Why device connectivity depends on network settings?

Networks and Devices Market Update: Key Trends and Drivers

Pablo Iacopino
Head of Research and Commercial Content

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Mobile industry is transforming faster than ever before

Growth and evolution of mobile devices and networks are at the heart

Proliferation of connected devices

New networks and capabilities

- Handsets
- Tablets and laptops
- Consumer IoT devices
- XR devices
- 5G FWA CPE
- Connected vehicles
- Enterprise IoT devices and machines

- 5G mobile networks
- 5G FWA networks
- IoT networks
- Private networks
- Network sunsets (2G, 3G)
- VoLTE and Vo5G
- ViLTE and Vi5G
- eSIM and iSIM
- Satellite

Network settings are essential to help OEMs, MNOs and MVNOs deliver a fast, complete and seamless user experience
Consumers going digital is a major force driving change. Network settings ensure consumers get the most from digital services.

### Smartphone is the leading central platform
- **More and more subscriptions to digital services**
- **Smooth and full control (via apps)**
- **5G raises the bar**

### Consumer interest in adding non-connectivity offerings to their mobile subscriptions

<table>
<thead>
<tr>
<th>Service</th>
<th>5G users</th>
<th>Difference compared to 4G users (pp)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video streaming</td>
<td>62%</td>
<td>+17</td>
</tr>
<tr>
<td>Music streaming</td>
<td>56%</td>
<td>+15</td>
</tr>
<tr>
<td>Live sports</td>
<td>39%</td>
<td>+14</td>
</tr>
<tr>
<td>Gaming</td>
<td>39%</td>
<td>+16</td>
</tr>
<tr>
<td>Cloud storage</td>
<td>56%</td>
<td>+14</td>
</tr>
<tr>
<td>Digital security</td>
<td>55%</td>
<td>+13</td>
</tr>
<tr>
<td>Wearables</td>
<td>52%</td>
<td>+17</td>
</tr>
<tr>
<td><strong>Devices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smart home</td>
<td>46%</td>
<td>+15</td>
</tr>
<tr>
<td>Entertainment</td>
<td>44%</td>
<td>+18</td>
</tr>
</tbody>
</table>

### Key findings from our global consumer survey

- **Bundling**: 5G subscribers are more interested in adding non-connectivity offerings to their mobile subscription contracts.
- **Content**: 5G subscribers make greater use of digital entertainment services (e.g. video, gaming) on their smartphones.

Source: GSMA Intelligence Consumers in Focus Survey. Aggregate figures for the eight markets analysed (China, France, Germany, Italy, Japan, South Korea, UK and USA).
As of 31st March 2023, operators have launched mobile 5G services in 228 countries worldwide. Additionally, 62 operators have announced plans to launch mobile 5G services. 5G commercialisation keeps growing, as 5G is now a global trend.

### Live commercial 5G network
- **Europe**
  - Albania
  - Andorra
  - Austria
  - Belgium
  - Bosnia and Herzegovina
  - Bulgaria
  - Croatia
  - Cyprus
  - Czechia
  - Denmark
  - Estonia
  - Finland
  - France
  - Germany
  - Gibraltar
  - Greece
  - Hungary
  - Iceland
  - Ireland
  - Italy
  - Latvia
  - Lithuania
  - Luxembourg
  - Malta
  - Monaco
  - Montenegro
  - North Macedonia
  - Norway
  - Poland
  - Portugal
  - Romania
  - Serbia
  - Slovakia
  - Slovenia
  - Switzerland
  - Sweden
  - South Korea
  - Taiwan
  - Thailand
  - Vietnam

- **North America**
  - Canada
  - US

- **Latin America**
  - Argentina
  - Aruba
  - Brazil
  - Chile
  - Colombia
  - Costa Rica
  - Dominican Republic
  - Guatemala
  - Guyana
  - Mexico
  - Peru
  - Puerto Rico
  - Suriname
  - Tristan and Tobago
  - Uruguay
  - Virgin Islands, US

- **Sub-Saharan Africa**
  - Angola
  - Benin
  - Botswana
  - Côte d’Ivoire
  - Ethiopia
  - Ghana
  - Kenya
  - Lesotho
  - Madagascar
  - Mauritius
  - Mozambique
  - Nigeria
  - Réunion
  - Senegal
  - Seychelles
  - South Africa
  - Tanzania
  - Togo
  - Zambia
  - Zimbabwe

- **CIS**
  - Azerbaijan
  - Russia
  - Tajikistan
  - Uzbekistan

- **Asia Pacific**
  - Australia
  - Bangladesh
  - Bhutan
  - Cambodia
  - China
  - Guam
  - Hong Kong
  - India
  - Indonesia
  - Japan
  - Laos
  - Macao
  - Malaysia
  - Maldives
  - Myanmar
  - Nepal
  - New Zealand
  - Northern Mariana Islands
  - Philippines
  - Singapore
  - South Korea
  - Sri Lanka
  - Taiwan
  - Thailand
  - Vietnam

- **MENA**
  - Bahrain
  - Iran
  - Israel
  - Jordan
  - Kuwait
  - Libya
  - Oman
  - Qatar
  - Saudi Arabia
  - Tunisia
  - Türkiye
  - UAE

Source: GSMA Intelligence.
Global 5G connections
Billion*

Major industry milestone in 2022:
1 billion 5G connections

5G adoption is faster than that of previous networks
Scaling beyond the first 1 billion

5G share of mobile connections
Globally*

Source: GSMA Intelligence. * Excluding 5G FWA connections and 5G IoT cellular connections.
The arrival of 5G has accelerated network sunsets
3G shutdowns are more popular than 2G shutdowns

2G and 3G network sunsets (globally)

Completed and planned sunsets, by region (2015–2025)

Source: GSMA Intelligence.
5G and network sunsets are driving VoLTE/Vo5G up
Voice and video going over 4G and 5G

Number of countries providing VoLTE service (including Vo5G) – Globally

Number of MNOs providing VoLTE service (including Vo5G) – Globally

Number of VoLTE connections (including Vo5G) – Globally, billion

COUNTRIES | MNOs | CONNECTIONS
---|---|---
2022: 120 | 2022: 299 | 2022: 3.7
2025: 151 | 2025: 386 | 2025: 70%
2028: 174 | 2028: 478 | 2028: 76%

VoLTE connections as % of 4G+5G connections

Source: GSMA Intelligence.
**eSIM is now mainstream…and global**

*Momentum is accelerating: eSIM-only smartphones a major milestone*

**Commercial availability of eSIM service for smartphones**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 2018</td>
<td>24</td>
</tr>
<tr>
<td>Dec. 2019</td>
<td>45</td>
</tr>
<tr>
<td>Dec. 2020</td>
<td>69</td>
</tr>
<tr>
<td>Dec. 2021</td>
<td>82</td>
</tr>
<tr>
<td>Jun. 2022</td>
<td>88</td>
</tr>
<tr>
<td>Dec. 2022</td>
<td>102</td>
</tr>
</tbody>
</table>

**Number of mobile service providers (MNOs and MVNOs) offering commercial eSIM service for smartphones**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Providers</th>
</tr>
</thead>
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<td>Dec. 2018</td>
<td>45</td>
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<tr>
<td>Dec. 2019</td>
<td>103</td>
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<tr>
<td>Dec. 2020</td>
<td>175</td>
</tr>
<tr>
<td>Dec. 2021</td>
<td>232</td>
</tr>
<tr>
<td>Jun. 2022</td>
<td>261</td>
</tr>
<tr>
<td>Dec. 2022</td>
<td>343</td>
</tr>
</tbody>
</table>

**eSIM-only effect:** eSIM commercialisation has accelerated after the launch of eSIM-only iPhones in the US in Sept. 2022

Source: GSMA Intelligence.
eSIM adoption in the smartphone market: forecast to 2030
The march towards mainstream

eSIM smartphone connections to 2030
Percentage of total smartphone connections (installed base) globally

- **Low adoption scenario**
- **Baseline scenario**
- **High adoption scenario**

**Key milestones: Baseline scenario (globally)**

- **1 billion** eSIM smartphone connections by 2025
- By 2028, **half** of smartphone connections will use eSIM
- North America will be leading by far (**eSIM-only effect**). Europe follows

**eSIM smartphone connections (2030)**
- **88%** 8.0 bn
- **76%** 6.9 bn
- **61%** 5.6 bn

Source: GSMA Intelligence.
Global IoT connections
Billion, globally

- Enterprise driving IoT growth: across all vertical sectors
- Consumer trends: smart home drives growth. Smartwatches overtaking fitness trackers
- Cellular on the rise: nearly 6 billion licensed cellular IoT connections by 2030

Source: GSMA Intelligence.
Momentum for private networks is accelerating
Boosting the number of networks and devices

Enterprise demands for Private Networks

22% of enterprises deploying or planning to deploy IoT solutions require location-specific network coverage (i.e. a factory or campus)

of which 88% have invested or are likely to invest in a private network for that location

Trends in Private Networks deployments

• Network vendors and operators are the main contractors so far…but new players are emerging

• 4G was the leading network tech in the early days; 5G is now taking the lead

• Industrial sectors lead…but there are deployments in all sectors of the economy

Source: GSMA Intelligence Global Enterprise Survey (~2800 enterprises across most vertical industries in 18 countries).
THANK YOU!

Pablo Iacopino
Head of Research and Commercial Content
piacopino@gsma.com