Use standardization to reduce IT complexity and accelerate innovation

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Organizations have become more reliant on technology to fuel their business. But there's a hidden cost to digital transformation efforts: growing complexity that can inhibit agility and innovation instead of enabling it.

Leadership teams can address IT complexity head-on through standardization and consolidation. By standardizing key elements of the technology stack — beginning with the operating environment — IT

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and business leaders can enhance security across the enterprise; reduce technical debt; increase interoperability, adaptability, and scalability; improve manageability and control; and mitigate gaps in IT skills or resources.

IT's expanding scope

There's no denying that IT's footprint is growing at companies of all sizes across all industries as their business models evolve. In Foundry's "Digital Business Research 2023" study, 93% of the participating organizations indicated that they have adopted or have plans to adopt a "digital-first" business strategy.

Two key trends are accelerating digital initiatives. First, customer preferences are shifting toward digital channels for interactions and transactions. Second, an increasingly hybrid workforce requires an expanded and cloud-focused digital tool set for collaboration with colleagues, partners, and customers.

To keep pace, organizations are responding with investments in IT infrastructure, applications, and devices. More than half (54%) of the IT leaders who participated in Foundry's 2024 "State of the CIO" study expect their IT budget to increase over the next 12 months. Red Hat's "2024 Global Tech Trends" study found that organizations are juggling a variety of tech funding priorities, including IT security, optimizing or modernizing legacy IT, and cloud infrastructure and management.

Amid all the benefits of digital technologies, however, the growing complexity of IT environments presents a significant downside of aggressive IT expansion. Complexity is the No. 1 barrier to successful digital business initiatives, according to the Foundry digital business study.

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"Complexity results in higher operating costs, because you spend more on specialized hardware, software, skills, and support," says Julio Pelegrino, distinguished architect, Global Services Office of Technology, Red Hat. "The more you spend on maintaining environments, the less you can spend on tackling big problems and innovation. It's more of a problem now than ever."

Business benefits of standardization

Leadership teams see the value of standardization as a way to decrease IT complexity and fuel modern business by bringing consistency to tools, processes, and workflows.

"It's in the CIO's hands to drive these standardization efforts," says Olivia Morales, senior product marketing manager for Red Hat® Enterprise Linux® at Red Hat. "They need to lean in and bring their teams on this journey, because the benefits to the business are worth whatever challenges they'll face along the way."

That business value spans five key areas.

1. Robust security

Lack of visibility and control across the end-to-end IT environment creates significant security risks. Poorly integrated systems, along with applications that fly under the radar and are not maintained or patched regularly, can lead to gaps that increase the risk of misconfiguration and create potential entry points for cybercriminals who are probing for any weakness.

Standardizing on tools designed with security in mind will make it easier to deploy and enforce security policies across the entire organization. Automated controls, proactive analytics, vulnerability alerts, and other

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elements of a layered strategy are all easier to manage in a standardized environment that includes a security-first software supply chain.

"When you standardize, you simplify," says Pelegrino. "When you simplify, you have more control of the risk your organization is exposed to."

2. Reduced technical debt and TCO

Technology sprawl, particularly with cloud-based services, is driving up the cost of deploying and maintaining IT environments. Investing money, time, and training in existing infrastructure increases technical debt, leaving less budget and time for additional investments in critical technologies, such as artificial intelligence (AI), that drive innovation. In the Red Hat Global Tech Trends study, respondents cited technical debt as the No. 1 barrier to successful digital transformation.

Standardization can help reduce existing technical debt and total cost of ownership, by reducing the number of systems and applications that IT teams must maintain. This approach streamlines daily maintenance and frees up financial and personnel resources to focus on innovation.

3. Increased interoperability, adaptability, and scalability

Poorly integrated applications and operating environments make it harder for teams to communicate and collaborate effectively, which can impede employee as well as customer experiences. Inefficiencies in finding and sharing information limit a leadership team's ability to rapidly respond to shifts in customer demand or other market changes. The digital era is putting increasing pressure on slow-moving companies to keep up with competitors.

Centralized development environments enable engineers to spend more time on customer-driven innovation. Standard configurations and automation improve interoperability, enabling IT teams to deliver services and software faster and shift their focus toward creating better experiences for customers and users. A standardized environment enables organizations to tap into an ecosystem of software vendors and

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service providers to deliver integrated, optimized applications, making it easier to adapt quickly to changing market dynamics and to scale operations in response to evolving business needs.

4. Improved manageability and control

The more complex the IT environment, the more time IT teams will likely spend maintaining, troubleshooting, and updating applications and systems. Standardization reduces management complexity; optimizes costs; increases uptime; and makes it easier for people to do their job with a familiar, consistent set of tools.

A standardized environment also provides a consistent and repeatable management experience that simplifies the implementation of enterprise-wide automation, which can speed product delivery and enable IT teams to focus on projects that deliver more business value.

5. Mitigating the skills gap

Rapid adoption of hybrid cloud models and the surge in AI-enabled tools have created skills gaps in many organizations, creating integration headaches and making it difficult to effectively manage different systems and services. Inadequate staffing impedes cost optimization, leading to project delays, increased downtime, prolonged resolutions, and heightened security risks.

Standardization helps IT teams streamline and automate processes with consistent tools that reduce the burden on existing staff and makes it easier to establish, share, and retain best practices. It can additionally help organizations keep up with skills requirements for ever-changing technology, which can provide a competitive edge to slower-moving companies.

A holistic approach to standardization

As with any other IT initiative, a standardization effort requires IT leaders to think holistically about the strategy and execution. A framework for consolidating a diverse, expansive IT environment should address three key considerations.

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Where to begin

A logical starting point is an operating environment. Each operating system (OS) — or even different instances of Linux, for example — can have unique ways of managing database queries, cloud workloads, or containers, which adds complexity and increases risk. A standardized operating environment will do the following:

- **Optimize operational efficiency by ensuring consistency across all workloads while streamlining processes with consistent tools and resources**
- **Improve security and compliance by providing better visibility into the operating environment across the organization**
- **Increase uptime, accelerate provisioning and deployment, and improve IT and user productivity, which further reduces operating expenses**

"If you don't standardize on the operating system first, then you won't be sure if everything that follows will be aligned and you'll waste a lot of resources building applications and automation for different platforms," says Morales.

How to sequence

Minimize business disruption by starting with applications that are reaching end-of-support phases, require significant updates, or are due for retirement. This approach will also build confidence in the benefits a standardized environment can deliver.

From there, teams can address other, smaller workloads — ones that are running on fewer than five OS instances, for example. Each successful consolidation will add to the body of work to support broader standardization efforts. Equally

important, this rolling schedule will free up developer resources to tackle larger migrations.

Using automation to standardize at scale

Automation has become a checklist capability for modern operating environments, because it helps DevOps teams streamline paths from development to production. Standard configurations are key to scaling this type of automation across the entire enterprise.

"Organizations want predictable, repeatable, and reliable IT infrastructure," explains Pelegrino. "The only way to deliver that is through automation."

When Salesforce decided to migrate 200,000 machines from CentOS Linux to Red Hat Enterprise Linux, it knew that a manual conversion would not be tenable for such a massive migration. The company deployed a variety of automation-driven tools, including a conversion playbook, an orchestrator system, and a configuration management system to convert systems to Red Hat Enterprise Linux. By eliminating downtime, ensuring system-wide health, creating better visibility, and powering parallelization of migration tasks, automation helped Salesforce complete its migration with time to spare ahead of the end-of-support date for its legacy OS.

AI is further accelerating automation's impact on deploying and maintaining standardized environments. For example, teams can use generative AI (GenAI) to create automation playbooks that capture and codify best practices for development, delivery, compliance, and security. Those playbooks can come to life through an operational chatbot that guides new software rollouts, based on internal knowledge culled from real-world implementations. "Using GenAI to write better documentation faster can have a huge impact," says Pelegrino.

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Conclusion: The cost of maintaining the status quo

Standardization can be messy. Some risk-averse CIOs may reason that the status quo is good enough to keep systems running without disrupting the business. But the cost of standing still may end up being quite a bit higher than tackling complexity. The dual benefits of reduced risk and increased agility make a compelling case for standardization.

"You're going to face challenges, but in the long run, you'll be better off with a standardized operating system that provides consistency and is still extremely flexible," says Morales. "You will start to see those cost savings, and you'll be able to move a lot faster."

Visit **red.ht/standardize** to learn how to tackle IT complexity with Red Hat.