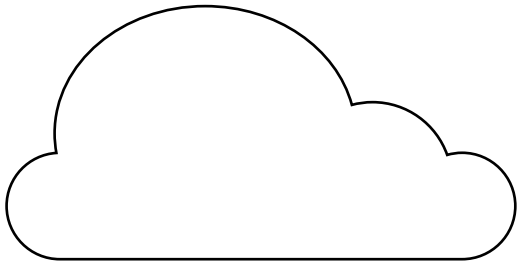
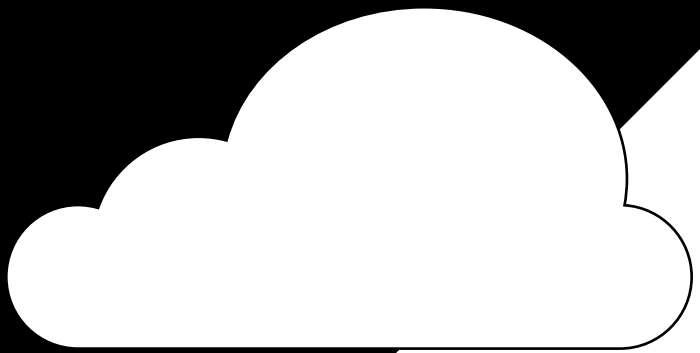
Red Hat



Process matters:

The executive's guide to moving to hybrid cloud



From the pages of
Cloud-native meets hybrid cloud: A strategy guide

Introduction

Information technology (IT) systems keep modern enterprises connected and productive. The capabilities they support are critical market differentiators, and they deliver ever-improving service availability and functionality for customers, employees, and partners.

Over time, system complexity and speed of change have escalated. With the rapid pace of technology, organizations increasingly face challenges relating to:

- Internal stratification.
- Monolithic applications.
- Workloads running across multiple footprints.
- Skills gaps.
- Multiple generations of technology.

Organizations that can overcome these challenges through digital transformation understand the business advantages of change, but often, leaders do not instinctively know how to deliver real value with new technologies.

The core tension between adopting new technologies and methods and maintaining old strategies primarily concerns **reliability** and **productivity.**

The move to highly distributed networks and public clouds is already underway, which means that change is an inevitable reality for most organizations.

As a leader, you need to find ways to move your organization to hybrid cloud infrastructure. While taking advantage of the scalability that public cloud platforms offer may be your immediate goal, a hybrid cloud approach is essential to delivering agile applications that can more rapidly meet changing business needs.

As a leader, you need to find ways to move your organization to hybrid cloud infrastructure.

Three trends enterprise architects and IT leaders need to map:

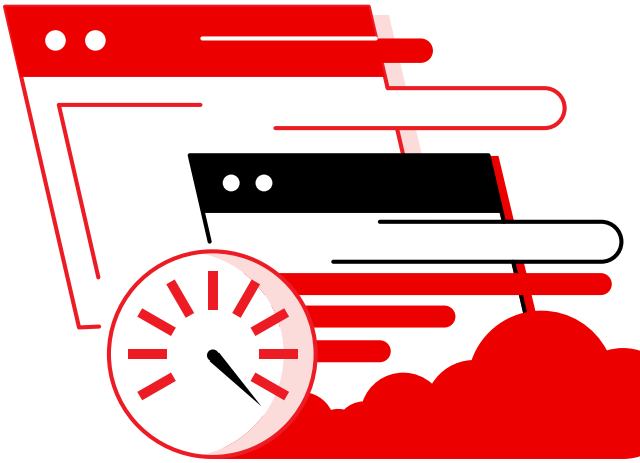
- ☐ IT platforms that quickly deliver solutions for business success
- ☐ Hybrid cloud environments that ensure systems are able to scale to growing demands
- ☐ Combining existing and new cloud-native technologies to create a robust, security-focused, and productive IT system

Modern IT challenges

IT systems can be thought of as the central nervous system of an organization, carrying information, coordinating actions, and executing many of the tasks that allow the organization to function. The size, density, and complexity of this system of applications has increased for most organizations in recent years.

Thinking of an organization's application environment as a single, organization-wide, evolving nervous system is a powerful metaphor since it brings into focus the properties the environment needs to exhibit and what tensions are in play as individual decisions are made.

By adopting a hybrid cloud approach, organizations can gain stability in their operating environment, provide developers with the tools to build applications faster, and scale by automating across their infrastructure—all while working in an environment where application ownership has become more distributed across the organization.



When modifying a large IT apparatus, it may seem simple to look at many of the challenges you face as either-or issues—including the tensions over:

- Reliability versus productivity.
- Predictability versus the ability to change.
- Security versus convenience.
- Performance versus cost.
- Rigidity versus freedom.

Instead, think of each issue as an opportunity to see how much you can increase one without disrupting or diminishing the other.

Modern IT challenges

At Red Hat, the shift toward modernizing IT infrastructure has come with a broad range of changes to its processes, including:

- A shift from a multiple-location, on-premise failover infrastructure to a hybrid cloud infrastructure, including public cloud zones from different providers.
- A move to cloud-native deployment and application development mode.
- Significant shifts in software development technologies and methodologies to allow the use of a wide variety of programming languages.
- Significant cost savings from containerization for greater reliability and faster updates.
- Upgrades to a range of applications and the increased adoption of application programing interfaces (APIs) and agile integration as a way to connect these applications.

Read more

Read more about Red Hat's transformation

At each step of implementing these changes, Red Hat has had to ensure increasing productivity without a huge loss of reliability.

> "Like many of our customers, we faced the real questions of, 'How can we do better than just keep up?' and 'What can we do to be well prepared for whatever comes our way?"
>
> **Mike Kelly**
> CIO, Red Hat

The Red Hat® team has focused on three objectives:

- ☐ Matching the speed and adaptability demands of digital business
- ☐ Improving the availability, resiliency, and security of digital systems
- ☐ Continuing to reduce operating costs

Strategy primer

When preparing your organization to modernize its IT for the hybrid cloud, making sure you have a strategy that fits your objectives is critical.

These three steps are essential to developing an effective long-term strategy:

1. **Assess the situation and set objectives.** This step would typically include both a long-term "Where do we want to be in 3-5 years?" element and a short-term "What's coming in the next 12-18 months?" view.

2. **Set policies, guidelines, and governance.** Invest in governance processes, tools, and skills for hybrid architectures and modern applications, or you put your initiatives at greater risk of failure. To meet project goals and deliver business value, you need to consider how to best achieve application and environmental security and threat management. Additionally, build the process of improvement into the policies and guidelines of using the product.

3. **Determine what to do next.** Create a set of specific actions to take right now that bring the organization closer to your objectives and more in line with your policies and guidelines.

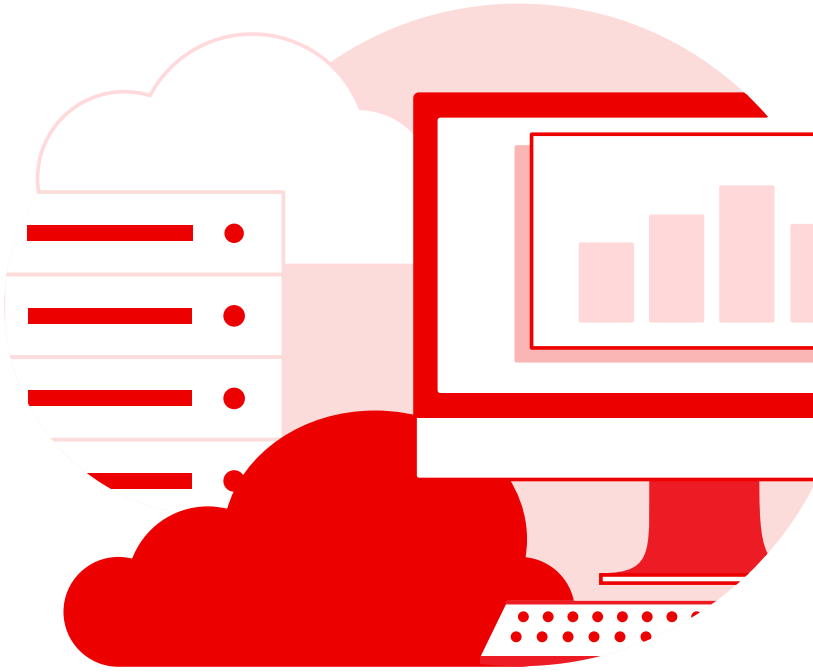
What do we mean when we say "productivity"?

For our purposes, productivity refers to the entire organization and all its employees. How much is getting done across the organization? We focus primarily on the productivity of the IT, development, and operations teams responsible for improving the applications available to their end users. However, by extension, these application improvements are a large part of the productivity of the remainder of the organization.

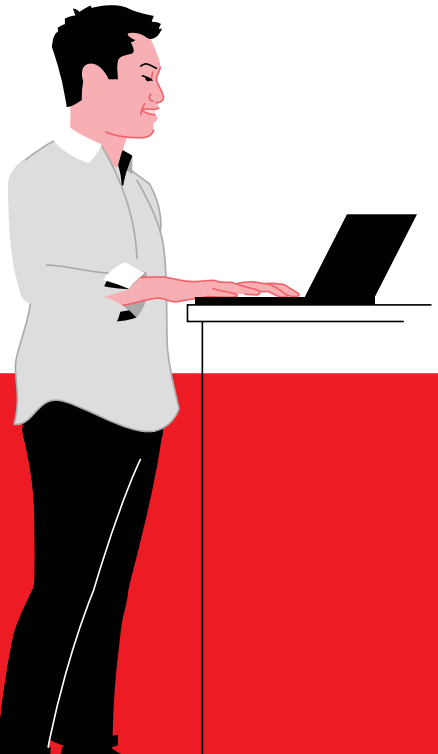
Strategy primer

Assess the situation

Every organization is likely to have:



- A set of on-premise datacenters, infrastructure hosted with one or more private hosting services, and public cloud providers.
- A set of applications and application development solutions.
- Developer tools, processes, automation, and management capabilities.
- A range of stakeholders who depend on the application environment to be productive.



Cataloguing and assessing these major components is a useful exercise since it provides a view of the breadth and depth of the whole application environment, allowing you to get a sense of how much each of those aspects can be changed to increase productivity while maintaining reliability.

Strategy primer

Your policies, guidelines, and governance

When adapting IT operation processes, the scope of change shouldn't be limited to finite projects. Adaptation and change must be embedded into the resulting product itself. In the high-pressure, continual operation of IT systems, completing a defined list of project tasks or milestones can be motivating. This approach makes sense for one-off issues or tasks, but it is not ideal when the deliverable is meant to be a durable system element on which other teams rely.

> Red Hat expresses this policy principle Projects ⟶ Products.

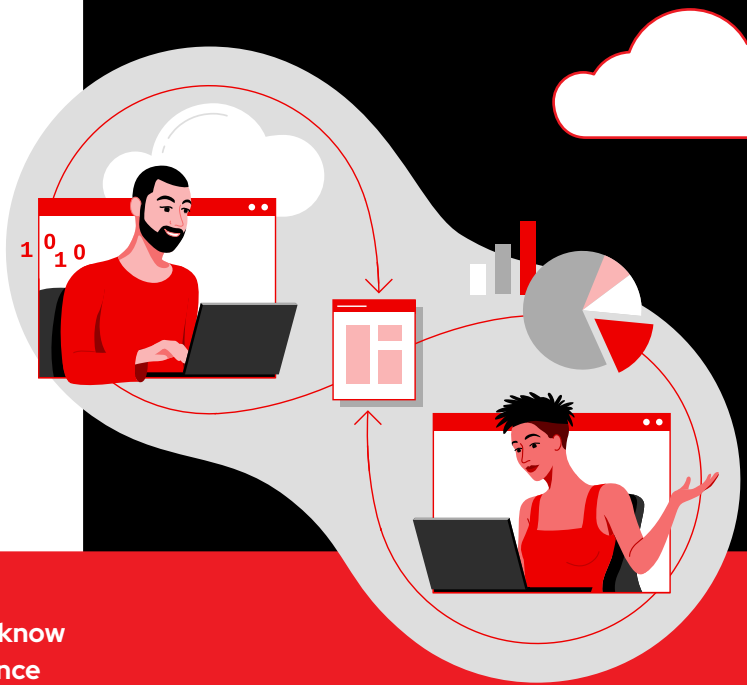
Thinking of IT systems as products causes us to consider ongoing production, the users, and what the users need. Then, if you're planning to make changes, think about how to best communicate your plans ahead of time. All these considerations would apply to products used by external customers.

Following this principle also means that you need to have a core plan for governance. Governance describes the system the cloud team operates and is held to account under. Ethics, risk management, compliance, and administration are all elements of governance. Ultimately, governance in organizations ensures that the investments support the business objectives.[1]

Turning strategy into action

The strategic principles outlined earlier are abstract enough that they may be applied to a variety of systems, so the next logical questions are:

- What do these systems look like?
- What are the components to consider?
- How are they organized?



Read more

Read more about what you need to know about cloud infrastructure governance

[1] Swanepoel, Johan. "What you need to know about cloud infrastructure governance." Red Hat, 9 Dec. 2021.

Architecture for success

An application environment has several components which are interconnected, and the strategy principles mentioned previously should be maintained across these layers and should inform their design. The division is as follows:

1. **Platforms and application delivery.**
The infrastructure that hosts the code processes that instantiate the applications that deliver value at the operating system and datacenter level

   With platforms and application delivery, consider:

   I. Making the platform as self-service as possible.

   II. The reliability of the entire platform when the architecture is distributed.

   III. Automation is key in complex hybrid cloud environments.

2. **Applications from custom code.**
Support for the execution of custom code-based applications that are innovative in functionality and separate an organization from its competitors

   Key considerations of application runtime strategy are:

   I. **Autonomy with consistency**— supporting the use of different languages and approaches throughout the organization.

   II. **Developer productivity** supported by tight integration with DevOps and developer tools.

   III. **Establishing a comprehensive security strategy.**

Architecture for success

3. **Applications from integration.**
Support for communication between applications that creates the functionality users experience directly

The most important integration considerations for organizations are:

I. **Mapping out a strategy** for which products and services become available and how they will be accessed by other software teams.

II. **Determining a strategy** for who owns integrations between these systems.

III. **Addressing strategic questions**, such as setting best practices for API management, virtualization of federated data, messaging, and data transformation across datacenter and cloud integrations.

4. **Applications from process automation.**
Support for applications that involve not only executing code, but also processes that engage humans (workflows) and logical rules contributed by non-developer experts in the organization

The strategic decisions relevant to this area include:

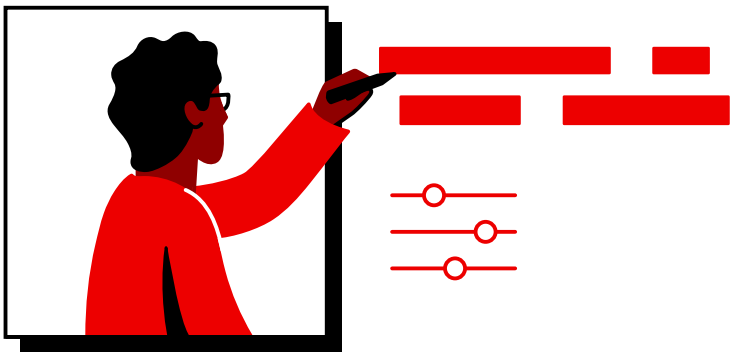
I. Allowing more employees, partners, and customers to participate in the creation and configuration of process-driven applications.

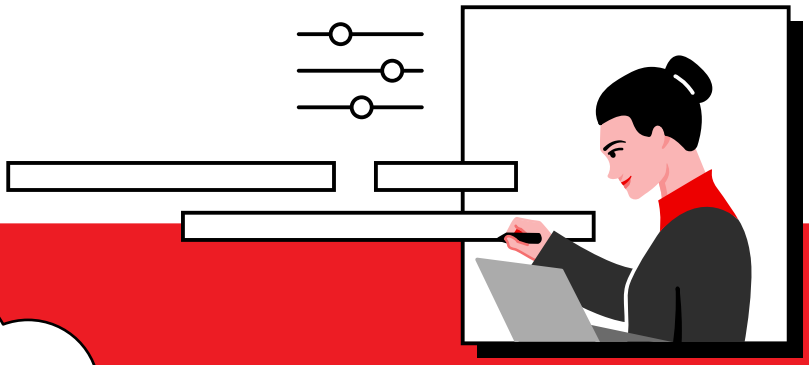
II. Determining protocols and procedures, roles and responsibilities for collaboration between line-of-business and IT when automating manual business processes.

III. Deciding on approaches to use Function-as-as-Service (FaaS) and the cloud for decision and intelligent process automation (IPA).

IV. Providing process management on-demand as a service.

V. Replacing custom-engineered, compiled code for processes with configurable rules and standard formats.





Architecture for success

5. Developer tooling, DevOps, and management.

Capabilities that wrap around the application environment to keep team members productive and systems functioning

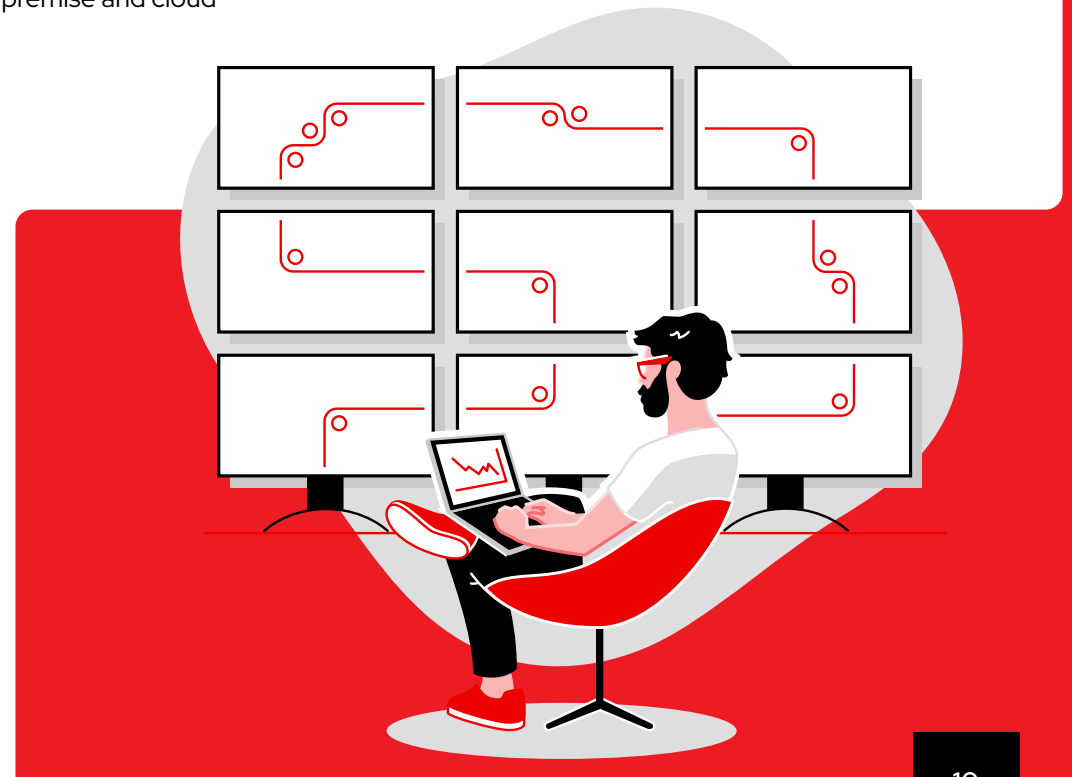
From a long-term planning perspective, the following strategic areas are key for developer tooling, DevOps, and application management:

I. **Universal capabilities:** Ensure that the same underlying infrastructure, services, and automation are available in each location and for the application delivery infrastructure (platform and automation) as well as the applications themselves.

II. **Developer tooling approach:** For example, a browser-based integrated development environment (IDE) running on containers may be the best option for providing a consistent developer experience across on-premise and cloud environments.

III. **A product mindset among development and operations teams:** Creating applications and services for reuse is hard work. However, it is harder to build trust in products and services operated by others. A product mindset requires teams to think long term about the systems they provide. This approach affects their planning process and will need to be captured in the automation, daily habits, and practices that go with updating, deploying, and retiring code.

IV. **Automation:** Without careful management of the processes and automation code themselves, a successful DevOps implementation quickly becomes a rigid system with diminishing returns.



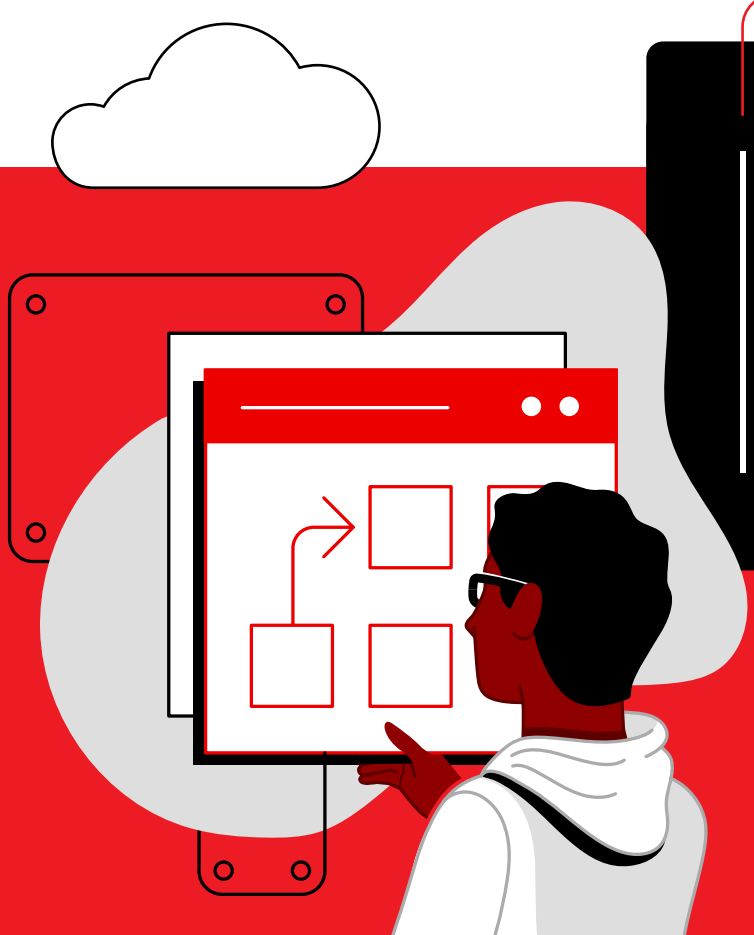
What's next?

IT systems have never been so valuable. However, without a cloud-native, agile strategy that addresses both reliability and productivity, businesses will increasingly struggle to compete in the market. While previous eras of IT have experienced great innovations, the past few years have seen an unprecedented reliance on IT to power almost every business function. Back-office and front-office systems must work together like never before.

The desire to explore new technologies and operating models also means there needs to be a consideration on how best to internally build skills and environments that encourage learning and differentiation.

To succeed in this environment, organizations need to provide a healthy, robust, and productive application environment that serves as a foundation for innovation. This application environment needs to support multiple datacenters and clouds while weaving in the latest, most productive cloud-native technologies.

Your organization needs applications that distinguish you from competitors while engaging stakeholders and providing value. Our objective is to consolidate strategic insights from customers and technology deployments to help others plan and strategize and to offer services that help with development, delivery, integration, and automation.



> To succeed in this environment, organizations need to provide a healthy, robust, and productive application environment...

What's next?

Open hybrid cloud is Red Hat's recommended strategy for transforming your applications, infrastructure, and processes in order to deliver a truly flexible and cloud experience with the security, speed, stability, and scale required for digital business transformation.

Red Hat's hybrid cloud strategy is open because it is based on enterprise open source software, which offers stable community innovation, open standards for broad compatibility, and open APIs for flexible integrations. Rather than getting locked into one vendor or technology, open hybrid cloud gives you the flexibility to put your workloads wherever makes the most sense for your business goals.

Learn more

For a more detailed and technically specific guide for adapting a complex IT system in a modern environment, please read the full e-book:

Cloud-native meets hybrid cloud: A strategy guide.

While not all the insights in this e-book will apply to every scenario, hopefully a number of the questions and considerations posed will be helpful on your IT journey.

About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.
As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.

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