Body of European Regulators for Electronic Communications
BEREC

BoR (20) 228

Report of BEREC recent activities concerning the EU 5G Cybersecurity Toolbox Strategic Measures 5 and 6 (Diversification of suppliers and strengthening national resilience)

1. Introduction

The BEREC Report provides an overview on the state of play of the implementation of the EU 5G Cybersecurity Toolbox[1] (herein: 5G Toolbox) strategic measures: SM05 - Ensuring the diversity of suppliers for individual MNOs through appropriate multi-vendor strategies - and SM06 - Strengthening the resilience at national level. This data was collected following the invitation of the NIS Cooperation Group and has been used as input to the Report on the impacts of the Commission Recommendation of 26 March 2019 on the Cybersecurity of 5G networks.

It aims to capture the actions (taken and foreseen) by the competent national authorities (Part A) and mobile network operators (MNOs) in EU and EEA (PART B).

The measures taken, plans and opinions were investigated in the form of questionnaires which were prepared by the BEREC ad hoc 5G Cybersecurity WG and launched by mid-June 2020. The specific information gathering exercise lasted until 28 August. The cut-off date for the final inputs from NRAs regarding Part A only of this report was Tuesday November 24th.The information gathering exercise for Part B of this report (information from MNOs) was concluded at the end of September.

A total of 26 NRAs answered of which 24 are EU members. 84 MNOs replied from 24 countries, of which 23 are EU members.

Furthermore, the BEREC ad hoc 5G Cybersecurity WG arranged webinars with stakeholders (vendors and associations of MNOs) during September 2020 in order to receive their views towards the implementation of SM05 and SM06 and received useful input.

2. Implementation of SM 05 (Diversification of suppliers) and SM 06 (Strengthening National Resilience) from Public Administrations´ Perspective- NRAs questionnaire

The implementation of the referred strategic measures of the 5G Toolbox varies across countries in the EU and EEA. Each country has established its own procedures of cooperation involving all relevant State bodies that have a role in the Toolbox implementation. NRAs´ roles range from being the lead authority in 5 countries to a supporting party.

To implement SM05, national measures have already been adopted in 6 countries and are planned or under consideration in 15 other. In 6 countries where measures are already adopted, they include measures aimed at ensuring appropriate multi-vendor strategies (such as conducting a review of MNOs plans for sourcing equipment). Similar approaches

[1] Cybersecurity of 5G networks: EU Toolbox of risk mitigating measures: https://ec.europa.eu/digital-single-market/en/news/cybersecurity-5g-networks-eu-toolbox-risk-mitigating-measures

are now being considered in more than half of the countries. Regarding SM06, 7 countries have measures in place.

Finally, the NRAs highlighted the fact that implementing appropriate diversity of suppliers will assist in avoiding potential network failure or discontinuation of the MNOs services due to supply chain disruption, and minimize suppliers' lock-in scenarios.

3. Implementation of SM 05 (Diversification of suppliers) and SM 06 (Strengthening National Resilience) from Mobile Network Operators´ perspective- MNO's questionnaire

MNOs perceive that multi-vendor strategies can be achieved in different ways, on different network levels such as in Radio Access Network (RAN) and/or in Core Network. The main advantage that MNOs see in a multi-vendor strategy is avoiding vendor lock-in and maintaining a sustainable competitive environment for vendor equipment. The main criteria for vendor selection are price, quality, performance and interoperability. The disadvantages that most MNOs have identified in a multi-vendor approach relate specifically to network management and interoperability. The MNOs have identified a need for better standardization.

According to the responses received, 5G networks and services are already commercially available from 27 MNOs, or approximately one third of MNOs active in the European electronic communications market. By the end of 2020, a further 14 European MNOs foresee to have 5G networks and services commercially available, making up approximately half the number of MNOs.

According to the responses received from MNOs, the implementation of a multi-vendor strategy is expected to have varying impacts in the development plans of most MNOs. This is evident given the current deployments of 5G networks and commercial availability of 5G services across the EU. The majority of MNOs have indicated that they would need more than 5 years to replace a specific 5G vendor without significant cost and outside the normal replacement cycle. Implementing a multi-vendor strategy is expected to have an impact on the Capital Expenditure (CAPEX) and Operational Expenditure (OPEX) of MNOs.

Of the current networks installed by MNOs in the European Market, six out of ten of the equipment used across all mobile technology generations (mainly in CORE and RAN elements), i.e., 2G up to and including 5G[2] is from non-EU[3] vendors as gathered data shows.

More specifically, concerning the RAN elements from 2G to and including 4G technologies, there is an equal distribution of EU and non-EU vendors.

As far as the RAN elements in 5G networks are concerned, EU vendors alone provide more than half of all the equipment installed.

Additionally, for RAN equipment, more than half of MNOs use a single vendor with almost one quarter of MNOs using two vendors across all mobile technology generations.

[2] As regards 5G, it should be noted that in a first phase, 5G deployment will consist primarily in 'Non-Standalone' networks, where only the radio access network is upgraded to 5G technology, and otherwise still relies on existing 4G core networks. Moreover, as roll-out progresses and national regulatory frameworks are being defined, the market data related to 5G suppliers is still limited and constantly evolving.

[3] non-EU includes North America, Asian and Australian vendors.

For CORE network equipment in 2G, 3G and 4G, more than half of the responding MNOs use a single vendor and for more than half this is a non-EU vendor. Approximately one quarter of the MNOs use two vendors.

For 5G networks, approximately two-thirds of the respondents use a single vendor for CORE equipment.

As far as interoperability and open standards initiatives, the responding MNOs are of the view that Open RAN and other such open-source initiatives are not yet mature enough for an operational network.

4. Open issues identified

As a result of producing this report, BEREC has identified a requirement to establish a deeper understanding of specific risk scenarios related to the MNOs full supply chain. The risk scenarios would also take into account supply availability, as well as obstacles and the actions needed to adapt to the global situation in the case that there are disruptions in the supply market.

Additionally, BEREC identifies a requirement to establish a greater understanding of the potential gains and limitations of Open RAN including the likely timeline before it can become a viable approach, as well as the current status of other pilot projects.

Finally, BEREC generally speaking identifies a need for possible further information gathering as well as for a more holistic understanding of the costs and impacts related to implementing various approaches of multi-vendor strategies by MNOs as a measure to mitigate the risk of single-supplier dependency and improve the resilience of network supply chains at the European as well as at the national level.