IoT Device Management System Patent US10999888

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ABSTRACT

A system and method for managing distributed Internet of Things (IoT) devices across enterprise environments, comprising an intelligent orchestration layer that enables automated device provisioning, security policy enforcement, and predictive maintenance through machine learning algorithms. The system utilizes a proprietary protocol stack for secure device communication and implements adaptive power management for extended device longevity.

BACKGROUND OF THE INVENTION

[001] Enterprise IoT deployments face significant challenges in device management, security enforcement, and operational optimization across distributed networks. Existing solutions lack comprehensive capabilities for automated provisioning, predictive maintenance, and intelligent power management at scale.

[002] The present invention addresses these limitations through an innovative approach to IoT device management that leverages machine learning and advanced analytics to enable autonomous operation while maintaining security and reliability.

SUMMARY OF THE INVENTION

[003] The invention provides a system for managing IoT devices comprising:

- A central management console with distributed edge processing capabilities
- Machine learning algorithms for predictive maintenance and optimization
- Automated device provisioning and security policy enforcement
- Adaptive power management protocols
- Real-time analytics and reporting infrastructure

DETAILED DESCRIPTION

[004] The system architecture comprises:

Control Layer

- Central management console
- Policy definition interface
- Security enforcement module
- Analytics dashboard
- API gateway

Device Layer

- Edge processing units
- Sensor interfaces
- Communication modules
- Power management system
- Security protocols

Analytics Layer

- Machine learning engine
- Predictive maintenance module
- Performance optimization algorithms
- Reporting system
- Data storage and processing

[005] The system enables:

Automated device discovery and provisioning

Real-time monitoring and analytics

Predictive maintenance scheduling

Security policy enforcement

Power optimization

Performance reporting

CLAIMS

A system for managing IoT devices comprising:

a) A central management console;

b) Distributed edge processing units;

c) Machine learning-based optimization algorithms;

d) Automated provisioning capabilities;

e) Security enforcement mechanisms.

The system of claim 1, wherein the machine learning algorithms provide:

a) Predictive maintenance recommendations;

b) Power optimization strategies;

c) Performance enhancement suggestions.

The system of claim 1, further comprising:

a) Real-time analytics capabilities;

b) Automated reporting functions;

c) Security policy enforcement mechanisms.

DRAWINGS

[Reference to attached technical drawings showing system architecture and component relationships]

TECHNICAL FIELD

[006] This invention relates to the field of Internet of Things (IoT) device management, specifically addressing enterprise-scale deployment and optimization challenges through intelligent automation and machine learning.

INDUSTRIAL APPLICABILITY

[007] The invention has direct application in:

- Manufacturing environments
- Logistics operations
- Smart building management
- Industrial automation
- Enterprise IT infrastructure

PRIOR ART REFERENCES

[008] The following patents and publications are incorporated by reference:

- US Patent 9888777
- US Patent 9999666
- US Patent 10111555

ASSIGNMENT AND RIGHTS

[009] All rights, title, and interest in this patent are assigned to Summit Digital Solutions, Inc., a Delaware corporation, including all rights to enforce and license the patent.

CERTIFICATION

I hereby certify that this patent document accurately represents the invention as claimed and described.

/s/ Michael Chang

Chief Technology Officer

Summit Digital Solutions, Inc.

Date: September 22, 2021

/s/ James Henderson

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LEGAL REPRESENTATION

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