

Q&A Breakout Session A: Update on IoT Connectivity

Q: Has KPN solved issues with permanent roaming in Canada and USA?

A: Allowing permanent roaming or not is up to the operators in that specific country. We work in close collaboration with other Telco organizations to see what we can offer. If you have any specific needs please let us know and we can discuss further possibilities.

Q: If there are 20 roaming agreements for LTE-M, does that mean that 20 countries are already covered? And if so, which ones?

A: With 20 operators, we cover 17 countries; we have roaming agreements with two operators in Belgium, Germany and Sweden respectively. More information on LTE-M roaming can be found on <https://m2m.kpn.com/en/connectivity/lte-m> and on the IoT Service Portal in the LTE-M Networks Document.

The list of countries we currently hold roaming agreements with:

- Australia
- Austria
- Belgium (2x)
- Denmark
- Finland
- France
- Germany (2x)
- Japan
- Latvia
- New Zealand
- Norway
- Spain
- Sweden (2x)
- Switzerland
- Taiwan
- The Netherlands
- United States

Q: Can you tell more about "Guaranteed Bandwith"?

A: In short: Guaranteed Bandwidth is a Value Added Service only available in the Netherlands which reserves a specific amount of bandwidth in a specific location to be allocated to a customer. This allows customers to have a virtual private network on premises powered by the capabilities of an MNO. For more information please visit: <https://www.kpn.com/zakelijk/5g/guaranteed-bandwidth.htm>

Q: Do KPN M2M SIMs already support 5G? And if so, does this work via the existing APNs?

A: KPN M2M SIMs support 5G in the Netherlands. Outside of the Netherlands 5G is supported on networks with 5G roaming agreements in place. All Communication-Plan that support 4G automatically also support 5G.

Q: I understood that 5G on M2M SIMs is already available in the Netherlands and in countries where you have 5G roaming agreements in place. Which countries/networks are these?

A: Yes, KPN M2M SIM cards are already compatible with 5G networks. Of course, the device must support 5G as well. In the Netherlands, a KPN SIM card can use our 5G network, which is constantly growing and expanding. The latest coverage in the Netherlands can be seen on <https://www.kpn.com/netwerk/dekkingskaart.htm>.

KPN has 5G roaming agreements in place with local operators in the following countries:

- Bulgaria
- Canada
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Greece
- Iceland
- Ireland
- Israel
- Norway
- Philippines
- Spain
- Sweden
- Switzerland
- Thailand
- United Arab Emirates

Q: Is 5G available through the same APNs as 4G? Is there a need to activate 5G on our M2M SIMs or do all SIMs automatically support 5G where available?

A: Yes 5G is available through the same APN as the 4G APN. There is no need to change any settings in regards to the APN, the Communication-Plan or the SIM card in order to start using the 5G networks.

Q: What are the expectations of LoRa in regards to country wide coverage in Europe?

A: KPN offers nation-wide coverage of the LoRa Network in the Netherlands. Furthermore LoRa has been rolled out in a number of countries, usually limited areas around larger cities. Unfortunately, we cannot predict how fast other operators will adopt LoRa; our advice for the time being is to limit LoRa solutions to the Netherlands, and use LTE-M solutions used in other European countries. In certain specific countries, such as France, LoRa could be an alternative.

Q: What is the expectation for the longevity of 2G network in Europe? Can you estimate if 2G will be available by 2030 Europe-wide?

A: It is difficult to make predictions on 2G availability in Europe by 2030. We investigate all the sunsets we know about, combine this information and share it with our customers through the IoT Service Portal. If we look at Europe, we see that most operators decide on availability for themselves, but most of the sunsets are planned between 2025 and 2030.

Q: What exactly does the guarantee "LoRa until at least 2030 and LTE-M until 2035" mean? Does it mean they can be switched off after these dates?

A: These networks will be supported at the very least until these dates. After these dates, the networks may be retired, or remain in use. There is no precise end date at this time.

Q: Many countries have NB-IoT and/or LTE-M, but is the coverage of these networks within these countries as reliable/widespread as LTE/4G?

A: In regards to the KPN network in the Netherlands we can assure that we provide a nation-wide coverage of LTE-M. This is not only limited to basic coverage, but also supports additional features such as PSM, eDRX and CEM A. We do not carry proprietary information regarding the LTE-M roll-out of other operators. Most operators only offer roaming agreements for LTE-M after having achieved adequate coverage in their country. LTE-M is based on 4G. So, the coverage map of 4G will be applicable most of the time. To know more about the coverage details of other operators, please take a look at their websites.

Please note that there is a special feature called Coverage Enhancement (EC) that improves the coverage compared to LTE. Most operators enable this feature. KPN has tested this extensively in the Netherlands and has achieved improved coverage with LTE-M compared to LTE. It is imperative to have a high quality antenna and low bandwidth. For NB-IoT this works differently, and has to be investigated individually per project. Both networks are still dependent on the roll-out of roaming operators.