# Strategies for telco infrastructure in an AI world: Part 1

AI is reshaping where data must travel, the volumes to be moved, and the speed at which data must be delivered. Based on our recently published report Networks for AI: Segmenting the growth, this article explores some of the key opportunities that growing AI adoption by enterprises and consumers creates for telcos.
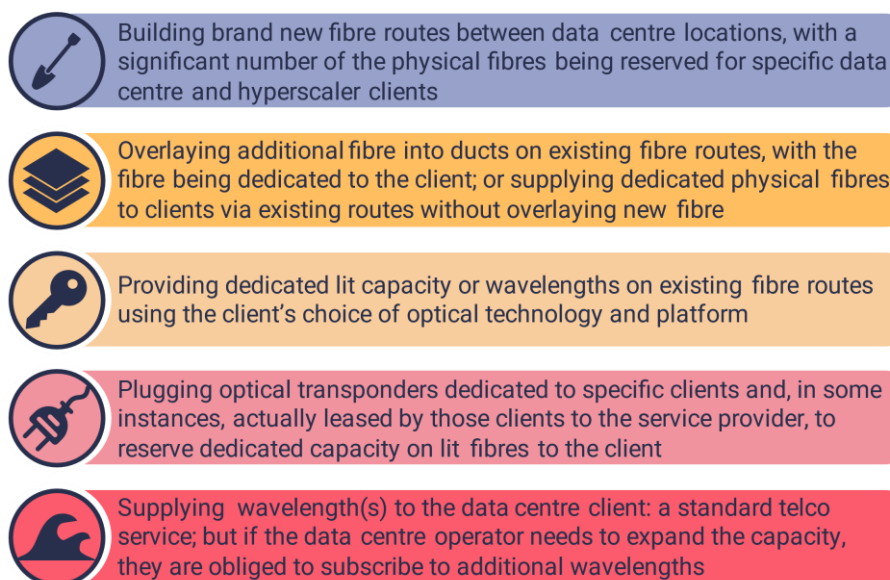
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In this article, we asses three AI-driven connectivity opportunities which telcos can monetise:

# 1. Data centre interconnect

The wave of demand for infrastructure capable of building and training AI models has driven a need for guaranteed, high-capacity links between data centres (data centre interconnect, or DCI); as the building and training of large language models (LLM) need extensive resources which might span more than one site. Operators, and indeed other specialised players, are well placed to meet this demand through an array of optical solutions, as illustrated in the figure below.

Many operators in Asia-Pacific, Europe and North America are adopting combinations of the five options described in the diagram below to capitalise on this anticipated growth in the connectivity demand for AI workloads. In the USA, Lumen Technologies' Private Connectivity Fabric - built on new fibre routes in addition to dedicated strands in existing fibre routes - has generated more than USD8 billion in sales via partnerships with hyperscalers.

## Levers to expand optical networks



Building brand new fibre routes between data centre locations, with a significant number of the physical fibres being reserved for specific data centre and hyperscaler clients

Overlaying additional fibre into ducts on existing fibre routes, with the fibre being dedicated to the client; or supplying dedicated physical fibres to clients via existing routes without overlaying new fibre

Providing dedicated lit capacity or wavelengths on existing fibre routes using the client's choice of optical technology and platform

Plugging optical transponders dedicated to specific clients and, in some instances, actually leased by those clients to the service provider, to reserve dedicated capacity on lit fibres to the client

Supplying wavelength(s) to the data centre client: a standard telco service; but if the data centre operator needs to expand the capacity, they are obliged to subscribe to additional wavelengths

Source: STL Partners

However, this approach carries risks. The "Deepseek" moment underscored the possibility that there may be an overbuild of AI-ready infrastructure – with model training simply not requiring as much compute capacity as initially envisioned. In addition, as AI traffic shifts from model training to inferencing, demand for point-to-point capacity may fall - or move away from large data centres towards a more distributed topology. The crux of the matter is ROI. To take the example of Lumen, again: while it has enjoyed success in securing the aforementioned hyperscaler partnerships, this has required significant investment in infrastructure buildout (it projects over USD4 billion in capex just this year); and it remains to be seen what the ROI on the overall investment will be.

# 2. Scaling-up existing Layer 1 to Layer 3 assets

A lower-risk strategy to capitalise on AI-driven connectivity growth is for operators to leverage their existing optical, ethernet and IP assets. Operators can invest in upgrading and scaling these assets in order for them to address more diversified customer segments than the various dedicated fibre options described in the

previous section. This investment may also address the medium-term opportunity of supporting enterprises in building and adopting their own LLMs/SLMs.

To achieve this, operators are moving towards NaaS delivery models for their Ethernet and IP bandwidth services (also discussed in the section below), and upgrading optical platforms to deliver higher capacity connectivity, for exampleby deploying new line cards to upgrade from 400 Gbit/s to 800 Gbit/s and even 1.6 Tbit/s.

An emerging behaviour is for some enterprise customers to "stack" these connectivity services, for example:

- An enterprise first requires a private IP link between their office and a data centre

- Then the same enterprises connects multiple data centres via wavelength services

- And finally requires Ethernet services to connect their data centre to the public cloud.

Telcos need to be able to offer quickly scalable enterprise connectivity services to satisfy the above described needs. Verizon is one operator offering such a service via AI Connect. Announced in January 2025, this service aims to expose the full range of the carrier's fibre, Ethernet, private IP, edge-cloud and 5G assets through a single programmable platform.

# 3. NaaS and AI-optimised SD-WAN

Finally, a telco can also offer connectivity services for AI workloads by using a mesh of networks, including its own, that of other telcos and of non-telco partners. Such platforms need to federate across multiple operators, cloud exchanges and non-telco providers on a peer-to-peer basis. This requires common orchestration platforms, settlement arrangements and assurance to create a unified network fabric.

SD-WAN offers an established example of how to deliver this type of multiprovider, multidomain network-as-a-service (NaaS). Some vendors are already supplementing SD-WAN solutions with AI-specific traffic handling. One such example is Broadcom's VeloRAIN, introduced in November 2024, which identifies latency-critical AI flows and prioritises them across the public internet and partner networks while applying enhanced security policies.

# What next?

There is no doubt that AI heralds a shift in how society functions, and opens up significant opportunity, and risk, for telcos as providers of critical connectivity infrastructure. This article presented three specific connectivity-based opportunities for operators. Other opportunities exist in the domains of Inference-as-a-service, GPU-as-a-service and AI-as-a-service. Our recently published report "*Networks for AI: Segmenting the growth*" also examines these adjacent opportunities in more detail.

This article is the first in a three-part series on the impact of AI on telco networks. The next instalment will examine the telco edge opportunity, and the final piece will explore how telco data-centre strategies must adapt to this new AI-era.

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