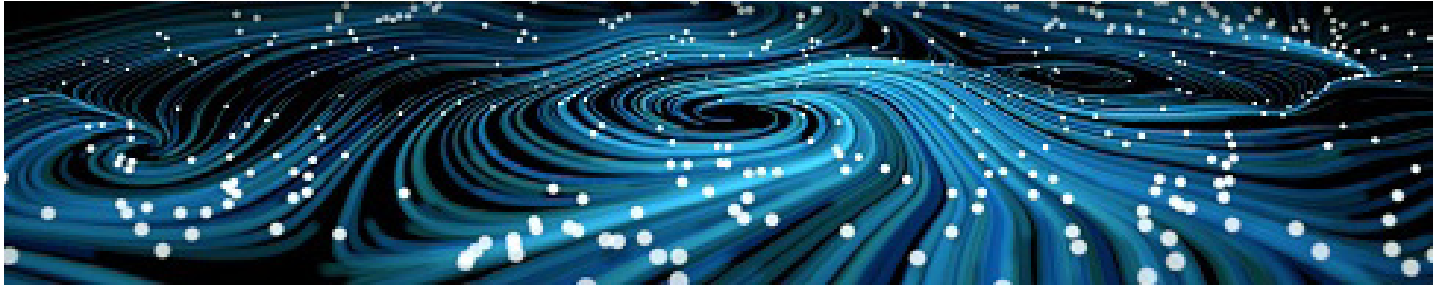


Lightstorm Delivers Next-Generation Cloud Connectivity and Digital Experience with Industry-Leading Coherent Technology



With a modern programmable optical network, India's only carrier-neutral network infrastructure platform delivers next-generation cloud connectivity and a digital experience that enables customers to successfully compete at the pace of business.

Overview

Lightstorm is India's only carrier-neutral network infrastructure platform built to accelerate business growth and innovation in the digital world by offering a first-of-its-kind utility-grade resilient fiber network, SmartNet, connecting the major economic hubs in India.

Lightstorm offers a Network-as-a-Service (NaaS) platform that opens new opportunities for enterprises by providing a simple, secure, and smart way to enhance their application performance and user experience. A trusted partner of several Fortune 500 companies, Lightstorm is building a robust foundation of digital infrastructure to create new sources of value and differentiation to businesses.

This case study explores the challenges Lightstorm faced as it set out to build its optical network footprint in India. It also highlights why Lightstorm chose compact, high-density photonic layer solutions from Ciena that easily scale to enable more capacity for their lead applications.

Current market environment

As the second largest country in the world by population, with approximately 1.35 billion inhabitants, India is an important market for telecom infrastructure investment. Since the COVID-19 pandemic, millions in India have become increasingly reliant on their broadband internet connections to stay in touch with family, friends, and co-workers. Broadband internet has emerged as an essential technology keeping both the society together and the economy running in this stressful time. The growth of broadband internet traffic due to the introduction of work-from-home and stay-at-home guidance has led to enterprises speeding up their digital transformation to brace for requirements of virtual meetings and online collaboration applications.

Global Content Networks (GCNs) are experiencing exponential traffic growth due to the change in traffic patterns fuelled by the current environment, which is driving the need for massive scalability to keep up with growth in compute, store, and interconnect requirements. The recent investment in India's

4G/LTE infrastructure and the resulting wider availability of data services has spurred a large growth in bandwidth demand across the country. To cater to this new demand, wireless operators are deploying higher-capacity devices and additional cell sites for higher-performance mobile services.

Lightstorm's opportunity

With new evolving business models, Average Revenue Per User (ARPU) for network services has been under pressure. Tariff rates and data charges are among the lowest in the world. Pay-as-you-grow models and low OPEX network infrastructure are critical to maintaining profitability in a hypercompetitive market. Enterprises and GCNs are driving the need for more bandwidth capacity in dense urban metro areas as well as in the less densely populated rural areas, which are seeing higher growth rates in data consumption due to the COVID-19 pandemic. The ability to address stringent requirements for latency and reliability is critical in today's scenario.

The reliability needed to keep network infrastructure up and running 24 x 7, meet Service Level Agreements (SLAs), and deliver an end-to-end customer experience is a tough ask, but Lightstorm rose to the challenge. Lightstorm reengineered optical infrastructure to serve a world powered by cloud and digital experiences—one that requires 100 percent uptime, shortest latency, and control in the hands of the customer.

Path to a design-first approach

Instead of going direct to customers with a predesigned solution, Lightstorm decided to reverse the process by spending time with customers to understand their needs better and develop a solution accordingly. This novel approach ensures that Lightstorm's offering is dynamically different from what is available in the market today. Lightstorm's services are centered on three key elements: utility-grade fiber infrastructure, an intelligent software-defined mesh network, and an on-demand NaaS platform.

SmartNet is a utility-grade secure fiber length of more than 12,000 km that connects economic hubs of Delhi, Mumbai, Bengaluru, Chennai, Pune, and Hyderabad, and caters to around 50 data centers with aggressive plans to connect many hundreds soon. The spine-leaf architecture, coupled with point-to-point linear long-haul network architecture, is designed to ensure 100 percent uptime and a latency of less than one millisecond.

On top of the state-of-the-art fiber network is the programmable network layer. It consists of an optical domain controller managing a flexible optical network along with an IP domain controller that further serves the physical customer assets to which the platform connects—including data centers, enterprise buildings, mobile base stations, and public cloud providers.

Lightstorm partnered with Ciena to build a highly scalable, flexible, and extensible optical network with the ability to handle multiple concurrent faults and guarantee service in the most cost-effective way possible.

Simplifying optical networking through adaptive, ultra-dense photonic solutions

The optical networking industry has been hard at work bringing new technology and innovations to market that support higher capacity interfaces, improvements in fiber spectral efficiency, ease of operations, and reduced cost per bit transported. Ciena, a leader in optical networking, worked together with Lightstorm to lay the foundation for a more scalable and robust network infrastructure. Ciena pioneered openness for photonic line systems, with deployments starting in 2005. As its third-generation open line system platform, Ciena's new 6500 Reconfigurable Line System (RLS) extends this openness and programmability into a compact, modular solution improving space efficiencies by 70 percent versus traditional, chassis-based solutions. With the RLS, Lightstorm can quickly react to unpredictable traffic requirements and easily scale wavelength capacity within a small footprint for bandwidth-intensive applications, such as Data Center Interconnect (DCI), 4G/5G wireless infrastructure upgrades, and core transport.

With the RLS' modular design, Lightstorm is building a programmable optical foundation with customizable flexibility and capacity to address specific hub requirements. Lightstorm ensures network scalability with an integrated, simple-to-deploy C+L-band solution, doubling the transport capacity per each fiber pair in the network. When deployed with leading 800G technology such as WaveLogic™ 5 Extreme (WL5e), the Lightstorm network supports over 60 Tb/s of capacity on a single fiber pair—a three times increase as compared to 200G networks widely deployed today. This means Lightstorm can quickly service more connectivity demands for their customers without needing to light additional fibres.

Networks built using traditional L-band solutions required heavy manual engineering and underwent signal performance fluctuations during L-band upgrades. With RLS' integrated channelized Amplified Spontaneous Emission (ASE) feature, Lightstorm gains all the capacity benefits of L-band with no operational headaches. Lightstorm can deploy wavelengths more quickly across both the C-band and L-band using the same streamlined process and ensure optimal stable system performance throughout the life of the network for its customers.

Architected for today's digital world, the 6500 RLS also increases photonic layer visibility and intelligence with a rich set of instrumentation features that speed up deployment and troubleshooting. Lightstorm customers benefit from fast turn-up of services, as Lightstorm can quickly identify manual fiber errors or dirty fiber connections through software. Moreover, Lightstorm ensures high network availability using Layer 0 control plane for wavelength restoration and gains real-time visibility with precise pinpoint of faults when a fiber cut occurs, accelerating repair times and reducing network downtime.

Lightstorm's open and programmable architecture lays the foundation for a network that allows for the automation of operational processes and ability to adapt to changing customer requirements. As a result, Lightstorm's customers only experience the high-quality, high bandwidth direct cloud connectivity they need, and don't have to worry about the network that is enabling it.

Conclusion

With its new modern programmable optical network, Lightstorm is delivering the next-generation cloud connectivity and digital experience its customers are looking for: always on, reliable connectivity that allows them to successfully compete at the pace of business.



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Yes

No