Create value in the IoT world

Huawei IoT Connection Management Platform
What's IoT?

The concept of Internet of Things (IoT) was first discussed as early as the 1980s. Now, having evolved from a concept into reality, IoT enables carriers to provide communication and data exchange between connected devices and people.

By its design, IoT integrates physical objects into the IT infrastructure. With continuous acceleration of global informationization, IoT is expected to offer advanced connectivity of devices, systems, and services and become an economic stimulus.

Deploying IoT apps on mobile networks is generally seen as the next step forward. This network architecture and business model promotes IoT apps and reduces network investment risks.
What's IoT Connection Management Platform?

Huawei core network complies with the development of the Internet of Things (IoT), designed as a unified connection management platform with the key abilities: Access agnostic, Carrier grade, Flexible and Open.

Huawei IoT connection management platform provides full connections between people and things and between things and things. Fast integration and support for multi vertical industry applications.

The Huawei IoT connection management platform meets the requirements of carriers, enterprises, and direct sales customers for an E2E IoT platform, helping them integrate industry services, accelerate service rollout, reduce integration costs, and increase revenue.

Built on the IoT connection management platform, the Huawei IoT solution integrates industry services and provides open APIs, service orchestration, and open data to implement a cost-effective and short product development cycle. The IoT solution also provides people and things-oriented Agent/SDK to provide real-time communication, data collection, and device control capabilities. Partners can apply for and use these functions to enhance their competitive edge and create new revenue streams.
Why IoT Connection Management Platform?

In the real world, M2M is changing people’s life. New technology connects people and things, making things smarter and people’s lives more convenient.

But facing the various vertical industries, and various requirements, customers still have many troubles to face:

- Cross-Vertical Industry, unified connection platform. Rapid terminal integration with IoT Agent. Open API to enable aggregation of IoT ecosystem partners. Open APIs and pre-integrated sensors to support operators TTM for enterprises and consumers customers.
- Big data analysis and real-time intelligence. Cloud platforms, layered design of terminal and edge gateway for control and intelligence. Platform provides rules engine and intelligent analysis tools.
- Carrier grade security scheme. Layered security design, covering the business layer, platform layer, access layer, and terminal layer. Device appropriate encryption algorithm matching stringent terminal power and memory resources requirements, while always ensuring industry standard levels of security.

According to operators’ pain points, Huawei IoT solution provides an access agnostic, open, flexible and secure connection management platform to help operators construct an ICT cloud based, strong ecosystem, E2E one stop solution.

Industry challenges

- Smart Home
  - There is not a unified standard in the short term for Smart Home. This fragmentation of the market will exist for the mid-term future.
- Connected Car
  - Safety, high efficiency, and routing of traffic. Antirtransportation
- Oil
  - Cost reduction, improved maintenance and personnel safety.
- Electric Power
  - Difficulty in connecting scattered electric power equipment and lack of effective unified network management.

IoT Connection Management Platform
Huawei Corporate IoT Strategy is divided into three layers:

1 Interface Specification
Open sourced LiteOS to optimizes sensors and terminals for low battery consumption and small memory footprint.

2 Access Modes
Support wireless and fixed access including gateways that support WiFi, Zigbee, Zwave, PLC, RF, Bluetooth etc.

1 IoT Connection management platform
Designed from ground-up for horizontal multi-service enablement
Huawei IoT Connection Management Platform

High Lights

**Access Agnostic**
- Any Network
  - Fixed/Mobile/Cable
  - Licensed/Unlicensed
- IoT Agent/LiteOS
  - Any Device
  - Any sensor

**Carrier Grade**
Ideal User Experience
- Immersed Interaction
- High security and Availability

**Flexible**
End to End Innovation
- SelfConnecting & Self Networking
- Fusion ICT Technology
- Joint Innovation Center
- Plug & Play

**Open**
Fast Time to Market
- Cloud-Based, Easy Deploy
- Open Eco-System
- New services on Fly
- Standard APIs

Access Agnostic

Any Network

IoT Agent/LiteOS

Any Device

Any sensor
Huawei Smart Home solution provides carriers a reliable, secure and easy to deploy one stop solution for end-user home security and home automation value added services.

Huawei Smart Home solution is based on the Huawei IoT connection management platform and has the benefits of high reliability, capability exposure, and service orchestration.

Huawei Smart Home solution allows for rapid service deployment utilizing carrier selected pre-integrated sensors and applications. Huawei Smart Home solution is also easily extensible to add new sensors and allow for user defined service applications, providing full flexibility for service operators to monetize various scenarios of Smart Home.

The common use cases in Smart Home include:

- Home Surveillance
- Home Security
- TV Communication
- Home Energy
- Home Health

Typical Scenario: Smart Home

![Smart Home Diagram]
Typical Scenario: Connected Car

Pre-integration Services of Connected Car

Fleet Applications
- Driving Status
- Driving Behavior
- Logistics Monitoring
- Location Monitoring

Personal Applications
- Vehicle Tracking
- UBI
- Navigation
- Entertainment

Capability Exposure (Application Enablement/DSP)

IoT Platform
- SIM Card Management
- Asset Management
- Big Data
- BSS

IoT Agent inside
- TCU/OBD
- wifi

Communication
- One-key to Talk
- SMS/EMAIL
- Hands-free Phone
- Voice Control

Information
- Weather, News, Stocks
- Parking Inquiry
- Gas Station Inquiry
- Traffic Violation Inquiry

Safety & Security
- Car Locating
- Remote Control
- Theft Alert
- E-CALL/B-CALL
- Collision Alert
- Maintenance
- Remote Diagnostics

Navigator
- One-key Navigation
- Dynamic Navigation
- Online/Offline Navigation
- Road Book
- Find Car

System function
- System Management
- Report Management
- API Exposure
- On-line Upgrade

Entertainment
- On-line Music
- On-line Video
- Broadcast
- Internet Browser
- APP Store
Typical Scenario: Oil

Real-time measurement data collection, improves refinery production management

- Mass flow meter
- Sensing gateway
- IoT Platform
- Optimization of crude oil procurement
- Optimization of crude oil blending
- Optimization of production process

Online monitoring solutions, achieve intelligent warning and predictive maintenance

- Engine pump failure alarm
- Machine pump life curve prediction & early warning
- Root cause of failure analysis

Intelligent inspection can improve the quality and efficiency of inspection, reduce security risk

01 Make inspection plan

02 Intelligent inspection

03 Real-time feedback of inspection data

04 Inspection data association, ensure the quality of inspection

05 Data analysis and alarm linkage

Production scheduling center

Workshop

Inspectors

Implementation of inspection system
To make clear the standard process of inspection

Whole factory inspection data

IoT Connection Management Platform

Whole factory inspection data

Big data acquisition and analysis capabilities to enhance operational management capabilities

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Typical Scenario: Electric Power

Data acquisition and analysis ability meets electric power industry needs for selection and storage of electric power.

Application & Big Data

Data modeling, Trend analysis

IoT Connection Management Platform

IoT agent / LiteOS for rapid integration of diverse terminal ecosystem

End to end integrated network security solutions build a full range of power connection security:

- TPM Trust Zone
- Hardware Security
- Terminal Auth
- Gateway Auth
- Token Authentication
- HTTPS, TLS, DTLS, SSL, VPN Encryption
- Transmission Security
- SIM Card Reuse
- USIM Card Auth
- Carrier-Class Security Auth
- Encrypted Storage
- Message encryption
- Video encryption

Unified connection management platform’s effective network management

Unified Platform

Data acquisition and analysis ability meets electric power industry needs for selection and storage of electric power.