Asia, as financial market data becomes available at different times throughout the day.
- Supports the addition of new instruments at different times.

IBM® Algo Risk Service Data Archive on Cloud

Algo Risk Service Data Archive on Cloud offers clients the option of storing data over longer periods to meet regulatory or internal reporting purposes. This extension represents an enhancement of the standard storage available within the Algo Risk Service on Cloud.

Algo Risk Service on Cloud offers clients standard storage of previous batch sessions as per the following schedule:

- Daily sessions for the current week (i.e., the most recent 5 business days).
- Weekly sessions for the current month (i.e., the most recent 4 Fridays; if a Friday is not a business day, then the prior Thursday is used).
- Monthly session from the last business day of the previous month.

Key benefits

Algo Risk Service Data Archive on Cloud offers clients several key benefits to subscribers. This extension:

- Supports meeting regulatory or internal policy requirements for particular periods of data storage.
- Offers clients the security of safe additional data storage, over periods customized to their distinct needs, with the option of efficient retrieval at any time.

IBM® Algo Risk Service Advisory

Algo Risk Service Advisory offers clients access to IBM's experienced financial engineers, integration engineers, project managers and business analysts to provide advice before, during, and after implementation of the Algo Risk Service on Cloud.

This extension provides clients with the expertise to configure and customize the sophisticated Algo Risk Service on Cloud to meet their specific business requirements. This additional support enhances clients' understanding and use of the rich functionality of the Algo Risk Service on Cloud through advanced training workshops, seminars and executive presentations. IBM's Advisory Team and thought leaders enable clients to implement the Algo Risk Service on Cloud more rapidly, and help optimize the returns on their investment in this advanced risk platform.

Key benefits

Algo Risk Service Advisory presents a number of enhanced benefits to clients, including:

- Providing clients access to the knowledge and experience of IBM's industry-leading risk practitioners and financial engineers.
- Offering close consultation with IBM's professionals to support the optimal integration of the Algo Risk Service on Cloud with a firm's organizational culture, processes, and business needs.
- Providing partnership level discussions on using the Algo Risk Service on Cloud to fulfill current business requirements, while taking into account emerging lines of business and/or new functional requirements.
- Providing advice and assistance for Executive, Regulatory, and Investor level reporting.

IBM® Algo Risk Service Axioma Equity Models on Cloud

Risk analysis of equities and equity based products requires a balance between the statistical and the financial significance of the results. Risk managers and investment decision makers require techniques that allow them to objectively look at portfolio risk in a flexible, consistent and transparent way.

To achieve these goals, IBM Algo Risk Service on Cloud has agreed with Axioma, one of the world's leading equity modelers, to incorporate Axioma's fundamental equity factor models (World Wide & Regional) into the Algo Risk Service offering. With this relationship, clients gain access to a cutting edge factor model as well as a sophisticated multi asset class portfolio risk evaluation system. Investment managers can use factors for portfolio construction decisions and risk officers can perform scenario analysis on portfolio and department level exposures. Both parties benefit from the consistency in methodology across the firm. Clients are able to utilize all

the existing service functions consistently across asset classes which includes an integrated advanced equity fundamental factor model from Axioma. Service functions that includes: drill-down, attribution and decomposition capabilities across all analytics with the addition of meaningful equity factors, accessing scenario dependent analytics across absolute and relative risk analysis via an interactive GUI where the valuation and re-valuation during simulation are consistent with “best of breed” modeling practices specific to the asset class, utilizing powerful what-if, virtual portfolio, limits, virtual benchmark capabilities.

Key Benefits:

IBM(R) Algo Risk Service Axioma Equity Models on Cloud presents a number of key benefits to clients of the Algo Risk Service on Cloud. This extension:

- Provides dedicated access to Equity Modeling Expertise within a proven risk framework. Axioma is a consulting firm staffed with seasoned industry experts who actively develop and support robust, transparent and cutting edge equity models that have found widespread acceptance in the industry.
- Currently supports the World Wide model within the IBM Algo Risk Service on Cloud. Axioma’s fundamental factor model calculates exposures to Common Market factors, Style factors, Industry Factors (GICS), Country factors and Specific risks.
- Provides models that are updated daily, with daily re-estimation and production of factor exposures and asset-specific risks. Do away with out of date and stale risk analysis.
- Helps ensure that model estimation is done in a transparent manner with open definitions and clear interpretation.
- Provides a risk framework where equity modeling can be brought into a multi-asset class perspective without loss of detail for any stand-alone form of analysis, including absolute and relative risk attribution and support for optimization.
- Allows risk to be attributed to meaningful factors and align the investment process with the risk process.

About IBM Analytics

IBM Analytics software delivers data-driven insights that help organizations work smarter and outperform their peers. This comprehensive portfolio includes solutions for business intelligence, predictive analytics and decision management, performance management, and risk management.

IBM 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. For further information please visit ibm.com/analytics

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