

White Paper

Optimizing Infrastructure Management with Predictive Analytics: The Red Hat Insights Approach

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IN THIS WHITE PAPER

This IDC White Paper discusses the role of management software in today's complex hybrid and multicloud environments. Key requirements and benefits for infrastructure management are identified. The increasing role of predictive analytics is discussed. An overview of the Red Hat Insights service for managing, securing, and optimizing Red Hat application environments is presented. Challenges and opportunities for the future are examined.

SITUATION OVERVIEW

IT operations are struggling to balance the pace of innovation with managing and optimizing their entire application environment. This is being complicated by the scale of IT infrastructure, complexity of application architectures, and volume of automation. But teams are not expanding, operations have become increasingly less effective, and innovation has suffered. Managing traditional infrastructure has also become costly and rigid, and many leaders are turning to cloud-hosted solutions so that they can focus on delivering business outcomes and not maintaining service-level agreements.

Success in these highly complex environments is measured by the ability to deliver critical applications in order to meet competitive business challenges, regardless of where the applications and data reside.

THE ROLE OF MANAGEMENT SOFTWARE

Management software and SaaS solutions are needed to monitor the behavior and security risk of applications and infrastructure, pinpoint the location and root cause of problems, and support processes for problem remediation – without adding the overhead of more infrastructure.

Management solutions can be general purpose across platforms or be focused on specific operating environments such as Red Hat Insights. Specific knowledge of an operating environment enables deeper knowledge for problem detection and identification and root cause analysis and problem resolution as well as providing information that can be used proactively to prevent incidents from happening in the future.

Growth in Complexity and Increasing Data Volumes Challenge IT

Rapidly increasing volumes of monitor and event data from complex infrastructures including physical, virtual, and private, public, hybrid, and multicloud environments is challenging IT organizations to understand the health and performance of the datacenter infrastructure. Data volumes and infrastructure complexity are overcoming the ability of IT staff to keep up with rapidly changing conditions.

Management software is needed to capture, analyze, and visualize the datacenter environment.

The Need for Advanced Analytics

Increasingly, management software is incorporating advanced analytics for more accurate problem determination and root cause identification. Analysis of incident-causing conditions can be used to identify patterns and problem causes and perform root cause analysis. Predictive analytics can be used to proactively understand that a problem is likely to occur and take actions to prevent incidents from occurring and impacting end users. While major IT emphasis is placed on troubleshooting and root cause analysis, the use of predictive analytics can often avoid pending incidents and prevent the necessity of "break/fix" sessions

CONSIDERING RED HAT INSIGHTS

Red Hat Insights is a SaaS solution from Red Hat used to manage and optimize Red Hat Enterprise Linux (RHEL), Red Hat OpenShift, and Red Hat Ansible Automation Platform environments using predictive analytics. According to Red Hat, the Insights SaaS solution is informed by the technical knowledge and deep expertise of over 1,000 Red Hat support engineers with information from over 115,000 unique solutions and 1,000,000 cases to help companies efficiently and intelligently manage their increasingly complex infrastructures.

The objective of Red Hat Insights is to continuously analyze Red Hat platforms and applications to predict risk, recommend actions, and analyze costs so that enterprises can better manage hybrid and cloud environments.

The Red Hat Insights SaaS solution collects configuration and measurement data from systems; analyzes the data for potential problems and risks based on analytics, rules, and the knowledge base; and provides prioritized results and recommendations and a playbook for remediation. The following are key capabilities of Red Hat Insights:

- Red Hat Insights provides comprehensive analytics across physical, virtual, container, and private and public cloud environments for assets deployed on Red Hat. Analytics and the knowledge base are updated periodically through the Red Hat Insights SaaS deployment model.
- Red Hat Insights supports real-time, in-depth analysis of application environments and infrastructure running on Red Hat to proactively identify threats to security, performance, availability, and stability. It provides visibility for problems such as configuration issues and urgent technical issues.
- The Red Hat Insights SaaS solution proactively identifies which systems are at risk for security configuration and vulnerability threats and provides actionable remediation recommendations based on the comprehensive knowledge and experience of Red Hat's certified engineers and product security teams.

- Remediation plans can be automated via integrations with Red Hat Ansible Automation Platform or Red Hat Smart Management. Red Hat Insights generates Ansible playbooks to automatically implement remediation steps.

The key benefits of Red Hat Insights include reduced security and compliance risk by identifying vulnerabilities, improved performance and overall application service levels, reduced downtime, improved IT operations staff efficiency and productivity, and improved visibility into resource cost and subscription utilization.

Insights Console Identifies Risks and Visualizes Utilization

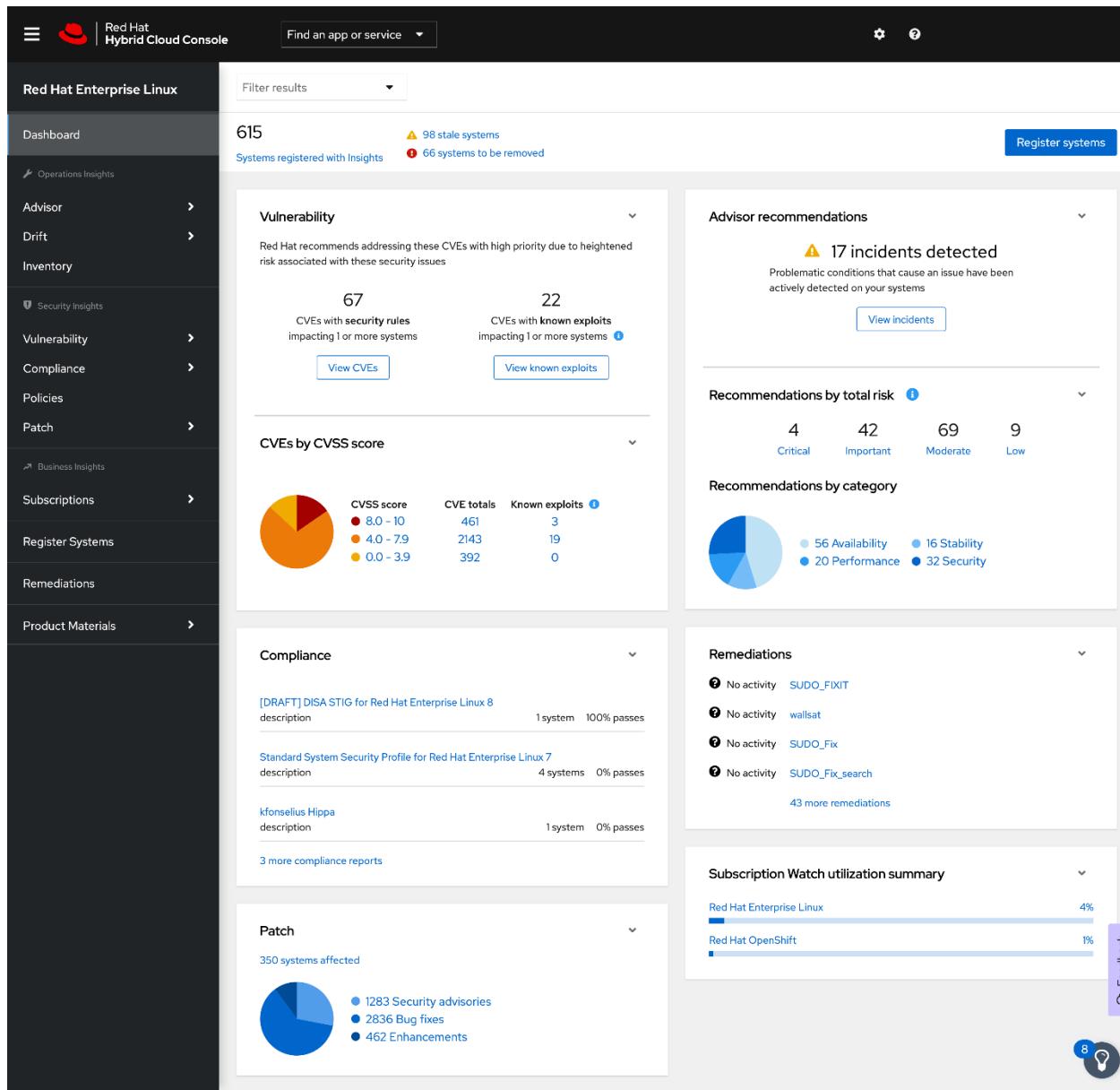
Issues discovered by Red Hat Insights are identified and displayed on the web-based Insights dashboards accessed through the Red Hat Hybrid Cloud Console, pushed out via APIs and webhook integrations, or with the Red Hat Satellite interface, for certain operational issues. Figure 1 shows an example of a Red Hat Insights Console display.

As shown in Figure 1, issues are classified according to the functional service area that is being affected, including performance, availability, security, and stability. Customers can drill down to see which systems are being affected, understand issues, and view recommended actions and remediation steps.

Red Hat Insights also provides a unified dashboard to see historical utilization of subscriptions across all footprints.

FIGURE 1

Red Hat Insights Console



Source: Red Hat, 2021

Red Hat Insights Customer Experience

IDC spoke with a large Fortune 500 company that specializes in supply chain management services and is a leading North American distributor of high-quality components, equipment, and materials. The company's IT department supports a Red Hat Enterprise Linux IT environment – both on premises and in the cloud. The company's business operations are primarily built on SAP-related applications deployed across over 400 RHEL servers. Red Hat Insights is used by the infrastructure, administration operations,

and security teams. IDC interviewed the company's infrastructure architect who is a long-standing Red Hat Insights user.

According to the infrastructure architect: In terms of server management, Red Hat Insights has been deployed "on everything" for use by the company's infrastructure team and administration operations team during the past five years. Administration operations uses Red Hat Insights Advisor to determine priorities for changes and improvements or remediations that need to be applied across the company's group of Red Hat Enterprise Linux servers.

He explained: "Insights Advisor may make a range of recommendations for changes for individual servers or groups of servers and give administration the ability to decide low, medium, or high priorities for implementing specific changes or remediations for specific server profiles." Red Hat Insights can scan deployed servers to check to see whether desired changes have successfully been applied.

He identified an "exciting development" that has evolved over the past two years: Red Hat has been "expanding the role of Insights Advisor as an SAP configuration and compliance scanner." Insights Advisor has been made capable of checking configurations for specific types of SAP servers and discovering issues such as insufficient swap space allocated or required OS changes for specific types of applications. Insights can make recommendations for actions to resolve these kinds of issues. This is particularly valuable when deploying new applications. Adding these capabilities is an example of Red Hat's ongoing active development of new Insights capabilities.

In terms of Insights Advisor and security, he commented: generally when you have a security issue a notification will bring it to everyone's attention. "Then the first question is: Are you vulnerable to this? Second question is: How many servers are affected? You can log into Insights, it already knows about the security notice, it already knows what servers are affected and what are the specific resolutions for each of your server types."

Red Hat Insights is being used for configuration management, security, and compliance. As a long-time Insights user, he explained the key benefit comes down to this: the infrastructure inventory is complete. "There is almost no question someone can ask about the environment that I can't go to Insights and get an answer."

In terms of overall Red Hat Insights benefits, "it's not like having one extra person on the team – it's like having an extra team to assist you in configuration management. If you are the kind of shop where you are busy and working on a lot of issues, then Insights is going to be a requirement."

CHALLENGES

As a SaaS solution, Red Hat Insights provides very rapid implementation for existing RHEL customers. Key metrics are obtained from server infrastructures and are analyzed by Red Hat Insights. Some customer segments such as healthcare and financial services organizations with on-premises datacenters and data privacy and security concerns can be reluctant to provide data from on-premises systems to the cloud. Red Hat has addressed these concerns by strictly limiting and anonymizing system information that is uploaded to the cloud for analysis. Red Hat needs to continue to socialize this approach.

CONCLUSION

IT organizations are facing enormous challenges in meeting the performance, availability, and security demands of highly interactive always-on digital business applications spanning public, private, hybrid, and multicloud environments. These demands will only increase as digital business applications proliferate, and more and more users expecting to receive a consumer-like experience will drive up the management requirements. IT infrastructure management tools such as Red Hat Insights are needed to help IT organizations meet the challenge of providing critical digital business services.

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