

Appendix

Abstract

The PoC, which will run from March 2022 to March 2023, will deploy 5GC network functions both in the AWS public cloud and DOCOMO's on-premises cloud infrastructure to verify availability and operational feasibility from the perspective of brown-field telecom operators. The PoC also will evaluate a prototype 5GC cloud-native architecture optimized for highly flexible and scalable public-cloud environments. Successful results are expected to be incorporated in DOCOMO's future 5GC initiatives and other network functions, paving the way for increasingly available 5G networks that could be deployed with exceptional flexibility.

Additionally, the 5GC network deployed in the AWS public-cloud environment and AWS Outposts will be used to demonstrate possible enterprise services of the future. Various industrial applications for machine learning, AI, IoT and extended reality (XR) have been deployed on AWS, reflecting the fact that industrial-application developers are now highly familiar with AWS. As such, the 5GC network deployed in the AWS public-cloud environment will enable easy collaboration with such applications. Further, these collaborations are expected to lead the creation of brand-new solutions and services like new ultra-low-latency services for IoT and XR. In view of 5GC's potential to enhance industrial functionality and AWS's proven track record with industrial and enterprise applications, orchestrating 5GC networks on AWS also will help enterprise customers accelerate their digital transformations.

5GC network functions also will be tested on Graviton2, AWS's energy-efficient processors, with an eye to providing customers with flexible, energy-efficient networks.

Background

DOCOMO, a leader among telecom operators in NFV research and development, began conducting basic research in 2005 and subsequently developed the world's first NFV technology for multi-vendor 4G core networks, based on which the company launched a commercial service in 2016. Today, more than 70% of DOCOMO's core network has been shifted to NFV and its 5GC network is fully virtualized. As an NFV frontrunner, DOCOMO is actively driving the evolution of this network technology.

NEC commercialized a reliable, high-quality mobile core solution on AWS in 2019 and began offering its Stand Alone 5G mobile core (SA-type 5GC) solution for the AWS cloud in 2021.

Items to Examine

	Item
1	Validation of availability and operability of hybrid cloud environment for telecom operators
2	Development and validation of flexibility and scalability of prototype 5GC optimized for public clouds
3	Validation of performance and power consumption of 5GC on Graviton2

Roles of Each Company

DOCOMO	Provide on-premises NFV infrastructure to run 5GC networks and lead the PoC by planning items to be verified from the perspective of telecom operators.
NEC	Provide 5GC software to run on Graviton2 and support 5GC provisioning and testing in the hybrid-cloud environment.
AWS	Provide Graviton2, a leading low-power public-cloud processor, and support 5GC provisioning in the AWS public-cloud environment.

References

NEC contributes to NTT DOCOMO's 5G standalone (SA) services launch with packet core:
https://www.nec.com/en/press/202112/global_20211222_01.html

NEC and Netcracker Orchestrate Cloud-Native 5G Core Services on AWS:
https://www.nec.com/en/press/202106/global_20210630_04.html

Discover the real 5G:
https://www.nec.com/en/global/solutions/5g/Blog_Discover_the_real_5G.html

AWS Graviton: <https://aws.amazon.com/ec2/graviton/>

AWS Outposts: <https://aws.amazon.com/outposts/>