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AVSYSTEM RATED AS A LEADING VENDOR IN MACHNATION'S 2020 IOT DEVICE MANAGEMENT SCORECARD

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Executive Summary

The IoT device management (DM) space is one of the most important and complex technology areas of the Internet of Things (IoT). Enterprises realize that support for IoT devices in a heterogeneous environment enables them to launch new services, create revenue opportunities, and minimize solution support costs.

MachNation rated the IoT DM vendors across a set of requirements spanning four distinct categories. The four categories of requirements consist of 18 sub-requirements that are the underlying bases of MachNation's evaluation. The four categories are:

- Lifecycle management
- Architecture and security
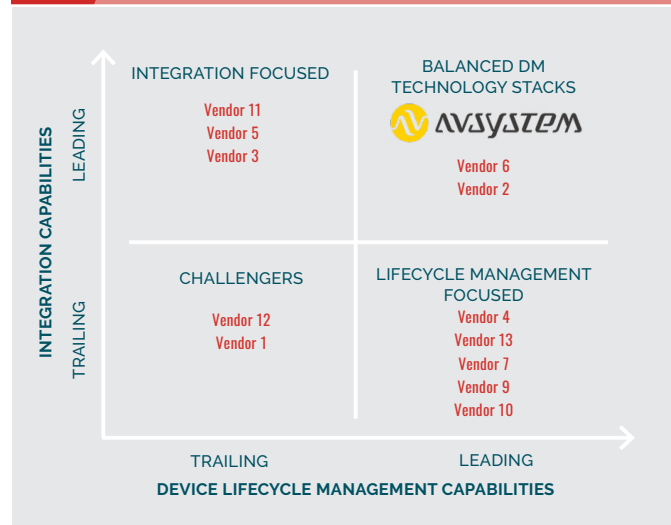- Integration
- Business and strategy

MachNation's 2020 IoT Device Management ScoreCard includes the following vendors (listed alphabetically):

Amazon, Amplia, Arm, AVSystem, Ayla Networks, Blynk IoT, Bosch, Harman, Microsoft, Nokia, Particle, PTC, and Software AG. See Figure 2.

Methodology

The MachNation 2020 IoT Device Management ScoreCard was started in Q1 2020 and completed in Q2 2020. All vendors that agreed to participate in the ScoreCard received an Excel-based questionnaire asking them to disclose details about strategic and technical aspects of their

FIGURE 1   MachNation IoT Device Management ScoreCard: Technology Capabilities

IoT device management solutions. Following completion of the questionnaire, MachNation conducted a follow-up telephone call to ask refining questions generated by the vendor's questionnaire responses. The call also allocated time for a live product demo. Additional requests for information and clarification from the MachNation team were addressed via email or additional calls.

Findings

MachNation suggests that enterprises evaluate a vendor's device management capabilities based on four requirement categories: excellent device lifecycle management, a cogent architecture and security, capable integration model; and an established and forward-thinking business strategy. Leveraging these requirements, enterprises can ensure that they are selecting a best-in-class device management vendor.

Lifecycle Management

Lifecycle management refers to the ability of a DM solution to provide capabilities for common

operational tasks relating to the management of devices or gateways. A leading DM solution must provide capabilities for initial asset rollout such as onboarding or software deployment. It must also provide capabilities for asset configuration and ongoing operational maintenance such as diagnostics, monitoring, and alerting. An efficient and capable operational management layer is key to providing cost-effective support of connected assets over the course of their service life. MachNation evaluates an IoT DM vendor's lifecycle management functionality in 5 key areas: software and firmware management; monitoring, alerting and dashboards; bulk device management; diagnostics, logging, and troubleshooting; and remote configuration and remote actions.

Architecture and Security

The architecture of a DM platform is crucial to ensure a solution functions effectively at the time of initial deployment, scales to production levels, and affordably serves the customer over the implementation lifetime. A high-quality technical implementation without an excellent underlying DM architecture is an easily made, but inevitably expensive mistake for a customer. MachNation has identified four evaluation criteria for overall DM architecture: security model, productization, scalability of the platform, and flexibility of the multi-tenant/multi-customer offering.

Integration

One of the most daunting prospects for any solutions provider is choosing an IoT DM that integrates efficiently with existing hardware and software assets while also providing a well-defined path for new asset deployments. MachNation believes that an effective DM platform should provide appropriate programmatic and non-programmatic resources to enable integration of managed and unmanaged devices into the platform and to provide the ability to make sensor and machine data available to external systems. MachNation evaluates an IoT DM vendor's integration functionality in five key areas: platform API capability and extensibility; device SDK and API integration; connectivity management; device data egress capability; and developer usability.

FIGURE 2	MachNation IoT Device Management ScoreCard 2020: Vendor List	
Amazon	Amplia	Arm
AVSystem	Ayla Networks	Blynk IoT
Bosch	Harman	Microsoft
Nokia	Particle	PTC
Software AG		

Business Strategy

There are several business and strategy characteristics of leading DM vendors that will maximize their chances of market success by having the proper amount of internal resources and market presence. MachNation has identified four areas of requirements for successful business and strategy characteristics including the size of the vendor's overall business, the vendor's DM vision, its technology enabler partners, and its business enabler partners.

AVSystem Overview

AVSystem, based in Krakow, Poland and founded in 2006 offers a variety of IoT services including Coiote IoT Device Management and Coiote IoT Data Orchestration for device lifecycle management and application enablement, respectively. AVSystem's IoT portfolio also includes Anjay, a free and open-source Open Mobile Alliance Lightweight M2M (OMA LWM2M) library. Initially, AVSystem focused on device management for the telecommunications industry with a particular emphasis on consumer gateways, but now AVSystem has expanded its offering to more industry sectors. AVSystem is also an evangelist of the LWM2M protocol, offering full support for the LWM2M version 1.0.2 and 1.1 specifications, as well as serving on the OMA advisory board for the LWM2M standard.

AVSystem has a particularly strong offering in the growing IoT device management ecosystem. MachNation believes this strength comes from its strong access control integration with external identity management systems, its native device compatibility and connectivity testing services, a high degree of developer support for the Anjay SDK library, and its continued commitment to offer industry leading support of the OMA LWM2M device connectivity protocol. MachNation cited AVSystem's unique strengths in the following areas:

AVSystem provides a unified authentication system that can integrate with multiple external identity-management (IDM) systems. AVSystem's new ID system for customers with multiple cloud accounts allows users to authenticate and link user profiles from other systems into a unified access control solution. User's can now authenticate their Coiote access with Google, Microsoft, IBM and more, thus enhancing the usability of the Coiote platform while also taking advantage of some added security features offered with cloud vendor accounts like multi-factor-authentication. This type of unified IDM using OAuth is a good approach for extending the usability of an IoT DM platform.

AVSystem introduced a device state and connectivity protocol testing module for individual devices. With this testing module, users are able to design and execute stability, connectivity, and telemetry tests for connected devices. While most IoT platforms have some form of internal optimization testing on the backend, it is a rather novel approach to make these features available to the customer. Users are able to ensure device optimization and diagnose any potential issues in real-time, offering potentially huge cost savings during outages or when experiencing unexpected device behavior, empowering customers to individually manage their solution without relying on external support technicians.

AVSystem has improved developer usability for its Anjay device SDK. Anjay is a set of tools that enable device manufacturers or individual developers to implement a LWM2M client on their hardware. AVSystem have made various improvements to accelerate the development effort and save time including: guided tutorials, more comprehensive documentation, and various failsafe mechanisms to prevent irreversible hardware damage. AVSystem has also made available a C language implementation of LWM2M available on Github for developers inexperienced with the LWM2M framework.

AVSystem offers a series of productized tests available to validate an LWM2M device on the Coiote platform. In addition to out-of-the-box test capabilities, system developers are able to test and diagnose device actions within a defined data-model via XML task templates. This is a stand-out feature from other LWM2M capable offerings that lowers costs and complexity for customers seeking to integrate their own LWM2M devices into the Coiote platform.

Conclusion

Based on MachNation's in-depth analysis of 13 IoT DM vendors, MachNation rates AVSystem as a leading IoT device management vendor.

MachNation is exclusively dedicated to testing and benchmarking Internet of Things (IoT) platforms, middleware, and services. MachNation owns and runs MachNation IoT Test Environment (MIT-E), the industry's only independent, hands-on, benchmarking lab for IoT platforms. MachNation testers, developers, and analysts provide guidance to industrial enterprises, the world's leading IT vendors, and communication service providers. MachNation participates in many of the world's most exclusive IoT events and contributes regularly to leading IoT and business press.

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