

The number of 5G networks worldwide increased in 2020 despite the effects of the COVID-19 pandemic

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The number of 5G deployments worldwide has grown considerably since 2019: in 2020, nearly 100 5G networks were launched, and the number of live 5G networks reached 142, up by 223% from the previous year.¹

Western Europe (WE), Central and Eastern Europe (CEE) and developed Asia-Pacific (DVAP) have had the largest number of 5G launches worldwide during 2020. At the end of December 2020, the number of 5G live networks in these three regions reached 110 (compared with 37 in 2019).

More specifically, MNOs in 23 of the 27 European Union (EU) member states launched 5G networks. Cyprus, Lithuania, Malta and Portugal are the only countries in the EU that have not launched 5G services as of December 2020.

In the DVAP region, three Japanese mobile network operators (MNOs), KDDI, NTT Docomo and SoftBank, launched commercial 5G services in 1Q 2020 –ahead of their originally planned roll-outs for July to coincide with the 2020 Tokyo Olympics. In addition, Rakuten, the new Japanese entrant, launched its 5G services in September 2020. In Hong Kong, 5G services were launched by the three major operators, CMHK, HKT and Hutchison 3 in April 2020 while the smallest MNO, SmarTone, launched commercial 5G services in May 2020.

Countries such as China, South Korea and the USA launched their 5G networks far before other countries, which puts this group of countries in a leading position in terms of 5G deployment and 5G subscriber take-up. However, other regions that initially lagged behind in 2019 deployed live networks in 2020. The first of these launches was in Africa (specifically in South Africa and Togo) and Latin America (launched in selected cities in Brazil).

Many MNOs' 5G roll-out plans went ahead despite delays in spectrum auctions

The substantial increase in the number of 5G launches worldwide was driven by the accelerated commercial availability of 5G handsets, by the availability of 5G-suitable spectrum and by MNOs' strong commitment to launching 5G, despite the challenges associated with the COVID-19 pandemic.

In fact, many MNOs managed to reschedule the timing of their 5G launches for before the end of 2020, despite the announced delays to the release of 5G spectrum as a result of the COVID-19 pandemic.

Few MNOs have chosen to launch 5G networks before the conclusion of local spectrum auctions, opting instead to offer services using their existing spectrum holdings (through technologies such as DSS) or temporarily allocated spectrum.

¹ For more information, see Analysis Mason's [5G deployment tracker 1H 2021](#).

In Poland, for example, the planned sale of C-band licences was postponed to 1Q 2021, but this did not prevent MNOs from rolling out 5G using existing spectrum. A similar scenario emerged in Sweden, where 5G was launched prior to the delayed auction of 2.3GHz and 3.5GHz licences in January 2021.

In South Africa, the date of the spectrum auction was postponed by the regulator ICASA until 1Q 2021. However, in April 2020, ICASA assigned three MNOs (MTN, Raid and Vodacom) temporary spectrum in response to the emergency caused by the pandemic in order to launch 5G networks.²

Some MNOs that postponed their 5G commercial launches because of a lack of spectrum have now managed to switch their 5G networks live because spectrum became available. For example, MNOs in France announced their initial 5G deployments in November and December 2020, immediately after the delayed mid-band 5G auction was completed in October 2020. Similarly, the three MNOs in Greece launched their 5G networks once the multi-band 5G auction in Greece ended on 16 December 2020.³

5G networks will be migrated to standalone architecture in the next few years as MNOs seek revenue opportunities

To remain competitive, the majority of MNOs have deployed 5G using non-standalone (NSA) architecture, which works with the existing LTE core. This has enabled MNOs to fast-track their 5G launches while preparing for new and complex use cases such as virtual reality (VR), augmented reality (AR) and other B2B services. However, to deliver advanced 5G use cases such as ultra-low-latency applications, network slicing and edge computing, MNOs must deploy standalone (SA) architecture.

As the 5G market matures, MNOs will move towards SA architecture deployments because of the need to monetise 5G investments and improve the 5G business case. Since the start of 2021, many MNOs have started to promote their SA initiatives. These include the following announcements.

- T-Mobile announced its nationwide SA deployment in USA in August 2020
- Vodafone partnered with Ericsson to deploy 5G standalone network in Germany
- Rakuten expects to launch an SA 5G network in Japan in 2021
- M1 is partnering with Nokia to deploy 5G SA network in Singapore in 2021.

However, there will be risks involved in the migration to a new architecture, such as disruption to existing services, as operators switch to the new 5G core. To fully benefit from the new architecture, MNOs will need to reskill their staff, create new operational processes and prepare themselves for the technical challenges related to the migration to a radically different cloud-based architecture.

² Spectrum was assigned in the 700MHz, 800MHz, 2300MHz, 2600MHz and 3500MHz bands. In November 2020 ICASA extended the validity period of the temporary assignment of radio frequency spectrum until 31 March 2021, instead of the original date within which the temporary spectrum was supposed to be returned (30 November 2020). However, MNOs that wished to continue using the temporary spectrum for the extended period were required to pay radio frequency spectrum licence fees. The use of the spectrum was free of charge previous to this announcement being made in November 2020.

³ The launch of Cosmote's 5G network was announced on the 17 December 2020, Wind Hellas announced the launch of its 5G network on 18 December, only a few days after the auction was concluded. The third operator, Vodafone Greece, launched its 5G network in January 2021.