White Paper

Transforming IT Operations to Enable Better Business Outcomes

Improving Operational Efficiency through the Intelligent Management of Infrastructure and Business Processes

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Introduction

To remain competitive, organizations should continue to digitally transform. They need to ensure their businesses are agile and protected to meet their ever-changing needs, while continuing to explore new and improved ways to leverage their most valuable asset—their data. With a focus on becoming more data-driven, and with the proliferation of data across the business from countless applications and sources, it's never been more critical for organizations to address the non-stop growth of data, including the need for modern data protection, management, and operations.

In terms of an underlying IT infrastructure, many organizations rely on a heterogeneous mix of vendors, products, and solutions (both legacy and modern offerings), to address the existing and future needs of their business and their mission-critical applications. The valuable data produced by these siloed, patchworked, and legacy tools and systems is ever-increasing. However, without an effective way to aggregate that data, or automatically analyze the complete set of data (identifying risks and uncovering unknown value), organizations are left relying on shortsighted insights, longer time to value, and a backlog of uncompleted tasks. And it is important to note that mining business data is quite different than mining system and software telemetry data. With business data, organizations look to improve customer targeting or supply chain, while system and software data enables improvements to system utilization, performance, resiliency, and uptime.

While replacing existing tools and/or modifying analytics workflows may help solve some problems, organizations must focus on finding the right foundation to support their often times hodgepodge of infrastructure tools and components. Because data is the key—from storing it and managing it, through deriving insights from it, to migrating and protecting it—organizations must take steps to transform their data centers to become more agile, better protected, and intelligently operated. So how do IT administrators efficiently process and act on all this data—not just what is stored, but the equally important telemetry data—in real time? Through a comprehensive systems management platform that leverages the latest innovations in technology like artificial intelligence and machine learning.

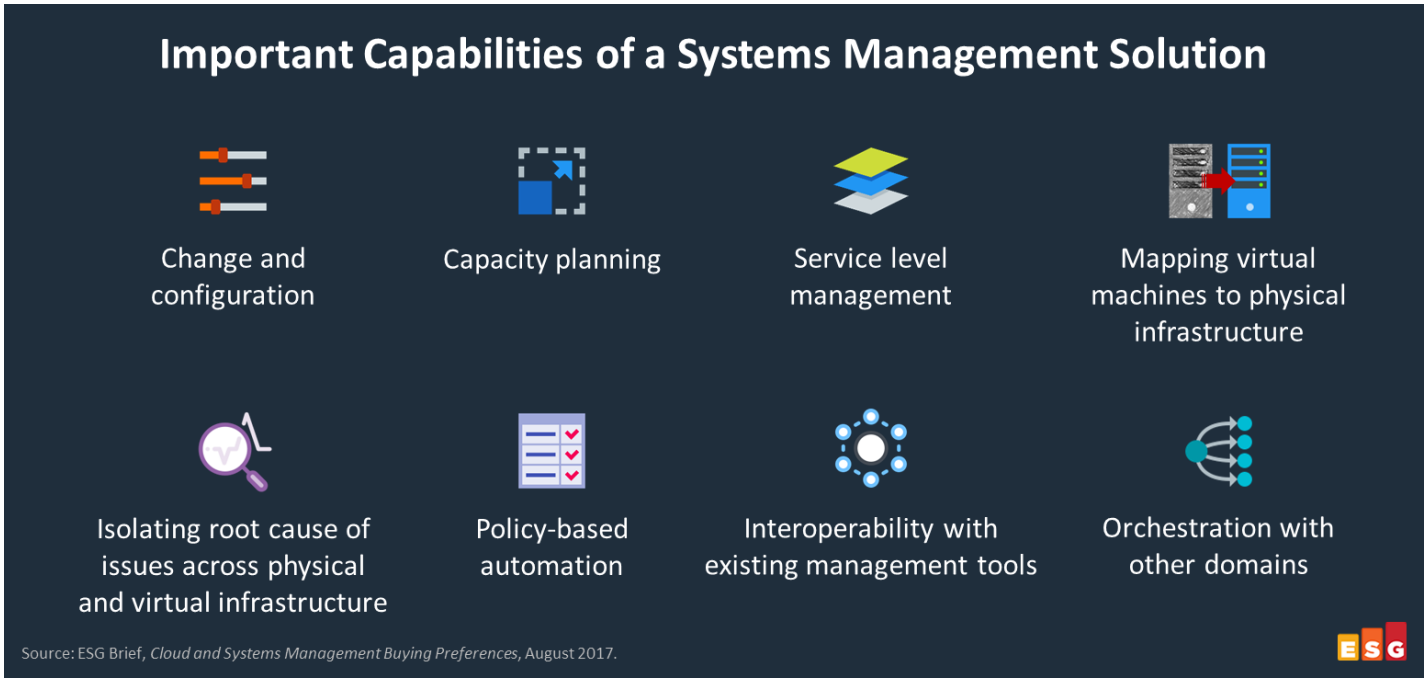
Systems Management Capabilities

Even with countless hybrid cloud adoption initiatives moving forward across industries, many companies continue to maintain much of their infrastructure footprint on-premises. In fact, ESG research from 2017 shows that 42% of organizations expected to have a significant on-premises IT footprint (i.e., most applications and workloads will still run on-premises) five years from that point.[1] To that end, organizations need to consider updating their systems management programs, specifically on the operations front. Due to the massive amounts of telemetry data generated in and across data centers, it's been a struggle for IT personnel to definitively determine the best ways to deal with, and gain business insights from, telemetry data to improve operational efficiency. The real question is what are organizations looking for in a systems management platform?

Based on ESG research, 37% of organizations said that managing infrastructure change and configuration was one of the most important capabilities of a systems management solution, while 36% said that capacity planning was. Some additional responses included SLA management, mapping VMs to physical infrastructure, root cause analysis across physical and virtual infrastructure, policy-based automation, interoperability with existing management tools, and orchestration with other domains (see Figure 1).[2] In addition, further ESG research shows that 63% of organizations would prefer to consolidate on a single overarching systems management suite from a single vendor, rather than rely on multiple tools based on each vendor's offering.[3] With a single systems management vendor, there are obvious efficiency gains, especially when that vendor is able to work with a number of different technology vendors across an organization's technology stack.

[1] Source: ESG Brief, *On-premises Infrastructure Is the Key to Hybrid Cloud*, June 2017.
[2] Source: ESG Brief, *Cloud Increases Systems Management Complexity and Capability*, July 2017.
[3] Source: ESG Brief, *Cloud and Systems Management Buying Preferences*, August 2017.

Figure 1. Important Capabilities of a Systems Management Solutions



Source: Enterprise Strategy Group

Using Intelligent Operations: Artificial Intelligence and Machine Learning

While the aforementioned capabilities are important, a solution that possesses all or close to all of them presents a different problem. IT administrators are then tasked with executing their extended job responsibilities across all of those capabilities. Simply put, there is too much information for humans to efficiently analyze. There are too many concurrent events happening across various technologies to effectively process, filter, analyze, and act upon. Many organizations have a variety of siloed tools (server tools, virtual machine tools, event monitoring tools, etc.) along with networks and storage. How does IT look across their application's data path and determine whether it's optimized? If IT has a problem, can they see where the problem lies on the data path? Is it the server? The virtual machine? The application? The network? The storage?

These common scenarios are driving the need for intelligent operations that leverage emerging technologies, such as artificial intelligence (AI) and machine learning (ML), to help IT administrators more efficiently do their jobs. With ML aiding IT operations, IT administrators can automate the real-time collection and analysis of constantly generated telemetry data across the infrastructure. By tying and analyzing telemetry data together with historic data, IT can ensure the infrastructure remains online, optimized, and secure—by monitoring, detecting, and correlating previously inaccessible data, identifying potential issues and risks, and recommending viable solutions.

AI enables IT to focus on value-added business initiatives rather than on routine and labor-intensive tasks by processing data and detecting patterns to gain business insights that can help improve decision-making, mitigate potential risks, and aid in budget planning. In addition, automating routine tasks, whether for analytics functions, provisioning, or general administration ensures best practices are consistently implemented, while at the same time reducing the risk of human error. In fact, according to ESG research, improving operational efficiency is the most important objective IT expects to accomplish from their organizations' investments in the area of AI/ ML.[4]

[4] Source: ESG Survey, *Machine Learning and Artificial Intelligence Trends*, June 2017.

So where can organizations find a comprehensive systems management platform integrated with AI/ML, and leave behind inefficient processes and lack of actionable information? Enter Hitachi Vantara.

Hitachi Vantara's Intelligent Operations Strategy

Hitachi Vantara offers multiple solutions and services to enable organizations to get a grip on their operational data and derive insights that impact the business. This will help businesses looking to leverage software to enable a better do-it-yourself infrastructure management approach across a heterogenous infrastructure, or leverage a managed service for complete hands-off data management operations that connects IT and business data, yielding operational excellence, maximized productivity, and cost savings spanning across global on-premises data centers and the cloud.

Hitachi Vantara's AI Operations

Hitachi Vantara's AI operations consist of a suite of intelligent, integrated systems management software. Powered by artificial intelligence and machine learning, AI operations are based on two newly enhanced software products, Hitachi Ops Center Analyzer and Hitachi Ops Center Automator. By tying these two products together, organizations gain the ability to more easily and, in many cases, automatically analyze and manage an organization's data center environment—from servers, virtual machines, networking to storage—in order to optimize the entire data path of an application.

Hitachi Vantara's AI operations focus on deriving strategic business outcomes, presenting viable approaches for organizations to optimally transform their data centers via intelligent operations (AI/ML)—increasing efficiency and reducing overhead by eliminating the need for separate tools with separate support centers to perform the same functions.

Offering the ability to monitor an organization's complete environment, Hitachi Vantara's AI operations can be leveraged to identify previously undetectable patterns and problems, as well as determine which point in the data pipeline needs to be optimized (and which doesn't). AI operations automate problem identification, determine root cause, and present the best course of action to troubleshoot and mitigate or solve the problem faster than using individual vendor- or domain-specific tools.

The Brain, the Engine, and the Amplifier

Hitachi Vantara's new AI operations strategy is built upon three concepts: The Brain (Ops Center Analyzer); the Engine (Ops Center Automator); and a tool, for the purposes of this white paper called the "Amplifier," which provides a means to integrate other Hitachi and third-party tools. Hitachi Vantara's integration of its existing Infrastructure Ops Center Analyzer and Ops Center Automator software now offers the ability to determine dynamic thresholds, analyze and resolve the root cause, automate changes to resolve problems, and use analytics to predict future resource requirements. The vendor uses ML (gathering telemetry data and analyzing it) to make intelligent recommendations (AI).

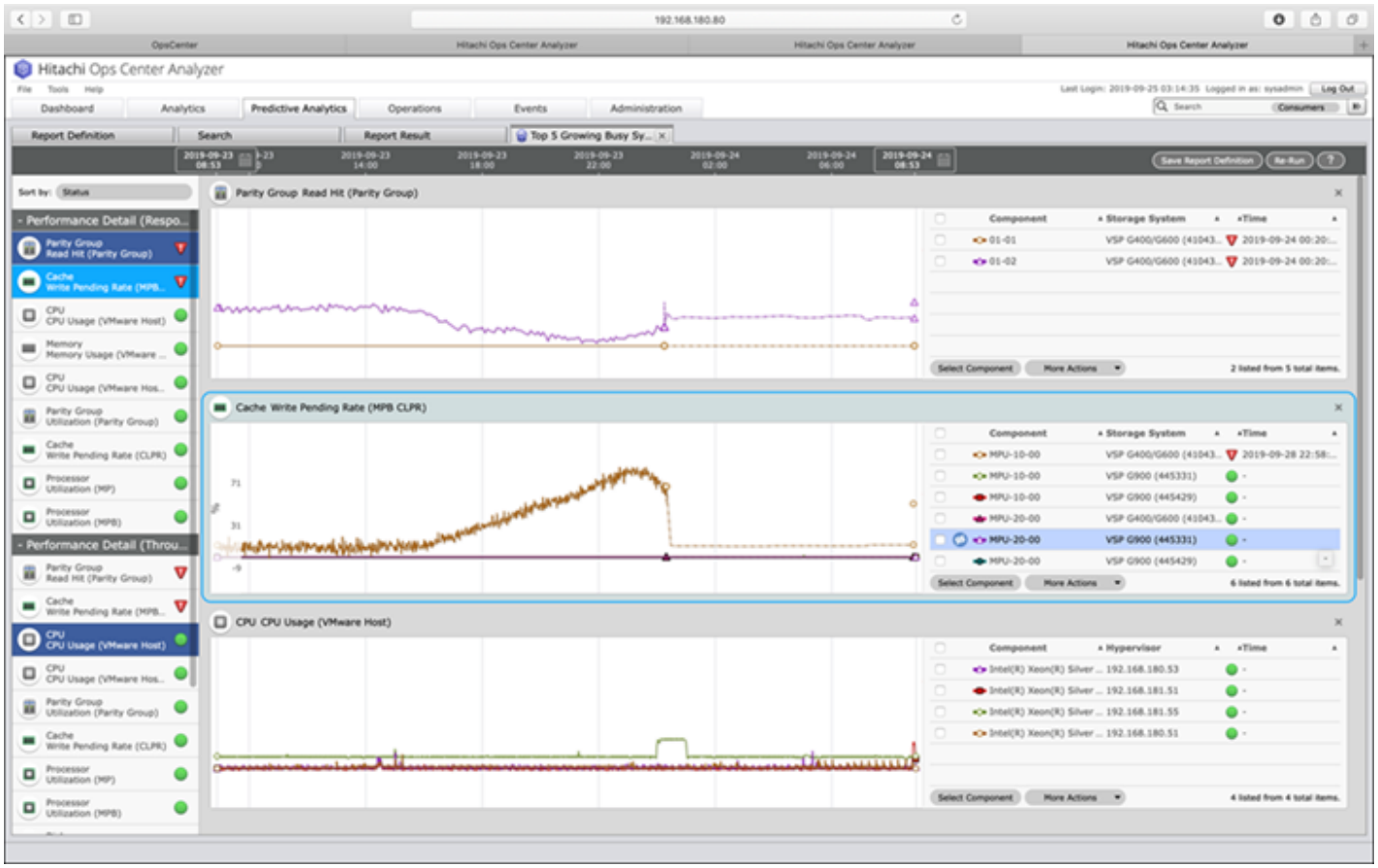
- The Brain analyzes data to ensure service levels are met and provide recommendations to optimize resources.
- The Engine automates actions and management provisioning workflows to accelerate resource delivery.
- The Amplifier further extends actions and analysis by integrating other Hitachi and third-party tools, such as IT Service Management (ITSM).

The Brain: Hitachi Ops Center Analyzer

Ops Center Analyzer, the brain of the AI operations strategy, is powered by ML and AI to provide data center-wide monitoring and insight. Ops Center Analyzer helps IT understand resource behavior, predict issues, troubleshoot problems, and forecast trends. This enables organizations to leverage telemetry data reported by VMs, servers, network, and storage components and infer application service level agreements are properly met while automatically identifying when and where anomalies occur across the entire data path. Because Ops Center Analyzer is tied to Ops Center Automator (the Engine), IT can launch the integrated automation tool to take optimization or repair recommendations a step further—by performing the configuration changes directly within the orchestration tool.

While Ops Center Analyzer doesn't touch upon the applications sitting on a hypervisor or server, the solution looks at analytics across the complete data path—on the hypervisor and the server, through the network to the storage, regardless of which hypervisor (VMware vSphere, Microsoft Hyper-V, and OpenStack), network (Brocade and Cisco), operating system (Windows and Linux), or storage (Hitachi or third- party) is being used. With a flexible deployment model (on- premises or as-a-service in the cloud), organizations can leverage the end-to-end data center analytics to improve infrastructure uptime, maintain optimal resource utilization, improve budget planning, and maximize return on investment with data-driven analytics insights.

Figure 2. Predictive Analytics with Hitachi Ops Center Analyzer



Source: Hitachi

The Engine: Hitachi Ops Center Automator

Ops Center Automator serves as an automated orchestration tool, helping to streamline management workflows and practices to reduce manual processes, so IT can automatically orchestrate the delivery of resources for a new workload or application. Business application-based best practices are built into the product, enabling the process to be more efficient. An available service catalog provides IT with self-service capabilities, while granular role-based access controls allow administrators to define various levels of access to support end-user self-service.

Additionally, organizations can customize existing or new workflow policies that benefit from integrated machine learning, which drives the categorization of resources, helping IT optimally deploy storage services and SAN zoning, or streamline configuration changes based on suggested problem resolutions with Ops Center Analyzer. With a REST- based API for easy integration across various analytics and service management products, organizations are able to gain deep levels of management visibility and transparency across the complete IT stack.

The Amplifier: Integrates other Hitachi and Third-party Tools

Hitachi Vantara is offering a standards-based API (the "Amplifier") to amplify the use of its tools within an existing management environment. A catalog of REST APIs is available for both Ops Center Analyzer and Ops Center Automator so organizations can benefit from a multi-directional data flow strategy. With Ops Center Analyzer, telemetry data can be passed to third-party tools for reporting or BI, while Ops Center Automator can not only automate anything with an API (think incident ticket creation or VM deployment), but also can execute automation requests from other third-party tools.

Smart Data Center from Hitachi Vantara

Smart Data Center from Hitachi Vantara is a subscription-based solution that leverages Hitachi's Ops Center software including Ops Center Analyzer and Ops Center Automator to analyze organizational data, predict results, and provide automated resolution across heterogeneous infrastructures. By combining data center analytics and automation with IoT device data, Smart Data Center can help organizations achieve operational excellence. Smart Data Center integrates operational data from systems, logs, and devices, with non-IT data associated with the business, to deliver more than simply operational analysis and recommendations. The solution can correlate those findings to uncover the impact to the business. And best of all, the burden to achieve these insights is not placed on IT staff or business analysts. System management and analytics insights are delivered by Hitachi Vantara, completing the subscription solution offering.

Smart Data Center enables IT to be less of a cost center and more of a business enabler. Organizations gain an understanding into the impact IT has on the business by providing transparency across IT and non-IT data. This starts with intelligent IT operations, where Hitachi Vantara provides advanced technology anchored with AI and machine learning to analyze and predict issues associated with capacity, performance, and health of the global IT infrastructure. This includes providing organizations with customized dashboards that best enable self-service to optimize and maximize resource utilization for operational cost savings. By incorporating IT infrastructure analytics, workflow automation, remote operations (monitoring, alerting, and reporting), support, and chargeback, organizations can be more strategic in their business planning, with the goals of embracing new business models to remain competitive and disruptive.

End-to-end Analytics and Insights

Smart Data Center consolidates operational data silos and sources across countries, business units, and data centers to accurately and efficiently correlate the right data to the right business outcome. And due to the vastness of the data sources and types supported, machine learning is leveraged to speedily uncover insights that were previously unattainable simply due to complexities associated with data integration.

Monitoring and Alerting

Organizations monitor the end-to-end infrastructure in real time, gaining insight through alerting capabilities that are used to enhance and predict issues. Whether diagnosing a bottleneck or isolating an incident, organizations can better meet advanced SLAs across their global data infrastructure to yield improved business outcomes.

Advanced Reporting for Chargeback/Showback

Through complete transparency into infrastructure operations, IT gains an enterprise-wide view into resource utilization from various business units and end-users. This newfound understanding into how IT is consumed enables an increased accuracy into cost forecasting and budget management. Additionally, the technology arms IT with the information required to ensure all end-users are happy and able to meet their usage requirements based on current or future demands.

The Bigger Truth

With the incredible amounts of data flooding data centers across industries, to stay competitive, organizations should quickly address the ways in which they can harness and leverage machine-generated data, telemetry data, and best practice data together for rapid business insights. These insights not only foster efficient business growth but also drive operational efficiency improvements that enable organizations to begin their journey to autonomous operations.

IT must have the tools to improve resource delivery and utilization, avoid bottlenecks, analyze root causes, view end-to-end data paths, and enable self-service. To that end, Hitachi Vantara has integrated existing management tools to provide a complete AI operations platform that enables IT to monitor, plan, optimize, automate, and maintain infrastructure uptime across the entire data center—offering valuable insights needed to make better, more informed decisions that don't just positively impact the IT environment or the data center but affect the entire business. And for those organizations who want a more hands-off approach to IT operations, while gaining greater insight into the impact IT has on the business, Smart Data Center from Hitachi Vantara enables organizations to simplify, optimize, reduce risk, and save on the bottom line. Whether looking to automate operational data collection and analysis in a single data center or incorporate the vast amounts of data generated on-premises and in the cloud across a globally distributed business, Hitachi Vantara is transforming IT operations and management to better enable the right business outcomes.

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