

Summary

Executive summary

Berg Insight estimates that the global number of cellular IoT subscribers increased by 70 percent during 2018 to reach 1.21 billion at the end of the year – corresponding to around 13 percent of all mobile subscribers. Until 2023, the number of cellular IoT subscribers is forecasted to grow at a compound annual growth rate (CAGR) of 49.4 percent to reach 9.03 billion at the end of the period. During the same period, cellular IoT network revenues are forecasted to grow at a compound annual growth rate (CAGR) of 34.4 percent from € 6.7 billion in 2018 to approximately € 29.4 billion in 2023. Meanwhile the monthly ARPU is expected to drop to € 0.27.

East Asia was the largest region with 848.0 million IoT subscribers at the end of 2018, far ahead of Western Europe and North America with 157.6 million and 111.7 million respectively. Altogether the main regions accounted for over 95 percent of the global installed base. Latin America, South Asia, Southeast Asia and Russia & CIS had in the range of 19–32 million M2M subscribers each, while Africa, Central Eastern Europe, and Australia & Oceania were in the span 7–19 million.

China is the world's largest market for cellular IoT connectivity services by volume. According to operator subscriber data, the installed base grew by 124 percent year-on-year to reach 767 million at the end of 2018. This corresponded to 63 percent of the global installed base. The spectacular numbers reported by the domestic mobile operators leave no doubt that China is leading the global adoption of massive IoT. The country has surpassed Europe and North America in terms of penetration rate – 54.7 IoT connections per 100 inhabitants at the end of 2018 – and is on track to reach 1 billion IoT connections during 2019. The Chinese government is actively driving adoption as a tool for achieving domestic and economic policy goals, at the same time as the private sector implements IoT technology to improve efficiency and drive innovation. Berg Insight believes that the role of the government is the main explanation for why China is ahead of the rest of the world in the adoption of IoT. Like other

advanced economies, the country has widespread adoption of connected cars, fleet management, smart metering, asset monitoring and other traditional applications for cellular IoT. It has also given rise to new consumer services enabled by connectivity like bike sharing. The most distinctive characteristic of the Chinese IoT market is however the way that the government is systematically using new technology to implement its vision for urban life in the 21st century.

China Mobile is the world's largest provider of cellular IoT connectivity. At the end of 2018, the operator reported 551 million IoT connections and a year-on-year growth rate of 141 percent. China Unicom and China Telecom ranked second and third with 110 million and 106 million connections respectively. Vodafone ranked first among the Western operators and fourth overall with 81 million connections, followed by AT&T in fifth place with 51 million. Verizon, Deutsche Telekom and Telefónica had in the range 25–35 million cellular IoT connections. Softbank/Sprint and Telenor were the last players in the top ten with 21 million and 17 million connections respectively. Year-on-year growth rates for the mentioned operators were in the span 20–35 percent, except for Softbank/Sprint that only grew 3 percent.

IoT connectivity revenues are growing at a considerably slower rate than the number of connections. Berg Insight's analysis of the IoT business KPIs released by mobile operators in different parts of the world suggests that global IoT revenues increased by around 19 percent during 2018, while the monthly ARPU dropped by 30 percent. Excluding China, the trend was less dramatic with revenues growing by 16 percent and ARPU declining 7 percent. Indeed, there is a negative correlation between growth in connections and monthly ARPU as the bulk of net additions are cost sensitive devices.

Verizon reported the highest IoT revenues of € 1.4 billion (US\$ 1.6 billion) in 2018 and the highest monthly ARPU of an estimated € 3.65. Around 60 percent of sales derived from the Verizon Connect fleet management and telematics business. China Mobile ranked second with yearly IoT sales of € 964 million but had the lowest monthly ARPU of just € 0.21. Vodafone and AT&T were not far behind. Annual IoT revenues for the Vodafone group in 2018 were approximately € 830 million, with a monthly ARPU of € 0.82. AT&T does not report IoT revenues but is believed to have generated approximately € 750–800 million.