

Title	制御系ホームネットワークアプリケーションに対する QoEおよびQoSに関する研究
Author(s)	大北, 真也
Citation	
Issue Date	2009-03
Type	Thesis or Dissertation
Text version	author
URL	http://hdl.handle.net/10119/8098
Rights	
Description	Supervisor:丹 康雄, 情報科学研究科, 修士

Research on QoE and QoS to control system home network application

Shinya Okita (0710015)

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

February 5, 2009

Keywords: QoE, QoS, Home Network, control system, experience.

In late years, telephone service and TV service are made IP. In that case, their pays attention to the one named QoS and QoE.

However, the QoE evaluation in the other machinery in the home network has been hardly done so far. So, in this paper, measurement of QoE for use of the control system application in a home network and the QoS factor for deriving suitable QoE are specified.

Then, in order to construct home network, it prepares the equipment which becomes necessary and it must design the network because home network service is actualized. To start from the decision of QoE first of all when the network is designed, and to correspond to it, the forwarding delay of the packet and the QoS parameter like the packet loss rate and the error rate etc. of the packet are adjusted.

Presently, audio quality in IP telephone servicing and image quality of IPTV and VOD(Video ON Demand) , clicking the link on the page which is indicated in the browser, it makes the picture indicate, at that time those such as the QoE appraisal which designates waiting as service quality exist, have started with the evaluation method which uses MOS value and the like, subjective appraisal as an objective appraisal value. Doing the discrimination conversion service which offers the service where quality differs when and, guarantee of excessive quality can think also the possibility of

bringing disadvantage to all users as a result in these days when the communications traffic continues to increase. Meanwhile, it is very important to perform QoE evaluation as one of the main factors making last decision of the communication service quality.

QoE(Quality of Experience) is a user experience quality while it is a standard of the service quality that QoS(Quality of Service) saw from the telecommunications provider and the service donor, and the standard of the service quality seen from the user.

In this research, to decide the home network service that researched first this time, the home network service was listed covering it. The equipment list and the equipment category list which were drawn up on the basis of the equipment list which was drawn up in bibliography A, you investigated next the classified by manufacturer, drew up the list of home network service. Based on the service list which I made next according to a maker, I made a list of service and the service category list which deleted service for a category by the property. The thoroughly contain list of the home network service which this time was drawn up is formed by the compound of the equipment list, the equipment category list, the service list and the service category list which are listed some time ago. In addition, the relationship of QoE and the QoS parameter which become the object in order to select the home network service which becomes the research object must be considered. Then, model of service it did as the service list and the service category list in regard to those which it drew up. As a result, the service targeted by this research was decided to the lighting control service and the streaming service.

Next, the QoE measurement experiment of the decided object service was done. Therefore I made a QoE evaluation seat for the choice such as data to use at the time of machinery and an experiment to be necessary for a QoE measurement experiment and preparations for hardware or making and the making of the application and the construction of the system and a subject to record evaluation value. In regard to the selection of the equipment in illumination control servicing because immediately responsiveness is required, the illumination equipment which almost satisfies the request was selected. Then is not only subjective, appraisal unlike illumination control service in regard to the selection of the equipment in streaming

servicing, and because also objective appraisal does, it selects the video image which it corresponds to that. In addition because there is a possibility QoE appraisal value changing with control with the software switch by the mouse in control of illumination of the illumination as selection of the hardware in measurement experimenting of illumination control service, with the difference of the degree of skill for the user interface such as the mouse, in order to take the shape which is closest to the control method of the former illumination which uses the wave motion type switch, the illumination control controller was made. In addition, because there is a possibility QoE appraisal value changing with the difference of the degree of skill for user interface in regard to the control of video, the controller of the push button type which is conscious of the shape of the infrared ray controller of conventional type was prepared.

After doing, QoE measurement experiment after spare experiment doing first, kept naming the preparation above this experiment on the basis of the result. In order to determine to which value it measures in this experiment, it went for checks – whether there is any error in selection of apparatus about spare experiment.

Then, consequently QoS measurement experiment of object service it did. Compilation of the application which becomes necessary for QoS measurement experiment then and construction of the system it did. With QoS measurement experiment, as the related characteristic of QoE and QoS parameter understands on the basis of the result of QoE measurement experiment, experiment it did.

When finally, QoS parameter is some kind of value at the time of illumination control servicing, it was possible to examine whether what QoE appraisal value is expected.

As a summary, in this research the QoS primary factor in order to guide measurement and appropriate QoE of QoE at the time of the use of the control type application in home network and examination of QoS parameter value it did. As future topic, in regard to other than the equipment and the service which are handled in this research it is thought that it is necessary to investigate, in addition in this research in regard to the related characteristic of fluctuation and QoE appraisal value of the QoS parameter which was not done it is necessary to investigate.