Oracle Solution for the Internet of Things

Benefits and Challenges of Machine-to-Machine Communication

Topic

The Internet of Things (IoT) is becoming the main driver for innovation in our economy, society and culture. Intelligent, networked devices are already populating both every day life and business. But smart homes, connected cars or Industry 4.0 are just the tip of the IoT iceberg. Industries, such as transportation, health care, or production / automation are seen as promising application fields. Here, a Machine-to-Machine (M2M) communication is the core of a connected, sustainable and mobile future. M2M is the automated exchange of information between devices such as machinery, vehicles or containers, with each other or with a central unit. M2M is such an important enabler and driver of the important future topic "Industry 4.0", because equipment and IT systems can communicate and share information in real time and automatically plan the next steps. This means for example that:

- tasks are redirected automatically, depending on demands,
- bottlenecks and unused capacity are identified,
- machines can be preventively serviced.

These are all factors that can lead to significant cost reductions while maintaining customer satisfaction, provided that the M2M communication is implemented correctly. However, the complexity of the M2M value chain can be a challenge that relates to a wide range of stakeholders, such as semiconductor, instrumentation and gateway manufacturers, network providers, telecommunications operators, independent software vendors, system integrators, and many more. Figure 1 demonstrates such a value chain.
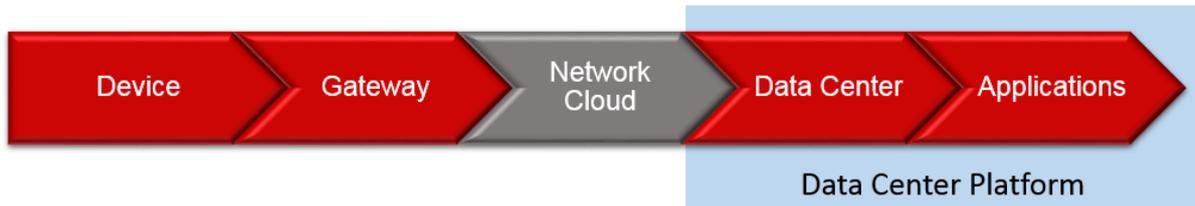

Fig. 1: Simplified M2M value chain

Currently, especially customized and non-standard solutions are realized. By following the complexity of the respective value chain significant costs can be saved by achieving scaling effects. It is important that the following requirements are met:

- meaningful reduction of complexity,
- ensuring sufficient information exchange,
- compliance with the law (e.g. privacy policy),
- other individual challenges depending on the industry, company structure etc.

The market leader Oracle offers with its enterprise applications interesting solutions to these challenges for the future. They control the entire value chain that extends from procurement through production to delivery to the customer. Particularly the Oracle technology products (Oracle Java Embedded) point in the right direction for the Internet of Things and Machine-to-Machine (M2M) communications and Big Data.

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Managing the complexity – Internet of Things platform

The Solution

Oracle offers a complete M2M architecture. From the Java platform to embedded data management systems to the back-end database, from Big Data technologies, middleware and analysis technologies to highly efficient hardware, which processes data into findings and insights, Oracle is the only company that offers an integrated, reliable and secure platform today and with a guaranteed future, thus meets the requirements regarding the IoT and M2M.

The Oracle Internet of Things platform meets the following critical requirements:

- seamless security,
- support for the integration of IT systems,
- coordination of partners in the value chain,
- consideration of cost-benefit constraints and on-time delivery,
- full compatibility and management solution over the entire life cycle,
- real time response to millions of device endpoints.

Oracle Java Embedded for reliability and portability: The right technology at the right place, from the right provider

From Embedded Java devices to Oracle Engineered Systems in data centers and Big Data analysis tools, Oracle provides a convenient Internet of Things platform, where the data from connected devices can be stored and analyzed (Fig. 2).
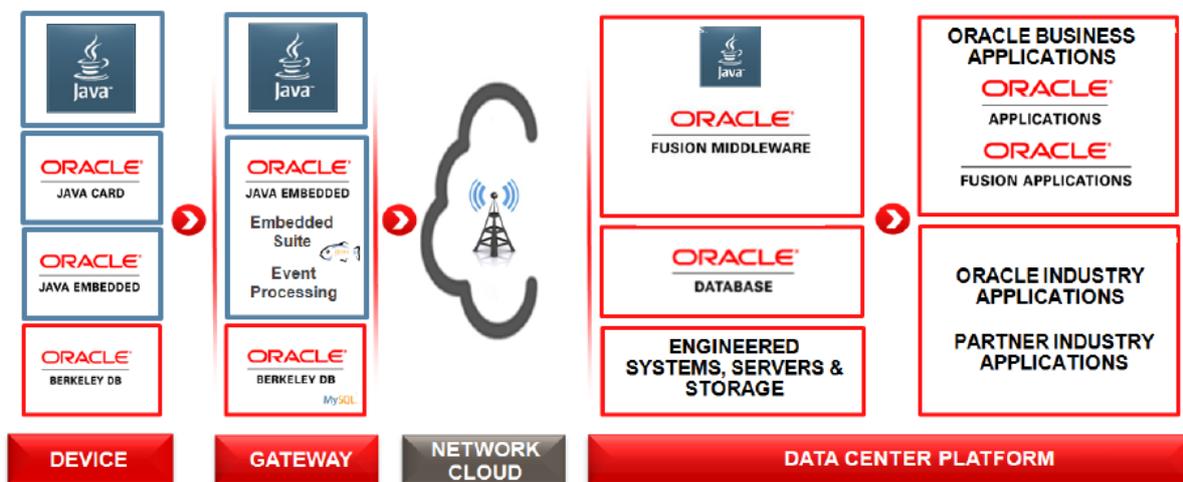

Fig. 2: Oracle Internet of Things platform

This platform is characterized inter alia by the following properties:

Smart: Java provides the ability to make devices intelligent and upgradable. Therefore, it supports immediate decision-making with back-end analysis and helps to make faster and better decisions.
Portable: Java allows a device to run apps that function independently of different device architectures and operating systems.
Open: A algorithm programmed in Java can be run on the peripheral device, on the gateway, and on the server without adjustments, depending on where the problem is currently solved best. This option is supported by all standards (Java Embedded, Java Standard and Java Enterprise Edition).

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Simplified implementation of Machine-to-Machine solutions with the right partner

Experienced service partner PROMATIS

The focus of the Internet of Things lies on devices that automatically digitize processes, interfaces and decisions. The use of M2M increases the transparency of all value-added processes. Thus, companies can benefit significantly from M2M solutions. In order to turn the vision of the Industry 4.0 into reality, especially the challenges regarding system integration must be mastered. As a specialized partner for Oracle technology solutions, we offer extensive expertise in the realization of complex integration scenarios and the automation of processes, because for over 20 years, PROMATIS stands for the synergistic interaction of business processes and modern technologies. Here, a continuity of the business processes along with the value chain is a prerequisite, across corporate boundaries.

With PROMATIS, your Oracle solution is competently implemented with the following values:

- Best know-how transfer, because with PROMATIS a solution is always implemented together with the client.
- Highly motivated and qualified staff ensures that your goals and requirements are considered throughout the project.
- Due to the close connection between PROMATIS and leading research institutions, you can have tomorrow's solution today.

Information

The listed products are trademarked and belong to the respective copyright owner. Date of documentation: April 2015

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