N ISE™

Integration Service Embedded Platform

NTELS Integration Service Embedded (ISE) is a remote monitoring gateway for M2M/IoT devices, including medical equipments (thermometer, blood glucose meter, scales), home appliances (refrigerator, washing machine, TV), communication devices (smartphone, PC).

N-ISE can be accessed on any device, which enables fast time-to-market and cost-effective operations. In addition, it provides software development kit (SDK) for API development and supports various backend systems (e.g., PC and mobile device).

Business Models

Smart Home

- Home monitoring with the camera and notifying in case of emergency
- Remote monitoring of home appliances and heating/air-conditioning systems
- Automatic alarm in case of gas leakage and intrusion detection
- Monitoring of energy consumption

e-Health

- Health status monitoring based on data collected from various medical equipments
- Pill reminder to help patients to take their medicine on time
- Alarm to the patient's guardian and physician in case of emergency
- Monitoring of patient activity

Smart Vehicle Care

- Sending the location of the driver to nearby hospitals via GPS in case of an accident
- Recommending car insurance products by analyzing the driving pattern

Various Industrial Areas

- M2M : Monitoring the usage and status of remote devices
- Smart City: Monitoring energy, water, waste, traffic, etc.
- Environment: Monitoring the air pollution
- Smart Container: Adjusting the temperature of containers

Features

Fast Time-to-Market for New Services

- Support for various protocols to respond to needs for new services
- Remote deployment in real-time

Web-based SDK

- Operation of the developer lounge
- Development of standardized APIs
- Support for simulator in various forms

Control of Service and Application

- Home network connection (Zigbee, UPnP (DNLA), Bluetooth)
- Remote installation, update, configuration, monitoring and diagnosis
- Rich remote access functions (Java, JCA, JMS, SOAP, REST, JSON-RPC, etc.)
- Optimized for porting to various JVMs and operating systems

Various Services and Management

- Additional management protocols, extension of business logic
- Backend system management and software provisioning
- Remote access to the application server for applications and gateway devices
- End-to-end security

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Smart Gateway Platform

Integration Service Embedded

Key Functions

Data Collection, Standardization, and Transport

- Collecting data from various devices
- Analyzing, optimizing, and standardizing collected data
- Storing standardized data in the collection server
- Transporting the collected data to backend systems (PC and mobile app)

Remote Device Management, Monitoring, and Alarm

- Device list and device profile management
- Automatic software update
- Diagnosis of device hardware and software
- Display of data collected from devices in chart and table
- Automatic/manual device control based on monitoring results
- Reporting to administrators based on monitoring results, if necessary

Security Management

- User authorization and permission grant
- Network communication management
- Certificate management

Software Development Kit (SDK)

- XML-based program source code generation
- Web-based SDK for flexibility in time and space
- Authentication, validation, conformance test, deployment/ interface
- Simulator (Device UART, Bluetooth, TCP/IP, and UDP)

Award and Contest

2013 Received "Best of the Best Award" in 2013 Korea Software Technology Award

2013 Selected as a presentation topic in the 6th Korea Software Architecture Contest

2012 Received "Excellence Award" for OSGi technology in 2013 Korea Software Technology Award

Use Cases

Advanced Metering Test Bed in Jeju

We undertook the Advanced Metering Infrastructure (AMI) project in Gimnyeong-ri, Jeju to implement the system that periodically collects electricity related data from solar power systems and sends to the push sever through OMP[1]. Data collected can be monitored on the smartphone app.

Implemented Functions

- Collecting electricity related data from solar power systems at five-minute intervals and sending to the push server through OMP
- Data collection from a maximum and minimum distance of 800 and 100 m
- Cluster tree using IPv6 RPL (SUN modem performs the relay function)
- Monitoring collected data on the smartphone app

SK Telecom Smart Home Gateway

We implemented a smart home system that collects data from home devices (thermometer, scales, treadmill), sends to OMP, and receives control commands from the OMP to control the devices.

Implemented Functions

- Common Device Bundle: Sends data collected to OMP and receives control commands from OMP
- HDP[2] Device Management Bundle: Collects data from devices, optimizes data to make it suitable for OPM through analysis, and sends to Common Device Bundle
- Collection Server: Stores data received from OMP in database

Note 1: OMP (Open M2M Platform for SK Telecom)
Note 2: HDP (Health Device Profile)

International Standards Compliant

OSGi, Lightweight M2M, Zigbee, SUN Protocol, ETSI 102.921 Standards, Architecture

Bluetooth, UPnP (DNLA), M2M Standards, CoAP, TR-069 Standards

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