# Splunk® at RMS

Operational Insight to Manage Transition to Cloud-based SaaS Offering

"Splunk software has proven itself invaluable by helping us quantify customer demand, right-size our environment and troubleshoot any issues in real time. Not only are we able to adapt reports in the Splunk App for VMware for in-depth analytics, but we are also able to correlate data across diverse applications and operating systems for a unified view of our infrastructure and service."

**Director of Cloud Operational Intelligence and Monitoring**
*Risk Management Solutions*

## O V E R V I E W

**INDUSTRY**
- Risk management and mitigation

**SPLUNK USE CASES**
- Monitoring of cloud resources
- Accelerated troubleshooting across heterogeneous systems
- Customer usage baselining/analytics
- Performance and resource optimization
- Capacity planning and forecasting

**BUSINESS IMPACT**
- Enable easier transition to cloud-based SaaS delivery model
- Improve overall customer experience
- Meet SLAs and financial goals through accurate rightsizing
- Decrease operational costs through infrastructure optimization
- Ensure smooth service delivery
- Reduce time-to-repair through easier root cause analysis

**DATA SOURCES**
- RMS(one) application—database extracts and log files
- IIS log files, configuration files, firewall logs
- VMware physical and virtual hosts

## The Business

Risk Management Solutions, Inc. (RMS) is the world's leading provider of software, services and expertise for the quantification and management of catastrophe risk. More than 400 leading insurers, reinsurers, trading companies and other financial institutions rely on RMS solutions to quantify, manage and transfer risk. RMS services clients from offices in the U.S., Bermuda, the U.K., Switzerland, India, China and Japan.

## Challenges

For more than 20 years, RMS customers have relied on the firm's RiskLink modeling software and associated data on earthquakes, windstorms, wildfires and terrorism to help make informed decisions about risk management and mitigation. In most cases, customers use RiskLink as an on-premises system, receiving regular software updates and the latest modeling data from RMS.

In 2010, RMS embarked on a comprehensive development program designed to provide customers with a new risk modeling system that would offer improved performance, lower costs, open architecture and a cloud-based software as a service (SaaS) delivery model. The recently launched RMS(one)™ platform required the efforts of more than 100 engineers and 1,000 test participants from leading insurers, reinsurers and brokers.

The RMS(one) SaaS hybrid cloud infrastructure relies on hundreds of physical and virtual servers, including tens of thousands of cores, thousands of VMs and petabytes of storage, at multiple RMS datacenters worldwide. The RMS(one) development team needed a way to increase operational visibility into this increasingly complex global environment.

"The majority of our infrastructure is running on top of VMware, so we use a hybrid model that combines our infrastructure with cloud bursting during peak periods," says the RMS director of cloud operational intelligence and monitoring. "We had multiple analysis tools, but no single tool that allowed us to consolidate machine data and slice and dice in meaningful ways. We needed a way to characterize customer usage, profile our environment and optimize resource allocation."

## Enter Splunk

In late 2012, RMS's immediate need was to optimize the management of a limited number of custom instances of RiskLink it was hosting for key customers. With up to 20 servers per instance, these systems generated a large volume of log event files, which were difficult to collect and analyze with existing tools. In addition, the RMS(one) development team needed a way to better understand and optimize the hybrid cloud planned for its new SaaS offering.

"We had a very complicated application across a large number of servers, and we were working with a brand new product," the RMS director of cloud operational intelligence and monitoring explains. "Splunk was the only solution we found that is able to tie together all of these different pieces and allow us to perform analytics on all of our data."

RMS chose Splunk Enterprise to solve its immediate log file diagnostic needs on its physical infrastructure, but quickly discovered the Splunk solution could help in many other ways. Splunk software is now deployed at each RMS datacenter, providing centralized consolidation of unstructured data for operational intelligence.

## Breakthroughs

**Operational insight eases product development**

RMS(one) represents a paradigm shift in how the firm delivers its risk modeling products and therefore required a purpose-built architecture. RMS adopted VMware as a critical

> "We are breaking new ground with RMS(one) and don't have a lot of evidence to allow us to be predictive. The Splunk platform gives us the granular view we need to understand what drives demand on a particular tier and provides a baseline for measurement.

*Director of Cloud Operational Intelligence & Monitoring, RMS*

### Free Download

Download Splunk for free. You'll get a Splunk Enterprise license for 60 days and you can index up to 500 megabytes of data per day. After 60 days, or anytime before then, you can convert to a perpetual Free license or purchase an Enterprise license by contacting sales@splunk.com.

deployment component of the RMS(one) architecture. Deploying the Splunk App for VMware has enabled the RMS(one) development team to scale up the collection of machine-generated data to manage its growing hybrid cloud infrastructure.

Splunk Enterprise and the Splunk App for VMware helped the RMS(one) team monitor and analyze its extensive beta testing program at all levels of the physical and virtual stack to help predict the impact on its infrastructure of RMS(one) general availability (GA). Unstructured data is consolidated and made available—democratized—to development, quality assurance, operations and product management teams.

### Operational analytics deliver business value

The new hybrid RMS Cloud infrastructure behind RMS(one) is an elastic environment, relying on high-performance computing and persistent storage resources within RMS datacenters, as well as bursting to third-party datacenters as needed.

Splunk Enterprise and the Splunk App for VMware give RMS the ability to characterize customer usage patterns by enabling the firm to pull together many different data sources into a comprehensive view. "That's been really key for us," says the RMS director of cloud operational intelligence and monitoring. "The Splunk platform gives us the ability to establish what normal behavior looks like, which is critical now because we are using so many new technologies and using them in new ways."

This capability enables RMS to rightsize its RMS(one) environment to achieve the optimal balance between high performance and cost-efficiency—which translates into the ability to run more risk simulations in less time, from hours to minutes. This increased performance means RMS customers have the power to drill down into portfolios in real time and investigate key drivers of risk and change.

### Cloud management made easy(er)

Another critical challenge for the RMS(one) cloud team is the seasonal nature of risk modeling demand—risk modeling of insurance and reinsurance portfolios can increase by up to six-fold during the final quarter of the year as firms work to evaluate risk and set appropriate rates.

"Splunk is helping us get our hands around our capacity planning challenge," notes the RMS director of cloud operational intelligence and monitoring. "Splunk software gives us visibility across all levels of our IT topology. Managing this topology is challenging. Rapid deployments needed to meet spikes in demand can create lots of churn through the vCenter."

To understand the physical and virtual elements of the RMS(one) infrastructure, RMS uses Splunk Enterprise and the Splunk App for VMware to conduct regular searches and pull topology data from the Splunk index. By categorizing the data within Splunk, RMS operations can drill down into specific areas for troubleshooting and granular analytics.

### VMware monitoring

RMS uses the virtual forwarders in the Splunk App for VMware to collect data from more than 900 ESXi hosts and tens of thousands of virtual machines and map it to customized dashboards in the App to monitor the overall health of the Cloud infrastructure. The dashboards provide near real-time updates on virtual system conditions, including critical problem indicators such as RAM swapping and ballooning, and CPU ready percentage. The company is then able to map this to application performance or latencies based on resource consumption.

Other Splunk dashboards provide information on role-based metrics, host level drilldown and customer usage. The dashboards accelerate troubleshooting, root cause analysis and help prevent resource overutilization.

The RMS cloud director notes: "Splunk software allows us to pull together many different data types and gives us a holistic picture of our operations. That is a truly unique value to us as we charge forward into the cloud."