A Study of Fault Diagnosis for Home-Network

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We can not expect there are experienced people who have skill and expertise in computer network in the home while there are experts in the office. Therefore home information appliance should be easily connected by anyone, and their services should be utilized without complex configuration. In addition, the home information appliance must be used by users without aware of the physical existance of network in the feeling which is similar to the traditional home appliance product. Additionlly product from different manufacturers exist in general home. Accordingly the mechanism which make connection between products manufactured by different company possible becomes necessary for home network. Each manufacturer are cooperating and work on standards for interconnection with which the above mentioned environment will be realized even with AV equipment and white goods.

However, the manager absent characteristic of home network in nature make it difficult to build and manage networks and it has became problem. Especially the equipment which participates in home network making use of the connected standard which designates IP as the base are a tendency of increase, and they introduce needing the setting of IP address and address of the DNS server regarding these equipment, require relatively high speed network, and finally complicate the construction of home network. Consequently the enterprise which it produces and sells these equipment cut many manpower resources in user support. In addition for introduction of the equipment to be difficult, it becomes also the primary factor which obstructs the spread of home network. Although it is expected that home network management provider appers in the future, it will takes some time before becoming business.

Then, in this research the home network fault diagnostic system is proposed. The home network fault diagnostic system is defined as consisted of two elements of the home network data gathering scanner which collecting the information of the home network fault diagnostic tool and the home network which had user interface and the function

which diagnoses the fault of home network, and it is examined how arranges these in home network.

The network system is designed to be layered structure, the system which is operational with layer differs. The fault which happens at layer is propagated to the layers above, it is difficult to recognize at which layer really fault occurs. It cannot be known the detailed fault cause of the system from the user, but as for the fault which is visible from the user they are thought to be categorized as some kind of fault which is possible problem caused at the system to some extent. In this research, we focus the specification called DLNA (Digital Living Network Alliance), a standard for easy sharing of digital contents among home appliance, personal computer and mobile equipment in the home, and classify fault of user's point of view and fault of system's point of view and show relationship between them.

Diverting existing technique of network fault detection diagnosis to home network fault diagnosis without modification is difficult. As a reason, the fact of existing technique of network management is listed that it is considered that SNMP is fundamental. It is also the reason that there are many tool that demand a certain level of knowledge user. In this research collection method of the information with the packet monitoring which focus on the broadcasting frame and multicasting frame sent through DLNA network is proposed. This collection method make it possible to discovery equipment which can not communicate with others using IP protocol by collected information about IP addresses and the subnetwork masks.