

Title	ホームネットワークサービスアーキテクチャにおける 障害検出・回復モデルに関する研究
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Failure Detection and Recovery Model for Homenetwork Service Architecture

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In recent years, intelligent home appliances are used in many families. These appliances can connect home network (HN) and communicate with other appliances. Additionally, many service providers (SP) can provide various homenetwork services to HN. When SP provides these services, HN has to communicate with several equipments. If one equipment break down on network, SP can't provide service to HN. It is difficult for user to probe problem on homenetwork service architecture. We can resolve this proble that we previously create failure pattern and recovery pattern for this architecture.

In this research, we proposed about failure detection and recovery model for information and communication equipment in homenetwork service architecture. For homenetwork service, many people expect higher reliability. Because SP operate intelligent appliance in HN. But, all equipment on homenetwork service architectures doesn't always appropriate work. If all possibility of fault and failure pattern is existence, it is easy to detect and recovery failure.

First, we discuss target model of homenetwork service. And we define homenetwork service model architecture, each entity, each function. Back-end Service Provider (BE), Service Portal (SP), Home Gateway (HGW) and Appliance is exiting on this model. When user want to get some services, user request his demand to HGW. HGW send this request to SP.

SP interpret this request and generate service scenario for HN. Also SP request necessary service or resource to BE. SP provide scenario and this contents to HGW, and HGW execute service scenario using contents.

We define that each entity of this model has “Service Application”, “Communication Middleware”, “Communication Protocol Stack” for function. Additionally, each entity has management manager for each function.

Next, we cover all fault of each entity’s function for creating failure detection and recovery model. Fault is arise all process or application on each entity.

In process or application fault, failure is caused on proposal model. Failure pattern is different in different fault. So, we cover all failure pattern on proposal model.

We use this fault and failure pattern, then we check up fault detection method and create fault and failure detection, recovery, notify sequence. We investigate appropriate protocol and method for fault detection. For these sequences, we go through that management manager follow any flow of failure detection and recovery. In detection phase of sequence, we have to check up how management manager can communicate with other and how information can get from other. In recovery and notify phase of sequence, we check up all availability of flow to recovery and notify process.

Finally, we adapt this fault and error detection-recovery-notify sequence to existing home network service, and we evaluate this model’s effectivity. We select three existing home network service and label three model. We create fault and failure matrix for each model. And we review availability of adapting proposal model’s detection-recovery-notify sequence for each model. Consequently, we can adapt these sequence proposal model to similar model, but can’t adapt to difference model.

In this research, we proposed detection and recovery model for failure on home network service architecture. And we adapt recovery model to existing service model. We can get availability of this model. Our model expect useful for similar home network service.

In the future work, we will assume multi-fault on this model. And we will create recovery sequence for this failure.