Telco edge data centres: How much capacity will be built in the next 5 years?

STL Partners webinar

27th September 2022

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Agenda

1	**Introduction and housekeeping**	5 mins
2	**STL Partners' Edge Insights Service**	10 mins
3	**Telco edge data centres - how much capacity in the next 5 years?**	20 mins
4	**Panel discussion and Q&A**	25 mins

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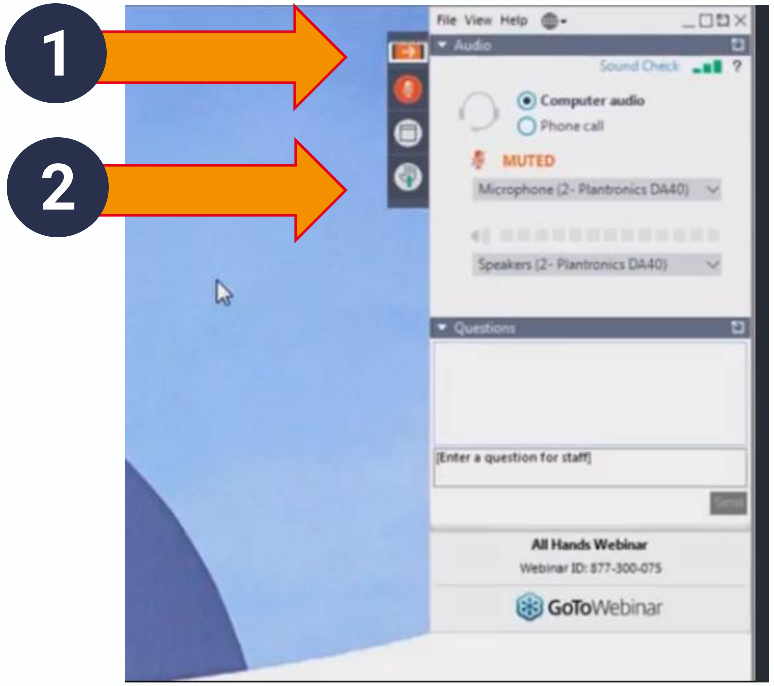

Presenters and Panelists

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STL Partners

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Edge Computing Practice Lead

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ELIZABETH RUMSEY

Senior Global Product Manager

Vodafone Business

NAREN MUTHIAH

Strategy and Business Design – New Growth & Development

Cox Communications

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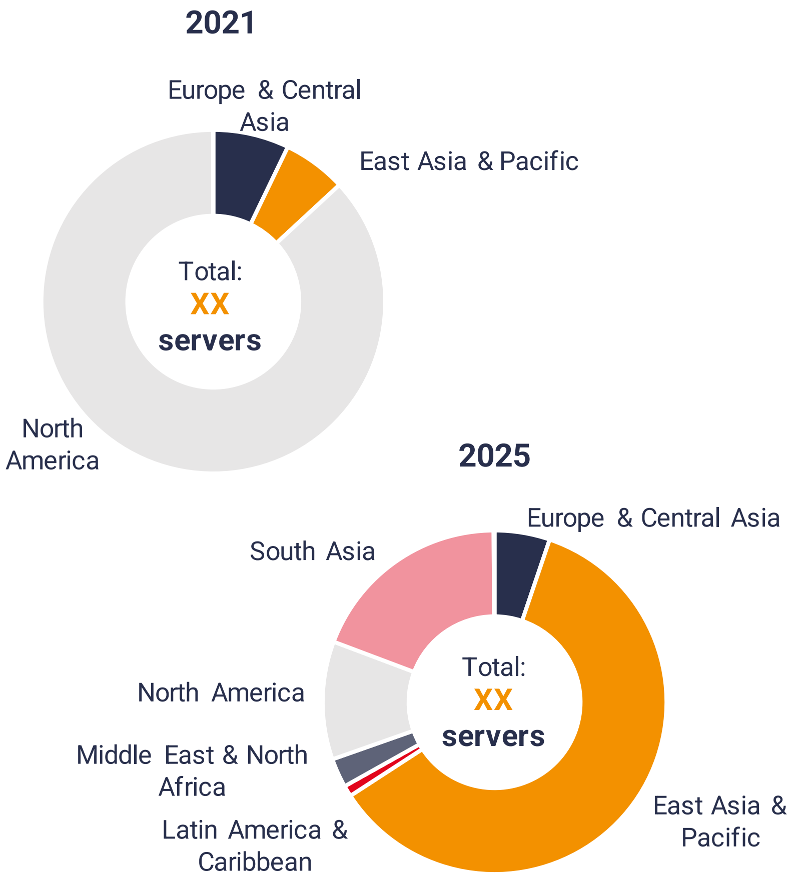
The edge capacity forecast estimates the number of network edge data centres from 55 telecoms operators

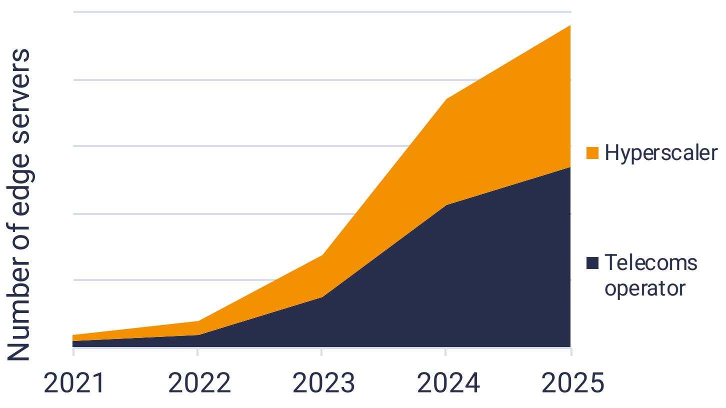
Edge capacity forecast

- Interactive tool to investigate number of edge data centres and capacity
- Accompanying report and analysis published once per year
- Updated every year
- Analyst calls to deep-dive on content

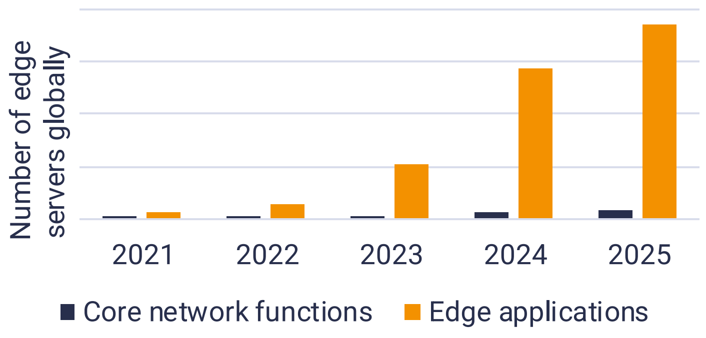
Network edge capacity by region (2021 and 2025)



Proportion of telco network edge capacity taken up by hyperscalers (2021-2025)



Network edge capacity by workload type (2021-2025)



Edge Insight Service: Pursuing a new opportunity

Product and service details

STL Partners' Edge Insights Service provides a combination of five tools to support telecoms operators and technology companies in developing their edge computing strategies

1. Research reports

- Access to all STL Partners thought leadership reports that focus on edge computing: strategies, use cases and business models
- Including existing back catalogue

2. Use case directory

- Over 50 edge computing use cases across 16 verticals
- Details on key drivers, potential partners, industry mapping
- Case studies on real world implementations

3. Ecosystem tool

- Interactive tool charting over 200 companies
- Analysis of company's edge products, and role in the value chain
- Deep-dives on companies' strategies and partnerships

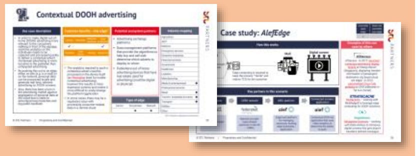
4. Market sizing forecast

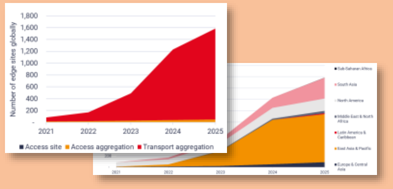
- Size of edge computing market (in revenue) from 2020-2030
- Broken down by vertical, use case, type of edge, country
- Forecast updated every year

5. Edge capacity forecast

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

Sample content





All subscribers can access our analysts on demand via quarterly analyst calls

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Today's session will focus on what STL Partners calls the "network edge" and the capacity for edge applications mainly

End-device	Enterprise	Access Point	Access	Transport	Core	Internet Exchange	Internet

Device edge	On-premises edge	Network edge	Regional edge	Hyperscale cloud

Edge applications

Consumer and enterprise applications running at edge computing data centres (e.g. cloud gaming, video analytics, etc.)

Core network

Distributed core network functions, e.g. distributed EPC in 4G/LTE and user plane function (UPF) in 5G

Radio access network

RAN baseband unit (BBU) functions running on edge infrastructure, e.g. central units (CU) and distributed unit (DU)

Key

In scope of network edge capacity forecast

Out of scope

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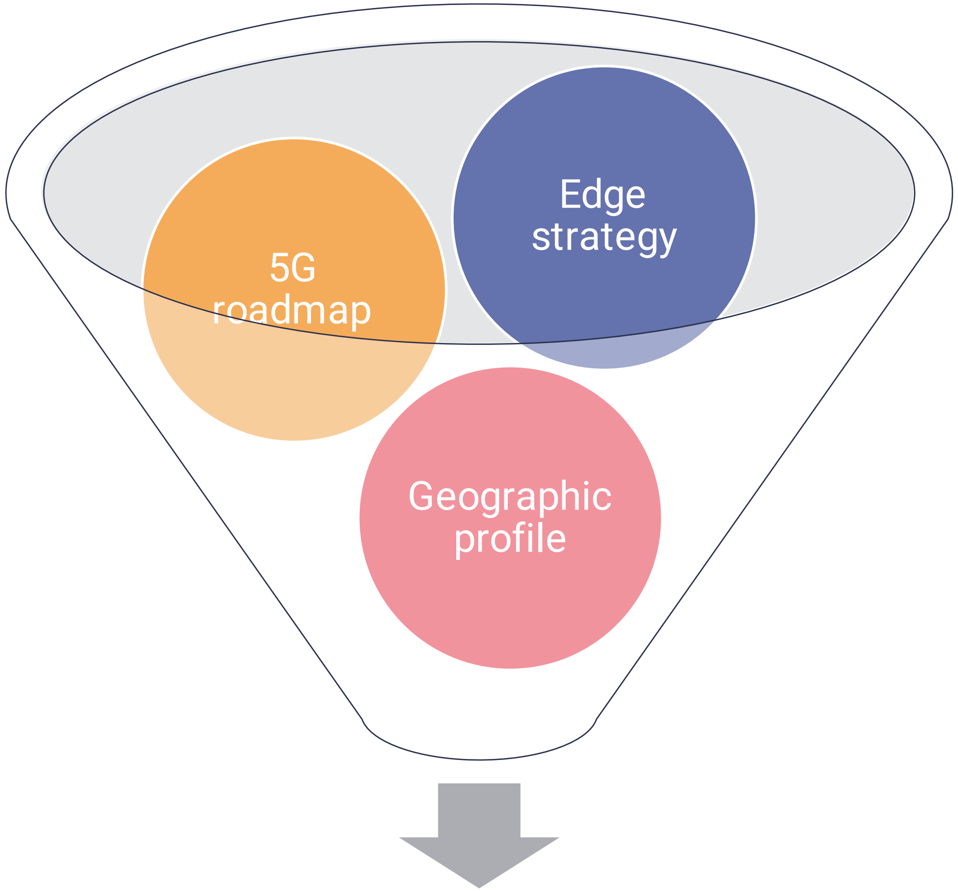
The initial forecast used 3 key factors to determine how many network edge data centres a telco would build



Network edge build:
number of sites, timeline and capacity

Although there are exceptions: comms providers deploying edge on cable networks or LTE

Edge strategy

Network edge strategies are influenced by the operator's existing business

	Strategy	Operator characteristics	Deployment approach
Love me some edge	Retail business strategy (selling services direct to enterprises), likely taking a hybrid deployment approach (building own edge and partnering)	Large existing enterprise business, incumbent in an early-adopting 5G market	Early deployments, minor proportion of edge provided by hyperscaler, large scale deployment
Help me buddy	Retail business strategy, but will largely rely on partners (hyperscalers) to build the stack	Challenger with large existing enterprise business or incumbent with relatively small enterprise business	Early deployments, significant proportion of edge provided by hyperscaler, smaller scale deployment
Wholesale house	Wholesale strategy, even serving mobile operators with co-lo/bare metal services	Non-mobile (cable or fixed) operator or an incumbent without any enterprise business	Later deployments, significant proportion of edge taken up by hyperscaler, potential large scale deployment in the long term
Connectivity queen	Not going to build infrastructure for non-network applications	Mobile operator without an enterprise business nor ambition to build one	No deployments

5G roadmap

Most early movers in edge computing have launched 5G first

Mobile operator	2018	2019	2020	2021
verizon		5G launch	Edge launch	
KDDI			5G launch Edge launch	
SK telecom		5G launch	Edge launch	
vodafone		5G launch		Edge launch
AT&T	5G launch	Edge launch		

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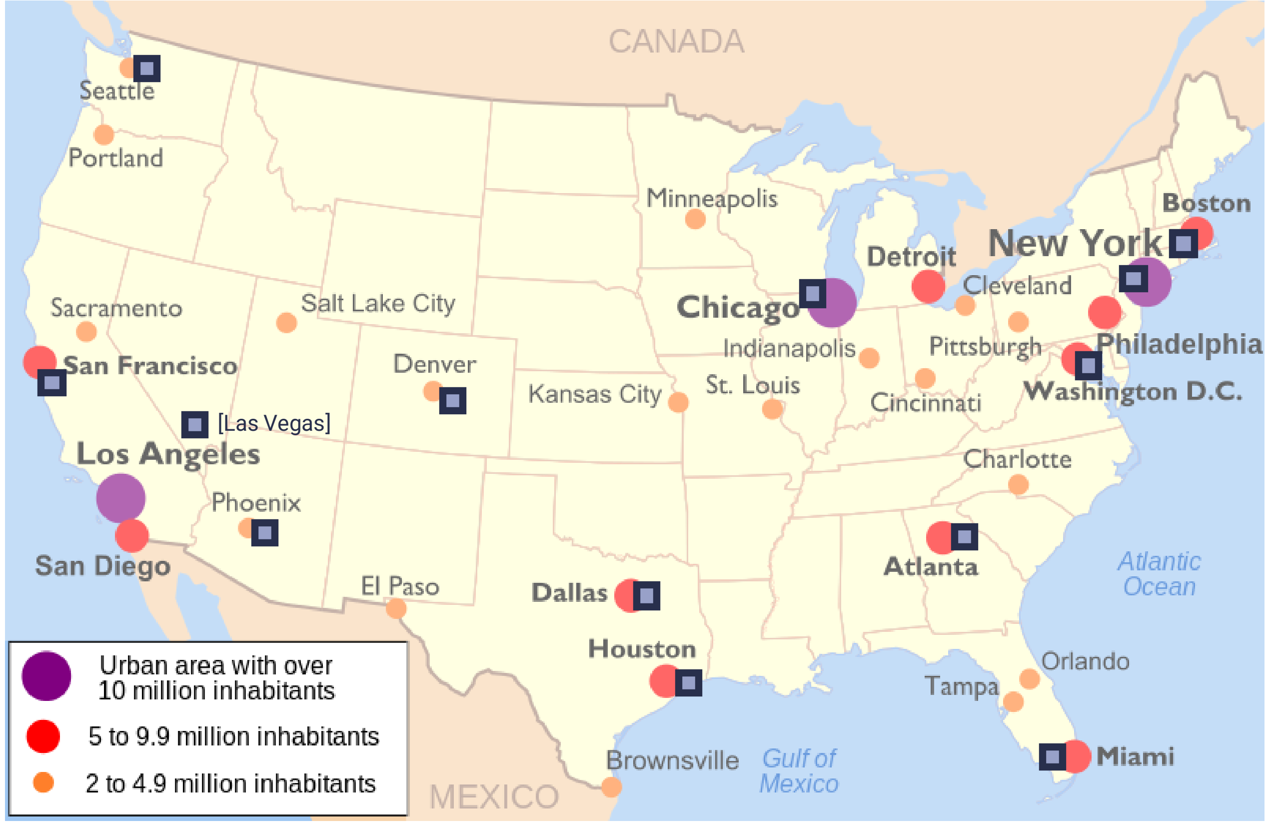
Geo profile

Edge site deployments have tended to focus on urban centres

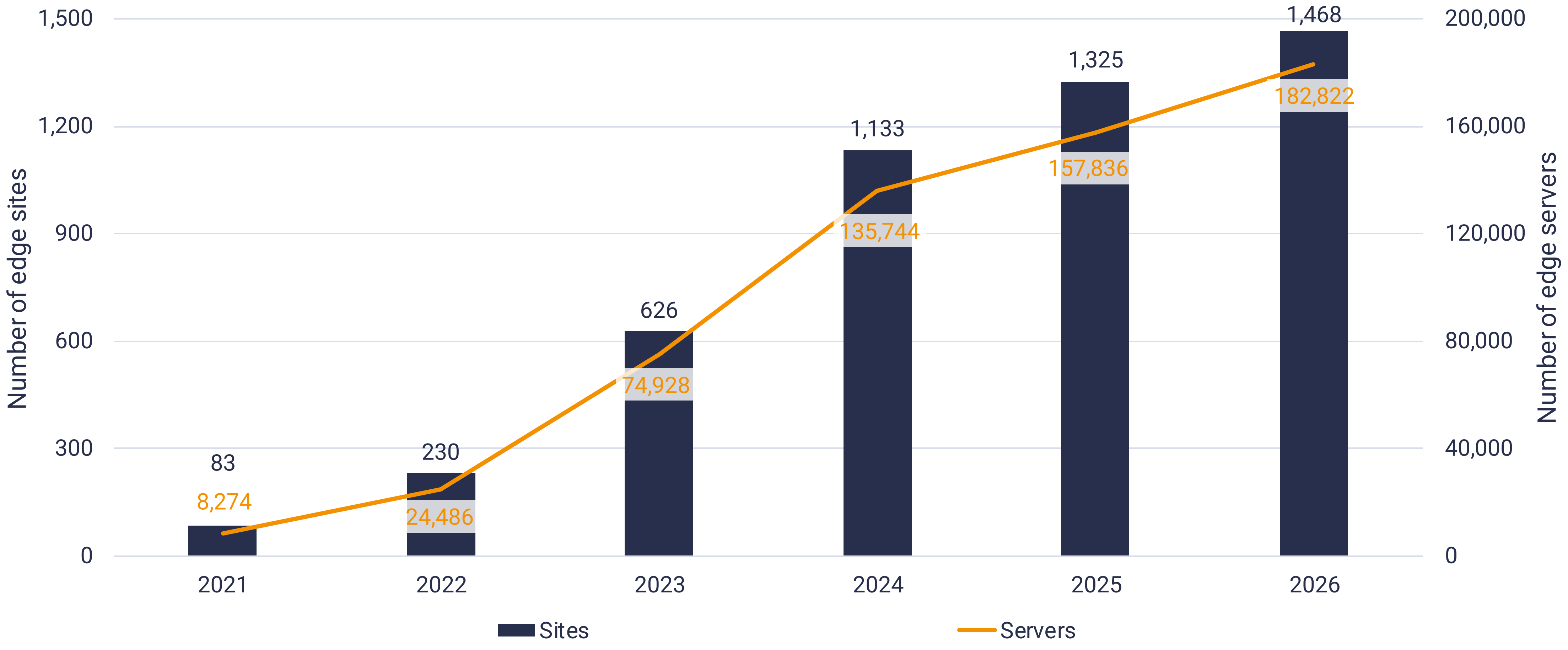
Verizon's network edge sites are all positioned in urban centres (as of December 2021)



Key Verizon edge site (AWS Wavelength zone)

Source: Wikimedia Commons, augmented with STL Partners analysis

Our forecast predicts just under 1,500 network edge sites globally by 2027



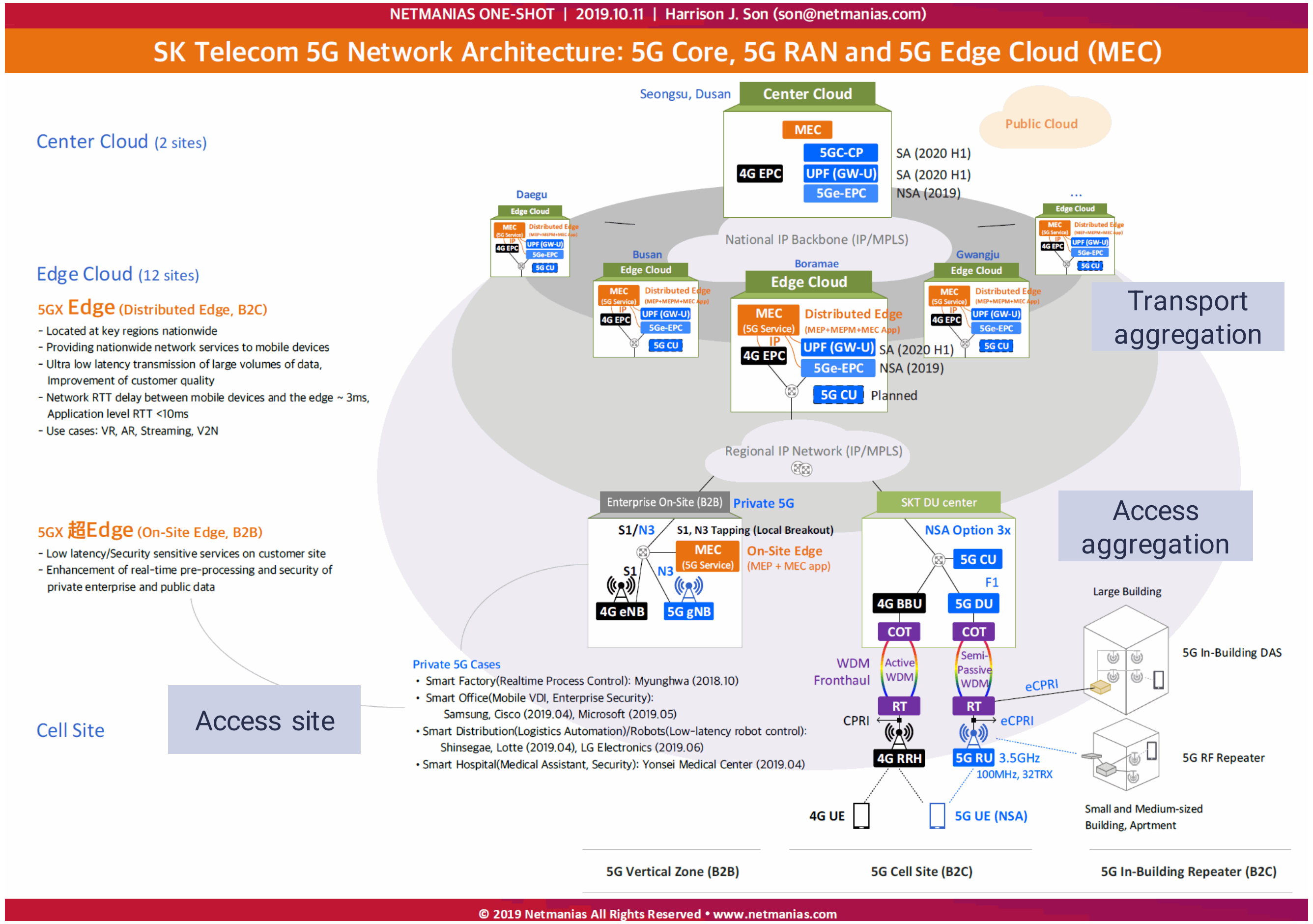
Where are these sites? There are three main locations edge can reside on the network edge

	← 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	20-30ms
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

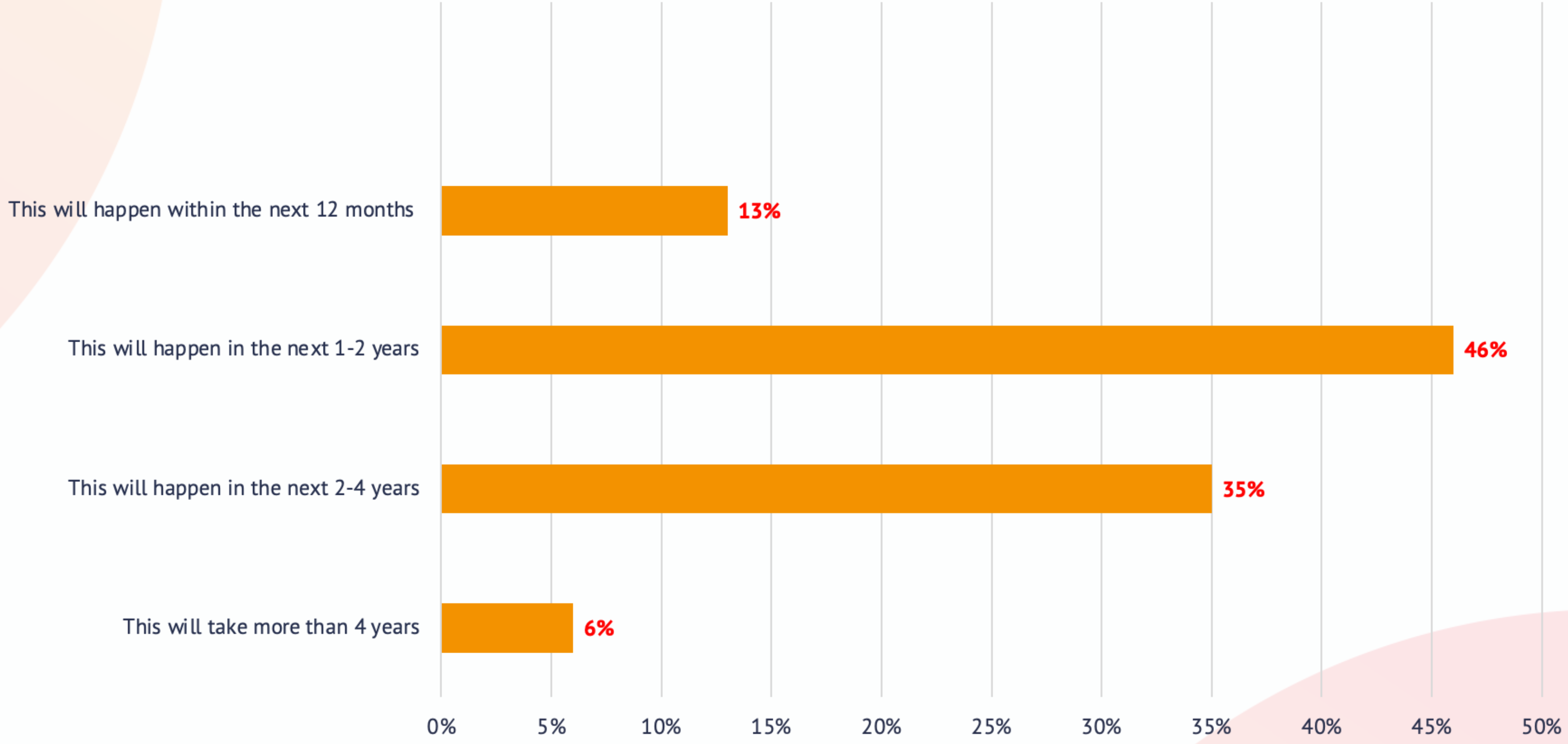
Most mobile operators are starting with transport aggregation sites

SK Telecom's edge architecture (2019 plans)

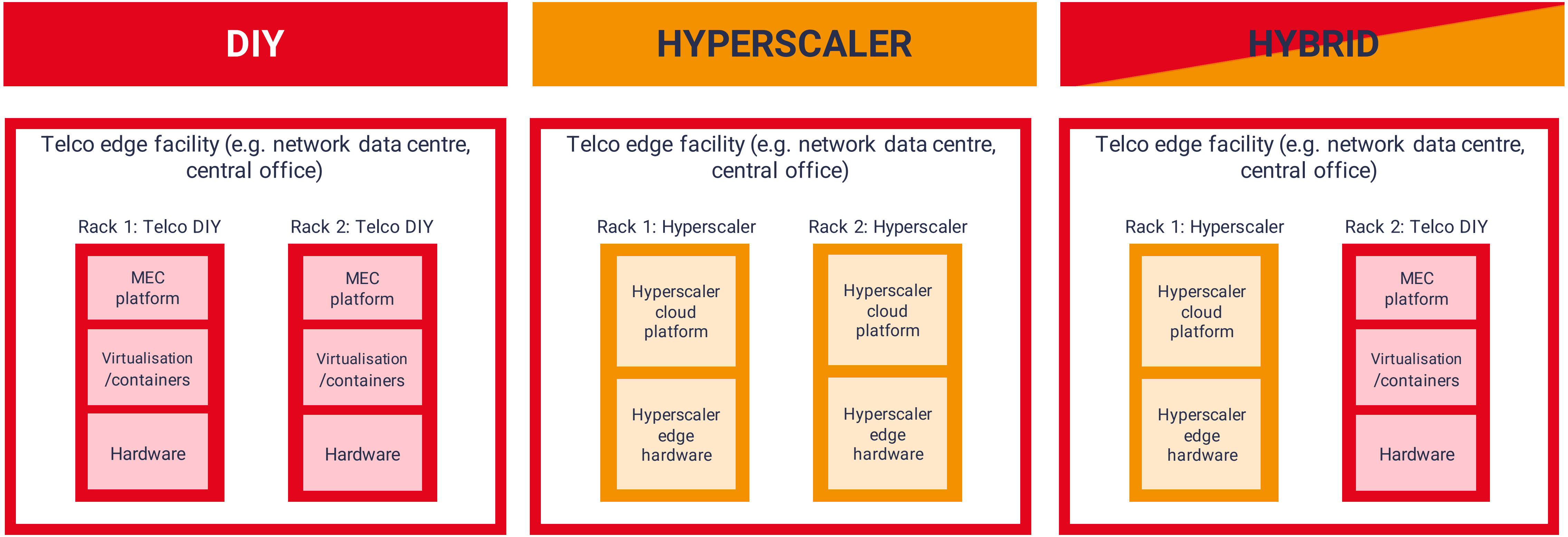


Source: Netmanias, STL Partners annotations

When do you believe telecoms operators will start using their access aggregation sites for enterprise applications (at wide scale / in your organisation)?

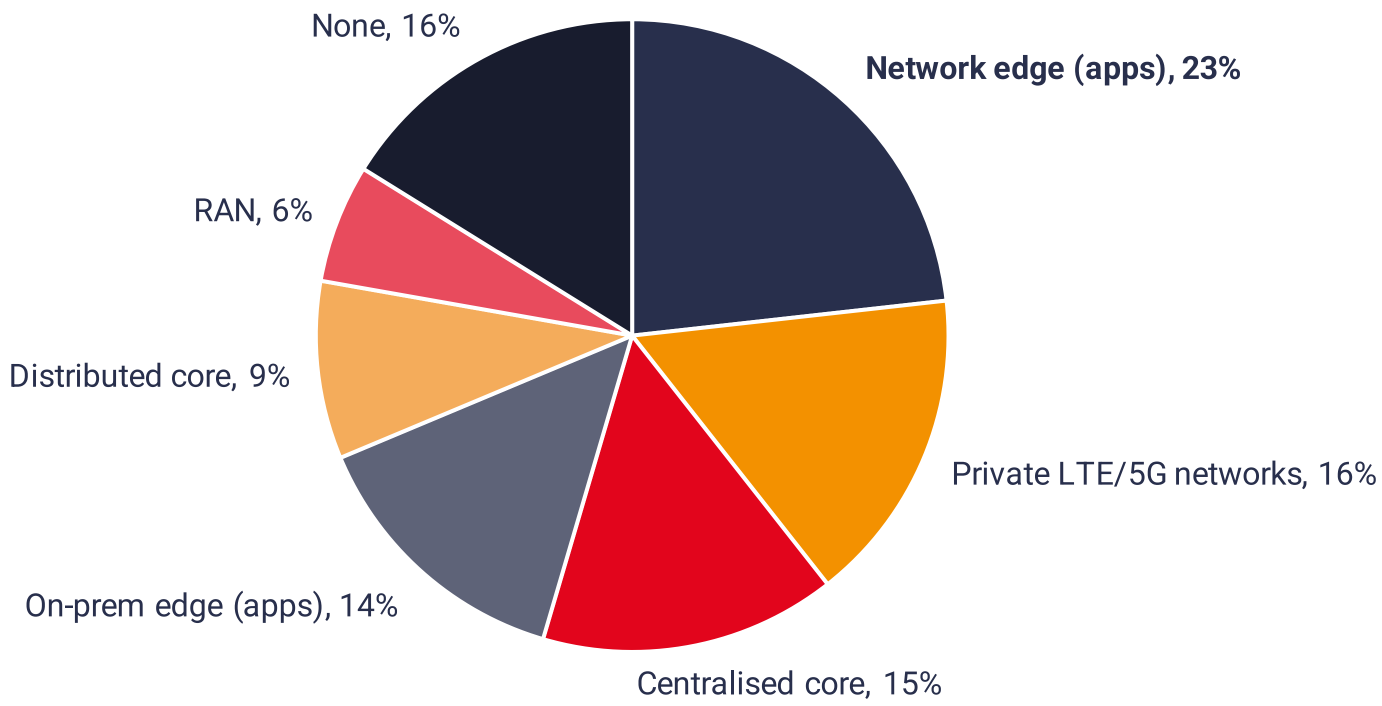


Another key aspect is who will build the data centre capacity – telco and partners or hyperscalers?



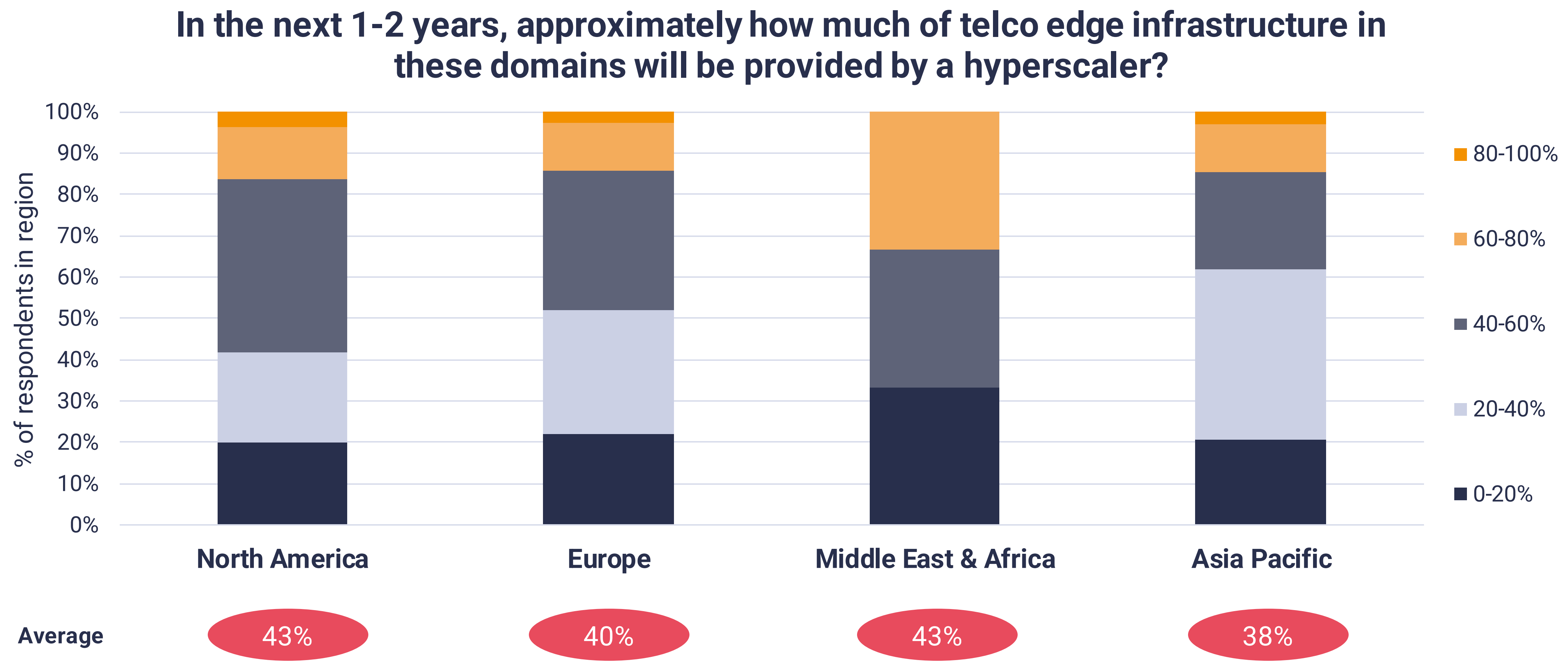
The network edge is the most mature domain for hyperscaler-telco partnerships

In which edge domain is your engagement/partnership with hyperscalers most mature?



STL Partners survey 2022, N=180

Most telecoms operators are open to the hyperscalers building at least part of the network edge



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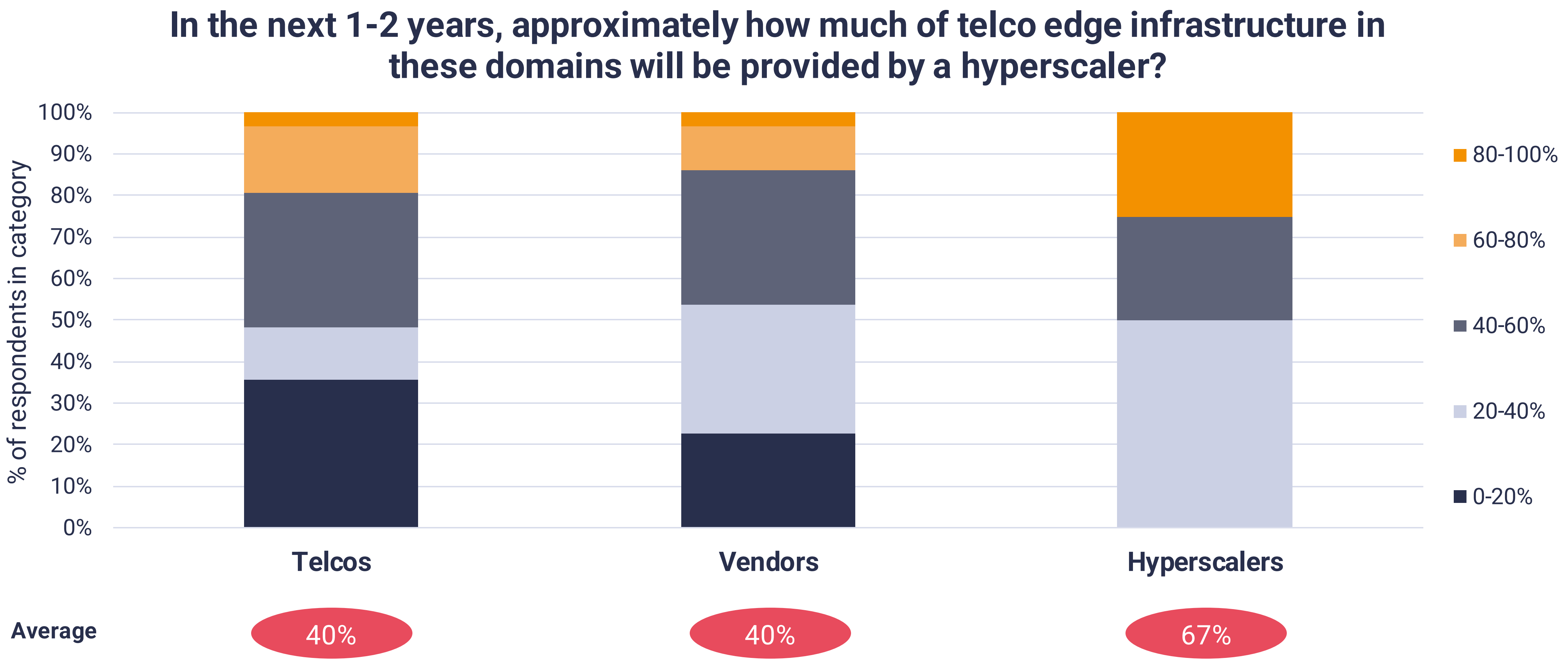
Unsurprisingly, the hyperscalers are more enthusiastic than the rest of the vendor community or telcos themselves



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However, despite the enthusiasm, the reality has not met the expectations when it comes to network edge

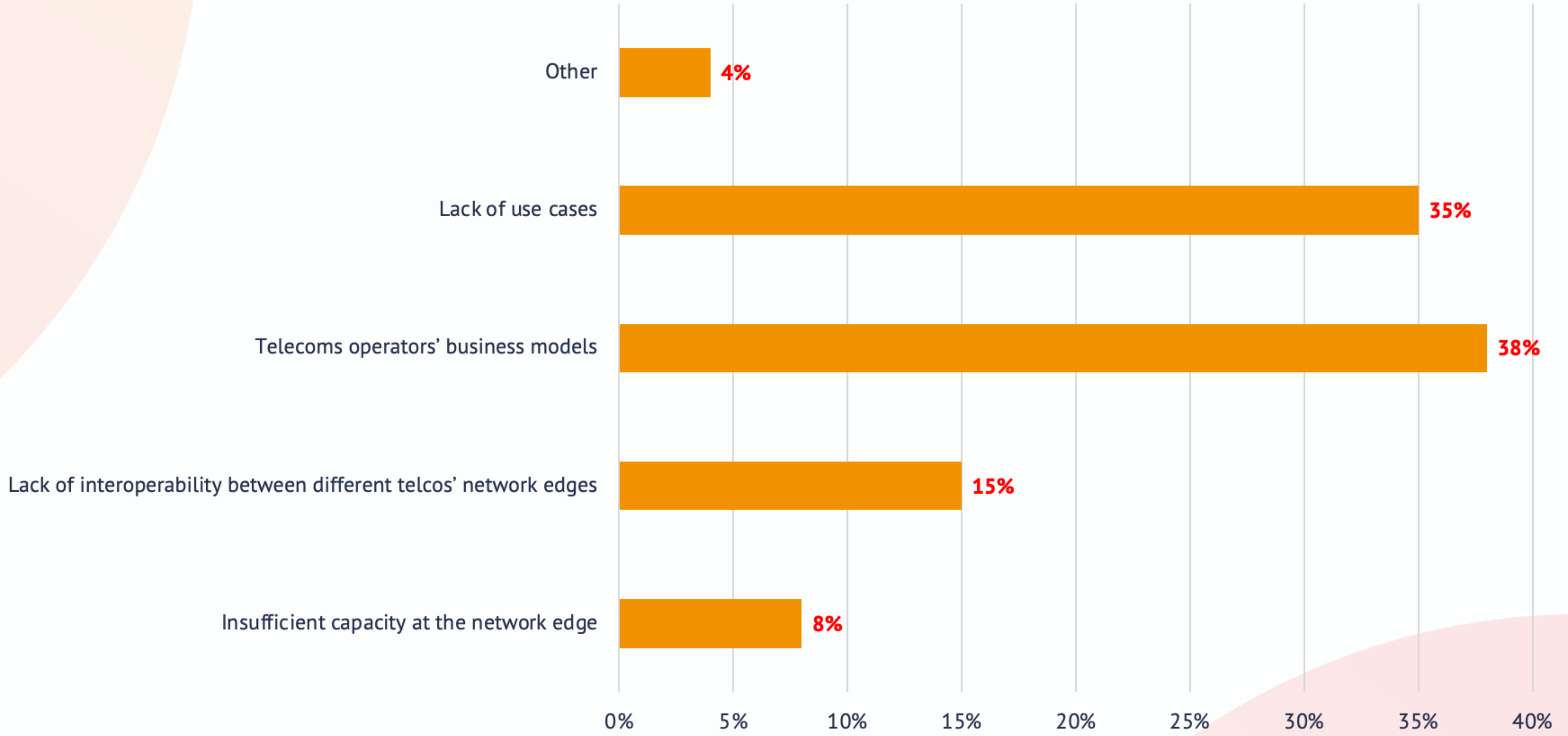
Challenges…

- Chicken and egg problem not cracked
- Customers unaware of edge computing
- Do telcos have the right relationships? E.g. with ISVs / developers

…But, there is also progress and signs of opportunity

- Progress on federated / interconnected network edges (e.g. 5G Future Forum, Bridge Alliance, GSMA)
- Traction within some use cases (especially CDN / application delivery network use cases)
- More network edge data centres in different countries (and scaling up within some countries)

What do you see as the biggest challenge for the network edge market?



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Q&A

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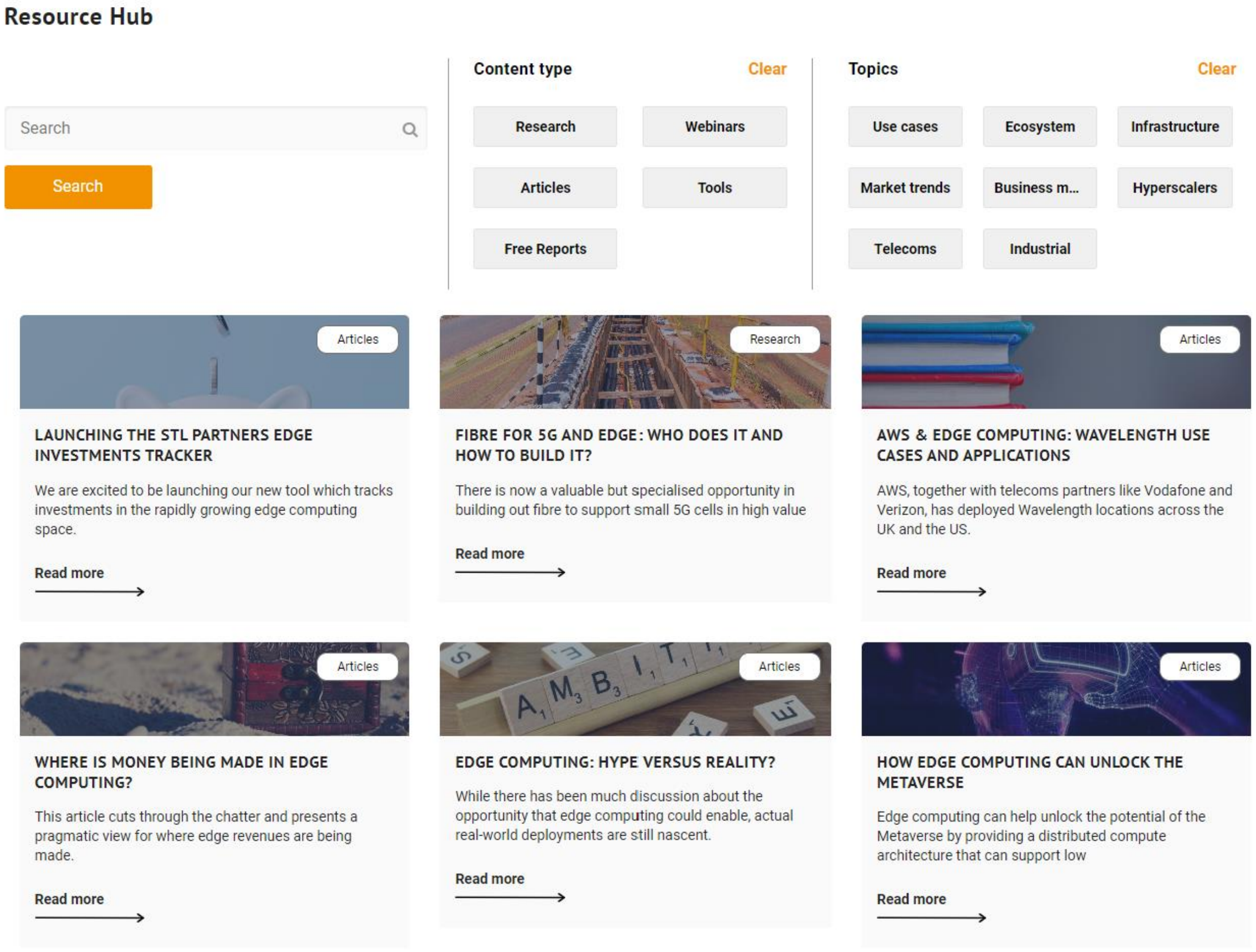

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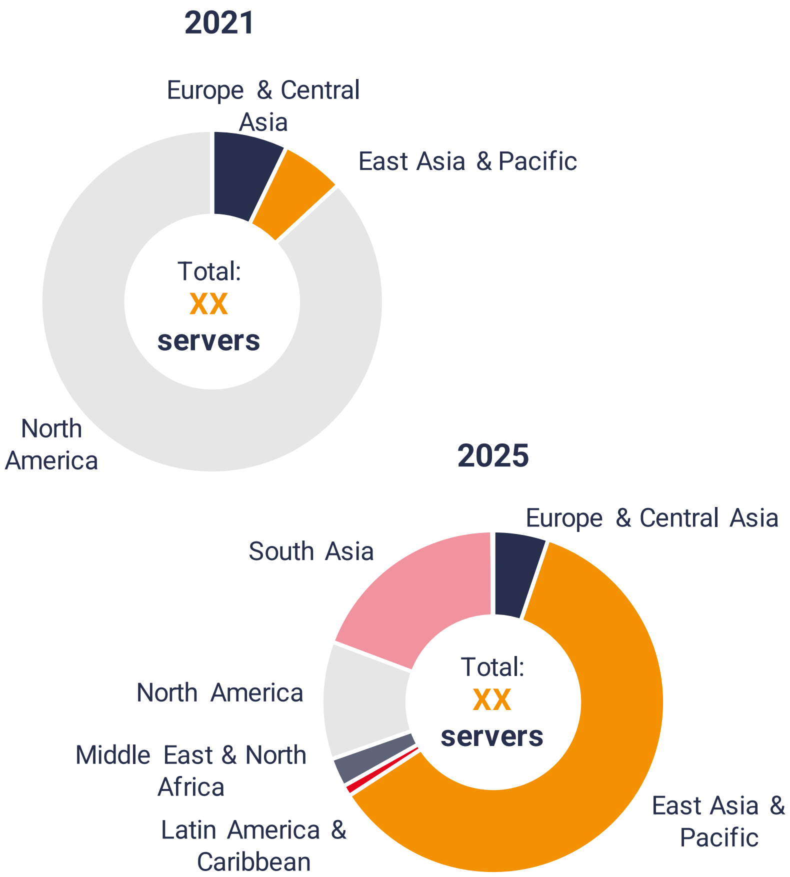

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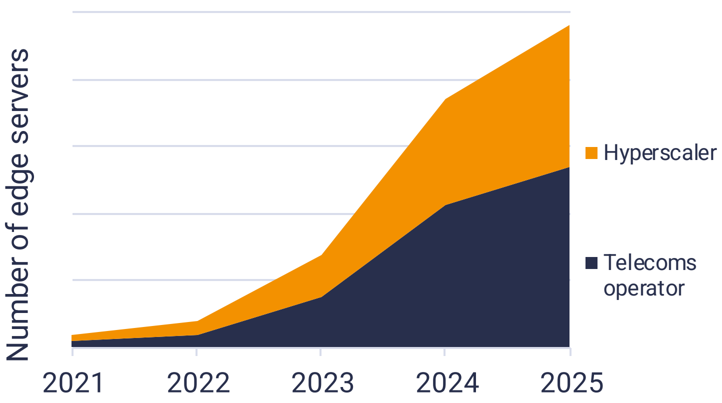

Network edge capacity by workload type (2021-2025)