Ever-ready infrastructure

Cracking IT and talent debt to thrive in the Cloud Continuum now and in the future

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IT's staggering evolution is a double-edged sword.

Enterprise technology continues to advance at an accelerated pace. And each step forward surpasses the next. As the saying goes, "the more advanced technology gets, the quicker it becomes more advanced". [1] From multi-cloud and hybrid cloud to AI and ML to edge computing, these advances have unlocked an enormous number of new opportunities for generating business value. The catch? They've also left IT departments severely pressed to keep up—let alone get ahead of the technology curve.

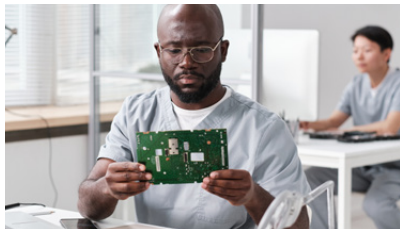
That matters because enterprise IT infrastructure is the backbone of today's digital business. It provides the compute, network, workplace and data platform capabilities needed to empower the users and run the applications that run the business. It provides the foundation on which exceptional experiences for consumers and employees can be built. Yet this technical landscape is changing rapidly. Complexity is on the rise. Digital talent is scarce. Infrastructure is becoming code and cloud is evolving into a continuum of technologies. At the same time, a rapidly changing business landscape is demanding ever faster transformation timelines.

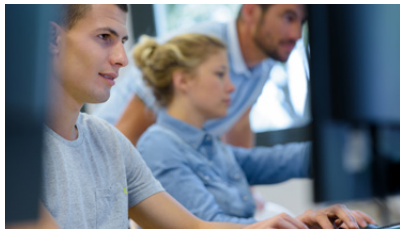
The combined effect? There's huge pressure on IT departments to support an increasingly demanding and complex set of requirements with legacy technology and skills—some of which simply can't be met with existing infrastructure environments.

But there's more. All this acceleration has also radically changed the way IT and infrastructure are actually delivered and operated. And the shift to as-a-service and infrastructure-as-code has left many organizations with a massive technology-related headache.

Think about all the technology accumulated over the last 20 to 30 years, and all the skillsets that go with it. These once-pivotal capabilities have become increasingly burdensome. And they're creating a growing technology debt and talent debt. The Infrastructure workforce that was originally hired for their expertise in traditional data centers, mainframes, networks, and service desk operations now find themselves displaced by cloud, AI, automation, site reliability engineering and edge computing.[2] Without proper investment and support to reskill, these highly capable resources struggle to stay ahead of the mounting digital skills needed to work a modern Infrastructure organization. It's no surprise, then, that many organizations feel daunted by the prospect of unwinding their businesses from legacy infrastructure and commercial commitments (see inset). In fact, it may explain why only 12 percent of companies say they're currently reinventing their business with cloud.[3]

Why infrastructure evolution is a hard problem: Five common barriers




01

Traditional data centers

Some organizations made the decision to invest in the purchase, maintenance and management of their own data centers – an expensive, long-term commitment that may no longer align with sustainability objectives.

02

Owning hardware assets

Asset purchases made with three-to-five-year depreciation cycles and/or contractual leases lock up budget which could otherwise be invested in moving to cloud.

03

Software licenses

Many organizations spend 35 to 55 percent of their IT budgets on software. And some of this software is likely redundant, especially where the organization is siloed or lacks governance.

04

Talent debt

Most IT organizations have invested in training and certifications for their people over the years. But, with the explosion of digital technologies, many are struggling to continuously upskill and rotate their talent to stay relevant and competitive.

05

Mainframe legacy platforms

Once the only option for companies with large-scale processing needs, mainframe platforms (Cobol, CICS, DB2, etc.) still operate some organizations' most critical transactions. Cloud is needed to rapidly scale these applications, but significant modernization is required to make it possible.


How to solve infrastructure's Gordian Knot.

Traditional approaches to infrastructure are limiting companies' ability to adapt, innovate and compete. And the longer the delay, the bigger the problem. A new way forward is needed. That means shifting away from "keeping the lights on" approaches. Organizations that fail to transform risk a slow death of eroding competitiveness, perpetually lagging the advances of others.

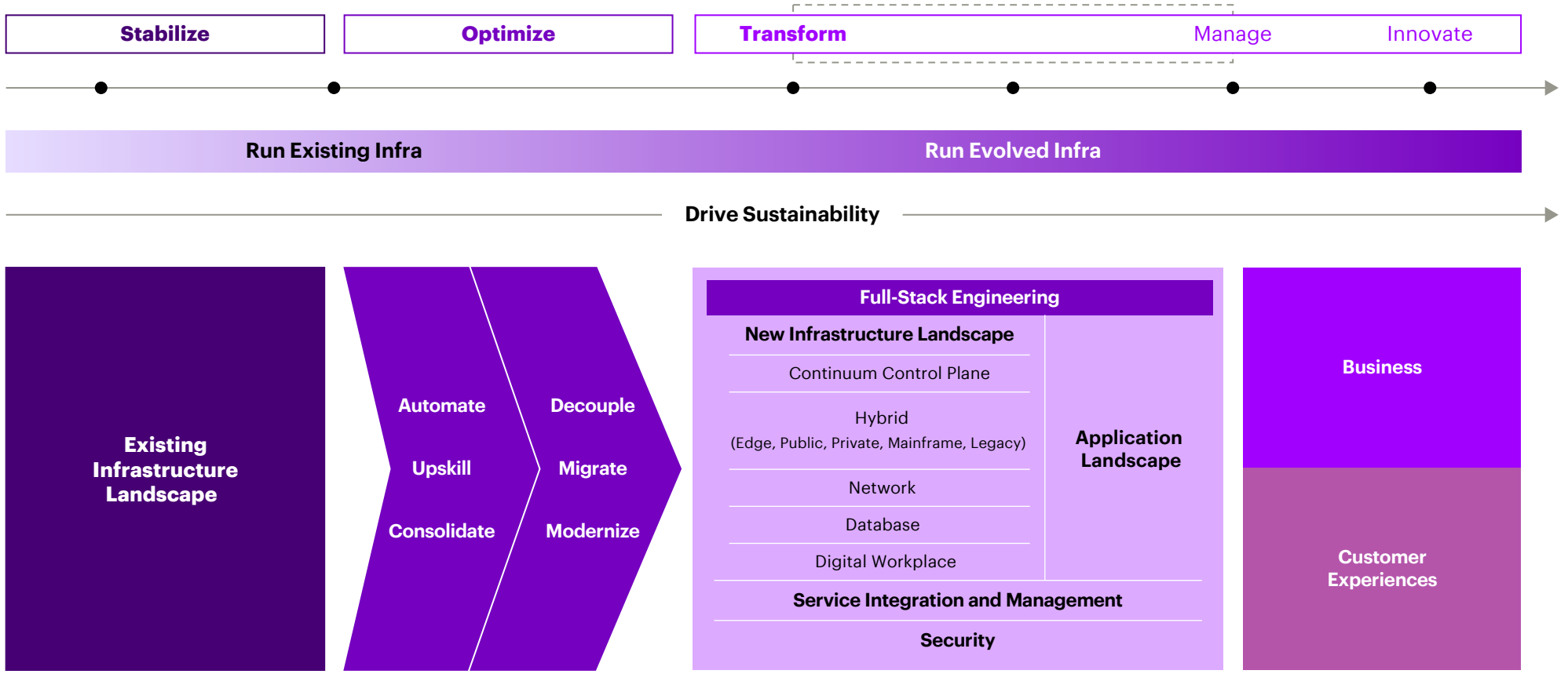
What's needed instead is an infrastructure focused on continuous innovation, automation and optimization. An infrastructure that enhances rather than diminishes competitive advantage.
An infrastructure that recognizes it's now essentially all about software—and has a continuous engineering/re-engineering approach to match.
And an infrastructure that uses AI-based automation, self-service tools and digital skills fit for a software-defined world.

This "new" or modern infrastructure can help organizations keep pace with accelerated change and compressed transformation timescales. But it requires them to evolve how they architect, develop and operate their infrastructure—including compute, network, workplace and data platforms (figure 1).

So what does a modern infrastructure look like? It's an infrastructure that:

- **Is consumable, automated and ready to support DevOps.**
- **Is architected for placement of workloads and, increasingly, data into a "landing zone" best suited to its needs—whether that's public cloud, private cloud, legacy data centers or edge.**
- **Is supported by an enterprise network that is seamlessly integrated, secure and software-driven i.e., infrastructure-as-code.**
- **Addresses the human, physical and digital aspects of the workplace, reducing friction and getting new insights to workers at the right time, in the right way, in the right place, via the right device.**
- **Includes the ability to manage and enable the estate across existing capabilities, technologies and services.**

Figure 1:
A framework for a new modern infrastructure.




How to
get started on
your modern
infrastructure.

Ever-ready infrastructure needs a solid and stable footing on which to build. That's true whether your goal is unlocking business value and innovation today or preparing the organization for the Cloud Continuum tomorrow. Either way, enterprises need to evolve away from a capital-intensive, hardware-oriented infrastructure discipline to one that is software-defined and intelligent. These changes are enabled by new operating models, new skills and new ways of working optimized for cloud, software-defined networks, modern workplace, data architecture and infrastructure engineering.

The key to success? Understanding that every organization has a different starting point on this journey—and different challenges to navigate. For some, it may be people and asset issues. For others, software licensing, mainframe and data center issues. Each organization needs to define what its own barriers are—and chart its own path to innovation and value.

> Accenture uses a stabilize-optimize-transform approach to systematically break down these barriers.

The best part? The timing of each step is flexible. So a business can realize the benefits of stability and optimization today—then kick start a transformation at the time of its choosing.

- **Stabilize.** Introduce automation to increase quality, reduce costs and build the foundation for a multi-speed operating model capable of supporting a hybrid landscape.
- **Optimize.** Free-up funding, people and clear a path to full-stack innovation. Begin continually re-engineering the infrastructure landscape to align with strategic business goals.
- **Transform.** Continue re-engineering the infrastructure landscape while introducing new Cloud Continuum capabilities to accelerate value and unlock innovation.

A **stabilized** environment is one that operates without critical system "fire drills". This is now table stakes, whether or not the organization plans to transform further. In fact, for some companies, just stabilizing and automating operations consumes so much attention and resources that little is left to focus on transformation. As one executive described it, "we don't have enough people to do the regular work, let alone dedicate them to a transformation." At this stage, we focus on "no regrets" foundational skilling. Stabilizing the environment results in a more efficient, automated, resilient and sustainable estate while experiencing fewer critical incidences.

An **optimized** environment is about getting maximum horsepower out of your IT estate and people to support the business. This means better leveraging existing capacity and capability and reducing the cost of operations. It also means being able to re-engineer the infrastructure landscape as new business requirements emerge. An optimized environment also accelerates time-to-market, reduces business risk and further supports sustainability while freeing funds to pursue other activities.

Then, when the business is ready to focus on tomorrow, this stabilized and optimized environment will provide the foundation for a **transformation**. This step expands your footprint in the Cloud Continuum, seamlessly leveraging more advanced technologies and capabilities to exploit a wider variety of opportunities—helping enable greater innovation, agility and alignment to strategic business initiatives with lower risk. The good news? It doesn't have to happen all at once. Each step forward toward transformation unlocks more of the innovative power of infrastructure.

Consider a global aerospace and defence company in need of consolidating more than 50 data centres, replacing obsolete and fragmented infrastructure to lay the foundation for a modern software-defined estate. This included implementing disaster recovery and high availability procedures while optimizing local site hosting proximity services and reinforcing high security standards. These efforts have resulted in a standardized, flexible and secure infrastructure that has reduced cost and risk – setting the groundwork for future transformation initiatives.


When the time is right, take the first steps to transformation.

Once, the focus of enterprise cloud technology was all about the public cloud. But as cloud technologies and cloud operating models have matured, so have enterprise strategies. Today's leaders recognize that cloud value does not come simply from migrating workloads to one or more of the global public cloud hyperscalers. Rather, it's about leveraging a continuum of capabilities—one that spans everything from multiple public clouds to on-device edge computing.

This Cloud Continuum does not have a single technology model, a single location model, or a single ownership model. Those who can harness the Continuum are using the cloud not just as a single, static destination, but as a future operating model. They do this by dynamically balancing public, private, hybrid, co-location, multi-cloud, and edge with advanced practices to support the ever-changing needs of the business. In this way, they ultimately unlock the full range of growth and innovation opportunities that cloud enables.

Not every organization may choose to expand into the Cloud Continuum, but keep in mind that even if you choose not to move significantly into cloud, you still need to manage your infrastructure and your people in a cloud-like way. Otherwise, your performance will suffer and your ability to innovate will be limited.

For those that do choose to exploit the transformative opportunities offered by the Cloud Continuum, their landscape must be engineered to support it.

> There is no one-size-fits-all approach, but a few core elements need to be in place if you're to succeed in tapping into the value of the Continuum.

Migrating your people to the cloud. According to our research, cloud leaders who transformed their people along with their technology achieved 60% higher ROI on cloud investments, than those who focused solely on the technology. However, not all people change programs drive the same amount of value. There are three "no-regrets" people moves for the Infrastructure workforce that have the biggest impact on value at any stage of your journey across the entire Cloud Continuum: alignment, ability, and adoption.

01
Alignment

Redefine the operating model for cloud or cloud-like operations, enabling seamless collaboration between IT and the business, between engineering and operations and between human and AI/machine intelligence.

02
Ability

Reskill infrastructure talent in cloud across multiple disciplines including XaaS, infrastructure as code, software-defined networks, security, continuous integration and development (CI/CD) as well as self-healing and other advanced technologies.

03
Adoption

Support infrastructure workers to embrace new ways of working, including SRE, CI/CD, product management, full stack accountability, DevSecOps, by setting clear expectations, adjusting performance metrics, and creating incentives to align with new objectives.

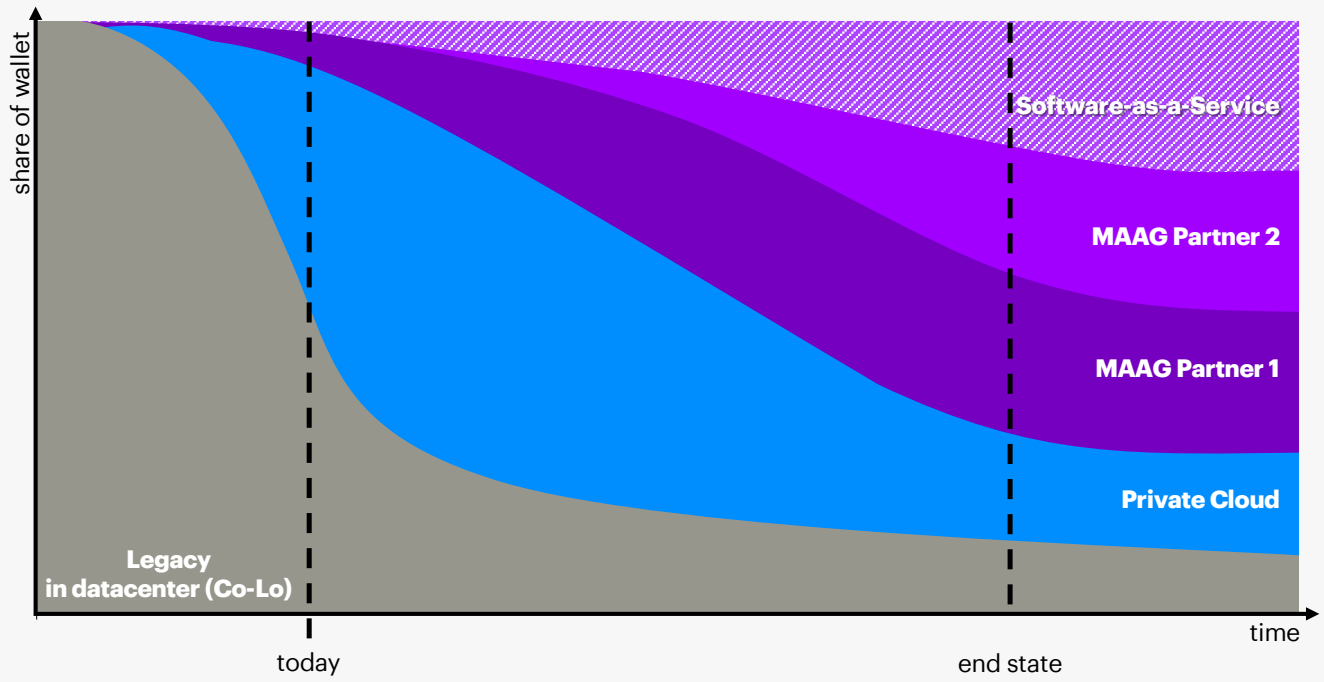
Finding the right landing zone in a new hybrid/multi-cloud world. Leading organizations recognize that value ultimately doesn't come from the infrastructure itself, but from what it enables. In other words, infrastructure does not change the enterprise; applications do.

Consider a network of train tracks versus the trains that run on them. The value to the passenger comes not from the existence of the tracks but from riding the train. However, if the operator doesn't invest in its infrastructure, plus a whole system of network management and optimization, that value is impossible to realize.

The lesson from this analogy? Be led by the needs of those who use the infrastructure. For enterprise IT, that means taking a user-centric, application-centric and data-centric approach to infrastructure (figure 2). That way, an organization can exit the data center and define the best landing zone for each application or dataset, taking into account both the value potential and the cost of migration. **Accenture's Seven Rs methodology** is our framework for guiding these decisions.

Security must also be baked-in from the start. This is too often overlooked, with many assuming that cloud service providers will manage this crucial aspect. An effective cloud security model is a shared, multi-dimensional, collaborative effort. It is one that is secure from the start, introduces proactive compliance, leverages automated and self-healing processes, and uses accelerators to enable security capabilities to be deployed rapidly across the estate.

Figure 2:
Hybrid infrastructure landing zones as percentage of share of wallet (illustrative). Value comes from actively shifting share of wallet in line with business needs and complexity



For example, machine learning or analytics-heavy use cases will often land in the public cloud where the most mature and high-performing data services are to be found. On the other hand, industrial applications requiring exceptionally low latency will typically land in a private cloud or data center. Internet of things use cases, static non-critical legacy applications, and data subject to storage sovereignty rules may all similarly dictate a non-public cloud landing zone.

Hybrid infrastructure is the inevitable outcome of this business-centric approach to enterprise IT. Even the public cloud hyperscalers themselves now agree that hybrid represents the future of enterprise technology, with many offering hybrid, private cloud, or co-location services alongside their public cloud offerings.

> It's a hybrid multi-cloud world, and enterprises need a hybrid infrastructure to match.

WSIB future-proofs its critical insurance and claims services.

Ontario's Workplace Safety and Insurance Board (WSIB) is one of the largest workplace insurers in North America. While focused on the traditional business of workplace safety, WSIB was not keeping up with its customers' evolving needs. That's why in 2017, it took a hard look at its aging and inflexible infrastructure and sought creative opportunities to transform it. WSIB and Accenture implemented new digital and cloud offerings leveraging a hybrid cloud approach to how the insurer provided technology services. This included streamlining internal workflows, establishing a dedicated technical team, integrating data sources and upgrading the internal connections and interfaces.

WSIB now has an infrastructure services strategy and cloud-grounded approach to better meet customer demands today and for years to come. Provisioning infrastructure for new projects used to take days and can now be accomplished in hours. **A new customer self-service portal enables individuals to track and view their WSIB claims information capability. This new approach has resulted in a 70 percent time saving for customers and additional call center capacity for WSIB. It also generated an overall customer satisfaction score of 80 percent, cementing this portal as the highest-rated digital product WSIB has launched to date.** Today, WSIB is a more flexible organization, and one that now is able to work with multiple vendors to boost customer service and drive innovation.

While a hybrid infrastructure provides the foundation on which to build in the Cloud Continuum, it is not the only consideration that will determine success. Properly addressing a handful of additional questions will significantly reduce the risk of your transformation efforts. These include:

- **Can your enterprise network work keep up?**
- **How does the workplace and workforce need to change?**
- **How will you engineer and orchestrate an increasingly complex IT estate?**

There are more questions that will arise, but let's focus on these three critical issues to start.

Building a network to meet your Continuum needs.

For years, **enterprise networks** have been falling behind the curve as executives focused on the migration to cloud. With greater numbers of cloud-based workloads and ever-increasing amounts of data flowing throughout the enterprise, the network can easily become a bottleneck, choking system performance and becoming a source of frustration for every worker.

Now, with an even greater role to play in the Continuum, the network has never been more important to the future prospects of a business. The good news is networks are becoming far more automated, integrated, and software-defined. In particular, SD-WAN technology is transforming networks into platforms, enabling them to be configured and managed in a faster, more automated, more efficient, and more agile way.

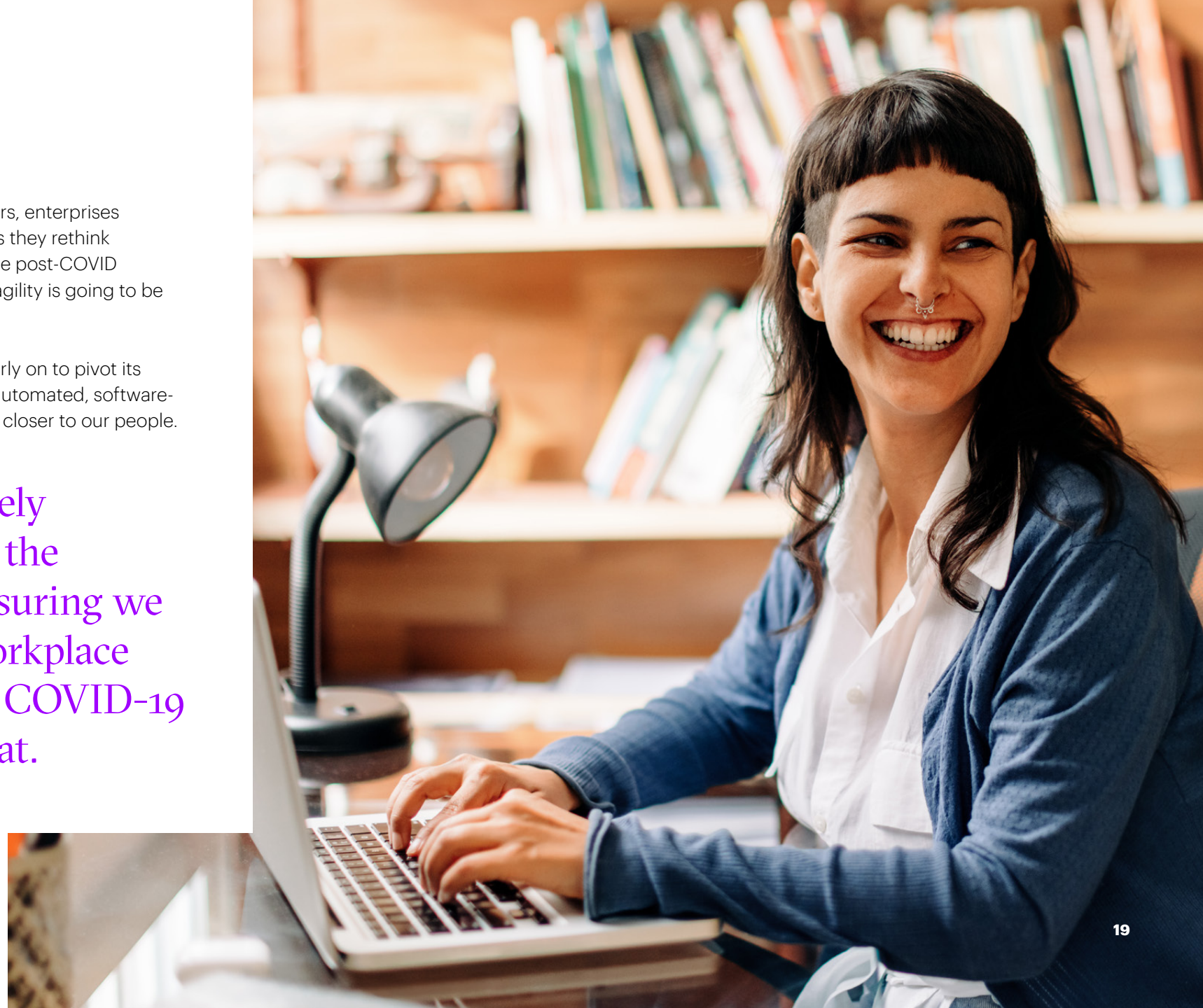
Historically, many enterprises have been cautious about upgrading their networks to SD-WAN. But leading organizations recognize the technology is now mature and the organizational agility it brings is critical for success in the Cloud Continuum. **And by deploying methodologies such as "zero trust" (treating all connections as potentially hostile and requiring authentication everywhere), these leaders have resolved many of their previous security concerns.**

With 5G also poised to enable radically enhanced cellular connectivity and

private network capability over the next few years, enterprises will have a range of modern and agile options as they rethink their networks. And as organizations adapt to the post-COVID "everywhere, anywhere" workplace model, this agility is going to be more and more essential.

Accenture, for example, made a key decision early on to pivot its network to be cloud-first. By adopting a highly automated, software-defined zero-trust model, we brought the cloud closer to our people.

> In doing so, we securely enabled mobility and the virtual workforce, ensuring we could adapt to the workplace disruption caused by COVID-19 without missing a beat.



Creating a workplace to thrive in the Continuum.

Enterprise infrastructure has implications for all dimensions of the new **hybrid workplace**—the human, the physical and the digital. The key objective? To use the huge growth in compute power and data volumes to reduce friction in the workplace and give new insights to workers at the right time, in the right way, via the right device and platform.

Leading organizations are already taking automation to the masses and giving more levers of control to the individual. Some are implementing low-code/no-code platforms that enable employees to augment their own decision-making, automate their own processes, or solve their own business problems with data.

Others are adopting a "process improvement as a service" model through a centralized hub or external provider. Take Microsoft Avanade's productivity studio concept. It provides a cadre of specialized process improvement talent who help individuals and teams create new solutions to specific business problems, which can then be spun off and reused elsewhere.

Workplaces themselves are being transformed through Cloud Continuum connectivity. Some companies are creating digital twins of their physical environments, giving them a real-time view of how the workplace is being used, not only in offices but for all

front-line workers. Soon it will even be possible to build digital twins of individual workers, providing real-time insights into their skills, their contentment levels, and any warning signs of dissatisfaction or cognitive overload.

> The Continuum can also be used to authenticate and empower individuals in a range of new ways, from smartphone-enabled access to physical and digital spaces, to augmented reality experiences for remote workers, to integrated digital workspaces that give employees everything they need to do their job, at their fingertips, in a single environment.

Harmonizing the IT estate across the Continuum.

The Cloud Continuum calls for a radical rethink of both the management platform and the operating model. Sticking with traditional ways of working—typically highly manual, reactive, and error prone—is simply a recipe for chaos and escalating costs.

It's why many have looked to bring stability and control to their IT environments by implementing cloud management platforms. These integrated products help organizations manage cloud environments by enforcing stricter security and compliance and increasing transparency across the full range of different infrastructure components. Crucially, they also enhance spend control by enabling FinOps operating models that bring greater financial transparency and accountability to individual cloud infrastructure decisions.

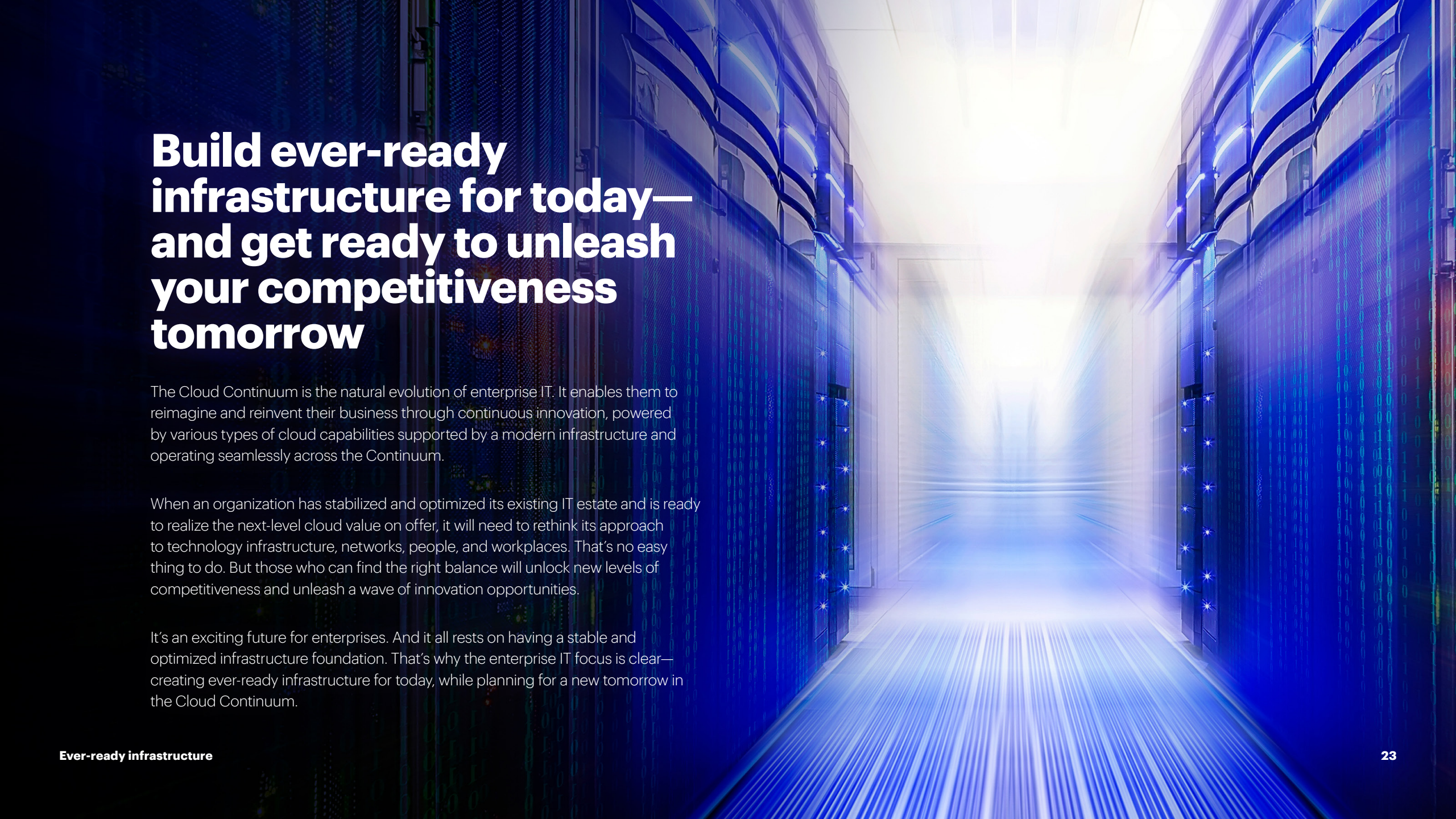
But as the concept of cloud expands, Accenture believes enterprises should go further still. By evolving the concept into a **Continuum Control Plane** (see inset) the organization can extend its strategy beyond a pure technology focus to encompass the entire complexity of the enterprise. That includes the processes for building and consuming cloud continuum capabilities, as well as the skills and capabilities of the people that use them. With a continuum control plane orchestrating across the whole of the infrastructure landscape, organizations can unlock new agile operating models that accelerate concept-to-cash cycles and enable new and better experiences for customers as well as employees.

> In short, a Continuum Control Plane provides the best of both worlds: the stability that's essential to controlling cost and the agility that's critical for future growth and innovation.

Continuum Control Plane: bringing harmony to the continuum

A Continuum Control Plane is a centralized command center for operating in the Cloud Continuum—managing the estate, orchestrating change and driving innovation from public to edge and everything in between, including private, hybrid, multi-cloud infrastructure, applications, data, network, people, and processes.

The Continuum Control Plane performs an orchestration role, bringing harmony to the organizational dissonance that hybrid IT complexity can create. It is differentiated by its extensive use of automation and self-service, radically simplifying how organizations build, manage and consume services across the full range of Infrastructure and Cloud Continuum infrastructure. It balances organizations' need for operational and financial stability with their need for rapid innovation and agility.



Build ever-ready infrastructure for today—and get ready to unleash your competitiveness tomorrow

The Cloud Continuum is the natural evolution of enterprise IT. It enables them to reimagine and reinvent their business through continuous innovation, powered by various types of cloud capabilities supported by a modern infrastructure and operating seamlessly across the Continuum.

When an organization has stabilized and optimized its existing IT estate and is ready to realize the next-level cloud value on offer, it will need to rethink its approach to technology infrastructure, networks, people, and workplaces. That's no easy thing to do. But those who can find the right balance will unlock new levels of competitiveness and unleash a wave of innovation opportunities.

It's an exciting future for enterprises. And it all rests on having a stable and optimized infrastructure foundation. That's why the enterprise IT focus is clear—creating ever-ready infrastructure for today, while planning for a new tomorrow in the Cloud Continuum.

About the authors

Philippe Chauffard
Global Lead, Infrastructure Engineering, Cloud First

Philippe has extensive cloud and infrastructure experience, ranging from strategy to transformation, migration and operations.

Ricky Santos
Global Lead, Technology Portfolio Delivery Management

Ricky has extensive experience across IT infrastructure including cloud services, operations, network, global compliance monitoring and risk management.

Yaarit Silverstone
Global Strategy Lead, Talent & Organization/Human Potential

Yaarit partners with CEOs and the entire C-suite to enable transformation and deliver sustainable capabilities and growth.

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