



twimbit

# Telecom Digital Odyssey

Navigating the AI-powered future

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# Key highlights



## #1 Industry revenue growth experiences structural slowdown

Industry revenue growth deaccelerates to 3.1% (average) YoY in FY-2024 from 7.1% YoY in Q1-2023, signaling a significant market shift. Developing countries continue the strong growth driven by increased data consumption.



## #2 Telcos in the APAC region demonstrate varied ARPU momentum.

Emerging markets (India, Indonesia, Philippines) demonstrate ARPU resilience, outperforming developed markets through increased data adoption and digital services.



## #3 EBITDA margin stabilizes through systematic transformation

Telcos maintain ~30% margins in 2024 through operational excellence initiatives, digital transformation, and infrastructure optimization.



## #4 Enterprise and Beyond-connectivity drives next growth horizon

Telcos continue to pivot toward B2B and digital services, the contribution from which is estimated to reach ~30% and ~40% respectively of total revenue by 2028, marking a strategic shift from traditional telco models.



## #5 5G monetization faces market-specific challenges

While China, India, and Thailand led 5G subscriber growth, price competition and use case development remain critical hurdles for sustainable 5G monetization.

## Key highlights



### #6 M&As reshape the competitive landscape

The consolidation wave gains momentum with regulators also recognizing the need to support growth and investments in digital infrastructure.



### #7 AI becoming integral to telco operations

AI adoption accelerates across telco value chain, with South Korean telcos leading APAC in AI/cloud integration for operational excellence and revenue growth.



### #8 APAC telcos bolster cybersecurity defense

Telcos continue to enhance security posture through AI-powered solutions, strategic partnerships, and targeted investments in security centers, prioritizing network resilience and data protection.



### #9 AI provides opportunity for growth in data centre business

APAC telcos leverage cloud infrastructure and data centres as strategic assets, enabling AI-driven innovation and new digital service capabilities.



### #10 Tech innovations will unlock future growth

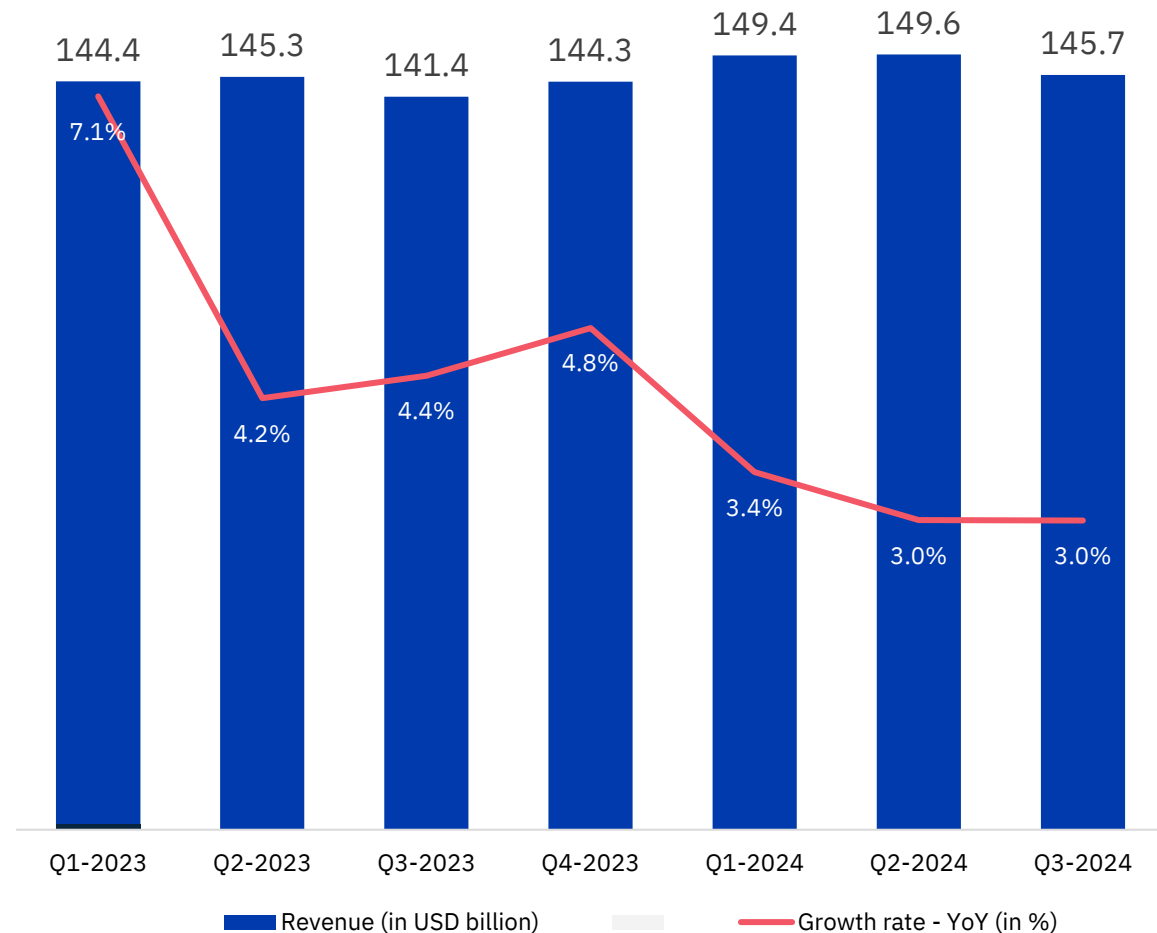
Telcos pursue next-generation technologies (APIs, RAN, Quantum, Satellite) through ecosystem partnerships, creating new value pools beyond traditional connectivity.



## Industry revenue grew at 3.1% YoY in 9M-2024

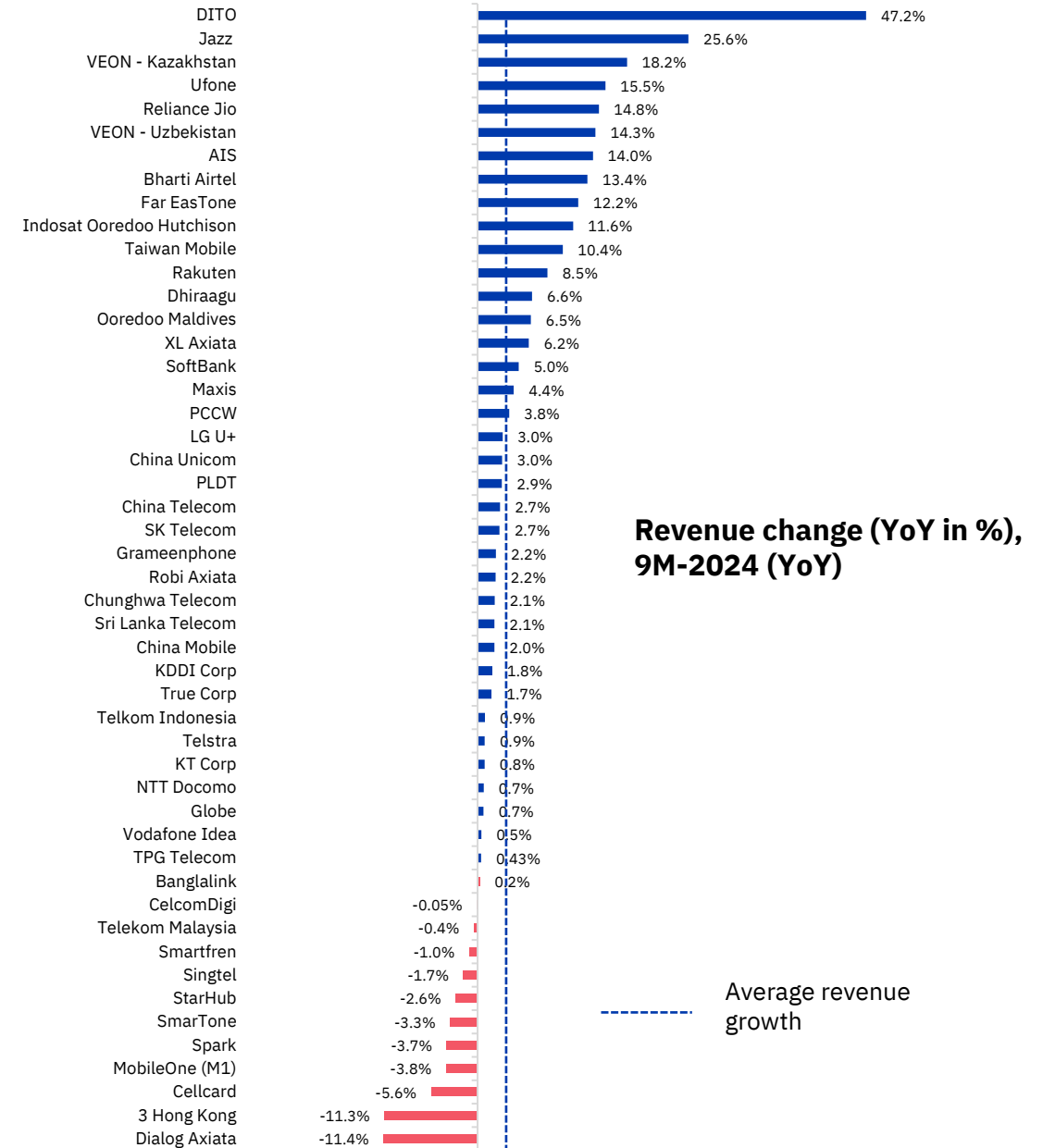
- Industry revenue growth decelerated to 3.1% YoY in FY-2024 from 7.1% YoY in Q1-2023, signalling a significant market shift.
- Revenue reached USD 444.7 billion in 9M-2024 versus USD 431 billion in 9M-2023, demonstrating 3.1% YoY growth across APAC markets.
- Growth drivers include 5G network expansion, subscriber base evolution, strategic pricing optimization, M&A synergies, and enterprise segment acceleration.
- Telcos in India and Pakistan continued to maintain revenue growth momentum in 9M-2024, while Chinese telcos experience moderated growth trajectories.
- Mature markets show divergent patterns. Japanese, Korean, and Australian telcos report muted growth, while Singaporean operators face revenue contraction.

APAC telcos revenue trends (YoY), Q3-2024



# Telcos in emerging markets bolster the squeezed revenue in developed markets

- Revenue growth was underpinned by accelerating data consumption, Beyond-connectivity offerings expansion, and Enterprise segment focus.
- Industry demonstrated growth-based momentum with 78% of telcos achieving growth, average YoY growth of 3.1% in 9M-2024.
- Double-digit revenue growth achieved by 23% of operators, highlighting pockets of exceptional performance.
- DITO emerges as growth leader with 47.2% YoY expansion in 9M-2024, reaching revenue of USD 209 million.
- China Mobile maintains market leadership, adding highest USD 2.2 billion in net revenue (2% YoY) to reach USD 110 billion total revenue in 9M-2024.
- VEON group companies leverage digital and data services as key revenue catalysts.
- Indian telcos drive growth through combination of strategic pricing initiatives and subscriber base expansion.



## Telcos in different countries weave unique tales of growth and challenges



DITO, the newest entrant in 2021, disrupted the Philippines telco market with affordable offerings and an emphasis on expanding rural connectivity.



Strategic tariff adjustments in mid-2024 and an expanded subscriber base underpin revenue growth in India, with the impact of the separate voice and SMS package mandate to be observed in 2025.



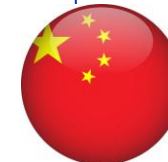
Pakistan's telecom sector experiences significant growth driven by widespread connectivity expansion and digital access, resulting in robust revenue gains for operators.



Synergies from the merger, along with increased roaming revenue, propel growth for Taiwan Mobile and Far EasTone in the Taiwanese market.



Intense competition, primarily through pricing wars led by M1 and Simba, is eroding mobile revenue in Singapore, prompting telcos to explore innovative solutions.



Slow economic growth has dampened enterprise demand, while intense competition drives ARPUs downward as telcos sustain low pricing, leading to slower revenue growth for Chinese telcos.

# Telco, multimedia and ICT solution provider



*“We continue to invest in our digital businesses to diversify portfolio strength and drive long term growth. Airtel also continues to invest in a future ready digital network to deliver brilliant customer experience.”*



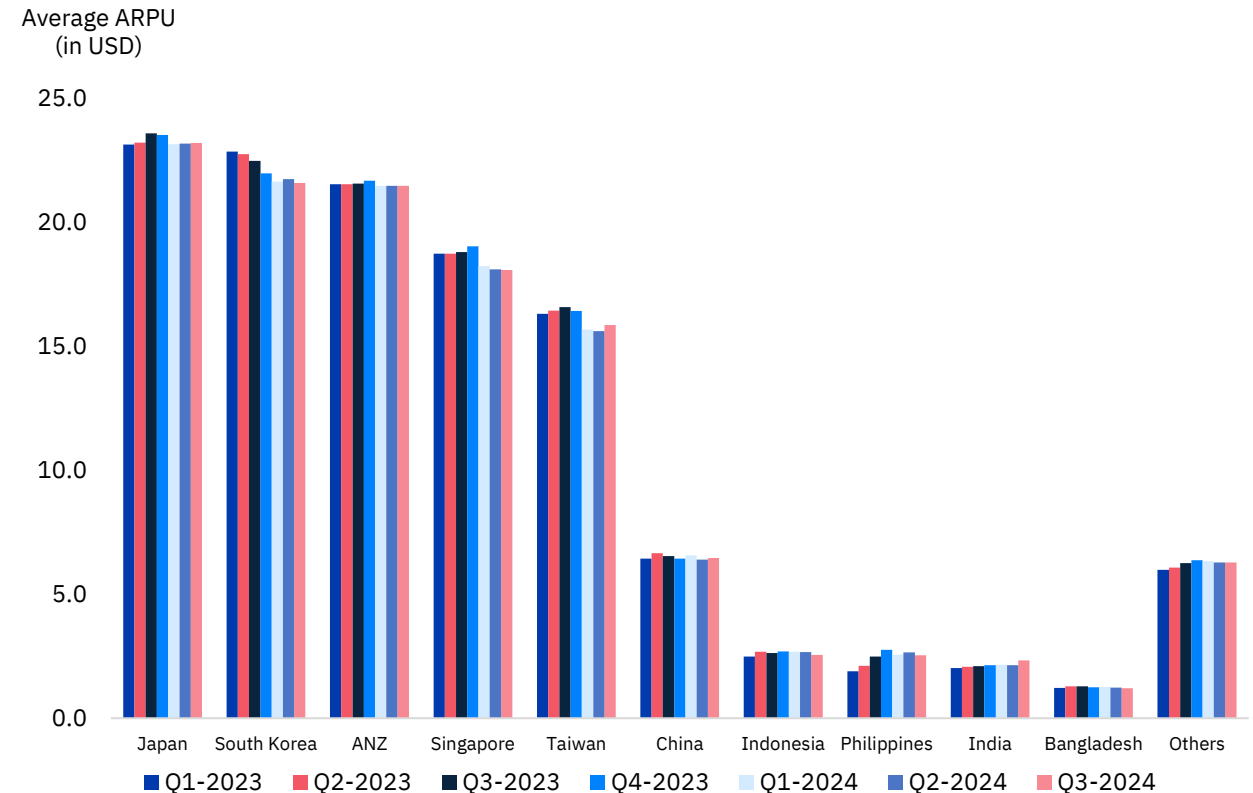
**Gopal Vittal**  
Vice Chairman and MD,  
Bharti Airtel



## Telcos in the APAC region demonstrate varied ARPU momentum

- Average ARPU maintains stability at approximately USD 10.8 in Q3-2024.
- Developed market telcos face marginal ARPU contraction due to heightened competitive dynamics.
- Emerging markets such as India, Indonesia, and the Philippines registered ARPU growth.
- VEON Group's telcos in Pakistan and Bangladesh leverage increased 4G and digital service adoption to bolster ARPU.
- Intense competition drives downward pressure on ARPU in China.

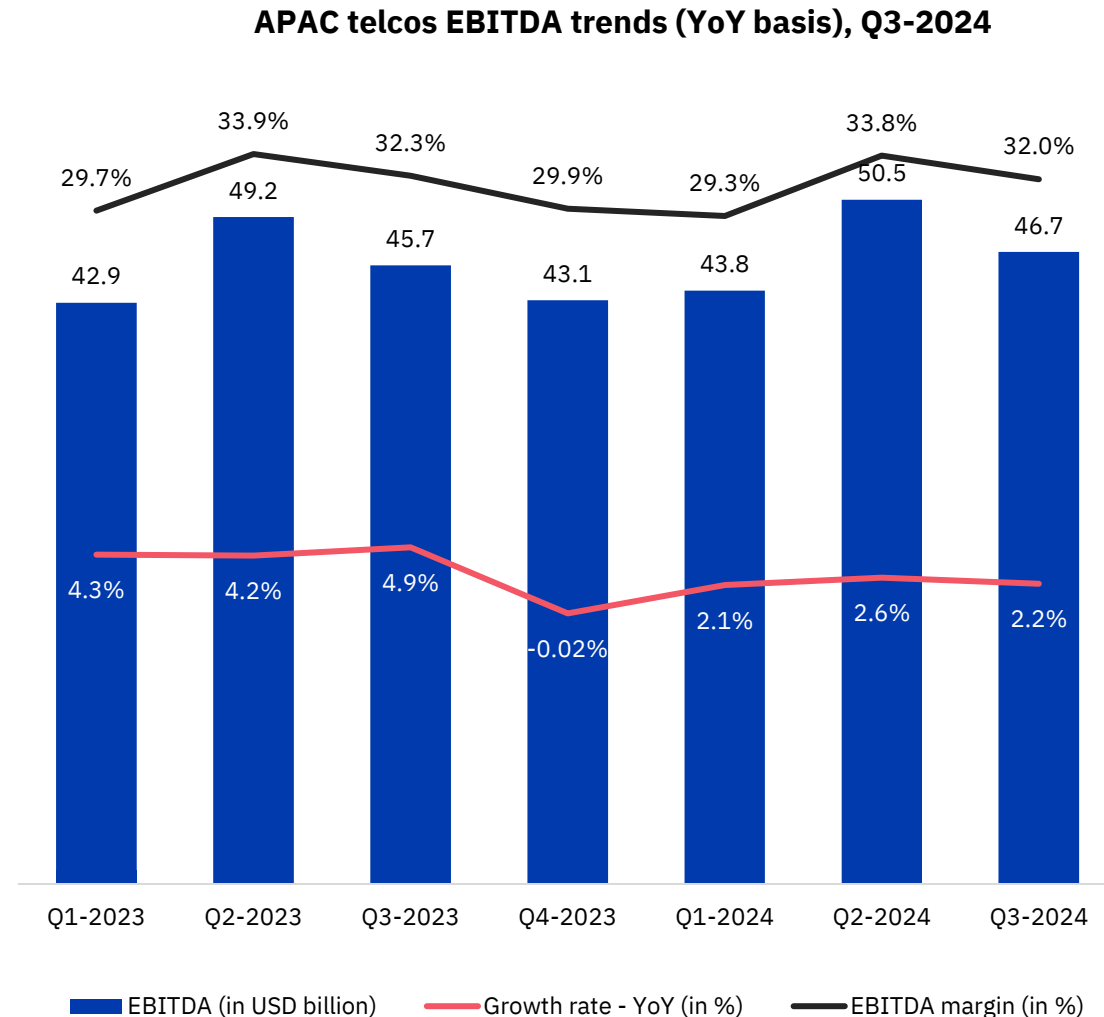
APAC telcos ARPU trends (YoY basis), Q3-2024



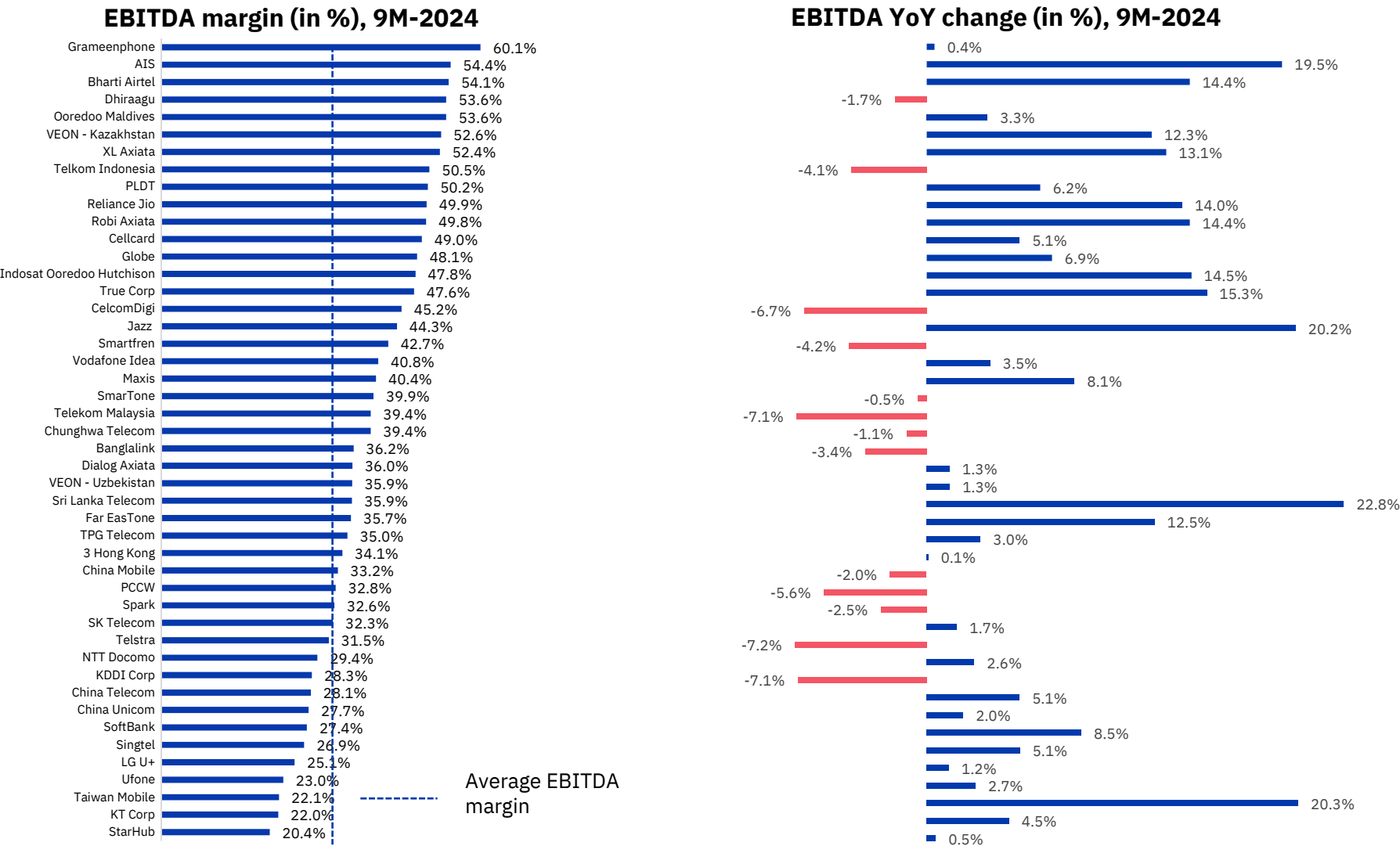


## EBITDA margin remained stable around 30%

- EBITDA margins for telcos consistently maintained a range of 29%-34%, demonstrating stable financial performance.
- APAC telcos have achieved stable and robust EBITDA momentum, underpinned by rigorous cost control measures and operational efficiency programs.
- Increased top-line revenue for many telecom operators further underpinned EBITDA momentum and its consistency.
- Around 22% of telcos in the Asia-Pacific region achieved double-digit YoY EBITDA growth for the first nine months of 2024.
- Grameenphone maintained industry leadership with an EBITDA margin of 60.1% for the first nine months of 2024, demonstrating superior financial leverage.



# Nearly 78% of the telcos record positive change in EBITDA in 9M-2024



# Merger synergies and 5G service adoption paves way for EBITDA growth



*“At the beginning of the year, we guided a consolidated EBITDA YoY growth of 11% to 13% for the full year. We are glad to report that we have delivered a 20% growth in the first 3 quarters, with accumulated consolidated EBITDA reaching NT\$31.7 billion, a new record for the company! This is once again driven by merger synergies that were realized ahead of schedule and our Telco+Tech strategies.”*



**Jamie Lin**  
**President, Taiwan Mobile**



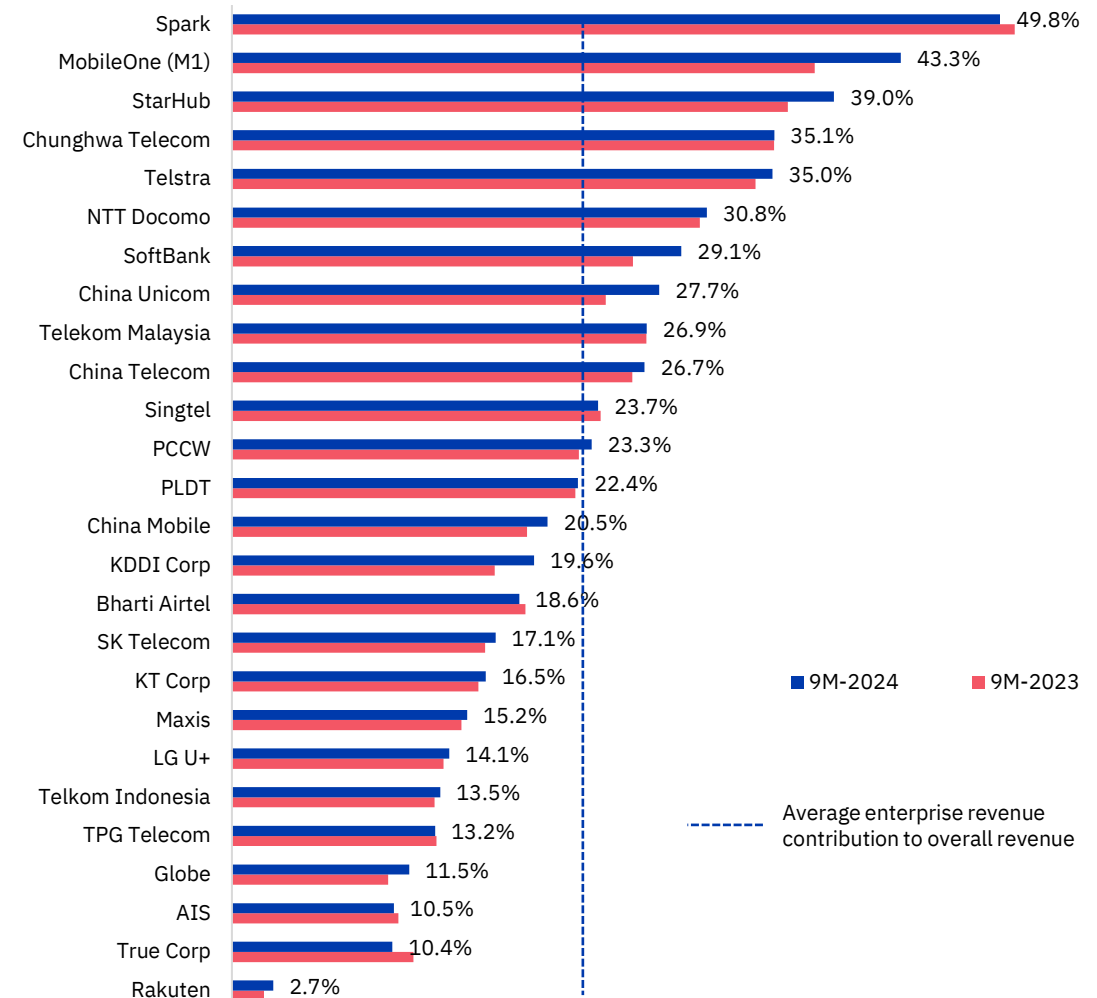
# Enterprise success hinges on telcos' innovation beyond connectivity



## Enterprise accounts for ~23% of total revenue in 9M-2024

- Telcos strategically expand service offerings to include a comprehensive ICT portfolio, as enterprise technology reliance intensifies.
- Average enterprise revenue contribution reached 23% of total telecom revenue in 9M-2024, up from 21.7% in the same period of 2023, underscoring its growing importance.
- 46% of telcos outperform the average enterprise revenue contribution, surpassing the average 23% benchmark.
- Spark leads enterprise revenue expansion, with Singapore operators MobileOne (M1) and StarHub closely following.
- Telco enterprise segment revenue climbed to an estimated USD 94.3 billion, achieving an 8.8% YoY in 9M-2024.
- Telcos collectively generated an incremental USD 7.6 billion in revenue from enterprise segment YoY for 9M-2024.
- Chinese telcos demonstrated strong enterprise revenue momentum, expanding by USD 4.3 billion YoY for 9M-2024, with China Mobile at the forefront of this growth.

Contribution of enterprise revenue to total revenue (in %), 9M-2024



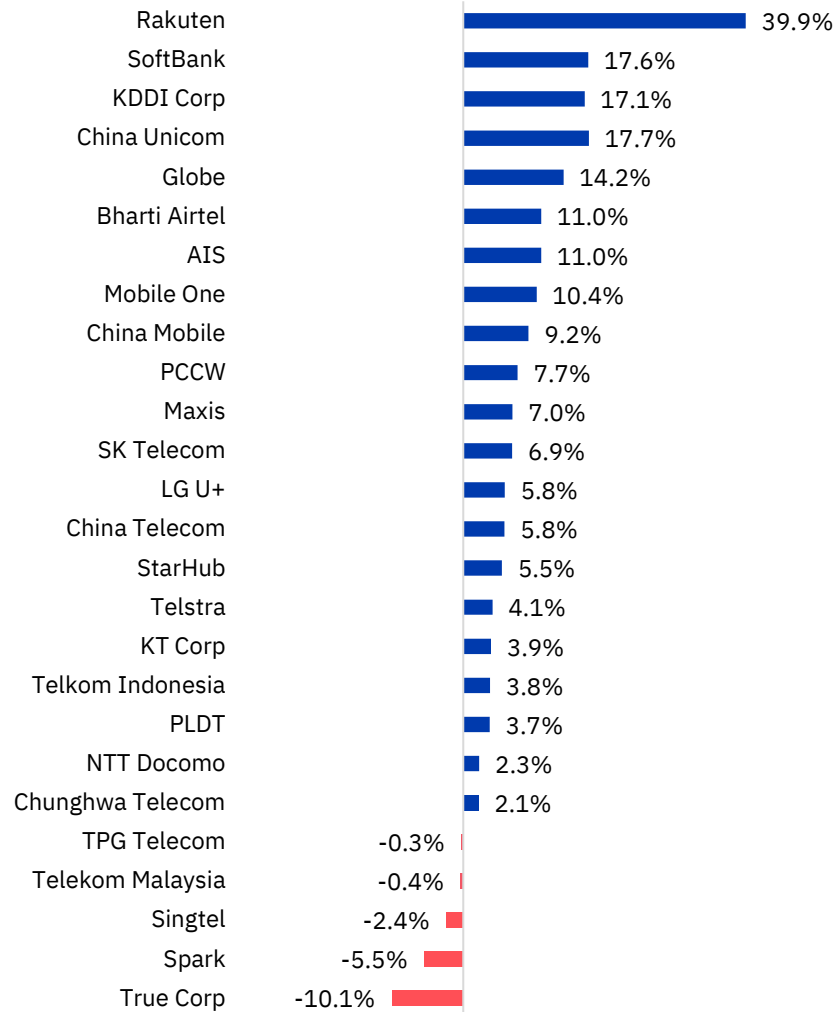
\* Based on reported financials of 26 APAC telcos; Average of the constant currency conversion rate has been applied revenue of all the quarters; Estimated values provided for China Unicom, MobileOne (M1), PCCW, NTT Docomo, Spark, TPG, China Mobile, Telstra

Source: Telco financials, Industry reporting, Twimbit analysis

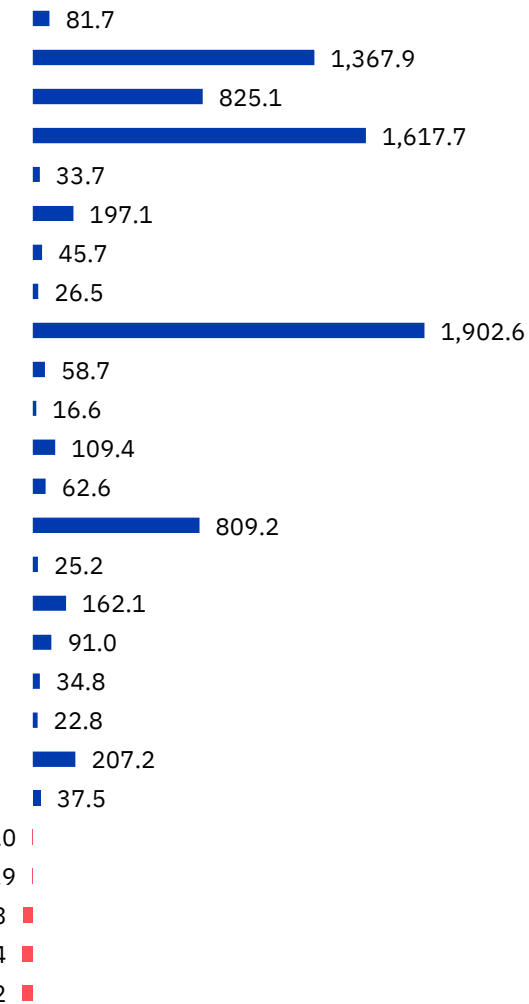


# Chinese telcos have the strongest suite of enterprise services

**Enterprise revenue change YoY (in %), 9M-2024**



**Change in enterprise revenue (in USD million), 9M-2024**



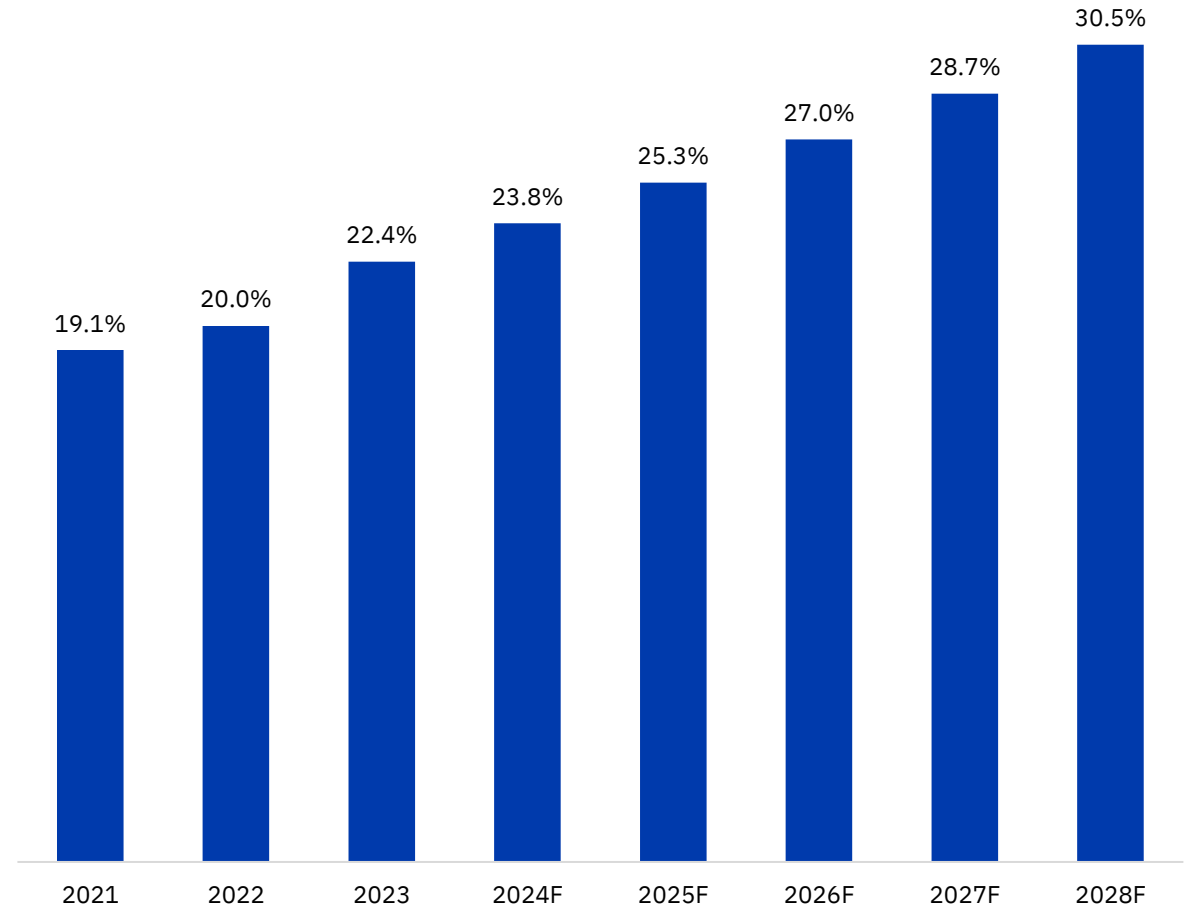
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Source: Telco financials, Industry reporting, Twimbit analysis

## Enterprise segment to account ~30% of total telco revenue by 2028

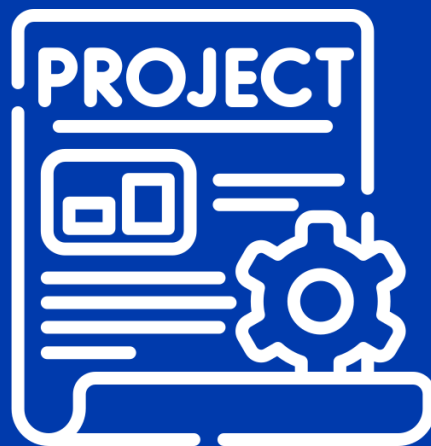
- Projected enterprise segment revenue contribution to overall telcos' revenue will expand from 23.8% in 2024 to 30.5% by 2028, indicating a robust contribution trajectory.
- Telcos augment traditional offerings by bundling services with comprehensive enterprise solutions, enhancing value propositions.
- Strategic investments in data analytics, cybersecurity, and digital transformation capabilities position telcos to meet escalating demand for sophisticated ICT and AI solutions, thereby solidifying their role as critical partners in enterprise digital transformation journeys.
- Telcos continue to scale their solutions by customizing offerings to address the specific requirements of enterprises.
- Artificial Intelligence (AI), data centre, and cybersecurity services demonstrate significant demand as telcos increasingly diversify their business portfolios.

Enterprise revenue contribution trends (in %) to Total revenue (2021-2028)





## Strong capability to deliver digital solutions fuels enterprise segment growth



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*“Group made coordinated efforts to scale up its network, cloud and DICT (data, information, and communications technology) operations. In the first three quarters of the year, the Group’s DICT revenue maintained favorable growth.”*



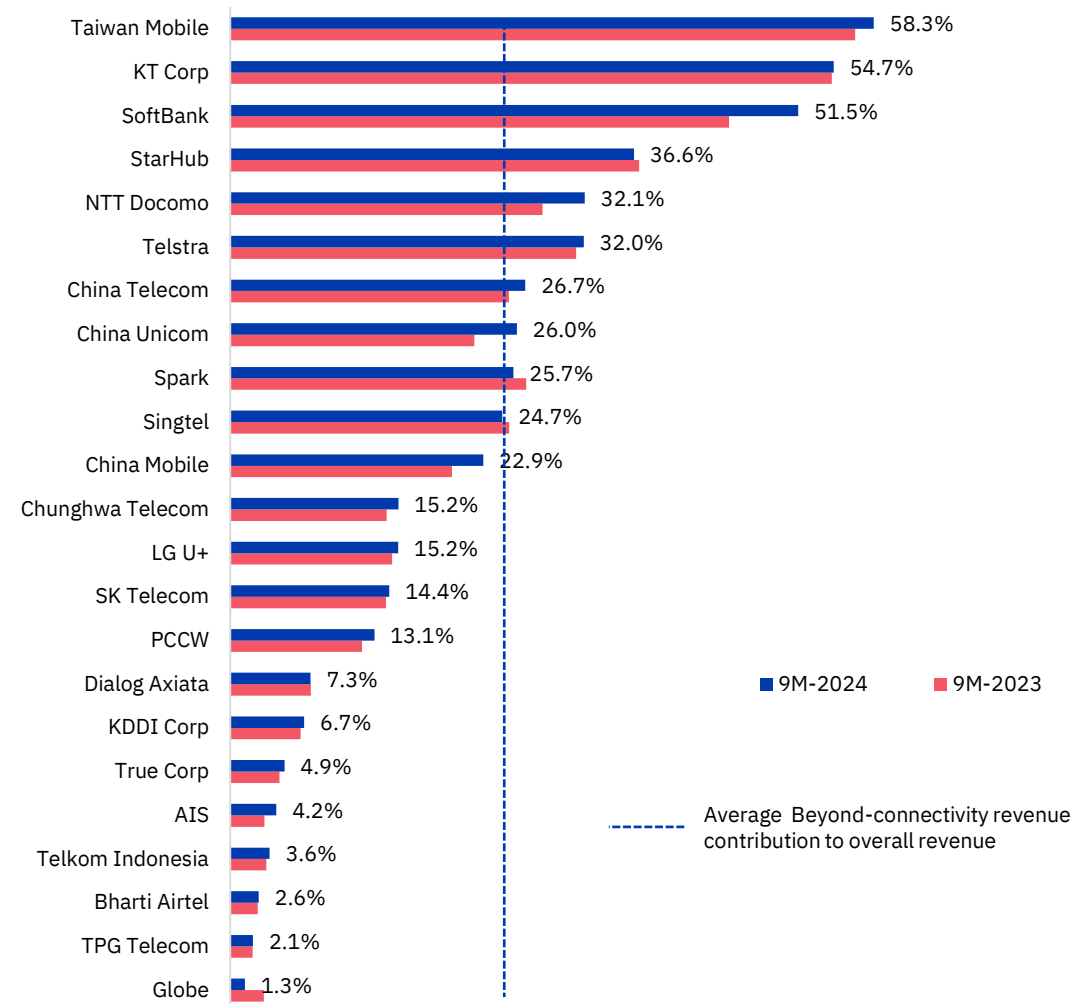
**Yang Jie**  
**Chairman, China Mobile**



# Beyond connectivity revenue exceeds a quarter of telcos revenue in 9M-2024

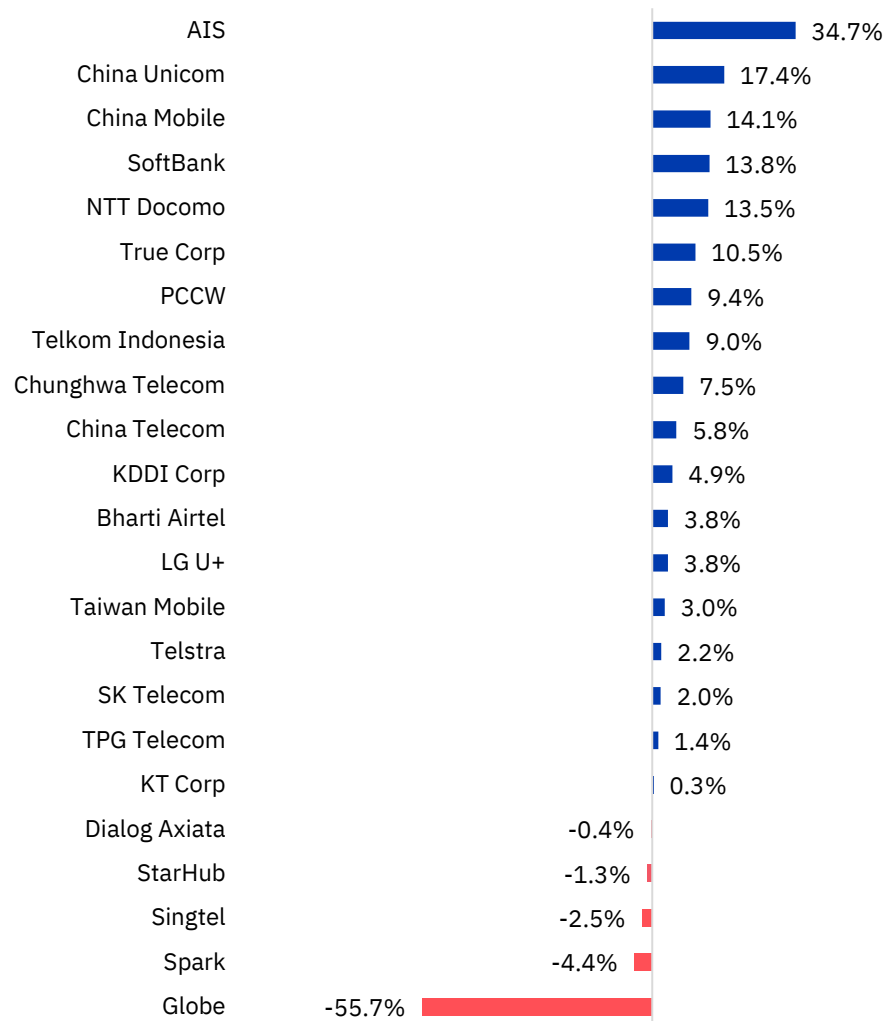
- Average "Beyond Connectivity" revenue for the 23 telecom companies analyzed enhanced their cumulative total revenue share to 25.3% in 9M-2024, up from 23.6% in the same period of 2023.
- 39% of the 23 telcos analysed achieved "Beyond Connectivity" contributions exceeding the 25.3% average benchmark.
- For 9M-2024, APAC telcos' "Beyond Connectivity" revenue demonstrated a 9.9% YoY growth, reaching USD 100.5 billion, compared to an overall revenue growth of 2.6% YoY, totaling around USD 396.7 billion.
- AIS led the "Beyond Connectivity" growth with a notable increase of 34.7% YoY in 9M-2024, followed closely by China Unicom and China Mobile.
- Chinese telcos leverage digital transformation services as the primary driver of "Beyond Connectivity" revenue, while SoftBank's financial services fueled its revenue momentum in Japan.

Contribution of Beyond connectivity revenue to total revenue (in %), 9M-2024

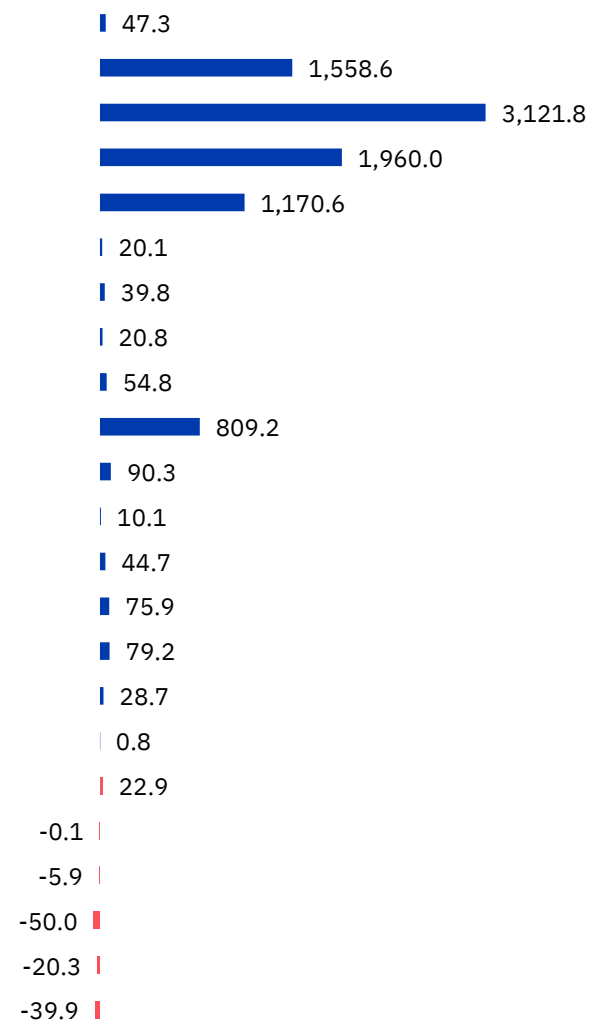


## Telcos witness significant growth in Beyond connectivity revenue in 9M-2024

### Beyond connectivity revenue change YoY (in %), 9M-2024



### Change in Beyond connectivity revenue (in USD million), 9M-2024



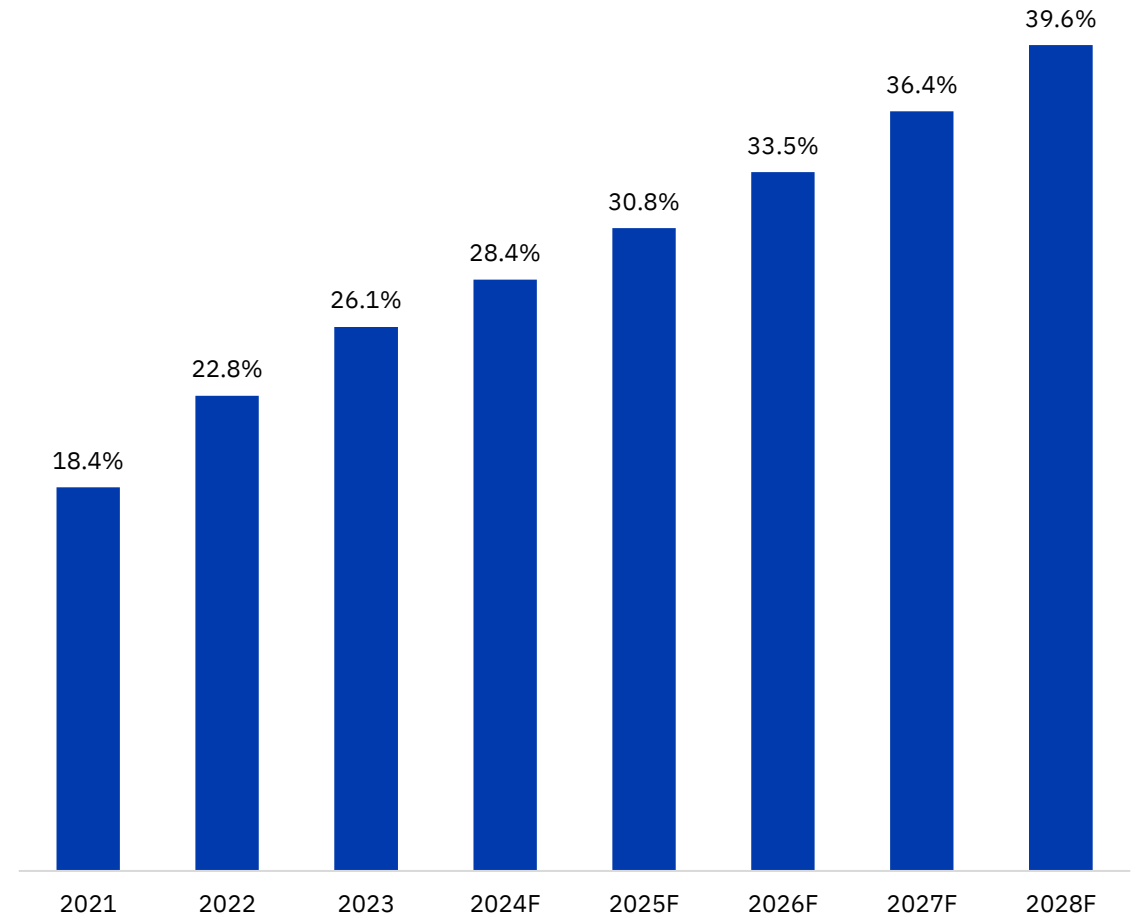
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Source: Telco financials, Industry reporting, Twimbit analysis



## Beyond connectivity to account ~40% of total telco revenue by 2028

- Enterprise segment contributions underpin "Beyond Connectivity" growth, serving as a major revenue driver for most APAC-based telcos.
- "Beyond Connectivity" services increasingly fuel telecom industry revenue and is growing more faster than the industry average.
- Estimated "Beyond Connectivity" revenue contribution to overall revenue will achieve approximately 39.6% by 2028.
- Strategic focus on non-traditional areas, including Cloud, Security, and Digital transformation services, propels non-connectivity revenue.
- Content, media, payments, and e-commerce have emerged as significant growth drivers in the consumer segment for telcos.
- Aggregating value-added services demonstrates an effective strategic approach for telcos to enhance revenue streams.

**Beyond Connectivity contribution (in %) of Total Revenue (2021-2028)**

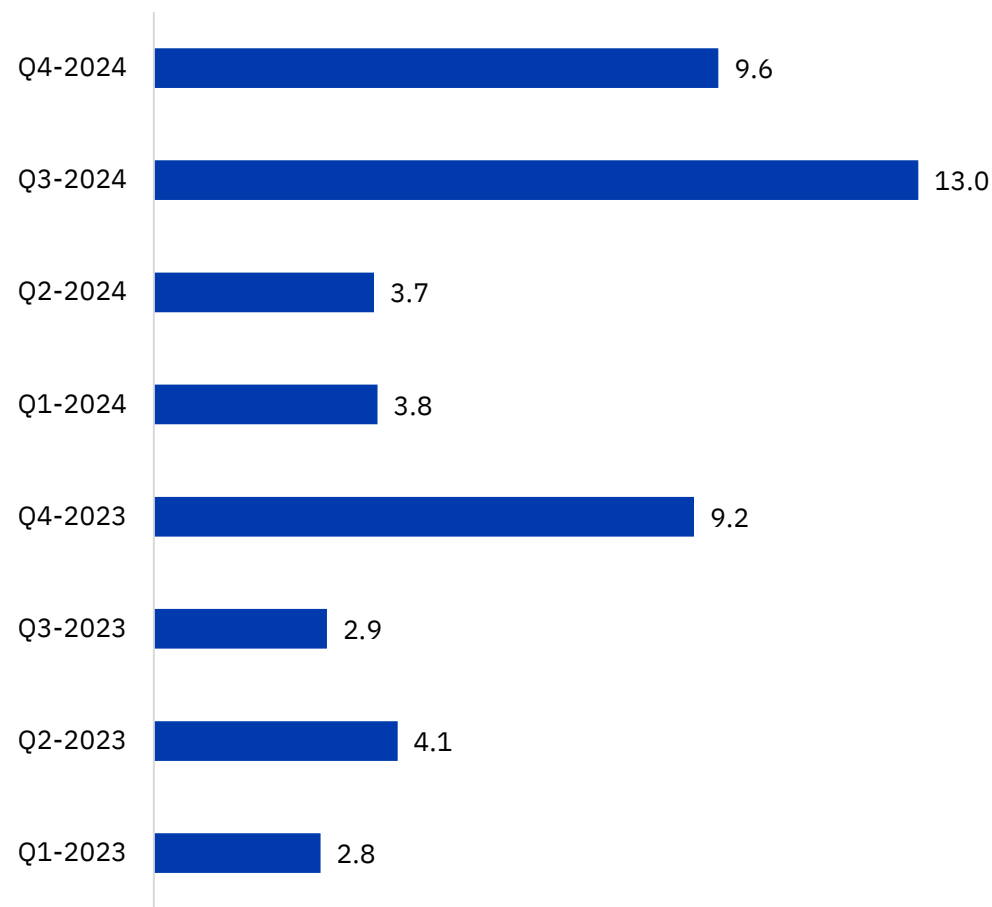


# M&A synergies continue to drive Telecom's evolving landscape

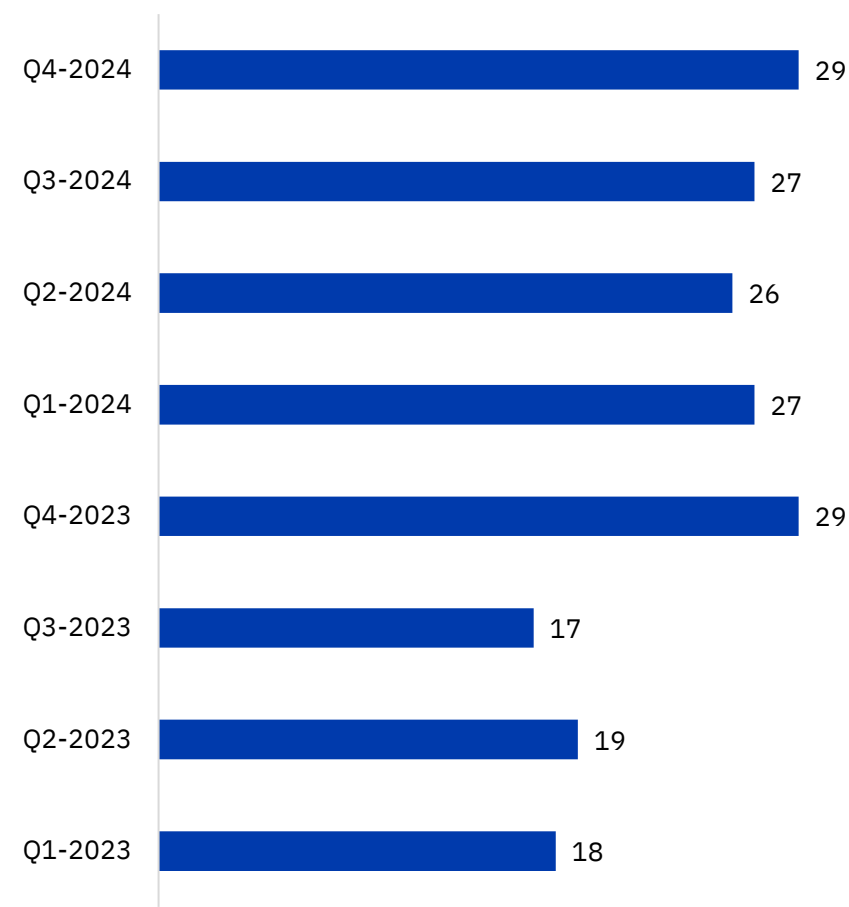


## M&A activity continue to rise indicating industry consolidation to continue

**M&A\* activity trends by Value (USD billion), Q1-2023 – Q4-2024**



**M&A\* activity trends by Volume, Q1-2023 – Q3-2024**



\* Sector: Telecommunications Carriers, Target location: Asia, Bidder location: Asia

## M&As continue to redefine the APAC telecom landscape



- Telstra completed the acquisition of Boost Mobile for USD 94.1 million (AUD 145 million) in Dec-2024.
- Telstra gains access to ~1 million prepaid mobile customers seeking more affordable mobile connectivity via this acquisition.



- Optus announced to sell Uecomm to ISP Superloop for USD 11.3 million (AUD 17.5 million).
- Superloop gains fibre connectivity access to 1,900+ buildings and 50 data centers.



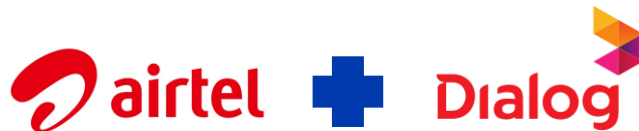
- Merger of Taiwan Mobile and Taiwan Star closed in Dec-2023, with Taiwan Mobile the surviving entity and Taiwan Star now dissolved.



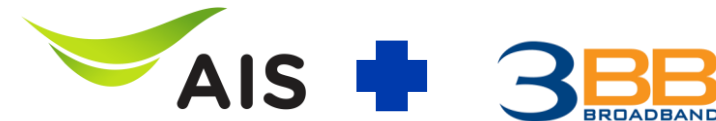
- XL Axiata and Smartfren announced to merge to create a combined entity with an enterprise value of USD 6.5 billion (IDR 104 trillion).



### Other Key successful M&As



Completed: June 2024



Completed: December 2023



# AI integration has the potential to unlock unprecedented growth for telcos





# AI becomes the core of modern telecom operations

## Network Optimisation

Telcos such as NTT Docomo and SK Telecom leverage AI to achieve faster 6G speeds and enhance network performance.

## Energy Efficiency

Globe Telecom utilizes AI to successfully reduce energy consumption, underscoring AI's pivotal role in sustainability initiatives.

## Spam and Fraud Detection

Airtel, Vodafone Idea, and KT deploy AI systems to detect and block spam SMS and mitigate fraud, strengthening network security.

## AI-Powered Customer Service

Telcos like SK Telecom and KT introduce AI-driven customer service platforms to elevate user experience and operational efficiency.

## Retail and Promotions

KDDI develops AI-powered retail promotion solutions, demonstrating AI's potential in enhancing sales and marketing strategies.

## Security and Risk Management

Vectra AI, Globe, Grameenphone, and Mobileum focus on AI-driven security and risk management solutions, emphasizing enhanced protective measures

## IoT and Smart Cities

NTT Docomo partners with local governments to implement AI and IoT solutions, advancing smart city initiatives.

## Content Personalization

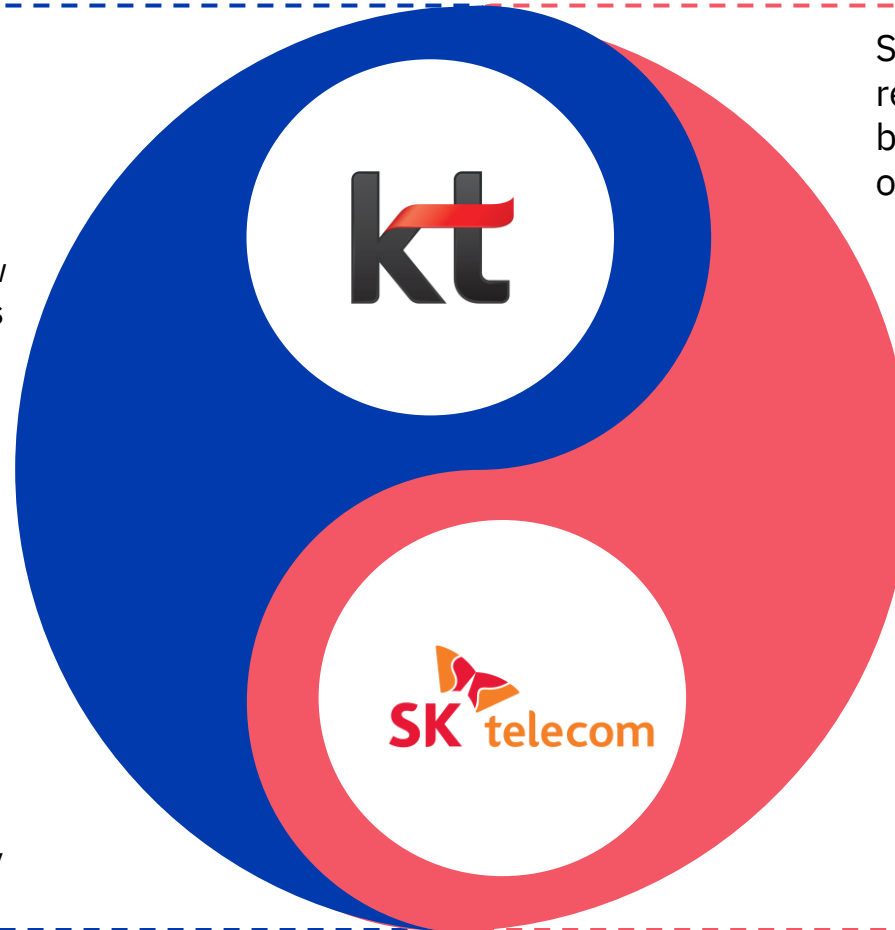
KT leverages AI to personalize content, analyze data, and elevate engagement through tailored recommendations and experiences.

## Korean telcos restructure, prioritize AI and Cloud

Korea Telecom (KT) undertakes a strategic restructuring in 2025 to concentrate on AI and cloud services.

### Key highlights

- **New Subsidiaries:** Established two new subsidiaries, KT OSP for field operations and network management, and KT P&M for customer service, to enhance operational focus.
- **AI & Cloud Focus:** KT commits to a substantial investment in AI and cloud services, partnering with Microsoft for a joint KRW 2.4 trillion investment.
- **Sales Growth:** Aims to increased sales in AI and IT sectors from 6% to over 19% by 2028.
- **Financial Goals:** Plans to lift its Return on Equity (ROE) from 6% to 9%-10% by 2028, reflecting its financial aspiration.



SK Telecom initiates a significant restructuring in 2025, creating seven business divisions to intensify its focus on AI and communications.

### Key highlights

- **Divisions:** SK Telecom will form divisions specializing in AI, such as Adot, GPAA, AIX, AI Data Center, and core telecoms including MNO, BWireline/Media, and Enterprise.
- **AI Focus:** The restructuring endeavor aims to bolster SK Telecom's AI capabilities and produce tangible growth in this strategic domain.
- **Asset Sale:** SK Telecom plans to sell three subsidiaries to Samgu I&C, streamlining operations and concentrating resources on core and AI business areas.

## South Korean telcos pursue AI roadmap for network optimisation



### AI RAN Parameter Recommender drives cost efficiency for telecom operators.

SK Telecom and Samsung Electronics collaborate to leverage AI for optimizing 5G base station performance, focusing on network resource optimization and superior customer experience.

**Method:** Samsung's AI model analyzes extensive network data to automatically determine optimal settings for each base station.

#### Benefits:

- Streamlined network optimization process enhances operational efficiency.
- Improved network performance and user experience boosts customer satisfaction.
- Enhanced 5G base station capabilities fortify competitive positioning.



### AI Meister streamlines operations across wireline and wireless networks.

KT employs AI to facilitate transition to a new network operating system, implementing two key AI systems:

- **AI Meister** automates network equipment management, initially targeting wired networks with plans for expansion into wireless networks.
- **AI Operator** aids field technicians in managing on-site equipment at customer locations, with future plans covering both wired and wireless tasks.

#### AI-Powered Network OS Enhancements:

- **Proactive Monitoring:** AI proactively monitors network traffic, identifying anomalies for swift action.
- **Autonomous Issue Resolution:** The system autonomously resolves network issues, reducing downtime and enhancing reliability.

# SK Telecom aims to redefine itself as a Global AI Leader



Investments  
towards AI

Expecting a ~3x increase by 2028:

12% → 33%



Revenue from  
AI portfolio

**USD 18.5 bn**

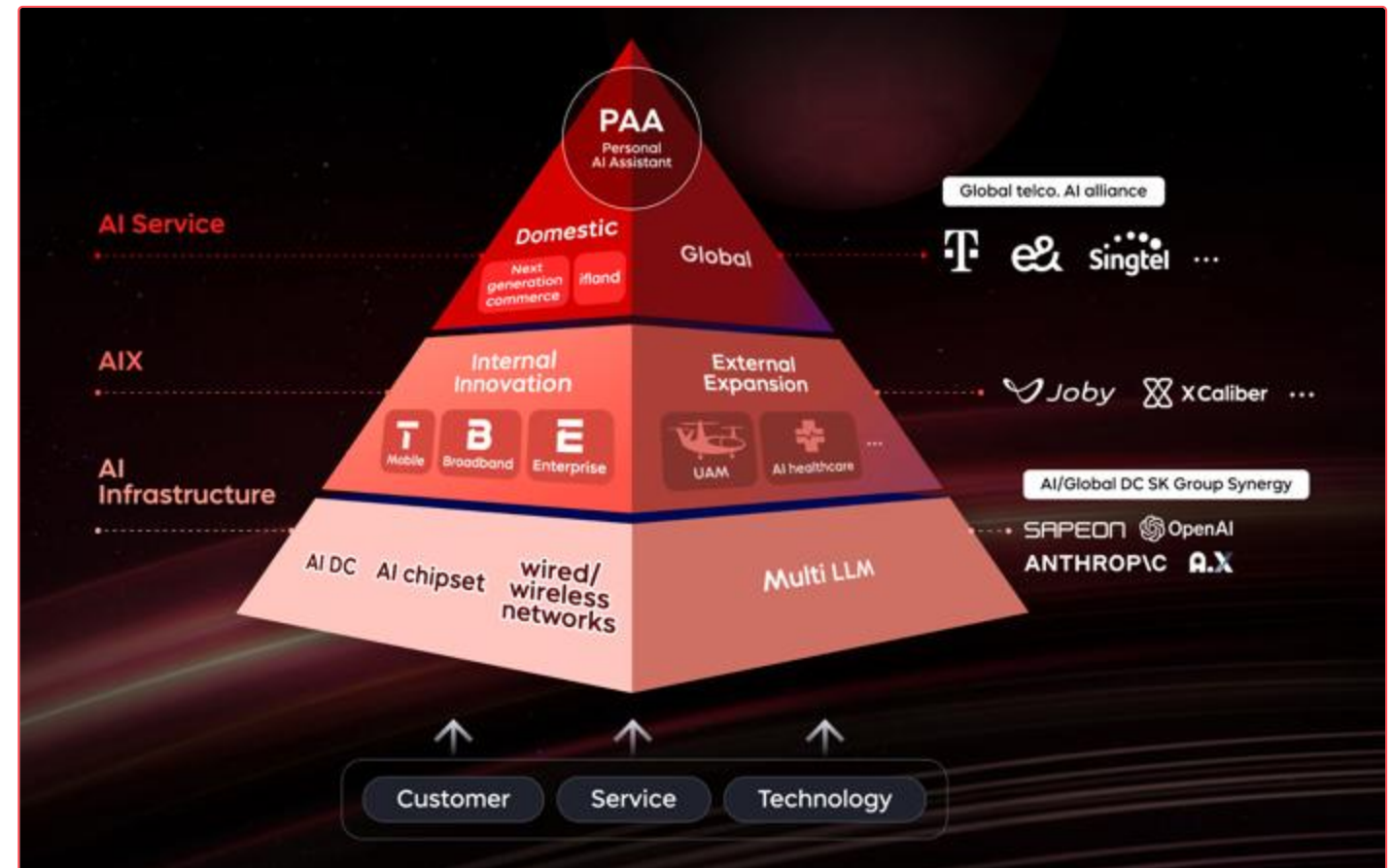
up from USD 13 bn and will  
account  
for **one-third** of total revenue by  
2028



Company  
Valuation

Become Korea's Top AI  
Company valued over

**USD 30 billion** by 2026



## Business impact from SK Telecom's AI initiatives



### Customer Experience

**80%** of routine inquiries  
handled by AI assistants

**30%** reduction  
of customer service costs



### Operational Efficiency

**33% increase**  
In employee satisfaction due to LLM  
model implementation

**81%** reduction  
In equipment analysis time



# Telstra and Accenture Joint venture to advance AI and improve operations



### Accenture's Contribution

- USD 3 billion AI investment assets
- Industry solutions
- Ventures & acquisitions
- Silicon Valley AI teams
- Ecosystem partnerships



### Telstra's assets

- Core Data & AI workforce
- Existing AI ecosystem
- Network Infrastructure
- Customer base
- Market presence



- **Accenture:** 60% ownership
- **Telstra:** 40% ownership
- 7-year partnership term
- Telstra retains AI strategy control

### Key focus areas

Agentic AI Implementation	Specialized Tools	Workforce Development
<ul style="list-style-type: none"><li>• Intelligent AI ecosystems</li><li>• End-to-end task optimization</li><li>• Business process reinvention</li></ul>	<ul style="list-style-type: none"><li>• Team productivity tools</li><li>• Self-healing networks</li><li>• Customer service AI tools</li></ul>	<ul style="list-style-type: none"><li>• Data &amp; AI fluency training</li><li>• Future-critical skills</li><li>• Streamlined operations</li></ul>

- ### Expected Outcomes

**Network Excellence**  
Resilient, self-healing network infrastructure

**Enhanced CX**  
Seamless connectivity and service delivery

**Operational Efficiency**  
Streamlined vendors from 18 to 2 JVs

# AI provides opportunity for growth in data centre business



# Digitalization led by AI-powered innovation drive data centre growth in APAC

## Artificial Intelligence (AI)

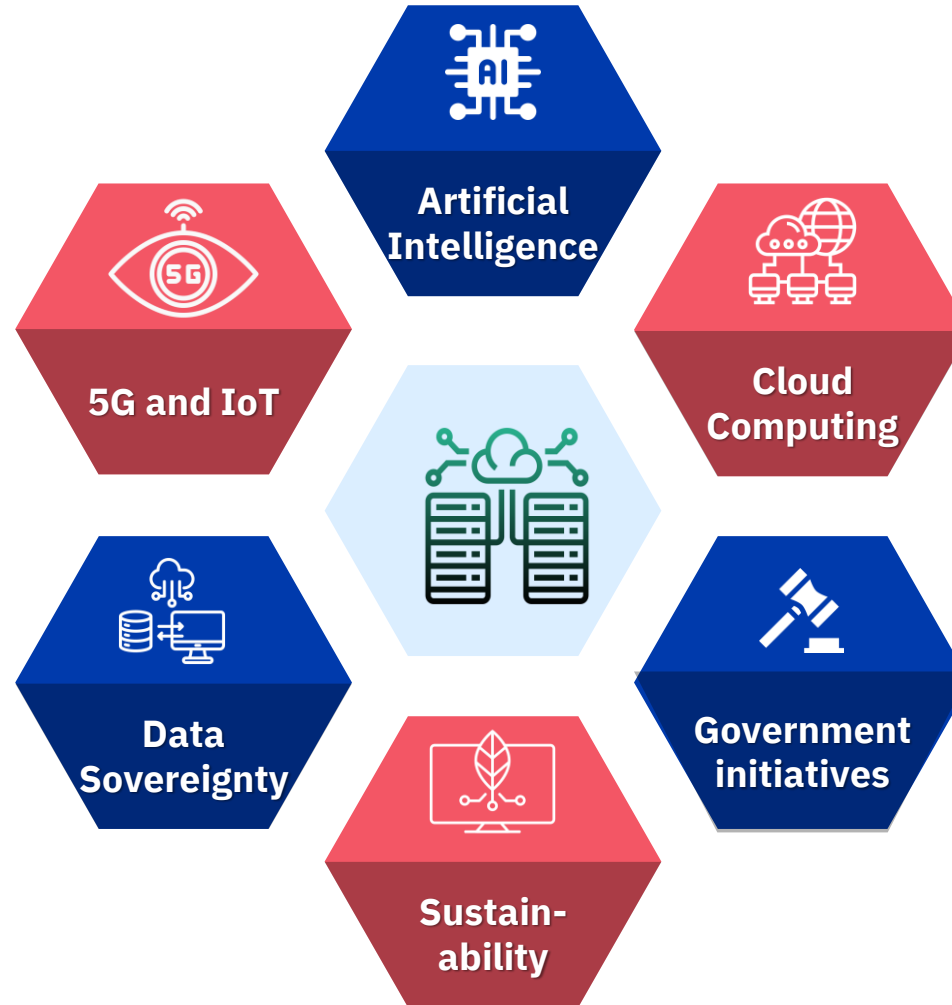
Leading hyperscalers (AWS, Microsoft, Google, Oracle) demonstrate 60%-81% YoY growth in Q3-2024 capital expenditures, underpinned by AI-driven momentum.

## 5G and IoT

5G and IoT momentum drives demand for edge data centers to reduce latency. For example, China Mobile achieved a 19.3 YoY surge in cloud revenue in H1-2024, leveraging 5G-cloud integration.

## Data Sovereignty

Stringent data privacy regulations accelerate regional data center expansion, evidenced by India's data localization policies that underpin burgeoning domestic data center development.



## Cloud Computing Adoption

Cloud leaders (Google, Amazon, Microsoft) expand data centre operations in Asia, with Google committing USD 1 billion in Thailand to address Southeast Asia's escalating market demand.

## Government Initiatives

Governments propel data center advancement to fortify digital economies. Indonesia's Industry 4.0 initiative targets establishing a national data center, aspiring to position as a premier digital economy by 2030.

## Sustainability

Sustainability initiatives propel adoption of energy-efficient data center technologies. Google's 2024 investment in Taiwan renewable energy projects illustrates its commitment to powering data centers sustainably.

# Data centre expansion to shape Digital future in APAC region

## APAC Data centres, H1-2024



### Operational capacity

~12GW

### Capacity under construction

~ 4GW+

### Planning Stage

~ 12 GW+

- Mainland China, Japan, India, Australia, Singapore, and South Korea command over 80% of the region's data center capacity, with Hong Kong and Malaysia emerging as close contenders.
- Japan, India, and Australia are poised for robust expansion, driven by escalated investments from cloud providers and colocation players.
- Leading providers prioritize policy initiatives, leverage targeted incentives, and implement energy efficiency and carbon footprint reduction through innovative technologies.



Globe aims to establish the largest data center in the Philippines by 2025, targeting a total capacity of 124 MW to bolster its market position.



Singtel introduced the Nxera data center brand, concentrating on AI and GPU cluster services to capture untapped opportunities across Southeast Asia.



Rakuten collaborated with Ampere Computing to enhance energy efficiency in AI data center operations, demonstrating a commitment to sustainable practices.



Telkom Indonesia enhanced its digital infrastructure by launching the neuCentrIX Pugeran data center in Yogyakarta, fortifying regional connectivity.

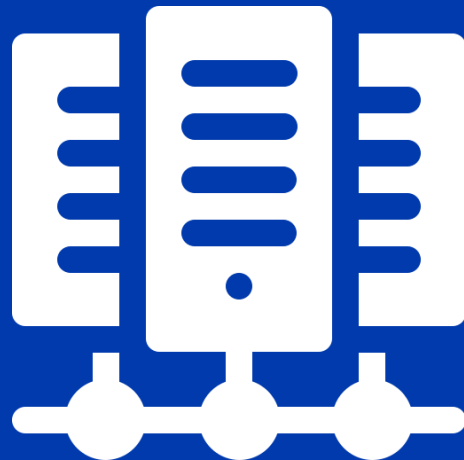


SoftBank plans for a large-scale, AI-driven data center in Osaka, targeting operational readiness by 2025 to address growing AI demands.



KDDI partners to construct Asia's largest AI data center, designed to deliver advanced AI compute platforms, catering to regional demand effectively.

# Telcos embarking data centre journey reckoning the AI led data volume surge



*“As demand for compute increases with the adoption of AI, cloud operators need to look into platforms and solutions to realize more sustainable compute. We have been very encouraged by the results of our trials with Ampere and look forward to continuing our collaboration to realize energy-efficient, sustainable data centers.*”

**Rakuten** **Hironori Yoshida**  
Executive Officer and Vice Director of the  
Cloud Platform Supervisory Department,  
Rakuten





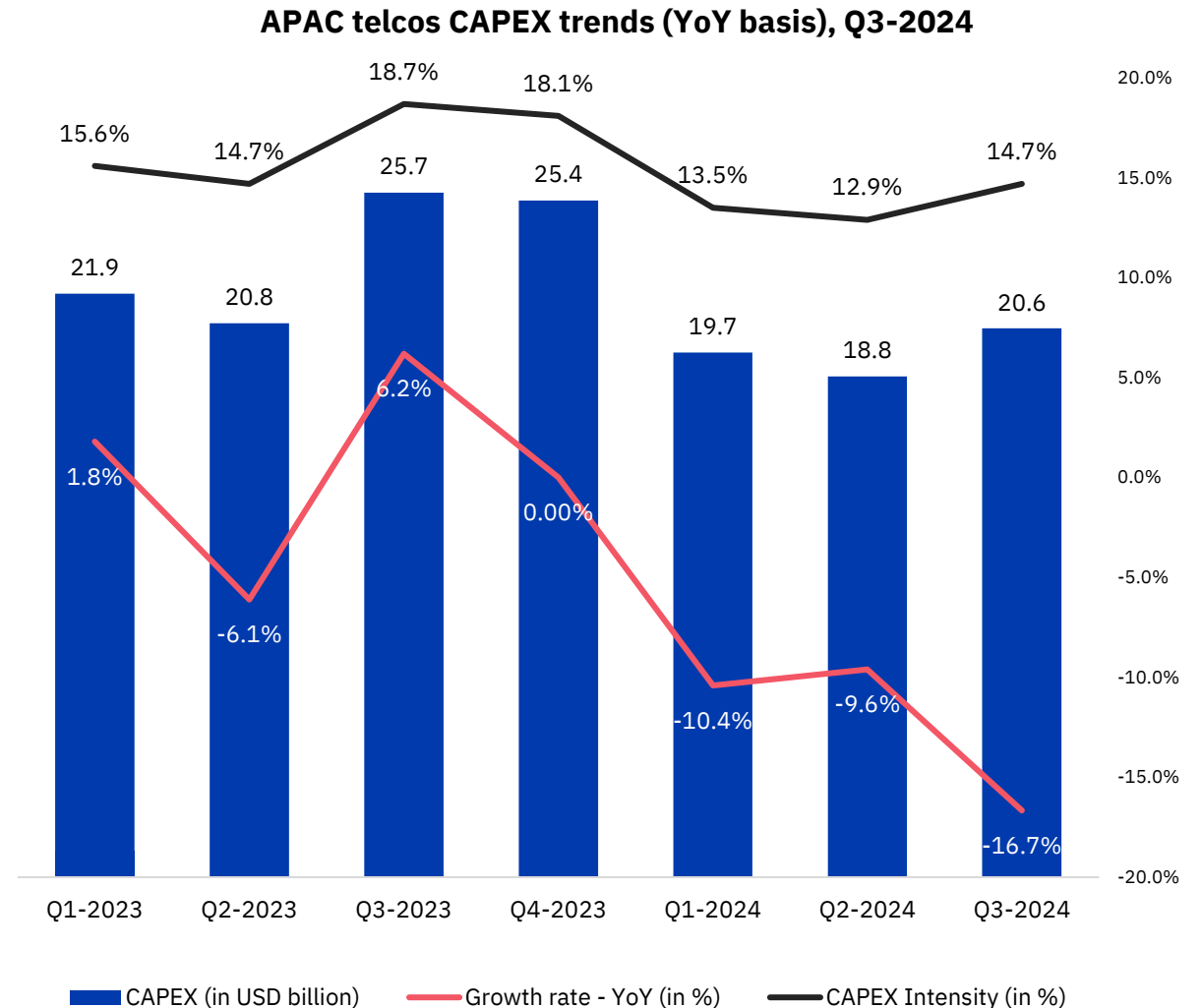
**CAPEX drops as networks mature,  
driving modernization and  
cashflow gains**



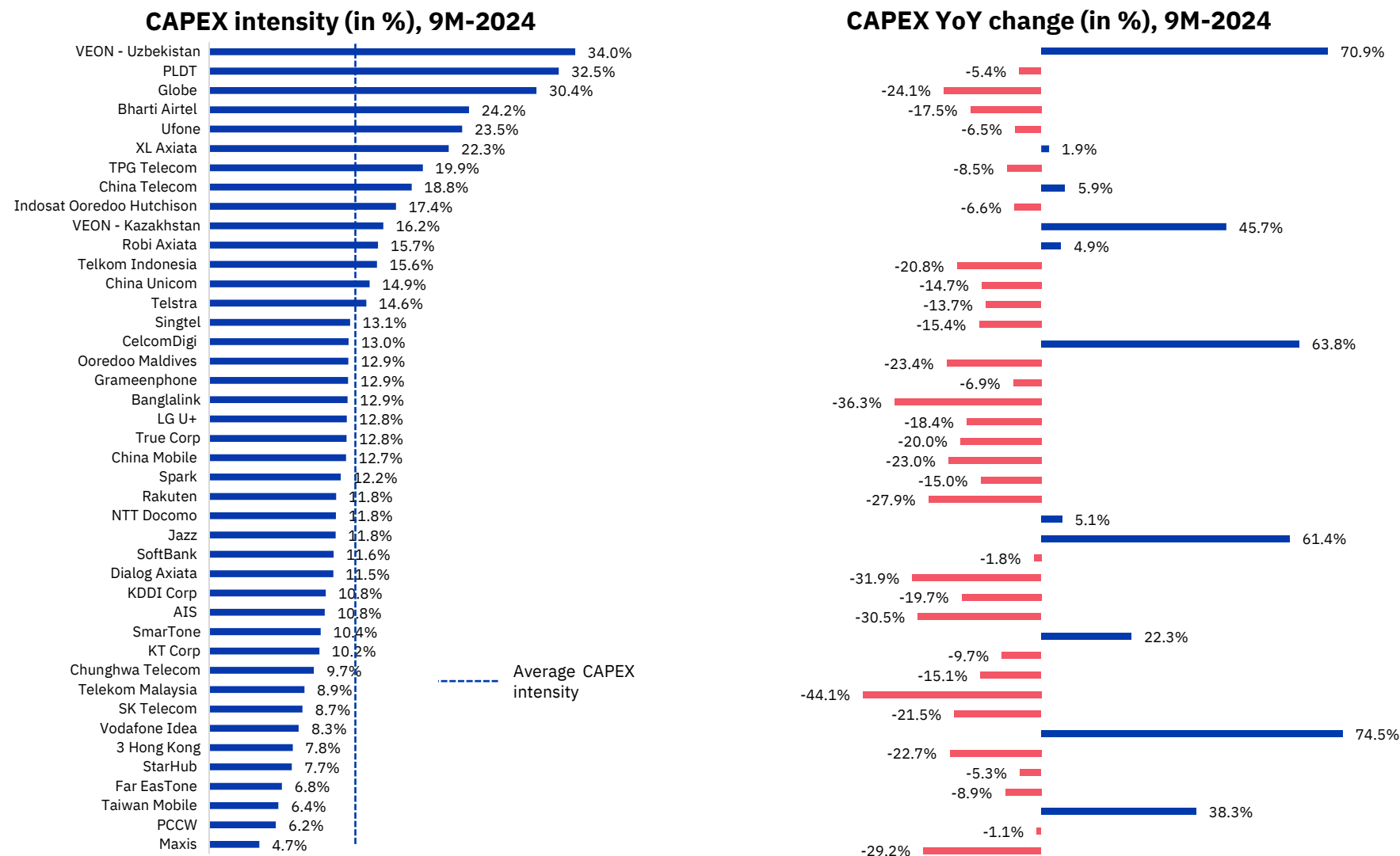


## CAPEX spending slows in 2024

- Telcos demonstrate CAPEX spending deceleration in FY-2024 as 4G and 5G network rollouts mature across major markets.
- Focus shifts to infrastructure modernization, with telcos prioritizing cash flow and profitability, indicating CAPEX stabilization or potential decline in forthcoming years.
- Approximately 74% of analysed telcos report CAPEX reduction from 9M-2023 to 9M-2024, underlining the trend of fiscal prudence.
- Network rollouts drive Vodafone Idea and VEON-Uzbekistan to elevate CAPEX, while CelcomDigi increases CAPEX due to network and IT integration efforts in 9M-2024.
- VEON-Uzbekistan achieves leading CAPEX intensity, registering 34% in 9M-2024, showcasing significant investment in network expansion..



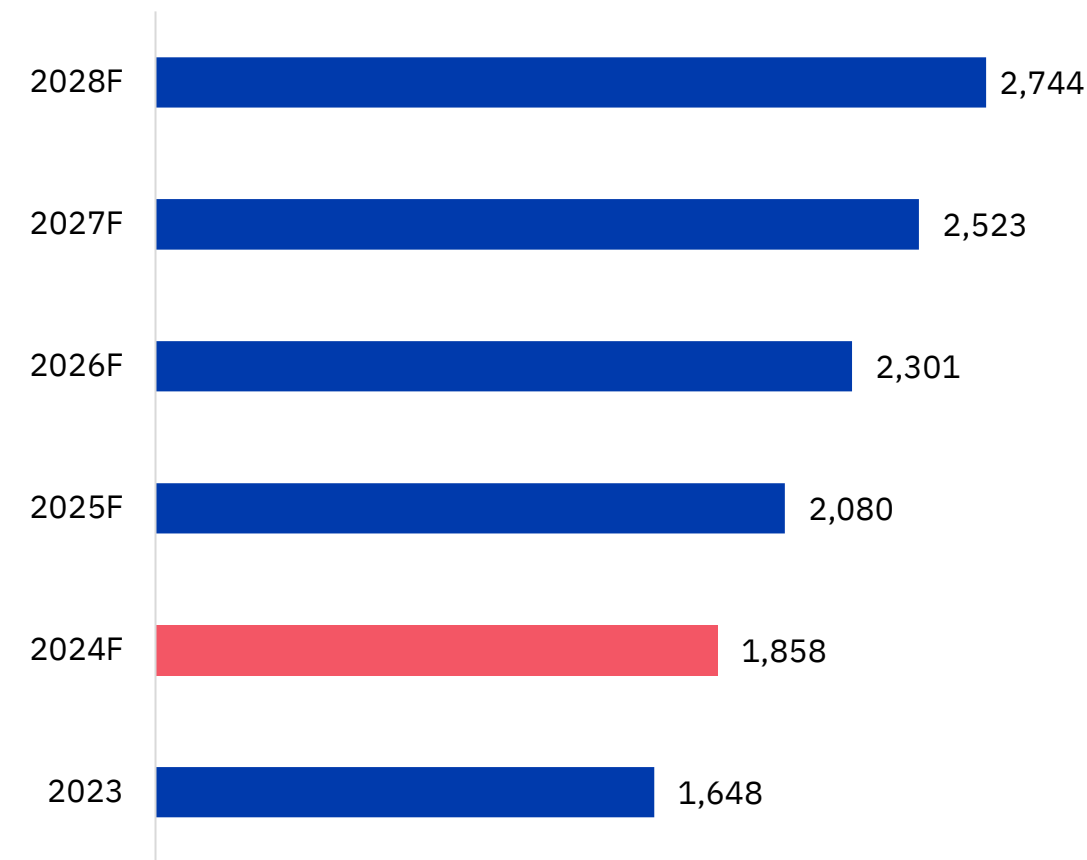
# Industry CAPEX intensity declines to 13.7% in 9M-2024 vs 16.1% in 9M-2023



\* Based on reported financials of 42 APAC telcos; Average of the constant currency conversion rate has been applied to CAPEX of all the quarters; CAPEX estimated China Telecom, China Unicom, China Mobile, PCCW, Spark, StarHub, TPG Telecom, Telstra, SmartTone, 3 Hong Kong  
Source: Telco financials, Industry reporting, Twimbit analysis

# APAC 5G subscriber count to surpass 2.7 billion by 2028

5G mobile subscribers APAC, 2023-2028F  
(in millions)



5G mobile subscriptions expected to grow at a CAGR of around 10% from 2024-2028.

Overall 5G subscriber penetration is estimated to reach 30% by 2028.

Developed markets like Australia, South Korea, Japan, China and Singapore to surpass 70% penetration by 2028.

Network rollout in countries like Indonesia, Malaysia, Uzbekistan will fuel growth in 5G subscribers.

# APAC 5G subscriber count reaches 1.7 billion led by China and India

## 1.7 billion+ 5G subscribers

5G mobile subscribers across countries in APAC (2024)

China	1.2 billion+
India	270 million
Japan	88.9 million
Indonesia	51.2 million
South Korea	36 million
Thailand	26 million
Australia	13.1 million
Taiwan	10.1 million
Singapore	2.5 million
Rest of APAC	6.5 million

Network coverage expansion, increased adoption of 5G, enhanced affordability of devices, and strategic promotional offers propel the expansion of the 5G subscriber base.

Rapid infrastructure expansion during the second wave of 5G deployments, notably in India and Thailand, catalyzes swift adoption rates.

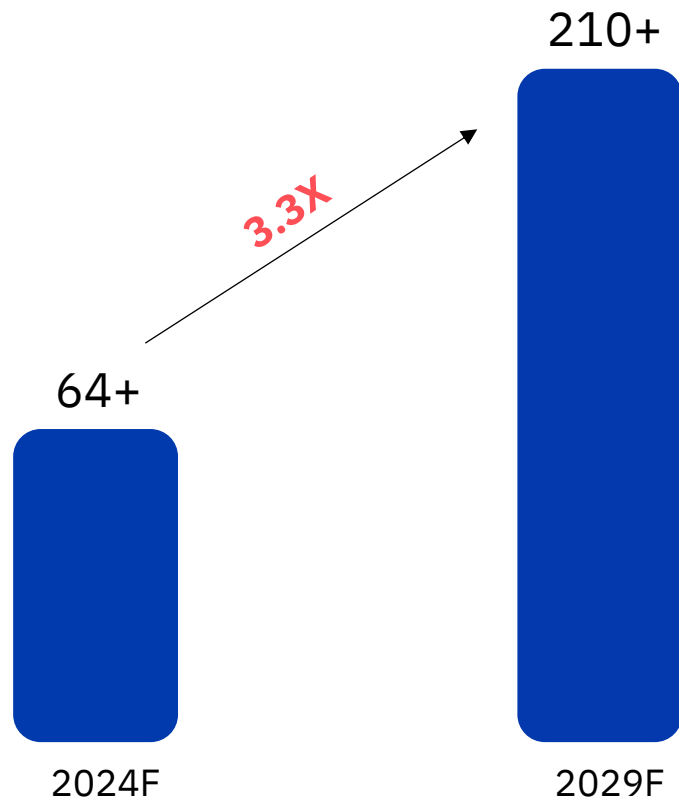
China and India dominate the 5G landscape, commanding over 80% of the region's total 5G subscriptions, demonstrating significant market influence.

Regional CAPEX stabilizes as nearly 74% of telecom operators reduce investments in 4G and 5G infrastructure compared to the previous year, reflecting strategic capital allocation.

The APAC region leads in mobile data consumption, with average usage reaching 24GB per smartphone per month, fueled by 5G users accessing value-added services and premium content.

## 5G FWA gains momentum, subscribers to triple in the next 5 years

**Fixed wireless access connections in APAC ; 2023-2029F  
(in millions)**



Nearly 65% of APAC telcos deliver Fixed Wireless Access (FWA) services, with 66% of these offerings based on 5G technology, highlighting the region's technological sophistication.

APAC's global FWA connection share is expected to exceed 45% by 2029, rising from around 40% in 2024, with frontrunners like China, India, Japan, and South Korea driving momentum.

Emerging markets, particularly India, are set to propel overall growth. India has recorded 3 million 5G FWA connections within a year post-launch, as Jio targets connecting 1 million homes monthly through its AirFiber service expansion.

Southeast Asia anticipates significant FWA growth, with Indonesia, Philippines, and Malaysia poised to spearhead this expansion, presenting substantial market opportunities.

5G advancements, especially in millimeter-wave technology, coupled with regulatory support, will underpin infrastructure development and foster innovation across the region.



# Securing operations and customers' trust in AI era, Cybersecurity powers telco growth





## Cyber breaches and outages continue to haunt APAC telcos



### **Singtel foils Cyberattack by Chinese Hacking group**

- In June 2024, Singtel swiftly detected and eradicated malware associated with Chinese state-sponsored Volt Typhoon, underscoring robust cybersecurity measures.
- Volt Typhoon allegedly orchestrated a global attack on Singtel, targeting telecom and critical infrastructure sectors.
- Singtel discovered the breach following the detection of suspicious traffic and sophisticated malware on a core router, demonstrating vigilant network monitoring.
- By promptly addressing the malware, Singtel ensured no data exfiltration occurred, maintaining service integrity and reinforcing customer trust.



### **NTT Docomo faces Service disruption due to DDoS attack**

- In January 2025, NTT Docomo encountered a distributed denial-of-service (DDoS) attack, resulting in website failure and temporary service disruption.
- The DDoS attack triggered a system glitch at 5:27 am, impairing access to the company website and 'goo' portal for nearly 12 hours, though mobile and communication services remained operational.
- Customers faced challenges with the 'd payment' mobile money service due to network congestion caused by the overwhelming traffic directed at NTT Docomo's servers.

## APAC telcos prioritizes Cybersecurity to tackle evolving threats



Vodafone Idea deployed Nokia NetGuard EDR across its 4G and 5G networks, enabling real-time threat detection and response capabilities.



Airtel Business collaborates with Fortinet to introduce 'Airtel Secure Internet,' delivering comprehensive, fully-managed cybersecurity solutions for enterprises.



Globe Telecom partners with Vectra AI to elevate network security, achieving faster threat response, noise reduction, and reducing escalations effectively.



StarHub launched Cybersecurity Awareness Training Platform powered by Cywareness, empowering employees with skills to thwart phishing attacks.



Dialog Axiata invests in Scybers Inc. through BOV Capital's Digital Innovation Fund, supporting the expansion of global cybersecurity services.



Robi Axiata's subsidiary, Axentec, commences operations in 2024, focusing on advancing services in cybersecurity, AI, and Blockchain.



PLDT and Smart's #BeCyberSmart initiative trains Occidental Mindoro IT officers on cybersecurity, AI risks, and digital safety.



Indosat Ooredoo Hutchison partners with Mastercard to launch a Cybersecurity Center of Excellence in Indonesia, dedicated to education and innovation.



APAC telcos are fortifying cybersecurity through AI, partnerships and strategic investments, safeguarding infrastructure while enabling secure digital transformation and economic growth.

## Industry partnerships are key to combating new-gen cybersecurity challenges



*“Cybersecurity is becoming increasingly complex and many organisations lack the resources to manage it effectively. We have been pioneers in offering inclusive Cyber Secured ILL in the Indian market. With the launch of yet another innovative security solution — ‘Airtel Secure Internet’— we offer a comprehensive, future-proof solution that strengthens enterprises’ security without the burden of high capex.*”



**Sharat Sinha**  
**CEO - Airtel Business**



# Innovation through APIs, RAN, Quantum, and Satellite to fuel future telecom growth



## GSMA Open Gateway drives Network APIs adoption by Asian telcos

### GSMA Open Gateway Initiatives

- **Standardized APIs:** The GSMA Open Gateway pioneers the deployment of standardized APIs via the CAMARA repository, providing consistent, interoperable digital service integration across networks.
- **Developer Empowerment :** The initiative enables developers to unlock advanced network capabilities such as anti-fraud tools and dynamic streaming, enhancing app development and monetization opportunities.
- **Market Opportunity:** With South and Southeast Asia contributing to 20% of global GSMA Open Gateway participation, there lies substantial potential in industrial and enterprise applications in these regions.
- **Regional Collaboration:** Bridge Alliance's API Exchange (BAEx), supported by 13 Asia-Pacific operators, simplifies API deployment and fosters regional digital innovation through collaboration.

APAC telcos Bharti Airtel, Reliance Jio, and Singtel joined a global initiative to advance network APIs, enabling developers to leverage enhanced network features and drive sector-wide digital transformation.

In South Korea, telecom leaders SK Telecom, KT, and LG Uplus pioneer network API adoption, bolstered by the GSMA Open Gateway and Bridge Alliance, enhancing regional enterprise API deployment.

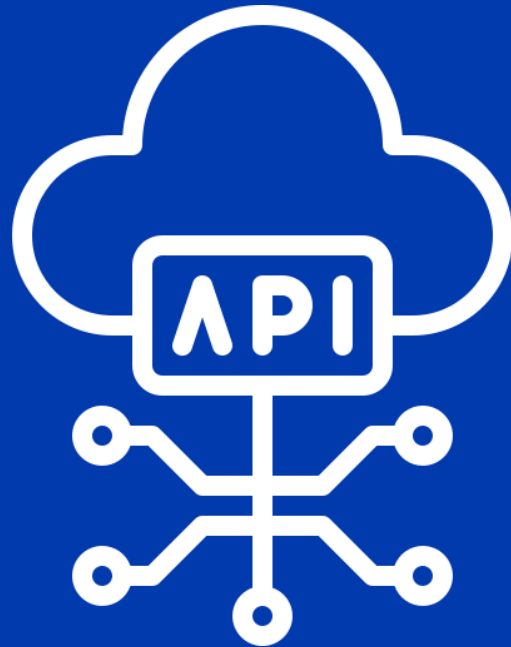
Sri Lanka's four mobile operators launched network APIs under the GSMA Open Gateway initiative, promoting seamless digital services across networks and encouraging global collaboration in the API economy.

PLDT and Smart collaborated on Network APIs to support businesses in optimizing operations, accessing real-time data, and developing superior solutions through strategic industry partnerships.





# API networks ecosystem evolves for a smarter, inclusive future



twimbit

*“As we rapidly adopt an AI and API-driven technology ecosystem—by collaborating with global leaders, Jio is thrilled to offer a suite of innovative and transformative APIs to enterprises and developers worldwide. Together, we are not just building networks; we are laying the foundation for a smarter, more connected, and inclusive world in the AI era.”*



**Mathew Oommen**  
**President, Reliance Jio**





## APAC telcos accelerate Open RAN adoption for 5G and future-proof networks

- Open RAN adoption is accelerating among APAC telecom operators aiming for flexible, cost-effective, and future-ready networks, driving innovation and efficiency.
- Increased investment in 5G network deployment, alongside demand for high-speed and low-latency connectivity, propels telco investments in Open RAN solutions.
- The Asia-Pacific Open RAN market is projected to exceed USD 500 million by FY-2024, with anticipated highest growth over the next five years until 2030, highlighting robust market potential.

### Open RAN initiatives by key APAC telcos



LG Uplus deployed Open RAN at the Kumoh National Institute of Technology campus as part of the Open RAN validation zone initiative.



Bharti Airtel awarded a multi-year, multibillion-dollar contract to Ericsson for the deployment of Open RAN-ready solutions to enhance 4G and 5G networks.



NTT DOCOMO selected AWS for its nationwide 5G Open RAN deployment, joining forces to develop a fully interoperable mobile network.



StarHub conducted Singapore's first Open RAN call on its 5G network in collaboration with NTT DOCOMO, marking a significant milestone for Open RAN adoption.

# Telcos embrace Open RAN to enhance network flexibility and reduce vendor lock-in.



*“With the successful demonstration of our Open RAN, in collaboration with NTT Docomo, we are thrilled to be the first to bring it to market, marking this significant milestone for StarHub and Singapore.”*



**Ayush Sharma**  
StarHub CTO



## Asian Telcos drive Quantum Tech adoption and innovation

- The United Nations designated 2025 as the International Year of Quantum Science and Technology, highlighting global advancements in quantum technologies.
- Asian telcos continue to lead the deployment of quantum-safe networks, a transformative breakthrough set to revolutionize security across multiple industries.
- Singapore, China, and Japan lead efforts in quantum-safe communication, post-quantum cryptography, and quantum-driven optimization for diverse sectors.
- The Indian government committed USD 730 million to establish itself as a global quantum powerhouse by 2031, driven by the National Quantum Mission aiming to develop scalable quantum computers within eight years.



Singtel launched Southeast Asia's first National Quantum-Safe Network Plus (NQSN+), partnering with Palo Alto Networks and Fortinet to shield enterprises from quantum computing threats.



KT collaborated with Toshiba Digital Solutions to implement hybrid quantum secure communications at Shinhan Bank, utilizing quantum key distribution and post-quantum cryptography to safeguard financial networks.

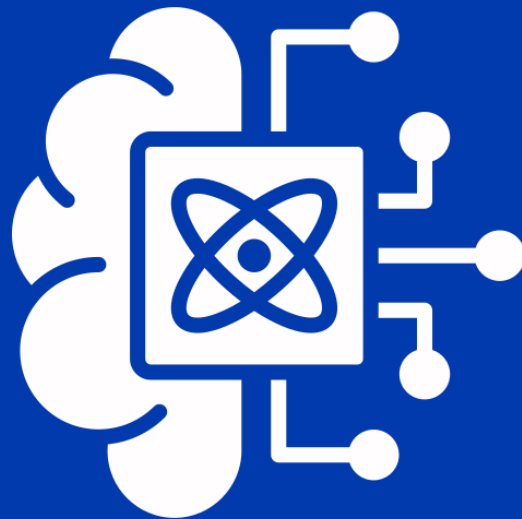


China Telecom plans to invest USD 265 million in QuantumCTek, supporting the advancement of quantum communications and secure networks, enhancing China Telecom's influence in the quantum sector.



NEC Japan, in partnership with Mitsui and Quantinuum, successfully demonstrated the issuance and redemption of unforgeable quantum tokens using quantum key distribution (QKD) for secure communications.

# Telcos embrace quantum computing for enhanced security and performance in future networks.



*“Though quantum computing may be in its nascent stages, it’s fast gaining velocity across critical information sectors, especially banking, healthcare and government services, and we want to ensure Singapore is ready for it. That’s why we specially-curated this programme to equip enterprises with the relevant skills and knowledge so they can take the necessary steps to future-proof their critical networks against potential quantum threats.*”



**Ng Tian Chong**  
CEO, Singtel Singapore



## Satellite Internet expands in Asia-Pacific through strategic telco alliances



**2024: 1 million+**  
Satellite broadband subscribers

### Satellite telecoms: untapped frontier drives growth

- The entry of players like SpaceX's Starlink into the APAC market intensifies competition, with Starlink outperforming traditional providers like NBN's Sky Muster in Australia in terms of speed and reliability, shifting consumer preferences.
- In India, the government's administrative allocation of satellite spectrum paves the way for companies like Starlink to offer services, potentially sparking a price war with entrenched telecom operators such as Reliance Jio.
- Malaysia, Indonesia, and the Philippines plan to collaborate with Starlink to launch satellite-based internet services in 2025, positioning these countries to enhance connectivity infrastructure.



KDDI, collaborating with SpaceX's Starlink, successfully demonstrated Direct to Cell services in Okinawa, allowing "au" smartphones to send SMS beyond terrestrial coverage via satellite connectivity.



As a Starlink reseller, Optus provides high-speed, low-latency satellite internet in Australia, offering prioritized data and full support, ensuring reliable connectivity especially for businesses in remote areas.



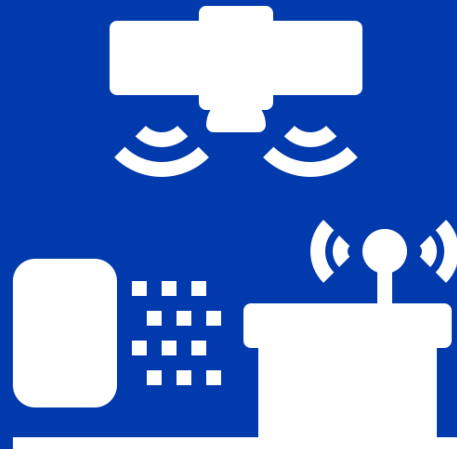
Reliance Jio Platforms' JV with SES secures IN-SPACE approval to operate satellites through Orbit Connect India, delivering high-speed internet and positioning to compete with Starlink and Amazon in India's satellite market.



LG Uplus partners with SpaceX to launch Starlink in South Korea, leveraging LEO satellites to enhance internet connectivity and address existing coverage gaps effectively.



# Telco's pursuing strategic partnership for launching satellite services



twimbit

*“Optus’ Satellite Internet for Business is a key form of redundancy offering an always-on back up safeguard against fire, floods, natural disasters.*”

**OPTUS**

**Ben Vella**  
**VP - Enterprise and Mid-Market, Optus**







Innovate to deliver  
**exceptional experiences**

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