APPLICATIONS
ANYWHERE
Redrawing the Boundaries of Data Connectivity
SES

APPLICATIONS ANYWHERE

The digitization of work environments and how we do our jobs is being redefined, as are the tools and technologies used to better serve customers. Businesses, enterprises, and government agencies across the globe are aggressively accelerating the adoption of data-intensive cloud-centric applications, boosting productivity, reducing IT infrastructure costs, and reaching new thresholds of business and operational agility.

This steady pace of cloud and edge application services adoption is creating a number of opportunities to deliver value to an entire operation, as collaboration, remote platforms, smart factories, IoT, and other applications and experiences become more capable. Additionally, many new applications are applying AI, machine learning, and big data for a more algorithmic behavior, learning and adapting to produce a more enhanced and involved experience.

These data-intensive applications will require networks to scale more dynamically and have more flexibility. For a service provider, this means delivering solutions not just about connectivity, but also addressing capability. For applications to be accessible anywhere, networks need to align directly with the cloud's requirements, while customers need to be connected to a cloud that runs on a network that goes everywhere.

Delivering these solutions with scale, flexibility, and ubiquitous reach will be especially challenging for operators serving remote and rural regions, where geography, infrastructure reliability, and low population density make it either physically impossible or economically infeasible to provide communication services using fiber and microwave.

With access to applications and services sourced directly from the cloud, end users expect to have stable and reliable connectivity, and access to their data anytime, anywhere.

EXTENDING NETWORKS
IN A CLOUD CONNECTED WORLD

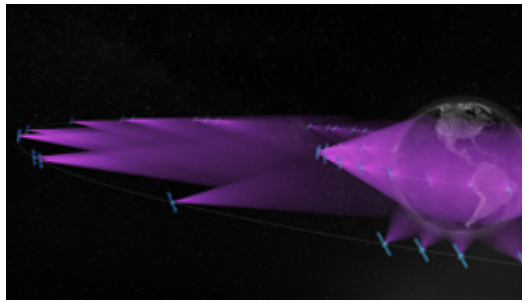
To meet growing demands and realize exciting new revenue streams driven by the adoption of data-intensive cloud-centric applications, operators will have to identify partners who can help deliver cloud connect services to any global end-point whether in the air, at sea, or in underserved areas on land. This includes mining locations, oil rigs, field humanitarian or defense operations, and even planes and ships on the move. Networks will need to evolve and scale to handle capacity with a ubiquitous reach, delivering services wherever those cloud points are, and providing seamless IT/OT connectivity even as the number of data centers, edge nodes, and interconnection points increases.

Satellite connectivity is key in completing this ubiquitous network fabric.

With recent innovations in ground and space systems to improve the experience and business models, a satellite network can now become an extension of the larger service provider network, an off-net provider that can help operators reach remote or mobile sites, anywhere they are located.

As part of a larger ecosystem, satellite operators can collaborate with global and regional network providers, using advanced technologies to ensure that a satellite segment of the network can be easily requested, flexed, or programmed to meet the application requirements. Those interactions can then be automated using industry standards and technologies, so the network provider can—in an automated, machine-to-machine way—utilize and get what they need from the satellite connection, seamlessly.

Space is the fundamental enabler for connecting directly to the cloud from anywhere. And the world's largest cloud service providers like Microsoft Azure are already extending their network ecosystems with satellite.



SES is employing Open Network Automation Platform (ONAP), a comprehensive platform enabling SES's satellite network to intelligently blend with fiber and microwave to increase integrability and provide end-to-end automation and orchestration.

LEARN MORE > SES Open Network Automation Platform

MOBILE BACKHAUL

MAKING NETWORKS BOUNDLESS

With the ability to deliver ubiquitous connectivity and reach, satellite operators are introducing new network architectures and standards by connecting an operator's core network to their cell sites, and meeting them at any point-of-presence (PoP). Satellite operators and their technology providers are also aggressively optimizing services for throughput, latency, and jitter, specifically to improve the mobile backhaul experience.

Additionally, network operators need to fulfill USOs, and to stay competitive, gain new subscribers by being the first MNO to reach a new area. With easy and quick integration into an operator's network via standards-based interconnection, satellite-enabled backhaul solutions make the economics of network expansion more attractive, especially in underserved areas, where low population density and low ARPU pose a challenge to near-term profitability.

Currently serving multiple kinds of networks simultaneously, including 3G, 4G, 5G, and Wi-Fi, satellite-enabled backhaul networks are already playing a major role in the development of 5G, with current solutions supporting key criteria for 5G including low latency, broad coverage and high reliability. Additionally, with the latest 3GPP specs, satellite is being integrated into the 5G ecosystem as a native backhaul, demonstrating that it will play a key role in the communications industry's 5G transformation, enabling new business opportunities for mobile network operators (MNOs) and vertical service providers.

Satellite mobile backhaul solutions can be tailored to meet business requirements specific to service operators and are backed by strong and comprehensive service level agreements (SLAs). Fully managed end-to-end backhaul services can effectively offload the financial and operational risk of deploying and managing the backhaul network and its required infrastructure making the backhaul link a natural extension of an existing network.

Deliver 3G, 4G, Wi-Fi, and 5G applications with more coverage, more flexibility, and more bandwidth.

LEARN MORE > SES GEO/MEO solutions for Mobile Backhaul

GOVERNMENT

Whether a government customer is in the air, on a ship, or in a fixed ground location, they need a high-performance network to support real-time data and critical communications between locations around the globe, and their headquarters at home. Additionally, as government agencies transition their operations to adopt the latest technological developments—including cloud-based applications and edge computing—they need to augment their existing networks with additional terminals and bandwidth, and add redundant communications paths to achieve the necessary flexibility, resilience, and redundancy.

By partnering with a satellite operator, Telcos and MNOs can provide government agencies with the network solutions they need to expand their reach and deliver a fully encrypted, end-to-end path from headquarters to mission, without using a public Internet. From enabling secure operations of the public administration network and coordinating a humanitarian response, to connecting deployed military personnel, a satellite-enabled network can provide secure connectivity solutions to any location around the world.

A customized satellite-enabled solution can enable frontline responders and military personnel to communicate with voice, video, and images in the field, exchange information to assess the situation, coordinate response efforts, and identify real-time needs. Recovery teams can run increasingly data oriented, latency sensitive cloud based medical and e-health applications, and humanitarian, logistics and resource management applications in the most demanding disaster and humanitarian response scenarios, anywhere in the world. And mission critical ISR operations can gather a massive range and volume of data to government gateways where they can be quickly processed and acted upon.

Government agencies rely on high-quality, real-time data to make informed decisions. And increasingly, satellite-enabled network solutions are helping to meet their demanding needs.

LEARN MORE > Government

ENERGY

Oil and gas, mining, renewable energy companies and even agribusiness are increasingly embracing digitalization to make day-to-day operations run more efficiently, reduce production costs, and boost employee welfare. The effective application of digital technologies can help with the analysis and management of engineering data, processes, and the supply chain in an intelligent and efficient way. Leveraging these new digital capabilities will help maximize output while reducing the cost of production.

However, remote diagnostics, process simulation and technologies like real-time condition monitoring rely on the existence of superior, seamless connectivity. Additionally, reliable internet connectivity is vital to employee safety since it enables remote team members to maintain direct contact with each other and monitor real-time site and equipment analytics.

By collaborating and partnering with a satellite operator, Telcos and MNOs can provide energy companies with the satellite-enabled connectivity solutions necessary for a wide range of services and applications, with full access to cloud resources from any location around the globe. An effective managed service model can ensure that a remote oil platform, refinery, mine or farm can cost-effectively scale bandwidth consumption throughout the lifecycle of an operation based on production rates, team requirements, and environmental monitoring.

Flexible high-bandwidth and low-latency connectivity enables the delivery of high-performance cloud services and applications to remote operations, at sea or in underserved areas on land.

LEARN MORE > SES Energy Solutions

COMMERCIAL MARITIME

New maritime technologies incorporating equipment monitoring, logistics management capabilities, remote operations and smart sensor networks continue to evolve and digitalization is already transforming shipping companies' operations and strategies. Ships at sea now have the ability to become sophisticated sensor hubs and data generators, producing and transmitting information from anywhere, in real time. This move toward digitalization has the potential to dramatically transform efficiency, productivity, and profitability in commercial maritime operations.

However, the reality is that with no access to terrestrial connectivity, it is difficult to deploy bandwidth-intensive digital applications on commercial vessels. For ship owners to fully recognize the benefits of these exciting new applications, the availability of reliable high-speed connectivity—on every ship—will be essential.

Working with a satellite operator, a Telco or MNO can deliver satellite-enabled network solutions that can provide the flexibility, scalability and resiliency the commercial shipping industry needs to ensure a seamless connectivity experience at sea. A combination of next-generation high-throughput satellites (HTS)—that leverage flexible spot beam technologies—and an extensive network of widebeam satellites can enable the delivery of high-performance coverage to commercial maritime vessels, anywhere in the world. Additionally, these space assets can be powered by an advanced ground system designed to optimize the satellites, and the overall performance of the network.

Innovations in ground and space systems are improving connectivity at sea, allowing for massive increases in the volumes of data transferred.

LEARN MORE > SES Commercial Maritime Solutions

ENTERPRISE

Cloud computing has grown dramatically as companies and governments continue to invest in digitizing their operations, deploy new technologies and develop infrastructures to enhance agility and efficiency. This growing use of cloud services and applications requires networks to scale more dynamically and operate with more agility. Additionally, as cloud applications become increasingly critical to business, network operators need to prioritize resilience, application awareness, and the flexible allocation of bandwidth to reach geographically dispersed operations and workforces to maximize productivity and scale operations.

A satellite-enabled network can help organizations apply the benefits of intelligent cloud and edge computing throughout the entire enterprise by expanding the accessibility of essential cloud services and applications. Satellite networks provide the unmatched reach that enterprises demand, with resilient connectivity to ensure that cloud and edge services can be delivered to customers instantly, reliably and securely, wherever they are located. By partnering with a satellite operator, Telcos and MNOs can deliver a better experience to the enterprises they serve today, even those beyond the network edge, reaching thousands of retail points, bank branches, ATMs, small businesses, farms, and factories, from a single satellite.

Satellite offers the ideal combination of coverage, throughput, and low latency performance to ensure that remote facilities and employees can quickly access cloud data centers.

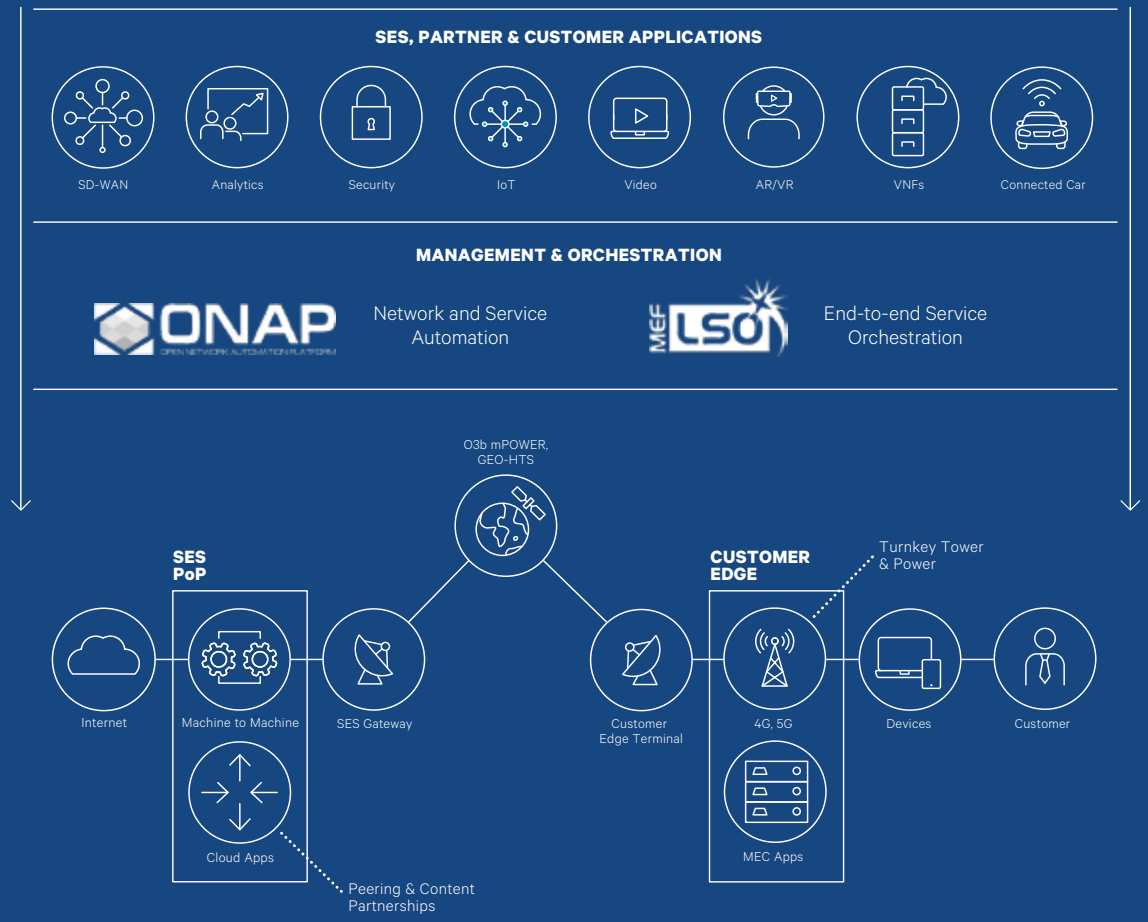
By combining SES's GEO/MEO multi-satellite system with cloud service provider networks, customers can obtain connectivity anywhere and optimize the performance of cloud workloads. Additionally, SES can connect modular data centers (MDCs) with a managed networking solution ensuring resilient, cloud-scale performance anywhere.

LEARN MORE > SES Enterprise solutions

ONAP IMPLEMENTATION BY SES

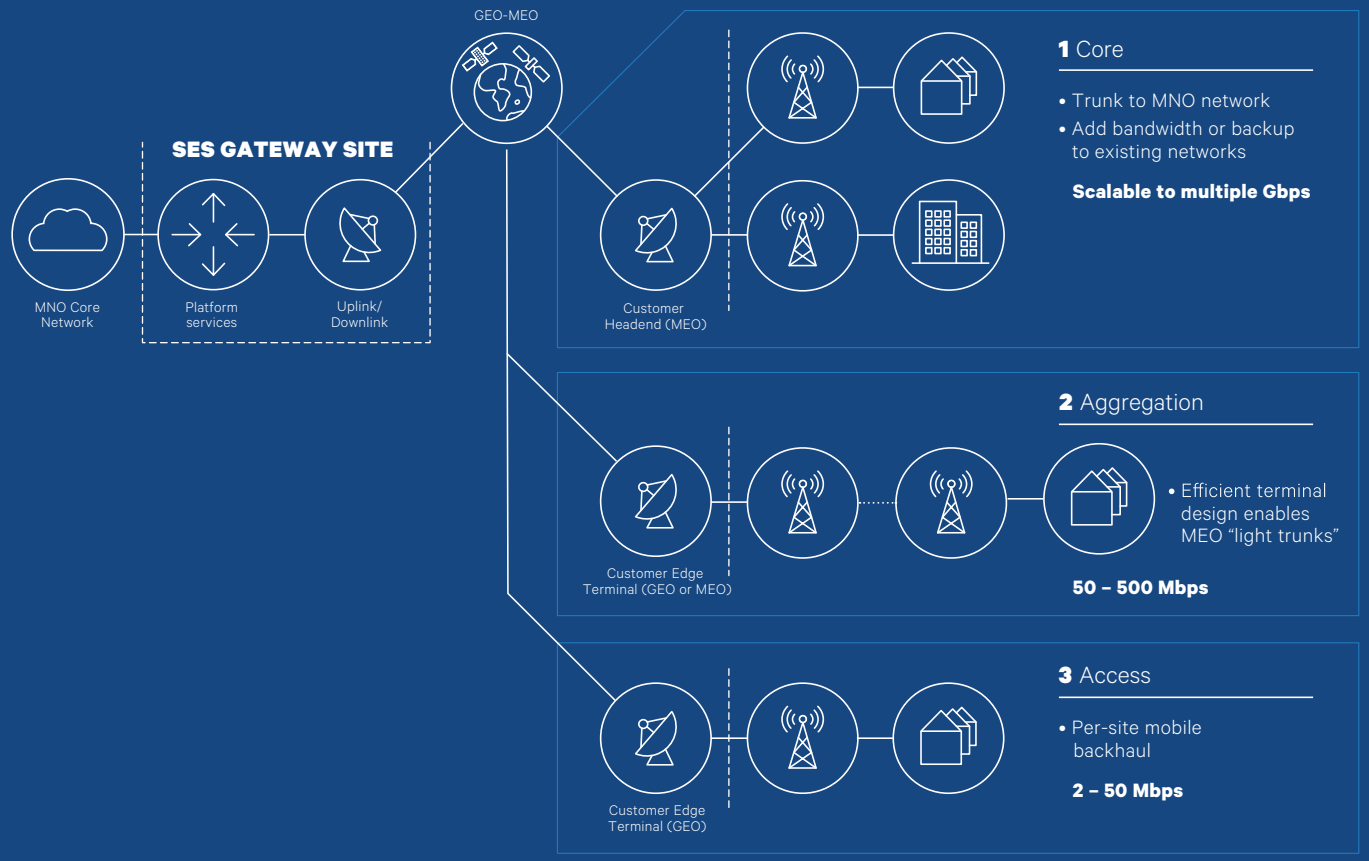
Bringing Satellite Into A Cloud-Scale Network Ecosystem

Complementary applications via a growing ecosystem of partners



Back ▸

GEO AND MEO SOLUTIONS FOR MOBILE BACKHAUL



Back ▸

GOVERNMENT

RESPONSE

Enabling quick and efficient operations for first responders

First response team on a remote deployment

Enabling key first response applications

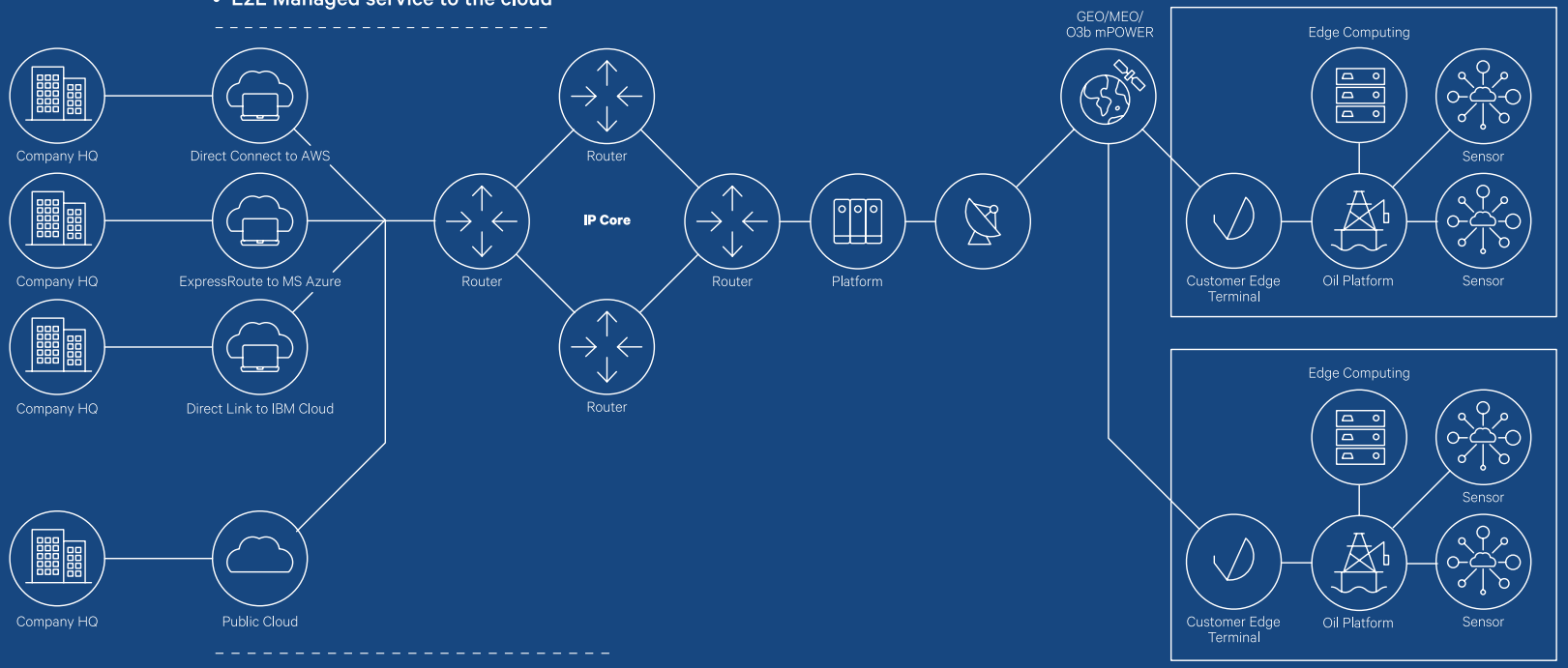
RECOVERY & RESTORATION

Empowering coordination and cooperation for humanitarian action, joint forces and local governments, reconnecting the affected population and businesses restoring downed infrastructure

Back ▸

ENERGY

Private Cloud
- Private, dedicated connection
- Performance tuned to workload demand
- **E2E Managed service to the cloud**



Public Cloud
- VPN-to-cloud encrypted through internet
- Public peering with major CSPs
- **Robust access to cloud services**

1 High-volume site
MEO

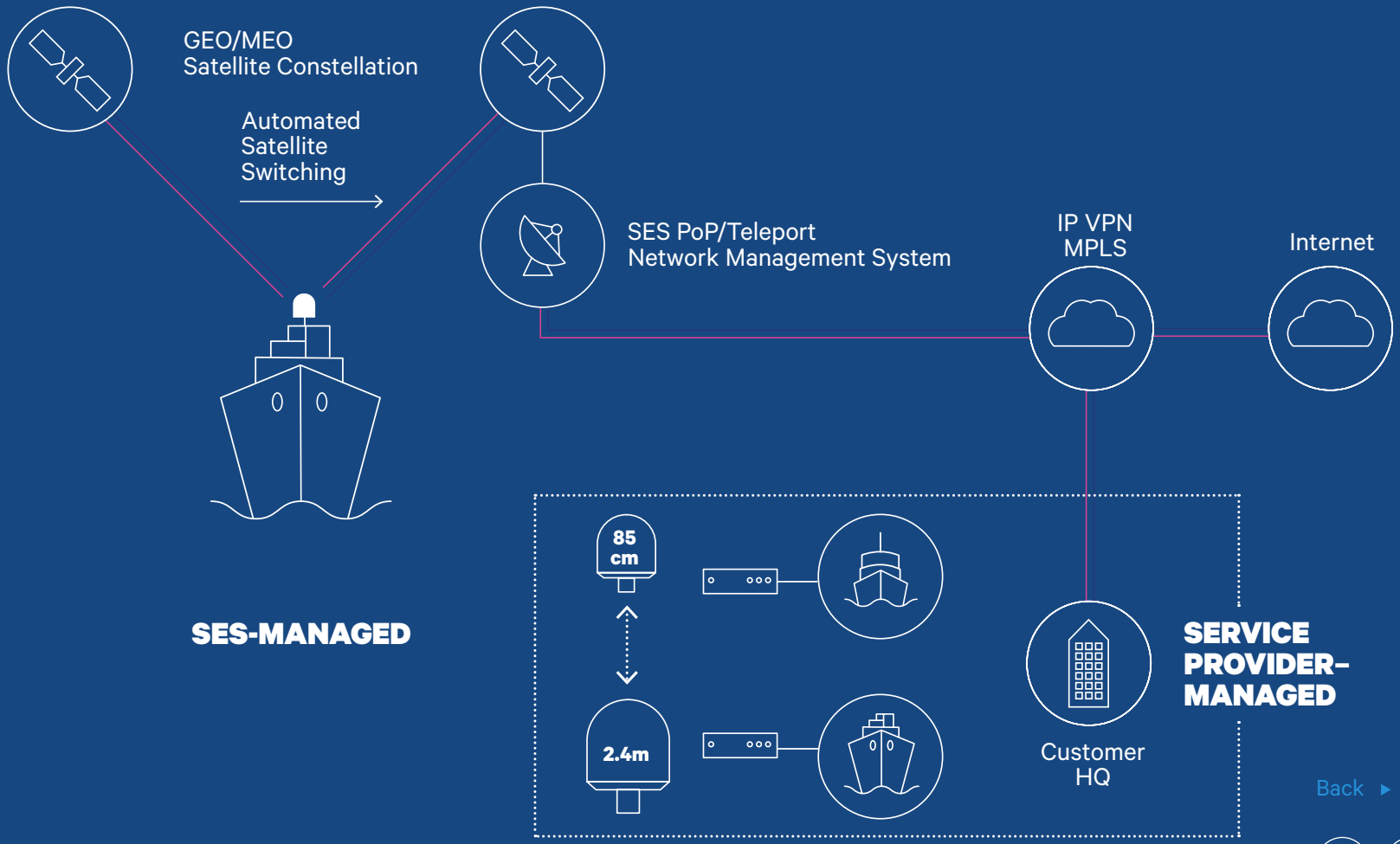
50Mbps to Multi-gigabit per second

2 Low-to-medium volume site
GEO

Up to 50Mbps

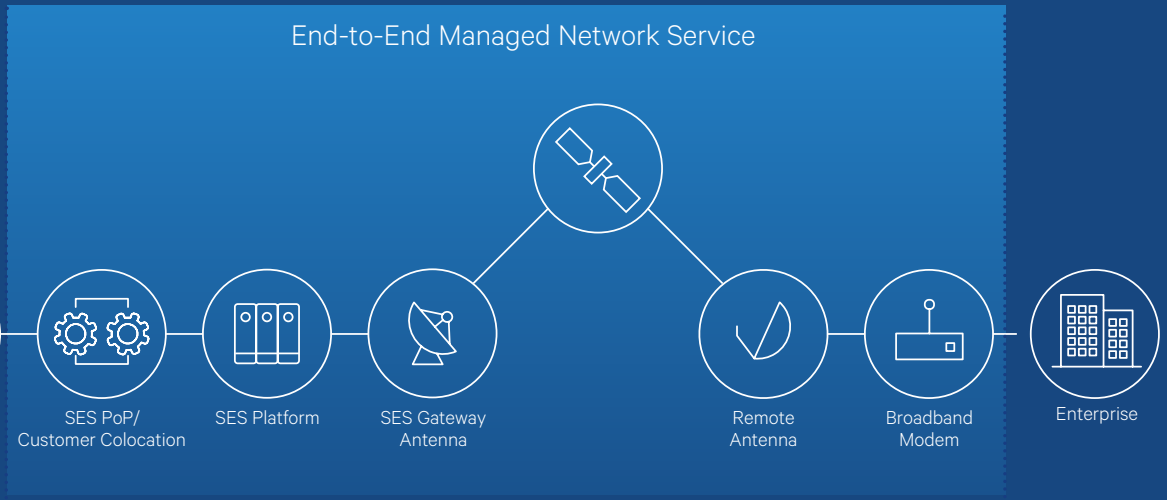
Back ▸

COMMERCIAL MARITIME

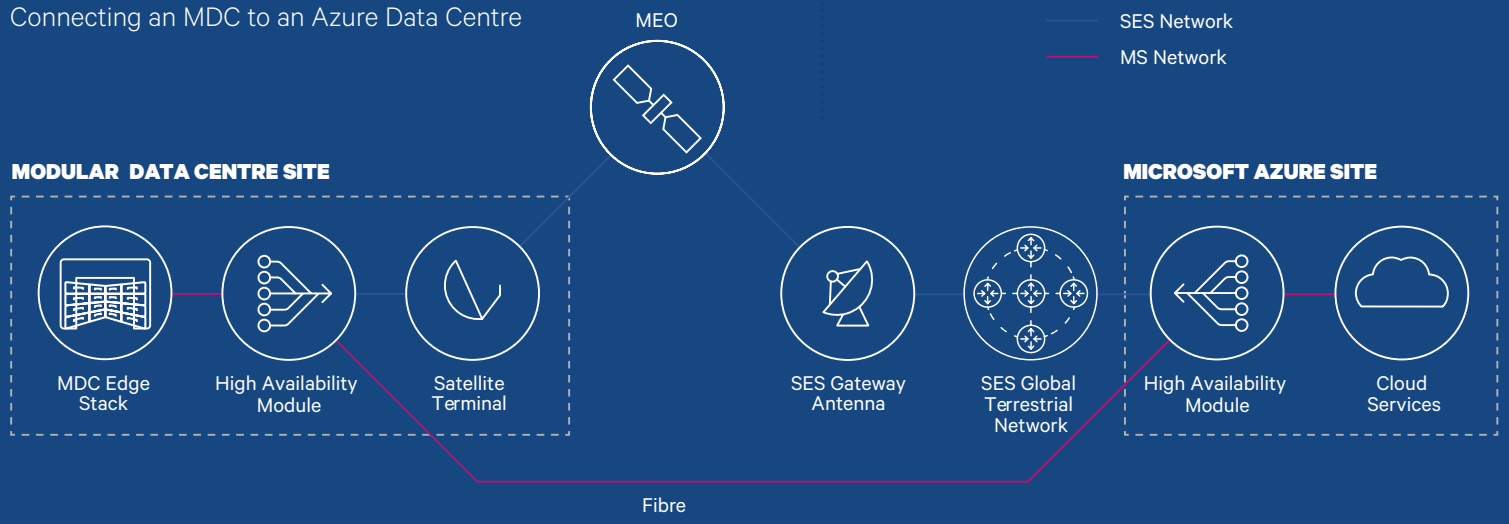


Back ▸

ENTERPRISE



Connecting an MDC to an Azure Data Centre



Back ▸

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