The Fastest, Most Secure Platform for Next-Gen Apps and Data

See how Lumen engineered an integrated platform as the critical layer between network, cloud and edge infrastructure assets and next-gen applications.

LUMEN®
The Platform for Amazing Things℠

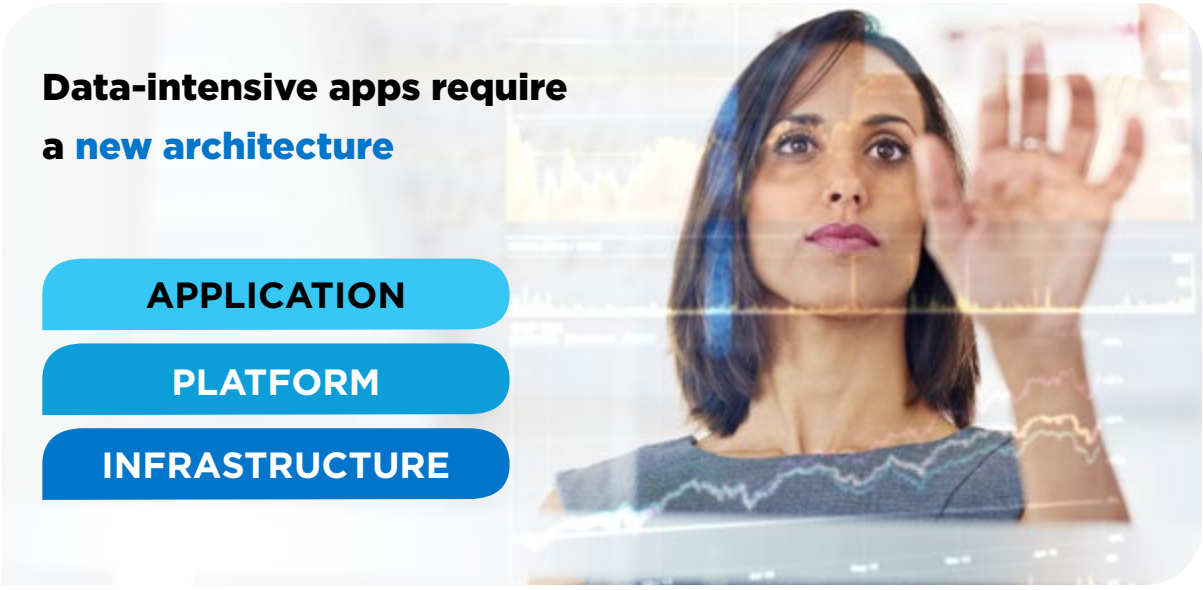
When planning business solutions, our customers want to know why the Lumen Platform is a critical foundation for applications, how the platform is structured and what its core elements enable businesses to do. It all begins with the power of data in this modern era.

Much has been said about the cross-industry impact of the 4th Industrial Revolution, but businesses looking to succeed and harness the power of it must ultimately become data-driven—engaging in an accelerating cycle of acquiring, analyzing and acting on data.

In this environment, applications have become a critical element of everyday business and life—the interface between our next-gen technologies and how we get value from them. Applications are the means for businesses to provide differentiated experiences, and they increasingly require distributed hosting environments and minimal latency for real-time engagement.

Unfortunately, current network, cloud and IT architectures present latency, cost, and data privacy and security issues that challenge the performance of distributed applications and real-time data processing.

The ability of critical industries, such as healthcare, manufacturing and retail, among others, to take advantage of next-gen technologies and applications—artificial intelligence, augmented reality/virtual reality and real-time analytics—hinges on an intelligent platform that builds on adaptive infrastructure and orchestration to help bring compute resources closer to the point of digital interaction. Even traditional workloads can benefit from the availability, security and performance enhancements delivered through a distributed computing model.



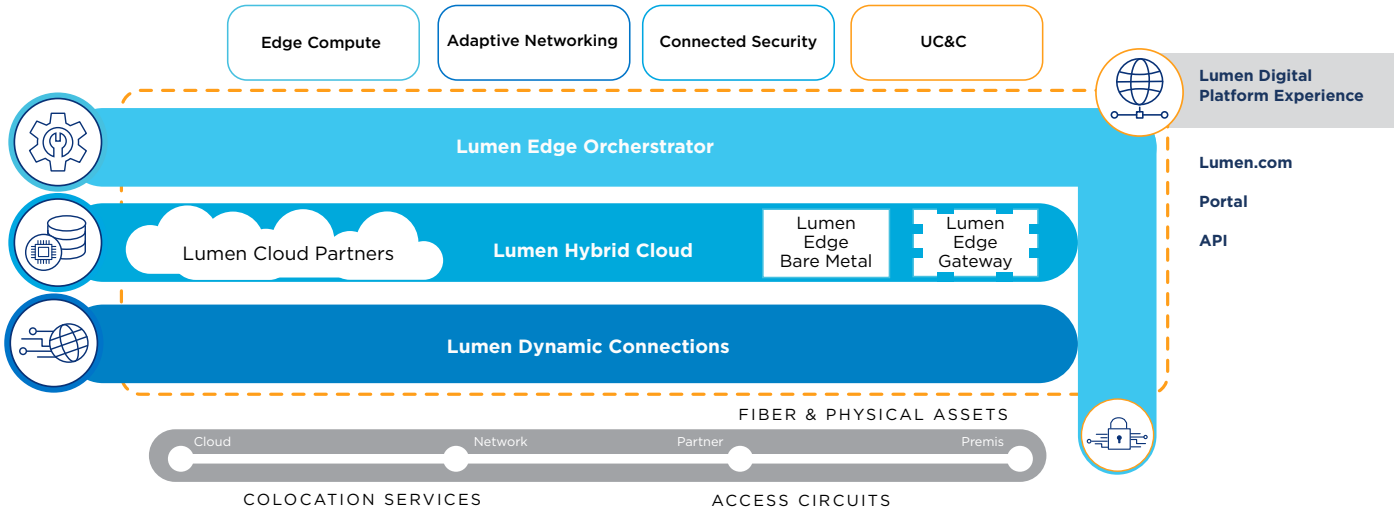
A new architectural platform

The world needs a new architectural platform—one that acts as a critical layer between advanced network and cloud infrastructure assets and the emerging applications and technologies of the 4th Industrial Revolution. This platform must be designed to support the intensive performance requirements of next-generation applications.

Rather than trying to manage the various layers of their critical IT stacks, businesses can leverage these inherent benefits of an application platform:

- Maximizing Performance—the ability to run workloads in the right computing environment based on application needs
- Increasing Efficiency—the ability to boost IT productivity even as the number of locations expand
- Innovating Faster—the ability to innovate and get to market faster by using cloud-native development models
- Working within an Ecosystem—the ability to leverage a range of integrated technologies already compatible with open and interoperable standards

These benefits offer a compelling reason for businesses to use an advanced platform to manage their applications and technologies. But what does such a platform look like? How should it be constructed in a way that truly enables these next-generation experiences?



Extensive global infrastructure

First, a strong physical infrastructure must be established—laying a foundation that enables all the core IT elements to exist in a unified way.

The Lumen Platform and its capabilities are grounded in extensive global infrastructure. Lumen operates one of the largest, most connected internet networks in the world, offering dynamic connections to more than 2,200 public and private data centers, with low-latency performance via global edge compute nodes, all delivering applications and data when and where they're needed. With this extensive infrastructure as a foundation, the Lumen Platform combines core IT elements into a unified application delivery solution for businesses, governments and communities—ultimately enabling the adoption of the emerging technologies defining the 4th Industrial Revolution.

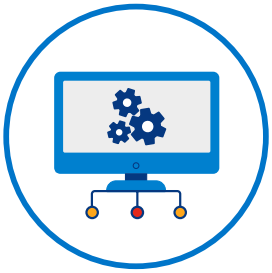
To effectively manage the intensive data and performance needs of emerging applications, platforms must include four core IT architectural imperatives:

- Software-Defined Networks—use a hybrid of wired and wireless network technologies to connect end points and users to the right compute services
- Hybrid Cloud Diversity—offers computing venues in the cloud, embedded in the network, on edge locations, or resident on the enterprise premises
- Managed Orchestration—helps deploy applications and services to the right execution venue, on the right network, with the right secure operational controls
- Integrated Security—empowers businesses to tailor their own policies based on individual risk assessments

All these core pieces need to operate securely, wrapped in a layer of integrated protection that helps ensure the application environment is safe. Application workloads are then able to operate efficiently on top of these core architectural pieces.

The Lumen Platform can simplify the delivery of customers' applications on a high-performance, secure, worldwide solution that places the right application at the right place using digital-first methods. The ability to natively combine these critical components is what enables Lumen to deliver fundamental value as the fastest, most secure platform for next-generation applications and data.[1]

To better understand how each component serves the platform, let's look at each one in a little more detail:



Software-Defined Networks

For applications to operate, they need to be connected to data sources, compute venues and end-users, while data workloads must be intelligently and dynamically routed based on real-time usage needs. The applications defining the next-gen experiences of the 4th Industrial Revolution demand maximum performance. Real-time data connections can't be made at the speed of a classic switchboard—they must be managed with the proactive efficiency and agility of intelligent software configurations that have been optimized for those performance demands.

Put simply, Software-Defined Networks (SDNs) are managed programmatically to enhance application agility, performance and control—connecting buildings, datacenters and clouds. At Lumen, we provide this through a range of adaptive networking services built on top of our global fiber network, dynamically controlled from the application, all the way down to the network layer.

As a key component of the Lumen Platform, SDN offers businesses:

- Flexible Management—enhance agility and control with dynamic connections in minutes
- Real-Time Workload Optimization—boost application performance based on changing workload needs
- Accelerated Data Engagement—acquire, analyze and act on data with greater speed for faster time-to-market
- Usage-Based Billing—maximize ROI and minimize overhead by only paying for the bandwidth used

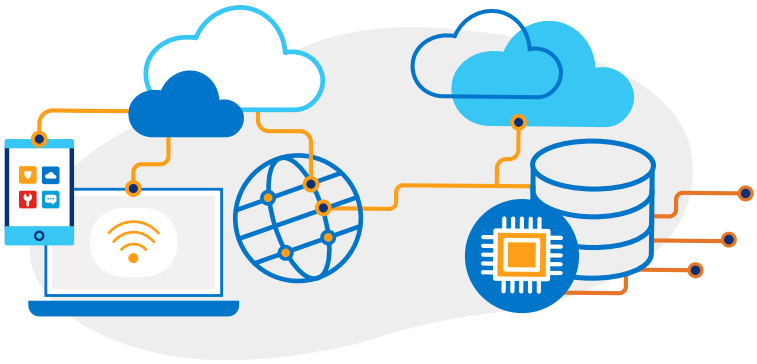
Hybrid Cloud Diversity

It's not enough to just have data moving efficiently across networks. Data workloads and computing venues must be analyzed as two sides of the application performance coin—the nature of an application and its performance requirements must determine the appropriate execution venue. Businesses increasingly require a range of public and private cloud environments to support their distributed applications, and they need the seamless flexibility to move data workloads between these environments as usage demands fluctuate. Combined with the intensive latency requirements of next-generation applications, edge execution venues have become a critical component of hybrid cloud strategies and the adoption of emerging technologies.

For the Lumen Platform, hybrid cloud diversity means leveraging our edge cloud nodes, public and private data center access and IT expertise to help ensure applications are hosted and managed in the environments best suited to maximizing their performance. At Lumen, we provide this capability to deliver exceptional data workload management for next-gen technologies.

This comprehensive suite of edge cloud and IT agility services offers businesses:

- Expert Design Planning—thousands of IT and operations specialists to optimize workloads
- Access to Efficient Architecture—streamlined IT with 2200+ public and private data centers each connected to ~450,000 global fiber route miles
- Ultra-Fast Execution Venues—designed to deliver <5ms latency or better and expected to meet 95% of North American market demand
- Optimized IT—shift budget from CapEx and OpEx to maximize ROI



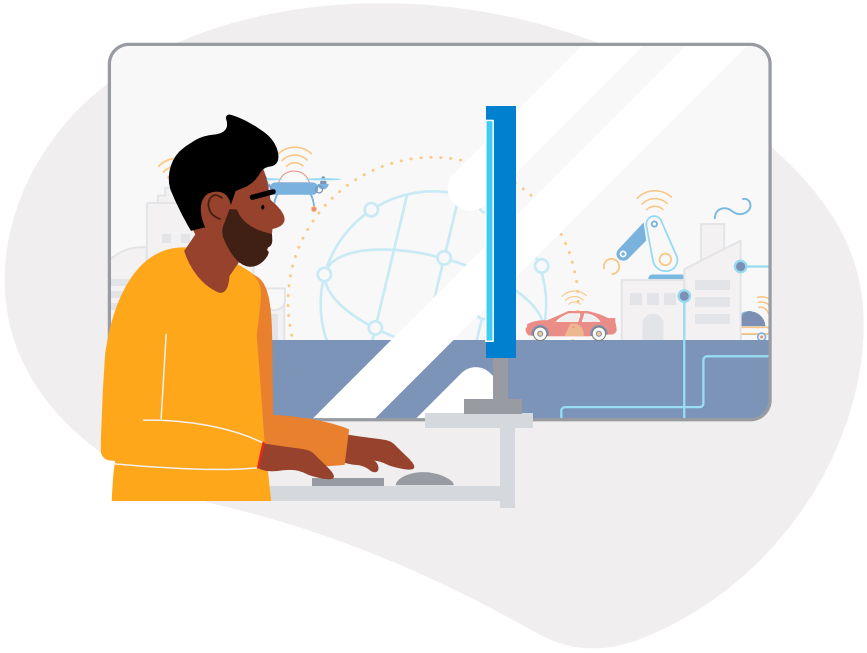
Managed Orchestration

Next-generation applications don't just require extensive networking and cloud assets. The complexity of managing the real-time IT and latency demands inherent to 4IR technologies requires a dedicated focus to seamless service orchestration. Most businesses simply don't have the level of internal IT resources available to ensure the next-gen apps they plan to deploy can be executed successfully and securely deployed to the right venue. But with expertise and infrastructure designed to help manage complex data workloads characteristic of these advanced technologies, businesses are able to redefine user experiences, capitalize on the benefits and grow.

For the Lumen Platform, managed orchestration means providing a layer of tailored IT consultation and managed expertise to simplify the adoption of next-gen applications and technologies. At Lumen, we deliver this capability to help guide businesses on their digital transformation journey.

This range of powerful managed services offers:

- Network Optimization—optimize connectivity to employees and customers
- Cloud Migration—equip IT teams with exceptional tools
- Application Modernization—future-proof performance and maximize investment
- Intelligent Solutions—build unique experiences and make decisions in real time



Integrated Security

With the volatility of today's digital threat landscape combined with the increasingly distributed nature of applications and mobile workforces, endpoint-based protection has become a digital relic. But this dynamic environment has made security even more critical.

Participation in the 4th Industrial Revolution necessitates becoming a digital business, but without confidence in data security, businesses can't adopt the next-gen apps and technologies that are essential to growth. We need a fundamental shift in data security. Security must be an inherent component to the entire data lifecycle and our next-gen architectures.

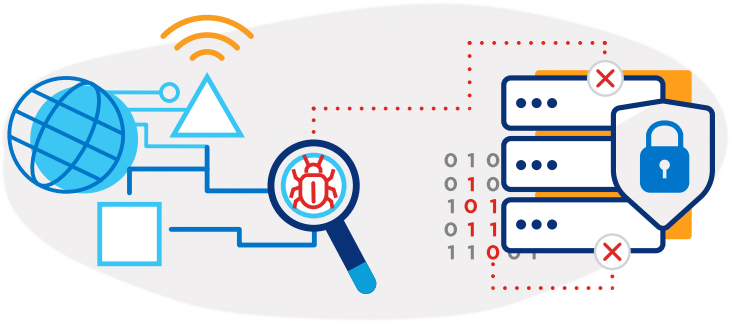
To address this need, the entire Lumen Platform is reinforced with intelligent and automated threat detection and response that is interlocked with the Lumen Platform's managed orchestration, covering the entirety of the platform and built-in to safeguard data and applications. Our Rapid Threat Defense is embedded into core Lumen services, proactively detecting and blocking malicious traffic.

At Lumen, we deliver integrated security designed to empower businesses to tailor their own policies based on individual risk assessments.

This range of connected security services offers:

- Global Threat Detection & Mitigation—using one of the world's largest global IP backbones as a threat detector
- A Global DDoS Platform—multi-tier platform helps protect web-facing sites and applications
- Embedded Security—inherently safer network services save cost vs. bolted-on security
- Intelligent, Automated Protection—using paid Threat Defense, our threat detection and response solution

With this peace of mind, organizations can readily leverage the Lumen Platform to secure next-gen technologies.



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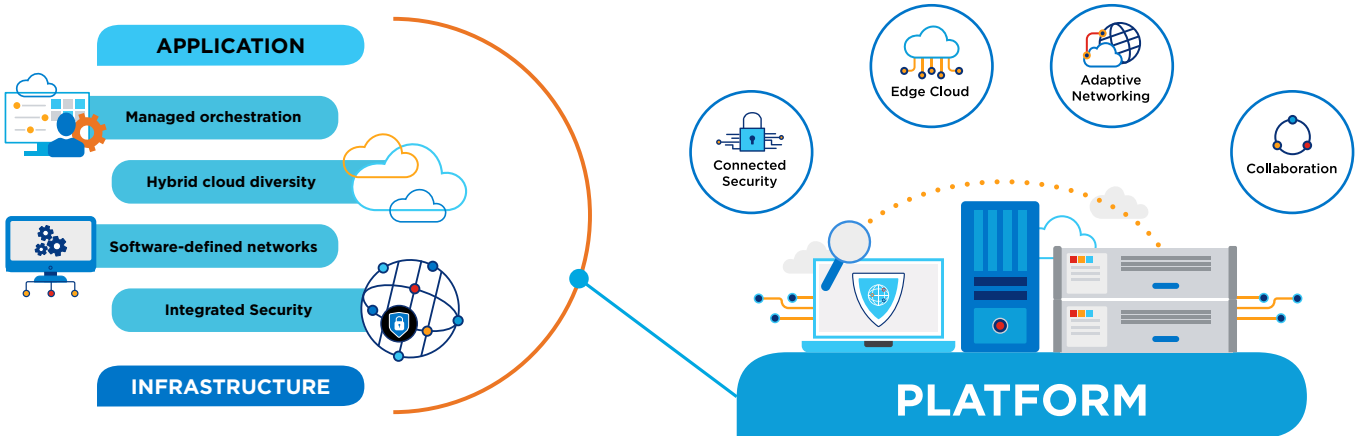
Our extensive infrastructure and expertise have enabled us to produce and unify the core IT components necessary for supporting emerging technologies, forming the bedrock of the Lumen Platform—the fastest, most secure platform for next-generation applications and data.

The Lumen Platform manages for latency and performance, allowing applications to live across a variety of environments that bring compute services closer to where they are needed, when they are needed. Designed to enable organizations to capitalize on their data and more quickly embrace emerging technologies, our platform helps efficiently deliver innovation that will redefine our shared digital landscape.

From this platform, Lumen offers businesses four complementary solution portfolios designed to meet the needs of next-generation digital experiences:

- Adaptive Networking
- Edge Cloud and IT Agility
- Connected Security
- Collaboration

Ultimately, the Lumen Platform will be the foundation that supports the promises of the 4th Industrial Revolution, enabling businesses to produce amazing things across industries and markets. This is why we built the Lumen Platform. **A platform for amazing things.**



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Learn more

Connect, protect and respond at the speed of business with the Lumen Platform.

Explore solutions

- 4th Industrial Revolution www.lumen.com/en-us/about/our-platform
- Adaptive Networking www.lumen.com-en-us/solutions/adaptive-networking
- Edge Computing www.lumen.com/en-us/solutions/edge-computing
- Hybrid Cloud www.lumen.com/en-us/solutions/hybrid-cloud
- Connected Security www.lumen.com/en-us/solutions/connected-security
- Collaboration www.lumen.com/en-us/solutions/collaboration

1. Platform claim based on Lumen's unique combination of assets and services with the lowest network latency on the majority of the MSA routes, threat detection, data scrubbing center capacity and end-to-end protection.

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