Oracle Financial Services
Asset Liability Management

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Oracle Financial Services Asset Liability Management (ALM) helps financial services institutions measure and monitor interest rate risk, liquidity risk, and foreign currency risk. This solution measures and models every loan, deposit, investment, and portfolio individually, using both deterministic and stochastic methods. Oracle Financial Services ALM is a next-generation solution fully integrated with Oracle's Financial Services Analytical Applications and shares a common account level relational data model.

KEY FEATURES

- Robust and highly scalable analytical risk engines
- Customer relationship level data model
- Full integration with Oracle Business Intelligence
- Integration of Risk, Performance Management, Customer Insight, and Financial Compliance

KEY BENEFITS

- Actively incorporate risk into decision making
- Promote a transparent risk management culture
- Deliver actionable customer and product profitability insight
- Deliver pervasive intelligence throughout the enterprise

Controlling the Complexities

In these economic times more than ever, managing balance sheet risks is paramount. To consolidate the management of risks, the treasury department must have a consistent framework for gathering data, measuring risks, monitoring changes, and acting on decisions.

Oracle Financial Services ALM meets these challenges. First, the Oracle financial services data model provides a repository for capturing the true financial characteristics of each customer relationship. These characteristics drive the modeling and behavior of these relationships. Assumptions about ongoing business activities, such as behavioral models and prepayment assumptions are stored independently to separate today's risks from tomorrow's actions. In the process of simulating future activity, over 200 financial measures are produced for every item on your balance sheet.

Oracle Financial Services ALM also provides the high-end analytics necessary to meet all your risk management goals, including value-at-risk (VaR), earnings-at-risk (EaR), market value, duration/convexity, income simulation, liquidity and interest rate gap. You control the levels at which results are aggregated, both in terms of the time frequency (modeling buckets) and the product categorization.

Multicurrency

Oracle Financial Services ALM provides features that address both the operational and analytical complexities of operations in multiple currencies. You define unique structural product characteristics, pricing methods, valuation, and new volume activity for every product and currency combination. To measure balance sheet sensitivity to currency fluctuation, you attach exchange rate scenarios to interest rate forecasts. Oracle Financial Services ALM also provides rate conversion calculations to adjust to an internally consistent value, irrespective of the initial quote basis. These rate conversions adjust for yield or coupon format, as well as different compound and accrual bases.

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Wealth of Output Information

Oracle Financial Services ALM calculates and stores a variety of financial risk indicators:

- VaR, EaR, and probability distributions
- Static and dynamic market value, duration and convexity
- Static and dynamic gap (based on both repricing and liquidity)
- Income simulation

The system captures a wide range of information, from the VaR of the entire organization to the detailed daily cash flows on a single customer relationship. Income cash flows are available on an actual as well as a transfer priced basis for any number of predefined rate paths. Gap results include principal runoff, repricing runoff, interest cash flows, and interest accruals.

Rigorous Calculations

Oracle Financial Services ALM is designed to operate on transaction-level data, using Oracle's highly accessible and flexible financial data model. Each account, as well as all forecasted new-business activity, is modeled independently on a daily cash flow basis.

Oracle Financial Services ALM generates market valuations of instruments with embedded options, VaR projections, and EaR projections using a highly tuned Monte Carlo simulation process. Within a Monte Carlo process, you choose one of four term structure models, including Vasicek, Extended Vasicek (Hull and White), Merton, and Ho and Lee. State-of-the-art modeling techniques are integrated into this process. The Monte Carlo engine prepares the risk-free curve, using complex cubic or quartic spline smoothing techniques. For no-arbitrage models, the Monte Carlo engine constructs a Hull and White trinomial lattice for yield-curve calibration.

To optimize performance, random number generation methodologies are enhanced with low-discrepancy sequence techniques. This advancement from crude Monte Carlo enables you to improve time to convergence by a factor of 10 to 1 on average, while still maintaining the proper distribution of results necessary for at-risk analysis.

Rather than requiring you to specify a single confidence level, the VaR and EaR calculators provide a complete value probability distribution over the specified "at risk" period for individual portfolios as well as for the entire balance sheet. If desired, system-generated rate paths are created and analyzed to better explicate the riskier scenarios.

Unique payment and repricing characteristics, captured directly from the data, can be modeled exactly, including:

- Unlimited repricing frequencies
- Caps and floors, both absolute and incremental
- Rate lags and minimum rate change requirements
- Teased/Discounted loans
- Arrears and advance payments
- Compounding and interest credited

The model supports a wide range of products with a variety of amortization and repricing methods, including:

- Derivatives, Swaps, Caps, Floors, FRAs, Futures, Forwards and FX Derivatives
- Negative amortization mortgages
- Irregular payment and repricing schedules on, for example, agricultural or construction loans
- Deferred principal and other irregular payment frequencies
- Conventional loans
- Step-up loans
- Balloons
- Bullet instruments
- Leases
- Annuities

Oracle Financial Services ALM models servicing rights, both for retained servicing rights and sold servicing rights. Accurate treatment of premiums and discounts are modeled at the account level as well.

Liquidity Risk Modeling

Cash flow and liquidity gap modeling results are accumulated in daily, monthly, or yearly buckets to meet a variety of modeling needs, including liquidity and cash management tasks. You have full flexibility to configure your modeling buckets based on specific organizational reporting needs.

Oracle Financial Services ALM processes data at any level required, from the entire balance sheet to targeted portfolios defined by filtering on specific characteristics.

Multi-factor prepayment and early redemption behavior models are also provided, allowing users to build custom models or use embedded algorithms for estimating principal runoff behavior across a wide range of deterministic and stochastic scenarios. You configure your assumptions to reflect varying changes in your cash flow profiles due to changes in interest rates, economic drivers and other external factors.

Flexibility in Process Management

One of the most important aspects of an asset liability model is data integrity. Many models "assume away" data issues, severely restricting the level of accuracy available from the model. In Oracle Financial Services applications, you use detailed customer information and control data quality directly, so correction of inconsistent data can be tailored to your specific product characteristics.

Calculations on today's balance sheet are processed and stored independently of new origination modeling. The separation of current position results from forecast assumptions enables analysis of the new business impact on the balance sheet, comparison of various business strategies, and quick turnaround when assumptions change.

Flexibility in Assumption Management

Built-in models are designed to meet the needs of a variety of products and markets, which provides a truly international solution.

All Oracle Financial Services ALM assumptions are completely separate from the detailed data. Each assumption is saved separately and distinctly. You create an unlimited number of assumption rules to provide a comprehensive review and thorough understanding of all likely rate risk situations.

A multifactor prepayment model can be specifically tailored to vary based on individual instrument characteristics, including seasonality, age, rate, and reprice information. You have complete control of complex calculations, including choice of term structure model, term structure parameters, use of quasi-random number generators, and smoothing techniques. New-business assumptions are defined and processed independently of current holdings, and their results stored separately.

Reliable Verifiable Results

Calculation engines are common among all components of Oracle Financial Services ALM and are integrated with other modules within Oracle's Financial Services Analytical Applications. The cash flow engine used to produce income simulation and gap results is also used during Monte Carlo simulation, cash flow transfer pricing for Oracle Financial Services Funds Transfer Pricing, Valuations for Oracle Financial Services Hedge Management and IFRS Valuations, and budgeted cash flows for Oracle Financial Services Balance Sheet Planning. Using the same cash flow engine provides consistent and verifiable results that are difficult to capture in any other model on the market today.

Auditing capabilities within all modeling engines enable you to drill down to truly understand the model's behavior. The cash flow engine allows detailed cash flows to be output for individual accounts. You can output forecast exchange and interest rates. Similarly, the Monte Carlo rate generator allows each individual rate path to be output and saved to the database. You avoid the "black box" feel of many models, because you can explore and verify the details whenever necessary.

Ultimately, results analysis in asset liability management is best presented at the highest practical level. To get behind that high-level analysis, you need very detailed reports. That is why Oracle Financial Services ALM enables you to customize hierarchical roll-ups of your chart of accounts.

Enterprise-Wide Analysis and Reporting

Oracle Financial Services ALM leverages Oracle's state-of the-art Business Intelligence technology to manage the information. ALM results are delivered through a unique Business Intelligence offering, Oracle Financial Services Asset Liability Management Analytics. This business intelligence offering fully leverages the key features of Oracle Business Intelligence Enterprise Edition (OBIEE), including Interest Rate Risk specific dashboards, standard monthly management and regulatory reports, and a robust environment for ad-hoc reporting. Oracle Financial Services ALM Analytics controls the detail of the output information by showing you the big picture, as well as drilling down to reveal the impact of individual products on your risk profile.

The Oracle ALM Analytics solution contains a pre-built data model with over 3,000 metrics, more than 60 dashboards and 100 seeded reports.   It employs best practices in Oracle Business Intelligence design based on Oracle's experience with hundreds of Financial Services and OBIEE implementations. Customers can use out of the box

reporting, or easily edit existing or create new reports tailored to their needs.

Some of the many pre-built risk measures deployed specifically in context for ALM reporting include

- Metrics for historical trends including month ago, quarter ago, year ago
- Ability to select benchmarks for processes, scenarios or rates
- Benchmarks for changes in value and relative percentage changes
- First, Last and Average results over time
- Functions for ranking results

Standard reports and dashboards are used to evaluate interest rate risk such as Market Value of Equity, Duration of Equity, Re-Pricing Gaps, Liquidity Gaps, Income Simulation results, Value at Risk and Earnings at Risk are all included as part of the reporting solution.

Figure 1. Oracle Financial Services ALM leverages Oracle's state-of the-art Business Intelligence technology to present users with meaningful risk analytics

Architecting the Right Solution

Oracle's Financial Services applications are integrated solutions based on "industry best practice" components. Solutions are assembled with confidence because you know all of the pieces fit together: data, analytics, business rules, dimensions/hierarchies and reporting. Although designed to be delivered on an integrated basis, each of these product components can:

- Stand on its own as a best-of-breed solution
- Undergo implementation in any order and on either a simple or sophisticated basis
- Support ongoing evolution of analytical methodologies

Key Features Summary

Product Modeling

- Standard and customizable repricing events
- Standard and customizable amortization types
- New business simulation under variety of forecasting methods
- Account-level deferred income recognition
- Complex interest calculations
- Modeling of off-balance sheet instruments
- Modeling of securitized/structured loans

Prepayment Modeling

- Instrument level prepayment assumptions
- Modular, reusable prepayment tables
- Optional seasonality adjustment factors
- Behavior Models for indeterminate maturity products
- Integration with AD&Co Loan Dynamics Model

Multicurrency

- Currency dimension in current balance sheet and assumptions
- Exchange rate forecasting
- Currency gain/loss calculations
- Detailed and consolidated results

Earnings at Risk

- Provides a more comprehensive view of income sensitivity
- Maintains a balanced balance sheet in all future time periods
- Aggregates results with different levels of detail
- Includes sophisticated yield curve smoothing techniques
- Provides a choice of term structure models
- Includes automatic calibration of no-arbitrage models
- Includes formula-based rate indices
- Includes optimized random number generation

Market Value

- Deterministic and stochastic valuation techniques

Dynamic Market Value

- Define unlimited forward valuation dates for deterministic valuation of balance sheet

About Oracle Financial Services Analytical Applications

Oracle Financial Services Analytical Applications bring financial institutions best-of-breed capabilities to proactively manage Financial Crime, Compliance, Risk, Treasury, Finance and the Front Office. The applications are built upon a commonly available analytical infrastructure consisting of a unified financial services data model, analytical computations, a Metadata driven "R" modeling platform, and the industry-leading Oracle Business Intelligence platform.

A single, unified data model and infrastructure provides one version of the analytical "truth" to business users throughout the entire enterprise. This enables financial services institutions to confidently manage performance, governance, risk and compliance. Shared data, metadata, computations and business rules enable institutions to meet emerging business and regulatory requirements with reduced expenses and the unified platform helps financial institutions to leverage existing investments.

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Hardware and Software, Engineered to Work Together

Oracle is committed to developing practices and products that help protect the environment