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# VectorRisk





# The Facts

**VectorRisk** is an Australian company with customers in Australia, New Zealand, Singapore and the United States that provides cloud based risk software solutions to banks, hedge funds, government and corporate treasuries.

Our risk system calculates market and credit risk exposures in real-time. Our clients have implemented the system as the engine behind credit limit monitoring, collateral stress testing, market VAR and stress, and CVA.



## [ EXPERIENCED ]

- The founders of Vector Risk came out of banks.
- Vector Risk has been active in the Australian market since 1998 in both a software and risk consulting capacity
- A proven enterprise risk solution has been in use since 2001 at Tier 1 banks
- Developed a new Software as a Service (SaaS) version for market and credit risk in 2014/15
- Multi-tenancy cloud solution (Microsoft Azure) vastly reduces IT costs, implementation timeframes and project risk. Private cloud is an option.
- Became an Alliance Partner with KPMG and now provide software and consulting support to their Financial Risk Management groups in Australasia and ASEAN.
- Became a strategic partner of Tullett-Prebon to provide analytics side-by-side with their rates
- Became a strategic partner of MThree Consulting to market and support the system in Europe and North America

## [ AN EVOLUTIONARY FRAMEWORK ]

- The multi-tenancy cloud solution (Microsoft Azure) vastly reduces IT costs, implementation timeframes and project risk. Put simply, the solution is inexpensive and scalable.
- Upgrades, bug fixes and product enhancements become available immediately
- The pricing and risk analytics are proven inside large banks.
- The workflow is defined around a daily process. It is simple to use "out of the box".
- Modular functionality allows organisations to evolve from a simple initial solution to a more sophisticated solution without the need for costly system upgrades or re-installations.
- High Performance Computing including vectorisation guarantees maximum performance.
- FRTB solution independently validated by KPMG Australia
- Customers can progress to the internal model if warranted by capital savings or other benefits.





# Performance Benchmarks

[ YOUR EVOLUTIONARY PATH TO THE FUTURE ]



CVA benchmark (5000 path Monte Carlo):	
Counterparties:	2000
Trades:	150,000 (60% swaps, 10% options, 30% FX)
Trade valuations:	32,709,985,209,270
Cashflow valuations:	698,835,209,270
CPU cores:	80
Run time:	<b>22 MINUTES</b>

FRTB benchmark (internal model – historic simulation 500 path):	
Books:	14 (plus 20 parent aggregations up to global IMCC)
Trades:	331,000 (42% swaps, 21% options, 37% FX)
Historic Simulations:	350
Trade Valuations:	2,215,230,420
Cashflow valuations:	30,050,754,264
CPU cores:	80
Run time:	<b>12 MINUTES</b>

FRTB benchmark (standard model):	
Books:	14
Trades:	331,000 (42% swaps, 21% options, 37% FX)
Sensitivities:	76,878 (6,372 portfolio + 70,506 trade level vega)
Trade Valuations:	54,872,271
Cashflow Valuations:	767,525,862
CPU Cores:	80
Run Time:	<b>8 MINUTES</b>

Vector Risk analytics always perform full revaluations on every scenario. There is no trade compression.

Analytics with larger scenario sets are better able to utilize vectorization in the pricing library and therefore have comparatively higher valuation throughput.

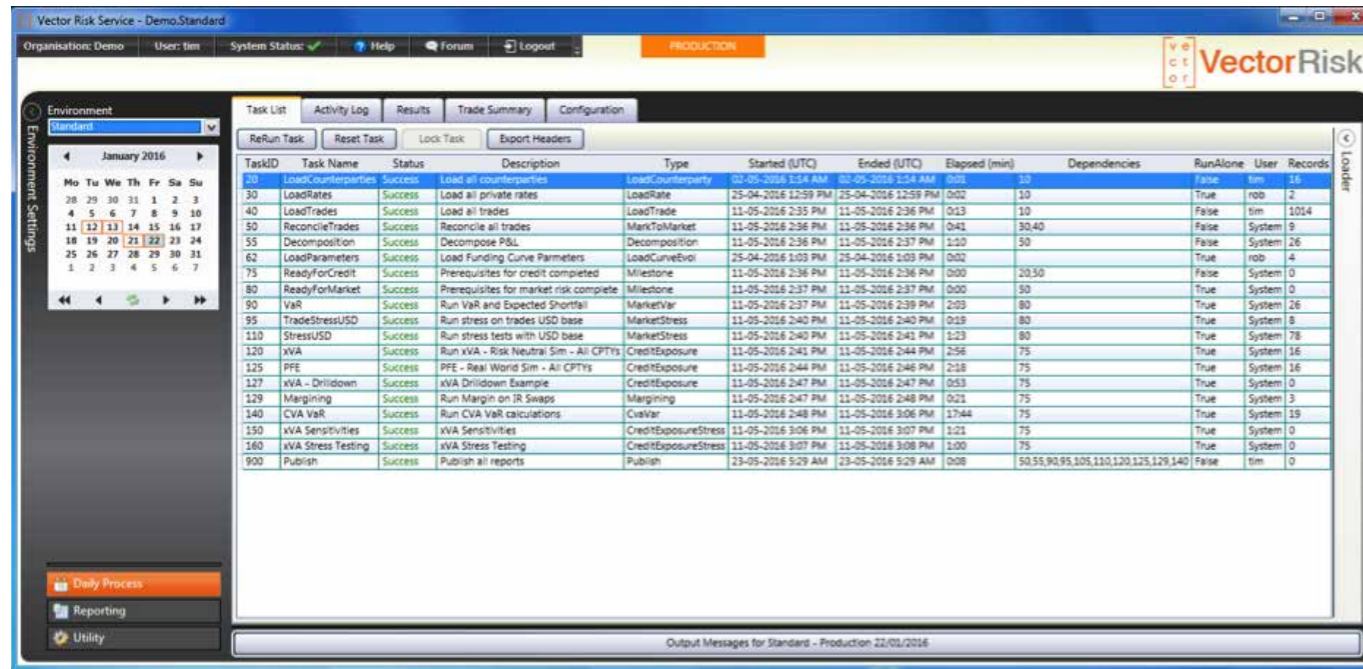
Trade Load and database caching for the above 331,000 trade portfolio: 30 minutes.

Benchmarks performed in February 2016.



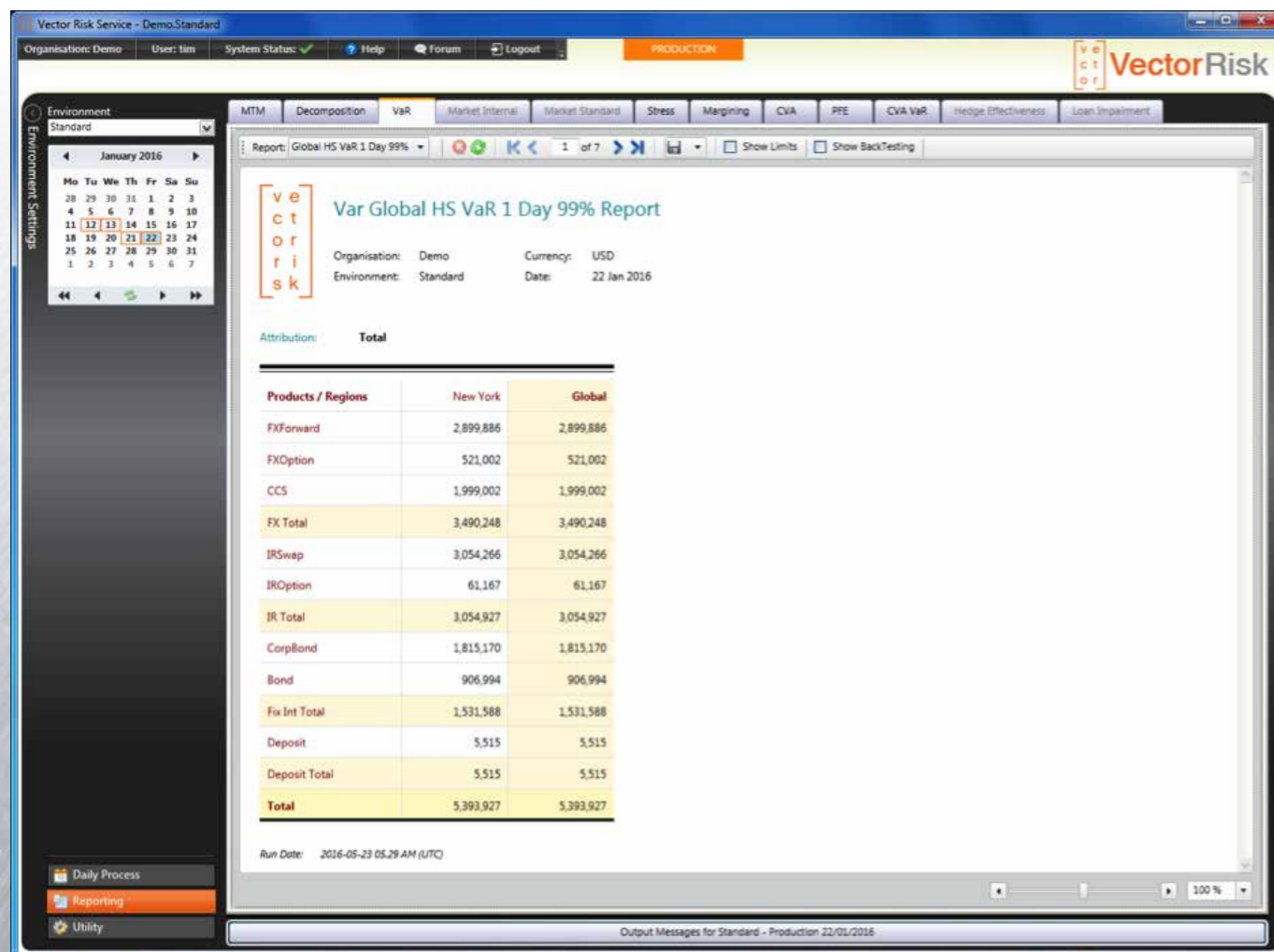
FIGURE 1: GUI WORKFLOW AND REPORTS

# Cloud Architecture



## [ CLOUD ARCHITECTURE ]

- Hosted on Microsoft Azure which is ISO 27001 compliant.
- Utilising Microsoft HPC (high performance computing), C++ and C#.
- Single instance of the software – shared databases and CPU. Easily scalable.
- Security database containing organisations, users and permissions.
- Web services. XML or CSV interface format. Reports viewable in GUI and published to secure URL.
- Separation of risk engine and workflow. Choose stateless risk engine calls, or configure a daily workflow with rate and trade loads, valuations, risk calculations and reporting.



## [ BENEFITS ]

- “Nothing to install” full cloud solution as the Vector Risk Service runs 24x7 on Microsoft Azure. Subscribers simply log-in and use the system.
- Trades and market data loaded in XML or CSV format
- Microsoft Azure provides high level of security, geographical redundancy and full DR.
- No in-house hardware requirement beyond access to a browser.
- The SaaS model is significantly less expensive than the bespoke enterprise model alternative.
- Opportunity to pilot the service before subscribing so you can be absolutely certain the service provides what you want before you commit.





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