



AVSYSTEM IOT PORTFOLIO

Introduction

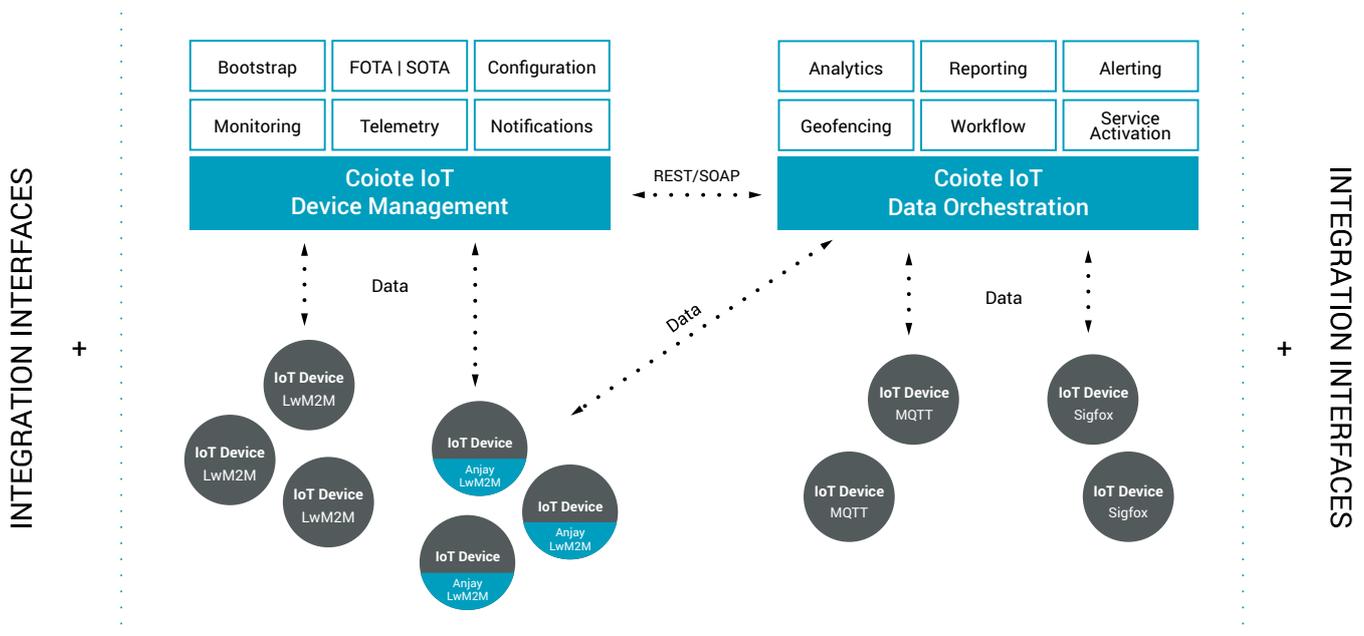
Internet of Things, or **IoT**, is a very wide term for the technology that has been with us since early 2000s and for the last 10 odd years has been constantly evolving to reach the point of being called the next **Industrial Revolution**. As a leading IoT software vendor, AVSystem believes that there are 2 main aspects at which you should look at Internet of Things: **devices (“Things”)** and **data these devices generate**.

The first aspect includes all the connected **smart things** such as sensors, actuators, computer devices, gateways and more. The number of IoT devices reaches nearly 10 billion in 2019 and all of these things have to be **managed** and maintained through their entire lifecycle.

The second aspect tightly linked to the first one is the **amount and quality of data** generated by those billions of smart things. This data is precisely the **entire potential** of all “things” in the Internet of Things and thus it needs to be harnessed and **orchestrated**.

As a result, one can say that if all the devices are properly managed and all the data is properly used, any business can unleash the **full power from IoT**. The role of AVSystem in the Internet of Things is to provide tools to make it happen – **device management and data orchestration solutions**.

AVSystem IoT Portfolio Overview



Device Management in IoT

Device management is the **first and most important** thing to think about when building services around IoT. Thanks to a proper device management system, you can ensure security for your devices and establish secure telemetry channels for data from these devices.



Lightweight M2M

OMA SpecWorks' Lightweight M2M is a sophisticated **device management** and **telemetry** protocol designed initially for resource-constrained devices such as sensors and other devices running on battery or with limited processing and storage capabilities. LwM2M's simplicity and its ability to work over low power wide area networks as well as its robust security mechanisms and well-defined object model makes it a **perfect choice** for M2M communication in the Internet of Things ecosystem.

With the **LwM2M 1.1** release the protocol has been enhanced with even more mechanisms improving its performance in the IoT. AVSystem as an active member of OMA SpecWorks always strives to keep its solutions compliant to the latest version of the standard.



Coiole IoT Device Management

Our flagship product for device management in IoT is **Coiole IoT Device Management**. It is a platform that enables **device management** and **telemetry** through **OMA SpecWorks' Lightweight M2M** standard (LwM2M). The platform also **supports MQTT** for telemetry data handling.

By utilizing LwM2M, Coiole IoT Device Management is able to provide a leading solution in device management and telemetry for all IoT devices – from small and simple sensors to big and complicated M2M gateways in various IoT verticals.

Key Features:



Remote configuration



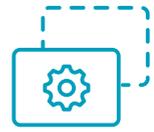
Fault Management



Monitoring



Firmware over the air



Application Management

Why Coiole IoT Device Management?

- 12 years of experience in large-scale device management
- Robust architecture – proven scalability, option to be deployed on-site or in any Cloud environment (AWS, Azure, Google Cloud)
- Easy integration with other systems (e.g. Coiole IoT Data Orchestration, Amazon AWS, PTC ThingWorx)
- Proven interoperability (best results at OMA SpecWorks' Test Fests)
- Leading Device Management Technology Stack in MachNation IoT Device Management ScoreCard



Data Orchestration

Data generated by IoT devices comes in enormous quantity. The most important thing is to obtain **quality** from this great amount of information. Only when you **analyse** the data produced by IoT devices, you get the real value from it. That is why systems for **data orchestration** become useful in IoT ecosystems.

Coiate IoT Data Orchestration

Coiate IoT Data Orchestration is a platform that enables collecting data from various sources, aggregating it and then visualizing & analyzing it to get useful insights. The platform is able to process data from such protocols as: **LwM2M, MQTT and Sigfox**, among others.

As an integration platform, Coiate IoT Data Orchestration uses existing infrastructure which allows for creating new IoT services and developing new IoT projects **without involving other service integrators**.



Get one source of data

Integrate various platforms - device management platforms (such as Coiate IoT Device Management), OSS platforms, etc. Coiate IoT Data Orchestration is capable of **collecting data from various sources** - devices, assets and other platforms - to process, aggregate and unify it.



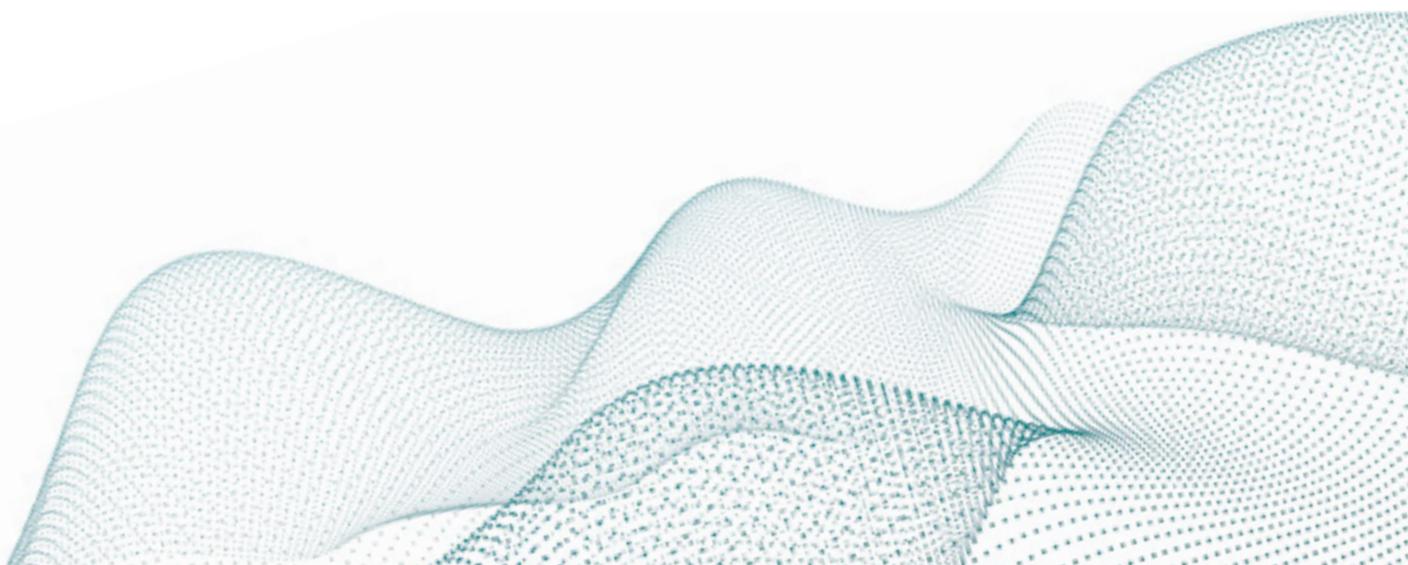
Visualize & analyze the data

Make your data easy to use by building **customizable** and dynamic **dashboards**. With Coiate IoT Data Orchestration you can also view the data in **separate views** (end-user, operation team, admin etc.), monitor data, maps and external UIs, analyze it in real-time and download ready-to-read report.



Perform actions based on integrated data

Create **fully customizable workflows** and dashboards dedicated to your teams, departments or customers. Perform event-based actions such as service activation, geo-location, monitoring, reporting and more.



Anjay LwM2M SDK

Anjay is a **free and open-source** Software Development Kit (SDK) that can be used to create an LwM2M Client to help vendors of Internet of Things equipment implement support for OMA SpecWorks' Lightweight M2M on their devices and enable remote management over LwM2M. Anjay together with Coiote IoT Device Management offer **full support for LwM2M** standard (Client and Server).

Anjay is also available in a **commercial version** with implemented **support for the latest version of LwM2M** and more features including integration with various operating systems such as: Intel, PowerPC, ARM, Free RTOS, Thread-X.

Technical Specification

Language standards	C99
TLS libraries supported	OpenSSL, mbed TLS
LwM2M interfaces implemented	Bootstrap, Register, Management and Information Reporting
Support for multiple LwM2M Server connections	Yes
Pre-implemented LwM2M objects	Security, Server, Access Control
Underlying protocols implemented	CoAP (RFC 7252) Observing Resources in CoAP (RFC 7641) CoAP Block transfers (RFC 7959) CoAP over TCP, TLS, and WebSockets (RFC 8323)
User guide, full API documentation	Sphinx, Doxygen, code documentation

LwM2M Interoperability Program and Professional Services

Having obtained in latest years the **best results** in OMA TestFests in LwM2M Server and LwM2M Client categories, AVSystem decided to create an **LwM2M Interoperability Program** to deliver professional services related to **LwM2M interoperability** verification.

The tests include execution of protocol-level scenarios, service-level scenarios as well as performance/stability testing.

The extended portfolio of professional services includes porting of Anjay LwM2M client to selected target platforms (Linux, Android, Free RTOS, Thread-X, Contiki, mbedOS), maintenance and support of OEM integrations, consulting and design and preparation of LwM2M SDK customized for the customer.

Your next step

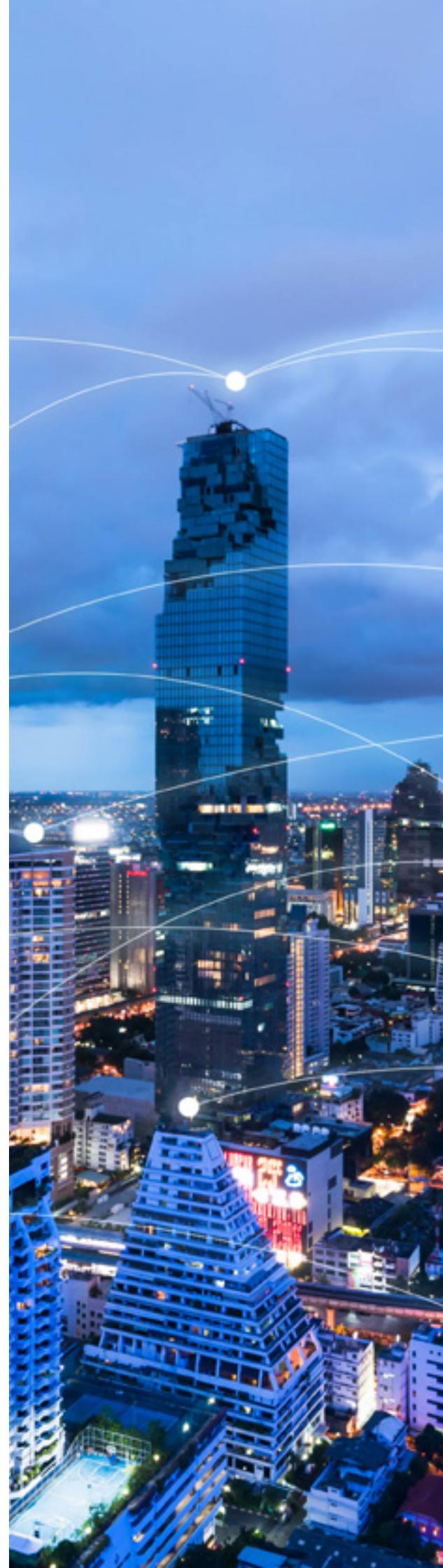
Grow and develop your business thanks to a long-term partnership with AVSystem.

Contact us at sales@avsystem.com to find out more on how we can help your business or visit

<https://www.avsystem.com/products/iot-solutions/>

About AVSystem

No IoT deployment is successful without proper device management – this is what AVSystem stands for. As a 12-year-old company, AVSystem is an expert in its field. We help companies around the world deliver better quality of service thanks to our top-class device management solutions. We also focus on WiFi VAS & indoor location as well as other systems for SDN and NFV. Apart from creating software, we actively participate in the standardization process of the LwM2M standard to enable secure device management and service orchestration in the IoT ecosystem. 100+ large companies worldwide prove the superiority of AVSystem's technology.





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