Infinity ACS

PRODUCT BROCHURE

Prepared by Dictionary Networks

www.dictionarynetworks.in

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Dictionary Networks

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Product Summary

Smart CPE Control. Maximum Efficiency. Built for your Infinite Possibilities.

Infinity ACS gives you complete command over your network with powerful, one-click CPE management tools. From real-time WAN control and bulk configurations to intelligent Wi-Fi analytics and TR-143 diagnostics, everything you need is at your fingertips.

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1. Introduction

Infinity ACS is a robust and feature-rich Auto Configuration Server (ACS) designed to streamline the management and provisioning of devices in broadband and telecommunications networks. Built on the TR-069 protocol, Infinity ACS offers unparalleled support for both TR-098 and TR-181 data models, ensuring compatibility with a wide range of Customer Premises Equipment (CPE).

TR-069, the backbone of Infinity ACS, enables seamless remote management of CPEs, allowing service providers to automate configuration, firmware upgrades, diagnostics, and monitoring processes. By supporting both the TR-098 data model (optimised for gateway device management) and the TR-181 data model (ideal for device and service management in complex environments), Infinity ACS caters to diverse operational needs. As it stands today, it has the possibility to bypass/make OLT independent from configuration and CPE management perspective.

2. About Us

We are a dedicated team of software and embedded engineers from India, part of Dictionary Networks driven by a shared passion for creating impactful networking solutions. With extensive experience in developing networking-based devices such as ONTs, routers, FW development, and web servers using the .NET framework, our expertise spans both software development and embedded systems.

Our diverse team includes professionals skilled in modern frontend technologies like React and Angular, ensuring that our products not only perform exceptionally but also provide a seamless and intuitive user experience.

3. Our Objectives

Our mission is to empower Indian ISPs with cutting-edge technology solutions tailored to their unique needs. Infinity ACS is our flagship product, designed to simplify device management and enable infinite possibilities for growth and innovation. We aim to expand our portfolio of software products in the coming

days, creating tools that address challenges and unlock opportunities across the networking ecosystem.

Together, we believe in making the dream of infinite possibilities a reality through our commitment to excellence and innovation.

4. Key Features

Infinity ACS – Powerful, Scalable, and Modern TR-069 Device Management

1. Comprehensive Device Management
Easily manage a wide range of devices, including gateways, modems, routers, and IoT equipment. Infinity ACS offers centralised control and monitoring across diverse network topologies.

2. Full Support for TR-098 and TR-181 Standards
Ensure compatibility with both legacy and modern multi-service devices. Infinity ACS is future-proof, providing seamless support for evolving broadband standards.

3. Secure and Flexible Communication
Supports both HTTP and HTTPS protocols, catering to environments with TLS encryption as well as non-encrypted configurations.

4. Scalable and High-Performance Architecture
Built to scale—from small setups to large ISP deployments. Infinity ACS ensures reliable performance and responsiveness, regardless of network size.

5. Intuitive and Modern Interface
Features a fast, clean, and responsive UI built on **Next.js**, making device configuration, diagnostics, and monitoring simple and efficient.

6. Advanced Remote Diagnostics
Quickly identify and resolve device or network issues through integrated diagnostic tools, reducing operational overhead and improving customer experience.

7. Complete WAN Management
Includes full WAN interface lifecycle support—create, edit, delete WAN interfaces directly from the ACS. No manual provisioning needed.

8. Backup and Restore Capabilities
Supports remote configuration backup and restore, providing safety and ease for CPE management and rapid recovery from device failures.

9. Docker-Based Deployment for Full Stack Control
Running in Docker, Infinity ACS delivers a flexible and portable deployment model that includes everything—from IP allocation to full CPE lifecycle management.

10. Robust Backend with .NET Core
The ACS backend is powered by a secure, scalable, and high-performance **.NET Core** stack, delivering enterprise-grade reliability and extensibility.

Infinity ACS empowers service providers with the tools they need to enhance operational efficiency, improve service delivery, and deliver an exceptional customer experience. With its adherence to industry standards and focus on flexibility, Infinity ACS is the ultimate solution for managing modern networks effectively.

5. Architecture of Infinity ACS

Infinity ACS is built with a modern, modular architecture designed for scalability, reliability, and ease of deployment. It leverages proven technologies to provide a seamless and powerful TR-069 device management experience.

Core Components

1. Backend – .NET Core

- Developed using **.NET Core**, the backend provides high-performance APIs and services for device communication, data processing, and configuration management.
- Handles TR-069 protocol logic, WAN interface operations, diagnostics, backup/restore functionality, and more.

2. Frontend – Next.js

- A fast, responsive, and intuitive user interface built on **Next.js**, designed to simplify device management, diagnostics, and user interactions.
- Delivers a single-page app (SPA) experience with server-side rendering (SSR) for performance and SEO benefits.

3. Database – Microsoft SQL Server (MSSQL)

- Stores all configuration data, device parameters, user accounts, logs, and operational history.
- Ensures data integrity, transactional consistency, and high availability for production-grade deployments.

4. Docker-Based Containerization

- Every component of Infinity ACS—backend, frontend, and database—is containerized using **Docker**.
- Simplifies deployment, scaling, and environment replication across test, staging, and production.

System Workflow

1. **CPE Device** connects to Infinity ACS via TR-069 over HTTP/HTTPS.
2. **Backend (.NET Core)** processes query, interacts with the device, and handles configurations.
3. **Frontend (Next.js)** presents all device data, diagnostics, and configuration tools to the user.
4. **Database (MSSQL)** persists device states, parameters, sessions, logs, and backup data.
5. **Docker Orchestration** ensures modular deployment, rapid updates, and scalable environments.

Key Technologies

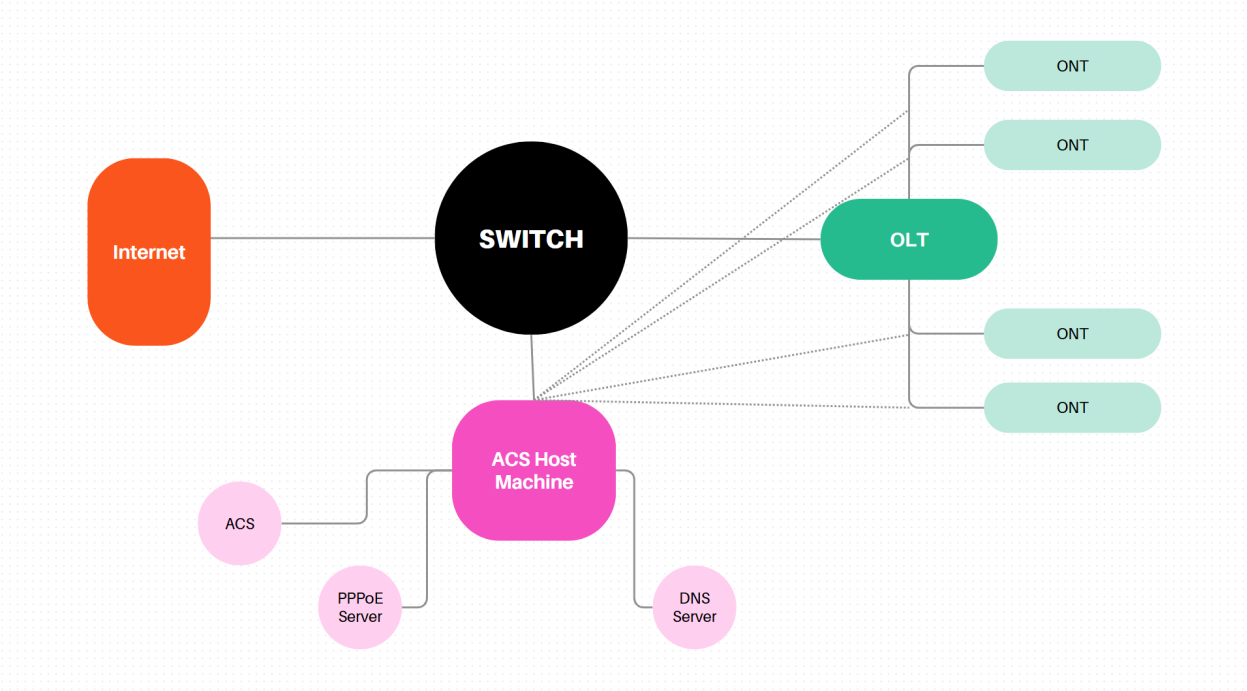
Layer	Technology
Frontend	Next.js (React)
Backend	.NET Core API
Database	Microsoft SQL Server
Deployment	Docker (containerized stack)

Layer	Technology
Protocol	TR-069 / CWMP over HTTP/HTTPS

6. Deployment Topology Simplified

Infinity ACS is designed with a container-first approach, enabling rapid deployment, easy scaling, and environment consistency across development, staging, and production. It uses **Docker** to package each component into isolated, lightweight containers for efficient orchestration and maintenance.

Topology Map



The topology that we follow make Infinity ACS more than just a normal ACS. We have designed it in a way that it will allow operators to move towards an OLT agnostic network.

The deployment packages include ACS, PPPoE Server and the DNS server in complete. It will help operators to have any kind of OLT they like while doing all their major WAN and CPE management from the ACS. We have achieved similar behavior to OLT←→ONT simulated but in IP layer between CPE and the ACS. The ONT as soon as it comes up in the customer's premises it will report to the ACS and the ACS can have track of everything.

7. CPE Management Features in the ACS

Key lessons include the importance of rigorous beta testing prior to launch and the value of proactive customer education. Incorporating user feedback early in the development phase ensured a more refined final product.

Infinity ACS offers a rich set of features to streamline and enhance Customer Premises Equipment (CPE) management. Key capabilities include:

1. **Broad ONT Support**
   Full compatibility with both **RTK** (Realtek) and **MTK** (MediaTek) based ONTs.
2. **Bulk Operations**
   Execute **bulk GET/SET actions** across all online devices for efficient mass configuration.
3. **WAN Interface Management**
   Create, edit, and delete WAN interfaces directly from the ACS.
4. **Mass Firmware Upgrade**
   Schedule and execute firmware upgrades across multiple devices simultaneously.
5. **Configuration Backup & Restore**
   Back up current device settings and restore them when needed for quick recovery.
6. **Wi-Fi Analytics & Channel Optimisation**
   Analyse Wi-Fi performance and receive intelligent **channel recommendations** to improve network quality.
7. **Optical Parameter Monitoring**
   Real-time alerts and recommendations based on optical signal strength and other key metrics.
8. **Full Parameter Access**
   View and modify all available TR-069 parameters at any time.
9. **TR-143 Diagnostics**
   Comprehensive support for **Download**, **Upload**, **UDP Echo**, **TCP Echo**, and **HTTP** diagnostics defined in TR-143.

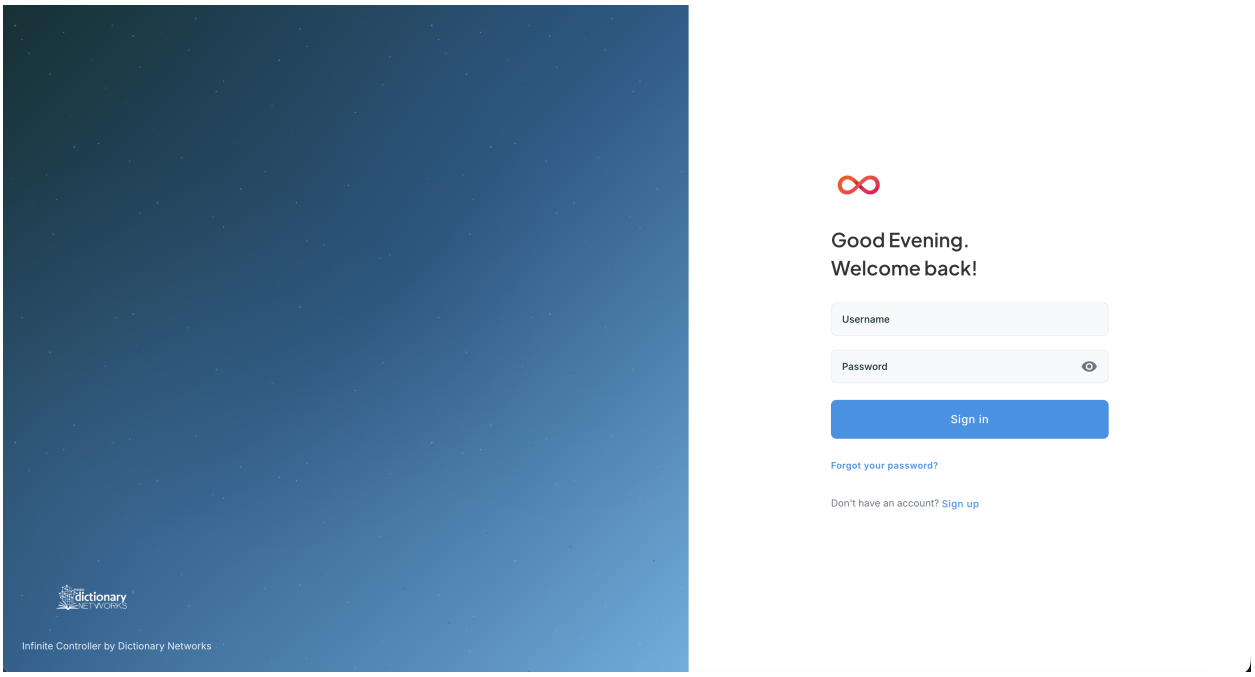
10. **Event Timeline Viewer**
    Visual representation of TR-069 sessions, device events, and provisioning history.

11. **Expert Developer Mode**
    Access a low-level RPC execution interface for full control over all supported TR-069 methods.

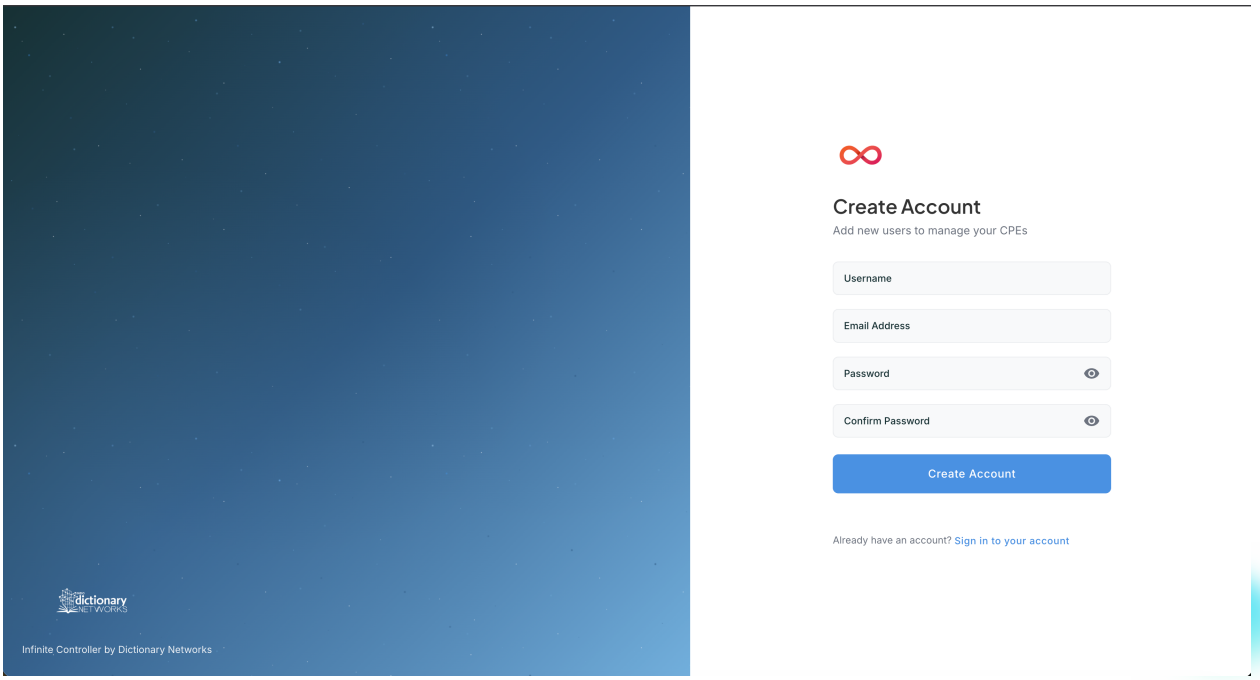
12. **Logs Management & Export**
    View, manage, and download device and system logs for detailed analysis and troubleshooting

8. Glimpses of the ACS

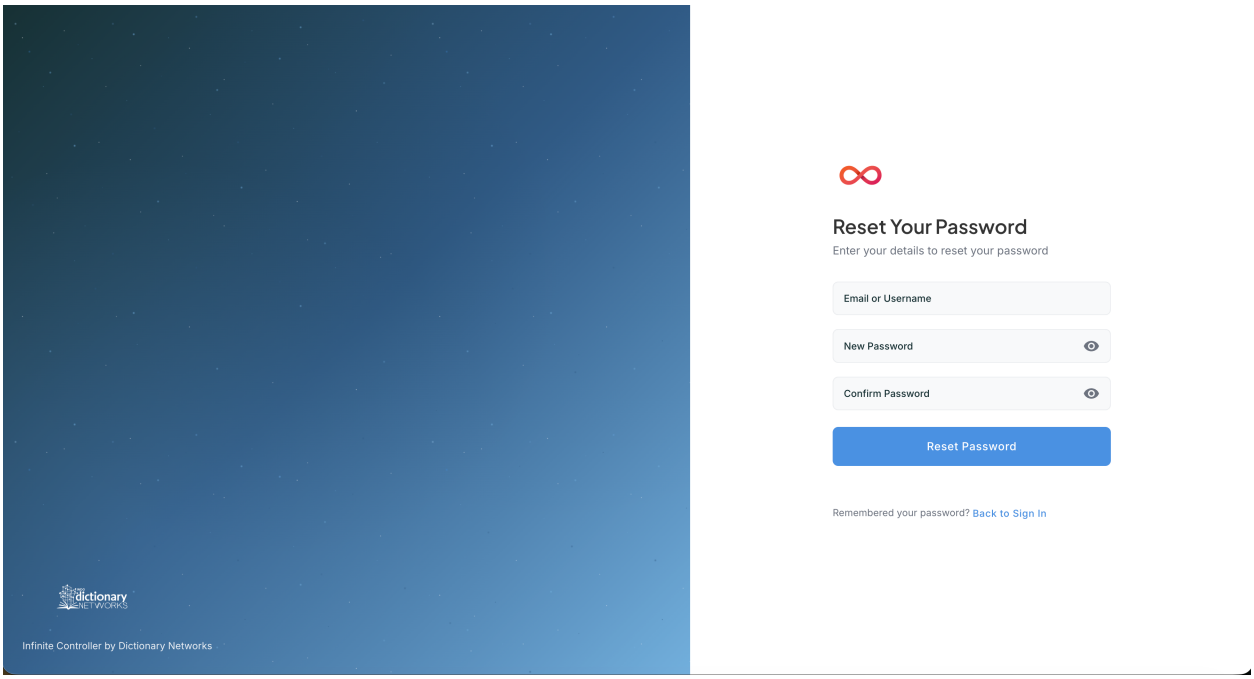
Login Page



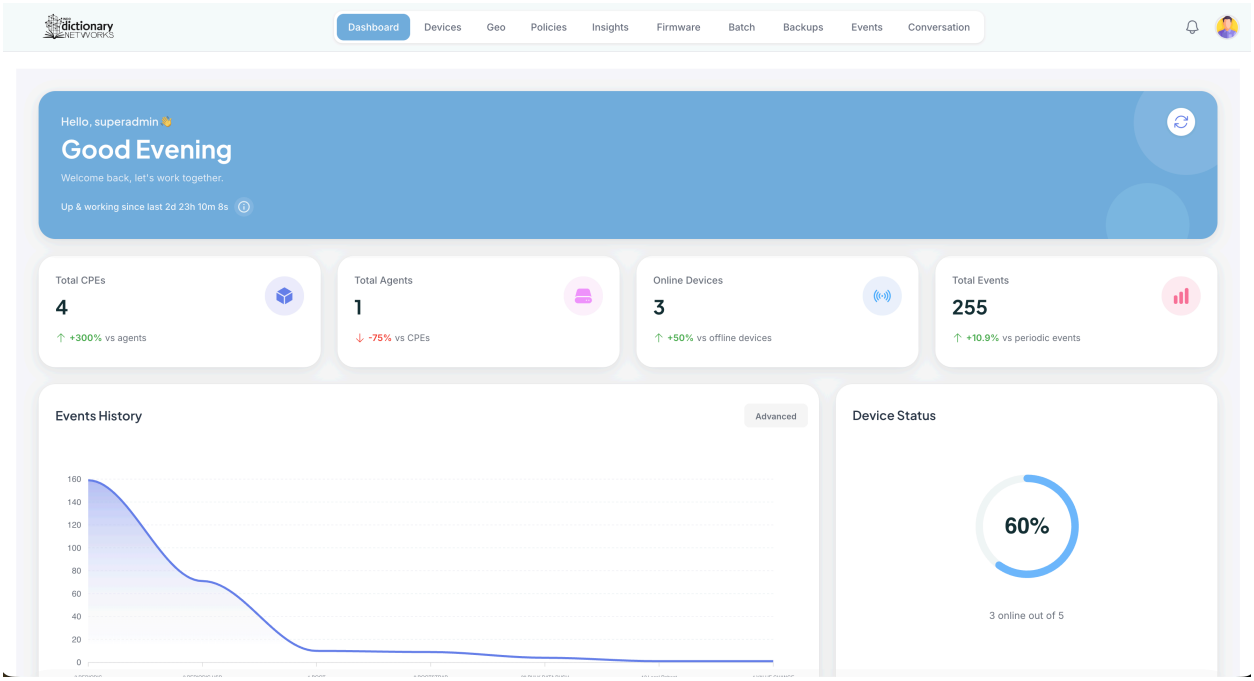
Registration Page

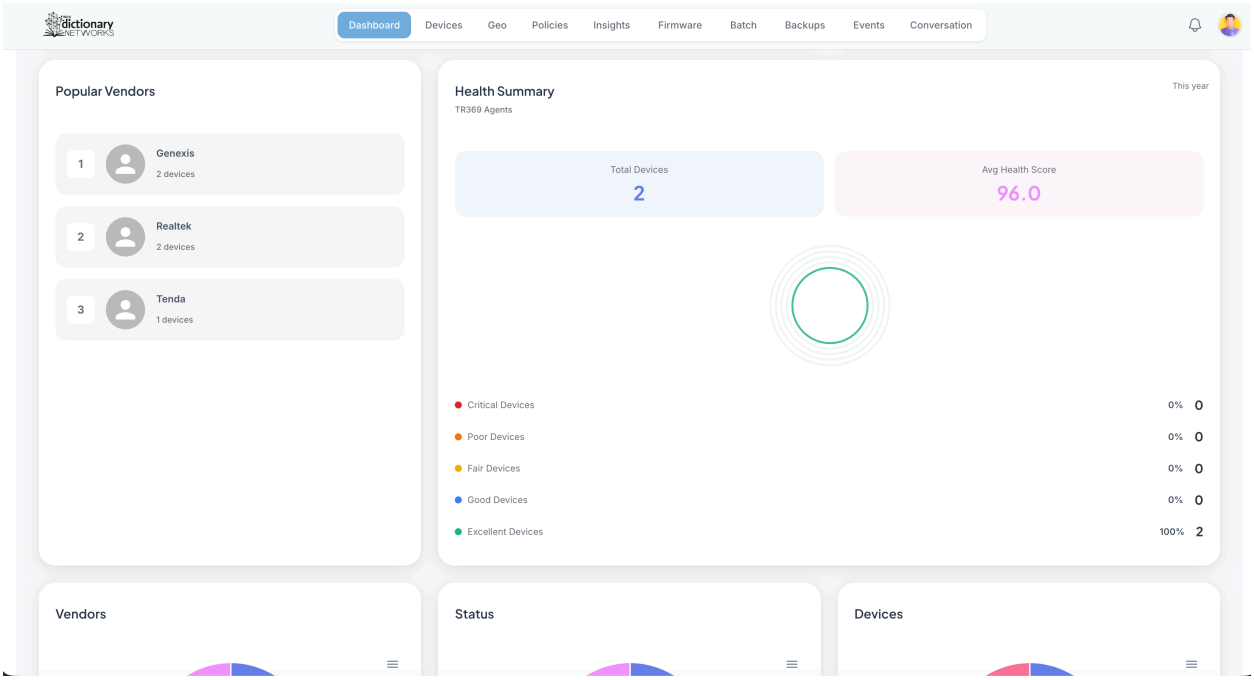


Forgot Password



Dashboard

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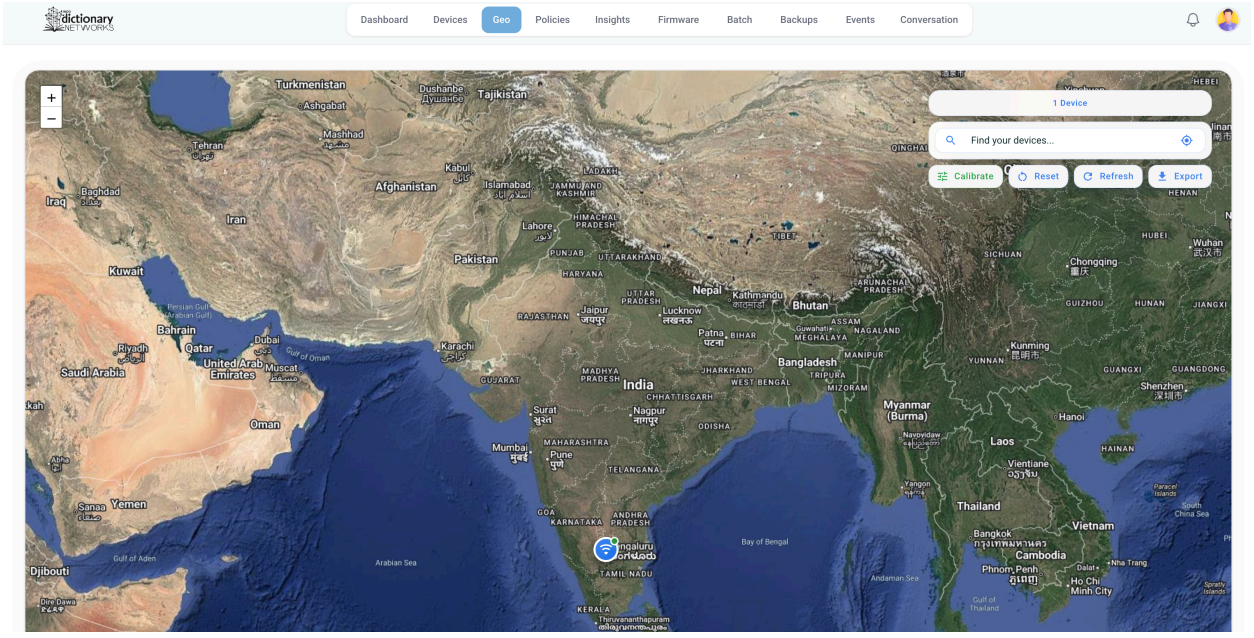
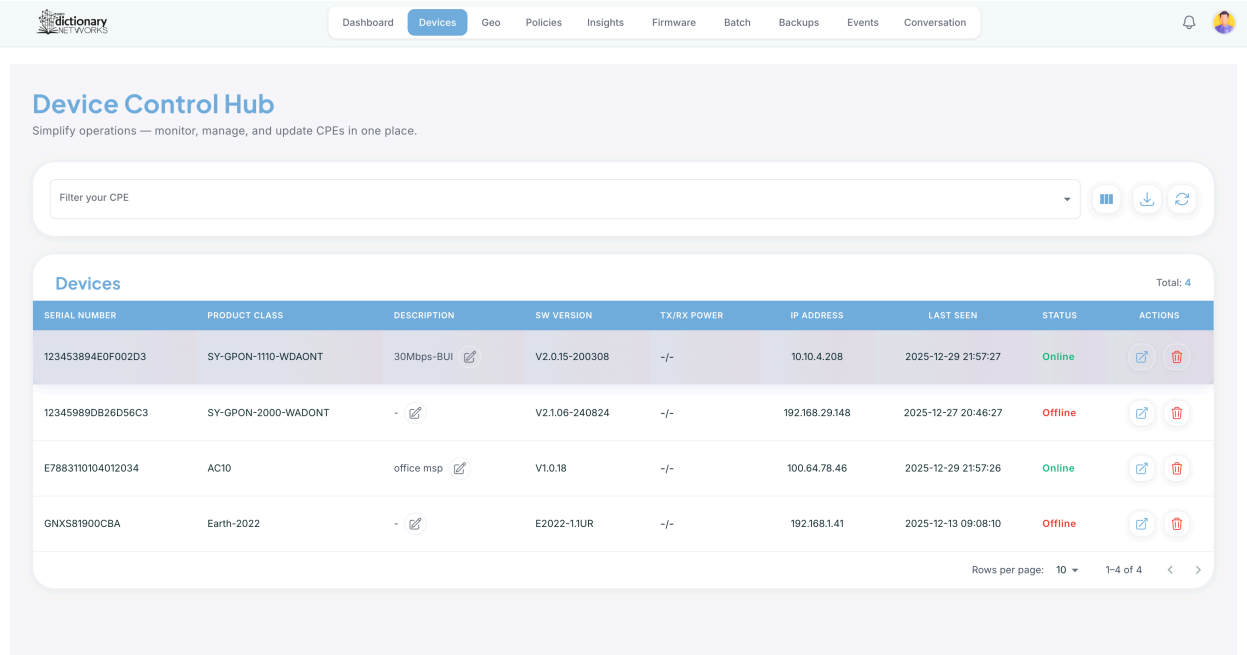
Dashboard
Devices
Geo
Policies
Insights
Firmware
Batch
Backups
Events
Conversation
Popular Vendors
1
Genexis
2 devices
2
Realtek
2 devices
3
Tenda
1 devices
Health Summary
TR369 Agents
This year
Total Devices
2
Avg Health Score
96.0
Critical Devices 0% 0
Poor Devices 0% 0
Fair Devices 0% 0
Good Devices 0% 0
Excellent Devices 100% 2
Vendors
Status
Devices

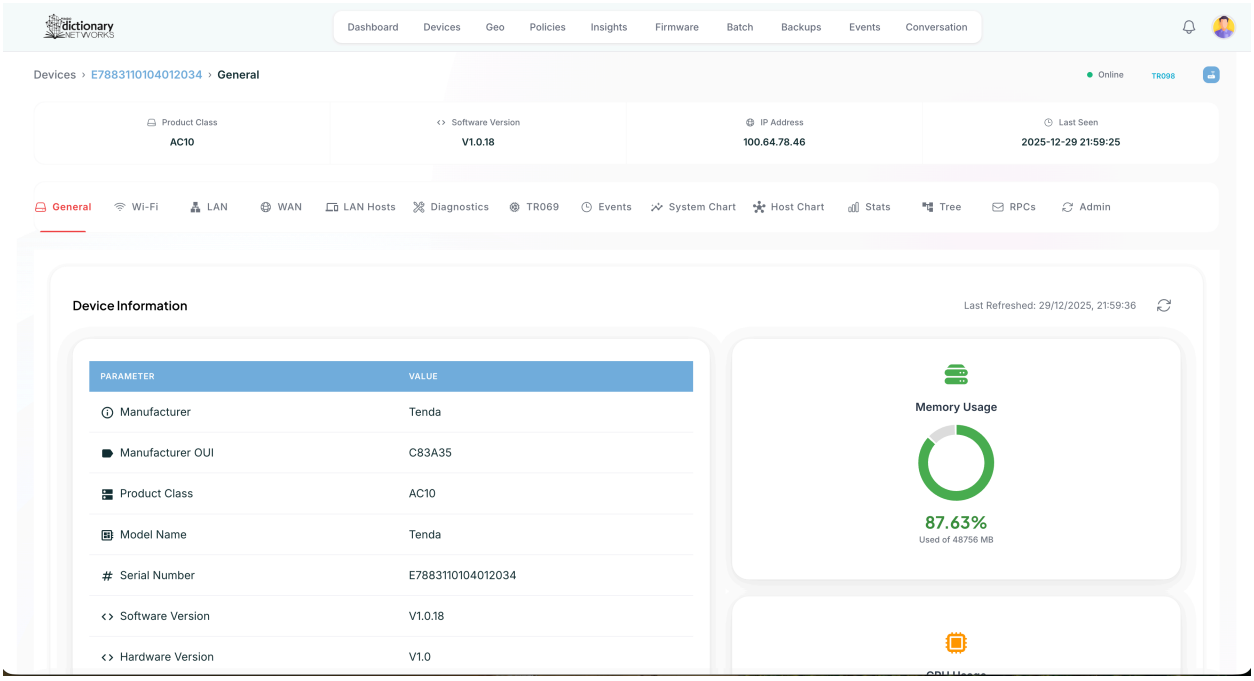
GEO Page


dictionary NETWORKS
Dashboard
Devices
Geo
Policies
Insights
Firmware
Batch
Backups
Events
Conversation
1 Device
Find your devices...
Calibrate
Reset
Refresh
Export
Turkmenistan
Tajikistan
Afghanistan
Pakistan
Iran
Iraq
Kuwait
Bahrain
Qatar
United Arab Emirates
Saudi Arabia
Oman
Yemen
India
Nepal
Bhutan
Bangladesh
Myanmar (Burma)
Laos
Thailand
Vietnam
Cambodia
Arabian Sea
Bay of Gengal
Gulf of Aden
Djibouti

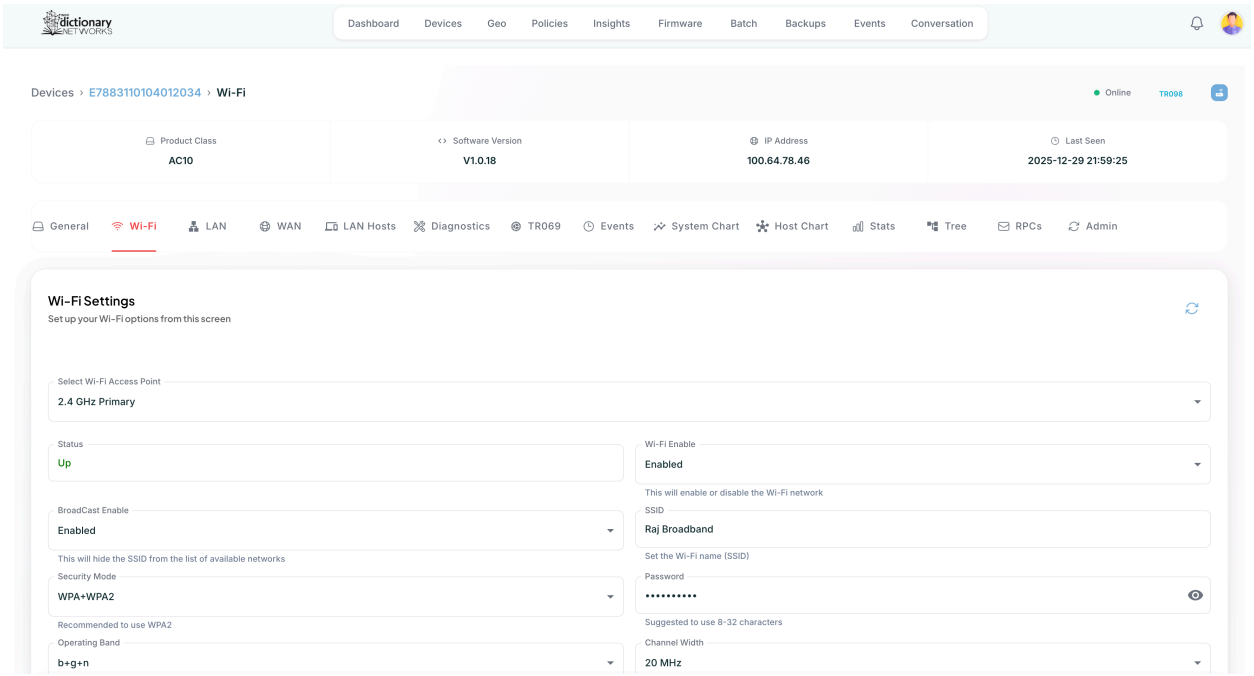
CPE List Page



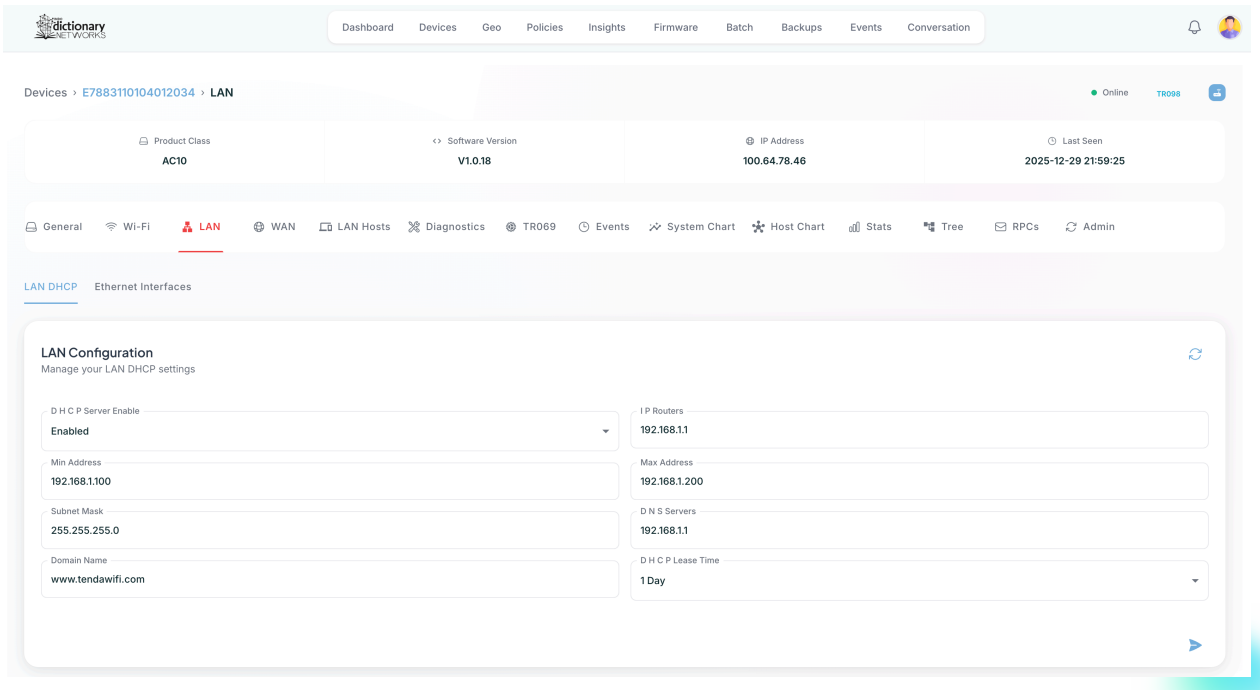
CPE Basic Info Page



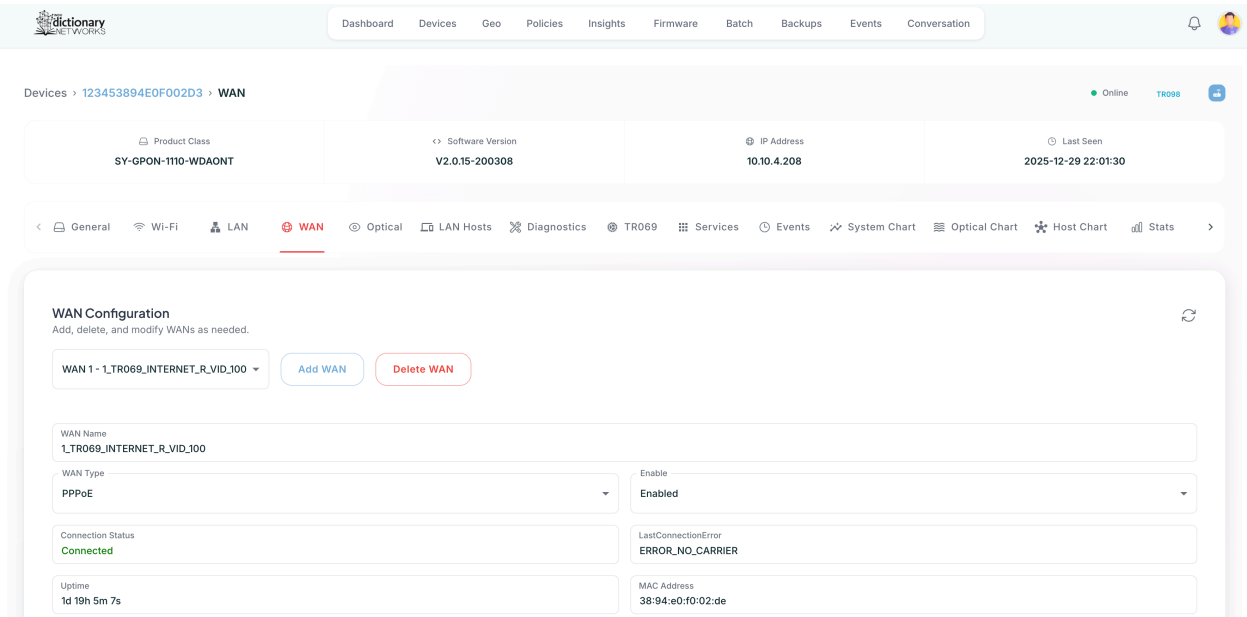
WLAN Config

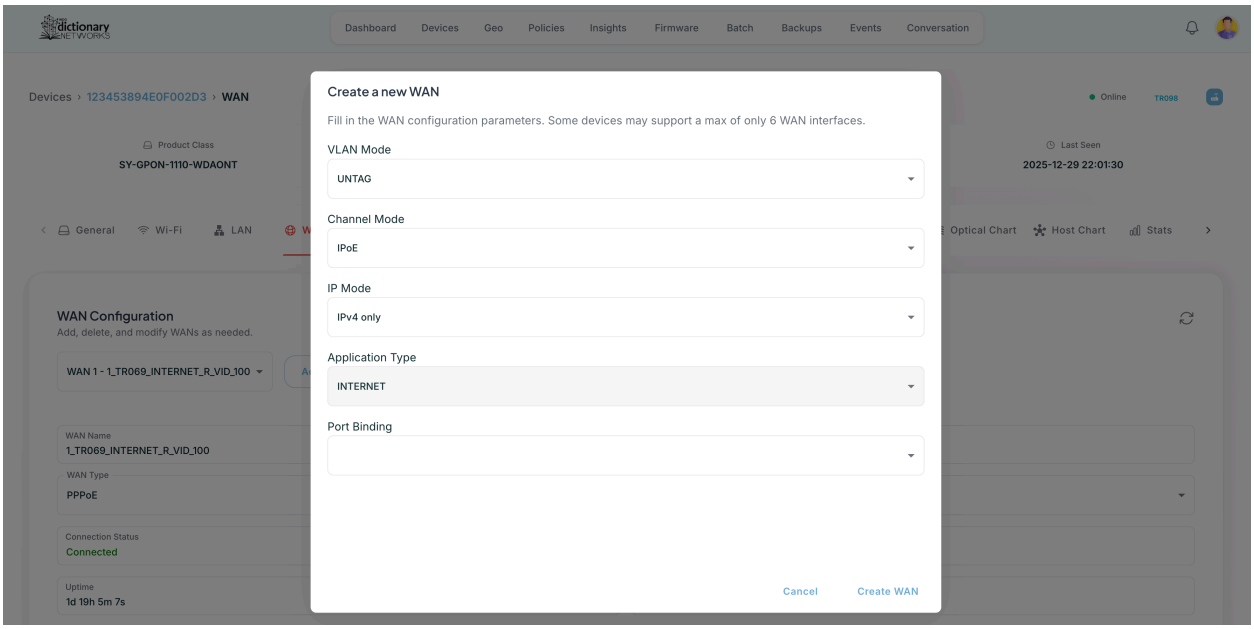


LAN – DHCP & Ethernet

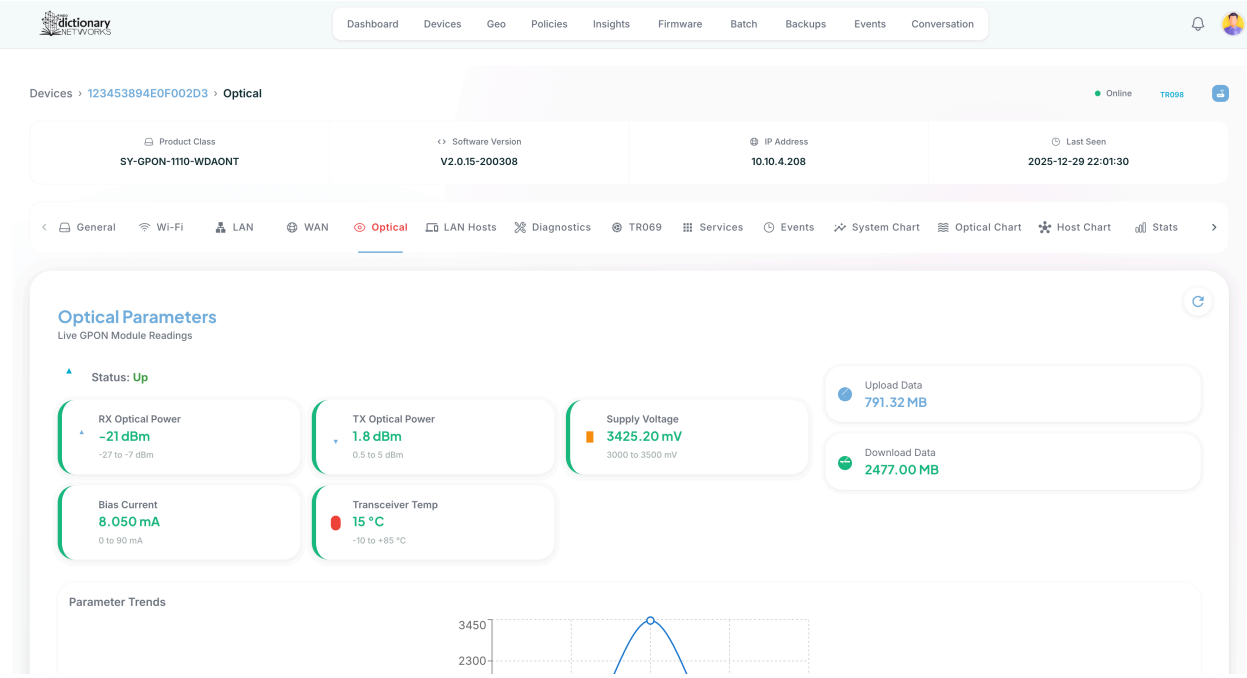


WAN Page

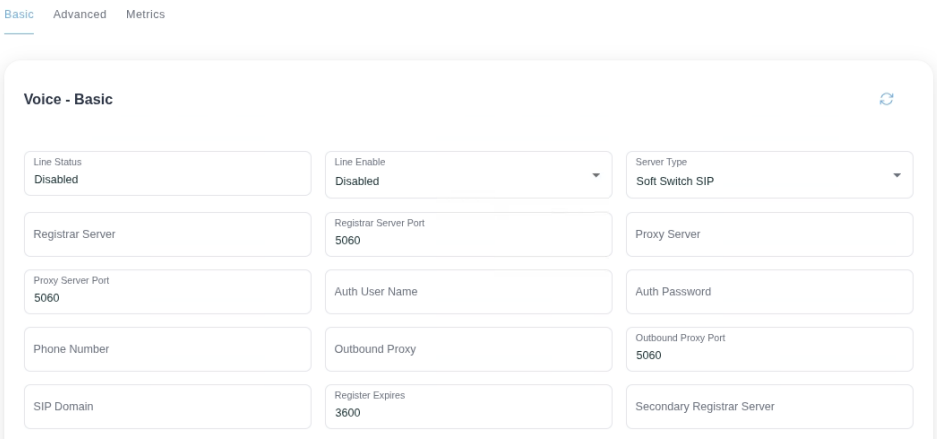

Dashboard
Devices
Geo
Policies
Insights
Firmware
Batch
Backups
Events
Conversation
Devices › 123453894E0F002D3 › WAN
Online
TR098
Product Class
SY-GPON-1110-WDAONT
Software Version
V2.0.15-200308
IP Address
10.10.4.208
Last Seen
2025-12-29 22:01:30
General
Wi-Fi
LAN
WAN
Optical
LAN Hosts
Diagnostics
TR069
Services
Events
System Chart
Optical Chart
Host Chart
Stats
WAN Configuration
Add, delete, and modify WANs as needed.
WAN 1 - 1_TR069_INTERNET_R_VID_100
Add WAN
Delete WAN
WAN Name
1_TR069_INTERNET_R_VID_100
WAN Type
PPPoE
Enable
Enabled
Connection Status
Connected
LastConnectionError
ERROR_NO_CARRIER
Uptime
1d 19h 5m 7s
MAC Address
38:94:e0:f0:02:de

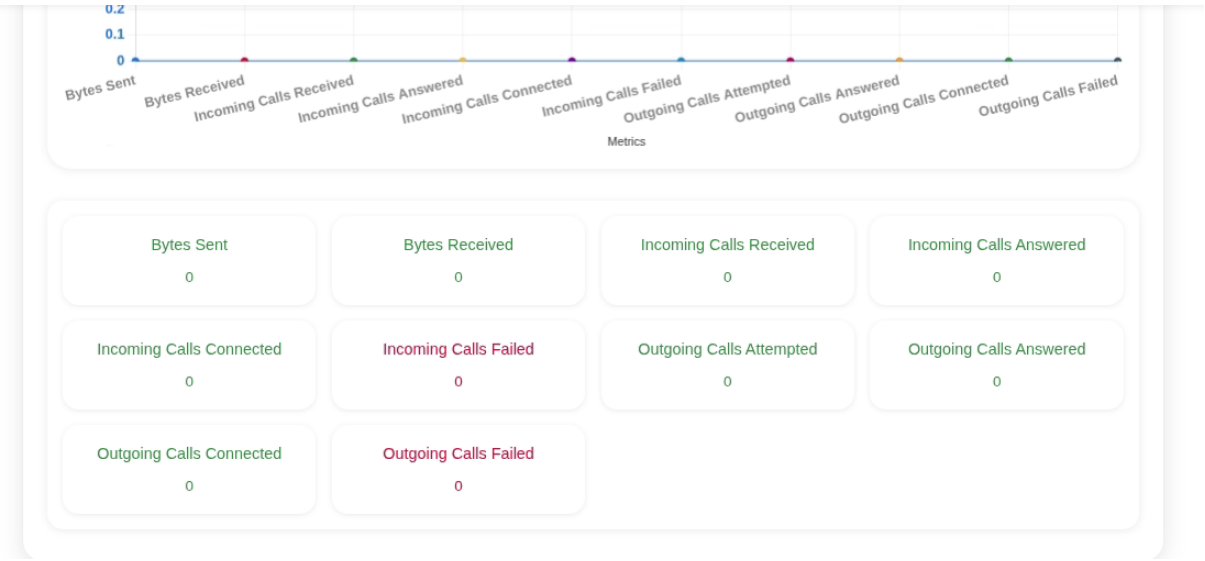

Create a new WAN
Fill in the WAN configuration parameters. Some devices may support a max of only 6 WAN interfaces.
VLAN Mode
UNTAG
Channel Mode
IPoE
IP Mode
IPv4 only
Application Type
INTERNET
Port Binding
Cancel
Create WAN

Optical Info Page

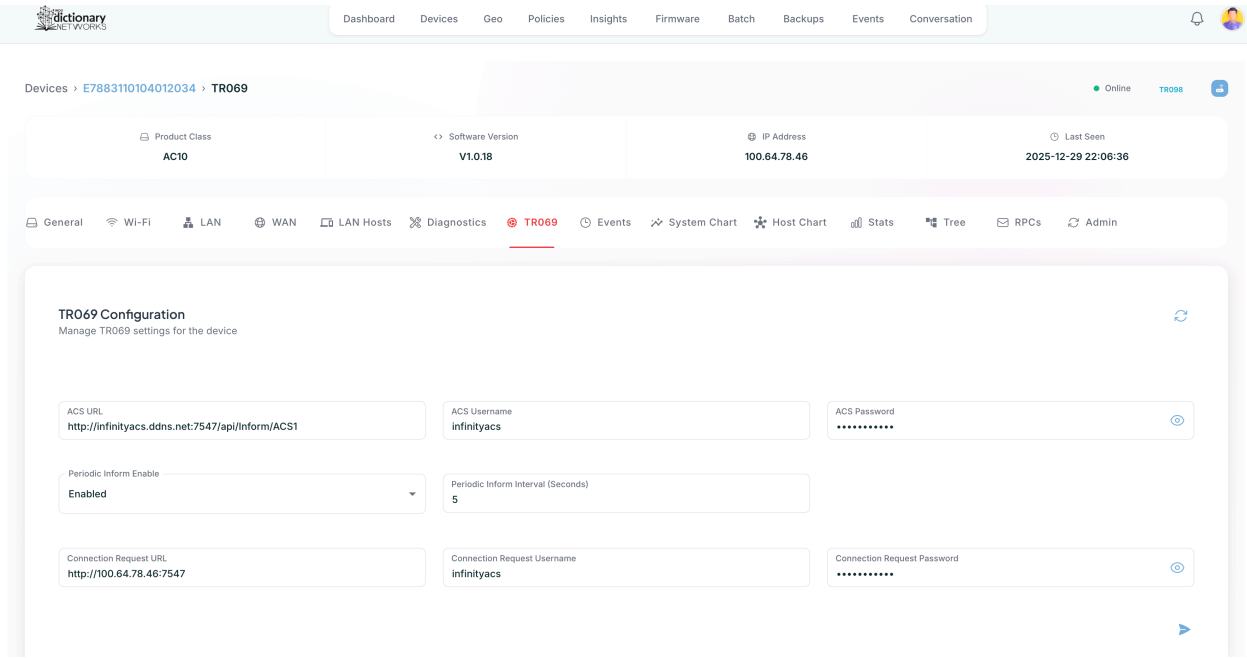


Voice Page




0.2
0.1
0
Bytes Sent
Bytes Received
Incoming Calls Received
Incoming Calls Answered
Incoming Calls Connected
Incoming Calls Failed
Outgoing Calls Attempted
Outgoing Calls Answered
Outgoing Calls Connected
Outgoing Calls Failed
Metrics
Bytes Sent 0
Bytes Received 0
Incoming Calls Received 0
Incoming Calls Answered 0
Incoming Calls Connected 0
Incoming Calls Failed 0
Outgoing Calls Attempted 0
Outgoing Calls Answered 0
Outgoing Calls Connected 0
Outgoing Calls Failed 0

TR069 Page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Dashboard
Devices
Geo
Policies
Insights
Firmware
Batch
Backups
Events
Conversation
Devices › E7883110104012034 › TR069
Online
TR098
Product Class
AC10
Software Version
V1.0.18
IP Address
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Last Seen
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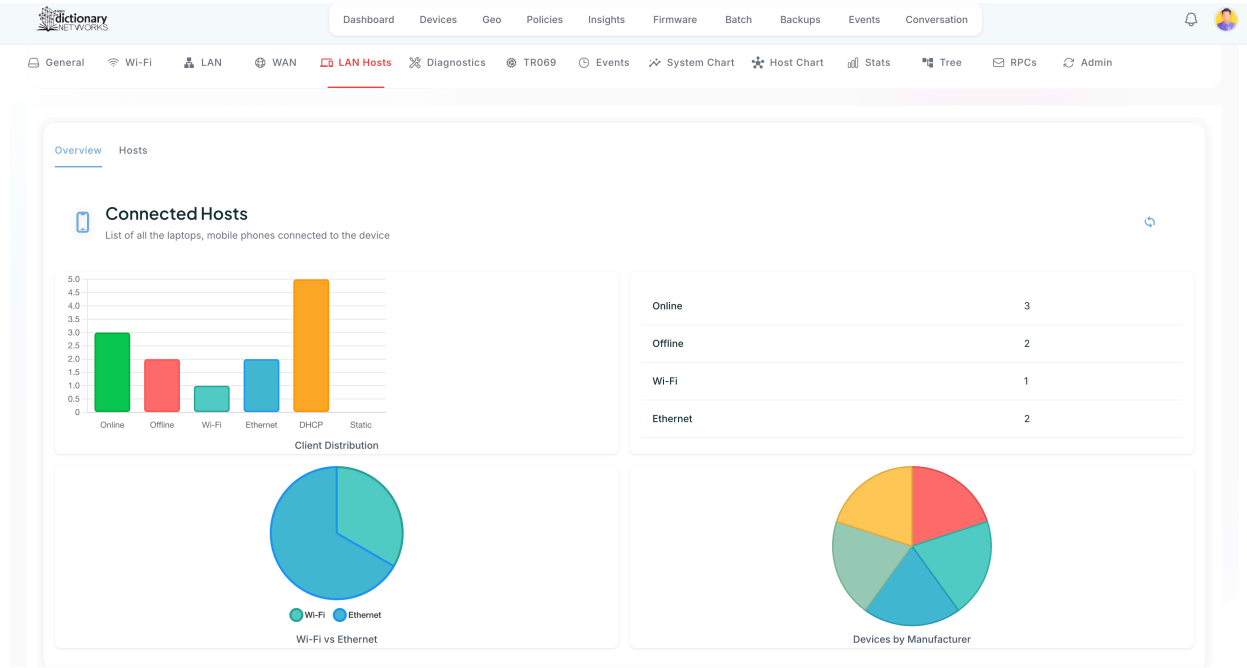
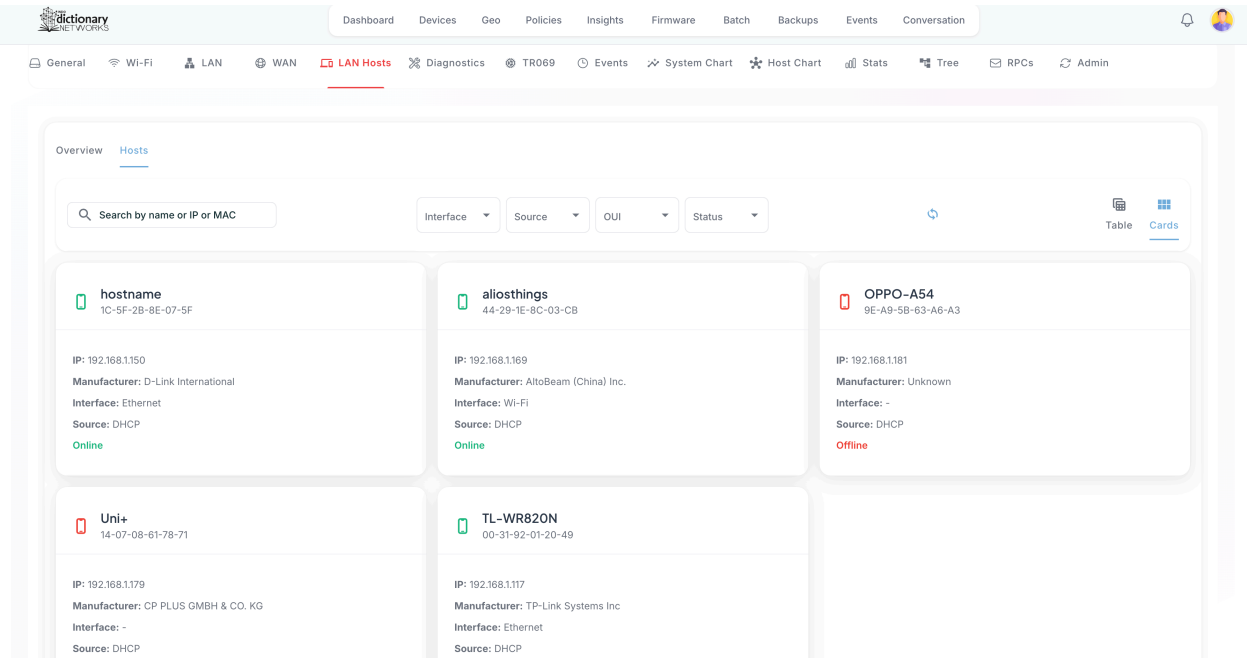
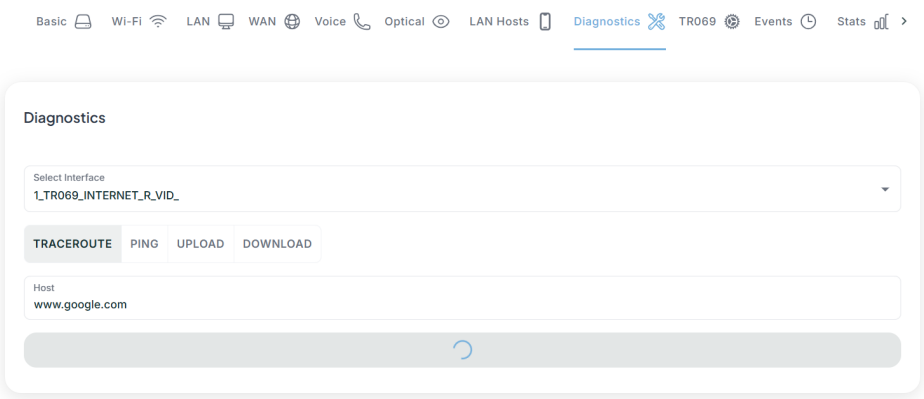
General
Wi-Fi
LAN
WAN
LAN Hosts
Diagnostics
TR069
Events
System Chart
Host Chart
Stats
Tree
RPCs
Admin
TR069 Configuration
Manage TR069 settings for the device
ACS URL
http://infinityacs.ddns.net:7547/api/Inform/ACS1
ACS Username
infinityacs
ACS Password
Periodic Inform Enable
Enabled
Periodic Inform Interval (Seconds)
5
Connection Request URL
http://100.64.78.46:7547
Connection Request Username
infinityacs
Connection Request Password

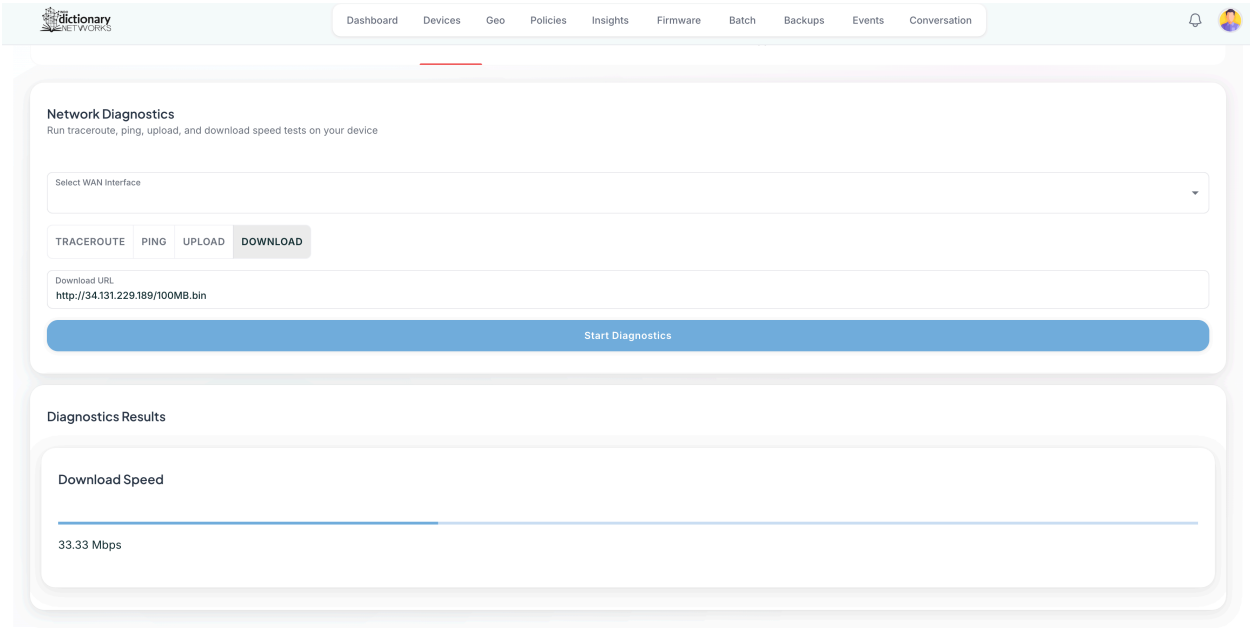
Connected Hosts



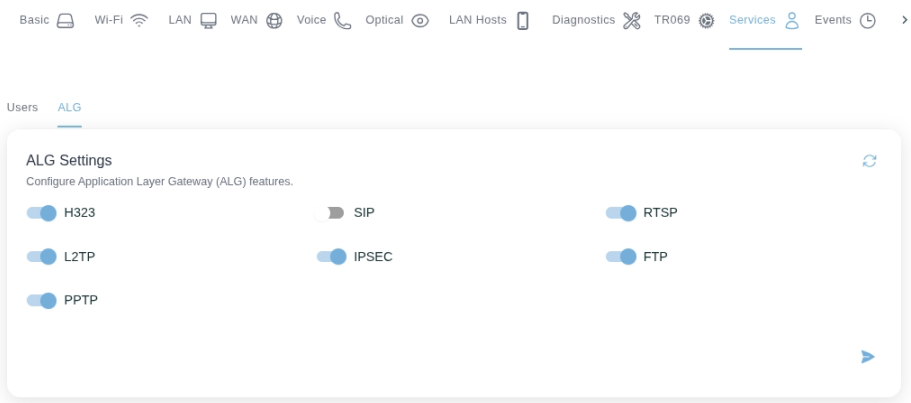


Diagnostics Page

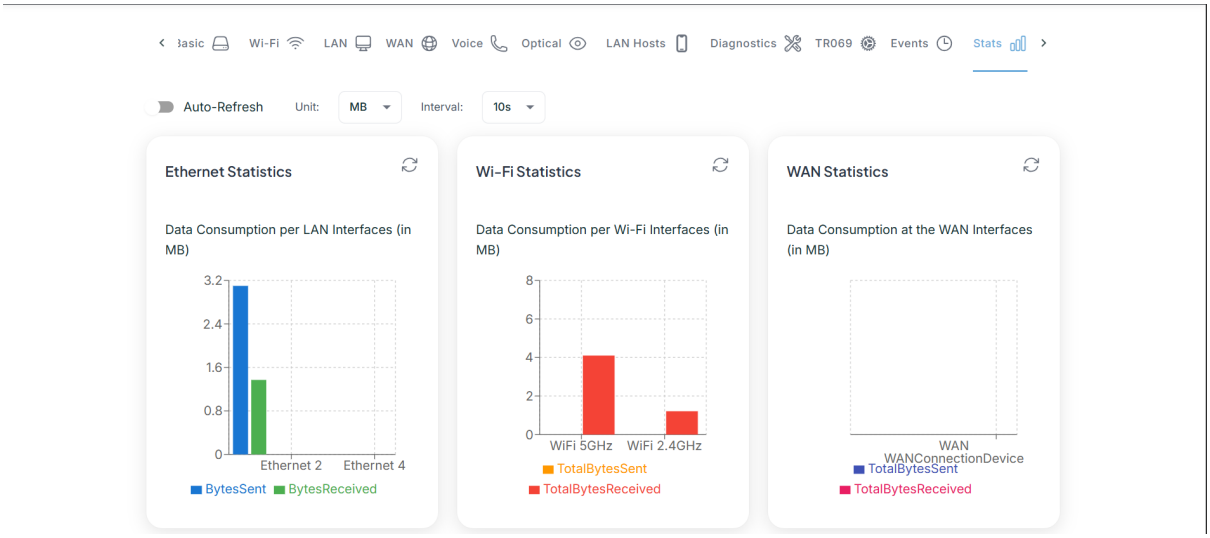




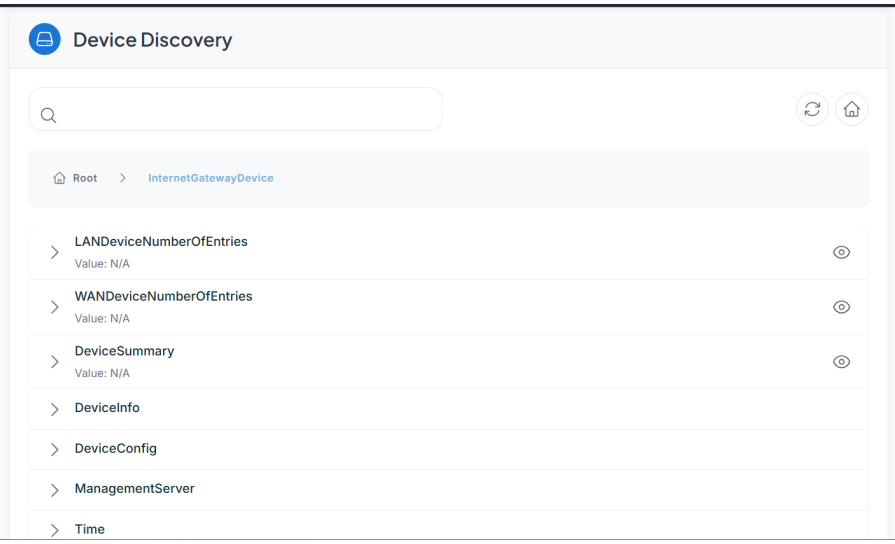
Services Page



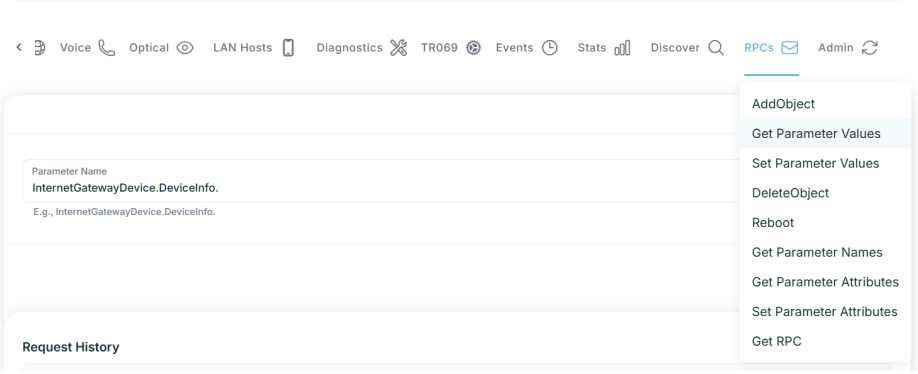
Stats Page



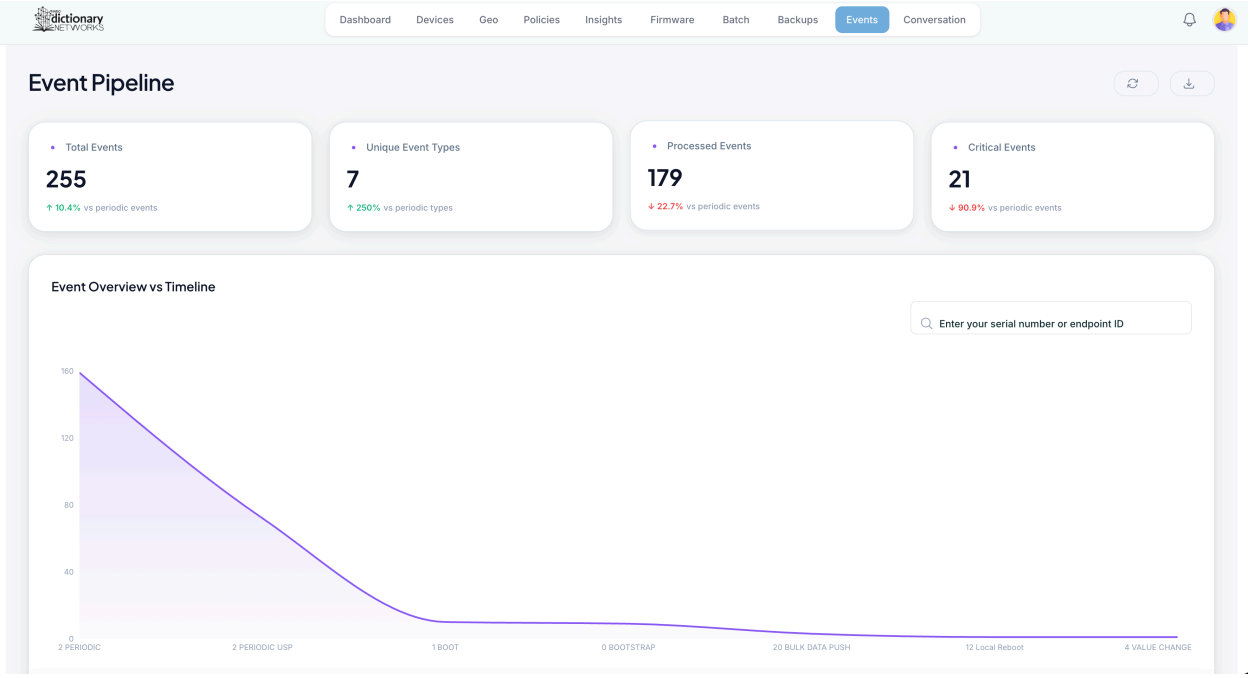
TR098 Data model tree view page



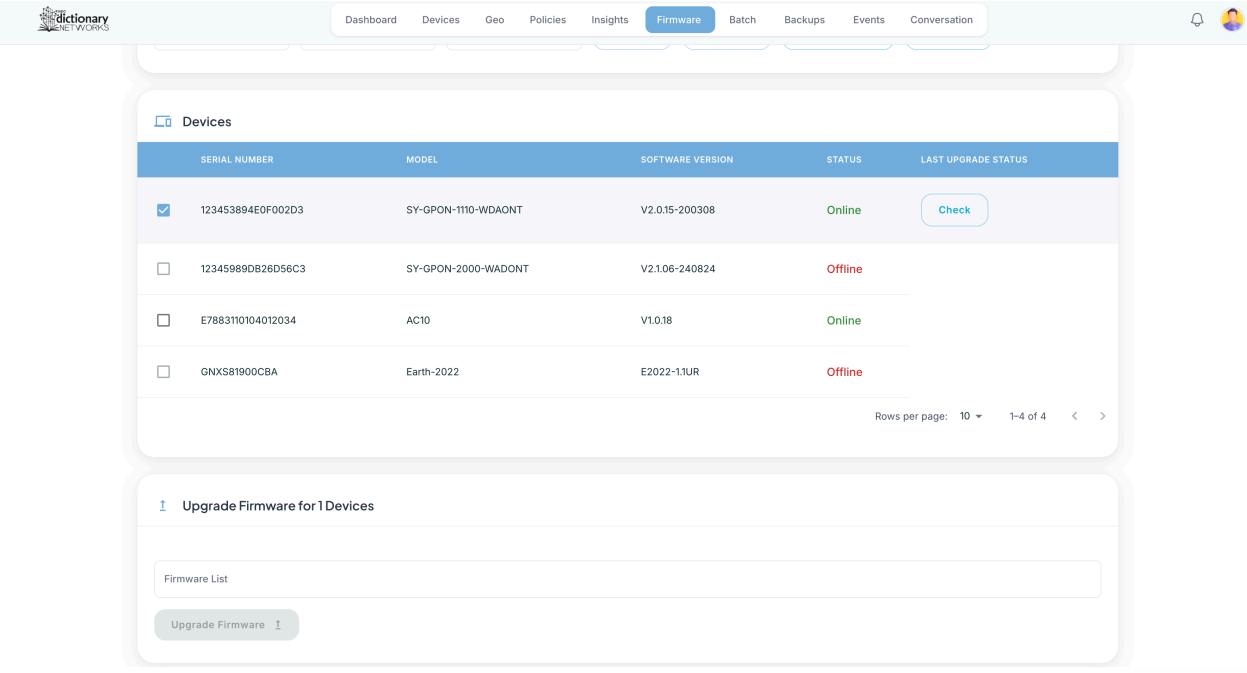
RPC Calls Page



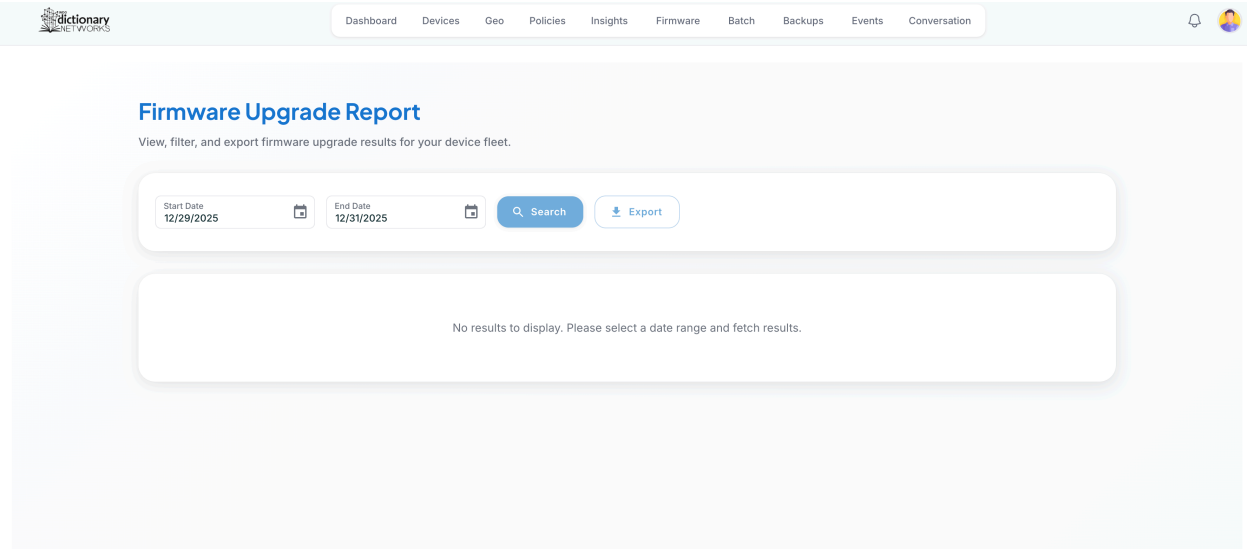
Events Timeline



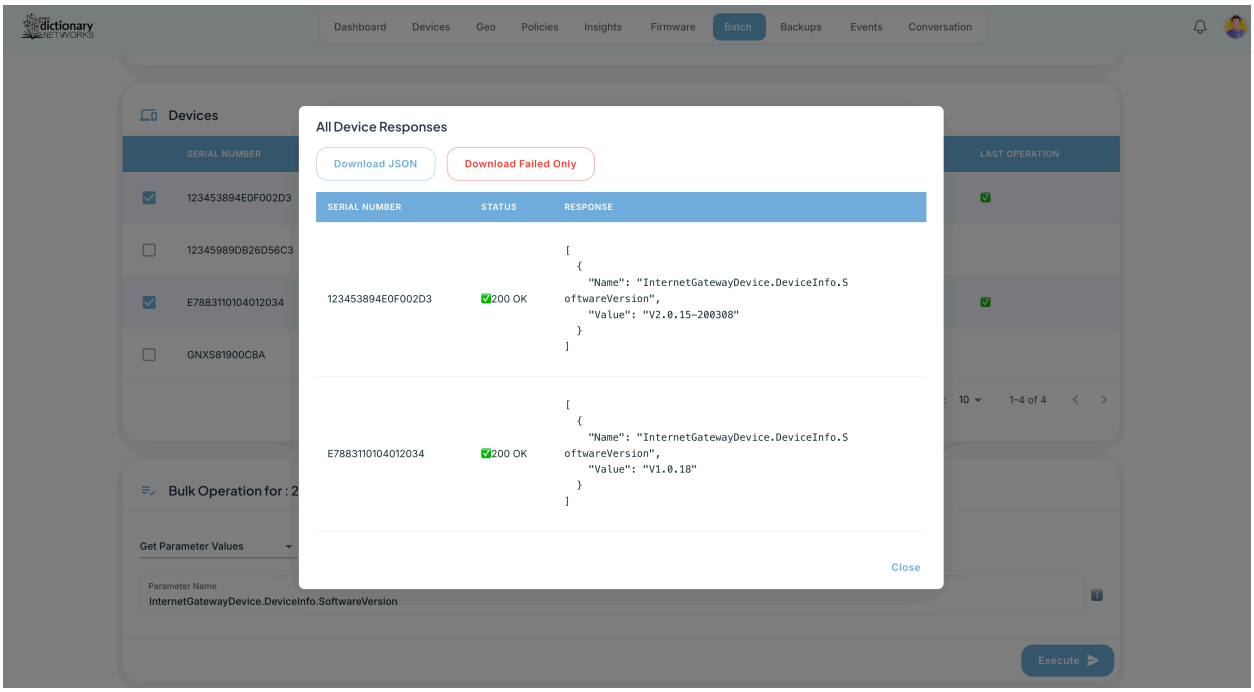
Mass FW Upgrade



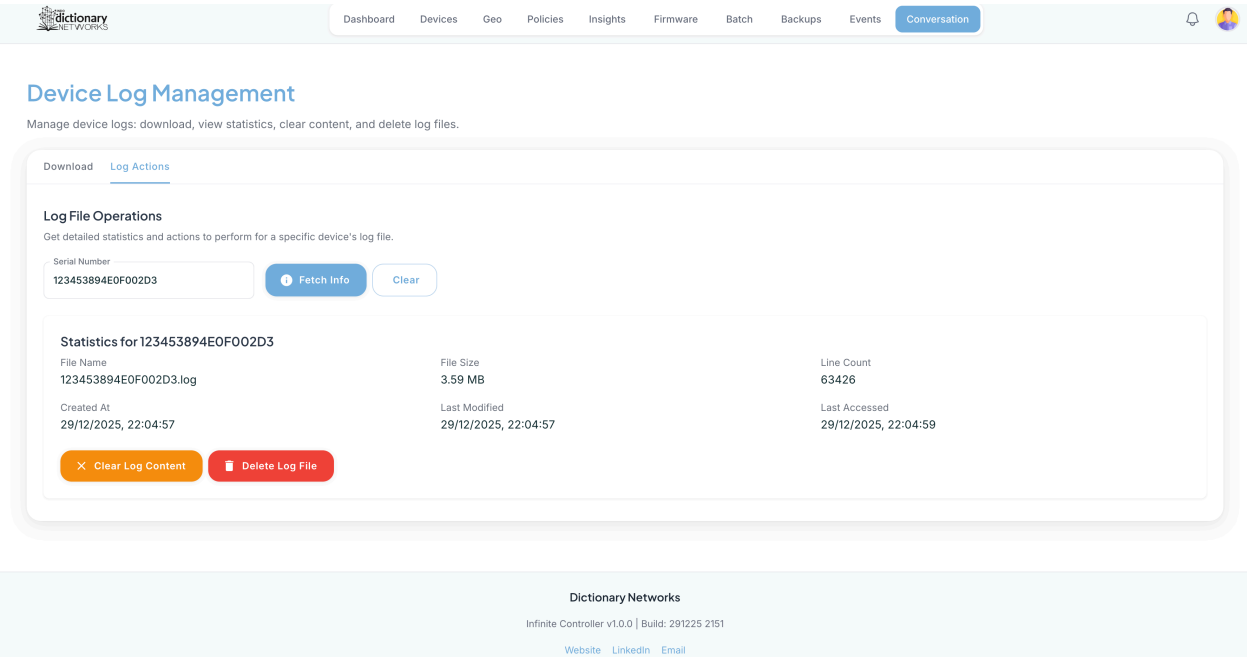
FW Upgrade Report



Bulk Action



CPE and ACS Conversation Logs



Contact US

For queries and questions regarding purchase, contracts, trials, deployment, joint venture, MOUs, please reach us at,

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Website : www.dictionarynetworks.in

LinkedIn: https://www.linkedin.com/in/dictionary-networks-a64b70356/

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