

An aerial night photograph of a bridge spanning a river. The bridge is illuminated with warm yellow lights, and the water reflects the lights. The surrounding area is dark, with some trees visible on the left bank. A white, stylized line graphic starts from the left side of the image, curves upwards, and then downwards, ending near the bottom right corner. The overall color palette is dominated by dark blues and greens, with the warm yellow of the bridge lights providing a focal point.

# Revenue from the edge

How communication service providers (CSPs)  
can unlock the revenue opportunities that lie  
at the edge of their networks



# Introduction

As Sarah travels across the city, her smartphone is indispensable. Her journey begins at home, using fiber broadband to check emails and plan her route. Switching to mobile data at the bus stop, she books a ride-sharing service. The app pinpoints her location, and soon she is on her way, with the driver using navigation reliant on the robust 4G network.

During the ride, she catches up on social media, streaming smoothly thanks to the strong connection. A notification from her smart thermostat prompts her to adjust the temperature at home, easily done with a few taps.

At a café, Sarah connects to Wi-Fi to save data. She logs into a video conference, the fixed broadband ensuring a clear call. After the meeting, she orders lunch through a delivery app, tracking the rider in real-time.

Heading to a meeting in an unfamiliar area, her phone's GPS guides her flawlessly, the 5G network ensuring no lag. Throughout her journey, the seamless integration of fixed and mobile telecommunications keeps her connected and efficient.

Sarah's experience is seamless, thanks to the combination of network and computing technologies working together behind the scenes that make it possible. It also illustrates why so many CSPs see the infrastructure at the very edge of their networks as the biggest opportunity to unlock new revenue streams.

# Services can save the day

The traditional CSP revenue model has relied almost exclusively on selling connectivity. CSPs' ownership of network infrastructure has given them the ability to profit from a surge in distributed computing and mobile services over the past 20 years, charging consumers for the bandwidth required to connect them with online services.

But revenue from traditional connectivity is no longer a route to growth. Traditional text and voice services (for which CSPs charge customers directly) are in decline, according to several reports from across the industry.

Juniper Research predicts that total voice revenue from consumer mobile subscriptions will [decline from \\$230 billion in 2023 to \\$182 billion in 2028](#), though it does note regional differences in revenue, for example, with North America

seeing a 73% drop, and the Far East & China seeing a 28% growth.

Another study from Juniper Research, released in 2024, predicts that operators are expected to [lose \\$3.1 billion in business messaging revenue](#) to OTT (over the top) messaging channels (eg. WhatsApp, iMessage) in the next five years.

At the same time, the cost of maintaining and improving networks to keep up with increasingly complex and data-heavy services is substantial.

McKinsey has stated that it expects mobile operators to invest [more than \\$600 billion in 5G networks between 2022 and 2025](#). GSMA Intelligence goes further, predicting that [mobile operator capex will reach \\$1.5 trillion between 2023 and 2030](#), with the vast majority (92%) on

5G related expenses. Grand View Research predicts a growth rate in the 5G infrastructure market of 22.9% between 2024 and 2030, taking it [from \\$27.76bn in 2024 to \\$95.88bn in 2030](#).

The combination of declining revenue streams and rising infrastructure costs has dented the growth plans of many CSPs. One leading global CSP had become one of the most valuable firms in the FTSE 100 at the turn of the millennium. On December 29th 1999, it had a market capitalization of \$152bn, whilst Apple's was \$16bn. Today Apple is worth \$2.6trn and the CSP in question just \$24bn. This presents a stark demonstration of why CSPs are losing out: **selling services that utilize network connectivity is far more lucrative than selling connectivity alone.**



That trend will almost certainly continue. Just look at the growth of Internet of Things (IoT) devices and cloud-based services - which both rely on CSPs' networks to function properly.

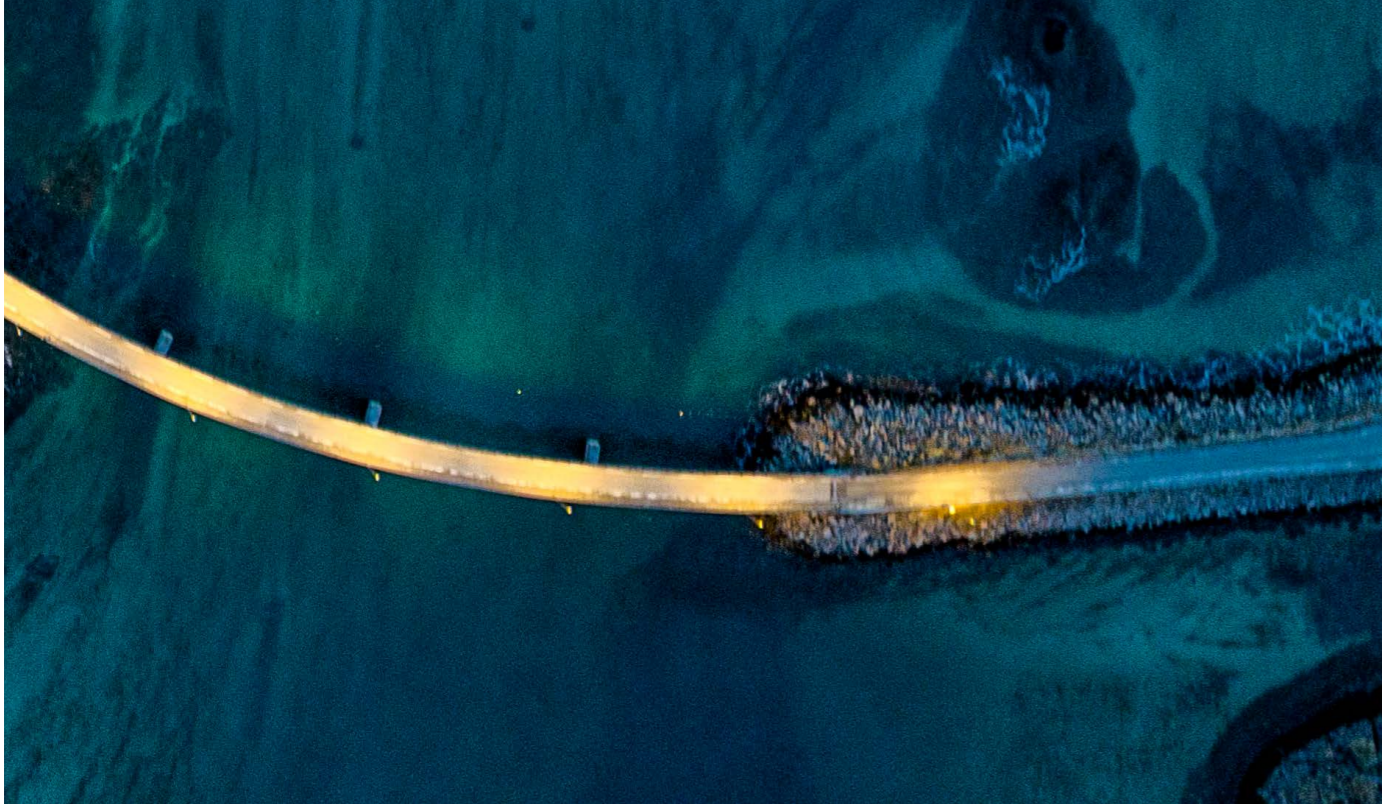
Transforma Insights believes that the number of active IoT devices will [grow to 39.9 billion in 2033](#), compared with 16.1 billion at the end of 2023, whereas IoT Analytics predicts that there will be [more than 29 billion IoT connections in 2027](#). Statista has stated that the IoT market will grow at an annual growth rate of 10.49% between 2024 and 2029, reaching the staggering volume of [\\$1,560.00bn by 2029](#), with much of this led by automotive IoT.

Significant growth is also expected in cloud computing. Grand View Research estimates the global cloud computing market size at \$602,310.7 million in 2023, [growing to US\\$ 2,390,184.5 million by 2030](#), with the largest segment being software as a service (SaaS).

CSP networks have enabled this growth, but they are now looking at ways to benefit from it more directly, evaluating ways to profit from the very services they already underpin. One of the reasons these CSPs have a good chance of success is because they own the premium real estate at the edge of the network – the point where network technology is physically closest to the end user. And that is where the future looks most exciting.

An aerial night photograph of a road, illuminated by streetlights. A glowing blue line traces the path of the road, starting from the top left and curving towards the bottom right. The surrounding landscape is dark, with some vegetation and structures visible. A dark grey rectangular box is overlaid on the left side of the image, containing the text 'Why is the edge important?'.

**Why is the edge  
important?**



# Axiata's perspective on 5G and edge for enterprises

## Industrial operations: the 5G and edge opportunity

The network edge matters for three main reasons – latency, locality and privacy. With the proliferation of connectivity, it makes sense to have certain services deployed as close to the user as possible, because their performance relies on low latency. The physical proximity of edge infrastructure to the user affects the time taken for data to move between that user and the service they want to access. There are also many services in modern scenarios, such as smart cities, which require large volumes of data to be transferred between the user and some form of central computing infrastructure.

The further away that infrastructure is on the network, the more expensive it is to transfer the data there and back and the quicker that CSP profit margins are eroded. As a result, services local to the user at the edge of the network can be cheaper to run than those further away. There are also many scenarios where the data being exchanged between a user and a service has privacy implications. Where restricted data or regulation come into play, working at the edge of the network limits the risk of data being compromised, because it has a lower distance to travel.

These benefits mean CSPs have a significant opportunity, unique to their position in the market. By owning the edge infrastructure, they hold the keys to unlocking these benefits. So, if they expand their proposition beyond connectivity, and start offering business to business (B2B) services direct to customers based at the edge, they could open up lucrative new revenue streams.

These could be infrastructure, or even platform-as-a-service offerings. They could be IoT services that bundle connectivity with management tools for smart devices used in the home or in industry applications. They could be cybersecurity services tailored for individual customers. Or, they could be media/entertainment streaming services bundled with connectivity to make the experience of accessing high-quality high-bitrate content simpler, cheaper and more reliable.

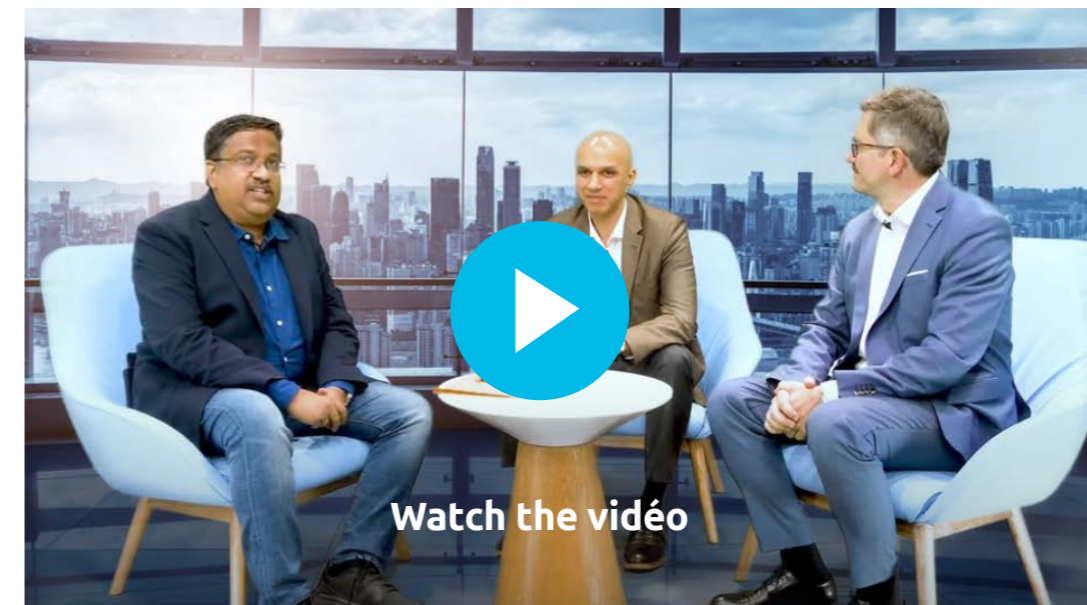
For example, a service could expose location APIs to the calendar application used by a large enterprise organization. The calendar could then check meetings and provide notifications to users to indicate they may be in the wrong location for the meeting, or simply too far away to get to the meeting location in time.

This is a relatively simple example. The true opportunity and potential are considerably larger.

Imagine a new ride sharing app that deploys and scales its technology. To do this, it needs both a CSP's connectivity and some subscription-based compute services that allow the application to work effectively. Today, whilst CSPs enjoy revenue from the connectivity, they do not take anything from the compute services on which these companies rely. What if they could?

If CSPs can own access to these compute services, add some differentiation to them by virtue of hosting them on the edge, and build in some bespoke services that can be best provided through their network infrastructure, they would have new avenues for generating revenue.

The potential of edge services to CSPs is varied and significant. This potential applies both for public services, sold direct to individual users on the core network, and for B2B enterprises that want to deploy services to staff and customers on private networks - for example, unified communications to simplify collaborative working environments.



Telecommunication service providers, like Axiata, are well-positioned to provide reliable connectivity to industrial enterprises like manufacturing firms and ports. Their familiarity with achieving 99.999% availability through their highly resilient network, coupled with the advantages of 5G and on-premise edge computing, offers a way for their customers to unlock greater efficiencies in their industrial applications.

Industrial organizations rely on real-time awareness of their production and operational systems to gain greater flexibility. Increasing this flexibility requires more sensors and controls, and this is where edge computing is vital. It allows software-based controls and telemetry collection to be securely hosted "inside" the production and operational systems.

# Two worlds that must collide

**So why, given the scale of this opportunity and the potential value of the network assets they already own, has this been difficult for CSPs to do?**

The answer lies in the differences between CSPs and cloud service providers – be they hyperscalers or smaller companies. One issue is about what CSPs know and what they need to learn. Telecoms companies have traditionally been very good at explaining and selling network products. But their ability to build and sell services that sit on their networks is less compelling.

This is made harder by how disconnected CSPs are from the developer community responsible for creating these services. Whereas hyperscalers, like AWS or Google, have invested heavily in engaging this community, speak their language, and have developed products which are lucrative for developers and support their work. CSPs have either not yet

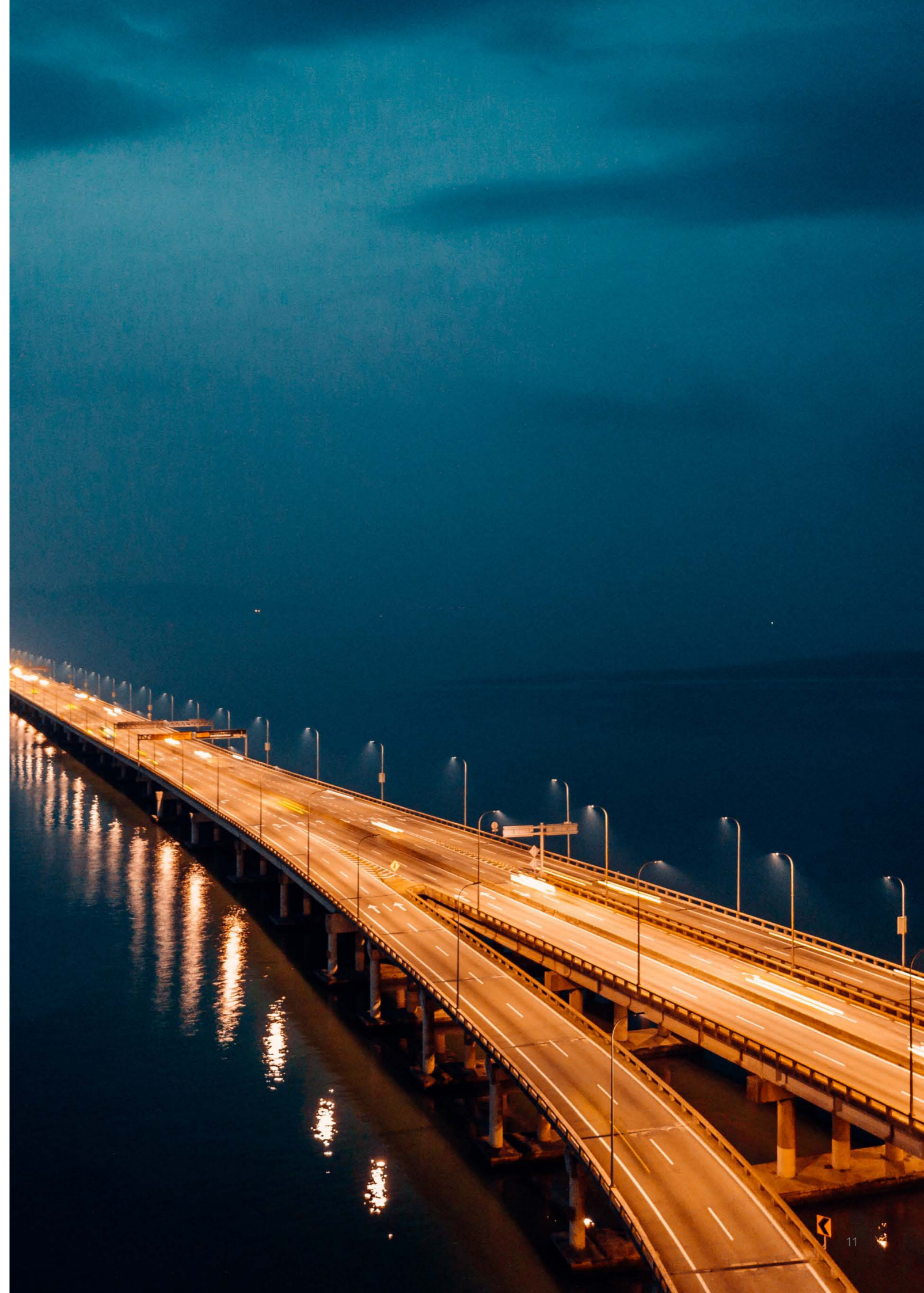
built these bridges or are only in the early stages of doing so, and the complexity of the CSP world - from standards to technologies - continues to make life difficult for developers.

Another problem is how CSPs deliver these services once they are implemented. They manage their networks through a combination of heavy orchestration, strict data monitoring, and low technology flexibility. In contrast, cloud service providers - particularly those selling to enterprise organizations - understand that their customers want lightweight approaches to service integration, management, and connectivity, and the ability to tailor solutions to reflect their existing technology stack.

Most already have multiple network and computing technologies embedded in their day-to-day systems. Solutions which take this into account are likely to be well received. Solutions

that require significant changes to an enterprise's existing setup or need intricate management might not do so well. CSPs must undertake a learning curve before they truly understand the enterprise challenge and how to sell edge services to this community.

Geographic perspective is also an issue. CSPs tend to have a regional view of their networks - whereas cloud services, by definition, are designed to be entirely global and technology agnostic. That regional/global dichotomy is a problem for CSPs that want to offer services that transcend geographic boundaries, when they currently rely on different regional infrastructure around the world. A system that can 'federate' application services across operator networks in different regions would help address this dichotomy.





# What must change?

Several things need to change before CSPs can overcome these barriers and start to benefit from building and delivering edge services.

The first is about shifting the perception that these challenges are solely the burden of the telecoms sector. They are not - the world of cloud-native service providers needs to overcome similar issues. Speak to any CTO in either market and it is clear that CSPs want to build cloud strategies, whilst cloud services providers are trying to build telco strategies.

There is mutual benefit to be had from a tighter connection between these two worlds. Cloud companies can help CSPs connect with developer communities, and telcos can work hand in glove with hyperscalers and emerging services companies to help them understand network environments

better, so they can design services that take network technologies into account. But, as two very different industries, both are going to need help to bridge the gap.

If CSPs are to successfully deliver edge services in a way that engages enterprise customers, they also need to change how they support them. They need to dial down the control they have traditionally enjoyed over complex network infrastructure and make it simpler for customers to manage edge network resources and services themselves – including infrastructure, data, and applications. Part of this important 'cultural' change involves recognizing that B2B enterprise customers will already have existing network and device asset management frameworks in place, and do not want complex orchestration and integration.



This requires new tools that can connect the dots between these existing barriers. The good news is that enterprise customers do not want these solutions to be complex. Essentially, they want three things from any tool that supports their use of edge services:

1. A clear view of the edge computing resources they are using
2. A clear view of the connectivity they are consuming, and a way to predict what they will need in the future so they can manage the road ahead
3. Tools that foster interoperability between existing siloed systems, so the introduction of edge services minimizes the friction with their existing technology stack

Platforms such as Capgemini Engineering's **Intelligent Edge Application Platform (IEAP)** are designed to do exactly this. They enable integration between multiple technologies that break down the barriers of technical complexity; they federate services across different operator networks in multiple countries or regions and they connect the contrasting expertise and approaches of CSPs and cloud companies in a way that makes it simple for enterprises to draw tangible benefits from edge infrastructure.

Multiple data sources converge on IEAP and similar platforms. Specific edge-native AI algorithms then handle vast amounts of real-time information to make sense of it all. This approach does more than merely collate and organize data, it presents information in insightful and actionable ways to encourage decisions that deliver tangible business outcomes.





# Conclusion

Bringing two worlds together

There is no doubt that CSPs have a major opportunity to generate significant revenue from offering edge services as part of their portfolios, because they already own the network real estate that enables edge service delivery.

But, what is also clear is that this is not a simple change. CSPs are going to have to make hard adjustments to entrenched processes and systems to capitalize. They are going to have to work closely with communities that are not inherently part of their ecosystem – particularly cloud-native developers. And they must change how they support customers, with a combination of sophisticated tools and expert guidance that can make managing the day-to-day use of edge services easier.

Ultimately, this is about bringing two connected worlds closer together. The cloud and telecoms networks are symbiotic business environments that already rely on each other. Both see the potential of the network edge, both are looking for ways to increase customer revenues, and both need each other to do so.

Any organization that understands these worlds and has deep expertise across the whole ecosystem (like our team here at Capgemini Engineering) will be critical for linking key players on both sides - and for helping CSPs overcome the barriers to implementing their cloud service strategies.

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# About Capgemini

Capgemini is a global business and technology transformation partner, helping organizations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 340,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2023 global revenues of €22.5 billion.

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