Public edge cloud market sizing study

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Market modelling approach and key drivers
Edge cloud value chain
Market size
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**Introduction**. This document is an overview of the key findings of a study conducted by Analysys Mason for Edge Gravity on the public edge cloud market.

### Context
- Edge cloud is expected to represent a logical extension to traditional centralised cloud to address increasing data traffic from traditional consumers and business applications and support the more stringent requirements of emerging use cases.
- Crucially, little has been done to date to accurately size and forecast the demand for public edge cloud services from enterprises.

### Key questions
What is the total expected spend and drivers of spend of businesses on public edge cloud solutions between 2019-2025?

How should telecoms operators and app developers / content providers approach the public edge cloud market opportunity?

### High-level methodology
- **Modelling structure**
- **Desk research**
- **Enterprise survey**
- **Interviews with industry experts**
- **Model calibration**
- **Final model**
- **Develop report**

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Some definitions [1/2]. ‘Public edge’ includes local datacentres in public locations close to end users, cell towers, central offices and operator metro datacentres.
Some definitions [2/2]. The public cloud delivery value chain can be broken down into 7 key elements and 4 main delivery models.

### Key components

<table>
<thead>
<tr>
<th>Cloud delivery value chain</th>
<th>Facilities</th>
<th>Data centre</th>
<th>Cloud stack</th>
<th>IT hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-location</td>
<td>Co-location</td>
<td>Co-location</td>
<td>IaaS</td>
<td>PaaS</td>
</tr>
<tr>
<td>Power / cooling</td>
<td>Physical switches</td>
<td>Virtual networking</td>
<td>Specialist platform services</td>
<td></td>
</tr>
<tr>
<td>Fibre / mobile access</td>
<td>Power</td>
<td>Security</td>
<td>Storage</td>
<td>Analytics</td>
</tr>
<tr>
<td>Security</td>
<td>Physical servers</td>
<td>Compute</td>
<td>Database management</td>
<td></td>
</tr>
<tr>
<td>Space</td>
<td>Space</td>
<td>Virtualisation</td>
<td>Middleware</td>
<td></td>
</tr>
</tbody>
</table>

### Associated delivery model

<table>
<thead>
<tr>
<th>Co-location</th>
<th>Co-location</th>
<th>IaaS</th>
<th>PaaS</th>
<th>SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power / cooling</td>
<td>Workload placement*</td>
<td>Virtual networking</td>
<td>Development tools</td>
<td>Specialist platform services</td>
</tr>
</tbody>
</table>

* i.e. resource management in hardware virtualisation systems to optimise efficiency of virtual machines
**Absolute spend.** Business spend on public edge cloud solutions will reach almost USD34 billion by 2025
**Incremental spend.** Growth between 2020 and 2025 is expected to be driven by the manufacturing, financial services and healthcare industries.

Incremental business spend on public edge cloud by sector, world (2020 to 2025)
Edge cloud is expected to be primarily adopted by large enterprises – at least initially

1. Public edge cloud will be a key enabler of new digital use cases with critical requirements
2. Large enterprises will be more likely to invest significantly in new use cases than start-ups
3. As a result, large enterprises will accrue much of the investment on public edge cloud
Use cases. Public edge cloud will be a key enabler of new digital use cases with critical requirements – e.g. in terms of latency, QoE, security

Key digital use cases for public edge cloud by sector

**Transportation**
- E-transport documentation across logistics chains/ authorities
- Blockchain support for smart contracts, traceability, compliance
- Warehouse robotics
- In-vehicle infotainment

**Retail**
- Digital product/pricing displays
- In-store 3D/4D printing
- In-store augmented/virtual/mixed reality
- Robotic store assistants

**Healthcare**
- Telehabilitation (e.g. using augmented/virtual reality)
- Augmented/virtual reality-based staff education and training
- Interconnected healthcare systems
- AI-based insurance claims processing

**Media & entertainment**
- Cloud gaming
- Video content delivery
- In-vehicle entertainment
- Augmented reality experience

**Manufacturing**
- Autonomous on-site vehicles
- Deep sensor networks for predictive maintenance, asset performance management and quality control
- Cobotics
- Sensor networks for asset tracking

**Public sector**
- Public safety (e.g., facial recognition, emergency services co-ordination)
- Public structures/buildings monitoring and preventative maintenance
- Holistic citizen services (e.g. joined-up tax, voting, utilities, etc.)
- Smart or autonomous public transport

**Financial services**
- Augmented/virtual reality-based customer support
- Bank branch of the future (e.g., conversion to coffee shops, ATM service expansion)
- Customer mobile apps (personal banking/trading)
- Cybersecurity (e.g. biometrics, facial recognition, intrusion detection, network security)

Source: Analysys Mason
Bus. segments. Large enterprises will be more likely to invest significantly in these new use cases – and therefore in public edge cloud – than start-ups.

% businesses using public edge cloud by business size, world (2022, 2025)

Start up will be in investment mode, i.e. will burn lots of cash, but may not have the resources to scale and produce significant spend on edge cloud.

Large enterprises will likely invest heavily on new innovative digital use cases to achieve their digital transformation plans. Some of those use cases will greatly benefit from public edge cloud capabilities.
**Decision making.** The emerging role of Chief Digital Officer will be key to drive investment decisions on new digital use cases and associated edge cloud solutions.

C-suite hierarchy and responsibilities in traditional organisations

<table>
<thead>
<tr>
<th>CEO</th>
<th>CMO</th>
<th>CFO</th>
<th>CIO</th>
<th>COO</th>
</tr>
</thead>
</table>

In a traditional organisational model, ICT is seen as a cost centre to support on-going operations. It falls under the responsibility of the CIO. ICT is a cost centre to the organisation. Public cloud is primarily used as a way to reduce those costs.

C-suite hierarchy and responsibilities in organisations with digital transformation strategies

<table>
<thead>
<tr>
<th>CEO</th>
<th>CMO</th>
<th>CFO</th>
<th>CDO</th>
<th>COO</th>
</tr>
</thead>
</table>

In digitally advanced organisations, new ICT technologies (e.g. 5G, edge cloud) are seen as enablers of new digital transformation use cases. Identifying use cases benefitting the organisation and investing in the right ICT technology falls under the responsibility of the CDO.

Traditional ICT applications (e.g. CRM) continue to be used to support on-going operations still exist, but fall under the responsibility of a Director typically reporting to the CDO.
Services. SaaS is expected to be the prevalent delivery model for public edge cloud solutions and as a result will account for the largest share of spend (40% in 2025)

Split* of business spend on public edge cloud by service type, world (2020, 2025)

Business spend on public edge cloud by service type, world (2019-2025)

Source: Analysys Mason

* Split may not add up to 100% due to rounding
Value chain [1/2]. The shape of the public edge cloud value chain will differ from the centralised model: end-to-end ownership will become unpractical...

Unlikely that app developers or platform providers would own edge locations at all

Unlikely that businesses would build a network of edge locations themselves
Value chain [2/2]. ...While the roles of facilities and datacentre providers will likely be decoupled
Current business models. Different delivery models are emerging in the nascent public edge cloud value chain

Each participant occupies only one layer of the value chain

Some operators build their own edge ecosystem and attract specialist app enablement providers

Specialist edge cloud providers expand across several layers of the value chain and attract specialist app enablement providers
**Future bus. models.** By 2025, the value chain will have consolidated as established cloud & CDN players enter the market and specialist providers expand capabilities.

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**Established cloud and CDN players move into the edge market**

- **MNO**
  - Colo
  - Amazon Web Services (AWS)
    - PaaS
    - AWS Marketplace
    - SaaS
  - Siemens
  - Business

- **TowerCo**
  - Colo
  - Vapor.io
  - PaaS
  - Siemens
  - SaaS
  - Business

- **Operator internet exchange**
  - Colo
  - Akamai (not current strategy)
  - SaaS
  - Business

**Specialist edge cloud providers continue to expand across more layers of the value chain**

- **MNO**
  - Colo
  - Edge Gravity
  - SaaS
  - Business

- **Equinix**
  - Colo
  - Stackpath, Fastly
  - SaaS
  - Business

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- Element owned by the business consuming the cloud service
- Element owned by a third party
- Service flow (may be different from contractual relationship)
Operator share. Operators may be able to capture a significant proportion of value from co-location and IaaS in early years, but this share will erode quickly.

Operator share of business spend on public edge cloud by service type, developed markets* (2020–2025)

Operator share of business spend on public edge cloud by service type, emerging markets *(2020–2025)

Source: Analysys Mason

* We categorise North America, Western Europe and developed Asia-Pacific as developed markets while Latin America, Central and Eastern Europe, emerging Asia-Pacific, Middle East and North Africa and Sub-Saharan Africa as emerging markets.
**Operator revenue.** As a result, operator revenue from public edge cloud solutions is expected to reach around USD6 billion by 2025 (~18% of total spend)

Operator revenue from public edge cloud by service type, world (2019-2025)
**Recommendations.** Value chain defragmentation will be necessary for the industry ecosystem to be successful

<table>
<thead>
<tr>
<th><strong>Telecoms operators</strong></th>
<th><strong>Application developers / content providers</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Focus efforts on familiar layers of the value chain</td>
<td>▪ Favour edge cloud providers that can offer a single point of contact</td>
</tr>
<tr>
<td>▪ Actively seek partnerships to offer a one-stop-shop value proposition</td>
<td>▪ Take early position on high-value sectors</td>
</tr>
<tr>
<td>▪ Act fast to avoid being outpaced by competition at the edge</td>
<td>▪ Consider platforms available right now</td>
</tr>
</tbody>
</table>
Executive overview

Introduction
Market modelling approach and key drivers
Edge cloud value chain
Market size
Recommendations for operators and app developers
Introduction. This is the final report of a study conducted by Analysys Mason for Ericsson Edge Gravity to quantify the size of the public edge cloud market

Context
- Ericsson Edge Gravity (‘Edge Gravity’) operates a global edge cloud network that links together a network of datacentres with the last-mile networks of over 90 network operators.
- Edge Gravity believes that edge cloud represents a logical extension to traditional centralised cloud to address increasing data traffic from traditional consumers and business applications (e.g. video) and to support the more stringent requirements (e.g. in terms of latency, quality of experience) of emerging use cases (e.g. AR/VR, healthcare).

Objectives
- Edge Gravity has commissioned Analysys Mason to conduct a study on the market opportunity for edge cloud solutions – including a quantification of the anticipated business spend on public edge cloud between 2019 and 2025.
- The output of the study is expected to support Edge Gravity’s strategic decision making and future sales efforts.

Methodology
- Our approach for this exercise is primarily based on the development of a model to quantify the size and evolution of the edge cloud market, with underlying drivers benchmarked against:
  - the results of a comprehensive survey conducted by Analysys Mason across 250 businesses from 7 sectors in the US, UK, Germany and Japan on their adoption and use of edge computing to enable a range of digital use cases.
  - data from our existing in-house research on business spend on a range of ICT services (including total cloud – IaaS, SaaS and PaaS) across 19 sectors and 52 countries.
  - interviews with industry experts with responsibility for edge computing developments within their organisation, as well as additional materials and notes collected from relevant conferences attended by Analysys Mason and briefings with CDN players, operators, web-scale players and prominent edge associations.
Summary of findings. The revenue opportunity from public edge cloud for the industry is expected to be significant

1. The revenue opportunity from adoption of public edge cloud solutions by businesses is expected to reach almost USD34 billion by 2025. Incremental growth in business spend between 2020 and 2025 is expected to be driven by the manufacturing, financial services and healthcare industries.

2. Organisations with digital transformation plans are expected to be the main customers of public edge cloud solutions – at least initially. Large organisations (1000+ employees) with digital transformation strategies are more likely be the first to implement new innovative digital use cases that benefit the most from edge cloud, such as use cases with low-latency requirements (e.g. autonomous on-site vehicles in the manufacturing industry, AR/VR-based staff training in the healthcare sector). The emerging role of Chief Digital Officer will be key to drive investment decisions on new digital use cases and supporting edge cloud solutions.

3. SaaS is expected to be the prevalent delivery model for public edge cloud solutions and will account for the largest share of business spend. Organisations will want to avoid the complexity of running new edge applications themselves and will buy such applications as-a-service (SaaS). Spend on PaaS, IaaS and co-location services will represent the revenue generated by the providers of the underlying platform, computing and datacentre service components of those applications.

4. The shape of the public edge cloud value chain will be different from the traditional public cloud – end-to-end ownership of the cloud delivery value chain will become unpractical, while the roles of facilities and datacentre providers will be decoupled.

5. Currently, three delivery models are emerging in the nascent public edge cloud value chain:
   - The first (and most common) model today is a complete fragmentation of the value chain, where each participant occupying only one layer of the value chain.
   - A second model is pursued by some large telecoms operators (e.g. DT, Telefonica, AT&T), which are working at consolidating several layers of the value chain across their own footprint.
   - In a third model, new edge cloud providers such as StackPath or Edge Gravity are building an extensive network of edge locations through partnerships with operators or third-party data centres with the aim of offering a consolidated, one-stop-shop global cloud platform for app developers and content providers.

6. By 2025, the value chain is expected to have consolidated. Large public cloud (AWS, Azure) and CDN (Akamai) providers are likely to enter the public edge cloud market in the future, while specialist edge cloud providers will continue to expand their offering across the value chain.

7. Operators may be able to capture a significant proportion of value from co-location and IaaS if they move fast, but this share will erode quickly. The rapid development of third-party datacentres means that operators may see their initial advantage as edge location owners fade quickly. Capturing a significant share of PaaS may proved to be challenging, as operators are not recognised as a destination for app developers, while positioning as a SaaS app provider generally requires specialist sector knowledge, which operators may be lacking.
We have developed a 5-step approach to quantify the size of the public edge cloud market, produce a view of the market by sector, service provider, and service type

1. We have initially segmented the number of businesses by region, business size and sector

2. We estimated the share of businesses using public edge cloud:
   - Businesses with 500+ employees with digital transformation strategies are expected to be the main customers of public edge cloud solutions – at least initially. Organisations with 1000+ employees in retail, transport & logistics, healthcare and media & entertainment sectors will be early adopters of public edge cloud, but companies with 500-999 employees will need to move to edge cloud eventually. These factors will generally translate into a higher adoption in developed markets, with some exceptions.
   - Companies of smaller size (e.g. start-ups) may be using new products using edge cloud, but their spend will likely remain small and therefore assumed to be negligible in our forecasting exercise

3. We made assumptions on the spend per business on public edge cloud solutions
   - The spend of businesses on public edge cloud can be considered as a subset of their overall ICT expenditure. In the long run, the annual spend on public edge cloud solutions will account for ~4-7% of the ICT expenditure of an enterprise, with some variations depending on the sector

4. We produced a breakdown of the total business spend on public edge cloud by service type (SaaS, PaaS, IaaS, etc.)
   - SaaS is expected to be the prevalent delivery model for public edge cloud solutions and will account for the largest share of business spend – businesses will purchase packaged solutions from vendors and will leave the decision of which IaaS provider in which co-location facilities to use to the vendor.

5. We made assumptions about the share of spend captured by operators by service type
   - Operators will likely capture a significant proportion of spend on co-location and IaaS in early years, but this share will erode quickly as third-party datacentres increase their deployments. Operators in emerging markets may be better placed than in developed countries to hold a large share for a longer period of time (less competition from third-party datacentres and large public cloud providers). Few operators will be able to expand across the cloud delivery value chain and capture significant SaaS and PaaS spend.
We have developed a five-step approach to quantify the size of the public edge cloud market

Overview of our approach to model the public edge cloud market

1. % of businesses using public edge cloud
2. Spend per enterprise
3. Split of spend by service type
4. Operator share of spend by service type
5. Business spend on public edge cloud by service type and service provider

Note: We have used as a key input to this modelling exercise the results of a comprehensive survey conducted by Analysys Mason in August-September 2019 across 250 organisations in the US, UK, Germany and Japan on their adoption and use of edge computing to enable a range of digital use cases. We have also conducted interviews with industry experts with responsibility for edge computing developments within their organisation, as well as additional materials and notes collected from relevant conferences attended by Analysys Mason and briefings with CDN players, operators, web-scale players and prominent edge associations. We have used data from our existing in-house research on business spend on a range of ICT services (including total cloud – IaaS, SaaS and PaaS) across 19 sectors and 52 countries.
We have initially segmented businesses by region, business size and sector.

Number of enterprises, world (2019-2025)

By region:

- North America
- Latin America
- Western Europe
- Central and Eastern Europe
- Developed Asia-Pacific
- Emerging Asia-Pacific
- Middle East and North Africa
- Sub-Saharan Africa

By business size:

- 1-99 employees
- 100-499 employees
- 500-999 employees
- 1000+ employees

By sector:

- Manufacturing
- Retail
- Healthcare
- Financial services
- Media & entertainment
- Public sector
- Transport & logistics
- Other

Source: Analysys Mason
Our survey has identified key digital use cases organisations expect to deploy via public edge cloud [1/2]

Key digital use cases* for public edge cloud by sector

Transportation
- E-transport documentation across logistics chains/ authorities
- Blockchain support for smart contracts, traceability, compliance
- Warehouse robotics
- In-vehicle infotainment

Retail
- Digital product/pricing displays
- In-store 3D/4D printing
- In-store augmented/virtual/mixed reality
- Robotic store assistants

Healthcare
- Telerehabilitation (e.g. using augmented/virtual reality)
- Augmented/virtual reality-based staff education and training
- Interconnected healthcare systems
- AI-based insurance claims processing

Media & entertainment
- Cloud gaming
- Video content delivery
- In-vehicle entertainment
- Augmented reality experience

Manufacturing
- Autonomous on-site vehicles
- Deep sensor networks for predictive maintenance, asset performance management and quality control
- Cobotics
- Sensor networks for asset tracking

Public sector
- Public safety (e.g., facial recognition, emergency services co-ordination)
- Public structures/ buildings monitoring and preventative maintenance
- Holistic citizen services (e.g. joined-up tax, voting, utilities, etc.)
- Smart or autonomous public transport

Financial services
- Augmented/virtual reality-based customer support
- Bank branch of the future (e.g., conversion to coffee shops, ATM service expansion)
- Customer mobile apps (personal banking/ trading)
- Cybersecurity (e.g. biometrics, facial recognition, intrusion detection, network security)

Source: Analysys Mason

* This diagram summarises the four use cases that businesses of a specific sector have most commonly selected to be delivered via public edge cloud in our business survey. Use cases are ranked from to bottom based on their decreasing likelihood to be implemented within the next 3-4 years (again based on responses to our survey)
From our research, large businesses appear to favour public edge cloud over managed edge cloud (on premise, managed by a third party) and private edge (owned and managed by the enterprise). Chief digital officers or their equivalents understand the cost and agility benefits of using a third party provided cloud versus having to build and manage a cloud themselves.

As businesses want to keep their data local (as they equate proximity with greater security), they will want to minimise network transport costs to the public cloud, which, for large volumes (e.g. terabytes) of data can be significant.

- Providing a public edge cloud provider can meet the enterprise’s security and cost requirements, enterprises indicate a strong preference for this solution. In some cases, they have limited ability to expand the capabilities of their existing environments, so they are looking at public edge cloud as part of an ‘overlay’ solution that will enable them to augment current operations with new use cases without having to disturb e.g. existing production lines/tooling etc.

Our research suggests that the services/use cases that will be deployed on public edge clouds will be completely new use cases that enterprises are implementing as part of their digital transformations, e.g. to support new end-to-end supply chain management requirements, servitisation, new digitally-driven systems, such as cobotics, autonomous vehicles, digital twins, AR/VR etc.

- According to the chief digital offices and equivalents that we have interviewed, these systems are seen as business enablers – of new levels of customer experience, productivity and service revenues, for example

- There is no sense that current workloads that have migrated or are migrating to the public cloud, which are typically IT cost centre applications, such as sales and marketing, ERP, CRM systems, systems of record (data warehouses) and/or test and dev environments, will be moved to edge clouds.

So public edge cloud and public cloud will serve different purposes for enterprises. Over time, we expect a proportion of private cloud workloads, which have not migrated to public cloud because large enterprises want to keep them locked down, as a source of competitive differentiation (i.e. current business-enabling systems) to migrate to public edge cloud, providing the latter can offer the security and proximity guarantees that enterprises are looking for.
We have assumed these use cases to be adopted by organisations with advanced digital transformation strategies – at least initially.

Key drivers:

- Businesses with 500+ employees with digital transformation plans are likely to be early adopters of digital use cases that benefit the most from edge cloud (see next slide for examples of key use cases).
  - In this segment, organisations with 1000+ employees will likely adopt edge cloud earlier than businesses with 500-999 employees, due to more advanced digital transformation strategies, and therefore stronger requirements for digital transformation use cases that are suitable for edge deployment.
- Companies of smaller size (e.g. start-ups) may be using new products using edge cloud, but their spend will likely remain small and therefore assumed to be negligible in our forecasting exercise.
Large businesses in retail, transport & logistics, healthcare and media & entertainment sectors will be early adopters of public edge cloud

% businesses using public edge cloud by sector, world (2019–2025)

Key drivers:

- Businesses with 1000+ employees will be early adopters of edge cloud, with first deployments from 2019 onwards
- Companies of smaller size (500-999) will lag behind in early years but will need to move to edge cloud eventually to keep up with their larger competitors
- Earlier adoption among very large retail, transport & logistics and healthcare sectors, due to changing supply chains and the need for more holistic information sharing across their entirety of the supply chain
- Growth in the media & entertainment sectors driven by the need to give customers with far better experience to achieve stronger customer retention
- Other industries such as manufacturing and public sector expected to lag behind (size of investment and extensive lifespan of production facility in the manufacturing sectors are key factors)

* "Other" includes sectors not modelled individually but with some potential for edge cloud adoption – e.g. agriculture, mining, construction, wholesale, professional services and other services

Source: Analysys Mason
The adoption of public edge cloud will grow at different paces across geographical regions

% of businesses using public edge cloud

% businesses using public edge cloud by region, transport & logistics sector (2019–2025)

Key drivers in transport & logistics sector:

- Government regulation and key initiatives pursued by leading countries in Western Europe (e.g. Germany) on smart highways, smart cities, intermodal infrastructure projects likely to be key drivers of adoption. The expected exit from the EU may force the UK to set up ways to track goods more closely.

- Some countries in Developed Asia-Pacific have advanced road infrastructure (e.g. Japan, Singapore) and will lead adoption, but some others will likely be slower as a result of their vast geographic size (e.g. Australia)

- North America is expected to lag behind other developed markets in the transport & logistics vertical due to its very large geographic size

- Current issues related to transport infrastructure in emerging regions (e.g. Latin America, Sub-Saharan Africa) will need to be addressed first, and therefore slow down edge cloud adoption

Source: Analysys Mason
The spend of businesses on public edge cloud can be considered as a subset of their overall ICT expenditure.
In the long run, the annual spend on public edge cloud solutions will account for ~4-7% of the ICT expenditure of an organisation.

Spend on public edge cloud as a % of annual average ICT spend per enterprise* by sector, Developed Asia-Pacific (2025)

- Manufacturing
- Retail
- Healthcare
- Financial services
- Transport & logistics
- Public sector
- Media & entertainment
- Other

* Per business using public edge cloud
SaaS is expected to be the prevalent delivery model for public edge cloud solutions and will account for the largest share of business spend.

### Key drivers:

- **Most edge cloud solutions to be implemented in the forecast period are expected to be delivered via a SaaS-based model.** For example, advanced businesses will not want to run new edge applications, such as facial recognition or blockchain across supply chains themselves. They will buy such applications as-a-service, which will be the prevailing model for digital companies.

- **For healthcare, financial services and retail sectors, the share of public edge cloud spend on co-location will be relatively higher as businesses in these sectors will need multiple branches/locations to operate the applications.**

- **Business integration services includes services related to integrating data and processes across SaaS-based applications running at the edge cloud and hybrid cloud environments.**

### Split of business spend on public edge cloud by service type*, world (2020-2025)

<table>
<thead>
<tr>
<th>Year</th>
<th>SaaS</th>
<th>PaaS</th>
<th>IaaS</th>
<th>Co-location**</th>
<th>Business integration services</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>46%</td>
<td>14%</td>
<td>13%</td>
<td>18%</td>
<td>9%</td>
</tr>
<tr>
<td>2021</td>
<td>45%</td>
<td>14%</td>
<td>14%</td>
<td>18%</td>
<td>9%</td>
</tr>
<tr>
<td>2022</td>
<td>43%</td>
<td>15%</td>
<td>15%</td>
<td>18%</td>
<td>8%</td>
</tr>
<tr>
<td>2023</td>
<td>41%</td>
<td>15%</td>
<td>17%</td>
<td>18%</td>
<td>8%</td>
</tr>
<tr>
<td>2024</td>
<td>40%</td>
<td>16%</td>
<td>18%</td>
<td>19%</td>
<td>8%</td>
</tr>
<tr>
<td>2025</td>
<td>40%</td>
<td>15.5%</td>
<td>19%</td>
<td>18.5%</td>
<td>7%</td>
</tr>
</tbody>
</table>

* The spend distribution by service type is based on the net revenue captured by each service provider in the value chain (with the exception of datacentre providers – see note below). For example, SaaS represents the net revenue captured by the application provider after paying the platform provider for platform components (PaaS) used to build the application. Please see next slide for more detail.

** Note: We do not break out co-location services provided by facilities owners from co-location services provided by datacentres, i.e. the spend on co-location presented in this report represents the total revenue captured by the datacentre provider before paying the facilities owner.

Source: Analysys Mason
Our spend distribution by service type is based on the net revenue captured by each value chain participant.
Operators are likely to capture a significant proportion of spend on co-location and IaaS in early years, but this share will erode quickly.

**Operator share of spend**

Operator share of business spend on public edge cloud by service type, Developed Asia-Pacific (2020–2025)

Operator share of business spend on public edge cloud by service type, Emerging Asia-Pacific (2020–2025)

**Key drivers:**

- In developed markets, operators are expected to benefit from a short window of opportunity to capture significant share of business spend on co-location and IaaS services. The likely future entry of large public cloud providers (AWS, Azure) and rapid development of well-funded and respected new players (e.g. Fastly, Stackpath) is expected to contribute to reduce these shares rapidly over the forecast period. Very few operators have managed to build an ecosystem of partners to expand across the value chain today, and we expect operator share from SaaS and PaaS to remain limited in the timeframe considered.

- In emerging markets, the share of business spend on IaaS and co-location captured by operators will likely reduce more slowly than in developed markets, due to slower investment (and therefore limited competition) from third-party datacentres and the (current) relative lack of interest in these markets from large public cloud providers (e.g. AWS).
The output is an estimate of the spend on edge cloud solutions by region, service type.

By region
- North America
- Sub-Saharan Africa
- ...

By service type
- SaaS
- PaaS
- IaaS
- Co-location
- Business integration services

By type of service provider
- Telecoms operator
- Non-telecoms operator

By sector
- Manufacturing
- Retail
- Health
- Finance
- Transport & logistics
- Public sector
- Media & entertainment
- Other

...Across a total of 8 regions

The same types of service providers and sectors are included under PaaS, IaaS, co-location and business integration services...
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We define ‘public edge’ as all local datacentres in public locations close to end devices, cell towers, central offices and operator metro datacentres. The public cloud delivery value chain can be broken down into 7 key elements: facilities, datacentre, cloud stack, application enablement, application delivery, business consumption, and end user. Different cloud delivery models co-exist within the public cloud value chain: co-location, Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS).

The value chain is complex, involving a variety of business models – for example, PaaS providers may offer services to SaaS providers or directly to enterprises, while purchasing IaaS services or run their own IT infrastructure.

Some of these business models may become non-applicable in a public edge cloud world – for example, a SaaS provider will unlikely own real estate or datacentres at the edge; similarly, the traditional IT model where a business would own all elements of the value chain will become irrelevant.

The shape of the value chain will change as well: while large datacentre providers commonly own the location on which their infrastructure is built, mini datacentres at the edge will need to be co-located in locations that will be owned by other organisations (e.g., telecoms operators, cities, retail parks, railways companies).

As a result, we have identified three key emerging models for the delivery of public edge cloud solutions:

- Some new edge cloud providers have expanded across the datacenter and cloud stack layers of the value chain and attracted specialist app enablement providers. In this model, operators provide them with co-location services primarily.

- A few operators have built their own edge ecosystem and attracted specialist app enablement providers, to which they provide an IaaS value proposition.

- Most ecosystem participants reviewed in our analysis tend however to only own one single value chain element. In this model, operators provide primarily co-location services.

In the longer-term, further consolidation is expected as established cloud and CDN players enter the market and specialist providers expand their capabilities. In the absence of unique differentiators from early edge cloud specialists, application developers may turn to the rich platform capabilities offered by AWS or Azure to build and host their applications for digital use cases.
We define ‘public edge’ as all local datacentres in public locations close to end devices, cell towers, central offices and operator metro datacentres.
The public cloud delivery value chain can be broken down into 7 key elements and 4 main delivery models.

**Key components**
- Fibre / mobile access
- Power
- Security
- Space
- Physical servers
- Physical switches
- Compute
- Storage
- Networking
- Virtualisation
- Development tools
- Analytics
- Database management
- Middleware
- Hosted applications
- Business
- Consumer

**Cloud delivery value chain**
- Facilities
- Data centre
- Cloud stack
- Application enablement
- Application delivery
- Business consumption
- End-user

**Associated delivery model**
- Co-location
- IaaS
- PaaS
- SaaS

* i.e. resource management in hardware virtualisation systems to optimise efficiency of virtual machines
A wide range of roles and delivery models exist in the current cloud application delivery value chain*

* We do not include IT hardware as a layer of the value chain - hardware vendors supply product components to cloud providers, but we consider these products to fall outside the scope of the cloud delivery value chain.
In the public edge cloud world, some roles are likely to not be applicable anymore...
...While roles at the edge location will be decoupled
Currently, different delivery models are emerging in the nascent public edge cloud value chain

1. Each participant occupies only one layer of the value chain

2. Some operators build their own edge ecosystem and attract specialist app enablement providers

3. Specialist edge cloud providers expand across several layers of the value chain and attract specialist app enablement providers
By 2025, the value chain will likely be more consolidated as established cloud and CDN players enter the market and specialist providers expand their capabilities.
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Section summary

- The public edge market is expected to grow quickly over 2019-2025:
  - The total number of businesses using public edge cloud solutions will exceed 111,000 by 2025
  - Their spend on public edge cloud solutions is expected to grow quickly from less than USD1 billion in 2019 to reach almost USD34 billion by 2025
- The manufacturing sector is expected to account for 33% of business spend in 2025. Other large sectors will include financial services and healthcare as well (18% and 14%, respectively)
- In terms of service categories, SaaS will account for the highest share (40% in 2025) of business spend on public edge cloud across the forecast period
- Operators revenue from public edge cloud services will grow in line with other providers’ and will account for 18% of spend in 2025. Co-location and IaaS are expected to account for the majority of operators’ revenue from public edge cloud (77% in 2025)
- In the short-term, the public edge cloud market will represent a limited share of the total public cloud market
The total number of businesses using public edge cloud solutions is expected to exceed 111,000 by 2025

Number of businesses using public edge cloud, world (2019-2025)

By region:

- North America
- Latin America
- Western Europe
- Central and Eastern Europe
- Developed Asia-Pacific
- Emerging Asia-Pacific
- Middle East and North Africa
- Sub-Saharan Africa

By business size:

- 500-999 employees
- 1000+ employees

By sector:

- Manufacturing
- Retail
- Healthcare
- Public sector
- Transport & logistics
- Media & entertainment
- Financial services
- Other

Source: Analysys Mason
The total spend of businesses on public edge cloud solutions is expected to reach almost USD34 billion in 2025

Business spend on public edge cloud, world (2019-2025), and split* (2025)

By region:

By sector:

Source: Analysys Mason

* Split may not add up to 100% due to rounding
SaaS will account for the highest share (40% in 2025) of business spend on public edge cloud across the forecast period

### Business spend on public edge cloud by service type*, world (2019-2025), and split** (2025)

*The spend by service type represents the net revenue captured by each service provider in the value chain (with the exception of datacentre providers – see note below). For example, SaaS represents the net revenue captured by the application provider after paying the platform provider for platform components (PaaS) used to build the application. See market modelling approach section for more detail.

**Split may not add up to 100% due to rounding.

***Note: We do not break out co-location services provided by facilities owners from co-location services provided by datacentres, i.e. the spend on co-location presented in this report represents the total revenue captured by the datacentre provider before paying the facilities owner.

Source: Analysys Mason
Operators revenue from public edge cloud services will grow in line with other providers’ and will account for 18% of spend in 2025

Business spend on public edge cloud by service provider, world (2019-2025)

Source: Analysys Mason
Co-location and IaaS are expected to account for the majority of operators’ revenue from public edge cloud (77% in 2025)

Revenue from public edge cloud by service type*, world (2019-2025), and split** (2025)

Operators:

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<tr>
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<th>IaaS</th>
<th>Co-location***</th>
<th>Business integration services</th>
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<td>1.0</td>
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Other providers:

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<th>IaaS</th>
<th>Co-location***</th>
<th>Business integration services</th>
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</table>

** The spend by service type represents the net revenue captured by each service provider in the value chain (with the exception of datacentre providers – see note below). For example, SaaS represents the net revenue captured by the application provider after paying the platform provider for platform components (PaaS) used to build the application. See market modelling approach section for more detail.

** Split may not add up to 100% due to rounding.

*** Note: We do not break out co-location services provided by facilities owners from co-location services provided by datacentres, i.e. the spend on co-location presented in this report represents the total revenue captured by the datacentre provider before paying the facilities owner.

Source: Analysys Mason
In the short-term, the public edge cloud market will represent a limited share of the total public cloud market

Spend on public edge cloud as % of spend on public cloud*, world (2025)

- Gartner: 5.3%
- IDC: 4.1%

Spend on public edge cloud as % of spend on public cloud** by service type, world (2025)

- SaaS: 6.4%
- PaaS: 6.0%
- IaaS: 4.3%

* Based on IDC and Gartner (projected up to 2025). Includes IaaS, PaaS, SaaS and business integration services but excludes co-location services from both public edge cloud and total public cloud for the purpose of the comparison (co-location not included in numbers reported by Gartner and IDC)

** Based on IDC (projected up to 2025)
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Recommendations. Value chain defragmentation will be necessary for the industry ecosystem to be successful

Recommendations to telecoms operators

- Operators should focus their efforts on layers of the value chain they are most familiar with. By definition, operators are well positioned to capture value at the edge of the value chain. Moving further across will be challenging – providing platform services (PaaS) to developers would require building capabilities and credibility (and in the longer-term competing against large and well-established platform players – e.g. AWS, Azure), while offering applications (SaaS) directly to businesses would require in-depth specialist sector knowledge that most operators are currently lacking.

- Operators should actively seek partnerships to offer a one-stop-shop value proposition to global app developers and content providers. Application developers will need to build scale and as such will typically favour a reduced number of providers for their cloud requirements. As an operator’s individual ability to offer a large range of edge locations is limited by its own geographic footprint, engaging in a model to collaborate with a large number of operators to aggregate edge locations into a global network could attract interest from app developers.

- Operators should act fast to avoid being outpaced by competition at the edge. The deployment of third-party local datacentres in public locations (e.g. retail outlets, stadia) is growing rapidly today and is expected to accelerate in the coming years. Operators should plan early to capture the benefits offered by their locations at the edge. Developing with an ecosystem of partners to offer a compelling value proposition to app developers rapidly could help operators sustain this advantage over time and maintain a significant share of co-location and IaaS value.

Recommendations to application developers / content providers

- Application developers should favour edge cloud providers that can offer a single point of contact. Handling relationships with a large number of multiple operators is complex, time-consuming and ultimately costly. Application developers with global ambitions and looking to build should consider seeking to partner with a reduced number of cloud providers that can manage those relationships centrally and offer a single point of contact. Several new edge cloud players offer IaaS services built on a global network of locations at the edge.

- Developers should take early position on sectors that are likely to generate high value at the edge. While the media & entertainment industry is likely to generate significant interest for edge cloud applications in the short-term, other sectors (e.g. manufacturing, healthcare, financial services) will generate significant spend on public edge cloud in the medium-term. To address those business opportunities, developers should select edge cloud providers able to offer locations that are well aligned with the specific use case requirements of those sectors (e.g. along highways for in-vehicle entertainment, near retail shops / shopping malls for in-store AR/VR).

- Developers who want to be in the market early should consider platforms available right now. Established public cloud providers are likely to introduce a public edge cloud offering, but not immediately. A number of specialist edge cloud providers are already offering a range of platform services specifically tailored to the technical requirements of edge cloud solutions which can benefit application developers who want to take an early position in the market.
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