Network edge capacity forecast: The role of hyperscalers

Edge Insights Service

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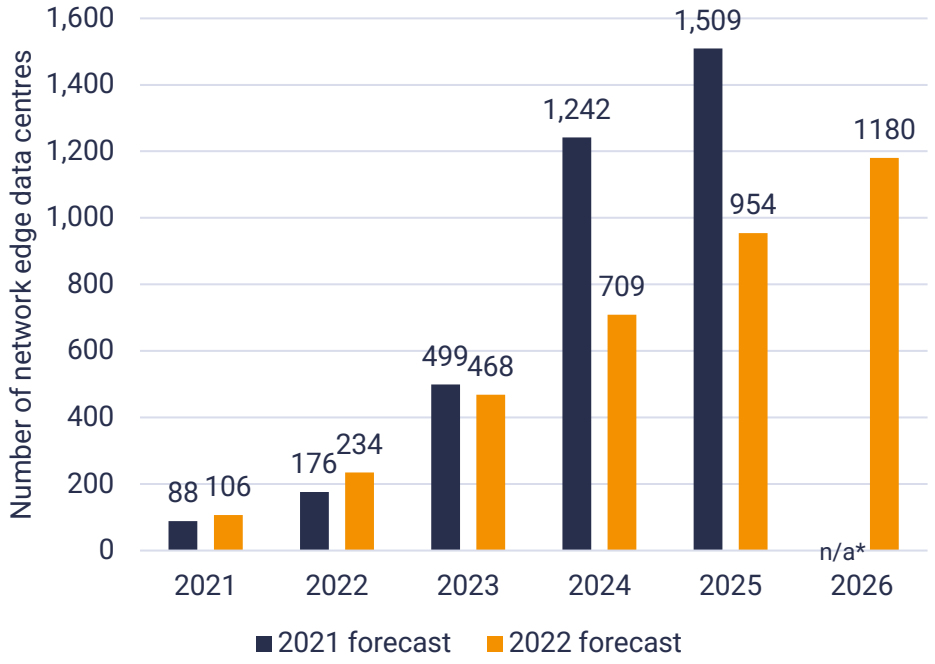
STL Partners' forecast for network edge capacity has come down for 2023 onwards

This report details a forecast of the capacity available for non-RAN applications at the network edge over the next five years. The network edge is defined as facilities for edge computing within the telecoms network - mobile, fixed or converged sites. The model focus on sites that will be owned and operated by telecoms operators.

Network edge data centres - 2021 forecast vs. 2022 forecast



*Last year's forecast only included the period 2021-2025

STL Partners has reduced its forecast for 2023 onwards

This year's forecast included an additional 25 telecoms operators, taking the total number of operators included in the model to 80.

Although the estimates for 2021 and 2022 were higher in this version, compared to last year's initial forecast, we have lowered our forecast from 2023 onwards for a three key reasons:

- Initial rate of deployment for China and India were higher than what we now expect in reality. These two countries made up 70-75% of last year's forecast, therefore reducing the estimates has had a significant impact on total numbers.
- Longer than anticipated gaps between the 5G (NR) rollouts and edge deployments. For example, although Saudi Arabia was one of the earliest market for 5G radio, the operators there have not yet launched network edge services.
- Slower rollout of subsequent edge sites after initial launch in leading markets, such as Germany, UK and South Korea. The operators there were early in deploying initial edges, but these have not increased in number significantly the last two years.

New operators are launching network edge services, with particular traction in Asia Pacific

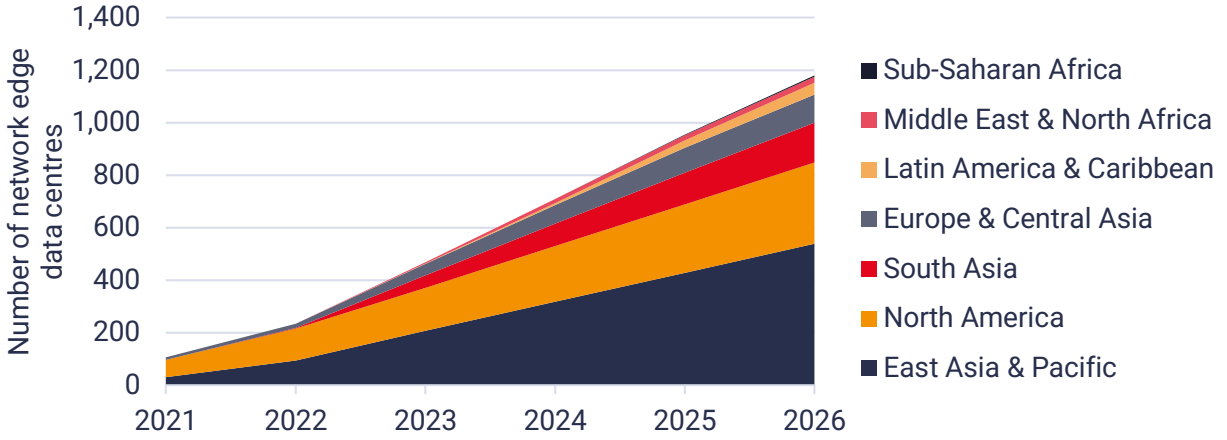
Asia Pacific will drive growth throughout our forecast period

Much of the investment in edge computing has been centred in the US the last 2-3 years. Both mobile operators (e.g. AT&T and Verizon) and MSO/cable operators (e.g. Cox Communications and Lumen) have launched edge services. Plus, the three large hyperscalers are US-based (AWS, Microsoft Azure and Google Cloud).

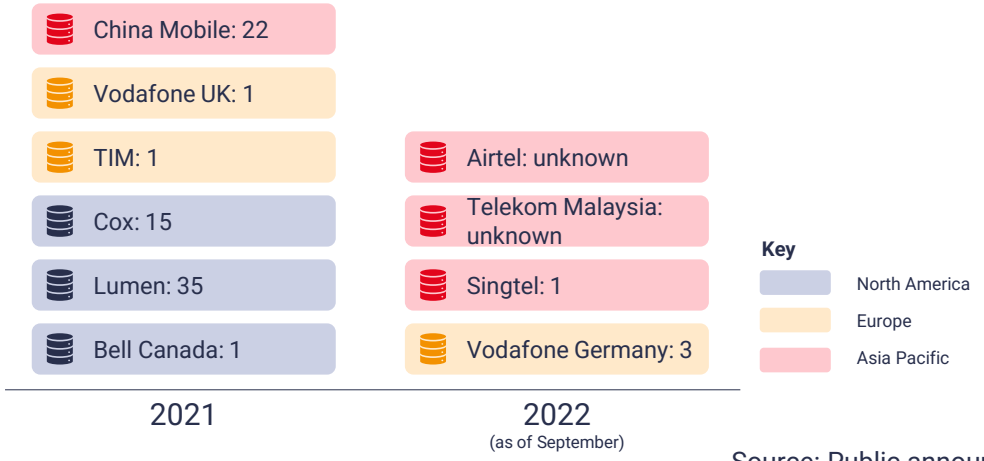
However, we predict that much of the growth will shift towards Asia Pacific in the coming years. The Chinese operators have been quick to roll out 5G and are scaling edge computing more widely, compared to other markets. Although we have assumed a slower growth rate

In addition, telecoms operators in markets across South East Asia and Pacific have been rolling out 5G radio and core, which has accelerated launches in edge services. For example, in Singapore, both StarHub and Singtel have launched 5G edge services, closely timed with their 5G standalone core rollouts. There is also activity in Malaysia, Australia and we expect other countries to follow soon too.

Number of edge sites by region



Telecoms operator network edge launch date and number of sites in launch year

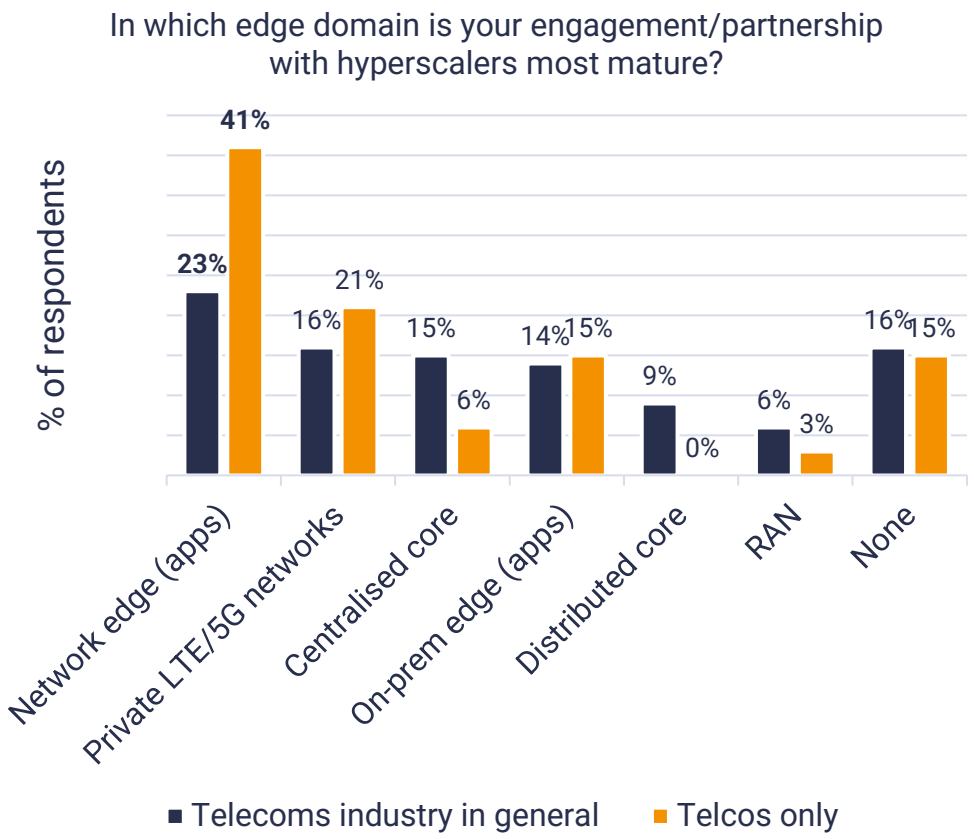


Source: Public announcements

Note: Numbers denote number of edge data centres made available for edge services by telecoms operator in launch year

Hyperscalers continue to play a key role in building network edge – it is the most mature edge partnership domain

Network edge is the most mature edge domain



STL Partners survey 2022, N=180

41% of telcos believe network edge is the most mature domain

Telco-hyperscaler partnerships are not solely focused on network edge. Other domains include Private LTE/5G networks (e.g. telecoms operators using hyperscalers' private network infrastructure platforms to serve enterprise customers) and mobile network infrastructure (i.e. RAN and core).

Nonetheless, the network edge is the most mature domain for edge partnerships, particularly from the telecoms operators' perspective. The survey results indicated partnerships between hyperscalers and other telecoms industry ecosystem players is more diverse.

The telecoms industry sees the strength of hyperscalers' cloud platforms as the biggest benefit for partnerships

29% of telco respondents chose "strength of cloud platforms" as an important benefit for working with hyperscalers. Telecoms operators have limited skills and resources to build their own edge platform stacks, however they are at the same time trying to ensure they are able to create value.

The two biggest drawbacks highlighted in the survey were "reducing overall share of revenue from edge services" and the "threat of hyperscalers becoming telecoms companies".

What next?

Next steps

As the next wave of telecoms operators starts investing in edge computing, STL Partners will continue to track the lessons from early adopters, covering the evolution of edge infrastructure. One domain we will continue to monitor is the edge computing in the Access Aggregation level. We will also be connecting our “demand-side” forecast (Edge Market Sizing) with this “supply-side” model.

Outside of this forecast, STL Partners is adding to its **Edge Insights Service**, ensuring we publish reports on key topics and incorporate insights through our tools (see an overview of the service below). If you have any questions you would like to discuss with us, or any suggestions for what we should be covering, please contact the lead analyst on edge computing, Ahmed Ali (ahmed.ali@stlpartners.com).

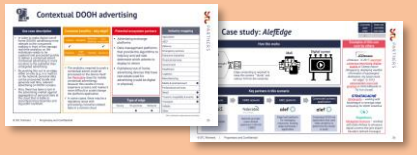
STL Partners’ Edge Insights Service

1. Reports

- Thought leadership reports on edge computing
- Including existing back catalogue

2. Use case directory

- Over 50 edge computing use cases across 16 verticals
- Case studies on real world implementations



3. Ecosystem tool

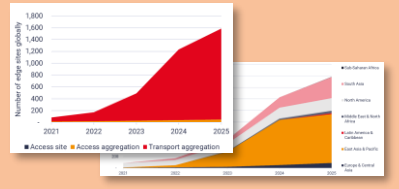
- Interactive tool charting more than 200 companies
- Deep-dives on companies’ strategies and partnerships

4. Market sizing forecast

- Size of edge computing market (in revenue)
- Broken down by vertical, use case, type of edge, country

5. Network edge forecast

- Total capacity in network edge data centres
- Broken down by application, country and type of edge



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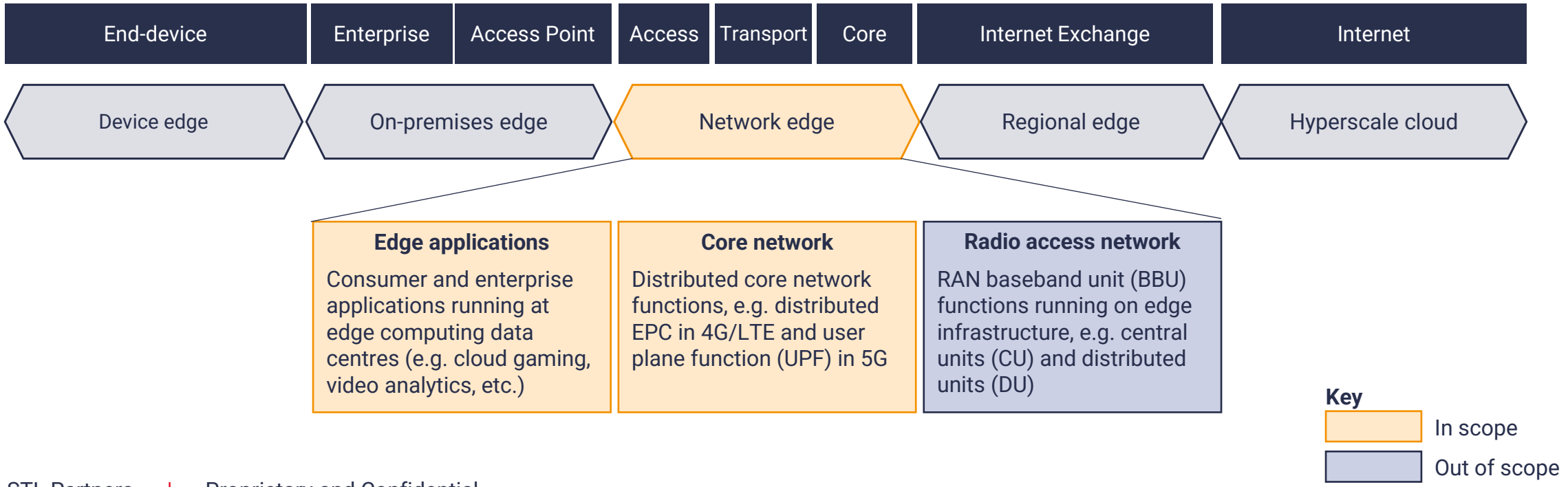
The report focuses on network edge computing sites

Edge computing comprises a spectrum of potential locations and technologies designed to bring processing power closer to the end-device and source of data, outside of a central data centre or cloud. This report focuses on forecasting capacity at the network edge – i.e. edge computing at edge data centres owned (and usually operated) by telecoms operators.

This forecast models capacity at these sites for non-RAN workloads. In other words, processing for enterprise or consumer applications and the distributed core network functions required to support them. We cover forecasts on RAN as part of our Telco Cloud research services portfolio.

Figure 1: Forecast scope in terms of edge locations and workload types



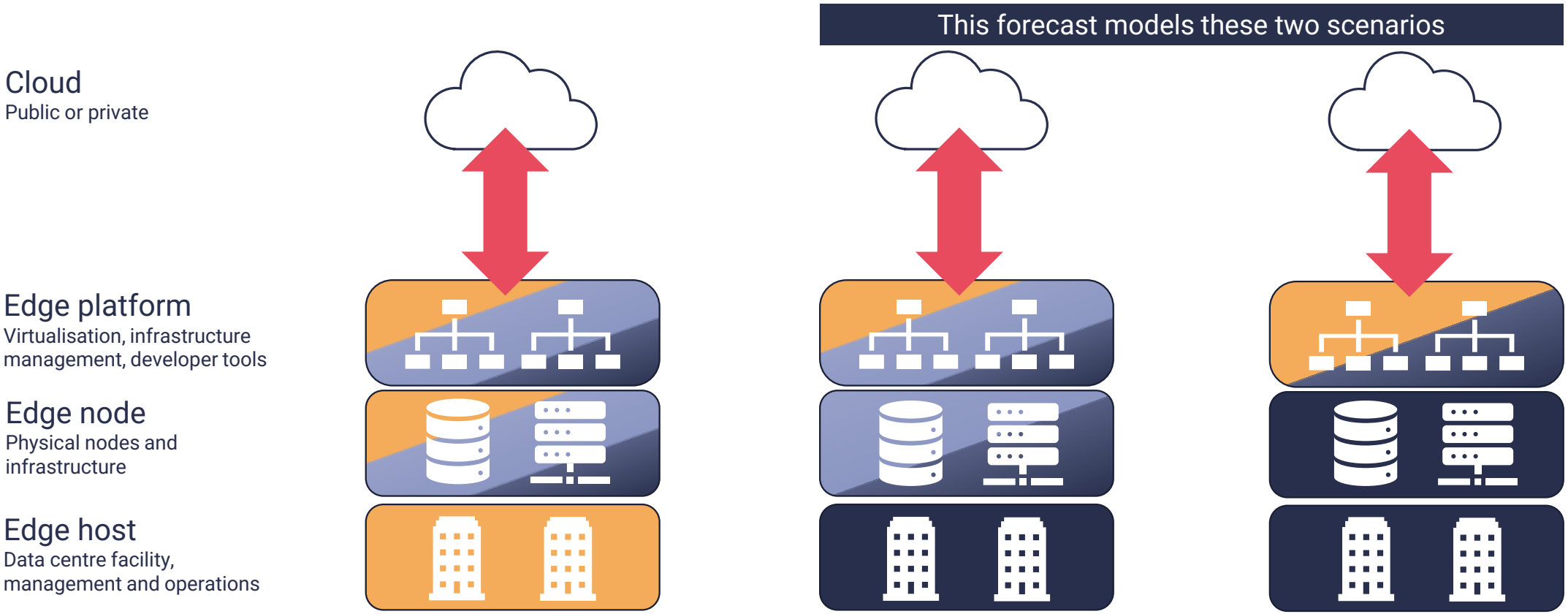
Network edge data centres have unique characteristics (compared to other forms of edge)

Figure 2: Characteristics of different edges

	Device edge	On premise edge	Network edge	Regional edge
Location	Smart devices (e.g. in vehicle, street lamp, IoT)	Enterprise site (e.g. retail, factory floor, IT closet)	Site owned by telecoms operator e.g. central office	Tier 2/3 city
No. racks available	0	0-4 racks	5-20 racks	20+ racks
Power	Up to 1kW	Up to 20kW	Up to 200kW	Up to 4000kW
Estimated roundtrip latency	Up to 5ms	10-20ms	10-40ms	20-100ms
Estimated distance from end user	0km	Less than 1km	5-30km	5-100km
Tenancy	Single tenant	Single tenant	Single tenant / Multi-tenant	Multi-tenant
External environment	Controlled (within device), harsh and rugged	IT closet, commercial and office, harsh and rugged	Harsh and rugged, conditioned and controlled	Conditioned and controlled
Passive infrastructure	May or may not have power and filtration, no cooling etc.	Has power with limited cooling and filtration, etc.	Tier 3+	Tier 3+
# of expected deployments globally by 2030	Millions	Hundreds of thousands	Thousands	Tens of thousands

This report covers two out of three scenarios for building the network edge

Figure 3: Network edge build scenarios



The output of the forecast focuses on capacity: number of edge data centres and servers

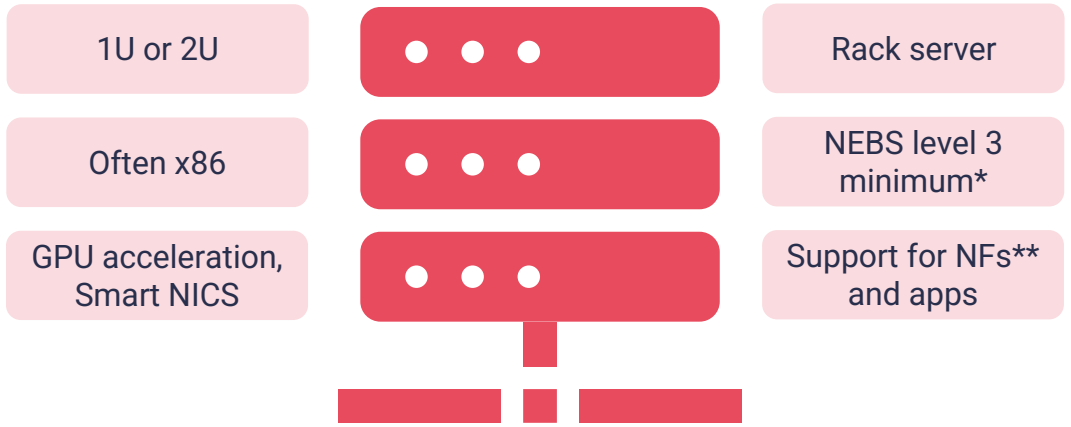
STL Partners has always argued that for network edge to take off, developers and enterprises need to see sufficient capacity at the edge to transform their applications to leverage its benefits at scale. The forecast seeks to provide an indication for how this will grow over the next five years, by predicting the number of edge data centres owned by telecoms operators and how many servers they plan to fill these up with.

Hardware vendors have been evolving their server portfolios for a number of years to fit the needs of the telecoms industry. This started with core network virtualisation, as the industry moved away from an appliance-based model to using common-off-the-shelf hardware to support the virtualised LTE core.

As infrastructure moves “deeper” into the edge, the requirements for servers will change. Servers at RAN base stations will not have full data centre structures, but need to be self-contained and ruggedised.

However, at this stage of the market’s maturity, most servers at the network edge will be in data centre-like facilities.

Figure 4: Types of servers assumed in the model



*NEBS is a compliance level that confirms the reliability, safety and quality of a vendor’s telecommunications equipment. NEBS Level 3 is considered carrier-grade.
**NFs = Network functions

There are three key factors determining a telco's approach and timing for its edge computing data centres

Telecoms operators want to build their network edges where there is demand. In general, the approach has been to create a deployment strategy for network edge data centres that guarantees a level of (low) latency for a certain level of population coverage. In interviews with operators, this has often ranged from 90-99% of the population experiencing sub-10 to 20 millisecond roundtrip latency for applications hosted at their network edge.

The resultant number of edge data centres will therefore be impacted by the spread of the population, the size of the country and the telecoms operator's network topology. For example, in well connected, small countries, such as the Netherlands, low latencies are already achievable with the current networks and location of centralised data centres.

The actual number of sites and speed at which a telecoms operator deploys these sites is driven by three main factors:

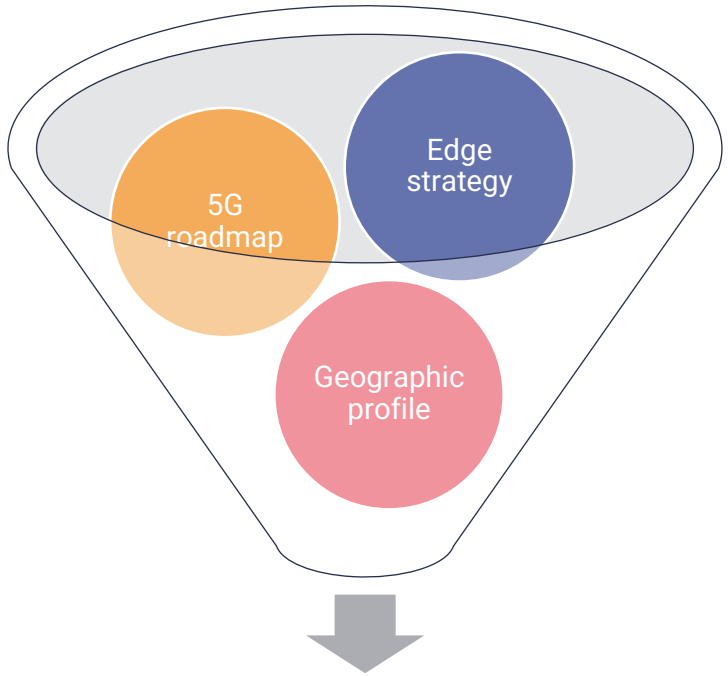
Factor 1: **edge computing strategy;**

Factor 2: the speed at which it has or will deploy **5G** (if it is a mobile operator);

Factor 3: the country's **geographic profile**.

Details on the evidence for the individual factors can be found in the inaugural report, Forecasting capacity of network edge computing.

Figure 5: Key factors determining network edge build

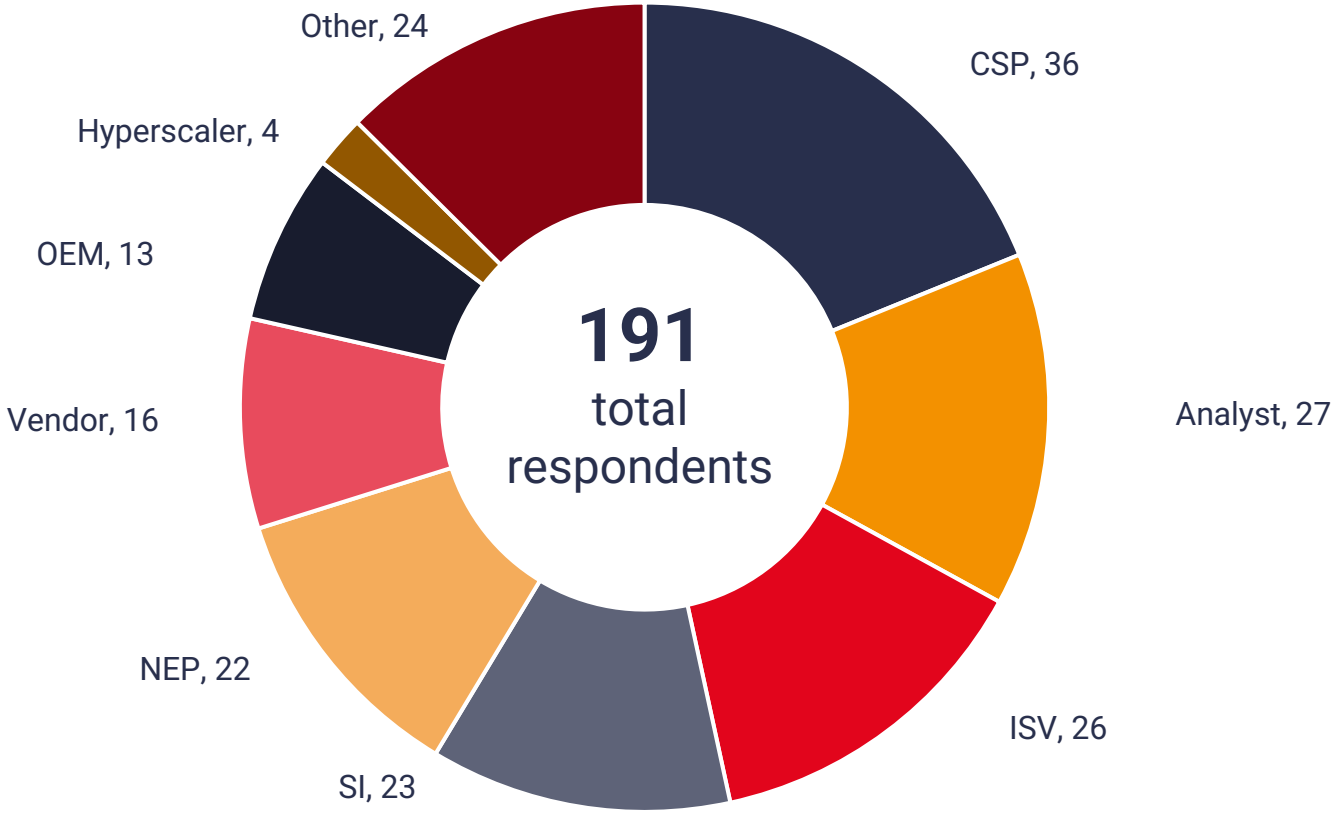


The updated forecast leverages results from a survey we have run for the last two years

The survey focuses on the following key questions:

- To what extent will edge infrastructure be 'built' by hyperscale cloud providers?
- What are the views of the telecoms industry on hyperscaler partnerships? Benefits and concerns.
- How does the maturity of these partnerships vary across different edge domains (e.g. private mobile networks, network edge for applications, RAN, etc.)?

Figure 6: 2022 survey respondents broken down



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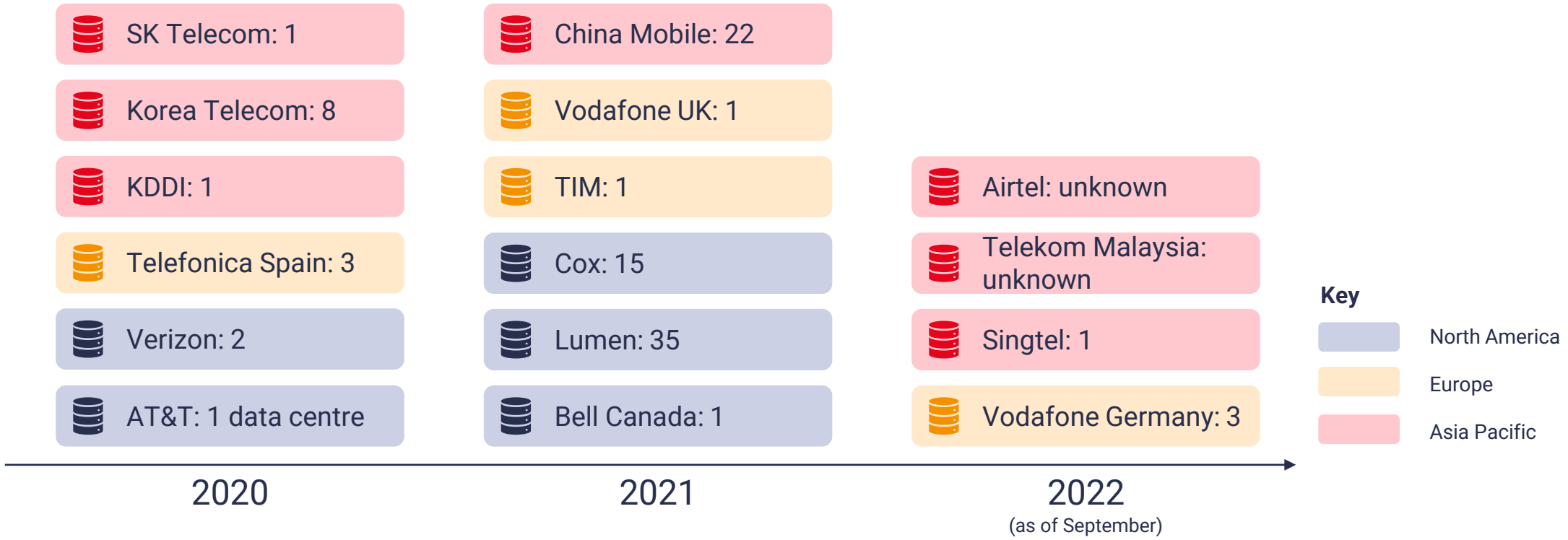
2021 and 2022 have seen new operators start to launch edge services – particularly in Asia Pacific

Figure 7: Year of telecoms operators' network edge launches and number of sites in launch year (as of September 2022)

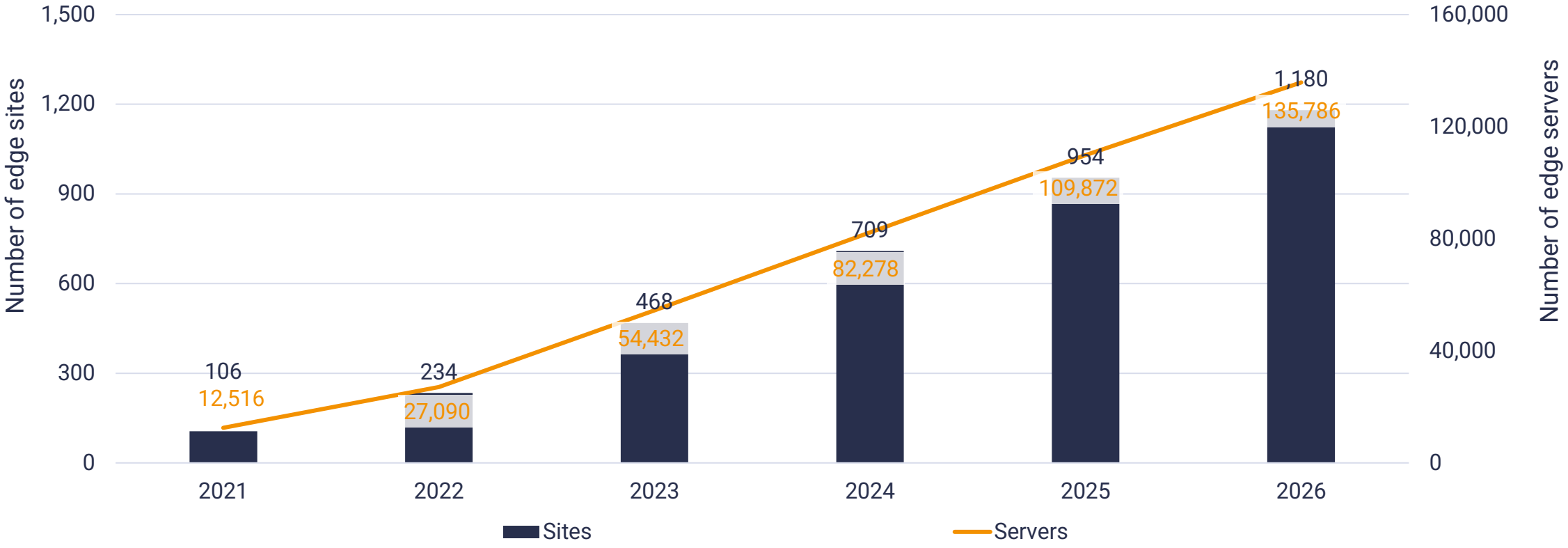


Source: Public announcements

Note: Numbers denote number of edge data centres made available for edge services by telecoms operator in launch year

We forecast that there will be just under 1,200 network edge data centres by 2026

Figure 8: Global network edge data centre forecast (sites and servers)



The forecast assumes all of these sites will be at the Transport Aggregation edge

Figure 9: Network edge locations

	← Network edge locations →			
Attributes	**Access site**	**Access aggregation**	**Transport aggregation**	**Core**
Average number of network sites* per operator	3K-100K	500-3K	50-300	<5
Distance from UE**	<20km	10-300km	50-1500km	500-3000km
Roundtrip latency from UE	<10ms	5-10ms	10-30ms	20-40ms
Typical (mobile) network functions at location	RU, DU	DU, CU	CU, UPF, EPC	Core (CP, UPF, EPC)
Original premises type (mobile)	Cell tower	Street cabinet, central office	Central office	Data centre
Original premises type (fixed)	Street cabinet	Street cabinet	Central office	Data centre

*Only a proportion of these would be used for edge computing (for applications)
**UE = User Equipment

Despite the hype for Access Aggregation edge, STL does not see edge applications there in the short-medium term

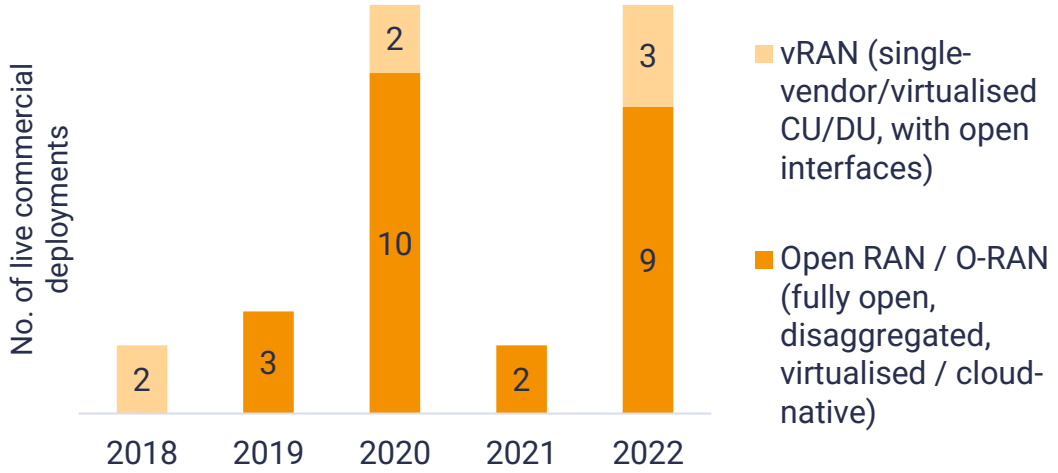
STL Partners' webinar in September 2022 asked the industry when they thought telecoms operators would start using their access aggregation sites for enterprise applications and almost all felt it would happen within the next 4 years.

However, to use such sites for hosting enterprise edge applications would require a significant evolution of the existing facilities, which are not yet data centre-ready. The panellist from Vodafone emphasised that hyperscalers have stringent requirements for data centres, which would require further investment and changes in the facilities available today. In addition, it is likely that these sites will only start being used for enterprise/consumer applications once they evolve for virtualised RAN. This is still at an early stage – very few telecoms operators have started deploying open RAN or vRAN (Figure 9). For this reason, we do not believe there will be edge computing capacity available for non-RAN workloads at access sites (base stations) or even access aggregation points.

Figure 10: Access aggregation webinar poll results

Source: STL Partners webinar September 2022

Figure 11: Open RAN and vRAN deployments, 2018-2022



Source: STL Partners Telco Cloud Deployment Tracker July 2022

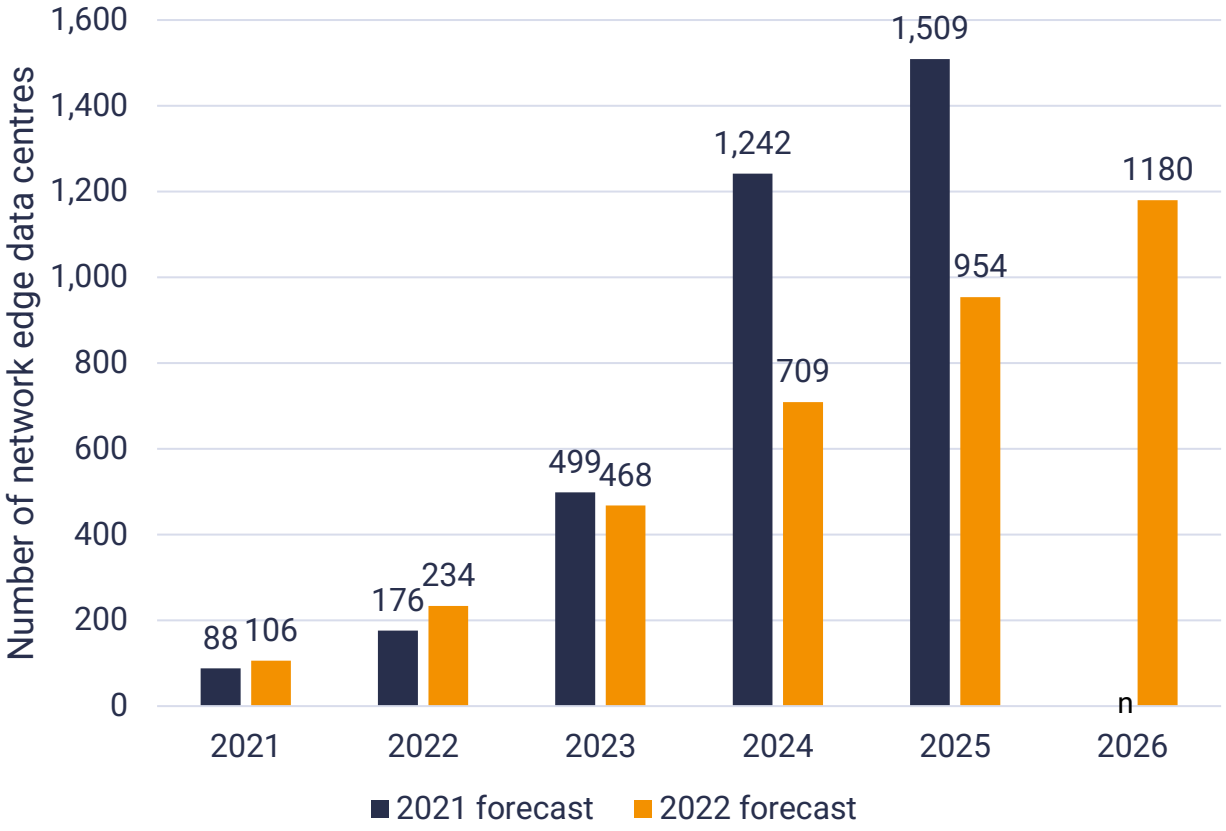
There are changes in the forecast from the last version – assumptions on growth rates have been reduced

This year's forecast has reduced the number of network edge data centres predicted beyond 2023. The main reason for this is due to a change in our assumptions for the rate at which operators in China and India will roll out their edge data centres and make them available for enterprises/developers, discussed in detail on the next page.

Other changes made to the model include:

- Adding 25 telecoms operators, taking the total number in the bottom-up model to 80
- Updating known data, for example based on deployments and edge launches announced in the last year
- Revising the growth rate, seeing as telecoms operators have been incrementally adding network edge data centres
- Adding more assumptions to when and how telecoms operators will expand network edge capacity, e.g. based on 5G core rollout, country/market maturity

Figure 12: Network edge data centres - 2021 forecast vs. 2022 forecast



Comparing the same scope as the last forecast (55 telcos), difference is mainly due to reductions in estimates for China and India

When comparing like-with-like, the number of network edge sites for the 55 telecoms operators included in the 2021 forecast, there are some discrepancies. These are mainly due to a deliberate decision to change the assumptions drive speed of deployment, particularly in markets such as China and India. Although telcos are bullish in both markets, particularly in China which is a 5G leader, the previous forecast had estimated there would be 772 edge data centres in China by 2025 and 291 in India.

Given the current rate of deployments, STL Partners has revised our previous predictions. For example, China Mobile currently has an 22 edge data centres in China after having started rolling out network edge services 2 years ago. At an average rate of 11 per year, it would be unlikely to reach over 200 by 2025.

Figure 13: Differences between 2021 and 2022 forecast

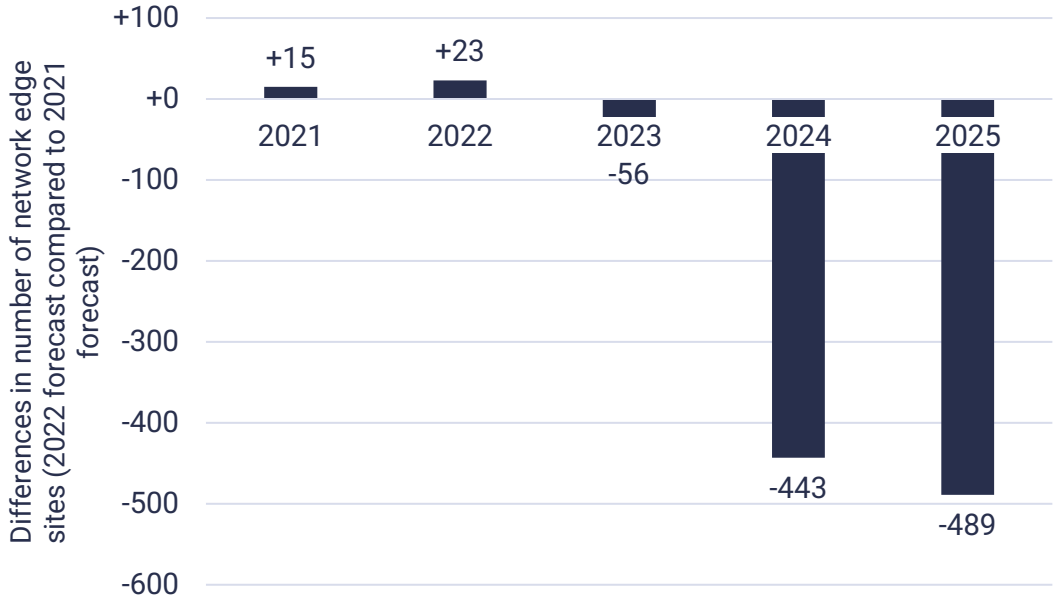
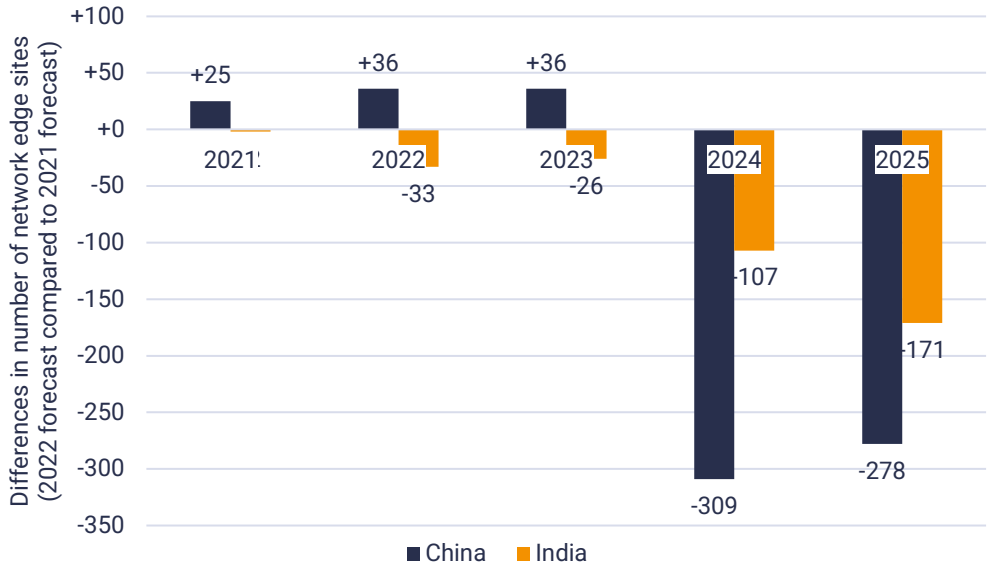


Figure 14: Highlighting forecast differences in China and India



Differences in other countries are largely due to timing of edge rollout

For most countries, there is limited change between the 2021 forecast and this year's results. However, there are a few where the main output, number of network edge data centres, either decreased or increased in the 2022 forecast. The below charts highlight countries where there was a notable difference between the forecast for the year 2025.

Figure 15: Countries whose forecast increased for 2025

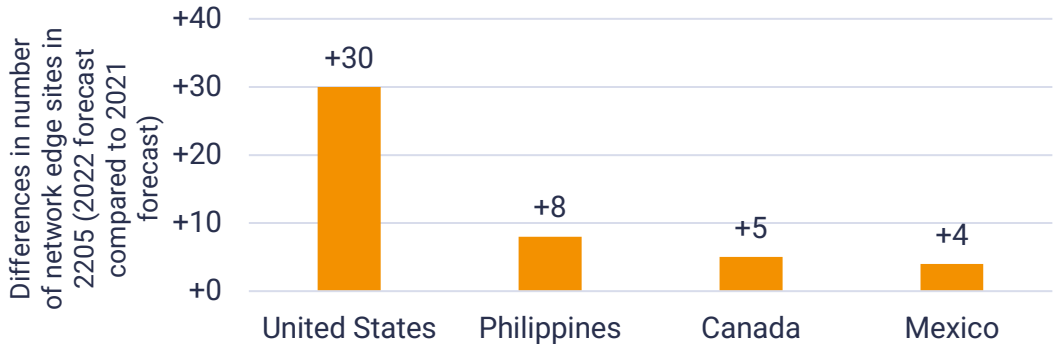
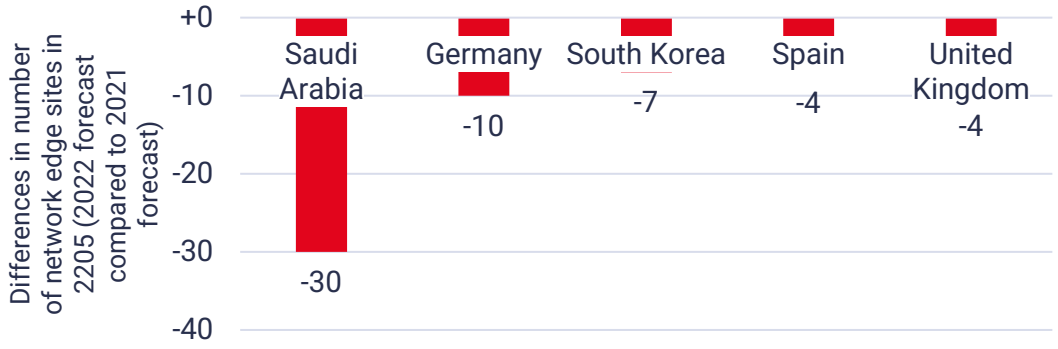


Figure 16: Countries whose forecast decreased for 2025



Reasons for higher forecast in 2025:

- **United States**: Our initial forecast underestimated the number of edge data centres US communication providers would be willing to rollout. Verizon, Cox and Lumen already have over 15 edge data centres each.
- **Canada and Philippines**: Telecoms operators are deploying earlier than anticipated (e.g. Bell launching with AWS last year and Globe running an edge programme).
- **Mexico**: Did not think operators would invest in edge given a higher focus on consumer services, but discussions with operators imply growing an edge business is a priority.

Reasons for lower forecast in 2025:

- **Saudi Arabia**: Delay between 5G rollout (Saudi Arabia was a very early market) and edge deployments.
- **Germany, UK and South Korea:** Slower than anticipated, e.g. SK Telecom's 12 site plan has taken time to roll out – 2 live edge data centres to date. In Germany's case, the gap MobiledgeX has left may contribute to the slowdown.

In some cases, there is a greater focus on private mobile networks and on-premises edge

Another reason that may contribute to the slowdown in network edge for certain operators, particularly those in Europe, is due to a shift in focus to on-premises edge and mobile private networks (over network edge). Here are some of the key reasons why on-prem edge seems to be taking precedent:

1. **Use cases are more mature**: Network edge use cases such as connected/autonomous driving, drones and AR/VR are still being proven.
2. **“Easier” business model**: Payback on a private mobile network/on-premises edge deployment can come from a single customer, whereas network edge requires scale.
3. **More straight-forward GTM**: Telecoms operators are new to engaging ISVs and developers, who are a key customer base for network edge applications, plus telecoms operators are not often seen as ‘cloud providers’. On the other hand, mobile private networks are more closely tied to telcos’ network business and, coupled with edge, can be sold into telcos’ existing core enterprise customer base.

5G SA core deployment delays can also play a role in slowing down network edge rollout

Although edge computing is not a mobile-only phenomenon, it is closely tied to telcos' 5G strategies. This is discussed in detail in the previous version of this report, Forecasting capacity of network edge computing.

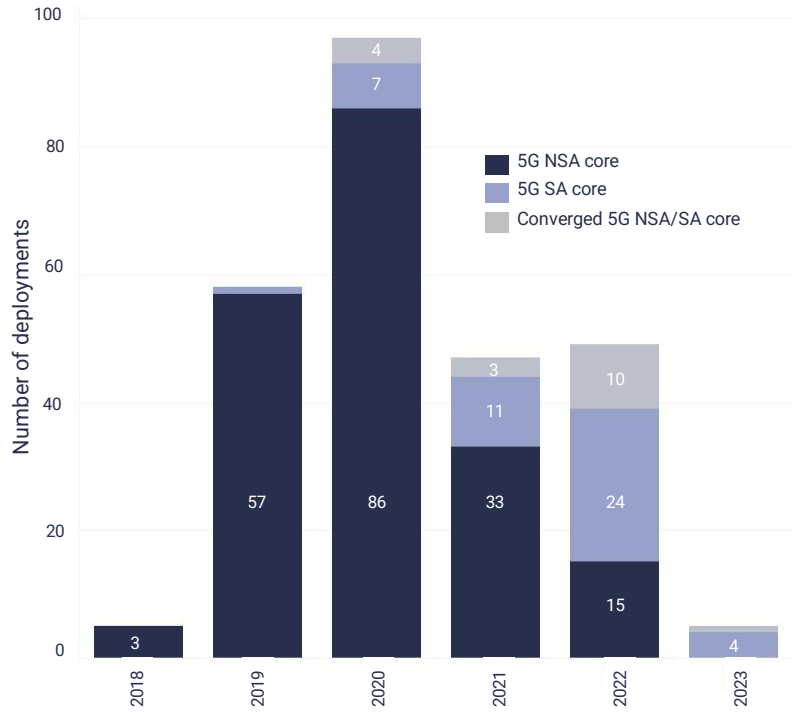
The 5G User Plane Function (UPF) plays a key role in steering traffic in an optimal way to minimise latency and break it out at the edge node. This can be done in 4G/LTE through Distributed evolved Packet Core (EPC) elements, although not as easily. In addition, the 5G Network Exposure Function (NEF) helps the network interact with applications to ensure the network meets their requirements.

These are only accessible through a 5G standalone (SA) core. For this reason, mobile operators' edge rollout strategies are tightly coupled with 5G SA rollouts.

However, as seen in one of STL Partners' reports published in the Telco Cloud Insights service, deployments of the SA core by some of the largest global operators have been adjourned, including:

- AT&T: Launch originally expected mid-2021; no current public deadline and interesting has been relatively slow in deploying network edge data centres
- Deutsche Telekom (Europe): Only trial deployments to date, in Germany and Austria
- Rakuten Mobile: Still not launched, despite being originally expected in 2021

Figure 17: NSA, converged, and SA 5G core deployments, 2018 to 2023



Source: STL Partners Telco Cloud tracker (July 2022)

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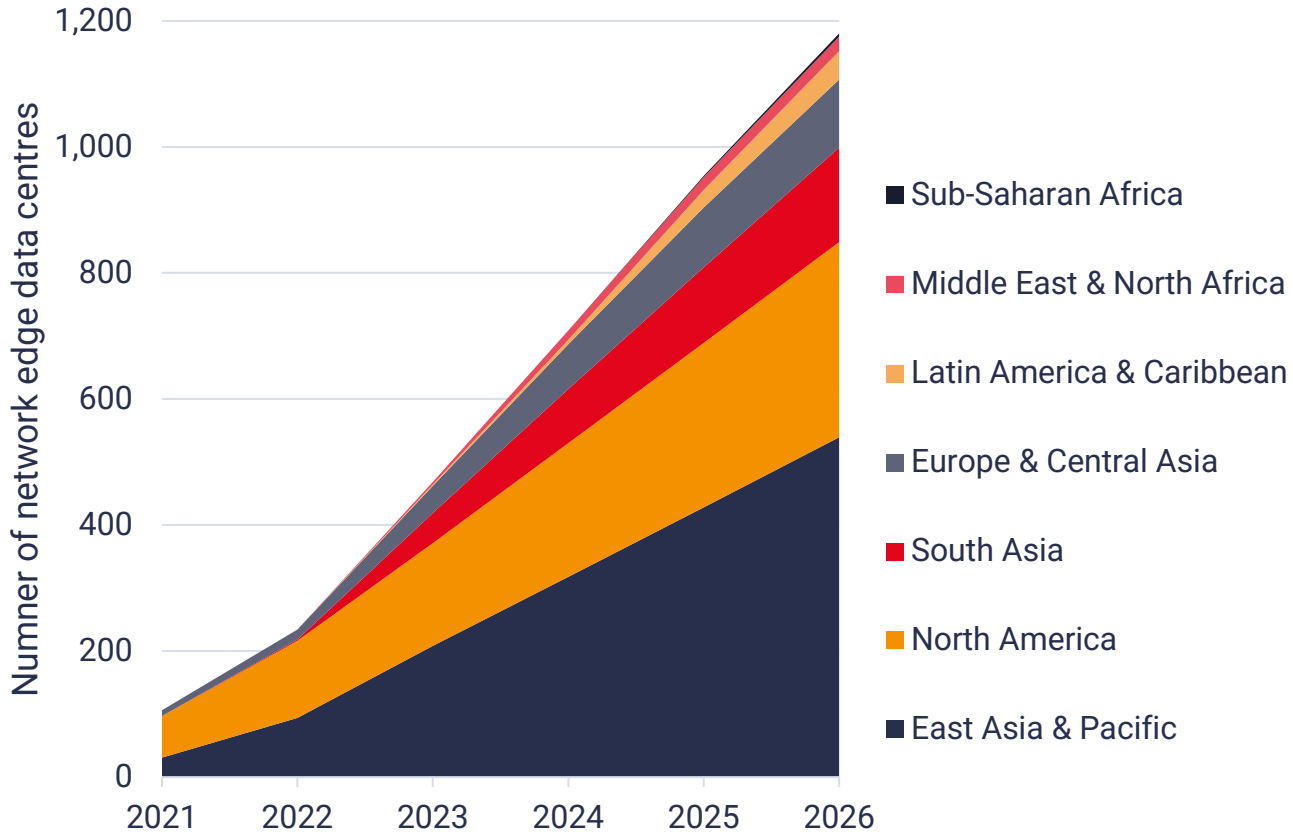
By 2026, East Asia & Pacific will host the largest amount of network edge compute data centres, largely driven by China

Figure 18: Number of edge sites by region



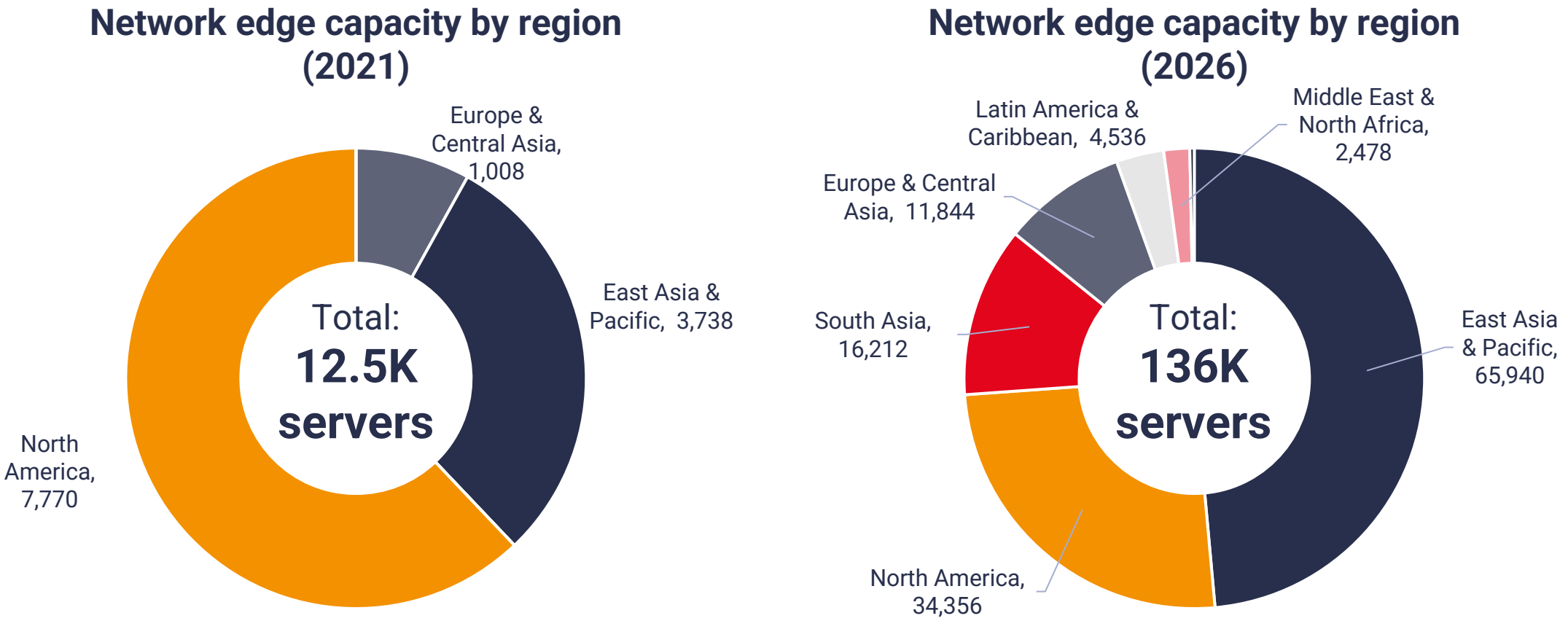
The Chinese operators have been leaders in deploying 5G, radio and standalone core. All four MNOs have now deployed 5G standalone core, including China Broadnet. In 2026, 26% of network edge sites globally will be in China.

Interestingly, part of the reason why China Mobile has been so aggressive in rolling out edge computing (5G MEC) is to save on backhaul costs, since it does not own any longhaul traffic capacity.

The European mobile operators, by contrast, have been relatively conservative in the number of edge data centres deployed. Based on what is known in the public domain, no operator in Europe has made more than 3 sites available to customers. This is not strictly a challenge for edge applications, since these markets are much smaller and round-trip latency is already quite minimal, but it helps to explain the differences between regions.

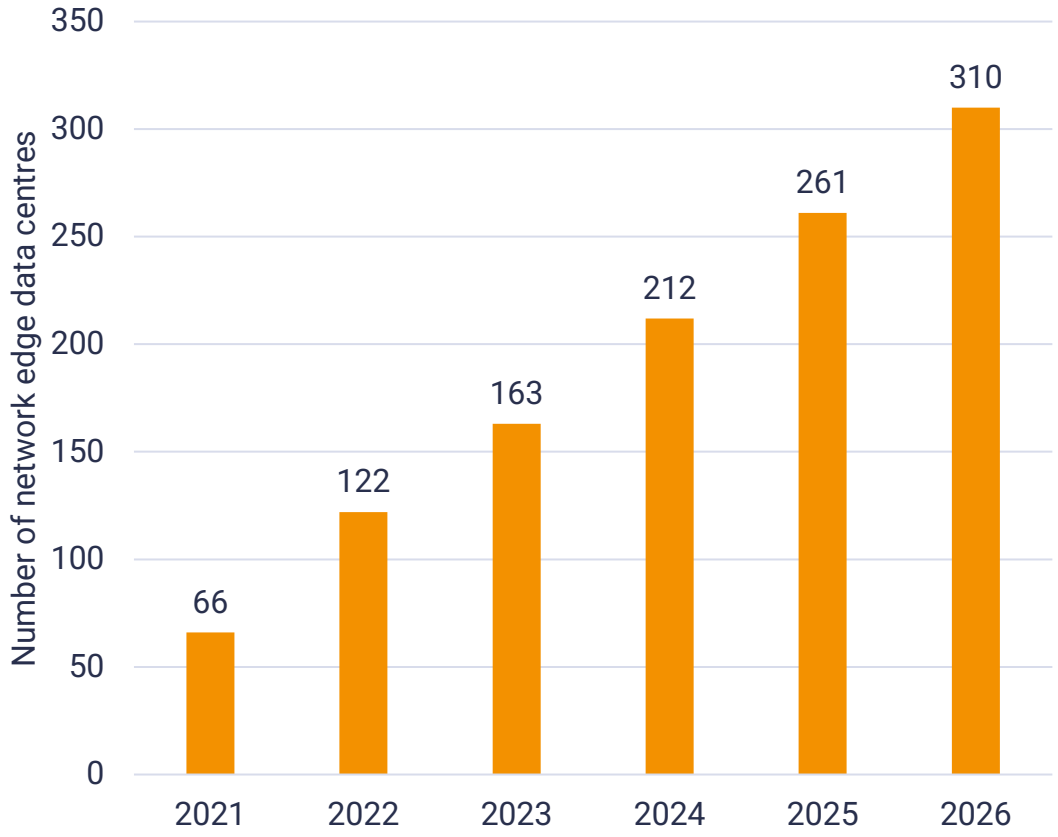
In the short term, North America has the most deployments globally

Figure 19: Network edge capacity by region (2021 and 2026)



Regional deep-dive: North America

Figure 20: Network edge capacity in North America

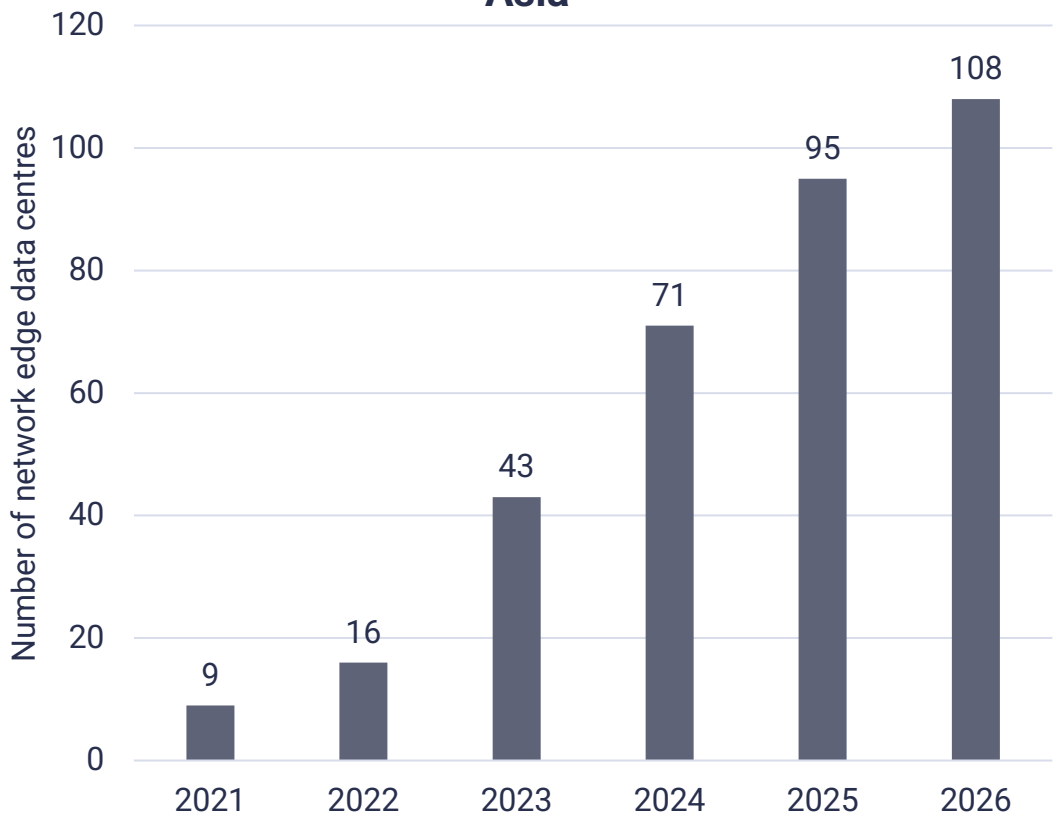


2022 developments:

- **Cox Communications** has continued to expand its Cox Edge business to new locations, including those outside the traditional locations on the East and West coasts of the US, such as Oklahoma. Its service focuses on providing IaaS and PaaS services, e.g. Virtual Compute, bare metal, Edge CDN, managed Kubernetes, DNS services, etc.
- **Lumen** has similarly expanded its locations across the US, as well as outside the country, for example in the UK. It has also been extending the range of services it offers, including leveraging partnerships with companies such as VMware to offer Edge Private Cloud.
- **Verizon** has been a leading mobile operator in terms of the capacity it has made available for network edge through the AWS partnership, with 19 locations available across the US.
- **AT&T** has remained relatively quiet on network edge and more focused on Private 5G edge, even its developer programme with Microsoft centres around this.

Regional deep-dive: Europe & Central Asia

Figure 21: Network edge capacity in Europe & Central Asia

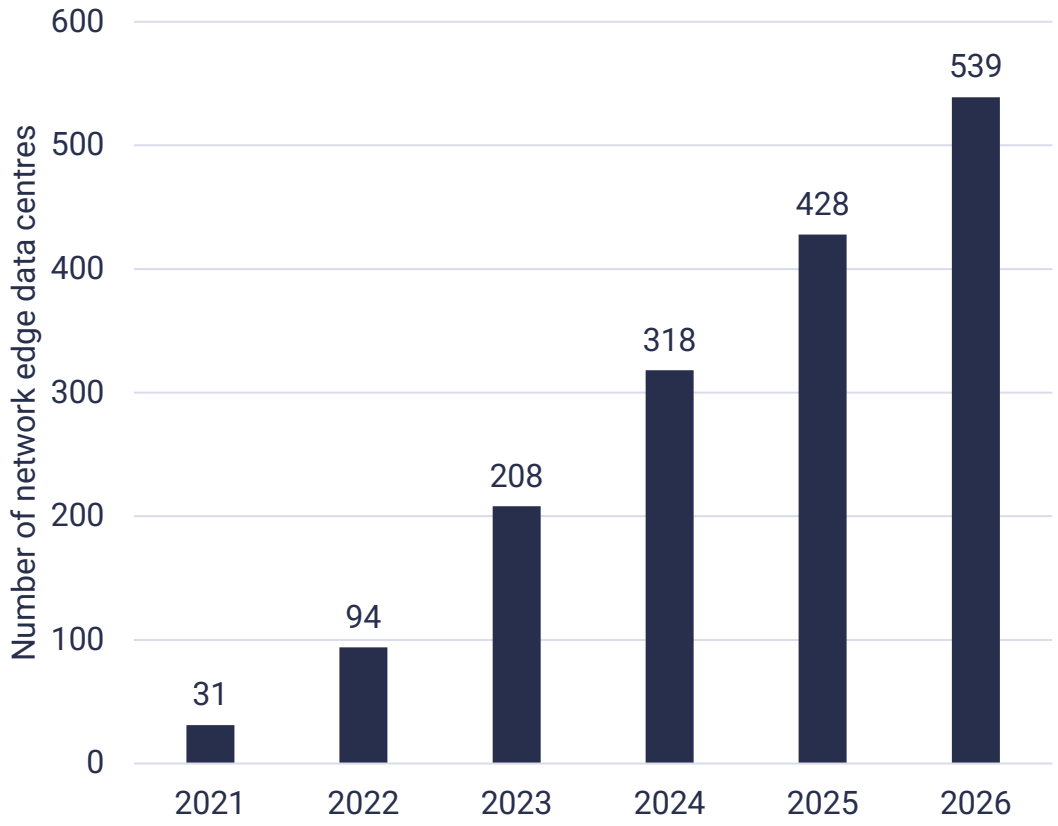


2022 developments:

- **Vodafone** has network edge now available in 3 European markets: UK and Germany via the AWS partnership and Italy using its own edge stack.
- Many of the Tier-1 European operators have been focused on various **federated edge initiatives**, including that by the GSMA, which seek to make it easier for developers to access the network edge. The initiatives will help developers to overcome the challenge of having to interact with every single telecoms operator to scale the edge.
- However, **MobiledgeX**, which was acquired by Google in April 2022 and has wound down most operations has slowed this down. There is now a gap to be filled in by other partners but things may stall in the meantime.
- There is a very limited number of European operators who have made edge platforms generally available to customers, much of the effort seems stuck in closed environments or labs/trials.

Regional deep-dive: East Asia & Pacific

Figure 22: Network edge capacity in East Asia & Pacific



2022 developments:

- Generally, Asia Pacific will be driving the next wave of network edge activity in 2023.
- Outside of China, **South Korea** is another market at the forefront of edge deployments. SK Telecom launched its second "5GX Edge Zone" in Seoul, whereas Korea Telecom was already early in rolling out 8 edge sites back in 2019.
- **Starhub and Singtel** have both launched 5G edge services, Starhub via partnerships with HPE and Singtel via its Paragon platform. We discuss the latter in more detail in a previous report, *Telco edge platforms: Balancing speed vs value.* Interestingly both operators have also deployed 5G SA core.
- **Telekom Malaysia's** network edge initiatives have been driven by its Wholesale business, and its platform TM Edge, focusing on IaaS and PaaS services for cloud providers, CDN and gaming companies, such as its partnership with Swarmio Media.

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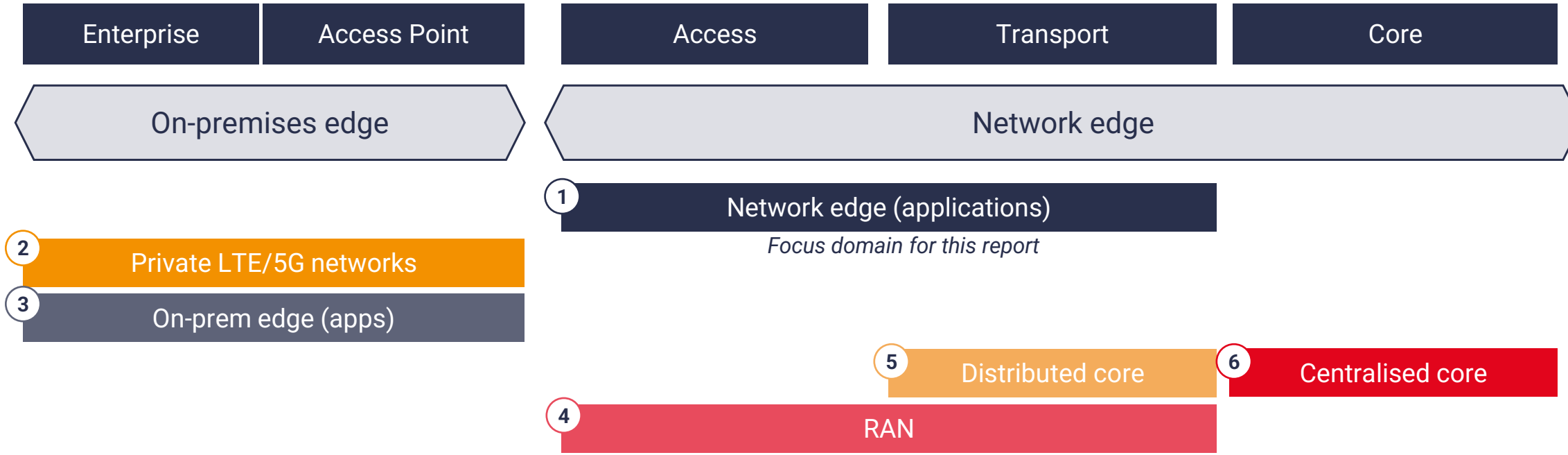
Telco-hyperscaler partnerships at the edge span multiple domains

For the last 3-4 years, the hyperscale cloud providers (namely AWS, Microsoft and Google) have been ramping up their investments in telecoms. Some of this falls outside of edge computing, such as providing cloud capabilities to enable telcos' customer applications, or enabling OSS/BSS, or broader IT application modernisation.

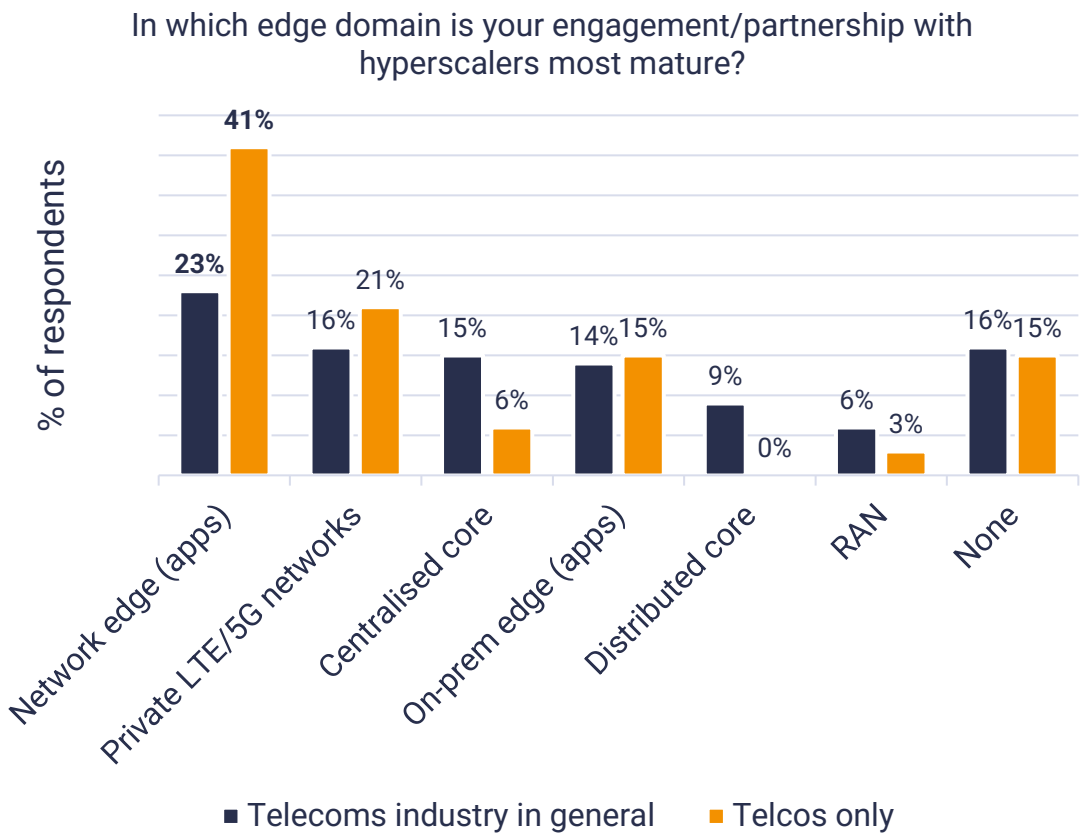
However, a significant proportion of the engagements are focusing on 5G and edge computing. Within edge computing, we see six main domains where there is activity (including centralised core).

Figure 23: Edge domains (for telco-hyperscaler partnerships)



The network edge is the most mature domain for telco-hyperscaler partnerships

Figure 24: Network edge is the most mature edge domain



STL Partners survey 2022, N=180

There is significant activity across the ecosystem in edge – not only between telcos and hyperscalers but including other partners such as SIs, ISVs and traditional network software and hardware vendors.

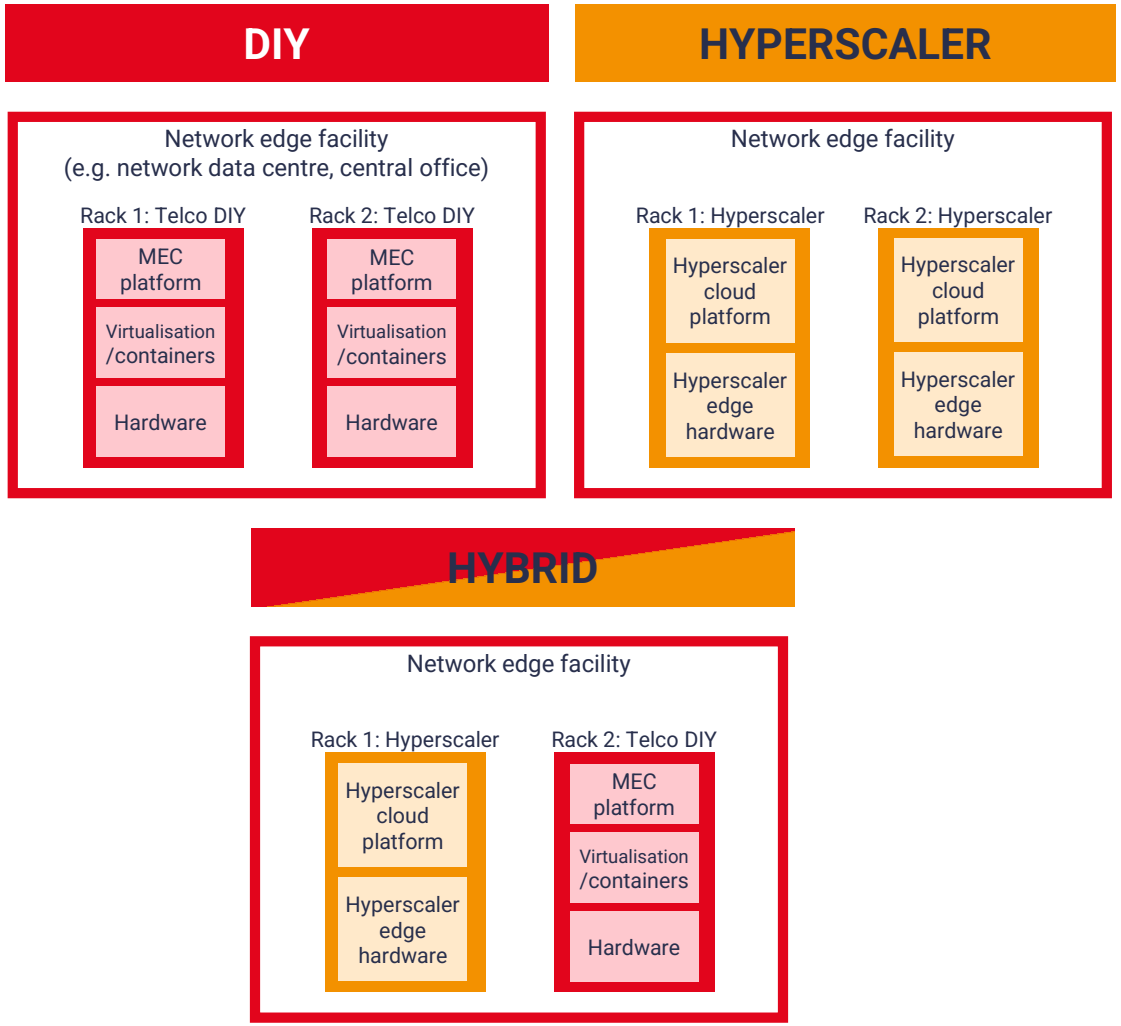
These span from hyperscalers offering edge services from telcos' network edge sites, to using hyperscalers' edge platforms and infrastructure for network functions, to co-developing applications and services.

In the survey, it was clear that the industry felt the network edge was the most mature domain for telco-hyperscaler edge partnerships. This was even more pronounced when just analysing data from telco respondents.

The public mobile network domains are taking longer to mature, i.e. core and RAN. Interestingly, the data suggests there is more work being done between hyperscalers and other industry partners than with the telcos themselves (yet). For example, the aggregate results show that 15% of the total industry respondents felt centralised core was the most mature domain, whereas only 6% of telco respondents did.

The telecoms industry sees the strength of hyperscalers' cloud platforms as the biggest pull for partnerships

Figure 25: Models for building the network edge



Within the network edge, the primary model of partnership is to implement the hyperscaler's edge platform (software and hardware stack) in the telco's network edge premises. The telecoms operator is akin to a co-location edge data centres provider. This is often then taken to market as an extension of the hyperscaler's cloud offering, although it could be offered by the telco too.

The industry has debated whether telecoms operators should partner with hyperscalers or not. The present question is more "how?" and, specifically, "how to retain value?"

On the one hand, there are advantages to partnering. The survey revealed the following benefits was perceived as most important to the telecoms operators:

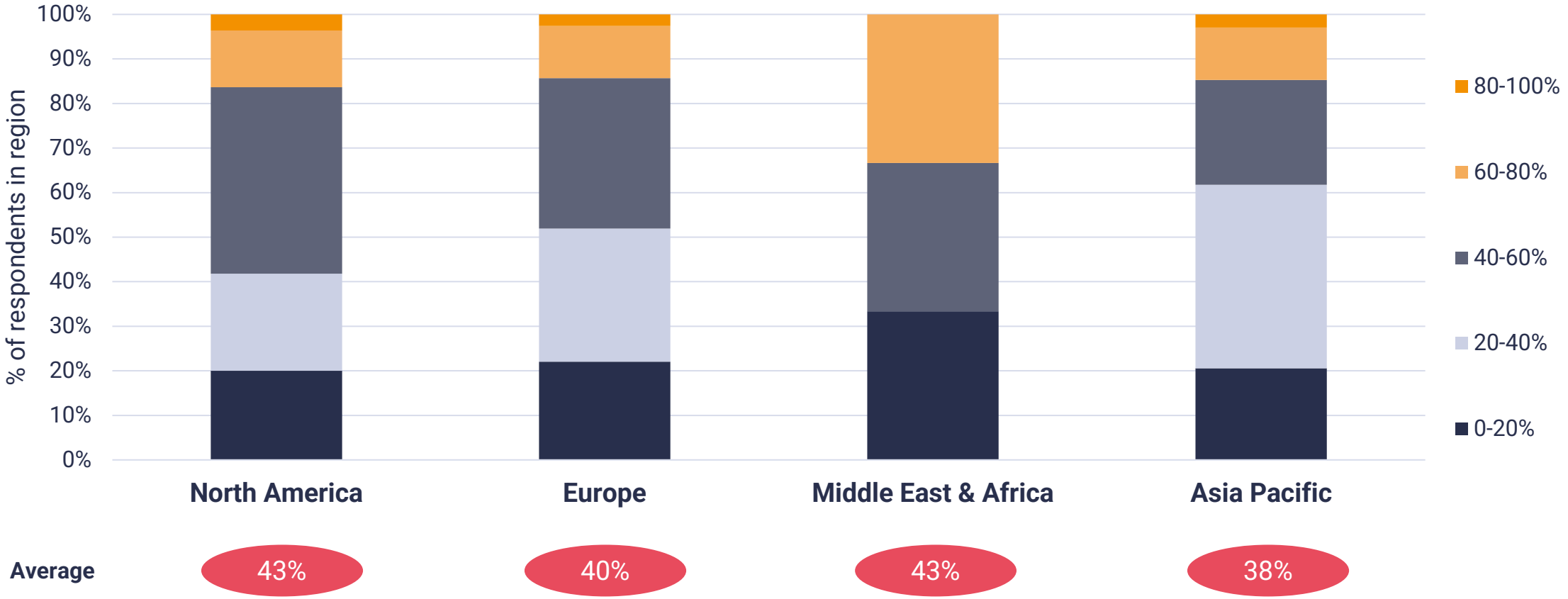
1. Strength of cloud platforms (29% of telco respondents)
2. Access to partner ecosystem (27%)
3. Accelerating go-to-market (23%)
4. Lower CapEx (11%)
5. "One stop shop" for an integrated offering (10%)

On the other hand, the two biggest drawbacks were reducing overall share of revenue from edge services and the threat of hyperscalers becoming telecoms companies.

Approximately 40% of the network edge will be provided by a hyperscaler – with limited differences between regions

Figure 26: Proportion of network edge built by hyperscaler

In the next 1-2 years, approximately how much of telco edge infrastructure in these domains will be provided by a hyperscaler?



STL Partners survey 2022, N=180

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Conclusions

The purpose of this forecast is to provide clarity on how much capacity of network edge computing there will be in the next few years. This year's forecast has shed the following key findings:

- Telecoms operators remain enthusiastic about the network edge opportunity – operators who launched sites before 2022 have continued building these out and we are seeing new operators launch edge services too.
- There is global interest in edge computing and Asia Pacific will drive growth in the next few years.
- Although there is a link with 5G launches and edge computing, it is the 5G core, not radio, that will help accelerate edge deployments. The 5G standalone core network functions are now an industry standard for enabling edge and optimising traffic to ensure quality of service and minimal latency.
- Almost all edge deployments are at the Transport Aggregation edge. Even though investments are being made in open RAN and virtualised RAN, we are many years away from seeing network edge services being run from Access Aggregation sites or the Access Sites (e.g. base stations) themselves.

In terms of the hyperscalers, the story remains the same: telecoms operators lack skills and capabilities to build their own edge cloud platforms and see partnering with hyperscalers to build edge services as a way to overcome this. In addition, hyperscalers come with an existing customer base of enterprises and developers from their cloud platforms that telcos are keen to tap into.

However, there is still substantial fear that this approach poses risks. Firstly, that the hyperscalers could eventually become telcos and cannibalise their core business and, secondly, that partnering erodes the share of the value from edge services that telcos could capture. This is driving a hybrid strategy for most telecoms operators to build their own platform (with other partners) and work with hyperscalers.

Although there are many edge domains where telcos, hyperscalers and other players in the telecoms ecosystem are partnering, the network edge remains the most mature. Network-focused domains, such as RAN and core are still at an early stage. Nonetheless, vendors and hyperscalers' partnerships are maturing here and this could change in the near future.

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Network edge capacity is evaluated across the following dimensions

Site type Where is the edge site logically located in the telecoms network?

Access site	Access aggregation	Transport aggregation
Edge site within RAN (at base station or fixed network equivalent)	Edge site within RAN aggregation points	Aggregation points; regional/metro nodes on a national backbone

Workload type Which type of edge workload is being run?

Core network functions	Edge applications
Distributed core network functions, e.g. distributed EPC in 4G/LTE and user plane function (UPF) in 5G	Consumer and enterprise applications running at edge computing data centres (e.g. cloud gaming, video analytics, etc.)

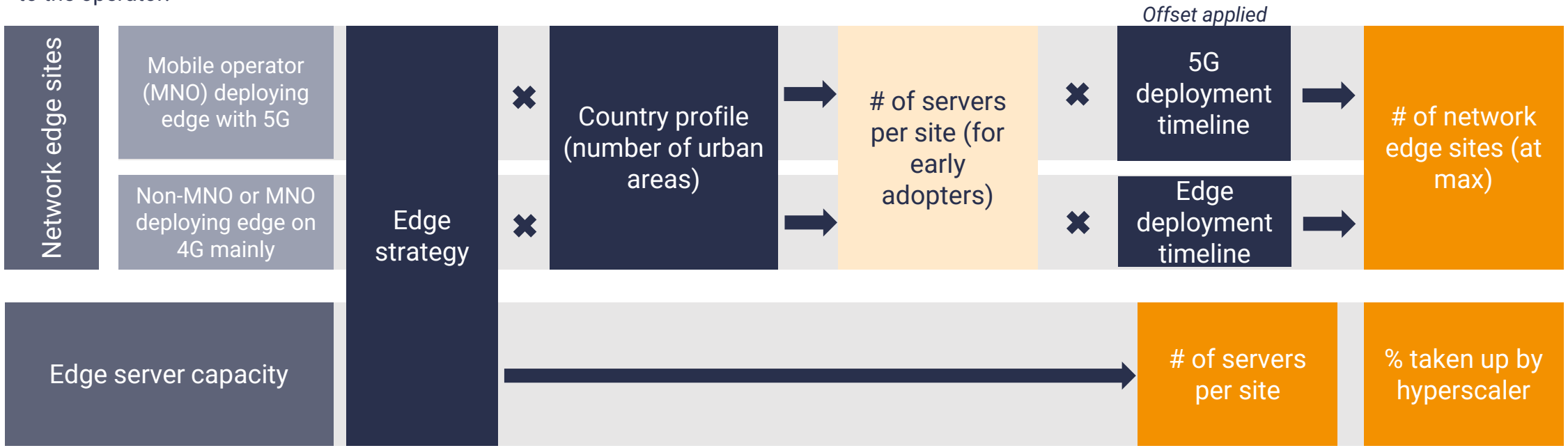
Edge server owner Who owns the server (telco or hyperscaler)?

Telecoms operator	Hyperscaler
Provider of telecommunications services (including fixed, mobile, converged, tower cos and cable cos)	Hyperscale public cloud computing provider (e.g. Google, AWS, Microsoft Azure)

The Network Edge Capacity model is built bottom-up by estimating capacity per telecoms operator

Methodology to calculate capacity output for:
Edge application workloads at **Transport Aggregation edge** for one telecoms operator:

The majority of the telecoms operators modelled are assumed to be tying their edge site deployments with their 5G networks. For these operators, we calculate the number of network edge sites in 2026 by applying their Edge Strategy to their country profile. Then, we apply an offset based on their 5G deployment timeline. For operators falling outside this category, we apply a different offset. Edge servers capacity is based on the Edge Strategy allocated to the operator.



Note: Actual data on telecoms operators' network edge deployments is inputted in the model where it is known and overwrites the algorithmic results
55 telecoms operators are included in the model

The Edge Strategy determines how many sites and servers the operator is predicted to have in 2026

Methodology to calculate capacity output for:
Edge application workloads at **Transport Aggregation edge** for one telecoms operator:

Strategy		Operator characteristics	Deployment approach	# of sites (transport aggregation edge)	# of servers per site (transport aggregation edge)	% taken up by hyperscaler	# of 5G distributed core servers / 4G
Love me some edge	B2B edge services, hybrid deployment	Incumbent, B2B business, early 5G market	Early, large scale, less hyperscaler	# of urban areas	126	40%	5/15
Help me buddy	B2B edge services, hyperscaler-dependent	Challenger with B2B business or incumbent without	Early, medium scale, more hyperscaler	½ # of urban areas	84	100%	5/15
Wholesale house	Wholesale, even serving MNOs	Non-MNO (cable or fixed), incumbent without B2B	Later, large scale, mainly hyperscaler	# of urban areas	126	50%	5/15
Connectivity queen	No interest in edge for non-network	Mobile operator without B2B	No deployments	0	0	n/a	n/a

Questions? Get in touch

Reach out directly STL's edge experts for any questions you may have

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