



TEN WAYS TO IMPROVE I.T. EFFICIENCY

WITH A STANDARDIZED OPERATING ENVIRONMENT

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The future of IT

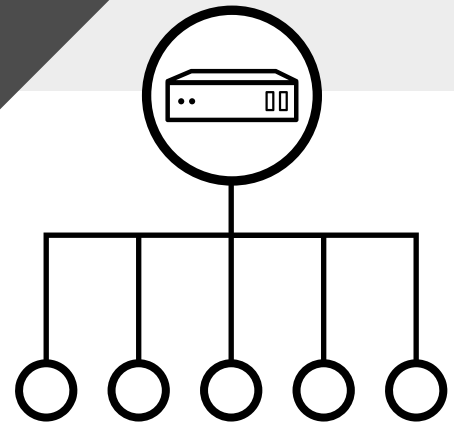


Standardize for IT efficiency

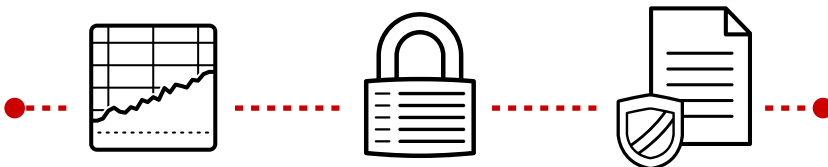
In today's digital businesses, IT organizations are expected to deliver more services at a faster pace than ever before.

However, the IT infrastructures of most companies encompass a variety of operating system vendors and versions, server hardware configurations, and management tools, resulting in a complex maze of resources that requires a large, highly skilled IT staff. Interoperability issues, complicated administration, and convoluted processes can delay provisioning, increase downtime, and create security and compliance risks, all greatly hindering flexible and efficient operations.

Implementing a standard operating environment can greatly simplify your IT infrastructure while mitigating many of the challenges that cause inefficiency. Streamlined management and operations lead to lower operating expenses (OpEx), increased uptime, faster deployment and provisioning, and improved IT and user productivity. In addition, **comprehensive visibility into your standardized environment increases asset control, security, and compliance.**



“ This IDC study demonstrates that organizations can leverage Red Hat Enterprise Linux to achieve the agile, high-performing server infrastructures they need while maintaining cost-effective and efficient server environments. In particular, organizations benefit from having a robust open source Linux platform to run business applications that enables them to support these transformational workloads with fewer servers, less IT staff time, and higher availability compared with servers running other operating systems.¹



¹IDC, “The Business Value of Red Hat Enterprise Linux,” November 2017.



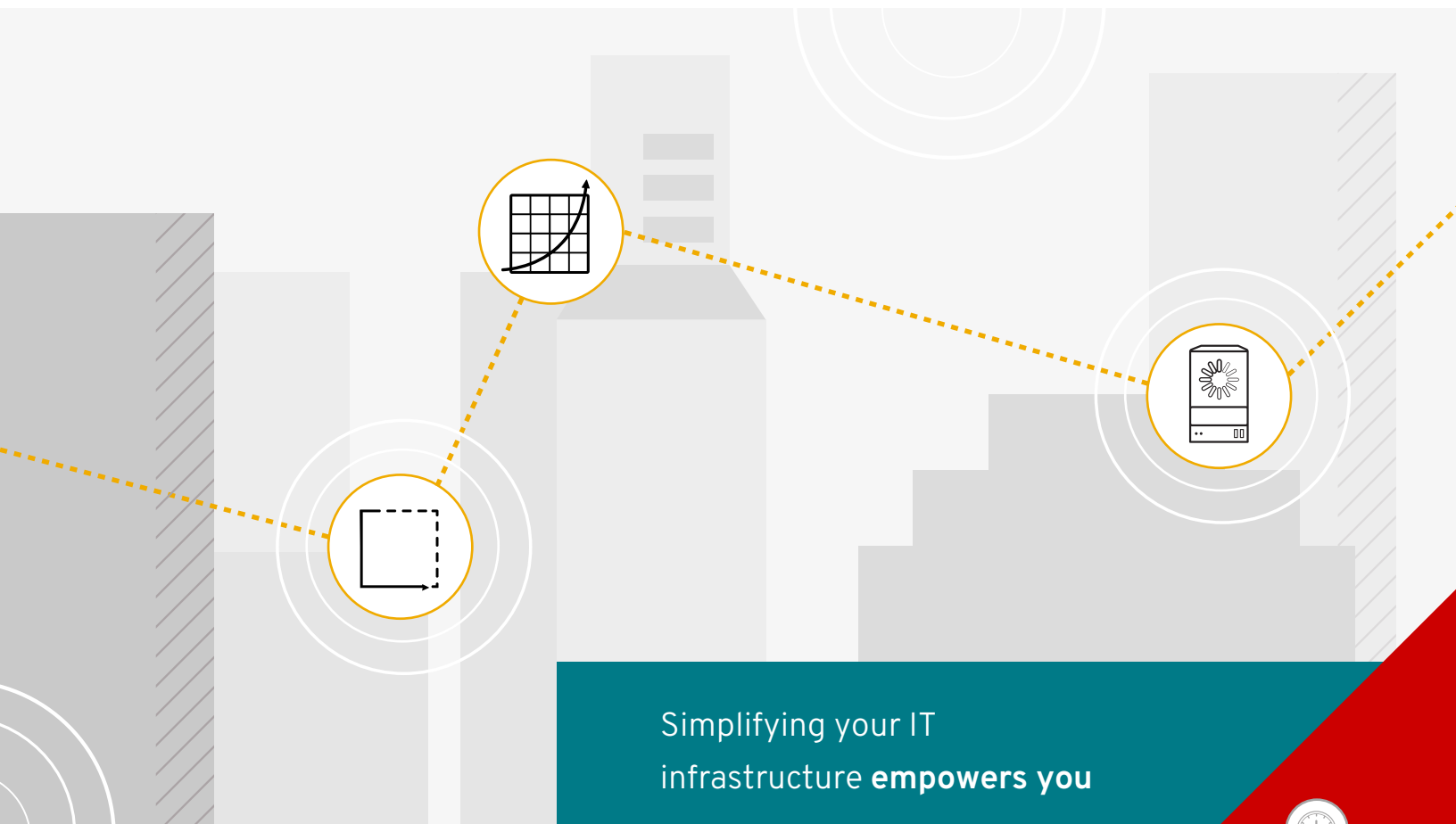
1.

Simplify to improve efficiency and productivity

The golden rule of standard operating environments is simplicity.

The goal of standardization is to increase consistency and reduce complexity. The ideal standard operating environment uses a defined set of components, interfaces, and processes throughout the entire IT infrastructure. This creates a known foundation for all systems and simplifies your infrastructure and operations.

A simplified IT infrastructure is easier to manage and operate. Provisioning, troubleshooting, scaling, and disaster recovery are more straightforward when fewer variations are involved. Simplifying your IT infrastructure empowers you to develop a single, standard set of operating procedures and processes to streamline operations, allowing a smaller staff to manage a larger infrastructure.



Simplifying your IT infrastructure **empowers you**



2. Document everything continuously

Documentation provides a critical record of how your IT infrastructure works. A poor understanding of infrastructure can cause outages and failed migrations while significantly delaying repairs.

Resources, configurations, and processes should be documented in detail. Automated processes, in particular, need to be thoroughly documented and reviewed regularly. A failure in an automated task can be catastrophic if no one has the knowledge or skills to troubleshoot and resolve the issue.

Maintaining documentation is an integral part of managing and operating your infrastructure. Governance policies and procedures should include documentation. Each change to your environment should be recorded, and every document should be version-controlled.

Additionally, different audiences require different types of documentation to do their jobs effectively, even though they may be working on the same application or resource.



Developers need information about the purpose of a particular section of code, usually listed as comments in the source code itself.

IT operators need administration guides that specify installation, configuration, management, and troubleshooting processes.

End users need manuals that describe how to use the application or resource to accomplish a task.

To avoid infrastructure issues and keep your IT staff and end users informed, ensure that your IT infrastructure is well-documented at all levels.

A single resource will typically require multiple versions of documentation targeting different audiences.

For example, developers understand source code, while operators consult administration guides, and end users refer to manuals.



3.

Balance standardization with flexibility

IT flexibility is essential to meeting demands for new services, both internally and externally. While there are numerous benefits to standardizing your IT infrastructure, **too much standardization can actually impede flexibility and agility.**



Standard operating environments use a designated set—or core build—of components, interfaces, and processes. Every system will not be exactly the same, but all will have a defined, known foundation upon which applications, virtual machines, and tools can be built.



Finding the right balance of standardization and flexibility depends on the needs of your organization. Large enterprises running hundreds or even thousands of servers might need several core builds to ensure that their employees have the right tools to do their jobs effectively. Smaller companies might need only a few core builds. Careful analysis can help you develop a reasonable number of core configurations for your organization.



Maintain flexibility in your standard operating environment by assessing the needs of your organization. Some organizations might need only a few core builds, whereas others need dozens.



4. Automate your infrastructure

Automating common administrative tasks reduces the amount of effort and time you need to provision new resources and services, enforces consistency across your environments, and requires fewer IT staff members to manage your infrastructure on a day-to-day basis. These improvements deliver many business benefits, including:



Faster rollout of new applications and services to internal and external customers.



Fewer security and compliance risks.

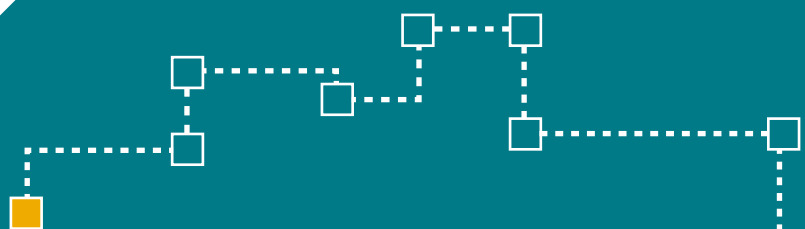


Lower OpEx.



More time and budget for IT staff to focus on strategic initiatives.

Be thoughtful when automating your infrastructure. Automated processes are not invincible and can (and will) break over time. **Establish a right-sized automation strategy to address tooling, standards, and governance.** Thoroughly documenting and reviewing all automated tasks on a regular basis is also essential. When the inevitable failure occurs, your strategy and documentation should facilitate the approach and provide process-specific knowledge to fix the automated process quickly. Without these procedures in place, small issues can quickly turn into critical system outages.



Automating common infrastructure tasks accelerates deployment of new applications and services, lowers the risk of errors, and reduces OpEx.

Make sure automated processes are well-documented so that business can continue if a process fails.



5. Embrace new technology as appropriate

IT is a rapidly changing field.

The methods, processes, and technology developed and implemented only a few years ago might no longer be the best or most efficient to provide services today. Your IT organization must keep up with current technology to stay competitive.

You should monitor the latest technological advances on the market, but not every new product should be implemented. Thoroughly assess each technology to determine if it is capable of supporting your organization's needs. This evaluation can be done using demos, rapid prototyping, proofs of concept, and sandbox environments. After comprehensive testing, if the technology meets your needs, you can begin the process of integrating it into your business operations.



Advanced technologies can help you stay ahead of the competition. Assess new products carefully to ensure that they will work for your organization.



6. Contain configuration drift

A standard operating environment relies on consistency to deliver benefits. Configuration drift occurs when strict procedures and standards are not followed or properly implemented, often as a result of manual changes. Drift can quickly negate the benefits of standardizing.

Management tools like Red Hat® Satellite Server or Red Hat CloudForms® can help you contain drift by enforcing configuration policies across your infrastructure. These tools let you easily provision systems and applications according to standardized operating processes and predefined configurations. Patching is also simplified and automated to let you roll out patches to multiple systems quickly. These features help you maintain a more consistent infrastructure.

Monitoring and auditing configurations are also important. Detecting drift lets you correct it before it impedes operational efficiency. **The same tools used to manage your infrastructure can often work with inventory and audit systems to report inconsistencies.** With visibility into system configurations, you can develop a plan to bring nonconforming systems back into compliance and continue to benefit from your standardized operating environment.

Configuration drift can quickly negate the benefits of a standardized operating environment. Control it by using management tools that enforce configuration policies at provisioning and continually monitor systems to make sure they remain compliant over time.

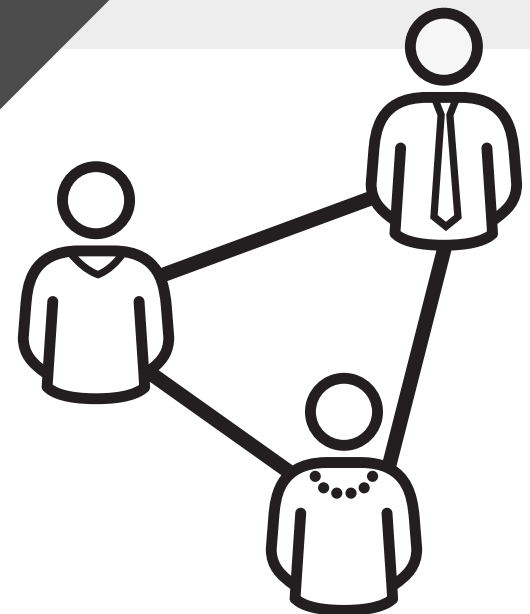


7. Concentrate on services, not on servers

The purpose of IT infrastructure is to deliver services to end users. However, for most IT organizations, planning, management, and troubleshooting operations revolve around infrastructure components. End users care about accessing their email, sharing files, and using the applications they need to perform their jobs. They are not concerned with network switch speed, compute capabilities, or storage capacity.

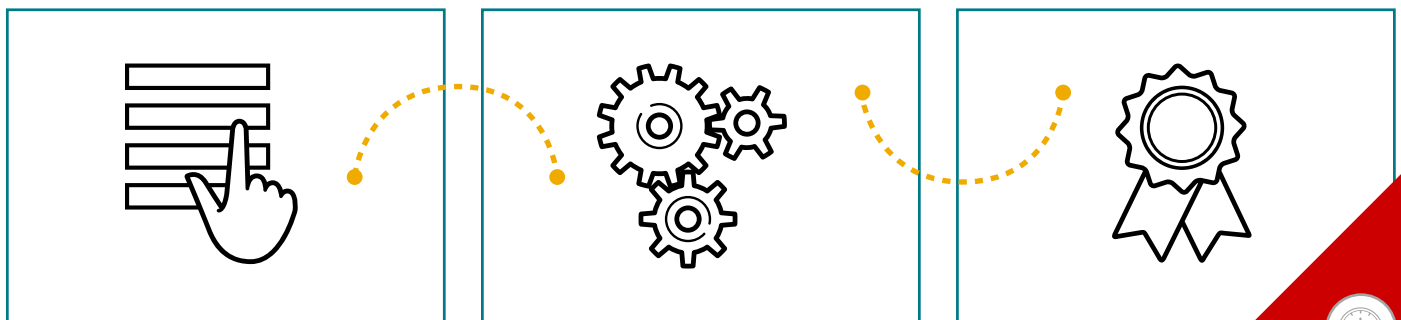
To meet end user needs, manage your infrastructure with a focus on services rather than components.

This focus should be applied to day-to-day maintenance operations, disaster recovery planning, resource allocation, integration of new technologies, and especially migrations. While migrating a single server sounds easy, the service implications are much greater. Each service running on that server must be migrated separately. A server hosting database, email, and web services requires three distinct migrations, not one.



Focus your infrastructure and operations on services for higher user satisfaction and better alignment with business objectives.

The broader IT field is moving to as-a-service offerings. Focusing your infrastructure and operations on services will not only help you boost user satisfaction, but it will also help your organization become more competitive and prepare for the future.



8. Scale dynamically to meet changing demands

Change is inevitable, especially in IT. Throughout the life cycle of a service, the demand or load placed on that service will fluctuate. Static infrastructures cannot keep up with unexpectedly high demands. Traditional methods of over-provisioning and planning capacity to meet peak, occasional demand levels can consume a significant portion of your budget.

A standard operating environment lets you dynamically scale infrastructure resources. When your systems have a common, shared foundation, they can deliver a variety of services instead of being dedicated to a single application. The same resource can then be allocated to multiple services at different times as demands change. As a result, you can maintain a smaller, more efficient infrastructure and trim capital expenses (CapEx) as well as power, cooling, and floor space costs.



Your infrastructure needs to scale dynamically and elastically to keep up with constantly changing demands. Using a common foundation for your systems lets you scale faster while maintaining a more efficient infrastructure.

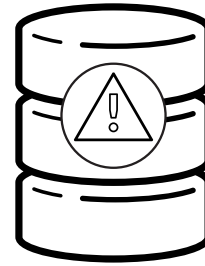
This approach also prepares you to take advantage of cloud technologies. For example, if your business is an online retailer, you could maintain a small, on-premise IT infrastructure that meets your average day-to-day needs. During peak consumer times like holidays and sales events, you could use cloudbursting—where an application runs in a private cloud or datacenter and bursts into a public cloud when the demand for computing capacity spikes—to meet the additional demand without needing extra resources in your own datacenter.



A standard operating environment lets you dynamically scale infrastructure resources.



9. Be ready for failures



Every IT infrastructure will experience failure during operation. Networks go down, memory goes bad, hard drives fail, and power supplies burn out. These common occurrences in datacenters have the potential to bring about catastrophic service outages.

By designing and implementing resilient services, you can often mitigate infrastructure failures. Resource-aware services can withstand component and server failures, reducing the number and severity of outages.

Running resilient services on a standard operating environment gives you even more protection. Greater system consistency and lower infrastructure complexity reduce the statistical likelihood of operational and security issues that can cause downtime. Better visibility into your environment lets you pre-emptively identify and fix many issues, and simplified patching helps ensure your systems are up to date.

According to IDC, **organizations using Red Hat Enterprise Linux®** report that they experience unplanned downtime an average of 56% less often and put the revenue impact of unplanned downtime on their employees using IT services at an average of 68% lower.²

experience
unplanned downtime

56%

less often

revenue
impact

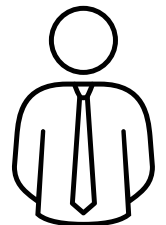
68%

lower

These preparations add up to more reliable IT operations and services, and more productive users.

“Red Hat offers so much more than just an operating system. Their enterprise-class technology is backed by an incredibly professional team that sees itself as an extension of our in-house team.”

GEORGES ABOU-ZEIDAN
TECHNOLOGY ARCHITECT, BANK AUDI³



² IDC, “[The Business Value of Red Hat Enterprise Linux](#),” November 2017.

³ Red Hat case study, [Bank Audi builds a platform for innovation with Red Hat](#), June 2017.



10.

Boost security with a layered approach

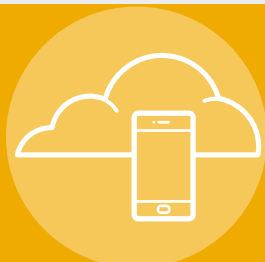


Effective security strategies go well beyond simple authorization checks through a centralized identity management system. By layering security throughout all aspects of your infrastructure, you can increase its resistance to breaches.

A standard operating environment makes protecting your infrastructure easier. Fewer base system variations give you more control over your environment and keep systems up to date with the latest security patches. Greater consistency also lets you increase interoperability in your environment and integrate security measures over multiple layers of the infrastructure stack.

However, each layer of security puts a burden on authorized users. Too much security can prevent employees from accessing the applications and data they need, while not enough security increases risk of intrusions and leaks. **Defining an effective security strategy is really an exercise in risk management.** Assess the value of each application and piece of data, and then identify who needs to use the application or data and any potential effects of unauthorized use. Only then can you define a policy that appropriately balances risk with accessibility to keep your infrastructure as safe as possible without unnecessarily impeding user productivity.

Carefully assess the amount of security each application and piece of data really needs. Each layer of security puts a burden on authorized users. Sensitive customer and employee information might justify many layers of security, but the office social events calendar probably does not.

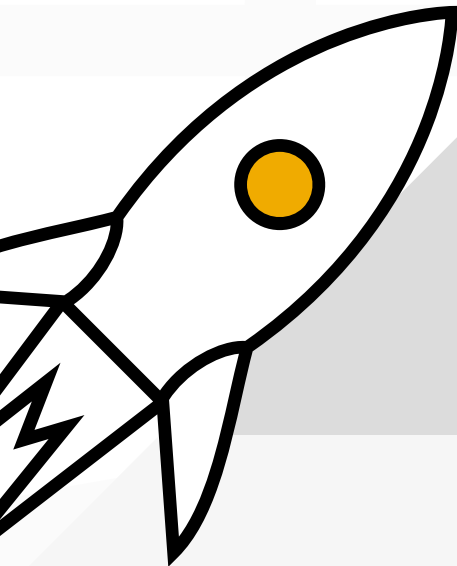


The future of IT

Standardization is the future of efficient, effective IT.

Outdated approaches to infrastructure design, management, and operation can prevent you from effectively and efficiently delivering the services your business needs. A standard operating environment lets you simplify and modernize your infrastructure and operations for reduced costs, higher uptime, and improved flexibility, security, and productivity.

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