

ICN 과 클라우드를 이용한 고속 콘텐츠 전달

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Fast Content Delivery using ICN and Cloud

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Abstract

The amount of data transported on the Internet has been growing enormously, and the cloud is now universally recognized as one of the most beneficial platforms for many people to store and retrieve their data from any location at a low cost and in a faster manner. Several types of services can be offered based on the cloud architecture with Information-centric networking (ICN) that has attracted a lot of attention because of its ability to retrieve data fastly and securely. In ICN, the content is retrieved based on the content name rather than the location of the content. Since the combination of the cloud architecture and ICN is beneficial for supporting fast content delivery, the cloud architecture will need to be upgraded to process the ICN messages for content delivery services. In this paper, we propose a fast content delivery mechanism using ICN and cloud for various applications. The architecture with the mechanism will provide faster content retrieval.

I. Introduction

Various types of services are provided in the cloud architecture, such as software as a service (SaaS), platform as a service (PaaS), and Infrastructure as a service (IaaS) [1]. A configurable SaaS platform was proposed in [2]. This paper proposes a fast content delivery architecture using ICN and cloud for various applications where the in-network caching function and forwarding engine for ICN can be considered as part of an IaaS. The architecture can also work as part of a PaaS for ICN users and can handle the incoming and outgoing ICN messages in the cloud.

II. Fast Content Delivery using ICN and Cloud

Figure 1 shows an architecture with ICN and cloud that can be run from a web browser or a desktop/smart device application and plays an important role to invoke the ICN functions for the content retrieval mechanism. An ICN application process can be used by the ICN user to initiate ICN functions.

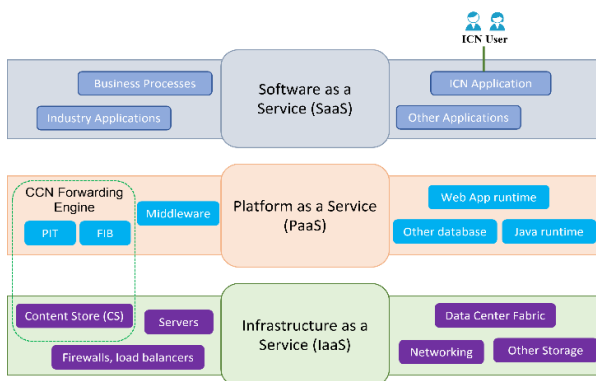


Figure 1: An architecture with ICN and cloud

In Figure 1, the content-centric networking (CCN) functionalities are incorporated into the cloud architecture where CCN is a type of ICN. The CCN forwarding engine is set in the PaaS layer of the cloud for managing the content request and retrieval messages for content delivery. The content store (CS) is located in the IaaS layer to support the in-network caching mechanism in the cloud. The caching mechanism manages the contents requested by the ICN user and may be used to share it with non-ICN users.

Every application has its web and desktop/smart device application interface that is connected to the CCN

forwarding engine. Figure 2 shows the detailed content retrieval mechanism where the content request message, i.e., Interest packet, is received from an ICN user and replied with Data packets to the content requester by a content provider.

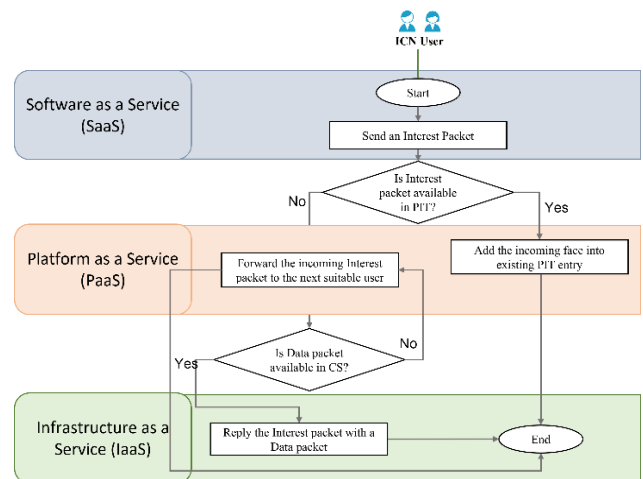


Figure 2: Procedure for content delivery

III. Concluding Remarks

This paper presented the detailed architecture of a fast content delivery mechanism based on the cloud architecture with ICN and also proposed a procedure for ICN-based content delivery. By using the proposed cloud architecture, the end-users can access their desired contents in a faster and secure manner.

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