cologix

Transforming data centers for the AI era

How Cologix keeps pace to meet growing AI demand

82% of companies are either using or exploring the use of AI

Artificial intelligence (AI) holds immense promise. Already, it's transforming industries by personalizing healthcare, preventing finance fraud, optimizing retail inventory and predicting equipment failure. According to one report, **over 82% of companies** are either using or exploring the use of AI. And the race to keep pace with it is just beginning. While the current AI market is already sizable, it's set to grow **by over 13x** over the next decade.

In fact, AI is evolving faster than the infrastructure required to support it. AI workloads, such as machine learning, deep learning and neural network training, require significantly more power than traditional compute. As these workloads become more common, data center power demand is projected to increase. A **recent report** found that data centers consumed around 4.4% of total U.S. electricity in 2023 and are expected to consume approximately 6.7 to 12% of total U.S. electricity by 2028.

Addressing the complex challenges of AI-ready infrastructure

Supporting AI is not as simple as scaling up existing infrastructure. Traditional data centers were not designed with the unique requirements of AI in mind, and adapting to these needs poses significant technical and operational hurdles. From power demands that push the limits of infrastructure to cooling systems strained by high-density configurations, building AI-ready data centers or retrofitting traditional facilities is no small feat. AI service providers must also ensure low latency for real-time AI applications such as inference and model training. Connectivity to onramps and access to multiple network providers is a must for seamless data transfer. These issues are compounded by global power and resource constraints, making it essential for data center operators to innovate and adapt continuously. Specific challenges include:

AI workloads demand more

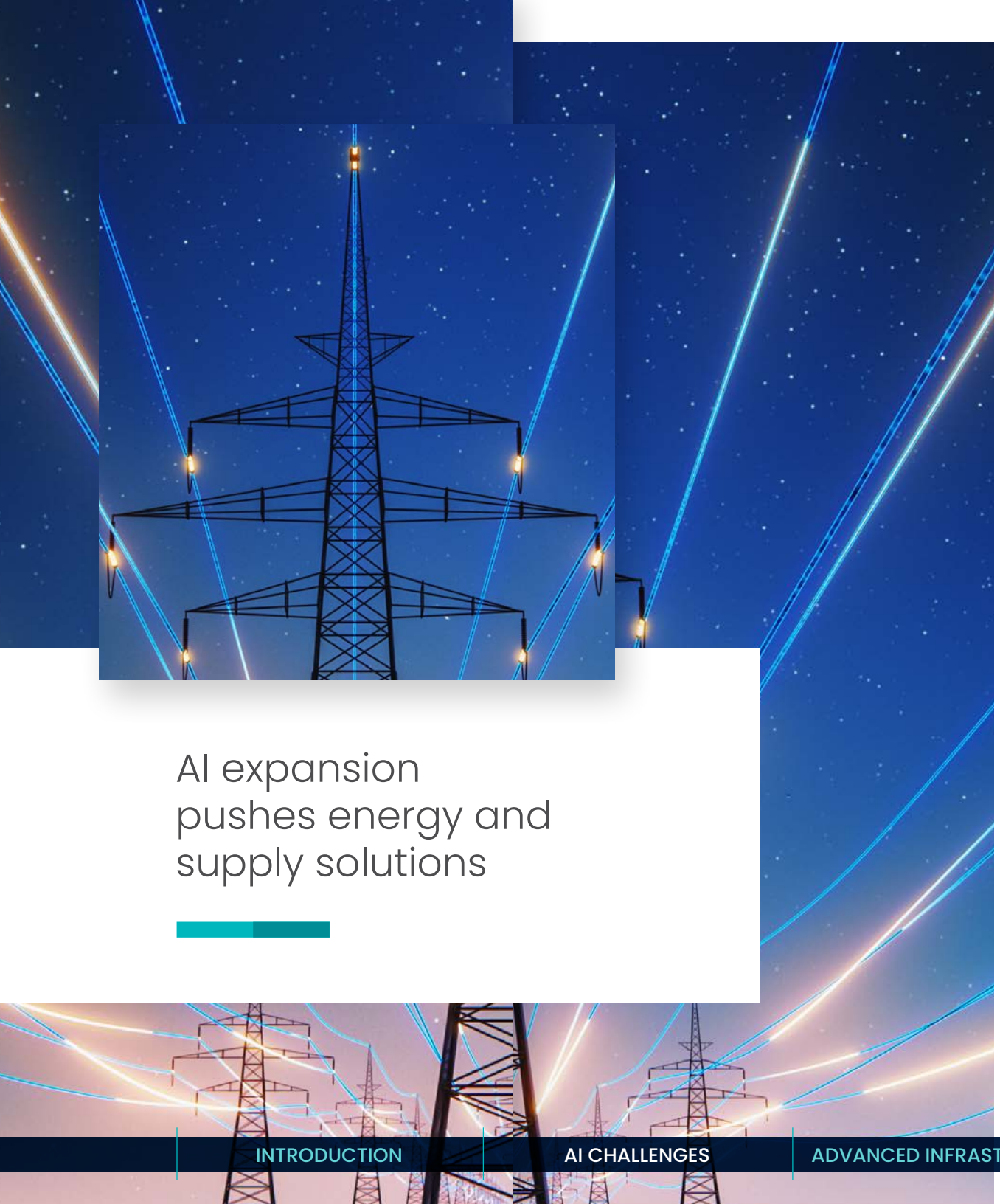
Meeting the steep growth of power and density demands

One of the biggest challenges in supporting AI workloads is the intense power demand. Traditional data centers typically managed up to 45 kW per rack but AI workloads now require densities up to 135 kW, with some predictions pushing toward **200 kW per rack.** This rapid rise in density requirements risks overwhelming current capacities, requiring data center operators to plan meticulously for scalability. At the same time, ensuring reliability in these high-density environments is critical for maintaining uptime and avoiding disruptions, particularly as AI workloads become central to mission-critical business processes. Without careful management, these escalating power demands could exceed the available supply, particularly in areas with limited capacity or regulatory constraints.

Balancing cooling needs with space, costs and the environment

AI workloads generate significant heat, making advanced cooling solutions essential. Traditional air cooling methods struggle to keep up with the high-density requirements of AI servers, forcing businesses to adopt newer cooling techniques like Direct-to-Chip (DTC) cooling and pushing data centers to offer extended cold aisle designs. However, implementing these advanced cooling solutions brings its own challenges. Operators must balance spatial requirements, cost considerations and environmental impact, all while ensuring that cooling methods are compatible with high-density AI setups. Ensuring the reliability of these emerging systems is also crucial, as a cooling failure could jeopardize the operational integrity of an entire AI deployment.

Cooling at the edge of innovation



AI expansion pushes energy and supply solutions

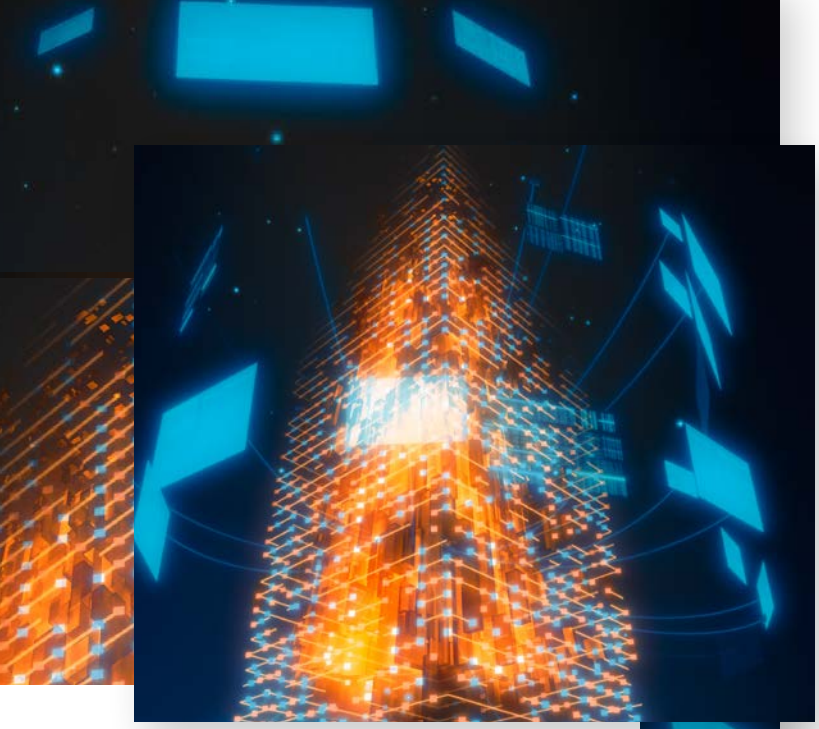
Industry constraints and resource scarcity

Meeting AI infrastructure needs also requires navigating broader industry constraints. Global power shortages, regulatory hurdles and supply chain issues all add layers of complexity. Power availability, in particular, is a critical challenge. The aging power grid, increasing frequency of extreme weather events impacting grid reliability, regulatory and policy complexity, and the transition from fossil fuels to renewables are some of the challenges facing the energy industry. The rapid expansion of AI and data centers is accelerating the need for grid infrastructure upgrades. Securing sufficient power often involves lengthy approval processes and, in many cases, delays due to limitations in local power grids. Additionally, supply chain disruptions can delay hardware sourcing, impacting deployment timelines.

How advanced infrastructure solutions solve AI challenges

To address the complex challenges of infrastructure built for AI service providers' workloads, Cologix offers a robust suite of solutions uniquely tailored to their needs. By prioritizing power, cooling, connectivity and sustainability, Cologix ensures flexible and scalable AI-ready infrastructure. In addition, we're committed to expanding interconnection opportunities by targeting markets rich in fiber and power. This extensive connectivity ensures access to diverse onramps and carrier networks, which is essential for minimizing latency and maintaining seamless AI operations.

Our data centers also offer access to carrier hotels and dynamic ecosystems, ensuring comprehensive solutions for our customers' evolving needs. This approach enables AI service providers to scale efficiently, manage growth effectively and ensure reliable performance. With security and compliance as core priorities, Cologix offers digital infrastructure designed to protect sensitive AI workloads while meeting industry standards.



Scalable campuses support the growth of AI

Edge and high-density computing

For AI applications that demand real-time processing, low-latency capabilities are essential. Cologix offers digital edge and hyperscale edge data centers strategically distributed across North America, with 45+ data centers spanning 12 markets across the U.S. and Canada. By reducing the distance that data must travel to centralized hubs, Cologix brings processing power closer to end-users, supporting faster data processing for these applications.

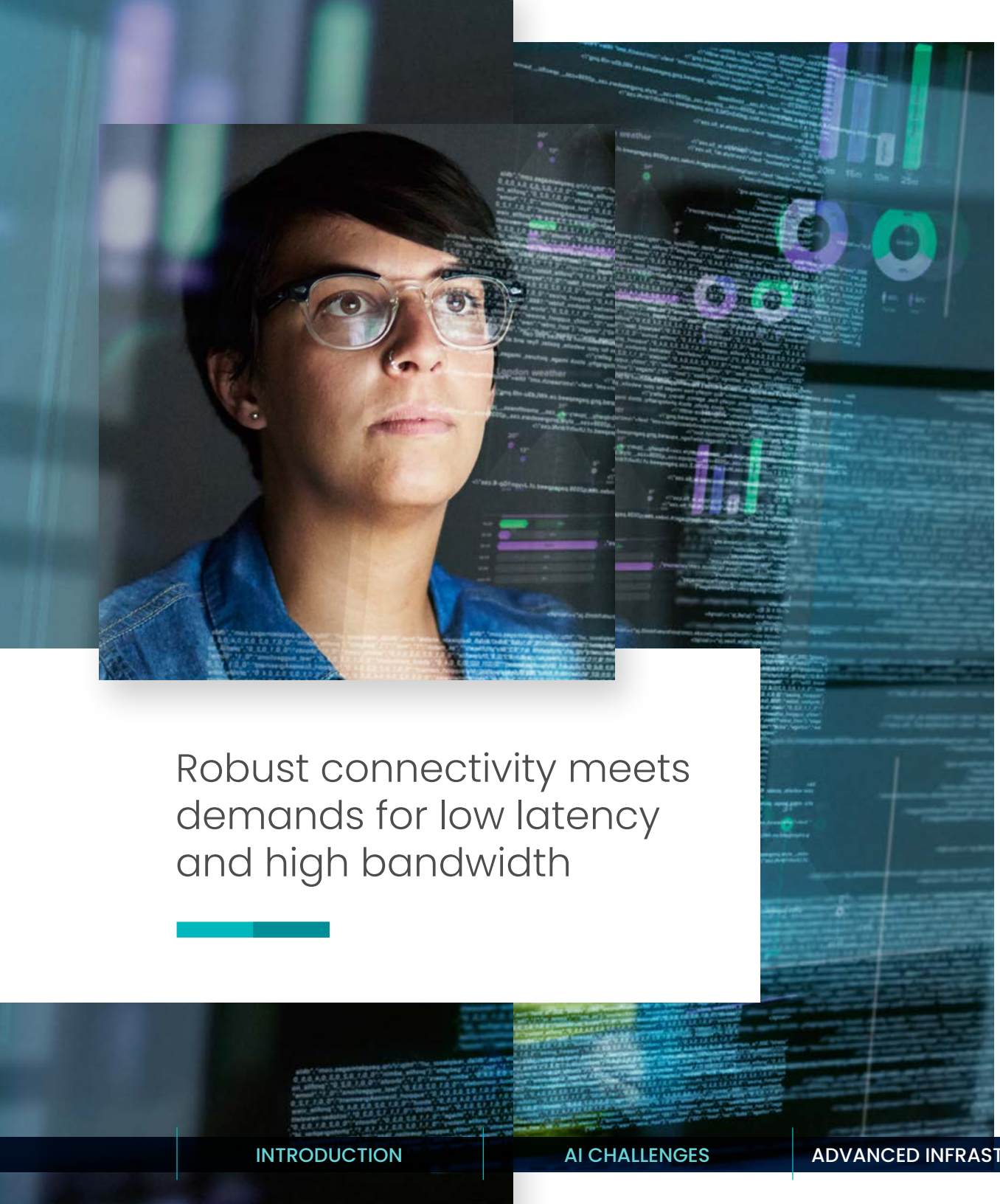
The result is a seamless ecosystem of carriers, cloud providers and onramps that AI workloads can access with minimal latency disruptions. This robust connectivity allows AI service providers to support a range of latency-sensitive applications, from autonomous vehicle development to real-time customer interactions. Additionally, Cologix's infrastructure is designed to be reliable, ensuring that high-density and hyperscale workloads maintain consistent performance, even under heavy demand.

For hyperscaler and large service provider power-intensive AI workloads, Cologix offers Scalelogix℠ campuses specifically designed for high-density and large-scale computing. These campuses provide multi-megawatt capabilities, allowing AI service providers to scale their power needs as they grow. Cologix's flexible power options accommodate both startups looking to scale incrementally and established providers with more consistent power demands, giving AI service providers the adaptability they need to expand over time.

Advanced cooling solutions

As AI workloads intensify, advanced cooling solutions have become imperative. Cologix facilities incorporate advanced technologies such as Direct-to-Chip (DTC) cooling, which circulates a liquid coolant directly to high-power components like GPUs and TPUs. This targeted cooling method supports power densities between 60 and 120 kW per rack, optimizing temperature control and enabling safe, efficient operation for AI workloads. Reliable cooling systems are crucial for maintaining uptime, preventing overheating and ensuring operational stability for AI service providers.

DTC cooling ensures safe, efficient operations for AI workloads



Robust connectivity meets demands for low latency and high bandwidth

Support for GPU as a service (GPUaaS) and high-speed connectivity

The rise of GPUaaS is reshaping the cloud landscape, providing scalable, high-performance computing designed specifically for AI, machine learning and deep learning. Just as traditional cloud services transformed access to computing power and storage, GPUaaS offers next-generation capabilities for handling AI's heavy processing needs. Companies of all sizes from startups to tech giants are now racing to deliver GPUaaS solutions that enable AI applications to scale efficiently.

Cologix data center infrastructure enables this shift by providing the power and flexibility required for GPUaaS, serving both new and existing AI service provider customers. This robust connectivity ensures that AI service providers can meet the low-latency and high-bandwidth demands of distributed AI workloads.

Sustainability and alternative energy initiatives

Cologix is committed to sustainable practices, including building a carbon-free footprint. Already, over 60% of the company's power footprint is carbon-free, with Canadian sites operating with 98% renewable energy.

In response to global power shortages, Cologix is executing a comprehensive energy strategy deploying a diverse mix of energy sources to ensure power supply and reliability for customers. Our energy strategy is focused on investments in innovative technologies, strategic partnerships with utilities and suppliers, and adapting to regional power needs.

These strategies aim to provide reliable, lower-emission power to meet the increasing energy demands of AI service providers while supporting long-term sustainability goals. As an example, Cologix works with utilities like AEP Ohio to optimize power solutions in its Columbus data center market.

"Cologix has been a proud part of the Columbus, OH community for over a decade, and our long-standing relationship with AEP Ohio exemplifies how we work with utilities to tackle power challenges. In addition, we are investing in diverse energy technologies and setting new standards for reliable, scalable and sustainable energy solutions for the data center industry."

– Shafaq Hedstrom, Cologix Chief Energy Strategy Officer

Over 60% of Cologix's power is carbon-free

Customized connectivity enables AI growth

Customer-centric and flexible approach

Cologix prioritizes a customer-centric approach, offering adaptable solutions designed around customer's specific needs. Recognizing the scaling challenges faced by AI startups, Cologix provides direct onramps and a range of carriers for greater choice and flexibility, allowing companies to grow incrementally while avoiding unnecessary costs. These onramps and carrier options ensure fast, reliable connectivity, enabling businesses to optimize low latency and superior network performance for their AI applications.

Leveraging tools like Computational Fluid Dynamics (CFD) analysis, we simulate fluid flow and heat transfer to help clients optimize their cooling layouts, enhancing infrastructure stability and efficiency. Additionally, our commitment to adhering to an extensive set of compliance standards ensures that customers' AI deployments meet their own stringent regulatory and security standards, providing peace of mind for even the most sensitive workloads.

Our support is backed by a team with deep project management, technical and operational expertise in handling demanding compute projects. This ensures that every phase – from initial planning to deployment – is guided by specialists dedicated to customer success.

Infrastructure solutions for today's AI workloads

As AI applications grow more extensive, Cologix is committed to delivering infrastructure solutions that support their workloads. These optimized configurations require high-density power, advanced cooling options and scalable deployments to address the rigorous requirements of modern AI use cases.

By prioritizing efficiency and scalability, Cologix enables AI service providers to adapt to the AI landscape as it evolves. Our solutions engineers work closely with customers' technical teams from the outset, fostering collaboration and creating solutions that meet the unique demands of AI infrastructure.

Advanced infrastructure for AI requirements

Partnering with Cologix for the future of AI infrastructure

As demands on digital infrastructure grow, Cologix is committed to supporting AI service providers with flexible, high-performance solutions that meet today's needs while adapting to tomorrow's challenges. With our excellence in data center design and development, deep operational expertise, robust connectivity and customer-focused approaches, Cologix offers more than just digital infrastructure; we build partnerships. Through our investment in innovative power, cooling and sustainability practices, Cologix has become a trusted ally in an increasingly complex data center landscape.

Whether you're a startup scaling your AI capabilities or an established provider expanding your footprint, Cologix is here to support your journey. Cologix can help you build infrastructure that fuels growth, drives innovation and aligns with your sustainability goals. Contact Cologix today to explore how our solutions can drive your AI success.

Cologix is North America's leading network-neutral interconnection and hyperscale edge data center company.

Ready to power your growth? Scale your AI workloads with faster, simpler, secure connectivity – wherever and whenever you need it. **Sales@Cologix.com** | **+1.855.265.6449**