

Question 6/11 – Protocols supporting control and management technologies for IMT-2020 network and beyond

(Continuation of Question 6/11)

1 Motivation

This Question has developed several protocols for control and management technologies such as orchestration, network slicing, network capability exposure, identification and network management of heterogeneous network environments to realize IMT-2020 network.

Artificial Intelligence (AI) application in network for enabling network automation and intelligence are important topics these days. How AI and big data technologies are leveraged to support intelligent control and management for IMT-2020 network and beyond should be specified and provided urgently to meet the market requirements. Especially, protocols to support intelligent control for IMT-2020 network and beyond, enhanced mechanisms such as low latency, low jitter and packet loss, guaranteed bandwidth, very large scale network, flexible connectivity and topology, resources assignment and sharing, and network slicing should be developed with high priority. With specific requirements from vertical industries, user plane management should be enhanced to optimize the user path and meet industry needs.

Also, protocols on common management system for accommodating both fixed and mobile networks are other important issues that have to be resolved in the future.

2 Question

Study items to be considered include, but are not limited to:

- What protocols and mechanisms need to be defined in response to gap analyses developed by relevant SDOs?
- What protocols and mechanisms need to be defined in support of service scenarios, requirements, capabilities, and architecture for IMT-2020 network and beyond provided by relevant ITU-T SGs and other SDOs?
- What protocols and mechanisms need to be defined for the key technologies to realize IMT-2020 network and beyond including intelligent control for transport network, orchestration, network slicing, user plane optimization, network capability exposure, identification, device authentication, fixed/mobile convergence, network management of heterogeneous network environments, etc.?
- How emerging technologies including AI, big data, and QKDN and related technologies are leveraged in the control and management protocols for IMT-2020 network and beyond?
- What protocols and mechanisms should be defined to realize high performance with features like ultra-low latency and high reliability for IMT-2020 network and beyond?
- What protocols and mechanisms should be defined to realize improvements and enhancements to service-based interface for IMT-2020 in order to improve efficiency, flexibility and intelligence?
- How to utilize and guide the open source software, in collaboration with relevant bodies, related to key technologies of IMT-2020 network and beyond to implement the developed Recommendations?

3 Tasks

Tasks include, but are not limited to:

- develop Recommendations on protocols, including mechanisms, to control IMT-2020 network and beyond with enhanced features, supporting very large-scale network, flexible connectivity and topology, fixed/mobile convergence, user plane optimization, etc.;

- develop Recommendations on protocols, including mechanisms, to support IMT-2020 network and beyond by using technologies such as network slicing, resource virtualization, orchestration, AI and big data, QKDN and related technologies, etc.;
- develop Recommendations on protocols, including mechanisms, for other key technologies of IMT-2020 network and beyond including identification, device authentication, and network capability exposure, etc.;
- develop Recommendations on protocols, including mechanisms, for common management system for IMT-2020 network and beyond;
- develop Recommendations on protocols, including mechanisms, for IMT-2020 network to realize high performance with features like ultra-low latency and high reliability;
- develop Recommendations on protocols for IMT-2020 network and beyond, to realize improvements and enhancements to service-based interface in order to improve efficiency, flexibility and intelligence;
- develop Supplement, Technical Report, Guidelines on the best practices and implementations of protocols and mechanisms, for IMT-2020 network and beyond, including open source software, in collaboration with relevant bodies.

An up-to-date status of work under Q6/11 is contained in the SG11 work programme (https://www.itu.int/ITU-T/workprog/wp_search.aspx?sp=17&q=6/11).

4 Relationships

Recommendations:

- Y-series and Q-series

Questions:

- 4/11, 7/11, 8/11, 14/11

Study Groups:

- ITU-T Study Group 2
- ITU-T Study Group 13
- ITU-T Study Group 15
- Other SGs involved with IMT-2020 studies

Other bodies:

- ITU-R
- ETSI
- IETF
- IEEE
- 3GPP

WSIS action lines:

- C2, C5

Sustainable Development Goals:

- 9, 17