VoLTE: 5G will provide the long-awaited boost

INSIGHT SPOTLIGHT

Voice-over-LTE (VoLTE) technology has been available for nearly 10 years. However, only around 30% of the mobile operators that have launched 4G have also deployed commercial VoLTE services. This is set to change, as the shutdown of 2G/3G networks and, more importantly, the rollout of 5G will boost the pace of VoLTE launches over the next five years.

This will drive VoLTE customer adoption and data traffic, as well as VoLTE roaming agreements, as the industry seeks globally interoperable voice and communication services. The renewed momentum for VoLTE provides an opportunity to assess the future outlook for VoLTE around the world, the impact of 5G and the implications for key industry stakeholders.

Analysis

Momentum for VoLTE will accelerate

Over 200 mobile operators currently provide commercial VoLTE services to their customers across approximately 100 countries. Operators in South Korea were the first to launch services in 2012, followed by those in the US and Japan in 2014. European operators began their VoLTE journey in 2015, while the three Chinese operators launched between 2015 and 2018. In recent years, VoLTE has made significant progress across all regions – but approximately 70% of operators that have launched 4G services still haven't launched VoLTE.

Several factors will accelerate the pace of VoLTE launches over the next five years. Limited support among smartphones was once a major hindrance to VoLTE progress, but most 4G smartphones today support VoLTE, according to the GSMA's TAC database. VoLTE is also increasingly available in devices beyond smartphones, including IoT devices (e.g. wearables, cameras and smart speakers).

Operators continue to enhance and optimise their VoLTE networks to capture benefits in terms of operations, spectrum efficiency and communications quality, including video over LTE (ViLTE). The shutdown of 2G and 3G networks will play a role in driving VoLTE launches and roaming agreements, as circuit-switched fallback (CSFB) technology will not work without 2G and 3G networks. The pace of shutdowns is likely to accelerate as operators seek to optimise their network operations and costs and refarm the spectrum for 4G and 5G. Over 60 mobile operators around the world have announced their plans to switch off their 2G/3G networks between 2021 and 2025, and more will join them over the next few years.

5G is a VoLTE game-changer

VoLTE is more than just a 4G technology. The future of operator-provided voice services relies on IMS technology as the only standardised solution, as there is no CSFB of voice from 5G. Therefore, IMS technology will support both VoLTE and voice over 5G (Vo5G). Various 5G devices support VoLTE and trials of Vo5G have been conducted.

5G network rollout will boost VoLTE launches over the next five years and allow the launch of Vo5G services. For both standalone and non-standalone 5G, VoLTE will be key to enabling the optimal user experience in the 5G era; poor VoLTE network performance or low VoLTE penetration may result in slower 5G adoption. Having a technology that allows consumers to play online games or watch videos while making calls will enhance the user experience and improve customer satisfaction.

Reaching 5 billion connections by 2025

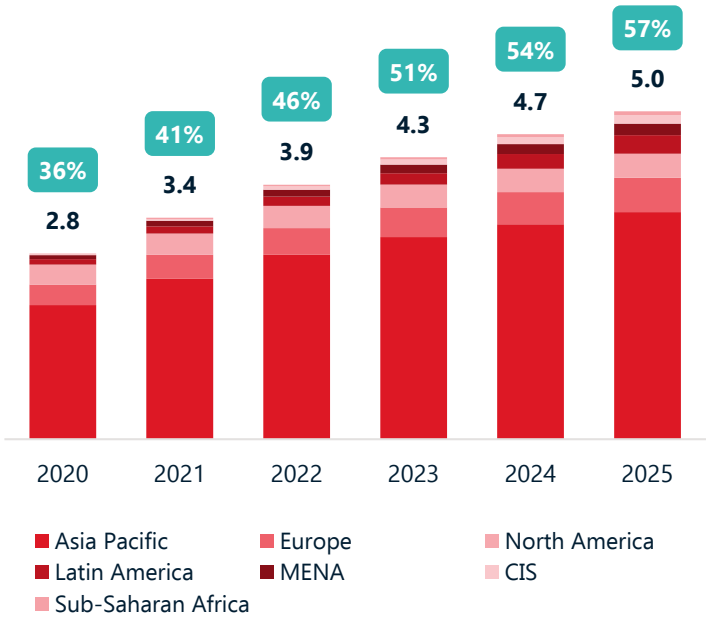
Predicting future VoLTE launches is a complex task: every factor mentioned above will play a role, sometimes with different timelines. GSMA Intelligence's forecast uses a unique methodology assessing VoLTE launch probability based on the following factors: 4G adoption and network coverage; smartphone penetration; contract/postpaid penetration; 5G launches and adoption; and consumer spend (on mobile devices and services). We forecast that there will be nearly 400 operators offering commercial VoLTE services by the end of 2025.

As this number grows, so too will the number of global VoLTE connections. Together, VoLTE and Vo5G will reach more than 5 billion connections globally by 2025, up from 2.2 billion in 2019. This will represent nearly 60% of mobile connections (excluding licensed cellular IoT), compared to around 30% in 2019. China will be the largest market with 1.7 billion connections, while North America and Europe will have about 370 and 520 million connections respectively. VoLTE penetration among 4G and 5G connections will reach around 75% by 2025.

Source: GSMA Intelligence

VoLTE/Vo5G will account for nearly 60% of mobile connections in 2025

VoLTE/Vo5G connections (billion) and penetration (% of total mobile connections excluding licensed cellular IoT)



Implications

Mobile operators

- **Plan your VoLTE timeline** – Operators that have yet to establish a timeline for rolling out commercial VoLTE services need to do this soon. VoLTE plans will be driven by 5G rollouts, 2G/3G sunset strategies, and the radio and energy efficiencies of moving voice to LTE. These plans, however, will need to take into account myriad requirements in the core network, radio network, device portfolio and roaming relations – none of which will be simple or materialise overnight. As VoLTE underpins 5G voice strategies, operators should consider VoLTE deployments ahead of their 5G rollouts. Doing so two years in advance could prove beneficial: one year for deploying and optimising VoLTE networks and another year for commercial VoLTE services.
- **Don't forget coverage** – As much as the core network, device portfolio and roaming relations will be crucial to getting VoLTE right, operators cannot afford to ignore a more fundamental requirement: coverage. Without broad and consistent LTE coverage, users will continue to have their voice traffic pushed back to 2G and 3G networks, which will cause service quality and network efficiency to suffer. Of particular importance will be ensuring sufficient uplink capacity.
- **Think beyond 4G** – Fundamentally, VoLTE enables operators to migrate their circuit-switched voice infrastructure to a fully IP-centric solution. As such, it will underpin 5G voice strategies. Any proposed investment in VoLTE, then, needs to be positioned as more than just a 4G investment. New VoLTE investments need to be justified as a future-proofing exercise, looking towards 5G in the medium term and taking advantage of innovations in terms of cloud-native and virtualised core network assets.

Network vendors and device manufacturers

- **Promote VoLTE as a cloud add-on** – The fact that only around 30% of operators with LTE have launched commercial VoLTE services so far indicates that the move to VoLTE has been seen as either too costly or simply not worth the investment. In order to fuel momentum for VoLTE deployment, network infrastructure vendors should position the technology as a simple, incremental component of any cloud migrations, which allows for simpler capacity scaling and 'pay as you grow' deployment models that would otherwise be unavailable.
- **Don't skimp on VoLTE because of DSS** – Network infrastructure vendors need to be careful of dynamic spectrum sharing (DSS) investments being used to justify a limited commitment to VoLTE. Where DSS solutions allow operators to maintain 2G/3G services while migrating spectrum to support 4G at the same time, they obviate the need for VoLTE. But this will only prolong the maintenance of legacy 2G/3G voice infrastructure. To this end, DSS needs to be positioned in terms of scaling next-generation technologies as opposed to propping up legacy technologies, and cost savings from a lack of VoLTE investment should not be taken into account.
- **Support VoLTE in 5G devices** – In an effort to scale 5G services, operators have been eager to see 5G device prices kept in check and within the reach of the majority of consumers (not just early adopters). Cutting corners on VoLTE support (i.e. 5G devices not supporting VoLTE) could be seen by device manufacturers as one way to accomplish this. However, this would be short-sighted, particularly as operators are considering how VoLTE investments will support future communications services.

Related reading

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