

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

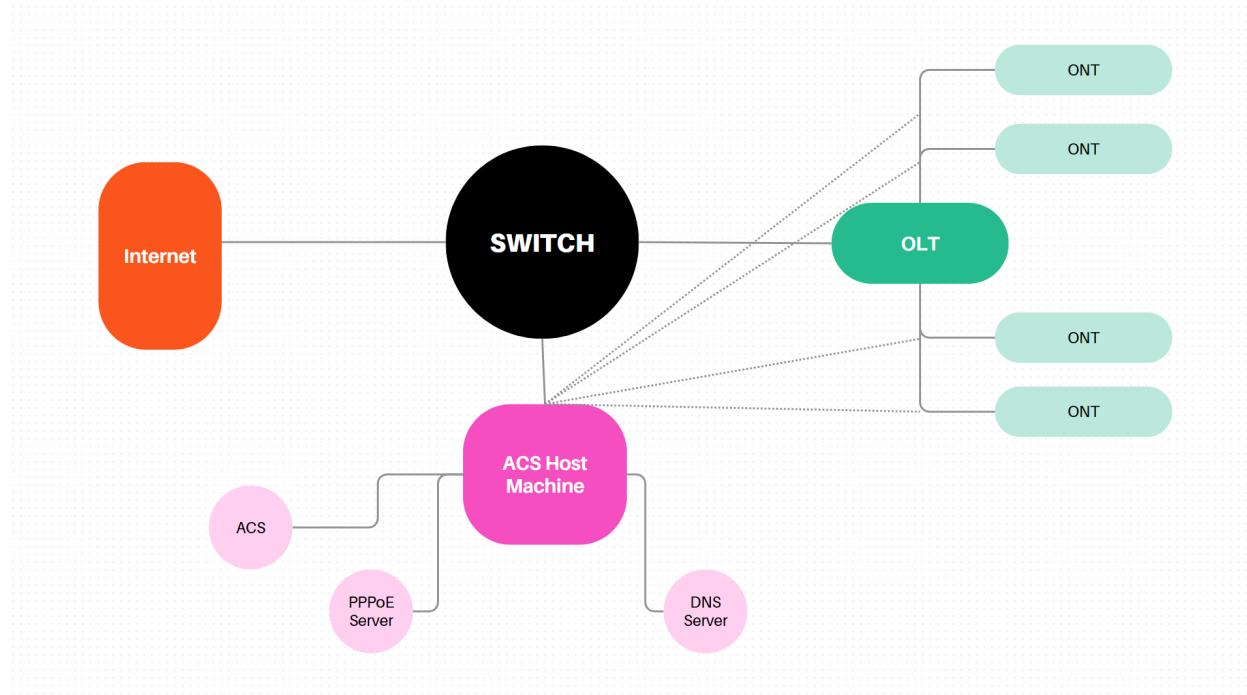
Layer	Technology
Frontend	Next.js (React)
Backend	.NET Core API
Database	Microsoft SQL Server
Deployment	Docker (containerized stack)

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**

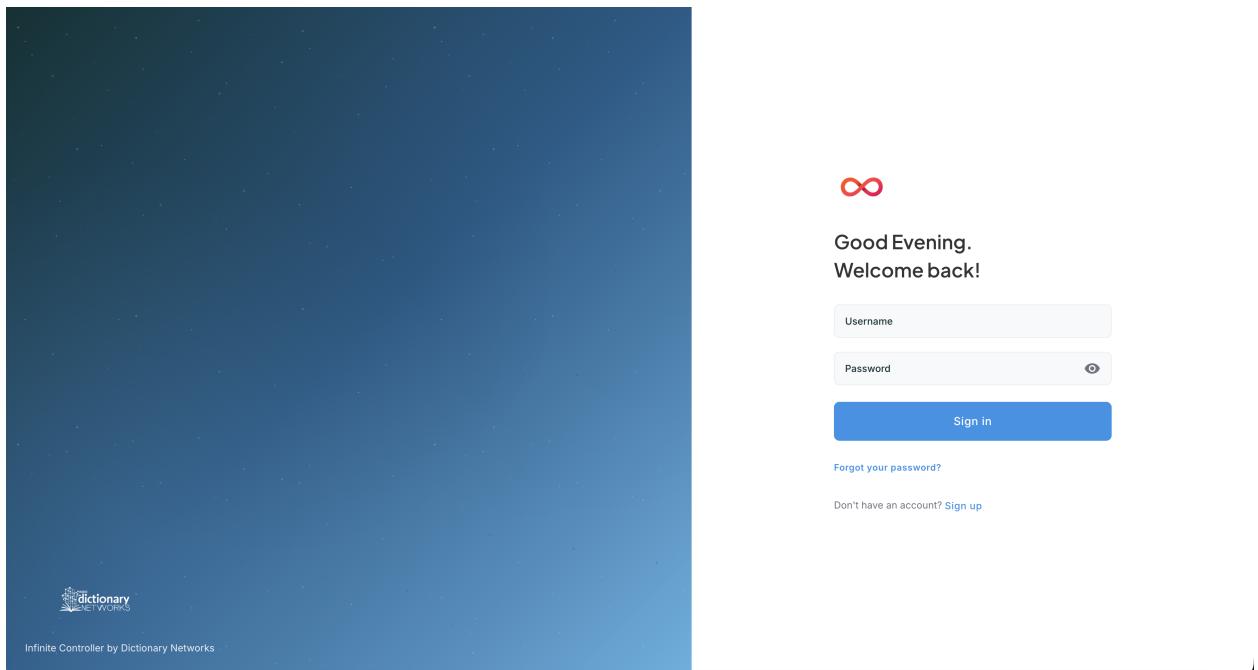
Access a low-level RPC execution interface for full control over all supported TR-069 methods.

12. **Logs Management & Export**

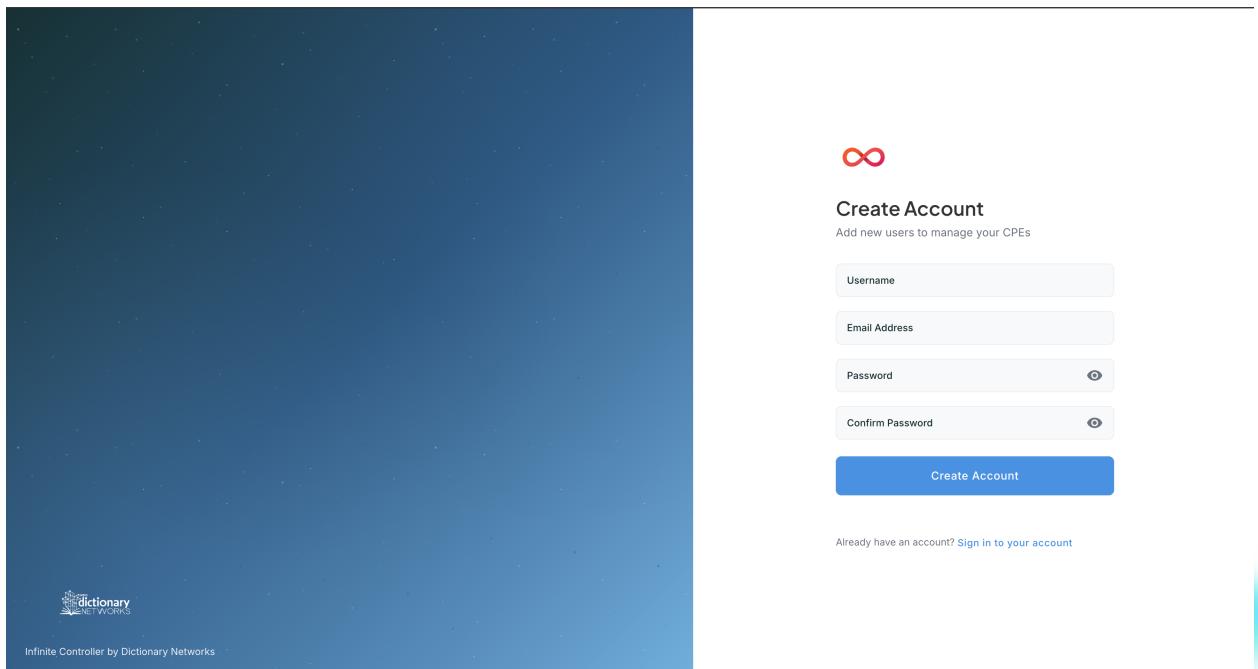
View, manage, and download device and system logs for detailed analysis and troubleshooting

8. Glimpses of the ACS

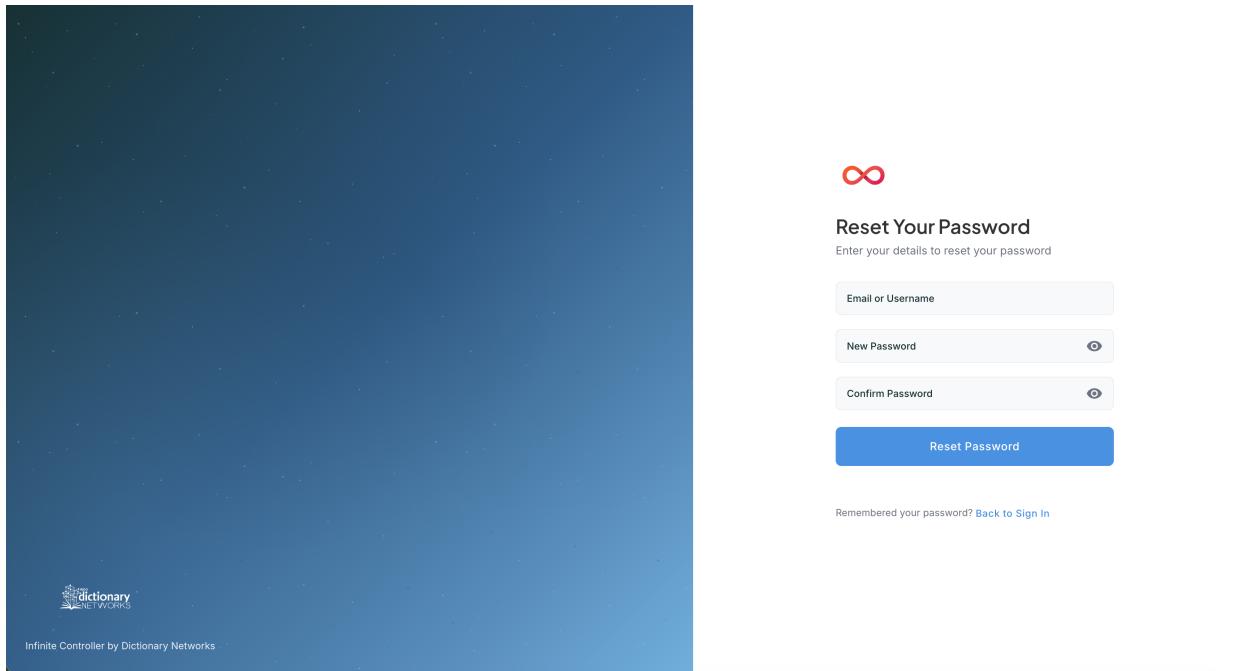
Login Page



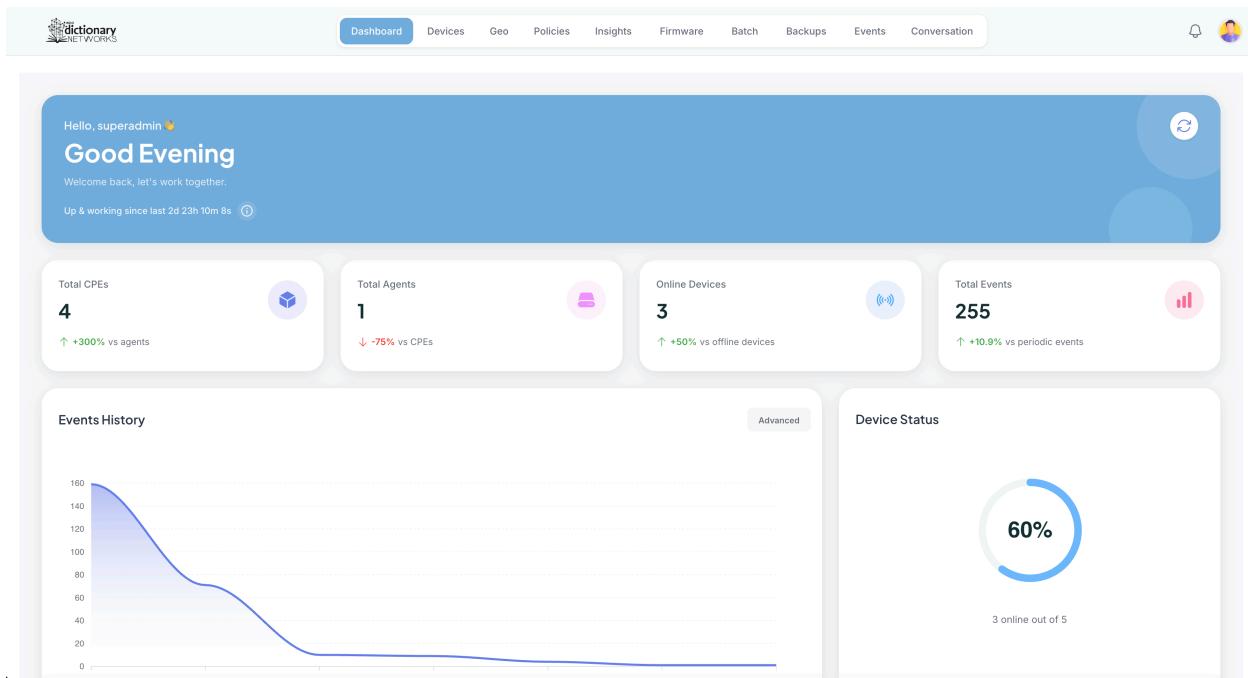
Registration Page

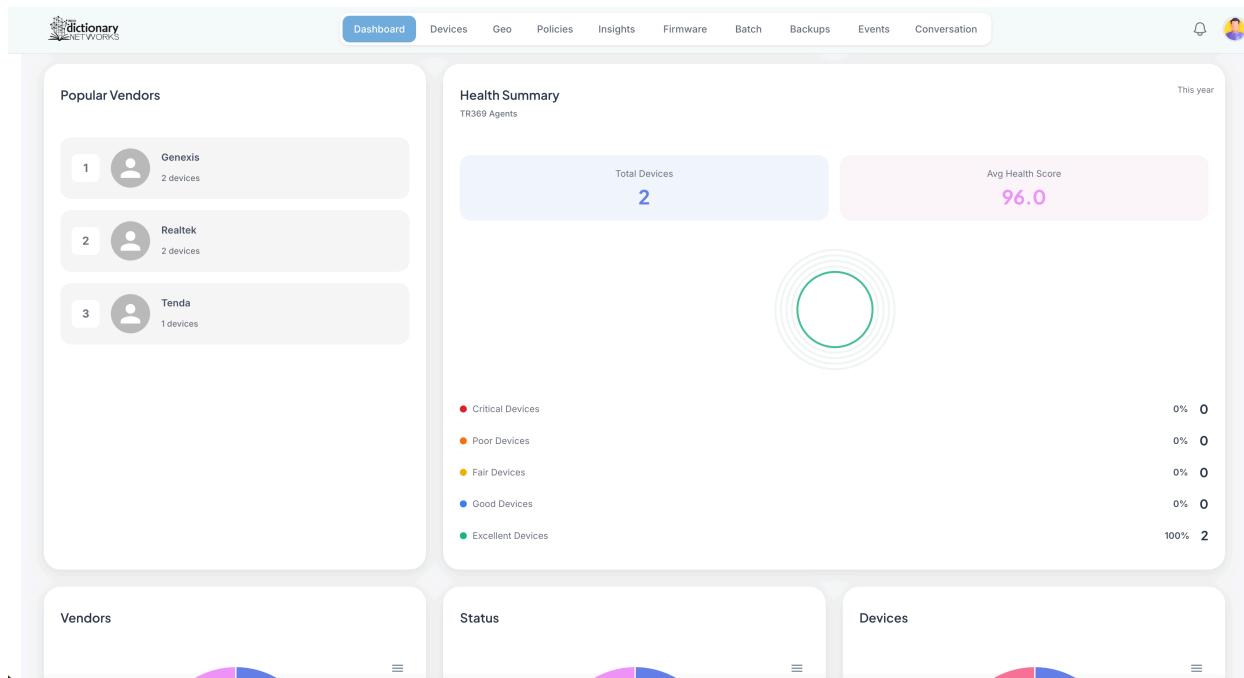


Forgot Password

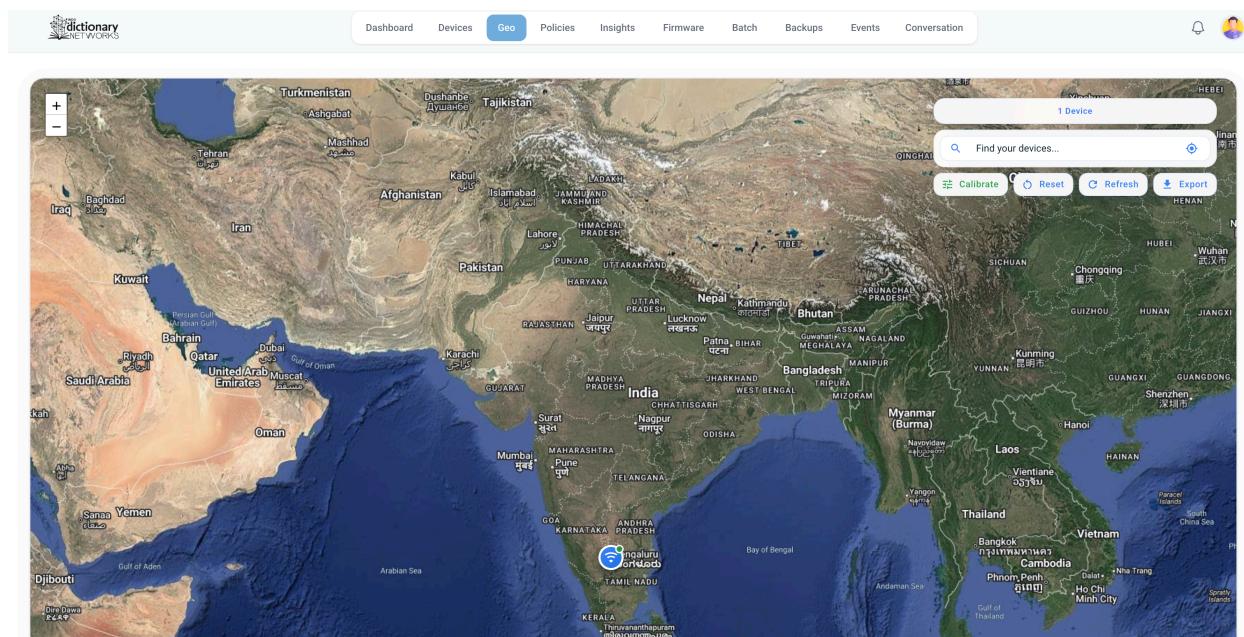


Dashboard





GEO Page



CPE List Page

Device Control Hub

Simplify operations — monitor, manage, and update CPEs in one place.

Filter your CPE

Devices

Total: 4

SERIAL NUMBER	PRODUCT CLASS	DESCRIPTION	SW VERSION	TX/RX POWER	IP ADDRESS	LAST SEEN	STATUS	ACTIONS
123453894E0F002D3	SY-GPON-1110-WDAONT	30Mbps-BUI	V2.0.15-200308	-/-	10.10.4.208	2025-12-29 21:57:27	Online	
12345989DB26D56C3	SY-GPON-2000-WADONT	-	V2.1.06-240824	-/-	192.168.29.148	2025-12-27 20:46:27	Offline	
E7883110104012034	AC10	office msp	V1.0.18	-/-	100.64.78.46	2025-12-29 21:57:26	Online	
GNXS81900CBA	Earth-2022	-	E2022-1.IUR	-/-	192.168.1.41	2025-12-13 09:08:10	Offline	

Rows per page: 10 ▾ 1-4 of 4 < >

CPE Basic Info Page

Devices > E7883110104012034 > General

Online TR098

Product Class AC10	Software Version V1.0.18	IP Address 100.64.78.46	Last Seen 2025-12-29 21:59:25
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General Wi-Fi LAN WAN LAN Hosts Diagnostics TR069 Events System Chart Host Chart Stats Tree RPCs Admin

Device Information

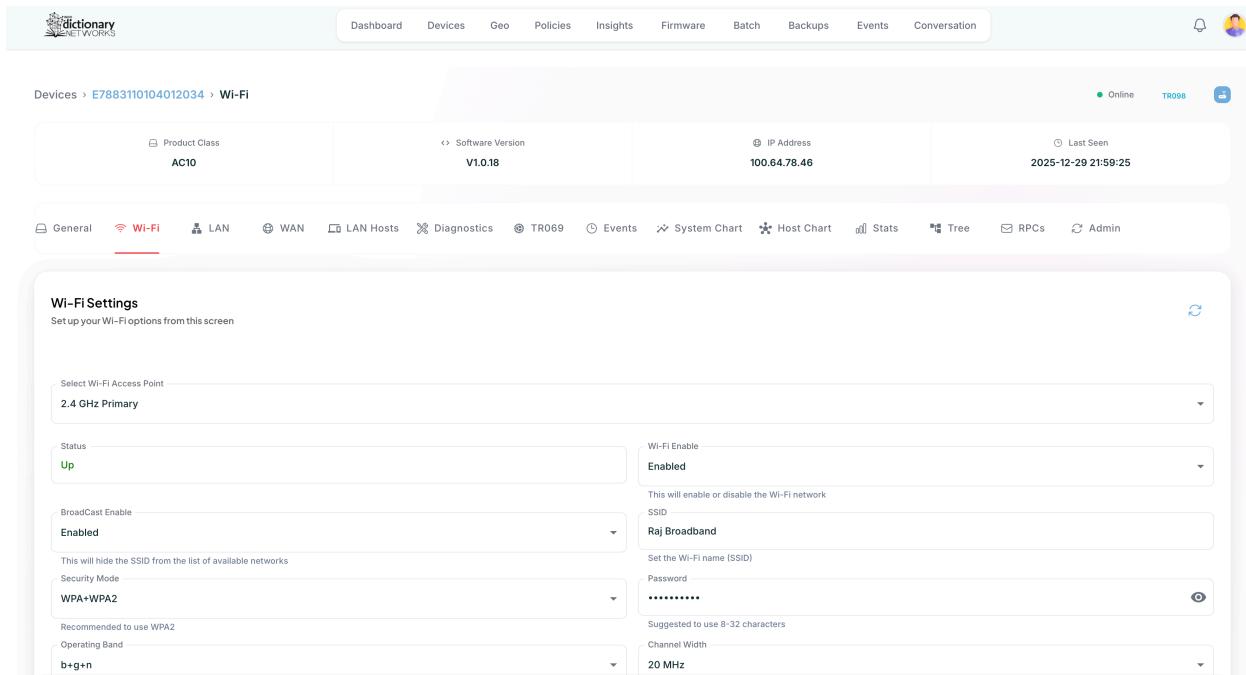
Last Refreshed: 29/12/2025, 21:59:36

PARAMETER	VALUE
Manufacturer	Tenda
Manufacturer OUI	C83A35
Product Class	AC10
Model Name	Tenda
Serial Number	E7883110104012034
Software Version	V1.0.18
Hardware Version	V1.0

Memory Usage
87.63% Used of 48756 MB

CPU Usage

WLAN Config



Devices > E7883110104012034 > Wi-Fi

Product Class: AC10 | Software Version: V1.0.18 | IP Address: 100.64.78.46 | Last Seen: 2025-12-29 21:59:25

General Wi-Fi LAN WAN LAN Hosts Diagnostics TR069 Events System Chart Host Chart Stats Tree RPCs Admin

Wi-Fi Settings

Select Wi-Fi Access Point: 2.4 GHz Primary

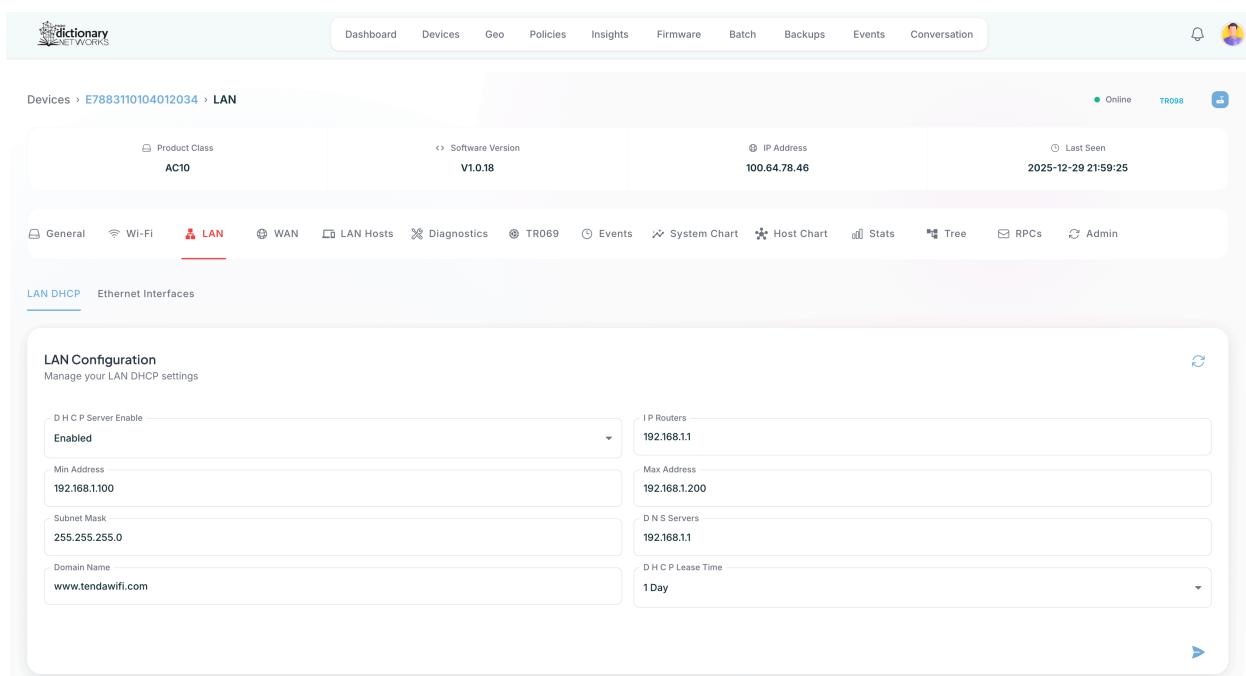
Status: Up | Wi-Fi Enable: Enabled

BroadCast Enable: Enabled | SSID: Raj Broadband

Security Mode: WPA+WPA2 | Password: *****

Operating Band: b+g+n | Channel Width: 20 MHz

LAN – DHCP & Ethernet



Devices > E7883110104012034 > LAN

Product Class: AC10 | Software Version: V1.0.18 | IP Address: 100.64.78.46 | Last Seen: 2025-12-29 21:59:25

General Wi-Fi LAN WAN LAN Hosts Diagnostics TR069 Events System Chart Host Chart Stats Tree RPCs Admin

LAN DHCP

Manage your LAN DHCP settings

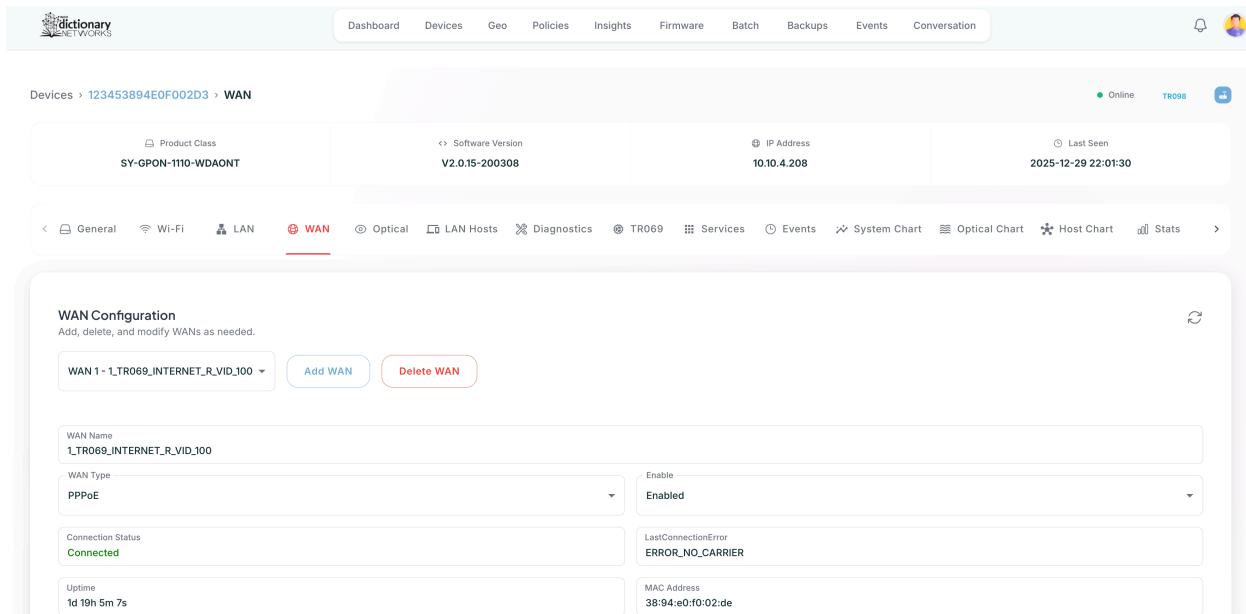
D H C P Server Enable: Enabled | IP Routers: 192.168.1.1

Min Address: 192.168.1.100 | Max Address: 192.168.1.200

Subnet Mask: 255.255.255.0 | D N S Servers: 192.168.1.1

Domain Name: www.tendawifi.com | D H C P Lease Time: 1 Day

WAN Page



Devices > 123453894E0F002D3 > WAN

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

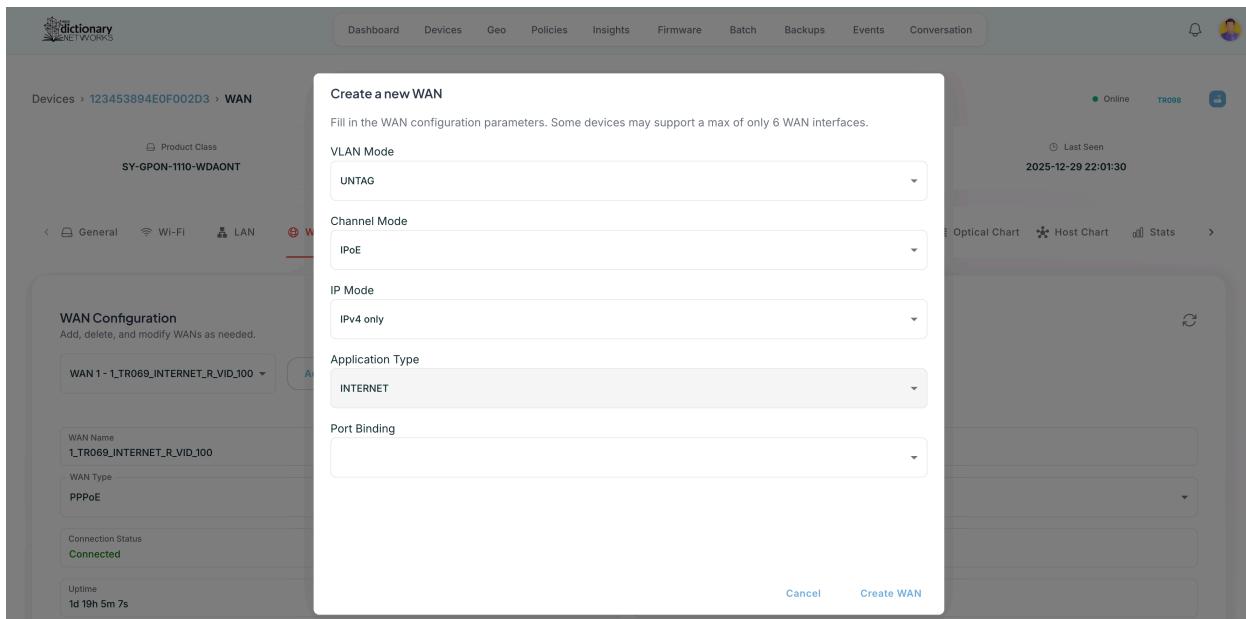
Enable: Enabled

Connection Status: Connected

LastConnectionError: ERROR_NO_CARRIER

Uptime: 1d 19h 5m 7s

MAC Address: 38:94:e0:f0:02:de



Devices > 123453894E0F002D3 > WAN

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

Devices > 123453894E0F002D3 > Optical

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 (selected), LAN Hosts, Diagnostics, TR069, Services, Events, System Chart, Optical Chart, Host Chart, Stats

Optical Parameters

Live GPON Module Readings

Status: Up	RX Optical Power: -21 dBm	TX Optical Power: 1.8 dBm	Supply Voltage: 3425.20 mV
	-27 to -7 dBm	0.5 to 5 dBm	3000 to 3500 mV
			Upload Data: 791.32 MB
			Download Data: 2477.00 MB

Bias Current: 8.050 mA | Transceiver Temp: 15 °C

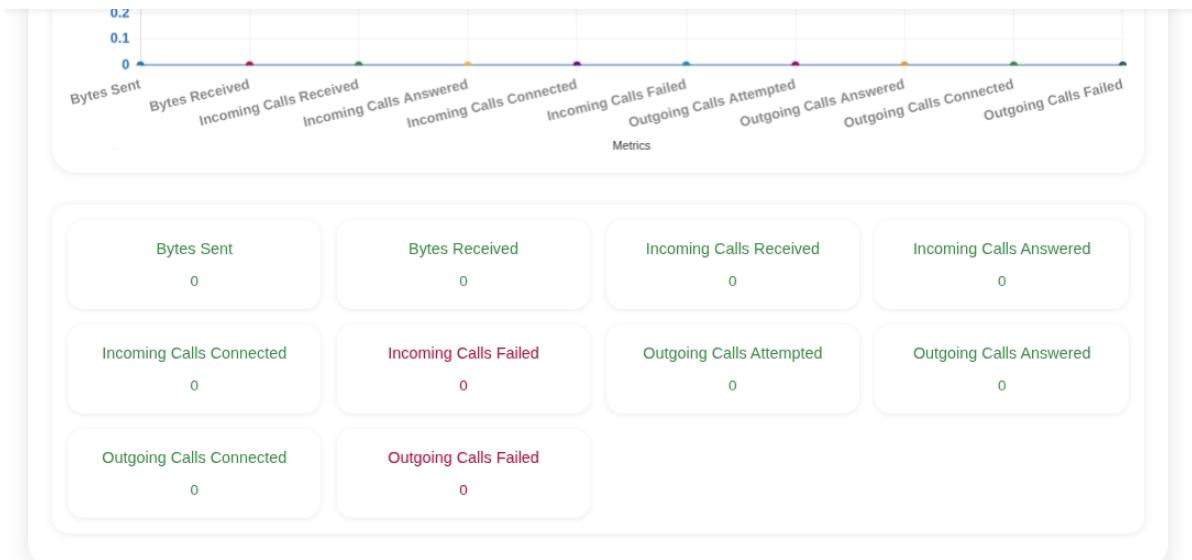
Parameter Trends

Voice Page

Basic (selected), Advanced, Metrics

Voice - Basic

Line Status: Disabled	Line Enable: Disabled	Server Type: Soft Switch SIP
Registrar Server	Registrar Server Port: 5060	Proxy Server
Proxy Server Port: 5060	Auth User Name	Auth Password
Phone Number	Outbound Proxy	Outbound Proxy Port: 5060
SIP Domain	Register Expires: 3600	Secondary Registrar Server



TR069 Page

Devices > E7883110104012034 > TR069

Online: TR098

Product Class: AC10	Software Version: V1.0.18	IP Address: 100.64.78.46	Last Seen: 2025-12-29 22:06:36
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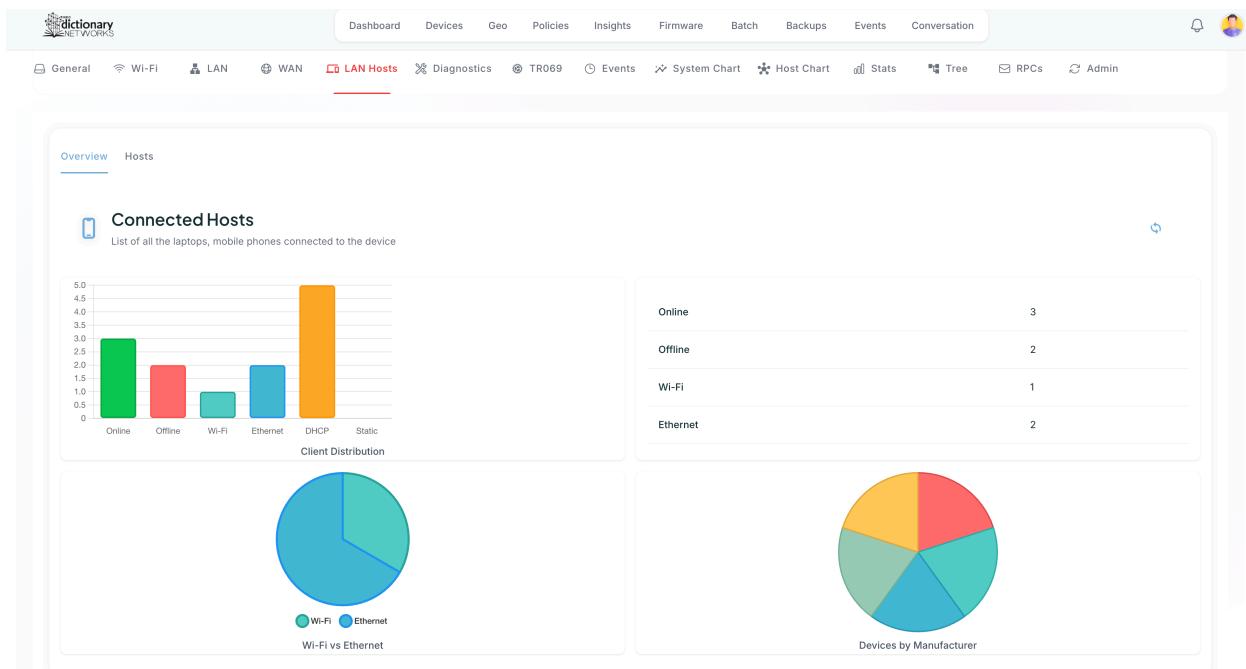
General Wi-Fi LAN WAN LAN Hosts Diagnostics **TR069** Events System Chart Host Chart Stats Tree RPCs Admin

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



The table view displays the following host details:

Hostname	IP	Manufacturer	Interface	Status
hostname	192.168.1.150	D-Link International	Ethernet	Online
aliosthings	192.168.1.169	AltoBeam (China) Inc.	Wi-Fi	Online
OPPO-A54	192.168.1.181	Unknown	-	Offline
Uni+	192.168.1.179	CP PLUS GMBH & CO. KG	-	Online
TL-WR820N	192.168.1.117	TP-Link Systems Inc	Ethernet	Online

Diagnostics Page

Basic Wi-Fi LAN WAN Voice Optical LAN Hosts Diagnostics TR069 Events Stats >

Diagnostics

Select Interface: 1_TR069_INTERNET_R_VID_

TRACEROUTE PING UPLOAD DOWNLOAD

Host: www.google.com

Start Diagnostics

Network Diagnostics

Run traceroute, ping, upload, and download speed tests on your device

Select WAN Interface

TRACEROUTE PING UPLOAD DOWNLOAD

Download URL: http://34.131.229.189/100MB.bin

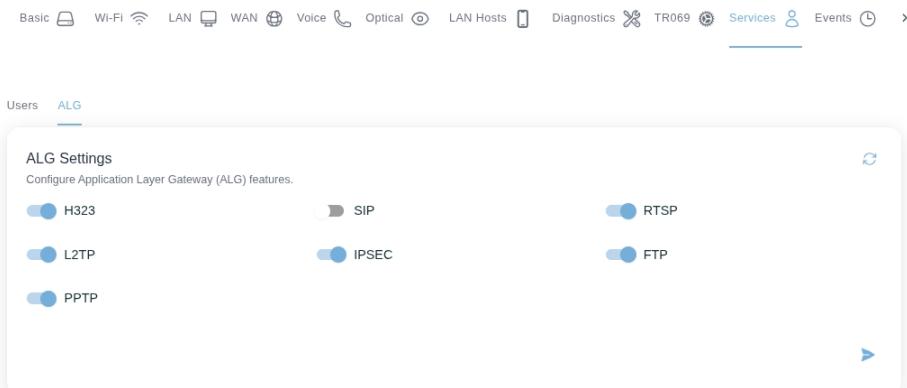
Start Diagnostics

Diagnostics Results

Download Speed

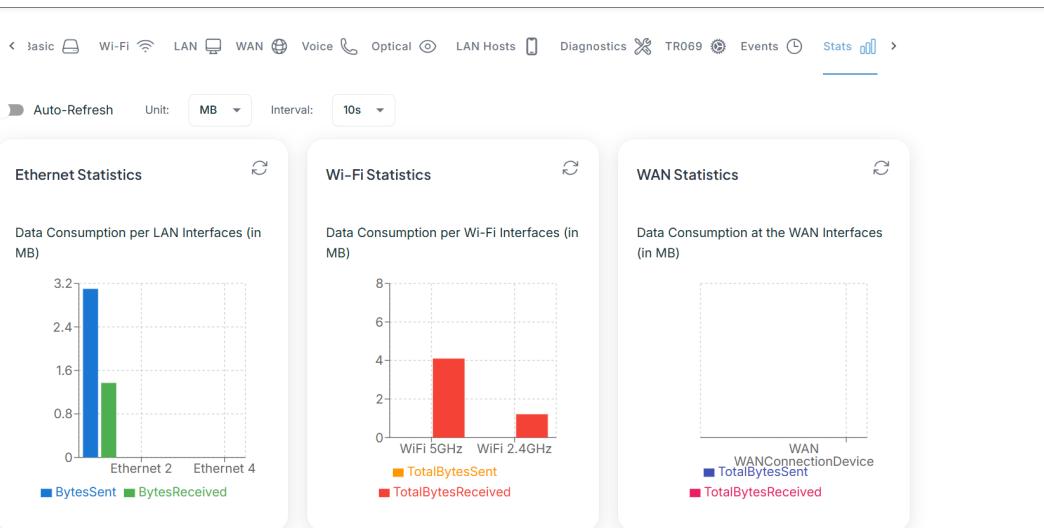
33.33 Mbps

Services Page



The Services Page displays various network management sections. The 'ALG' tab is active, showing 'ALG Settings' for configuring Application Layer Gateway (ALG) features. It lists supported protocols: H323, SIP, L2TP, IPSEC, RTSP, PPTP, and FTP. Each protocol has a corresponding toggle switch. The 'ALG' tab is highlighted in blue, and the 'Users' tab is shown in grey.

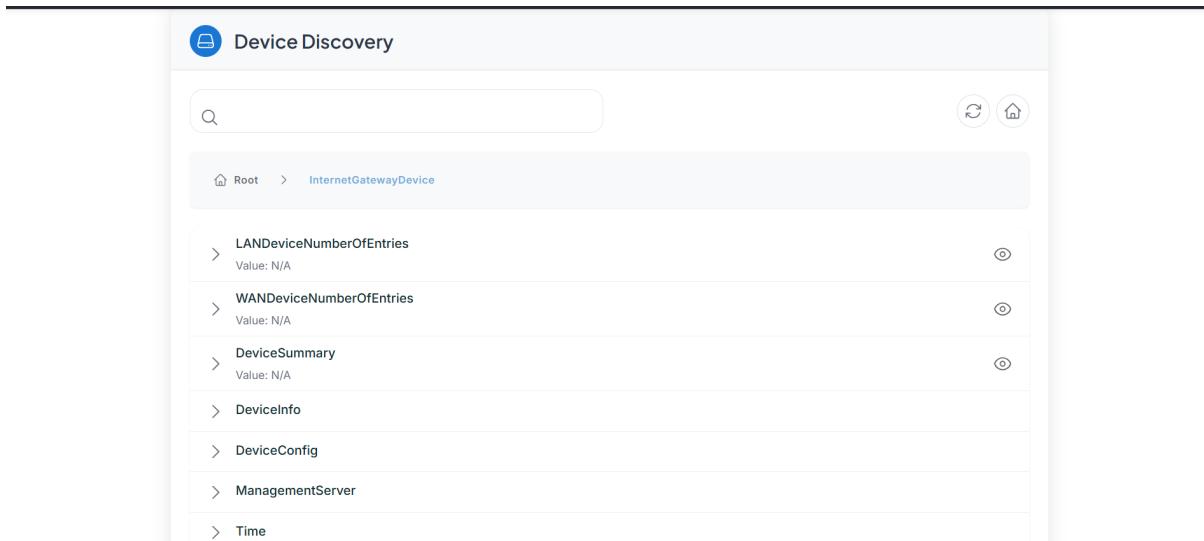
Stats Page



The Stats Page provides real-time network statistics. At the top, there are refresh and unit selection buttons (Unit: MB, Interval: 10s). The page is divided into three main sections: Ethernet Statistics, Wi-Fi Statistics, and WAN Statistics.

- Ethernet Statistics:** Shows data consumption per LAN interfaces (in MB). The chart compares BytesSent (blue) and BytesReceived (green) for Ethernet 2 and Ethernet 4. The Y-axis ranges from 0 to 3.2 MB.
- Wi-Fi Statistics:** Shows data consumption per Wi-Fi interfaces (in MB). The chart compares TotalBytesSent (orange) and TotalBytesReceived (red) for WiFi 5GHz and WiFi 2.4GHz. The Y-axis ranges from 0 to 8 MB.
- WAN Statistics:** Shows data consumption at the WAN interfaces (in MB). The chart compares TotalBytesSent (blue) and TotalBytesReceived (red) for WAN Connection Device. The Y-axis ranges from 0 to 8 MB.

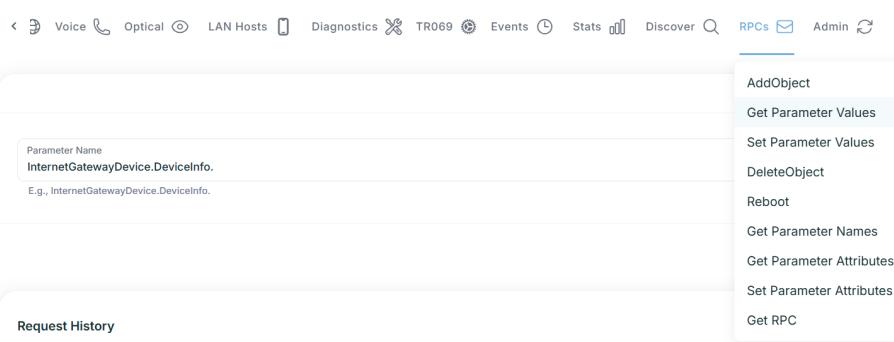
TR098 Data model tree view page



The screenshot shows a 'Device Discovery' interface. At the top, there is a search bar and navigation icons for refresh and home. Below the header, the breadcrumb navigation shows 'Root > InternetGatewayDevice'. The main content area displays a tree structure of data model objects:

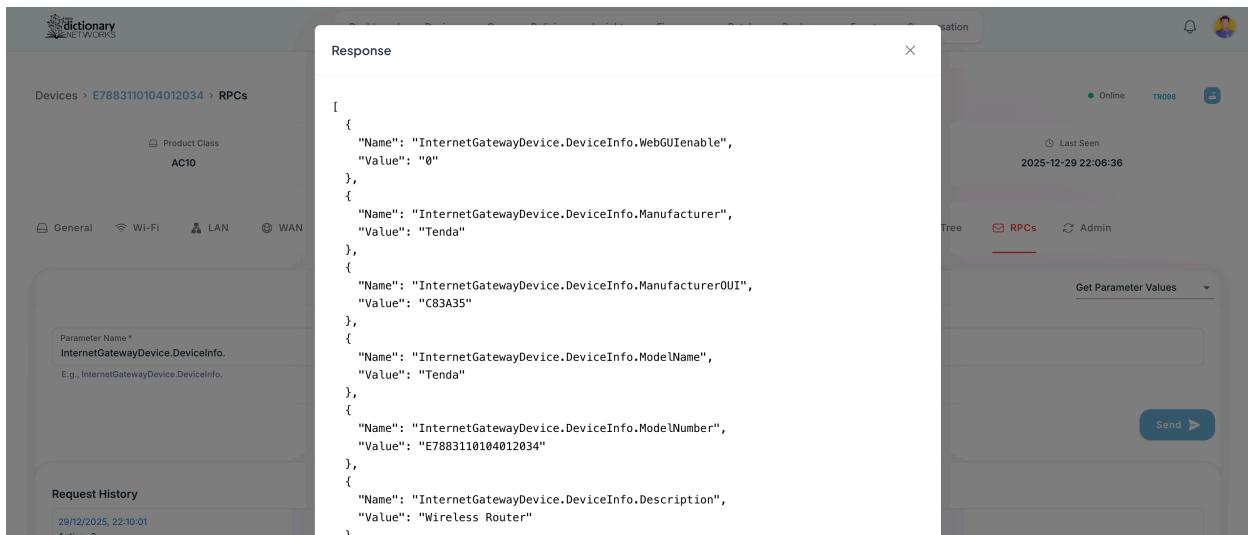
- > LANDeviceNumberOfEntries
Value: N/A
- > WANDeviceNumberOfEntries
Value: N/A
- > DeviceSummary
Value: N/A
- > DeviceInfo
- > DeviceConfig
- > ManagementServer
- > Time

RPC Calls Page



The screenshot shows the 'RPCs' tab selected in the navigation bar. A context menu is open on the right side of the screen, listing the following options:

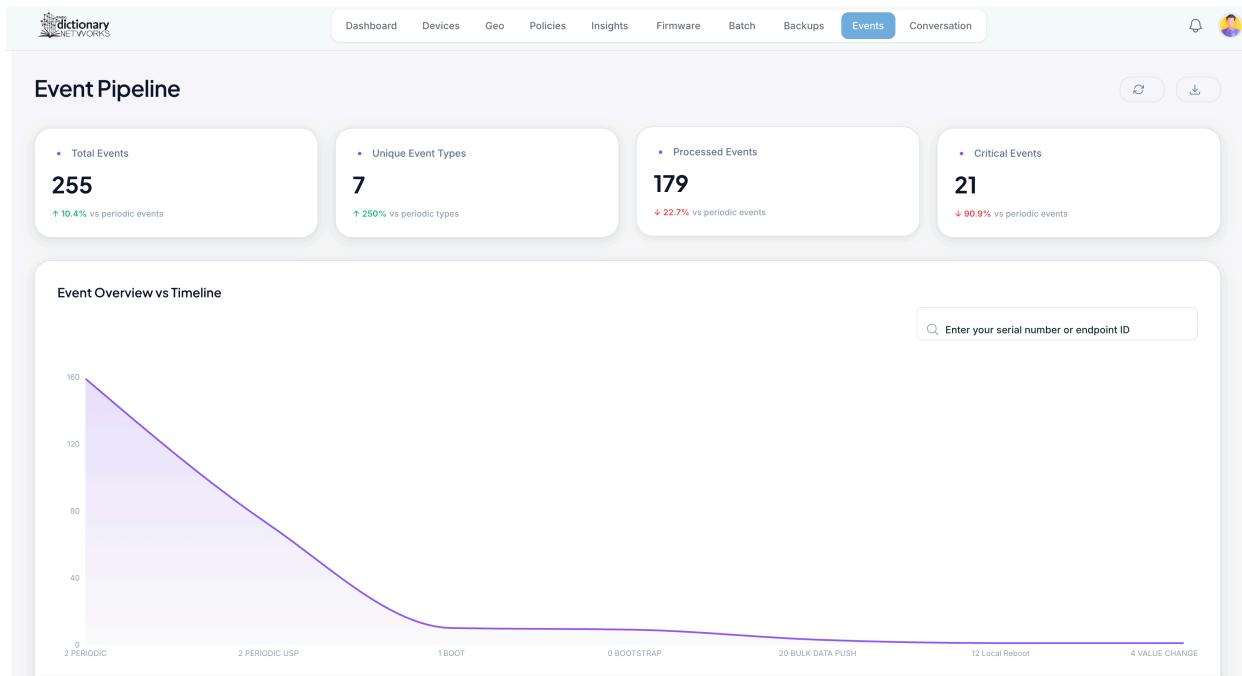
- AddObject
- Get Parameter Values
- Set Parameter Values
- DeleteObject
- Reboot
- Get Parameter Names
- Get Parameter Attributes
- Set Parameter Attributes
- Get RPC



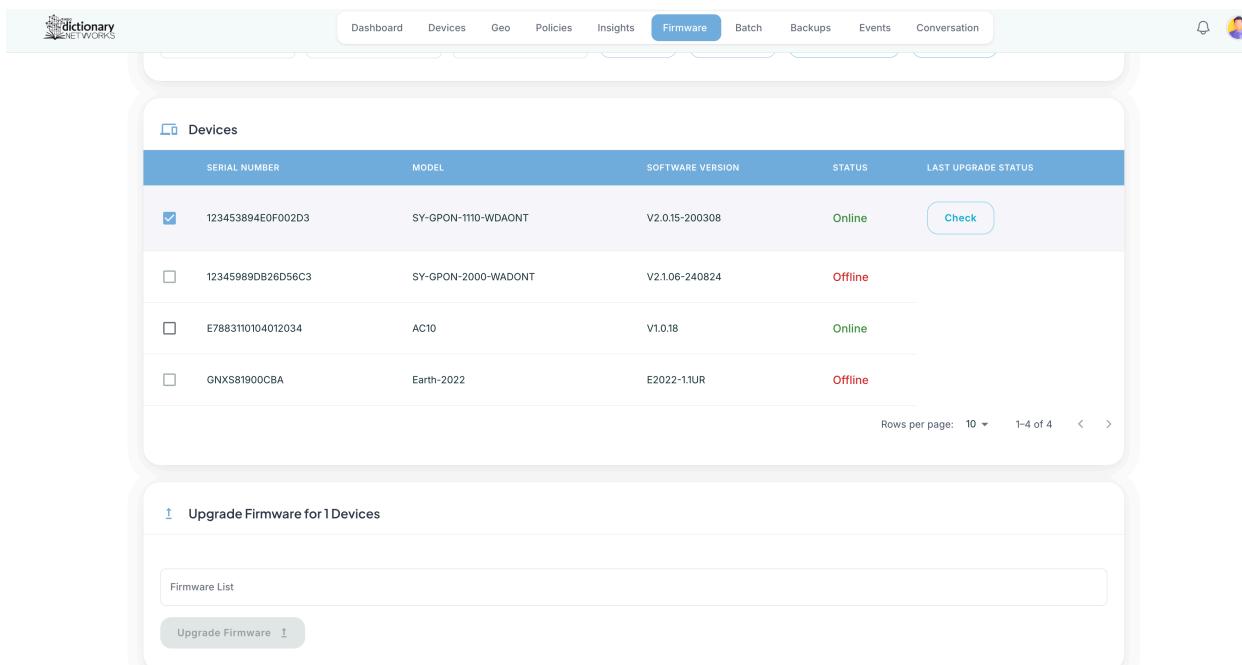
The screenshot shows the 'RPCs' tab selected in the navigation bar of a device details page. The left sidebar shows device categories: General, Wi-Fi, LAN, and WAN. The main content area displays a table titled 'Response' with the following data:

Parameter Name	Value
InternetGatewayDevice.DeviceInfo.WebGUIenable	0
InternetGatewayDevice.DeviceInfo.Manufacturer	Tenda
InternetGatewayDevice.DeviceInfo.ManufacturerOUI	C83A35
InternetGatewayDevice.DeviceInfo.ModelName	Tenda
InternetGatewayDevice.DeviceInfo.ModelNumber	E7883110104012034
InternetGatewayDevice.DeviceInfo.Description	Wireless Router

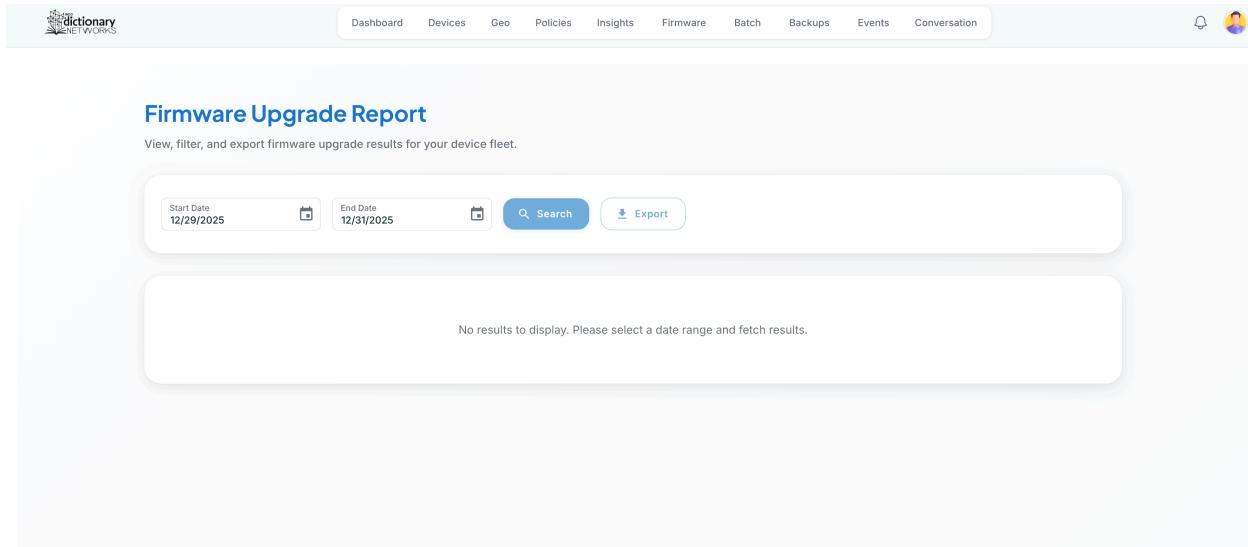
Events Timeline



Mass FW Upgrade

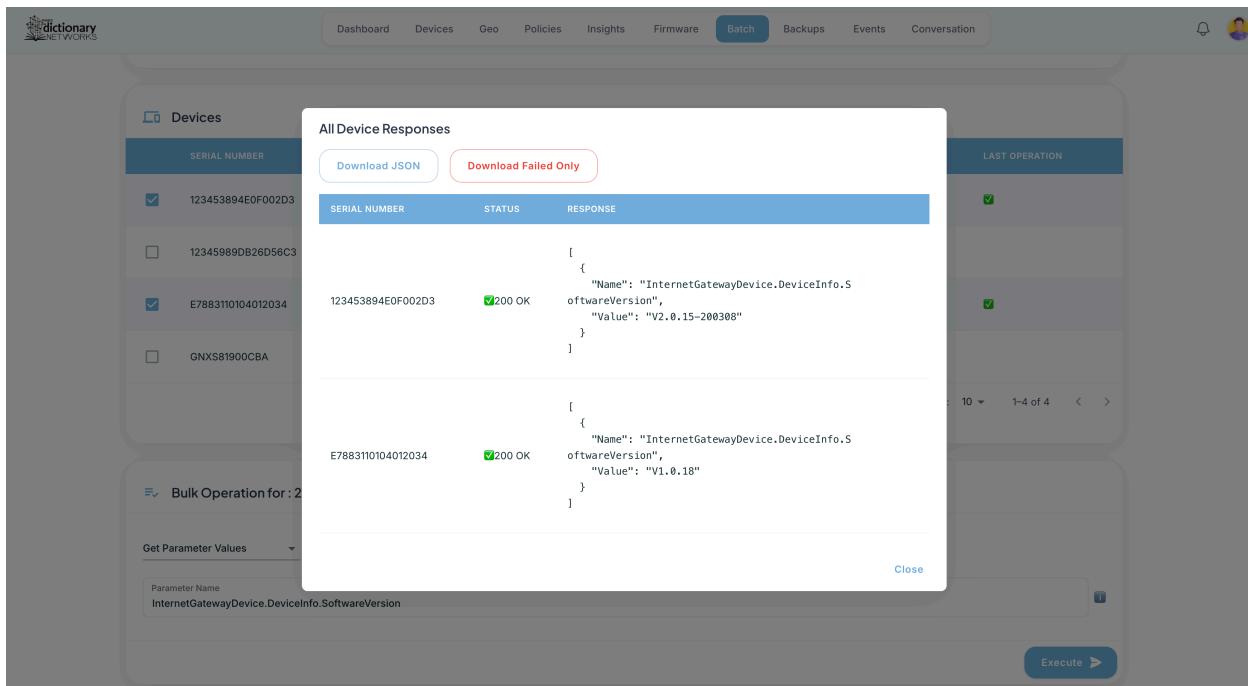


FW Upgrade Report



The screenshot shows the 'Firmware Upgrade Report' page. At the top, there is a navigation bar with links for Dashboard, Devices, Geo, Policies, Insights, Firmware, Batch, Backups, Events, and Conversation. On the far right, there are a notification bell icon and a user profile icon. The main content area has a title 'Firmware Upgrade Report' and a sub-instruction 'View, filter, and export firmware upgrade results for your device fleet.' Below this is a search/filter section with 'Start Date' (12/29/2025), 'End Date' (12/31/2025), a 'Search' button, and an 'Export' button. The main results area displays a message: 'No results to display. Please select a date range and fetch results.'

Bulk Action

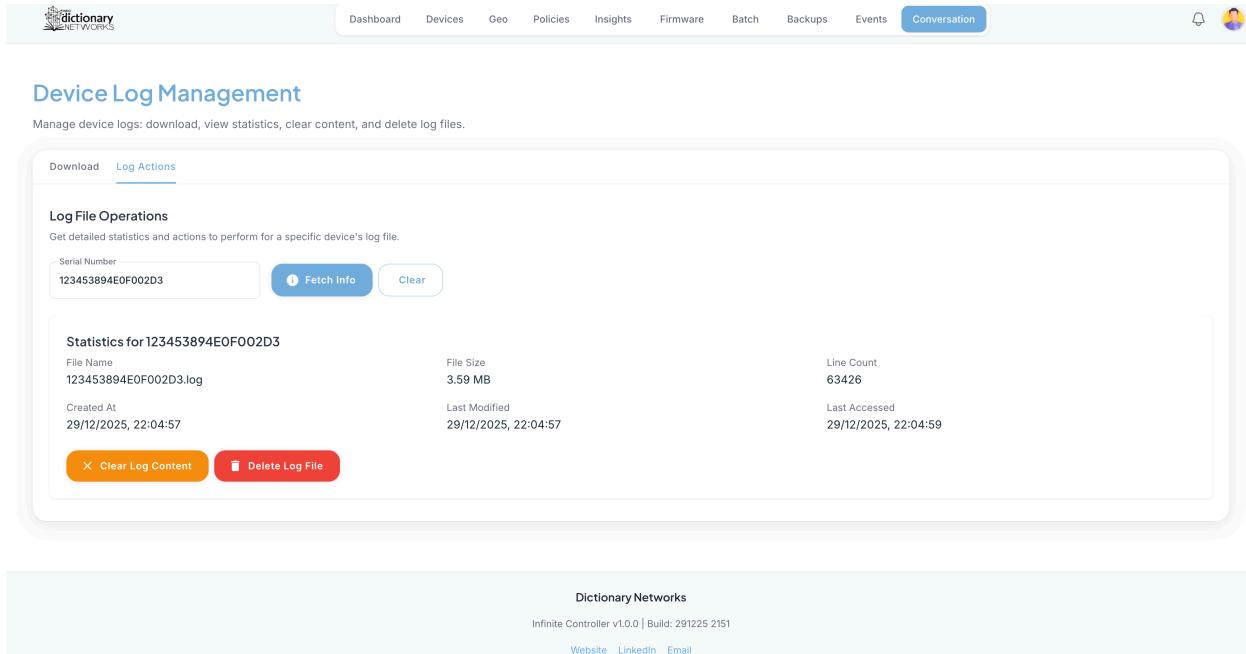


The screenshot shows the 'All Device Responses' modal window. It has a header 'All Device Responses' with 'Download JSON' and 'Download Failed Only' buttons. The main table has columns for 'SERIAL NUMBER', 'STATUS', and 'RESPONSE'. The table shows two rows of data:

SERIAL NUMBER	STATUS	RESPONSE
123453894E0F002D3	200 OK	[{ "Name": "InternetGatewayDevice.DeviceInfo.SoftwareVersion", "Value": "V2.0.15-200308" }]
E7883110104012034	200 OK	[{ "Name": "InternetGatewayDevice.DeviceInfo.SoftwareVersion", "Value": "V1.0.18" }]

On the right side of the modal, there is a 'LAST OPERATION' section showing a list of operations with checkboxes. At the bottom right of the modal is a 'Close' button. The background of the modal is semi-transparent, showing the 'Devices' list on the left and a 'Bulk Operation for : 2' section at the bottom.

CPE and ACS Conversation Logs



The screenshot shows the Dictionary Networks interface with the following details:

Header: Dashboard, Devices, Geo, Policies, Insights, Firmware, Batch, Backups, Events, Conversation (highlighted in blue), and a user icon.

Section Title: Device Log Management

Section Subtitle: Manage device logs: download, view statistics, clear content, and delete log files.

Log File Operations: Get detailed statistics and actions to perform for a specific device's log file.

Serial Number: 123453894E0F002D3

Buttons: Fetch Info (blue), Clear (light blue)

Statistics for 123453894E0F002D3:

File Name	File Size	Line Count
123453894E0F002D3.log	3.59 MB	63426

Created At: 29/12/2025, 22:04:57

Last Modified: 29/12/2025, 22:04:57

Last Accessed: 29/12/2025, 22:04:59

Actions: Clear Log Content (orange), Delete Log File (red)

Footer: Dictionary Networks, Infinite Controller v1.0.0 | Build: 291225 2151, Website, LinkedIn, Email

Contact US

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

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