Service mesh technology revolutionizes 6G core network signal processing

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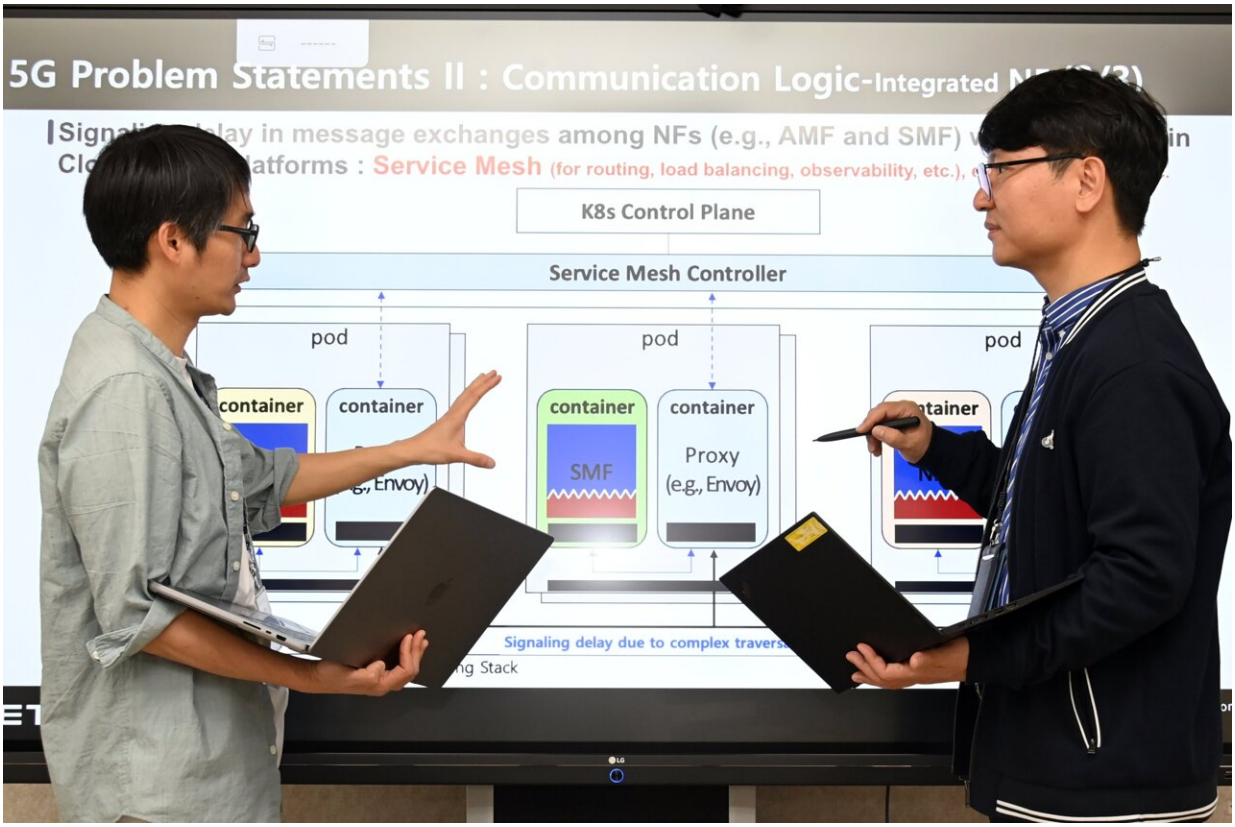

Service Mesh Controller. Credit: Electronics and Telecommunications Research Institute(ETRI)

Korean researchers are strengthening South Korea's leadership in the global market through the development of 6G, the next-generation

mobile communication technology.

Electronics and Telecommunications Research Institute (ETRI) announced that they showcased their latest research results at the "6G Symposium Spring 2024" held in Oulu, Finland, from April 9 to 11, drawing the attention of attendees.

At this symposium, ETRI particularly showcased its "service mesh" technology. This technology is a key 6G technology that addresses complex communication issues among numerous cloud-native mobile network functions that are dynamically created or terminated in a cloud environment.

6G mobile networks are moving away from the dedicated hardware equipment structure of existing 4G/5G networks. They are evolving into a cloud-native architecture where mobile network functions are virtualized into software services that are developed, deployed, executed, and managed in a cloud environment.

Accordingly, network functions developed in the form of microservices in various languages and environments are deployed and operated on the cloud. To provide smooth mobile services to users, these microservices need to exchange complex control signals rapidly. However, the existing structure posed issues such as communication delays due to inefficient communication methods.

ETRI's newly developed service mesh architecture has significantly improved communication delay by reducing existing networking procedures by more than 80%. It reduced the number of networking stack that a packet passes, which used to be 24 round trips, to just 4.

By completely separating the business logic and communication logic that were mixed within existing network functions, and adopting an

agent that can selectively use high-speed communication methods such as gRPC, an open-source Remote Procedure Call (RPC) framework, ETRI has enhanced the mobile core network signal processing performance.

Additionally, it provides a 6G development environment where network function developers can focus solely on developing core mobile service functions. Developers no longer need to worry about the communication logic such as network service registration, discovery, connection, and authentication.

Namseok Ko, the head of ETRI's Mobile Core Network Research Section, said, "ETRI's service mesh technology can be adopted as a core technology for cloud-native 6G mobile networks. This technological development is expected to enable faster and more efficient 6G communication services and contribute to the advancement of global communication technology."

The research team stated that this symposium, held as a part of the EU 6G Flagship project, provided an opportunity to solidify South Korea's position as a global leader in the field of communication technology.

ETRI also announced plans to further expand and commercialize this technology through the next-generation communication industry technology development project promoted by the Ministry of Science and ICT.

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