

Open Source at the Heart of IT Transformation



WHITE PAPER

IT Transformation is Essential for Growth, Profitability & Competitiveness

“When you’re finished changing, you’re finished.”
When Benjamin Franklin reportedly said those words, he could have been describing almost any business operating today. Why? Because business demands, customer expectations and competitive pressures are growing fast and constantly changing. Hence, the need for faster and more agile delivery of new software innovations and services. To keep up, IT transformation and change is now a critical success factor for almost all modern organizations.



Traditional data centers are simply too rigid, slow and difficult to adapt to meet the requirements of the new digital business age. By contrast, organizations that focus on transforming their IT environment complete three times as many IT projects ahead of schedule, are four times more likely to report excellent levels of IT process automation, and are seven times more likely to view IT as a profit center and competitive differentiator.¹

With so much at stake, many organizations start their efforts to transform by moving toward a software-defined infrastructure (SDI). This usually involves designing new cloud-native applications and deploying workloads to public cloud

platforms. However, that doesn't mean data centers are a thing of the past. The vast majority of IT workloads are still hosted in enterprise-owned or co-location data centers.² And when you factor in the explosive growth of business-critical applications and data, it becomes clear that these data centers will remain essential to progressive, digital-centric planning.

Research by SUSE® shows that 95 percent of IT leaders believe SDI is the future for the data center.³ Today, most organizations have already virtualized and consolidated the resources in their data centers. They are now ready to take the next leap, toward a private cloud—converting those data centers into the SDI needed to deliver the same fast, responsive, automated,

scalable and efficient environment they have come to expect from the public cloud.

All of this means that future-focused business and transformation strategies will need to address a multimodal IT world: one that encompasses traditional data centers, SDI and cloud environments.

¹ ESG Research Paper: How IT Transformation Maturity Drives IT Agility, Innovation, and Improved Business Outcomes

² Source: Uptime Institute annual survey results

³ Source: SDI, Containers and DevOps—Cloud Adoption Trends Driving IT Transformation



Open Source Solutions Driving Transformation and Innovation

The race is on for business and technology leaders to transform their IT strategies by embracing cloud (private, public, hybrid or multi-cloud environments), SDI and data center modernization. These are not easy tasks to accomplish, however. The key to success is finding proven, enterprise-grade solutions that are agile enough to keep pace with the market and able to adapt to new innovations when they emerge.

When organizations get these decisions right, regardless of the industry, they become more responsive to their customers and more competitive. Consider the banking sector, which has rapidly moved from being dependent on in-person, on-site transactions to developing mobile systems capable of handling millions of transactions each day. Banks have accomplished this digital transformation while meeting stringent regulatory, compliance and security mandates, as well as fast-changing customer expectations.

By means of IT and digital transformation, along with the implementation of DevOps principles, many banks have been able to innovate at speed without taking

risks they could not afford. In essence, they have made the leap to no longer define themselves simply as banks, but rather as digital businesses that conduct financial transactions. Meanwhile, those that have failed to adapt are suffering the consequences. The same is true in many other industries. IDC predicts that worldwide spending on digital transformation will soar past \$1 trillion in 2018.⁴

Open source tools, technologies and applications are at the heart of many of these transformation stories. Gartner predicts that by 2022, more than 70 percent of new in-house applications will be developed on an open source database management system (OSDBMS) and 50 percent of existing commercial relational database management system (RDBMS) instances will have been converted or will be in the process of converting.⁵ The explosion of credible and mature enterprise open source options is moving even the most risk-averse organizations towards the adoption of open source solutions.

Many businesses replace proprietary applications with open source solutions primarily because of the cost-savings potential, but that's only the beginning. Incorporating open source SDI solutions as part of a full IT transformation strategy delivers added efficiencies and the agility needed to satisfy their evolving business needs. True open source solutions help organizations avoid the risk or cost that often results from vendor lock-in. These solutions can also be more easily adapted to whatever technology stack an IT organization currently has in place or plans to implement in the future.

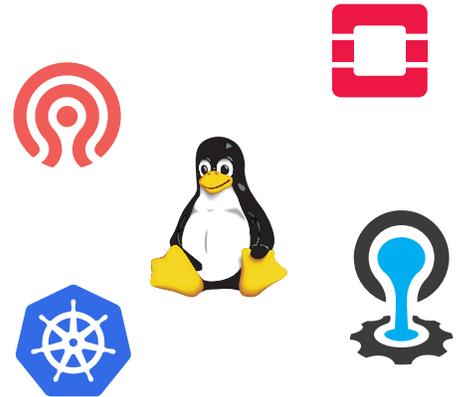
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⁴ Source: IDC worldwide semi-annual digital transformation spending guide

⁵ Source: Gartner “State of the Open-Source DBMS Market, 2018” report

Which Open Source Technologies Should You Choose?

Given the enormous growth in the adoption of open source applications, platforms and solutions, which of the available technologies should you be using in your business?



Linux

The obvious starting point is Linux. From modest beginnings, the Linux kernel and operating system have grown and matured into today's established mainstay for enterprise IT. Linux has earned its reputation for versatility and as the trusted, secure foundation for enterprise architectures and business-critical solutions or workloads where reliability and uptime are essential requirements.

Linux is now the dominant player for high-performance computing (HPC), as demonstrated by its monopoly of the top 500 supercomputing global rankings. HPC is becoming increasingly important for business analytics, artificial intelligence (AI), machine learning (ML) and scientific research.

Linux boasts a lean, consistent, modular and fully functional code base that makes it a primary choice for everything from embedded devices and Internet of Things (IoT) applications to cloud, database and business intelligence platforms. It provides the best operating system (OS) for a multimodal IT strategy and is ideal for both traditional and SDI environments.

Given the fast-growing popularity of cloud applications, container technologies and DevOps processes—all of which typically run on or with Linux—it comes as no surprise that Linux is the most in-demand open source skill in the IT employment market.⁶

With its stability, portability, security and cost-effectiveness, Linux will continue to be a vital component for organizations of all types and sizes looking to modernize, transform and sustain their IT systems.

OpenStack

OpenStack software is the unrivaled leader when it comes to open source cloud platforms. It is an exceptional solution for building a new private cloud or for converting an existing traditional data center into a dynamic, scalable and agile private cloud environment.

OpenStack provides the fast, self-service and automated access to shared pools of compute, storage and network resources that are needed for new levels of efficiency, productivity and innovation. It also provides the opportunity to completely reshape the economics of running your own data center, while enabling you to maintain control of security and data sovereignty requirements.

No wonder over 80 percent of organizations have already adopted OpenStack or plan to do so in the near future,⁷ many of them as part of a multi-cloud or hybrid cloud strategy.

⁶ Linux Foundation: "The 2018 open source jobs report"

⁷ Source: SDI, Containers and DevOps—Cloud Adoption Trends Driving IT Transformation

Ceph

We are in the middle of what many describe as a data explosion, with some estimates suggesting that we'll have to store, manage, analyze and protect over 16ZB (zettabytes) of structured and unstructured data by 2025.⁸ This data growth is being driven by new technologies that are likely to impact all of us, opening up new business opportunities and challenges.

There is now a common acceptance that traditional, hardware-based storage systems are simply too rigid and expensive to keep up with this rate of data growth. Some smart decisions need to be made, and the only way forward is to embrace a software-defined storage (SDS) strategy.

SDS solutions separate the physical storage hardware from the data management logic or intelligence. This means that high-cost proprietary hardware is no longer required, and low-cost "off-the-shelf" hardware can be used instead. All the advanced storage functionality is then handled by software.

Ceph is the most popular software-defined storage solution used with OpenStack cloud. It is also an ideal solution for many other use cases and environments where block, object, file or unified storage is needed. Ceph provides flexible, feature-rich, massively-scalable storage with a radically reduced capital and operating cost structure.

Kubernetes

Gartner predicts that more than half of all global organizations will be running containerized applications in production⁹ by 2020—and for very good reasons. Containers are a way of taking virtualization to the next level of efficiency. They are fast and simple to spin up, dynamically scalable, consistent and extremely lightweight in terms of resources. They are an excellent means of modernizing existing legacy applications, as well as designing new cloud-native applications for hosting in private, public or hybrid clouds.

Kubernetes is an orchestration engine for automating the deployment, management and scaling of these containerized applications—making the whole process easier, faster and more efficient. Kubernetes has grown rapidly in popularity, to the point where it is seen as the outright market leader by software developers, operations teams, DevOps professionals and IT business decision makers.

Kubernetes is set to be an essential building block for the application delivery solutions that enterprise businesses need to enable and support their IT transformation efforts.

Cloud Foundry

In our increasingly software-driven world, the ability to adapt and deliver new solutions and services quickly is vital. To accomplish this, the container technologies, cloud-native application and DevOps processes mentioned above are helping to drive shorter and more regular application delivery cycles. However, to achieve further incremental efficiency and speed improvements, we need to rely more and more on process automation.

Cloud Foundry is the application delivery platform designed to handle all the heavy lifting needed to make this happen. It automates and accelerates the delivery and management of containerized cloud-native applications, handling all the repetitive, time-consuming tasks with ease. Productivity and efficiency gains can then be taken to the next level. This makes it easier to implement DevOps, agile development and CI/CD processes, as well as deliver an outstanding experience for developers.

⁸ Source: IDC White Paper, Sponsored by Seagate "Data Age 2025"

⁹ Linux Foundation: "The 2018 open source jobs report"

Creating an IT Transformation Strategy to Keep Pace with Your Business

Let's look at three examples of how business and technology leaders can transform their IT infrastructure, technologies and processes right now to better meet business and customer demands.

First, centers can be transformed by converting them into highly flexible private cloud environments to enable fast, on-demand access to IT services and resources. Forward-thinking businesses are using OpenStack to build SDI and using Ceph to solve data growth challenges, with self-managed and self-healing unified storage.

BMW¹⁰ and ZF Friedrichshafen¹¹ are examples of leading manufacturers using these open source technologies to drastically reduce the time to provision IT resources. In some cases, these processes have been shortened from days to minutes. This is helping to accelerate the innovation and development of self-driven vehicles, IoT systems and advanced data management solutions. The automated and self-service nature of these modernized data centers frees up highly-skilled IT and development teams to focus on driving real business value, drastically improves efficiency, helps to reduce shadow IT and retains security and governance control within the organization.

A **second** way to revolutionize your IT systems is through application modernization. Adopting an "if it isn't broken, don't fix it" approach might seem logical for many organizations. After all, if an application is fundamentally important to the business and is working, it's tempting to leave it well alone. However, change might be forced upon us by hardware or software obsolescence.

Alternatively, the functionality, efficiency or performance benefits of application modernization might be just too compelling to ignore.

For some legacy workloads, it might be possible to simply host them on an SDI or cloud infrastructure, divorcing their dependency on underlying hardware. Alternatively, cloud-optimization might be appropriate, taking advantage of some cloud functionality. Or perhaps a complete re-design, adopting a containerized or cloud-native approach, might be the best option.

Smartodds¹² is an example of a modern, data-driven business that needed to quickly adapt to stay ahead of their competition. They achieved this by adopting containers, DevOps processes and state-of-the-art CI/CD (Continuous Integration/Continuous Deployment) workflows, while maintaining a strong focus on security and high availability to keep everything running smoothly. Packaged enterprise-grade Linux and Kubernetes orchestration solutions are the core technologies that deliver the functionality and performance they require.

The **third** way to modernize is by automating and orchestrating IT processes to ensure that they are repeatable, consistent and able to meet stringent corporate IT and security standards. This is made possible by building operating system templates that fully incorporate internal security policies and deploying them automatically across tens of thousands of servers. IT operations can be further optimized by automating patch management and by identifying and resolving out-of-compliance systems. In addition, by monitoring, tracking and logging all hardware and software changes to the

Linux infrastructure, businesses can more easily and assuredly comply with audits and reporting requirements.

This is the approach taken by Lenovo. As a rapidly expanding business, they found themselves running important business applications on a host of different Linux distributions and versions. Lenovo also wanted to migrate their SAP applications from proprietary UNIX to an industry-standard Linux platform in order to lower costs, improve performance and avoid the risks of vendor lock-in.

Manually keeping the entire environment up to date with the latest security patches and updates was proving to be a massively complex and time-consuming task. Real-time monitoring and reporting were also difficult, raising additional security concerns and regulatory compliance issues. However, by carefully selecting their enterprise-grade Linux platform and adopting a comprehensive, automated management solution, Lenovo has been able to cut administrator workload by 50 percent and can now effortlessly manage almost 1000 instances of Linux. They have also been able to accelerate the detection and elimination of security loopholes.

¹⁰Intel solution brief: Accelerating Business Growth with Industry-Standard, On-Premises IaaS

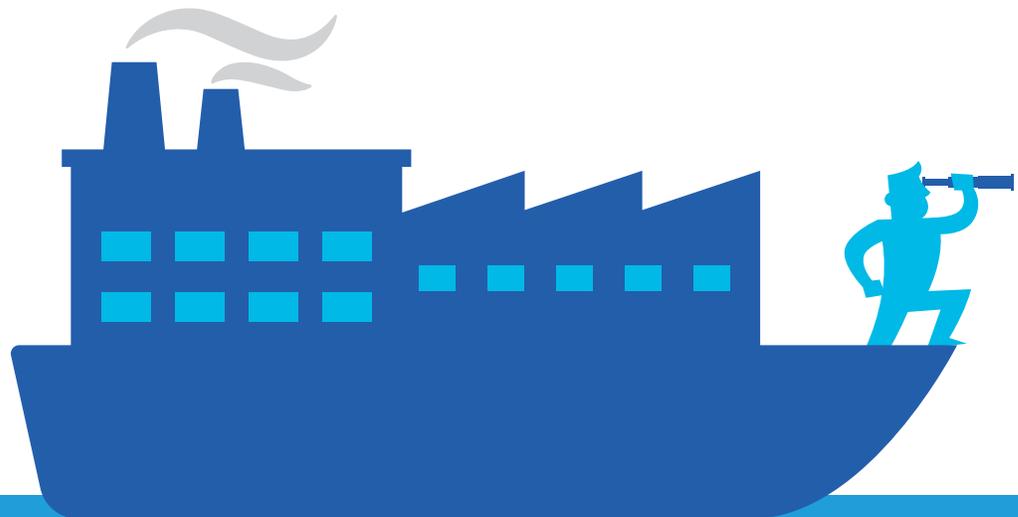
¹¹SUSE: ZF Friedrichshafen AG Success Story

¹²SUSE: Smartodds success story

Future Success Depends on Continued IT Transformation

Business success is increasingly tied to a forward-focused, adaptive IT strategy. Today, nothing stays the same for long and new disruptions are always on the horizon. This makes it critical for IT organizations to be ready to adapt and transform, with a software-defined infrastructure and application delivery strategy. By leveraging proven open source technologies and solutions, businesses can improve agility and achieve the performance necessary to get to market faster, serve customers better and ultimately stand apart from the competition.

For more than 25 years, SUSE has delivered and supported open source technologies and solutions like those described above for companies worldwide. As the truly open, open source provider, SUSE frees businesses from vendor lock-in and provides enterprise-ready solutions that can be deployed across a variety of open source distributions. SUSE has helped thousands of businesses transform so they can successfully unify their IT operations, intelligently sense and quickly respond to new trends, experiment boldly to drive market-disrupting innovations and keep evolving to meet whatever challenges tomorrow brings.





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