

Necessity of Maintenance Standard for Home Network

2008.10.21

Dr. Young-Sung Son

Contents

1. Introduction
2. Obstacles to Proliferation of Home Network
3. Necessity of Maintenance Standard for Home Network
4. Maintenance Standard
 - Fault Management
 - Remote Management
 - Maintenance Resource
5. Conclusion

Introduction

❖ Home Network Overview

- Many technologies and products are interconnected and co-existed
- Integrated management of multi-vendor residential gateways over standardized interface and home network devices that could support its own middleware.
- No administrator and no expert
- Home Network Management is needed
 - Provisioning
 - Installation and upgrade of RG software and application services in an integrated manner.
 - Monitoring
 - RG's status and their services provisioning status
 - Controlling
 - multi-vendor residential gateways and devices
 - Configuration
 - Addressing, Binding, Event processing to Services

Obstacles to Proliferation of Home Network

❖ Home Network Market is growing slowly in Korea.

□ Home Network Market of Korea

- inclined to New Construction of House (Apartment)
- Home Automation is a major application.
- Multimedia entertainment is starting with IPTV
- Market Size : \$120,000,000 in 2008
(Gartner, Korea Home Network Industries Association)
- This market size is not suitable to our expectation

□ Following problems could limit market growth in Home Network.

- High Cost of Maintenance
- Difficulty of Configuration
- No Way to Fault Processing

Necessity of Maintenance Standard for Home Network

- ❖ User Request Cases of Maintenance in Korea market
 - 95% of Repairing Services are related to non-system fault
 - Wrong configuration (ex: IP setting)
 - User's Mis-use (ex: Wrong remote ccon usage, Device power off)
 - Non-managed device (ex: PC) can cause network jams
 - But, User can't provide any information to Service Provider

- ❖ Limitations of Current Home Network
 - Maintenance Cost is an obstacle to Proliferation of Home Network
 - No standard - Fault Processing and Recovery Standard

- ❖ In Korea, many companies require to make Maintenance Standards about Home Network.
 - Fault Management
 - Remote Management
 - Maintenance Resource

Fault Management

- ❖ A Fault Management is a collection of fault class and protocols to detect and recover maintenance resources in home network.
 - Fault Class Definition
 - Fault code
 - Fault behavior description
 - Fault Detection Mechanism
 - Behavior based Fault Detection
 - Model based Fault Detection
 - Service Monitoring based Fault Detection
 - Fault Recovery Mechanism
 - Rule based Autonomous System Recovery
 - Remote Recovery

- ❖ Requires Unifying Fault Management Scheme with further abstraction in a model framework

Remote Management

- ❖ A Remote Management is a collection of access protocol to maintenance objects and devices, and possibly of interaction primitives.
- ❖ Remote Management Functions
 - Gateway Management
 - Remote Monitoring and Controlling to Gateway Status
 - Component Execution Management
 - CAS Management (Authentication)
 - Network Management
 - Addressing
 - Network Configuration (NAT Port Management)
 - Network Status Monitoring
 - Service Management
 - Remote Monitoring and Controlling to Devices Status
 - Binding Map Management
 - System Diagnosis Service

Maintenance Resource

- ❖ A Maintenance Resource is a collection of definitions of managing object, their system and their components
- ❖ Requires Resource Definition to be specified for
 - Network Resources
 - Topology Information
 - Bridge Information
 - Bandwidth Information
 - Device Resources
 - Device Information (Type, Control, Access Control)
 - Device Firmware Update
 - Service Resources
 - Service Description
 - Service Provisioning
 - Utility Management
- ❖ Maintenance Resources will help home network administrators simplify and automate managing tasks such as operating system upgrades and security patch management

Conclusion

- ❖ Necessity of Maintenance Standard in Home Network
 - Easy-Configuration
 - Fault Recovery (Device/Network/Service)
 - Prevention of User's Mis-use (Control/Configuration)

- ❖ Home Network Maintenance Standard
 - Fault Management
 - Remote Management
 - Maintenance Resource Management

- ❖ For the interconnection of HES products, SC25 WG1 had progressed
 - HES-Gateway Standard
 - Interoperability Standard
 - Home Network Protocol Standards

- ❖ However, it needs more consideration for maintenance in Home Network