A Study on Using SIP Signaling for Home Networks

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Recentry, Digitization of AV(Audio Visual) devices progressed remarkably, and the domestic information environment has been ready with improvement in the high speed of an access line, and low-pricing. The Internet has come to be considered as what has a realistic home network by the appearance of AV devices which carries an IEEE1394 interface now when the life has been permeated widely.

However, by home network standards, such as HAVI and Jini, in case the interconnection of between AV devices is carried out, "the collection original procedure of information required for connection" and the "connection of original procedure" are taken, and there is a problem that flexibility is missing. This means that connection between device becomes difficult, when connection between the device connected to the home network and the device connected to another home network is considered.

This research aims at realization of the interconnection of AV devices through the network. In order to attain realization of the interconnection between device, the necessity of using the signaling protocol of general-purpose. Therefore, the real-time data communications of AV devices connected to the home network are regarded as a session, and improvement in the interconnection nature between AV device is aimed at by using SIP (Session Initiation Protocol) for initiation of a session.

SIP is a protocol which makes it possible to perform signaling between terminals and to perform start of the session which is both directions type communication of TV phone, TV conference, etc., change, and closing in the communication service based on IP(Internet Protocol). It is designed so that the existing protocol currently used on IP network may be utilized effectively, and it is the protocol expressed in text form also now compared with mainstream H.323, and affinity with the Internet is a general-purpose protocol.

JAIST Video LAN consists of TS(Terminal System) which connect two and them of a front end network and a core network. The front end network was made into a network like IEEE1394 device where video device is connected, and the RMA(Resource Management Agent) on a core network has managed the connected devices. A core network connects between both front end networks by going via a TS. RMA has resources management, resources connection, and offer of GUI to a user. In this research, a system is proposed by using a JAIST Video LAN system as a base, and the signaling procedure in a system is realized using SIP.

In a proposal system, two kinds of new nodes called a DM(Device Manager) and a DC(Device Controller) are implemented. DC is located in the middle of a frontend-network and a core-network, and has the function to change the signaling message in Video LAN into a SIP message. Connection operation of AV device by SIP is realized by carrying out cooperation operation with a TS. DM exchanges the SIP message by two or more DC, and offers GUI, resources management, resources connection.

Moreover, although it was using for SIP to start signaling operation from a user's terminal as the foundations type, from the method of third party call control in SIP, the JAIST Video LAN system was approached and control of the terminal from the DM who is a third party's node was enabled.

If the pre communication function by acquiring a partner's away awareness not only initiation of a session but before initiation from now on is used, it will be thought that it becomes easier for a user to use the information appliance connected to the network.