

Condition-Based Maintenance with DataV Maintain

Maintenance of business-critical equipment is the single largest controllable asset expense, especially when multiplied by millions of assets. Preventative maintenance should help avoid unplanned downtime and emergency equipment failures that can cost three to four times more than regular maintenance. But time- or usage-based maintenance can result in servicing equipment too often or not enough and burden limited maintenance personnel. Condition-based maintenance allows equipment to be serviced only when it's needed based on actual operating conditions for lower maintenance costs, better workflows, and longer asset life.

DataV Maintain creates optimal maintenance schedules for extremely large populations of business-critical assets by monitoring and analyzing current operating conditions on assets' digital twins. It can pinpoint at-risk assets before they fail, avoiding expensive repairs or replacement. The system evaluates the health of an entire population of assets to identify trends in groups, and takes action on a subset of the group; for example,

alerting personnel of required maintenance or modifying maintenance notifications when environmental conditions affect equipment performance. Integration with existing enterprise maintenance applications and workflows improves service organization efficiency and reins in costs, and standardized reports provide a consolidated, easy-to-understand view of an entire population of assets.

Key Features



- **Rules and automation** – Supports data-driven and goal-based reasoning using a complex business rules engine built on a hybrid reasoning system (HRS). Data-driven reasoning evaluates information such as asset telemetry against rules (configurable constraints) to determine what action to take. In a goal-based approach, the rules engine strives to sustain a desirable result (goal) against a constraint by taking actions that contribute to the goal.
- **Maintenance recommendation** – Reasoning engine analyzes real-time operating conditions, along with external factors, for assets and recommends changes to maintenance schedule in order to extend asset life. As it detects conditions that could negatively affect asset life, it allows for asset configurations re-tuning.
- **Condition monitoring** – Remotely gathers asset operating telemetry along with environmental data and displays real-time asset operating conditions in an extensive dashboard view.
- **Alerts/Notification** – Alerts can be configured to notify designated people or groups via email, SMS, or external notification extensions when assets reach a designated RUL threshold.
- **Enterprise workflow integration** – Configures and detects events or conditions to trigger enterprise workflows via API integration with ERP systems' MRP interfaces. For example, DataV Maintain can automatically order a part through a centralized parts management system before an asset arrives at a service location. Once the repair is complete, the application reports technician diagnostic time to a workforce management database.
- **Search** – Uses device queries to find and generate an aggregate view of device twins. Device queries are structured as JSON objects that can provide filters, projections, aggregates, and lists of sort expressions.

Benefits

- Reduces service costs by determining optimal repair intervals for millions of devices based on actual asset usage and operating conditions, while reducing truck rolls and service calls for emergency repairs
- Improves maintenance workflows and technician efficiency by servicing equipment only as needed
- Increases equipment reliability and productivity, while reducing risks associated with failures
- Extends asset longevity for better return on capital investment and deferred investment in replacement equipment

DataV Apps



Predict

Modeling of equipment behavior and monitoring of the real-time environment to identify a future failure event



Repair

Automated evaluation of fault codes and operating parameters resulting in an optimized repair plan that adapts to current conditions



Manage

Lifecycle management of IoT devices, including provisioning, inventory, software updates, and configuration



Maintain

Determination of tailored maintenance schedules for managed equipment based on actual usage and external factors



Optimize

Performance improvement based on data models that can be used in offline mode for simulation or online mode for comparative analysis



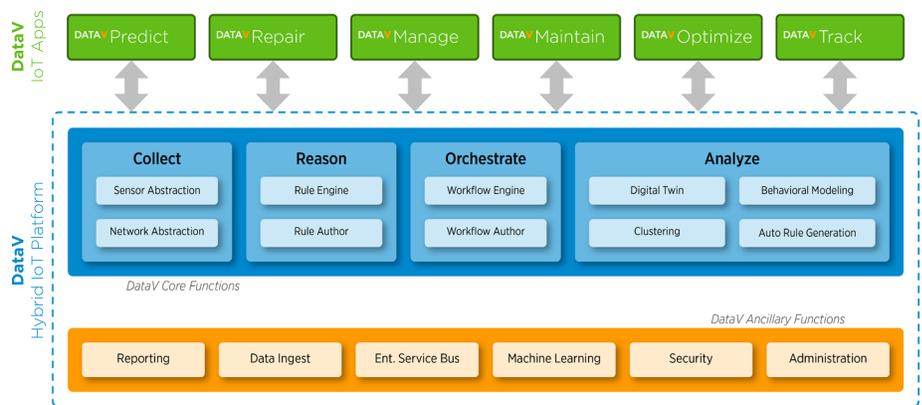
Track

Real-time usage information from managed assets that can inform product design or maintain compliance in regulated environments

The DataV Hybrid IoT Platform

The DataV Hybrid IoT Platform helps industrial companies get maximum business value from their critical assets by collecting, analyzing, and acting on data collected from connected equipment. It supports DataV applications by automating data analytics, rules generation, and algorithms. By creating a digital twin of each connected device, the platform enables powerful adaptive analytics across millions of assets for unparalleled scalability, insight, and management capabilities.

The user-friendly platform allows DataV applications to run concurrently, share data and insights across the entire system, and integrate with other operational and enterprise applications. This accelerates analytics processing and allows the system to become more intelligent over time through machine learning. The platform runs on-premise, in the cloud, or a combination, and can work independently or in conjunction with Amazon Web Services and Microsoft Azure for flexibility and scalability.



ABOUT BSQUARE

For over two decades, Bsquare has helped its customers extract business value from a broad array of assets by making them intelligent, connecting them, and using data collected from them to improve business outcomes. Bsquare software solutions have been deployed by a wide variety of enterprises to create business-focused Internet of Things (IoT) systems that can more effectively monitor assets, analyze data, predict events, automate processes and, in general, optimize business outcomes. Bsquare couples innovative software with advanced professional services that can help organizations of all types make IoT a business reality.

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