THE FASTEST-GROWING OPERATOR REVENUE STREAMS IN 2024

Whitepaper

TELCO & CONNECTIVITY

JUNIPER RESEARCH

1.1 Introduction to Operator Revenue Strategies

As technology evolves and consumer behaviours shift, operators continually adapt their approaches to generate revenue and sustain competitiveness in the market. The following subsections explore various facets of operator revenue strategies. Each subsection offers insight into the specific strategies, trends and challenges encountered by operators for three key revenue-generating services as they navigate the dynamic landscape of telecommunications services. By examining these key areas, operators can attain a more comprehensive understanding of the multifaceted strategies driving their revenue generation in today's interconnected world.

1.1.1 eSIMs

In October 2013, the GSMA (Global System for Mobile Communications Association) announced the development of a new type of SIM which is directly soldered into a device. This new type of SIM, called eSIM, could then be programmed to connect to a chosen carrier's network profile, via a process known as RSP (Remote SIM Provisioning). eSIMs provide a secure vault that stores information regarding mobile subscribers, including specific credentials to connect to a given operator network, in a secure digital format. Whilst the terms eSIM and eUICC (Embedded Universal Integrated Circuit Card) are often used interchangeably in the eSIM market, for clarity, Juniper Research defines each term as the following:

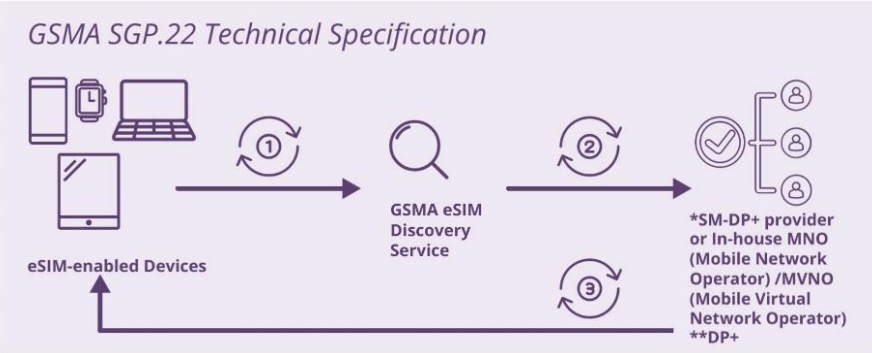
- eUICC: Hardware component that encompasses operator profiles that allow for RSP. The eUICC is often referred to as the eSIM chip.
- eSIM: Refers to the eSIM ecosystem as a whole, including the eUICC, eSIM profile and RSP capabilities.

eSIMs are located in a number of consumer and industrial locations, including smartphones, wearables, security systems, manufacturing, smart cities and IoT agricultural devices. eSIM-enabled devices search for a new subscription profile, using the GSMA-led eSIM Discovery Service. This service aims to deliver a virtual phonebook, which provides the details of all available subscription profiles. However, it is important to note that industry support for this service remains limited at present.

a) The GSMA eSIM Discovery Service sources a new subscription profile via an SM-DP+ (Subscription Manager Data Preparation Address) provider or using a network operator's in-house DP+. Notably, SM-DP+ providers source subscription profiles from both MNOs and MVNOs.

b) The new subscription/profile is downloaded by the eSIM-enabled device.

Figure 1: eSIM Ecosystem Actors & the RSP Process



Source: Juniper Research

In general, understanding the differences between eSIMs and traditional plastic SIMs is critical for mobile operators to adapt their processes, systems and offerings accordingly. The ability to remotely manage eSIMs and support various form factors and grades opens up new possibilities for service delivery and customisation.

There are some notable differences between eSIMs and traditional plastic SIMs, which are particularly relevant for operators:

- Traditional plastic SIMs are not remotely programmable, whereas eSIMs offer an embedded eUICC for remote provisioning and management. This allows for more streamlined processes, reduces the cost of logistics and enables faster onboarding of new subscribers.
- SIMs are available for commercial, industrial and automotive grades. eSIMs are available in all form factors and grades, with M2M (Machine-to-Machine) connectivity following the GSMA SGP.02 push mechanism and consumer connectivity following the GSMA SGP.22 pull mechanism. The GSMA's SG.31 and SG.32 specifications represent the convergence of a 'push-and-pull' model. The push refers to OTA (Over the Air) intelligence software updates being pushed on the device, whereas the pull refers to on-board intelligence within the device. There is the need to have the pull aspect in order to have the push as well, which will be key to supporting M2M use cases. In May 2023, the GSMA announced its latest IoT eSIM specification, SGP.32. Knowledge of these technical specifications is essential for operators to ensure interoperability, security and compliance with industry standards to enable seamless integration of eSIM technology into their networks and services.

1.1 AI-native Networks

Shown below are drivers for the growth of AI in telecommunications networks that operators should be informed about.

i. Increased Affordability of AI Solutions

A significant driver of affordability of AI is the overall increase in hardware technology-processing power which has affected the working capacities of AI units. This is especially true for GPUs (Graphical Processing Units). This is in tandem with trends in AI technologies to become generally more mature and refined with further trialling and training of processes and algorithms through mass adoption in the industry. Alongside the development and innovation in programming AI, there will also be collaborative efforts to make AI more standardised and adaptable to existing conventional network structures.

On top of the more technical side of things, there are also business practices and economic factors that can improve affordability of AI. As AI becomes a more prominent market force, the natural mechanisms of economies of scale, as well as the pooling of AI talent and AI customers and the competition between developers and vendors, will all lead to overall price reductions for AI solutions. Furthermore, recent years have seen the greater prominence of open-source coding and programming of software which includes AI, which can reduce overall costs, especially licencing costs, and promote innovative collaboration. AI solutions vendors are also offering more flexibility in the way they price their products (be they subscription-based or unit-based) which can meet a wider range of business practices of potential buyers of AI solutions and fundamentally improves general affordability. Furthermore, AIaaS (AI-as-a-Service) is a commercial model which does not require clients to invest in their own infrastructure in addition to the AI software itself.

All these ongoing technological and commercial trends are contributing to an overall greater affordability and availability of AI solutions in network orchestration to the market. By leveraging AI technologies effectively, operators can stay competitive and meet the growing demands of consumers for reliable and high-performance connectivity.

1.1.2 Cloud Services in Network Operations

Cloud computing is a model for delivering computing services over the Internet; allowing users to access and utilise servers, storage, databases, networking, software and applications on-demand. Instead of owning and maintaining physical hardware and infrastructure, users can provision and access resources through a provider's data centres, paying only for the resources they use. The use of cloud computing technologies to deliver various network functionalities and services can encompass a wide range of functions, including but not limited to:

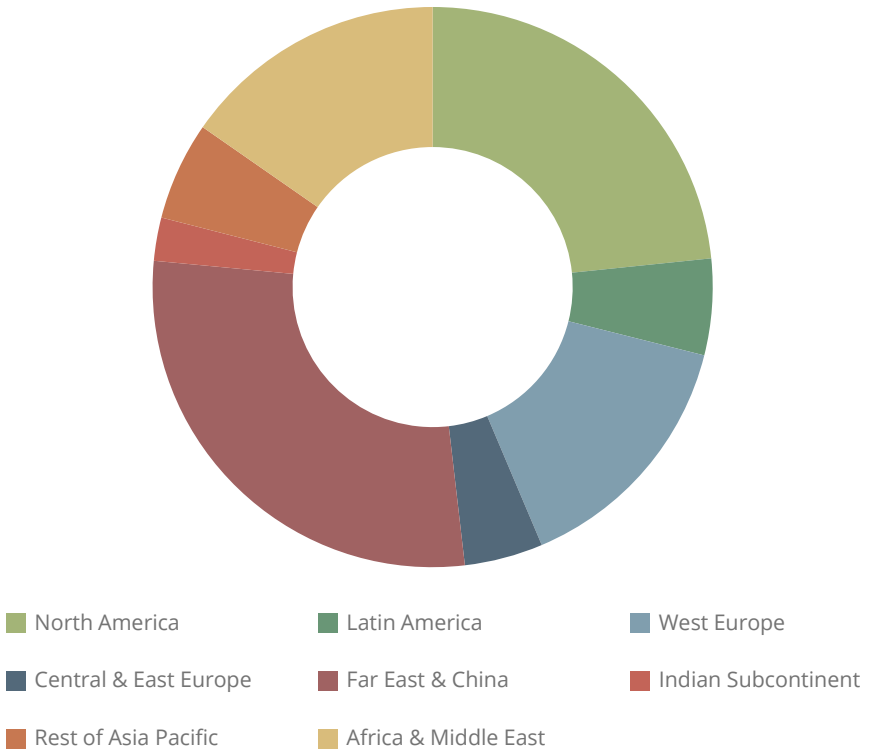
- Virtualisation: Cloud services enable operators to virtualise network functions, such as RAN (Radio Access Network), core network elements and services like VoLTE (Voice over LTE) or messaging platforms. Virtualisation allows for more flexible and efficient resource allocation, scalability and cost savings.

- NFV (Network Functions Virtualisation): NFV is a key component of cloud services in network operations. It involves virtualising network functions traditionally implemented in hardware (such as routers, firewalls and load balancers) into software that runs on standard servers. This further enables operators to deploy and scale network services more rapidly and efficiently.
- SDN (Software-defined Networking): SDN decouples the control plane from the data plane in network devices, allowing for centralised network management and programmability. Cloud services can provide SDN controllers and management platforms, enabling operators to dynamically control network traffic flows, optimise performance, and implement policies more easily.
- Network Slicing: Cloud services enable network slicing, which involves creating multiple virtual networks within a single physical network infrastructure. Each slice can be tailored to specific use cases, such as enhanced mobile broadband, URLLC (Ultra-reliable Low-latency Communications) or mMTC (Massive Machine-type Communications) allowing operators to efficiently support diverse services and applications.
- Analytics and Machine Learning: Cloud-based analytics platforms leverage Big Data and machine learning algorithms to analyse network performance, predict failures or congestion, optimise resource utilisation and enhance the overall QoS (Quality of Service) and experience for mobile subscribers.
- Edge Computing: Operators can deploy computing resources closer to end-user and IoT devices. Edge computing reduces latency, improves application performance and supports use cases that require real-time processing, such as AR (Augmented Reality), VR (Virtual Reality) and autonomous vehicles.
- Security Services: Cloud-based security services can contribute to providing operators with tools for threat detection, intrusion prevention, encryption and access control. These services help protect network infrastructure, subscriber data and applications from cyberattacks and unauthorised access. Cloud providers invest heavily in security measures and compliance certifications, offering operators robust security features and helping them meet regulatory requirements. This not only protects sensitive subscriber data but also enhances customer trust.

1.2 Market Forecast Summary: Global Operator-billed Revenue

Operators will find revenue growth through the monetisation of enterprise markets, such as cellular IoT, to capitalise on the $900 billion global telecommunications market this year.

Figure 2: Global Operator-billed Revenue in 2024, Split by 8 Key Regions: $900 Billion



Source: Juniper Research

- Despite their significant investment in 5G networks, operators have struggled to monetise the widespread adoption of 5G by consumers. Failing to gain a significant price premium over 4G services has been a key issue.
- Turning to Enterprises, operators should invest in cloud technologies that enable new services such as CAMARA-compliant APIs to better manage IoT services over networks. An API will enable third-party software to communicate with specific applications present in telecommunications networks.
- 5G is the key enabling platform for operator growth in the IoT market owing to the high degree of software defined processes which enable the swift deployment of APIs. However, to maximise this growth, operators must provide APIs that enable real-time management of devices, remote configuration and integration with third-party solutions. This will position operator networks well to capitalise on the operators opportunity for IoT connectivity revenue; a market forecast to grow from $10 billion in 2023, to $23 billion by 2028.

Order the Full Research

Discover an invaluable overview of operator revenue sources broken down by established and emerging technologies in this latest report. Featuring data split by 60 countries, this new research delivers key insights and a thorough assessment of existing business models to industry executives; enabling them to gain clear insights into new and emerging business models shaping the operator revenue market, and new revenue opportunities expected to disrupt the market for the next five years.

Key Features

- **Future Market Outlook:** Analysis of key trends in the market, including the growth of cellular technologies, total cellular data traffic generated, and operator-billed revenue.
- **Emerging Telecommunications Service Analysis:** Deep dive evaluation of the future of the telecommunications industry; analysing development and deployment of new areas in the sector, such as non-terrestrial networks, eSIMs/iSIMs, and network APIs.
- **Benchmark Industry Forecasts:** Provided for sector-based operator-billed revenue in the telecommunications industry for 8 key global regions and 60 select countries.
- **Country Readiness Index**: Comprehensive coverage featuring country-level analysis on the future of 60 markets split by 8 key regions; thoroughly evaluating each country's future success across emerging telecommunications technologies, such as eSIMs, APIs and AI in operator networks. It categorises these 60 countries into 4 distinct classifications: Focus Markets, Growth Markets, Saturated Markets, and Developing Markets.

What's in this Research?

1. **Key Takeaways & Strategic Recommendations:** Top-level report evaluating key market challenges and the addressable user base in the telecommunications industry, along with strategic recommendations for operators to maximise revenue.
2. **Future Market Landscape:** Deep dive evaluation of the future of the market; outlining future operator services, such as 5G, eSIMs, iSIMs and network APIs.
3. **Five-year Forecasts:** Extensive forecasts on the total market spend for the operator revenue strategies market, including carrier billing, M2M connectivity enablement, 5G, business messaging and voice.
4. **Interactive Forecast Excel:** Highly granular dataset comprising of over 13,500 datapoints; allied to an interactive scenario tool; giving users the ability to manipulate Juniper Research's data (Interactive XL).
5. ***harvest* Digital Markets Intelligence Centre:** 12 months' access to all the data in our online data platform, including continuous data updates and exportable charts, tables, and graphs (ONLINE).

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