

# Loop and IoT Standards Compliance

Litmus Automation products comply with security standards at the transport layer (certificates are unidirectional and bidirectional) and for client authentication and authorization.

## Data Transport

- **MQTT** (Message Queuing Telemetry Transport) - A lightweight messaging protocol for transfer of data to/from IoT devices. This protocol, optimized to minimize network bandwidth consumption, is designed for interactions with sensors and mobile devices. The protocol, which sits on top of TCP/IP, supports a publisher-subscriber architecture and is designed to interact with objects that measure physical quantities such as light, gas, temperature, dust, motion, sound, and pressure. Software accesses the tangible object using an Object ID and this object can have multiple instances.
- **REST APIs** (Representational State Transfer) - Application programming interfaces (APIs) provide endpoints for requesting essential information from JSON via HTTP (refer to [REST API with JSON](#)). Users can develop their own interfaces using REST APIs.

## Device Management

- **LWM2M** - This OMA (Open Mobile Alliance) Lightweight Machine-to-Machine (M2M) protocol provides device management via client-server application layer communication.

## Data Model

- **IPSO** (Internet Protocol for Smart Objects) - This platform promotes IoT device interoperability and it enables "smart object" functionality.