



# The Business Value of Red Hat's Open Source Solutions for SAP

RESEARCH BY:



**Peter Rutten**  
Research Director, Infrastructure Systems,  
Platforms and Technologies Group, IDC



**Megan Szurley**  
Consulting Manager, IDC



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## BUSINESS VALUE HIGHLIGHTS



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**318%**

five-year return on investments (ROI)

**99%**

less unplanned downtime

**\$94,500**

annual benefits per 100 SAP users

**61%**

more efficient IT infrastructure teams

**24%**

more efficient IT security teams

**32%**

higher developer productivity

**24%**

faster development cycle

**\$33.02 million**

higher annual revenue per organization

## Executive Summary

Businesses that run SAP business applications need to modernize their IT environments as part of their digital transformation with a distinct focus on modernizing their SAP landscape. A major component of this modernization is the migration to SAP S/4HANA, which automatically means a move to an enterprise-class SAP-certified Linux operating system (OS). This shift to Linux opens up an opportunity to bring in Linux not just as the operating system but also as a comprehensive operating platform for the entire SAP landscape, and conceivably even for the rest of the datacenter. In this business value study, IDC shows the benefits that businesses experienced in moving from a previous environment, which could be Windows, Unix, or Linux, to a range of Red Hat's open source solutions for SAP. To validate the benefits of Red Hat's open source solutions for SAP workloads, IDC interviewed seven organizations running business-critical SAP applications on Red Hat operating environments. To qualify for this study, organizations had to run various SAP workloads, including SAP S/4HANA on Red Hat solutions such as Red Hat Enterprise Linux for SAP Solutions, Red Hat Ansible Automation Platform, Red Hat Virtualization, and Red Hat OpenShift. The data obtained from these organizations and applied to IDC's Business Value model showed that study participants realized significant value with Red Hat Solutions for SAP.

**IDC calculates that study participants will achieve a five-year return on investment (ROI) of 318% by:**

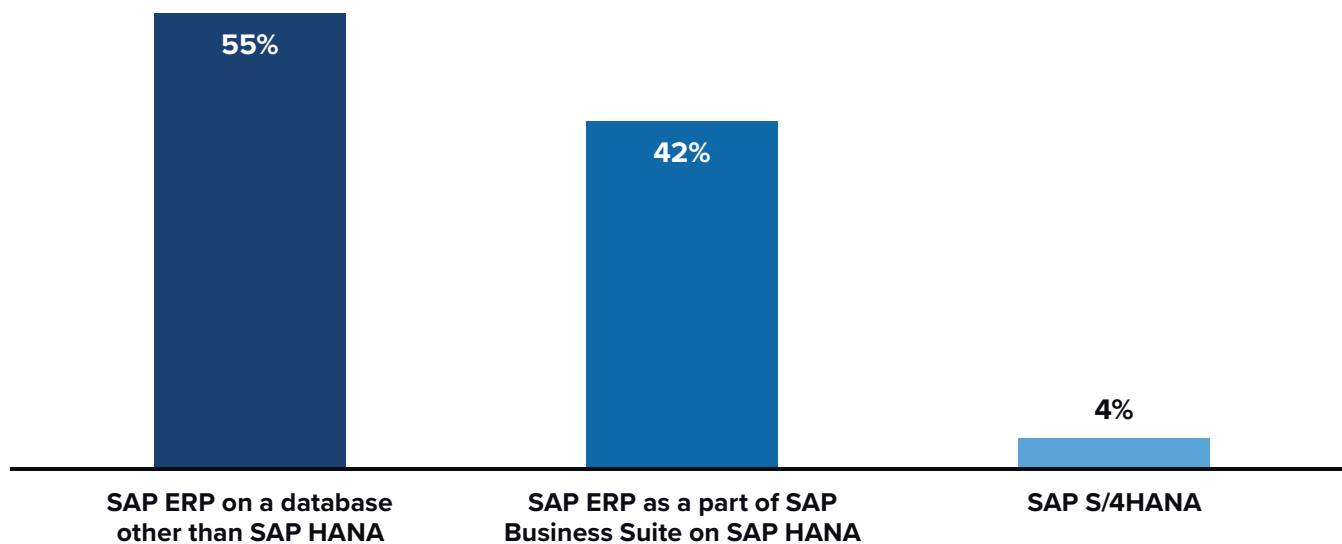
- ▶ Lowering infrastructure costs
- ▶ Increasing productivity for IT, development, and analytics teams
- ▶ Simplifying migrations and upgrades of SAP applications
- ▶ Decreasing planned and unplanned downtime
- ▶ Enabling greater business productivity

## Situation Overview

For SAP customers, the IT modernization initiatives that drive their digital transformation logically go hand in hand with a need to modernize their SAP landscape. IDC research has found that legacy multi-instance ERP continues to be the most common ERP estate for SAP customers. The next most common is an all-encompassing single-instance ERP system that provides visibility across the back-office operations but in a static way, not in real time. To date, only 20% of businesses have full visibility of their operations in real time. Only 11% are using such advanced SAP features as machine learning (ML) or Internet of Things (IoT).

In other words, most businesses still have to modernize their SAP ERP estate. IDC has found that the majority of SAP customers (54.6%) are not on the SAP HANA database yet, and only 3.6% are on the integrated database/ERP solution SAP S/4HANA (see **Figure 1**).

**FIGURE 1**  
**Current Database and SAP ERP Application**  
 (% of respondents)



n = 1,212, Source: IDC, 2021

Of those that have started to migrate to SAP S/4HANA, 59.1% live with elements of the SAP S/4HANA suite and continue to roll out more components. The reasons why businesses make the shift to SAP S/4HANA are directly linked to their overall digital transformation drivers. They first and foremost want to drive operational efficiency. Second, they need access to real-time data to adapt to changing market conditions. Third, they want to create a better customer experience. Other factors that play a role are consolidation of the SAP landscape and, of course, the desire to be ready for SAP's 2027 deadline when support for non-SAP HANA databases and classic ERP ends.

SAP modernization is not for the faint of heart, and there are some distinct challenges to be overcome. Businesses say that the most significant challenge they face is migrating the data. The second most frequently mentioned hurdle is the database migration to SAP HANA or the ERP migration to SAP S/4HANA. Third is the consolidation of different versions and instances of the current SAP landscape. Interestingly, demonstrating the business value of going through this complex process is the least mentioned difficulty—businesses are clearly able to articulate the reasons for the initiative, and they have been able to determine the expected ROI.

Because SAP modernization is a component of overall modernization and digital transformation, the operating environment plays a critical role. Moreover, since a migration to SAP HANA also means a migration to a Linux environment (or expansion of an existing Linux environment), IDC is seeing a “tail wagging the dog” effect in which the SAP modernization onto Linux triggers businesses to take a fresh look at their entire operating environment.

When asked about the role of the operating system in their SAP modernization initiative, only 12.2% of organizations said that they view the role of the OS as limited and traditional. The rest said that they view the OS as an open source ecosystem for virtualization and management of their private, hybrid, or public cloud. These organizations said they especially want to use SAP Data Intelligence (previously known as SAP Data Hub) to streamline development of SAP extensions with microservices, containers, and APIs. But they also said that being able to use predictive analytics to prevent errors that cause downtime is almost equally important. Businesses want to leverage the operating environment to automate manual tasks so they can speed up deployment and changes in the datacenter. More than 78% of businesses said that these OS capabilities are critical or very critical for their SAP landscape modernization.

## What Is Being Compared

The Business Value of Red Hat Solutions for SAP section of this study provides an overview of the business value that businesses have experienced after they moved to Red Hat's solutions portfolio for SAP. As previously stated, when businesses migrate their SAP landscape to SAP HANA, whether just the database or directly to the integrated business application SAP S/4HANA or the integrated warehouse application SAP BW4/HANA, they must also migrate to an SAP-certified and supported Linux operating system. Red Hat and SUSE are the only SAP-certified Linux distributions, and only the most recent versions of each will be supported.

Before an organization migrates to SAP HANA, it may be running its SAP applications on Oracle Database (with Solaris or Linux as the OS), on DB2 (with AIX as the OS), on Microsoft SQL Server (with Windows as the OS), or on SAP's Sybase ASE database (Linux, Windows, and AIX). The organization's SAP applications may be running on any of these operating systems as well as on Red Hat, SUSE, or another Linux distribution.

In this business value study, IDC compares before and after—*before* businesses ran their SAP workloads on Red Hat software and *after* they had moved them to run on Red Hat. The study should therefore not be interpreted as directly comparing Red Hat with its competitor in this space, SUSE. The benefits that businesses reported were realized by moving from any of the aforementioned operating systems to Red Hat Enterprise Linux. None of the participants stated that they moved from the competing SAP-certified Linux distribution to Red Hat Enterprise Linux and as a result experienced the stated benefits.

# Red Hat's Solution Portfolio for SAP Overview

Red Hat offers an extensive portfolio of solutions that enables businesses to run, develop, simplify, and extend end-to-end business processes for SAP workloads, both on premises and on any cloud. Ranging from an underlying operating system to comprehensive analytics, the Red Hat solution portfolio helps enterprises create a scalable, flexible, and intelligent infrastructure that sets them up for a future of innovation as an SAP-powered digital enterprise.

## Red Hat Enterprise Linux for SAP Solutions

Red Hat Enterprise Linux for SAP Solutions provides a range of capabilities to improve the performance of SAP HANA, including Red Hat Enterprise Linux High Availability Add-On, which is an automated high-availability solution that reduces planned and unplanned downtime in scale-up and scale-out SAP HANA, SAP S/4HANA, and SAP NetWeaver deployments. It also provides in-place upgrades and live patching capabilities for common vulnerabilities and exposures (CVEs). With the inclusion of Red Hat Insights and Red Hat Smart Management, businesses can also receive real-time assessment of risks related to performance, availability, stability, and security for their business-critical SAP applications.

## Red Hat Insights

Red Hat Insights enables IT administrators to proactively manage systems running Red Hat Enterprise Linux through a single, consistent service. Red Hat Insights, offered as a software as a service (SaaS), uses predictive analytics to detect issues, monitor security and compliance, and prescribe mitigations. The solution minimizes system downtime, supports hybrid cloud environments, and enables regulatory compliance through proactive monitoring and mitigation. Red Hat Insights can be integrated with Red Hat Ansible Automation Platform to implement prescribed mitigations. Red Hat Insights analyzes IT infrastructure against Red Hat's constantly expanding knowledge base to provide real-time assessment for risks related to performance, availability, stability, and security. Red Hat Insights is part of any Red Hat Enterprise Linux subscription, including the Red Hat Enterprise Linux for SAP Solutions subscription. With a Red Hat Enterprise Linux for SAP Solutions subscription, it also includes a SAP workload-specific dashboard, clustering hosts into SAP systems by their SAP system ID (SID), as well as SAP-specific rules for alerting system configurations, which do not meet the specifications recommended by either Red Hat or SAP. Red Hat Insights complements the SAP EarlyWatch Alert service, thereby providing a holistic view across the SAP environment that includes a bottom-up view on infrastructure health and a top-down EarlyWatch Alert view.

## Red Hat Smart Management

Red Hat Smart Management combines the ability to execute remediation plans from Red Hat Insights with the infrastructure management capabilities of Red Hat Satellite. It helps organizations more securely manage any environment that is supported by Red Hat Enterprise

Linux. Red Hat Smart Management is part of Red Hat Enterprise Linux for SAP Solutions subscriptions. As an integrated part of the Red Hat Smart Management solution, Red Hat Satellite provides a system management solution that makes it easier to deploy, manage, and secure Red Hat solutions on bare metal and virtual servers across on-premises and cloud environments. Using Red Hat Satellite, IT administrators can manage Red Hat software subscriptions and set and manage consistent system configurations such as access control across their entire IT infrastructure. Red Hat Satellite also enables applying security updates and patches efficiently with minimal disruptions. It provides support for hybrid cloud platforms and for seamless upgrades, live patches, and fixes. Red Hat Satellite can be integrated with Red Hat Insights and Red Hat Ansible Automation Platform to leverage advanced analytics to detect and mitigate risks. The software serves as an easy-to-use management solution to keep Red Hat Enterprise Linux for SAP Solutions environments running efficiently and securely and lets users group sets of SAP systems to manage them centrally.

## Red Hat Ansible Automation Platform

Red Hat Ansible Automation Platform enables scalable and secure automation of various aspects of enterprise IT operations, including resource provisioning, application life-cycle management, and network operations. It consists of an automation controller, automation engines, and hosted services like Ansible automation hub. All other products within the Red Hat portfolio can be integrated using the Red Hat Ansible Automation Platform, which provides programmatic methods to deploy, manage, and secure infrastructure resources. Red Hat Ansible Automation Platform simplifies configuration of SAP landscapes and Red Hat infrastructure. In combination with Red Hat Enterprise Linux for SAP Solutions, Red Hat Ansible Automation Platform makes it possible to automate critical transitions such as system and software upgrades with near-zero downtime.

## Red Hat Virtualization

Red Hat Virtualization is an open virtualization platform built on top of KVM. Red Hat Virtualization supports a variety of guest operating systems, including Red Hat Enterprise Linux, Microsoft Windows Server, and Microsoft Windows desktop operating systems. Red Hat Virtualization provides a centralized dashboard and programmatic access to manage virtual resources. Red Hat Virtualization can also be integrated with other Red Hat products such as Red Hat OpenShift, Red Hat Ansible Automation Platform, and Red Hat OpenStack Platform to manage both virtual machine (VM)-based and containerized workloads. Red Hat Virtualization supports a variety of software-defined storage solutions, high availability of virtual machines, and third-party tools to enable backup and restoration of virtual machines in case of failure. Red Hat Virtualization is secured using Secure Virtualization (sVirt) and Security-Enhanced Linux (SELinux) technologies to help secure and harden the hypervisor against any attacks.

## Red Hat Integration

SAP's recommended hybrid integration platform for integrations of SAP on-premises ERP systems with cloud applications is SAP Integration Suite. SAP customers running on Red Hat environments can use SAP Integration Suite for their SAP and non-SAP integrations with 2,000+ prebuilt integration flows, which reduce integration efforts and maintenance costs.

SAP Integration Suite also enables API-based integrations and innovations. For non-SAP integrations, customers can also use the SAP S/4HANA-certified integration solution Red Hat Fuse. Red Hat Integration solutions allow customers to integrate data and manage the entire API life cycle through Red Hat Fuse and Red Hat 3scale API Management, from design to implementation to API retirement, including SAP. With 3scale API Management, a fully functional API management platform, customers can benefit from its full-featured developer portal. In addition, 3scale API Management supports the OpenAPI specification, enabling import capabilities for all SAP API Business Hub APIs. Red Hat Fuse allows customers to create out-of-the-box and custom data and application integration flows using SAP and non-SAP systems.

## Red Hat OpenShift

Red Hat OpenShift is an enterprise-grade certified Kubernetes (a container orchestration) platform to build, deploy, and manage containerized applications. Red Hat OpenShift can be consumed as a fully managed service on different cloud providers or customer managed using Red Hat OpenShift Container Platform. It can be deployed on premises on bare metal servers, on virtualization platforms (Red Hat Virtualization, VMware, or Red Hat Openstack Platform), or on major cloud providers such as AWS, Google, IBM, or Azure. In addition, Red Hat Advanced Cluster Management for Kubernetes can be used to manage multiple Red Hat OpenShift clusters and applications from a single console, with built-in security policies, enabling customers on open hybrid cloud. Bringing the strength of commercial distribution of Kubernetes to the microservice architectures, containerization, and DevOps model of SAP's future digital enterprise, businesses can benefit from leveraging their own Red Hat OpenShift Container Platform instance with isolated data, storage, and network environments to adhere to their data security, privacy, and protection needs.

# The Business Value of Red Hat Solutions for SAP

## Study Demographics

IDC explored the value and benefits for organizations running SAP workloads on Red Hat's open source solutions. To understand the full impact of having a Red Hat operating environment, IDC conducted interviews that were quantitative and qualitative in nature. Study participants had significant knowledge about the impact that Red Hat had on SAP functionality and as a result were able to distinguish the specific business and operational benefits that the Red Hat solutions brought to their SAP environments. During these interviews, customers cited the impact Red Hat had on SAP from the point of view of IT operations, business, and cost.

Organizations interviewed had an average employee base of 11,557 and average annual revenue of \$4.7 billion. These organizations had an IT staff of 517 individuals who supported 124 unique SAP business applications. Interviewed Red Hat customers were headquartered in the United States and represented the following vertical industries: manufacturing (3), professional services, finance, telecom, and biotech. **Table 1** (next page) provides additional firmographics of interviewed organizations.



TABLE 1

## Firmographics of Interviewed Organizations Using Red Hat for SAP

| Firmographics                   | Average   | Median |
|---------------------------------|---|--------|
| Number of employees             | 11,557  | 6,000  |
| Number of IT staff              | 517   | 400    |
| Number of business applications | 124   | 103    |
| Annual revenue                  | \$4.7B  | \$1.5B |
| Countries                       | United States (7)   |        |
| Industries                      | Manufacturing (3), professional services, finance, telecom, and biotech |        |

n = 7, Source: IDC In-depth Interviews, February–May 2021

## Choice and Use of Red Hat Solutions for SAP

Study participants described several reasons for selecting Red Hat's open source solutions to serve as a foundation for SAP workloads. Largely, interviewed companies recognized that SAP applications were business critical in nature, and because of this, they had a need for enterprise-level support and additional agility and scalability to meet never-ending business demands.

### Study participants spoke to the criteria upon which they made the decision to run SAP on Red Hat:

▶ **Modernized enterprise-level foundation for SAP:**

*"We needed to have a modern outlook for our SAP environment, which means having a foundation that's scalable. We want to expand and grow our business, so we went with Red Hat for scalability and flexibility and the ability to support enterprise-level solutions."*

▶ **Cloud management services for patching and configuration control:**

*"What Red Hat gives us for our SAP environment is cloud management services for better deployment. That helps with the patching for SAP S/4HANA and the configuration control that we need for the different environments such as production, development, and testing."*

▶ **Convenient and mature technical support:**

*"We chose Red Hat because of the maturity of the technical staff. Their people know what they are doing, and their solutions are easy for us to work with ... We chose Red Hat over [another solution] because we have existing staff who are trained and certified in Red Hat. Also, there are technical benefits of Red Hat—a lot of our code base is already written in the Red Hat environment."*

Study participants reported making broad use of Red Hat's open source solutions for running their SAP applications and systems, with all interviewed organizations using Red Hat Enterprise Linux and most organizations also using Red Hat Ansible Automation Platform, Red Hat Virtualization, Red Hat OpenShift, and Red Hat Integration. Interviewed organizations implemented Red Hat solutions after using a mix of other solutions. They described running varied SAP environments on their Red Hat operating environments, with four organizations running SAP S/4HANA and several each running SAP HANA, SAP Business Suite, SAP Business Warehouse, and SAP Data Intelligence.

**Table 2** provides in-depth details about study participants' use of Red Hat solutions for SAP. Organizations ran an average of 29 SAP applications on 19 physical servers. There were approximately 8,158 internal users of those applications, showcasing the importance of a reliable foundation for their SAP environments. Even further demonstrating the criticality of Red Hat solutions for SAP, organizations attributed 85% of their annual revenue to SAP workloads running on Red Hat's open source solutions.

**TABLE 2**  
**Red Hat for SAP Use by Interviewed Organizations**

|  | Average | Median |
|--|---------|--------|
| Number of SAP applications                                   | 29      | 8      |
| Number of internal users of SAP applications                 | 8,158   | 2,288  |
| Number of physical servers                                   | 19      | 22     |
| Number of terabytes (TB)                                     | 558     | 75     |
| Percentage of revenue related to Red Hat for SAP environment | 85%     | 100%   |

n = 7, Source: IDC In-depth Interviews, February–May 2021

## Business Value and Quantified Benefits of Red Hat Solutions for SAP

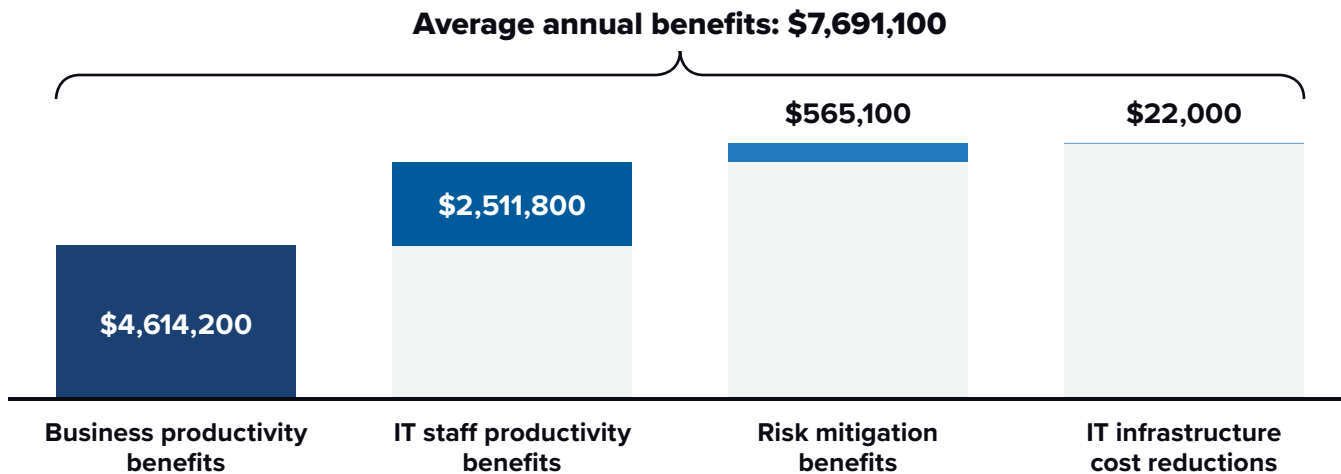
Interviewed organizations identified many benefits of operating SAP on a Red Hat environment. Most notable benefits centered around increasing reliability and agility because of the ease of use and predictability that Red Hat environments brought to SAP. In addition, for many study participants, Red Hat allowed for greater innovation because staff had more time to work in other areas.

**Specifically, organizations stated the following benefits of Red Hat solutions for SAP:**

- ▶ **Ease of use, strong documentation, and performance:**  
*“The most significant benefits for us of having a Red Hat operating environment for SAP [are] ease of use and better documentation. Red Hat is enterprise level and provides strong support when we experience a glitch.”*
- ▶ **Uptime required by business:**  
*“The most significant benefit that we see with Red Hat solutions for our SAP environment is getting the uptime that we need, the system just runs ... We’re more agile and we can actually deploy during the day with minimal disruption, so there’s a lot less planned downtime.”*
- ▶ **Faster to market with new features:**  
*“With Red Hat, we can get new features out faster, and because the team isn’t spending all their time worried about ‘lights on’ work, they can work on enhancements and they can work on things the customers want.”*
- ▶ **Automation that enables innovation for business:**  
*“We’re using Red Hat Ansible Automation Platform to deploy code for our SAP environment and also to manage and automate it ... It helps us to have innovation, together with business process decision modeling through reports and dashboards, to understand business activity and security.”*
- ▶ **The flexibility to scale with business need:**  
*“Red Hat gives us a scalable infrastructure for our SAP environment. When we talk about expanding and growing our business, we want to go with a vendor [that is] scalable [and] flexible and has the ability to support enterprise-level solutions.”*

These benefits and more resulted in a total average annual benefit of over \$7 million for organizations. **Figure 2** showcases how a Red Hat environment for SAP enabled agility and scalability for participants, especially regarding business and IT staff productivity.

**FIGURE 2**  
**Annual Average Benefits per Organization**  
 (\$ per organization per year)

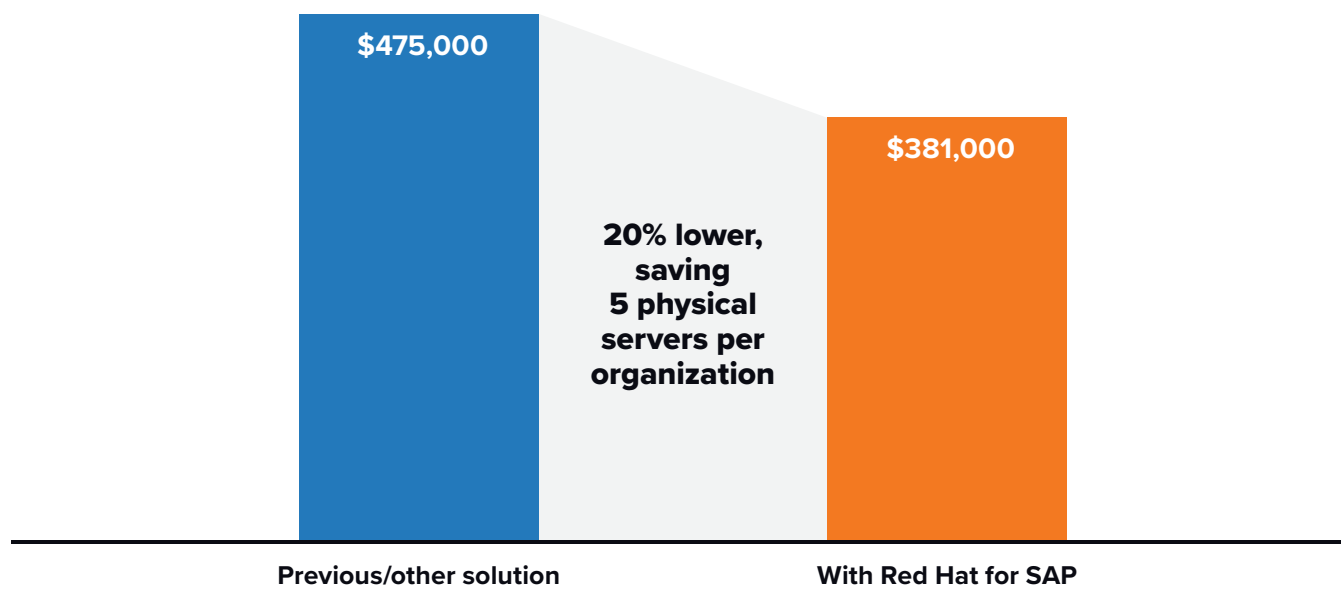


n = 7, Source: IDC In-depth Interviews, February–May 2021

## IT Infrastructure and Staff Cost Efficiencies

An important benefit of using Red Hat's open source solutions with SAP workloads was reducing the overall cost of IT infrastructure. As **Figure 3** demonstrates, organizations were able to operate five fewer servers than they would have otherwise required. This amounted to 20% savings over five years. One organization noted: *“Red Hat helps us avoid hardware for our SAP environment through its support and automatic updates ... With the unsupported version, we had to have a lot of headroom because we didn't know what would happen; now, we can run our infrastructure tighter because of the lower risk with Red Hat.”*

**FIGURE 3**  
**Five-Year Server Infrastructure Costs**  
 (\$ per organization over five years)



n = 7, Source: IDC In-depth Interviews, February–May 2021

In addition to IT infrastructure savings, organizations recognized noteworthy efficiencies for their IT staff. Largely, organizations reported that Red Hat simplified operations through automation and support. Because of the high level of integration of Red Hat and SAP, cumbersome systemwide upgrades were needed with less frequency and application migration was simplified.

### Integration of Red Hat and SAP created a rather large efficiency leading to more time for IT staff to spend on innovation or on other important initiatives:

► **Integration means that fewer large upgrades are required:**

*“Red Hat saves us from big, huge forklift upgrades because of how easily we can integrate with our architecture when the number of users and transactions increases because Red scales easily.”*

▶ **Automation frees up staff to work on other activities:**

*“Being on Red Hat helps us get support for our SAP environment ... And we can automate management of development, storage, and middleware from our resources ... Our IT infrastructure team can write more documentation, provide more training, and focus on other aspects of infrastructure, like security and stuff like that, with Red Hat.”*

▶ **Migration of new applications has been simplified:**

*“If we had to put these new apps onto the old system, we would have had to do a lot of migration. We would have had to work with the vendor and would have had to outsource a team. That would have taken probably a year and probably it would be double the number of people that we used for this without Red Hat.”*

The benefits previously noted helped IT infrastructure teams move more seamlessly and efficiently. As shown in **Table 3**, with Red Hat solutions for SAP, IT infrastructure teams recognized a difference of 8.5 full-time equivalents (FTEs) per organization over their prior solutions, a 61% benefit, which represents significant efficiency in terms of freeing up staff to handle other activities and enable growth for SAP environments.

**TABLE 3**  
**IT Infrastructure Team Efficiencies**

|   | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Benefit |
|---|-----------------------------|-------------------------|------------|---------|
| Staff time to manage infrastructure per organization (FTEs) | 13.9                        | 5.4                     | 8.5        | 61%     |
| Number of staff hours per year per 100 SAP users            | 320.0                       | 124.0                   | 196.0      | 61%     |
| Value of staff time per year                                | \$1.39M                     | \$538,000               | \$849,000  | 61%     |

n = 7, Source: IDC In-depth Interviews, February–May 2021

Security teams also recognized a significant benefit from using a Red Hat operating system. Customers indicated that Red Hat was reliable and secure for both internal and external users. One participant noted: *“We have better customer security with Red Hat ... We probably would have lost some of our bigger customers because of this, which would create revenue leakage. It’s better customer relationships with Red Hat for our SAP environment, which is a good thing.”* As shown in **Table 4** (next page), these efficiencies translated to the security team, as interviewed organizations recognized a 24% benefit.

**TABLE 4**  
**Security Team Efficiencies**

|   | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Benefit |
|---|-----------------------------|-------------------------|------------|---------|
| Staff time to secure infrastructure per organization (FTEs) | 8.5                         | 6.4                     | 2.1        | 24%     |
| Number of staff hours per year per 100 SAP users            | 196.0                       | 148.0                   | 48.0       | 24%     |
| Value of staff time per year                                | \$849,100                   | \$642,900               | \$206,200  | 24%     |

n = 7, Source: IDC In-depth Interviews, February–May 2021

While somewhat smaller than the other IT teams, database administration teams also recognized a benefit of 13% (see **Table 5**). Several participants stated that Red Hat offered very high enterprise-level support. This support helped customers manage their databases related to SAP environments in a timely and efficient manner. Red Hat also gave customers the ability to manage credentials and scale with ease. One customer stated: *“We chose Red Hat for manageability. Red Hat has more features for managing at scale and managing common credentials.”*

**TABLE 5**  
**Database Administrator Team Efficiencies**

|  | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Benefit |
|--|-----------------------------|-------------------------|------------|---------|
| Staff time to manage databases per organization (FTEs) | 12.2                        | 10.7                    | 1.5        | 13%     |
| Number of staff hours per year per 100 SAP users       | 281.0                       | 246.0                   | 35.0       | 13%     |
| Value of staff time per year                           | \$1.22M                     | \$1.07M                 | \$152,400  | 13%     |

n = 7, Source: IDC In-depth Interviews, February–May 2021

These efficiencies resulted in a positive impact on a number of key performance indicators for the IT team. **Table 6** (next page) demonstrates that when deploying additional compute resources, organizations saw a 54% efficiency, which resulted in saving 29.3 hours of staff time over previous solutions for each compute deployment. When deploying new storage solutions, they saw an even larger impact at 63%, saving staff a significant 43 hours per deployment.

**TABLE 6**  
**IT Agility Key Performance Indicators (KPIs)**

|   | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Efficiency |
|---|-----------------------------|-------------------------|------------|------------|
| Time needed to deploy additional compute resources (days)   | 13.9                        | 6.4                     | 7.5        | 54%        |
| Staff time required to deploy new compute resources (hours) | 44.6                        | 15.3                    | 29.3       | 66%        |
| Time needed to deploy new storage resources (days)          | 18.2                        | 6.7                     | 11.5       | 63%        |
| Staff time required to deploy new storage resources (hours) | 52.1                        | 9.3                     | 42.8       | 82%        |

n = 7, Source: IDC In-depth Interviews, February–May 2021

## Development Team Cost Efficiencies

Red Hat's open source solutions for SAP workloads helped organizations realize many productivity efficiencies for their development teams. Interviewed organizations stated that with Red Hat, developers were able to move with greater agility, allowing them to effectively answer business and customer needs and, as a result, go to market faster with new applications or features. In addition to being able to move more quickly, developers were able to create tested and robust frameworks for applications and features with Red Hat operating systems. One customer stated: *"We have 15 developers working in our Red Hat for SAP environment, and they are saving 20% of their time ... Red Hat helps the developers because it's a framework that we have cocreated with our Red Hat and SAP teams so that each developer has a set amount of responsibility, which makes them accountable. So Red Hat helps us create a framework for the development process."*

The benefits previously noted had a strong impact on productivity for development teams. The agility offered by Red Hat's open source solutions for SAP development activities helps developers react to business needs in a more timely manner. For example, Red Hat enables developers to create robust frameworks for testing thoroughly and quickly. One customer noted: *"Agility is particularly important for us with Red Hat for when we are coming up with solutions that we want to get to market fast, and having Red Hat helps us deliver to our customers in one quarter as opposed to six months previously. The difference is significant."* **Table 7** (next page) illustrates that with increased agility, developers were able to produce 47% more new applications and 50% more new features, thereby meeting business needs for new and enhanced digital functionality for SAP environments. Further, they did this more quickly, streamlining development life cycles by an average of 24% for new applications and 35% for new features. This equates to users and customers having access to new applications 4.5 weeks earlier and new features 4.1 weeks earlier on average. For interviewed study participants, this has resulted in an average productivity gain of 32% of developers working in their SAP environments, representing an important gain in the capabilities and capacity for their development teams.

**TABLE 7**  
**Development KPIs**

|                                     | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Efficiency |
|-------------------------------------|-----------------------------|-------------------------|------------|------------|
| <b>New applications</b>             |                             |                         |            |            |
| Number of new applications per year | 4.8                         | 7.0                     | 2.2        | 47%        |
| Number of weeks per new application | 18.8                        | 14.3                    | 4.5        | 24%        |
| <b>New features</b>                 |                             |                         |            |            |
| Number of new features per year     | 62.2                        | 93                      | 30.8       | 50%        |
| Number of weeks per new feature     | 11.7                        | 7.6                     | 4.1        | 35%        |

n = 7, Source: IDC In-depth Interviews, February–May 2021

Study participants also described achieving important benefits in terms of enhancing the overall agility of their SAP environments. They reported being able to migrate and upgrade new SAP applications and/or features with greater ease. The benefits previously noted helped IT infrastructure teams move more seamlessly and efficiently in executing migrations and upgrades. An interviewed organization stated: *“Having a Red Hat environment has helped with SAP updates because we can literally pick up the phone and call Red Hat support ... We probably completed a Red Hat for SAP upgrade in a month in total, including project planning. If we were still on [unsupported alternative], it would probably have been longer than that, say two months.”* Supporting this statement, **Table 8** illustrates that with Red Hat's open source solutions for SAP workloads, study participants saved nearly three weeks' worth of time on average for these tasks, amounting to a 78% benefit for their organization. This type of efficiency is beneficial for organizations in terms of not only saving staff valuable time but also helping them generate value from SAP-related upgrades or enhancements in a shorter time frame.

**TABLE 8**  
**Impact on SAP Migrations and Upgrades**

|  | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Benefit |
|--|-----------------------------|-------------------------|------------|---------|
| Time to complete migration/upgrade (weeks)           | 3.5                         | 0.8                     | 2.7        | 78%     |
| Staff time to complete per migration/upgrade (hours) | 797.0                       | 199.0                   | 598.0      | 75%     |

n = 7, Source: IDC In-depth Interviews, February–May 2021



## Risk Mitigation Benefits

Interviewed organizations have also created a more productive environment with far less downtime affecting their SAP systems when using Red Hat's open source solutions. Because SAP applications are often business critical in nature, when the applications go down, there is an impact on employee productivity and revenue. Red Hat enabled organizations to reduce the risk associated with both unplanned and planned outages with enterprise-level application foundation, support, and compliance.

### Red Hat solutions for SAP customers indicated:

▶ **Agility helps better address business opportunities:**

*"Red Hat helps us with addressing business opportunities because we're more agile; so if there's a systems requirement, we can actually make the change and streamline the process ... For example, we can extend partnerships to more companies to do business with because we're more open and agile with easier integration."*

▶ **Risk associated with business-critical environments is limited:**

*"100% of our revenue is tied to SAP; the entire company is using it, and it's for business-critical applications. We want to be able to pull the emergency lever and know that it is supported, and we have a third party to call. For the unsupported version, SAP supports running components but not the operating system like with Red Hat."*

▶ **Patching enables more efficient compliance:**

*"Red Hat Enterprise Linux and its included Red Hat Insights give us more effective system management for our SAP environment. What it comes down to is that patching was important because we have to respond to Sarbanes-Oxley audits, so it's important to have automated and backup patching."*

**Table 9** (next page) demonstrates the impact Red Hat for SAP Solutions had on unplanned downtime. With Red Hat solutions, organizations decreased the frequency of unplanned downtime by an average of 64% and could resolve outages 70% faster on average. This resulted in saving 1.6 productive hours per user per unplanned outage, a very impactful 99% efficiency, bringing operational risk associated with unplanned SAP outages to close to zero in terms of lost productivity.

**TABLE 9**  
**Impact of Unplanned Downtime**

|   | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Benefit |
|---|-----------------------------|-------------------------|------------|---------|
| Unplanned outage per year                         | 9.6                         | 0.2                     | 9.4        | 64%     |
| Mean time to recovery (MTTR)<br>(hours per event) | 4.0                         | 0.8                     | 3.3        | 70%     |
| Calculated FTE impact                             | 7.1                         | 0.1                     | 7.0        | 99%     |
| Lost productivity (hours per user)                | 1.6                         | 0                       | 1.6        | 99%     |
| Value of lost productive time per year            | \$493,600                   | \$4,600                 | \$489,000  | 99%     |

n = 7, Source: IDC In-depth Interviews, February–May 2021

In addition to decreasing the frequency of unplanned downtime, Red Hat's open source solutions for SAP workloads decreased the need for planned outages. This is largely because of the deep level of integration that Red Hat has with SAP, giving organizations the agility needed to push out real-time updates. An interviewed organization noted: *"We're constantly thinking of adding additional modules to our SAP environment, and we can test much easier with Red Hat. Second, change management is better with Red Hat, and we can actually deploy updates during the day, so it's more agile. There's a lot less planned downtime as a result."* **Table 10** illustrates that organizations running SAP on Red Hat's open source solutions were able to decrease planned downtime events by six outages per year, a 65% benefit, with users losing an average of 90% less productive time due to planned outages.

**TABLE 10**  
**Impact of Planned Downtime**

|  | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Benefit |
|--|-----------------------------|-------------------------|------------|---------|
| Planned outage per year                | 9.2                         | 3.2                     | 6.0        | 65%     |
| MTTR (hours per planned outage)        | 7.6                         | 0.8                     | 6.8        | 89%     |
| Calculated FTE impact                  | 1.6                         | 0.2                     | 1.5        | 90%     |
| Lost productivity (hours per user)     | 0.4                         | 0.04                    | 0.3        | 90%     |
| Value of lost productive time per year | \$114,100                   | \$11,100                | \$103,000  | 90%     |

n = 7, Source: IDC In-depth Interviews, February–May 2021

## Business Productivity Benefits

Interviewed organizations were able to distinguish distinct business productivity benefits that they are achieving as a result of running their SAP environments on Red Hat's open source solutions and cited specific revenue gains and operational efficiencies. For example, because of the robust frameworks and well-documented methodologies of Red Hat's open source solutions, analytics teams are on average 33% more productive with SAP running on Red Hat (see **Table 11**). IDC calculates the value of enhanced analytics team productivity levels at \$338,400 per organization. Supporting these statistics, a customer said: *"We need to make sure we have a clear methodology based on enterprise-level technologies and that Red Hat Integration and other solutions give us an enterprise-level framework that works with SAP HANA."*

**TABLE 11**  
**Analytics Productivity Gains**

|  | Previous/<br>Other Solution | With Red Hat<br>for SAP | Difference | Benefit |
|--|-----------------------------|-------------------------|------------|---------|
| Equivalent productivity of analytics teams per organization (FTEs) | 14.9                        | 19.7                    | 4.8        | 33%     |
| Value of staff time/productivity per year per organization         | \$1.04M                     | \$1.38M                 | \$338,400  | 33%     |

n = 7, Source: IDC In-depth Interviews, February–May 2021

With the added ability to support market demands in an efficient manner, organizations were able to attribute additional net revenue for business enablement to Red Hat's open source solutions. IDC calculated the average value of revenue gains at \$33.02 million per year per organization — one of the larger specific benefits seen by interviewed organizations. As shown in **Table 12**, assuming a 15% operating margin, interviewed organizations recognized \$60,700 of additional net revenue per 100 users, which amounts to nearly \$5 million total additional net revenue per organization.

**TABLE 12**  
**Business Enablement per Organization**

| Higher Revenue                           | Per Organization | Per 100 Users |
|--|------------------|---------------|
| Total additional gross revenue per year  | \$33.02M         | \$404,700     |
| Assumed operating margin                 | 15%              | 15%           |
| Total additional net revenue — IDC model | \$4.95M          | \$60,700      |

n = 7, Source: IDC In-depth Interviews, February–May 2021

## ROI Summary

**Table 13** presents IDC's analysis of the financial benefits and investment related to study participants' use of Red Hat's open source solutions for SAP workloads. According to IDC, organizations will make a total discounted investment of \$6.42 million over a five-year period when acquiring and operating Red Hat's open source solutions. As a result of lower costs of IT infrastructure, staff productivity gains, reduced unplanned downtime, and business enablement, interviewed organizations will achieve a total discounted five-year benefit of \$26.8 million. IDC calculates that given the previously stated investment and benefit levels, interviewed organizations will achieve a five-year ROI of 318% with a payback period of 13 months.

**TABLE 13**  
**Five-Year ROI Analysis**

|                         | Per Organization | Per 100 Users |
|-------------------------|------------------|---------------|
| Benefit (discounted)    | \$26.83M         | \$328,900     |
| Investment (discounted) | \$6.42M          | \$78,700      |
| Net present value (NPV) | \$20.42M         | \$250,300     |
| ROI (NPV/investment)    | 318%             | 318%          |
| Payback period          | 13 months        | 13 months     |
| Discount factor         | 12%              | 12%           |

n = 7, Source: IDC In-depth Interviews, February–May 2021

## Challenges/Opportunities

### For Businesses

Developing a business case for migrating an SAP landscape to SAP HANA with classic ERP or to SAP S/4HANA is a notoriously complicated starting point of the overall project. So many aspects of the business and the IT organization will be affected in hard-to-measure ways that the sheer number of intangibles causes many organizations to settle for a combination of an actual ROI and an educated leap of faith.

One critical portion of the migration initiative is the shift to an SAP-certified Linux distribution. For some organizations, this is a new environment; for others, it may be an extension of their existing Linux environment. The former may not realize what the beneficial ROI impact is of just the migration to Linux, but it is significant, as this business value study has demonstrated.

The latter may have had a limited Linux presence and are now expanding Linux to their mission-critical SAP database and applications, modernizing their entire environment in the process. They, too, should expect a similarly positive effect on the ROI for their SAP landscape migration.

## For Red Hat

Among organizations that are less familiar with Linux but that are now facing having to adopt the OS for their mission-critical systems, Red Hat may be primarily known as a Linux distribution. But Red Hat is not just an enterprise-grade open source operating system company; it provides a comprehensive open source ecosystem that enables customers to run their SAP-related applications on Red Hat OpenShift, automate SAP deployments and day 2 operations with Red Hat Ansible Automation Platform, and advance their organization toward becoming a more flexible enterprise with various other solutions described previously.

The challenge for Red Hat, hence, is to convince organizations to take a broader view of its open hybrid infrastructure portfolio for SAP and help them conceptualize a flexible, container-based, automated, orchestrated, and flexible platform adjacent to their SAP database and applications. What's more, IDC considers SAP Business Technology Platform a great opportunity for businesses to develop, integrate, and extend new applications in the cloud, and we expect more SAP applications to become containerized in the future, extending this flexibility further. For Red Hat, these trends are an affirmation of its strategies to deliver a seamless operating ecosystem across on premises and cloud for SAP and SAP-related applications.

## Conclusion

This business value study demonstrates that businesses can realize a significant ROI when migrating their database to SAP HANA or their traditional ERP to SAP S/4HANA while shifting to Red Hat Enterprise Linux for SAP Solutions. IDC found a variety of quantified benefits based on a detailed comparison of seven organizations' businesses and IT environments before and after the migration initiative. We determined that the organizations realized an average 318% five-year ROI by moving to Red Hat as part of their SAP migration and that they achieved \$33 million higher annual revenue per organization directly attributable to their Red Hat adoption. Their developer productivity increased by 32%, and their IT infrastructure teams became 61% more effective. Planned downtime was reduced by no less than 99%, and security teams found themselves to be 24% more effective. This data (and the detailed data throughout this study) should provide compelling support for the decision-making process of any business currently in the process of determining the ROI of a SAP migration.

## Appendix: Methodology

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of Red Hat's open source solutions for their SAP environments as the foundation for the model.

**Based on interviews with organizations using these solutions, IDC performed a three-step process to calculate the ROI and payback period:**

- 1. Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of Red Hat for SAP.** In this study, the benefits included staff time savings and productivity benefits as well as operational cost reductions.
- 2. Created a complete investment (five-year total cost analysis) profile based on the interviews.** Investments go beyond the initial and annual costs of using Red Hat for SAP and can include additional costs related to migrations, planning, consulting, and staff or user training.
- 3. Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of Red Hat for SAP over a five-year period. ROI is the ratio of the net present value (NPV) and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

**IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:**

- ▶ Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and manager productivity savings. For purposes of this analysis, based on the geographic locations of the interviewed organizations, IDC has used assumptions of an average fully loaded salary of \$100,000 per year for IT staff members and an average fully loaded salary of \$70,000 per year for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).
- ▶ The net present value of the five-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.
- ▶ Because IT solutions require a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

*Note: All numbers in this document may not be exact due to rounding.*

## About the Analysts



### **Peter Rutten**

#### **Research Director, Infrastructure Systems, Platforms and Technologies Group, IDC**

Peter Rutten is a Research Director within IDC's Enterprise Infrastructure Practice, covering research on computing platforms. In this role, Peter focuses on high-end, accelerated, and heterogeneous infrastructure and their use cases, which include supercomputing, massively parallel computing, artificial intelligence (AI) and analytics, and in-memory computing. His research on high-end servers includes mission-critical x86 platforms, mainframes, and RISC-based systems as well as their operating environments (Linux, z/OS, Unix). His research on accelerated computing includes servers with GPUs, FPGAs, ASICs, and other accelerators that are deployed in the cloud as well as on-premises. Peter also examines emerging technologies and platforms such as quantum computing, neuromorphic computing and others that have the potential to disrupt mature infrastructure markets. As part of his role, Peter performs market sizing in these areas as well as custom market sizing for IDC's clients.

[More about Peter Rutten](#)



### **Megan Szurley**

#### **Consulting Manager, IDC**

Megan Szurley is a Consulting Manager within IDC's Custom Solutions Division delivering consultative support across every stage of the business lifecycle: business planning and budgeting, sales and marketing, and performance measurement. In her position, Megan partners with IDC analyst teams to support deliverables that focus on thought leadership, business value, custom analytics, buyer behavior and content marketing. These customized deliverables are often derived from primary research and yield content marketing, market models, and customer insights.

[More about Megan Szurley](#)

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