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Author(s)	石橋, 賢二
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Description	Supervisor:日比野 靖, 情報科学研究科, 修士

A Suitable Handoff in Mobile Network Protocol

Kenji Ishibashi

School of Information Science,
Japan Advanced Institute of Science and Technology

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For developments of computer technology, computers would have various forms, and it would have been portable like as PDA, embeded computer, personal handy phone, notebook computer. And mobile computer can use PC card which can be plugged in and out at work. Combination of mobile computer which can be used PC card and PC card network media made possible changing network media on the fly. For the reasen, a mobile computing environment is realized that we make possible to use many service and resource on the network at any time from everywhere. On the other hand, communication media making the foundation have also diversified, and we have been possible to use many sorts of the things, Ethernet, wireless LAN, ISDN and personal handy phone used to public telephone circuit. While we carry the notebook computer, select a valid communication media at all the place, and can keep network connection of the computer.

Though it is made to the infrastructure of mobile computing, it designed the assumption the network nodes are static because many application use client/server system on TCP/IP architecture. Therefore, it come into various problems if we carry portable computer and connect it to usable communication media at the place.

For example, if at local area network on the premises like as college campus and office building we carry working computer then we like to resume the work, it must change network configuration of the machine and need an initial procedure. But there are some

case that the change of configuration is supported by an application, it is inefficient that each of application deal with the moved computer. The new network media which had been made for mobile computing environment such as wireless LAN and PIAFS have different characteristic from current network media. Therefore current network system cannot handle new network media completely.

Recently, in order to that situation, protocol which introduce a concept of the mobility of computers, cannot be supported with old TCP/IP architecture, would be suggested. By DHCP (Dynamic Host Configuration Protocol) protocol auto configuration of IP address and netmask, other network parameter is executed then the host is assigned IP address at the subnet visited when mobile host is moved over the subnet. Therefore it is possible that it is assigned IP address and changed configuration automatically. But we cannot identify the mobile host or it is impossible to keep TCP connection if only supported by DHCP. For the sake of solution that DHCP be unable to conquer the problem it is suggested architecture of Mobile IP in IETF (Internet Engineering Task Forces).

A mobile host is recognized by unique address on the Internet by means of assigning constant address to mobile host on IETF Mobile IP. IETF Mobile IP makes possible to move by servers called home agent and foreign agent, it is received by forwarding packets addressed to a mobile host between the agents. A mobile host is assigned constant address, recognized by unique address on the Internet. However IP address of mobile host is used not identifier of connecting point to network but identifier of that host. And since IETF Mobile IP is only specified the necessary function for forwarding packets to mobile nodes in network layer, it isn't related to technical inheritance to the other layer. On datalink layer, protocol differ from one media to another, characteristic and handling of media do too. Therefore it become problem when it is indeed applied.

In this research, for the purpose of we can make use of this technology successfully, we analyze it's advantage and failure, to extend more useful system we suggest new function. We classify considerable problem into three.

- Separation identifier of connecting point to network and identifier of that computer.
- Adaptation to characteristic of communication media.
- A suitable handoff control.

Specically in this research, we aim at "suitable handoff control", we consider how handoff controller realized that function and extended Mobile IP system integrated it

affect in mobile computing environment.

The word called handoff means action that mobile host change wireless base station in wireless network. We treat switching difference media like as the wireless handoff, optimize to fit characteristic of each communication media.

To be possible of smooth switching communication media, we control of unifying to usable communication media information, have to control a suitable timing of switching communication media based on the information. Handoff controller control the switching, control well tuning to Mobile IP's control message. We can reduce cutting a connection and execute smooth switching between communication media by dealing with our speedy handoff. As an evaluation we show the speed of handoff, find and investigate the cause of issue. The function of handoff controller that control timing of switching communication media is inner module of the media selector that support selecting communication media, cooperation with the function of separation identifier of connection point to network and identifier of that computer, and of adaptation to characteristic of communication media. As a conclusion we discuss how our extended Mobile IP system work in mobile computing environment, we compare our system with other one.