Intelligent Operations Management from Applications to Storage

VMware vRealize Operations
New Demands Require a New Approach

The transition from client-server computing to the mobile-cloud era is creating a tectonic shift in IT. Businesses must automate personalized IT services delivery and increase agility to stay competitive. To realize the full benefits of virtualization and cloud infrastructure, enterprises must rethink IT operations.

“The spread of virtualization and cloud computing has added a new volatility and dynamism to the IT stack,” says Gartner. “Old-style event correlation and root-cause analysis technologies based on a structured, static understanding of topology relationships between IT infrastructure components fail to keep up with the new dynamics.”

Line-of-business stakeholders expect operations teams to ensure application and infrastructure performance and meet SLAs. Yet IT is still using fragmented operations management approaches that require manual troubleshooting. When legacy tools are used to manage a predominantly virtual environment, they produce alert storms and false positives. Because operations teams have no visibility into emerging capacity, performance, and compliance issues, it is impossible to proactively address changing line-of-business requirements.

Ineffective tools cause fire drills and lead to overprovisioning of resources. The lack of visibility into application and infrastructure dependencies hinder operations teams’ efforts to increase efficiency. Downtime and expensive audits are the result of IT’s inability to assess the impact of change across infrastructure and applications. While IT teams understand the value of automation and standardization, traditional tools lack the necessary controls and customization capabilities required for unique environments. Frustrated, IT teams are looking for new ways to simplify and automate the operations of today’s virtual, physical, and hybrid cloud environments.

How vRealize Operations Simplifies and Automates IT Management

With vRealize™ Operations™, VMware delivers intelligent operations management across physical, virtual, and cloud infrastructures—from VMware vSphere® to Microsoft Hyper-V, Amazon Web Services, and physical hardware. vRealize Operations correlates data from applications to storage in a unified management tool that is easy to use. It leverages policy-based automation to increase IT efficiency, and provides IT control over performance, capacity, and configuration with predictive analytics driving proactive issue identification and resolution.

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**Independent Research Shows VMware Customers Experience Significant Benefits**

Researchers from Management Insight benchmarked the benefits of vRealize Operations for IT management, quantifying the incremental value of vRealize Operations for vSphere customers. The 2014 study results reveal customers experience significant operational and business benefits from the vRealize Operations. Specifically customers deploying vRealize Operations reported:

- **Key performance metrics increased by 20 – 40 percent** in addition to the benefits gained from deploying vSphere.
  - 34 percent improvement in capacity utilization
  - 30 percent more uptime for tier 1 apps
  - 26 percent additional cost savings on IT infrastructure management

A key advantage resulting from the additional visibility into the vSphere environment is increased IT administrator confidence. vRealize Operations customers reveal far higher abilities in problem management, capacity planning, change management, application dependency mapping, multihypervisor management, and many other areas than those that have not deployed Operations Management.

Customers deploying vRealize Operations also experienced a strong return on investment:

- The average **ROI was 2.4x** for customers that deployed vRealize Operations.
- More than 50 percent of respondents said it took **fewer than six months to realize value**.

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“For the first time ever we’re able to capacity plan, to look ahead and forecast what we’re going to need for the next one, three, or five years.”

– Ricky Caldwell, Director of Server Operations, Architecture and Infrastructure, Cornerstone
Similarly, a recent Forrester Consulting study of the Total Economic Impact of VMware vRealize Operations\(^2\) revealed that customers experienced

- Up to 45 percent reduction in time and effort spent on compliance management
- Up to 67 percent gain in IT productivity from reduced manual effort and fewer incidents
- Up to 30 percent CapEx reduction from capacity optimization and deferred hardware purchases

Customers also reported additional business benefits from increased availability and uptime, as well as reduced risk of compliance violations and audits.

Key Capabilities of vRealize Operations

vRealize Operations enables organizations to manage the health, risk, efficiency, and compliance of dynamic workloads and heterogeneous infrastructure. The solution features three primary categories of capabilities that seamlessly work to simplify operations so IT teams can be more proactive and efficient.

Figure 2: Manage the Health, Risk, Efficiency, and Compliance of Virtual Infrastructure and Applications
Intelligent Operations

vRealize Operations delivers intelligent operations management across physical, virtual, and cloud infrastructures, through the following key capabilities:

Predictive Analytics and Smart Alerts
Leveraging self-learning analytics, dynamic thresholds, and automated correlation of application and infrastructure performance, vRealize Operations enables operational visibility and immediate identification of emerging capacity, performance, and compliance issues. Dynamic thresholds automatically adapt to environments to provide fewer and more specific alerts of health degradations, performance, bottlenecks and capacity shortfalls. Smart Alerts drive action by combining multiple symptoms into a single alert that surfaces the underlying issue and provides clear remediation recommendations. Smart Alerts also accelerate troubleshooting and root-cause analysis by providing meaningful insights into problems and reducing overall alert volume.

Application Dependency Mapping
Application-awareness and dependency mapping simplify impact analysis to help IT teams more quickly identify root cause or build recovery plans. Operations teams get comprehensive visibility—from applications to host, virtual machines, and data stores to switch port and LUN levels—for faster troubleshooting and disaster recovery.

Application-to-Storage Visibility
Storage analytics provide deep visibility into infrastructure topology, statistics, and events across host bus adapters, fabric, and arrays using standard protocols. The automated correlation of application and infrastructure performance together with self-learning analytics increases operational visibility and helps IT quickly identify any issues.

Capacity Modeling
Using “what-if” scenarios, operations teams can save and commit capacity models to the analytics engine to influence capacity calculations and alerts. Extending beyond vSphere and across physical and application-level metrics, including data from third-party management packs, capacity planning and project management features include demand-based models that increase consolidation ratios and allocation-based models that meet SLAs.

Customizable Views
Customized dashboards, reports, and views help operations teams visualize key performance indicators (KPIs), provide role-based access, and enable better collaboration across infrastructure, operations, and applications teams. For greater transparency, reports can be tailored to a variety of teams’ needs.

“The online betting and gaming industry is constantly changing and, as a business, speed is of the essence and it’s imperative that we stay ahead of the game. With VMware’s vCloud Suite, the Betfair IT team has effectively become ‘service brokers’; with developers across the business able to scale IT up and down as and when they need it.”

– Lee James, Head of IS and Infrastructure, Betfair
Policy-Based Automation

vRealize Operations increases efficiency using automation that is based on policies and includes

Remediation Processes and Configuration Enforcement
Automated workflows help reduce mean time to incident and mean time to resolution. vRealize Operations streamlines the creation and customization of remediation workflows with preconfigured actions. Recommendations can be triggered manually or automated. Flexible group policies with access management keep IT in control as operations teams define specific capacity thresholds, alert types, notifications, and configuration settings to prioritize operational activities for business-critical applications, production workloads, or business units.

Flexible Capacity Optimization
Automated optimization capabilities support better resource planning by enabling operations teams to reclaim overprovisioned capacity, increase resource utilization, and eliminate the need for scripts and spreadsheets.

Streamlined Compliance
Automated detection, enforcement, and remediation of security hardening guidelines, configuration standards, and regulatory compliance requirements across environments helps operations teams ensure infrastructure and application compliance. Operational compliance views enable IT to proactively enforce standards, detect changes early, and automate remediation. Visual correlation of change events with performance data across physical and virtual infrastructure, OSes, and applications provides visibility into performance degradation from configuration changes.
Unified Management

vRealize Operations enables complete transparency and features.

Scale-Out and Resilient Platform Built for Automation
The Operations Management platform provides a scale-out architecture that supports automated failover, replication, and multitenancy for the platform.

Comprehensive Visibility from a Single Console
Unified management provides comprehensive visibility from a single console across applications, multiple hypervisors such as Hyper-V, storage, and physical, virtual, and cloud environments. The platform provides health, risk, and efficiency views with integrated insights into performance, capacity, and configuration issues.

Support for Any Cloud, Any Platform
Hyper-V and Amazon Web Services monitoring dashboards provide a single operations console across private, public, and hybrid clouds.

Analytics Extensions to ANY Data with the Open and Extensible Platform
Operations teams can extend predictive analytics and Smart Alerts to third-party management packs (e.g., Microsoft and SAP) by integrating third-party monitoring data into the vRealize Operations analytics engine where it is correlated with data from other infrastructure and application metrics. Enhanced application monitoring is available through default dashboards for business-critical applications (e.g., Microsoft SQL, Exchange, and SharePoint).

Editions Tailored to Address Specific Needs

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<th>Overview</th>
<th>vREALIZE OPERATIONS ADVANCED</th>
<th>vREALIZE OPERATIONS ENTERPRISE</th>
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<td>Intelligent operations management across physical, virtual, and cloud infrastructures. Supported by third-party management packs. Advanced capacity projects and customizable automation actions. Application-to-storage visibility. Complete control over performance, capacity, and configuration management.</td>
<td>All of the capabilities of the Advanced edition, plus additional capabilities for managing business-critical applications. Application monitoring and OS-level, configuration, change, and compliance management capabilities for infrastructure and applications in physical, virtual, and cloud environments.</td>
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<td>Infrastructure teams managing virtual, physical, and hybrid cloud environments with responsibility across compute, storage, and networking resources up to and including the OS level.</td>
<td>Infrastructure and operations teams responsible for the performance, availability, and compliance of applications running in large virtual, physical, and hybrid cloud environments.</td>
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<td>Key Capabilities</td>
<td>vREALIZE OPERATIONS ADVANCED</td>
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<td>Capacity optimization</td>
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<td>Predictive analytics and Smart Alerts</td>
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<td>Application discovery and dependency mapping</td>
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<td>OS monitoring (e.g., Windows, Linux, Solaris for physical and virtual environments)</td>
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<td>vSphere resource monitoring, planning, and optimization</td>
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<td>vSphere hardening and compliance</td>
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<td>OS-level configuration and regulatory compliance (e.g., PCI, HIPAA, SOX)</td>
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<td>Application, middleware, and database monitoring (e.g., Microsoft, Oracle)</td>
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“VMware provided the most complete solution that was really built for the cloud era, versus other solutions that may have been retrofitted for cloud.”

- Michael Lebiedzinski, Director of Private Cloud Engineering, Covance

Transform Operations Management with VMware

“In virtualized environments, it’s important to connect configuration and performance management to understand the interdependencies and impacts of changes in the physical infrastructure on the virtual infrastructure and vice versa,” asserts Gartner. “In cloud environments, this becomes critical due to the pace of change expected as services are requested and fulfilled by automated processes provisioning, configuring, reclaiming and reprovisioning infrastructure resources on demand.”

Across virtual, physical, and public cloud environments, vRealize Operations enables IT organizations to proactively address performance issues, maintain high availability for business applications, improve operational efficiency, and enforce IT standards and compliance. Operations Management is a strategic suite in the VMware IT management portfolio, which includes a set of solutions that support IT teams as they evolve from builders of infrastructure into brokers of all IT services across the business.


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Case Study: Large Manufacturing Company

With more than 11,000 virtual machines operating in five physical data centers, this VMware customer needed a scalable solution that would provide management, monitoring, and quick issue resolution. The company required a solution that would be able to monitor virtual machine performance and track changes made to the physical server hosts as well as to virtual machine configurations. The most critical requirement was for a self-learning intelligent solution that would compare trending and normal operational swings with true deviations or performance issues, and alert them correctly.

Solution

The company selected vRealize Operations to manage its large virtualized infrastructure. The enterprise architect stated that the real value is the intelligence behind the monitoring that looks for anomalies to reveal areas where problems are actually occurring.

“I didn’t need or want hundreds of alarms going off every day when some threshold was crossed. That provides no value and we just ignore it. VMware vRealize Operations has a learning algorithm and now we look at anomalies not just thresholds.”

The integration of performance, capacity, and compliance provided the ability to track changes made to servers and virtual machines and was correlated to the alerts from the vRealize Operations dashboard. Troubleshooting and resolution became easier and faster.

Results:

• Alert reduction – Alert volume reduced from 500-1000 threshold alerts a day, to 50-100 vCenter Operation alerts.
• Increased efficiency and faster troubleshooting – Improved IT efficiencies by about 20 percent. A problem that used to take 4-8 hours to solve can now be resolved in a single hour.
• Improved capacity utilization – 92 percent of virtual machines were overprovisioned. With vRealize Operations, the company was able to get back resources from over-provisioned virtual machines.
• vRealize Operations has delivered infrastructure savings in the 10-20 percent range.