API GATEWAY IMPLEMENTATION PATENT

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ABSTRACT

A system and method for implementing an enterprise-grade API gateway architecture that enables secure, scalable integration of distributed systems through intelligent routing, authentication, and transformation of API requests. The invention comprises a novel approach to API request handling, incorporating machine learning for traffic optimization and automated scaling based on real-time analytics.

BACKGROUND OF INVENTION

Field of Invention

[0001] The present invention relates to the field of enterprise software architecture, specifically concerning systems and methods for implementing intelligent API gateway services that facilitate secure communication between distributed software applications.

Prior Art

[0002] Traditional API gateway implementations suffer from limitations in scalability, security, and intelligent request routing. Existing solutions typically rely on static routing rules and manual scaling, leading to inefficient resource utilization and potential security vulnerabilities.

DETAILED DESCRIPTION

Overview

[0003] The present invention provides an innovative approach to API gateway implementation through the following key components:

a) Machine Learning-Enhanced Request Routing

b) Automated Scaling Architecture

c) Real-time Traffic Analysis System

d) Intelligent Authentication Framework

e) Transform Engine for Protocol Adaptation

System Architecture

[0004] The system comprises:

Core Gateway Engine

- Request interceptor
- Authentication processor
- Route optimizer
- Response handler

Analytics Module

- Traffic pattern analyzer
- Performance metrics collector
- Predictive scaling engine

Security Framework

- Token validation system
- Threat detection engine
- Access control manager

Implementation Method

[0005] The implementation process includes:

Initial gateway deployment with base configuration

Machine learning model training using historical traffic patterns

Dynamic rule generation based on observed patterns

Automated scaling trigger implementation

Security policy enforcement integration

CLAIMS

A method for implementing an API gateway, comprising:

a) Receiving an API request from a client application

b) Analyzing request patterns using machine learning algorithms

c) Dynamically routing requests based on learned patterns

d) Automatically scaling gateway resources based on traffic analysis

e) Implementing security policies through intelligent authentication

The method of claim 1, wherein the machine learning algorithms comprise:

a) Neural networks for pattern recognition

b) Decision trees for routing optimization

c) Clustering algorithms for traffic analysis

A system for implementing the method of claim 1, comprising:

a) A core gateway engine

b) An analytics module

c) A security framework

d) A scaling controller

e) A transformation engine

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ASSIGNMENT

All rights, title, and interest in this patent are assigned to Summit Digital Solutions, Inc., a Delaware corporation, including all rights to enforce and collect damages for past infringement.

LEGAL REPRESENTATION

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MAINTENANCE STATUS

First maintenance fee due: September 22, 2026

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CERTIFICATION

I hereby certify that I am authorized to execute this patent document on behalf of Summit Digital Solutions, Inc.

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Michael Chang

Chief Technology Officer

Summit Digital Solutions, Inc.

Date: September 22, 2022
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