AXEDÁ® AGENTS

The Intelligent, Secure Connection

Your devices contain a wealth of information about their status, health, usage, and performance. Without capturing and processing this information, however, you have no way of knowing – until they break down – when your devices will require maintenance or how frequently particular features are used.

Axeda Agents collect device data, process information, and communicate with the Axeda® Machine Cloud® so that you can make well-informed decisions. Installed on or near your devices, Axeda Agents provide instant, two-way, Firewall-Friendly monitoring, communication, and control of device information and events, while business rules optimize the flow of information.

Leveraging a Proven Architecture

The Axeda Agent is built with a modular architecture that separates data from logic to provide maximum flexibility without sacrificing speed of deployment. Three layers comprise the architecture. At the bottom layer, pluggable drivers provide access to data sources through either standard or fully customized protocols. In the middle layer, core logic provides a uniform set of modules to transform the data into useful information. The top layer is the XML project file, built with the GUI-based Axeda Builder tool to configure the operation of the core layer. This three-layer architecture speeds deployment by using a standard productized core of services that can be configured without changing code.

What If You Could…

- Monitor device health to make repairs remotely?
- Increase uptime through proactive monitoring of device information and events?
- Securely exchange information between your devices and the cloud?
- Automatically detect new devices as they are connected?
Integrating with Devices
Axeda Agents easily integrate with intelligent devices to monitor and communicate information, alarms, files, and events to the Axeda Machine Cloud, and receive commands back for execution. They can be embedded inside devices for small footprint systems, run as services, or connected to external hardware attached to devices. If you have multiple devices at one location or on a local network, a single Axeda Agent can also act as a gateway to connect multiple devices to the Axeda Machine Cloud.

Applying Local Intelligence
Axeda Agents send data to the Axeda Machine Cloud only when necessary, such as when data has changed, and make decisions locally to reduce network traffic and server load.

Communicating with Devices
Axeda Agents communicate with devices via a library of out-of-the-box supported device drivers, custom software drivers, regularly scheduled scripts that collect and parse data, or industry-standard network and industrial protocols. The Axeda driver library includes out-of-the-box device connectivity for monitoring:
Axeda Agents

- Databases
- Log files
- Operating systems
- Application interfaces (APIs)
- Networked devices (via SNMP, Telnet, FTP, etc.)
- Web management interfaces (via parsing of published HTML content)

Others can be written with the Axeda Software Development Kit (SDK) to interface with the unique requirements of your devices. With documentation on the programming APIs, information on how to extend the Axeda Platform, and sample code, the Axeda SDK includes:

- **Custom Handlers** – Hook into the Axeda Agent to filter data and events and modify the sequence of events to process Axeda Agent activities, such as data transformation, alarm filtering, file transfers, and Axeda® Connected Access™ (separate application) sessions.

- **Data Source Drivers** – Create new C++ drivers to access any data source and use scripting for quick access to file and Telnet sources.

- **Custom Components** – Extend Axeda Agent capabilities, add custom logic and data handling, and access APIs through the Axeda Builder.

- **Web Services (called from external programs)** – Report data, alarms, and events to the Axeda Agent and control Axeda Agent actions, including file transfers and communication with the Axeda Platform.

Axeda Agents can also execute scheduled scripts that collect data and alarms from any source, create files to upload to the Axeda Cloud, and run maintenance tasks. For example, an executed script can automate diagnostic tasks by uploading configuration and other files or delete temporary files when available disk space is less than the threshold. Using built-in platform security mechanisms, you can centrally manage script deployment and control access.

**Key Features**

- Embedded, tethered, and gateway configurations meet your deployment requirements
- Two-way, patented Firewall-Friendly communication ensures secure information exchange
- Immediate warning of critical device information through alarms
- Out-of-the-box device connectivity
- Fast time to deploy and redeploy as new service features are added
- Easy-to-use user interface to configure information access and rules

**Benefits**

- Accelerate deployment with minimum or no coding
- Realize low cost of ownership by delivering remote service upgrades with low risk
- Decrease time and service costs by running scripts and collecting complex data
- Define business rules that specify what information to send and when

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**Figure 2. Axeda Agent Architecture**

<table>
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<tr>
<th>DATA COLLECTION</th>
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<th>AXEDA BUILDER</th>
<th>MULTIPLE DATA SOURCES</th>
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| Continuous data monitoring | Project Files                             | GUI tool for configuration without programming | Network protocols
| Periodic collection of snapshots and files    | Agent Core Services                       |                           | API access
|                                           | Drivers                                   |                           | Scripts                           |
|                                           | Scripts                                   |                           | XML data                          |
|                                           | Other                                     |                           | Event logs                        |
|                                           |                                          |                           | Database                          |
|                                           |                                          |                           | Platform resources                |
|                                           |                                          |                           | Other sources                     |

**Diagram:**

- **DATA COLLECTION**
  - Continuous data monitoring
  - Periodic collection of snapshots and files

- **BUSINESS RULES**
  - Logic for alarms, expressions, timers
  - Execution of scripts

- **REMOTE CONTROL**
  - Interactive sessions
  - Software upgrades

- **COMMUNICATION**
  - Firewall-Friendly
  - Proxy server support
  - Standards: SML, SOAP
  - Encryption: SSL

**Let’s talk about your needs.**

- **Project Files**
  - Sample code
  - Documentation on programming APIs

- **Agent Core Services**
  - Information on how to extend the Axeda Platform

- **Drivers**
  - C++ drivers

- **Scripts**
  - Custom logic and data handling

- **Other**
  - APIs through the Axeda Builder

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Securely Exchanging Information
Axeda Agents incorporate patented Firewall-Friendly communication technology that lets remote devices exchange information securely with the Axeda Machine Cloud – even when hidden behind corporate firewalls. Axeda Agents initiate all communication with the Axeda Cloud using available LAN connections – without changing IT security settings. Your device is safe and secure because it is not “on the Internet” or addressable from outside the corporate firewall.

The Axeda Platform can also enable secret key message encryption, which may be used with SSL to encrypt data beyond the demilitarized zone (DMZ). Mutual authentication (with certificates on both the Axeda Agent and the Axeda Cloud) can ensure that only authorized devices are connected to the Axeda Cloud.

Automatically Detecting New Devices
Axeda Agents enable large-scale deployments by automatically detecting new devices – eliminating costly on-site visits as new devices are added, when the location of existing devices has changed, or when migrating to a new network topology.

Intelligently Processing Information
Axeda Agent includes components that simplify the processing of device information. Processing information at the device level reduces the amount of information that needs to be sent to the Axeda Enterprise server. Data processing components included with Axeda Agent include:

- Data items
- Expressions
- Timers/scheduling
- Alarm generation
- Data logging

Creating, Deploying, and Administering Projects
Axeda Builder is a graphical development tool that enables you to create, edit, and deploy Axeda Agent projects – without any C/C++ programming. Agent projects define data collection, alarm evaluation, and business rules. Axeda Agents can be added to your devices as part of the manufacturing process and installed either by field technicians or by your customers via a Web download.

As you add new service features, you can reconfigure and redeploy your Agents to your devices with Axeda Software Management (separate application) – all while the system is running to minimize downtime. Finally, with the Axeda Deployment Utility, site-specific information is separated from the Agent so that upgrades can be delivered without modifying the site configuration.

“Axeda Agents easily integrate with intelligent devices to monitor and communicate information, alarms, files, and events to the Axeda Machine Cloud, and receive commands back for execution.”