

Point of view | Application Services

Beyond uptime: Site reliability engineering for business resiliency



Advancing application management

Businesses today need agility and stability in their applications. Given that about 47% of companies are estimated to have over 500 applications in the next five years, it's safe to say application management is a high priority.¹

Site reliability engineering (SRE), Google's brainchild to navigate complex systems at scale, seamlessly blends software engineering and IT operations.¹ This approach thrives on a culture of automation, continuous improvement and vigilant monitoring. SRE teams ensure reliability, availability and scalability while implementing key principles like service-level objectives (SLOs) and tracking error budgets and incident response. A recent IDC paper sponsored by NTT DATA found that SRE, which is currently deployed in managing 42% of applications worldwide and expected to support 55% of apps in the next five years, plays a crucial role in enhancing business resiliency.²

According to Gartner®, "By 2027, 75% of enterprises will use SRE practices to optimize product design, cost and operations to meet customer expectations, up from 10% in 2022."³

IT operations traditionally centered on infrastructure management, including the intricacies of hardware, software and server configurations. Cloud computing ushered in a paradigm shift, transitioning the focus from infrastructure to service management. This eventually led to the advent of DevOps, which harmonizes app development and operations to streamline the software lifecycle.

As applications have and continue to grow in complexity and distribution, there's a demand for a nuanced approach to ensure reliability and availability. SRE fits the bill. There's also a natural synergy between DevOps and SRE: 84.7% of organizations actively integrate both approaches.²

But SRE isn't simply a theoretical enhancement for businesses. It also translates into tangible benefits. Google's own study reveals that organizations adopting SRE practices stand to gain a 50% reduction in operational costs, a 30% decrease in downtime and a 10% dip in incident volume.⁴ And because resilience isn't an aspiration but a necessity, SRE has emerged as the linchpin for swift and efficient business recovery.

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How SRE supercharges your cloud-native journey

Application development in the dynamic landscape of cloud-native technology focuses on harnessing the capabilities of cloud computing technologies, including containers, microservices and serverless computing. This approach empowers your organization to fast-track application development and deployment while offering enhanced scalability and resilience. But as you embrace it, you're likely to confront fresh challenges.

In the broader spectrum of application management, adopting cloud-native practices helps optimize efficiency and address modern software development challenges. And it is in this context that the principles underpinning SRE will help your business fortify resilience and scalability within a complex digital ecosystem.

Automation stands as a cornerstone, enabling SRE to minimize manual errors while freeing human resources to address important issues. This strategic use of technology not only enhances efficiency but also contributes to overall system reliability.

Reliability uses a rigorous approach with metrics such as SLOs and service-level indicators (SLIs) as navigational tools to guide SRE efforts toward achieving and maintaining desired levels of service reliability.

Post-mortems are blameless and provide a forward-thinking perspective. In the aftermath of incidents, the focus pivots from assigning fault to learning and improvement, which fosters a culture of continuous enhancement.

Capacity planning emerges as a proactive measure within SRE, enabling your organization to anticipate future needs. This foresight becomes increasingly critical. As such, capacity planning is an integral aspect of SRE's contribution to overall system resilience and reliability.

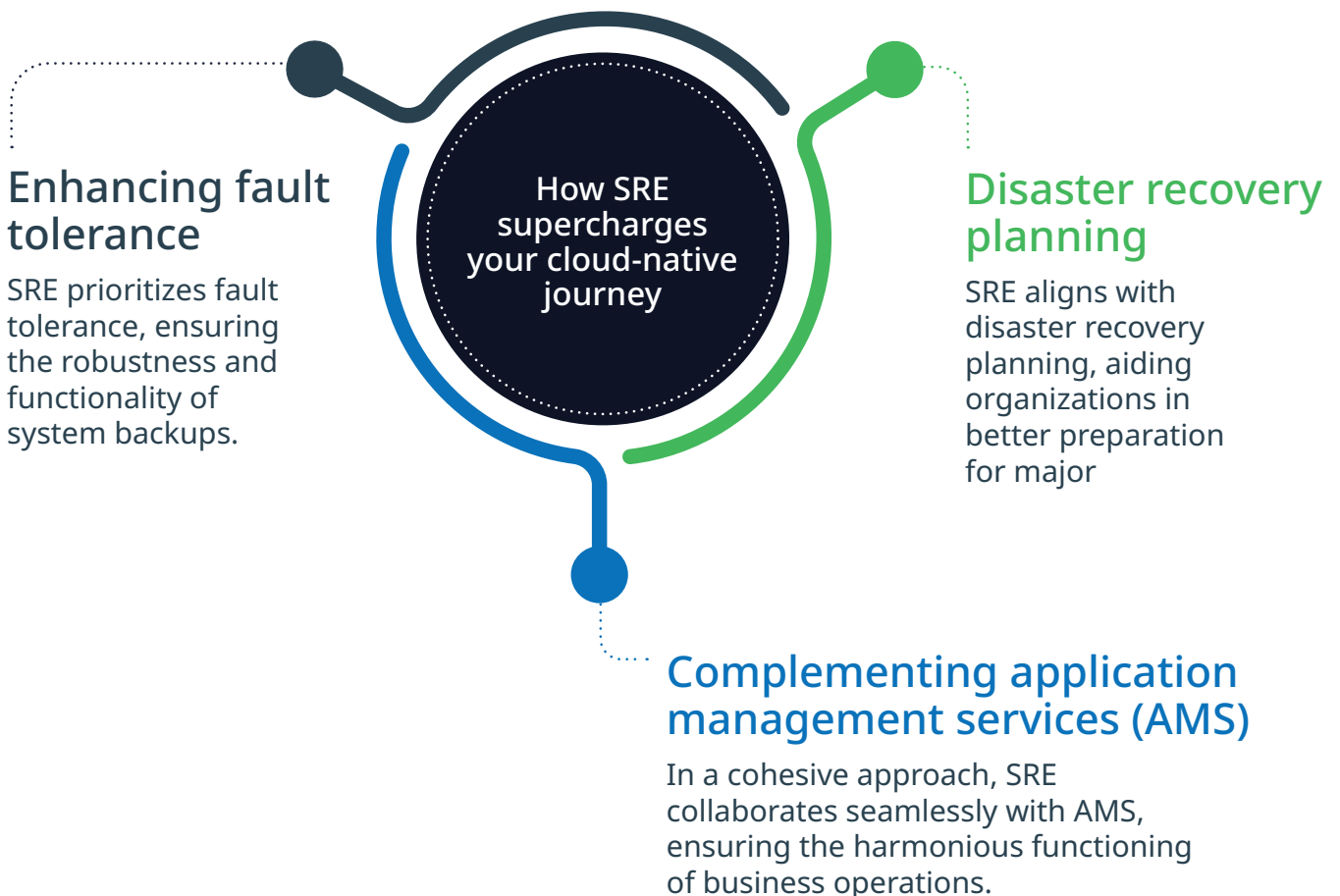


Figure 1. Supercharging your cloud-native journey with SRE

Implementing SRE practices within cloud-native development environments yields a multitude of advantages:

- **Enhanced reliability and availability.** SRE practices prioritize the reliability and availability of services, crucial in the dynamic context of cloud-native development.
- **Increased scalability.** By concentrating on building scalable services, SRE practices empower systems to adeptly handle heightened loads and increased traffic.
- **Swift incident response.** Efficient incident response procedures enable teams to address unforeseen issues promptly and effectively.
- **Continuous improvement.** Through automation and monitoring, SRE practices emphasize ongoing enhancement. This fosters a culture of learning from incidents, facilitating continual improvements within the system.
- **Improved collaboration.** SRE practices promote collaboration between development and operations teams. This collaboration enhances communication and facilitates the resolution of challenges, contributing to the overall efficiency of the development lifecycle in cloud-native environments.



Crafting a robust, modern application delivery framework

In modern application delivery, strategic milestones that reflect the maturity of your organization's capabilities mark the journey toward resilience. Central to this evolution is the imperative of building expertise — a focal point for navigating diverse technologies in which the progression unfolds through five distinctive stages (see Figure 2).

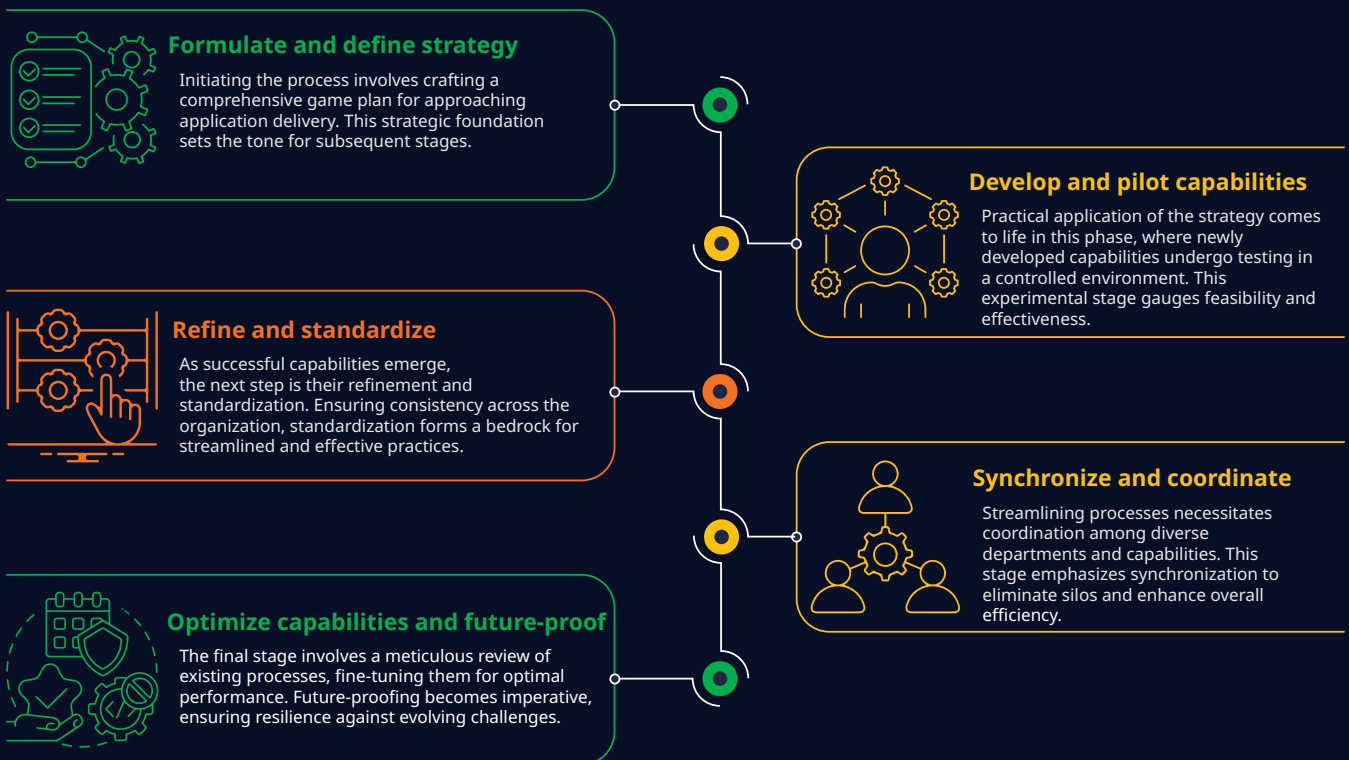


Figure 2. Building expertise: A five-step approach to crafting a modern, robust app delivery framework

With organizations estimating that more than half of their application portfolios will be cloud-based in the coming years,² SRE transitions from a good-to-have to a must-have for any organization aspiring to thrive in the modern digital landscape. Having recognized the value of SRE, your need to know how to implement it. We recommend the following best practices:

- **Promote automation.** Prioritize automation to save time and minimize errors. Automation not only enhances efficiency but also ensures consistency in processes.
- **Focus on important metrics.** Utilize metrics as beacons guiding more informed decisions. Metrics such as SLOs and SLIs provide quantitative insights into the reliability of services.
- **Learn from mistakes.** Embrace setbacks as invaluable learning opportunities. The SRE mindset revolves about continuous improvement, where each incident becomes a stepping stone for refining and enhancing processes.
- **Invest in training.** Provide ongoing training for your SRE team. Keeping abreast of the latest trends and skills is paramount in navigating the ever-evolving landscape of modern application deliver

SRE implementation is a multifaceted journey, and the choice of tools plays an important role in your success (see Figure 3).



Figure 3. Site reliability engineering tools that help you get past tech challenges

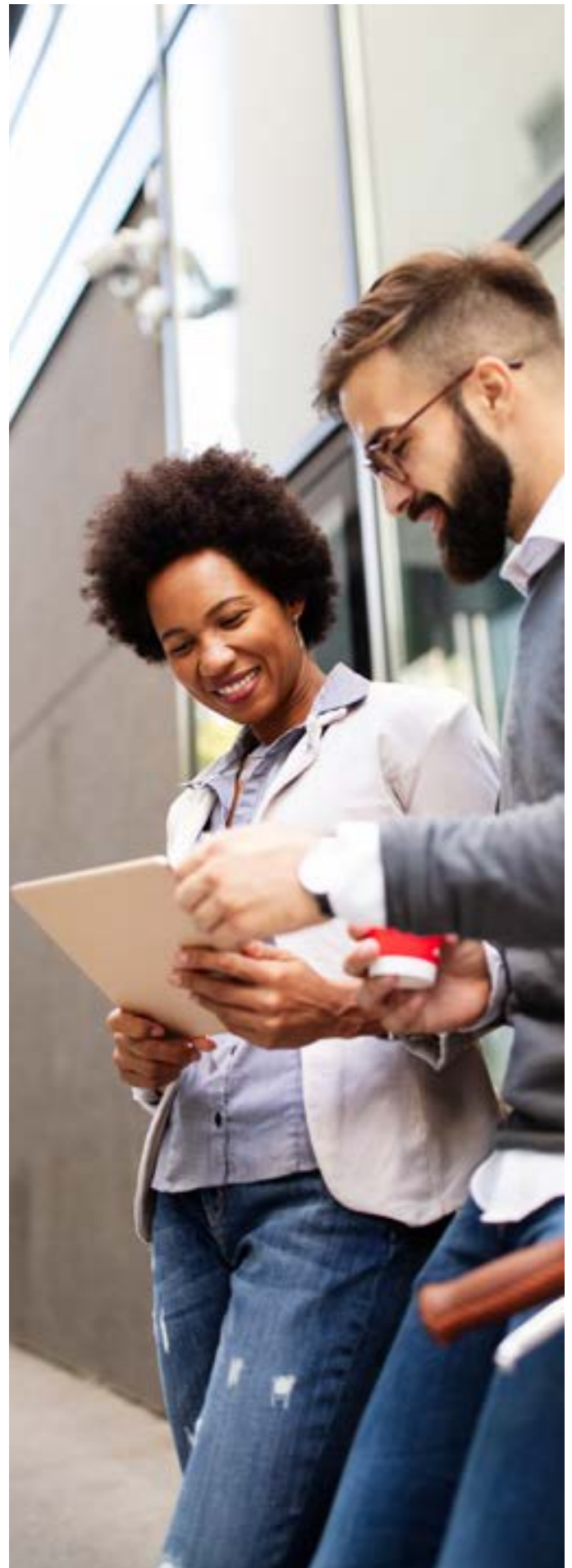
As a set of evolving practices, SRE has become a cornerstone for effectively managing complex systems. Integrating this method empowers organizations on the journey to exceptional application reliability and availability. In the context of cloud-native development, SRE practices assume even greater importance. Adopting these practices can help your organization manage application reliability and scalability while embracing the advantages of cloud-native technologies.

How NTT DATA facilitates SRE adoption

As a leading global technology services company, NTT DATA offers comprehensive SRE solutions. Our experts:

- **Assess current infrastructure and processes.** By evaluating your existing infrastructure and processes, we'll help your enterprise pinpoint areas for enhancement. This includes scrutinizing system performance, identifying bottlenecks, and assessing the efficacy of current tools and procedures.
- **Design resilient systems.** We'll support your enterprise in designing and implementing resilient systems with high-availability, scalability and security. Strategies involve integrating redundancy, failover mechanisms and disaster recovery plans, as well as leveraging cloud-native technologies like Kubernetes and Docker.
- **Implement automation.** We facilitate the implementation of automation across the software development lifecycle. This encompasses continuous integration and delivery pipelines, automated configuration management and using tools like Terraform for infrastructure as code.
- **Provide SRE expertise.** Our team of seasoned SRE professionals will support your enterprise in establishing and managing SRE processes. This includes defining SLOs, conducting post-incident reviews, establishing feedback loops and fostering a collaborative culture.
- **Deliver training and upskilling.** Your enterprise can benefit from our training and upskilling programs by nurturing a reliability-centric culture. This involves educating developers and operations teams on SRE best practices, implementing knowledge-sharing platforms and fostering a continuous learning ethos.

By harnessing NTT DATA's expertise and solutions, your enterprise can seamlessly adopt SRE, enhancing application reliability, scalability and security in a cloud-native landscape.





Ready to get started?

Our proven expertise not only provides operational efficiency but also offers up to 40% savings in operational costs. We're committed to guiding clients through the complexities of modernizing an application portfolio with best-in-class SRE practices. Let's work together to build a robust digital future for your organization.

Visit our [Digital Application Services](#) page or [contact us](#) to learn more.

About the author

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Pushpender specializes in cloud-native application development using .NET, C#, Restful API and microservices. With over 17 years of experience, including more than eight years focused on Azure Cloud, he has extensive knowledge and expertise in the IT industry.





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