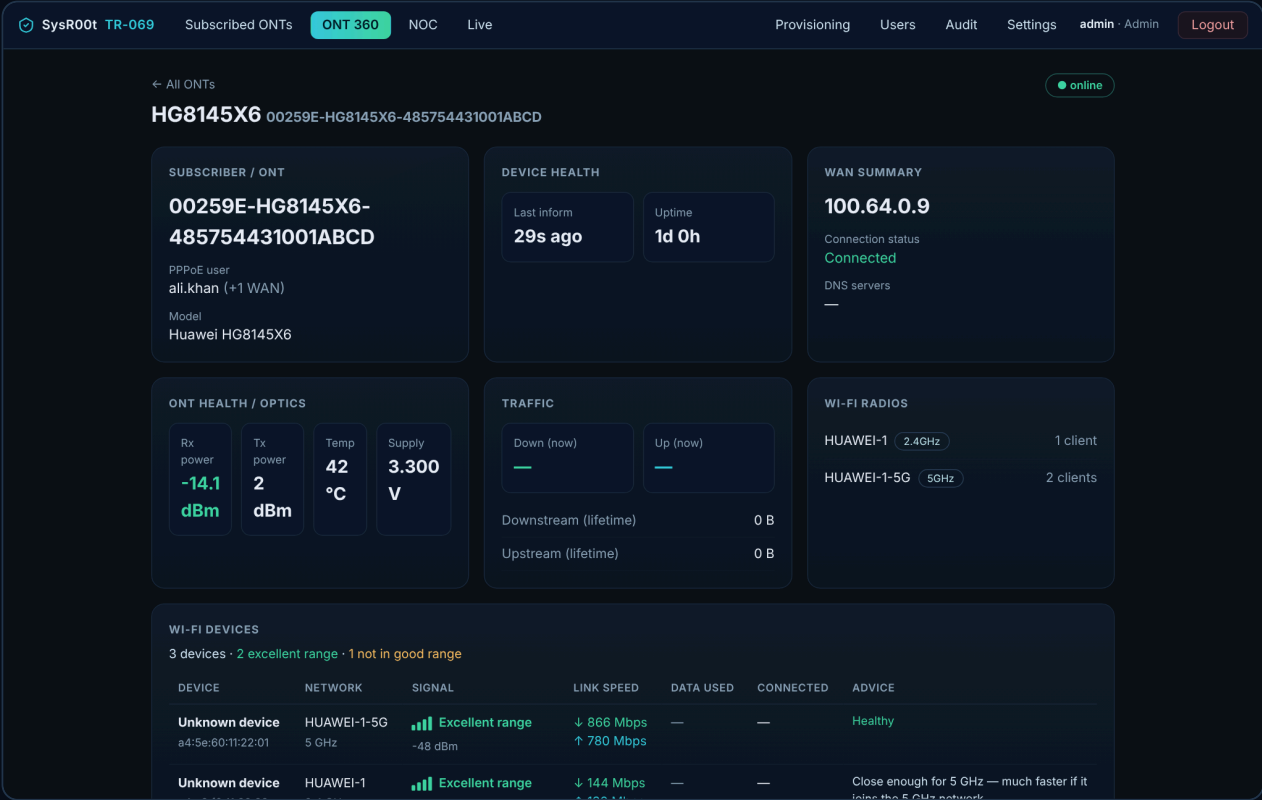


ONT Management System Product Manual

Every screen, button and module of the self-hosted TR-069 / GenieACS portal for ISPs — explained with pictures.



Contents

1. Introduction

2. Getting started

3. Navigation and roles

4. Subscribed ONTs

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8. WhatsApp alerts and settings

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12. Troubleshooting

1 Introduction

The **SysR00t ONT Management System** is a self-hosted TR-069 / GenieACS portal for ISPs and GPON operators. It runs on your own server, under your own brand, and gives your NOC one place to see, fix and provision every subscriber ONT.

This manual explains every screen and button, who can use it, and what happens on the ONT when it is used. Sections marked with a plan badge are only present when your licence includes that module.

Plans at a glance

Feature	Basic	Pro	Big Bash
ONTs per licence	500	1,000	Unlimited
Licence (per year)	\$300	\$500	\$1,000
Annual support	\$50	\$100	Free
Subscribed ONTs list & search	✓	✓	✓
ONT 360 dashboard — WAN, optics, traffic, Wi-Fi	✓	✓	✓
NOC dashboard	✓	✓	✓
Live traffic	✓	✓	✓
User management (Admin / Support / View-only, ONT scope)	✓	✓	✓
ONT 360 tools — health check, Wi-Fi settings, ping / traceroute, notes	—	✓	✓
Wi-Fi Insight	—	✓	✓
Bulk actions	—	—	✓
Audit log	—	—	✓
Zero-touch provisioning & WAN editor	—	—	✓
WhatsApp alerts (Meta Cloud API)	—	—	✓
Full white-label branding	—	—	✓
Instant updates from the publisher	✓	✓	✓

All licences are annual and renewable after 12 months. Reminders are emailed 30, 7 and 1 day before expiry; on expiry the portal locks until the licence is renewed.

2 Getting started

Server requirements

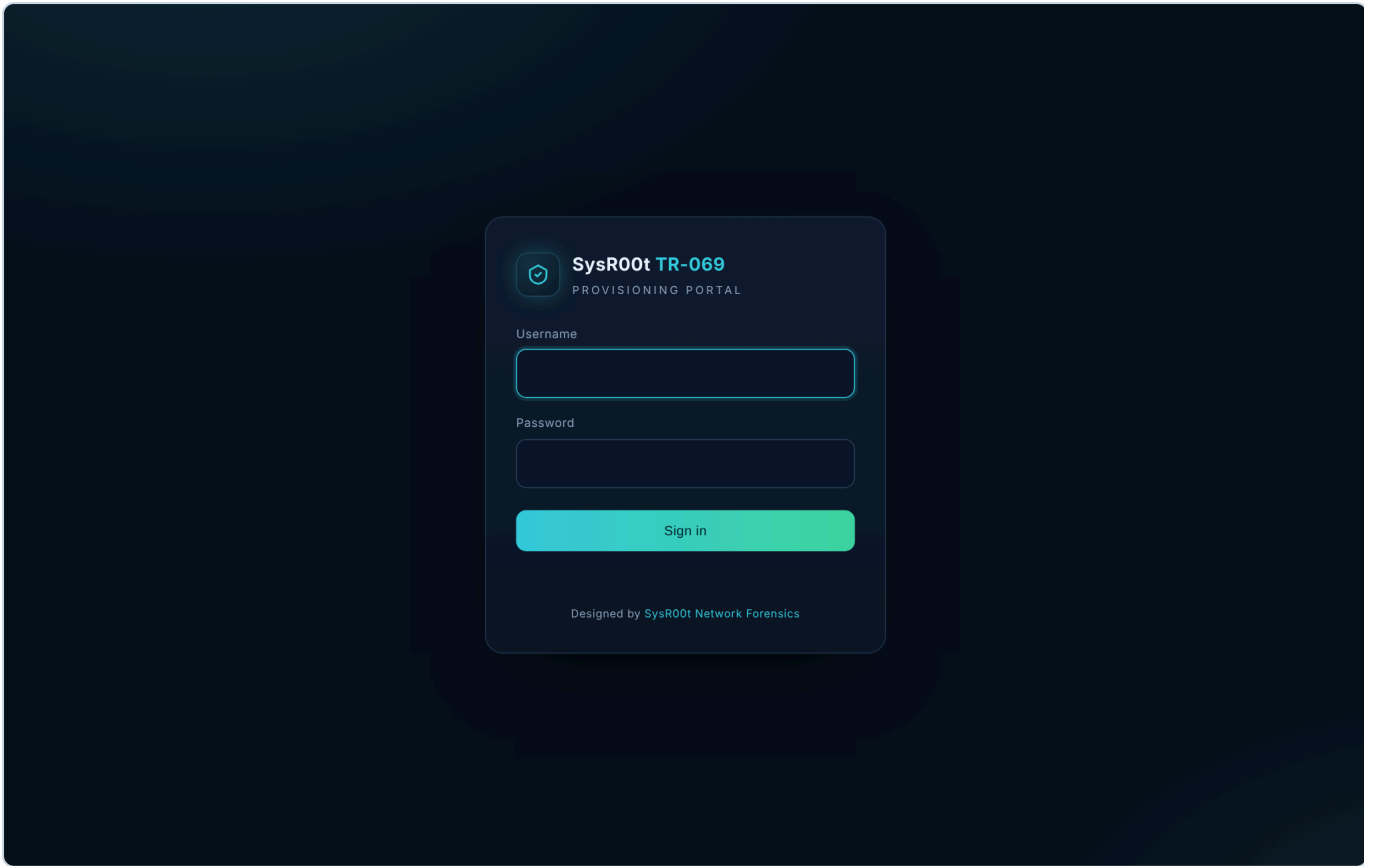
Plan	Recommended server
Basic & Pro	Ubuntu 24.04 LTS (64-bit) 16 CPU cores 16 GB RAM 200 GB disk (SSD recommended) Bare-metal or VM
Big Bash	Ubuntu 24.04 LTS Sized with you Suggested 24+ cores, 32+ GB RAM, 500 GB+ SSD

Network

- Inbound TCP 80 and 443 — portal and Let's Encrypt certificate
- Inbound TCP 7547 — TR-069 / CWMP, the ACS port ONTs connect to
- DNS A record for your portal domain pointing at the server
- Outbound 443 for package installation and certificate issuance

Installation

1. Your licence is issued and an install link is emailed to you.
2. On the fresh server run the one-line command from the email as root. It installs MongoDB, GenieACS, the branded portal, nginx and a Let's Encrypt certificate.
3. Point each ONT's ACS URL at `http://<your-domain>:7547/`. ONTs appear in the portal on their first contact.
4. Sign in at `https://<your-domain>/` with the admin account created during installation.



The branded sign-in page.

3 Navigation and roles

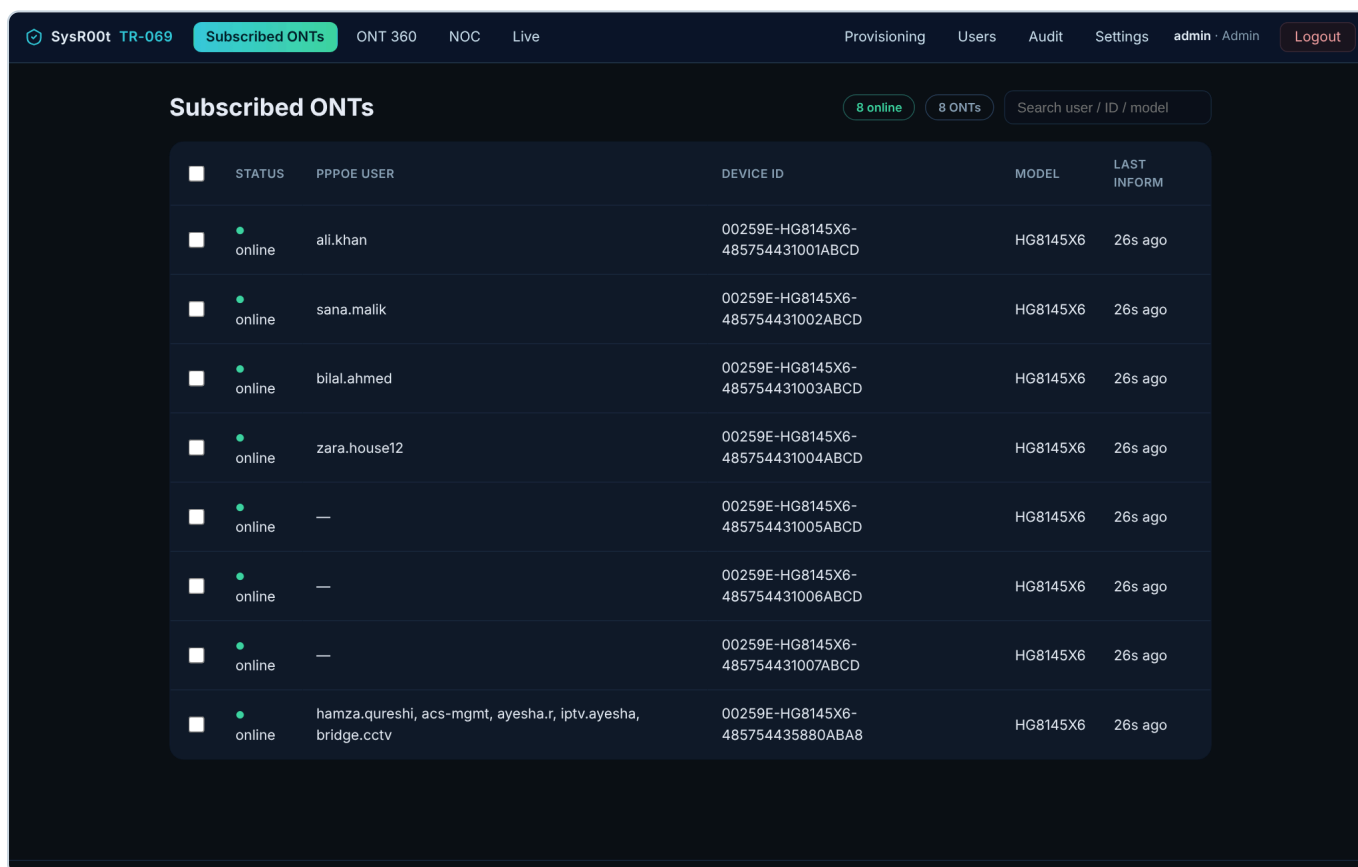
The top bar always shows **Subscribed ONTs** · **ONT 360** · **NOC** · **Live**. Depending on your role and plan it also shows **Provisioning**, **Users**, **Audit** and **Settings**, then your name, your role and **Logout**.

Role	What it can do
Admin	Everything: all ONTs, actions, provisioning, users, audit log and settings.
Support	Sees the ONTs assigned to it (or all). Can scan, refresh, reboot, run tools, change Wi-Fi and provision. Cannot manage users or settings.
View only	Sees the ONTs assigned to it. No action buttons or edit controls are shown at all.

A user's **ONT scope** can be *all ONTs* or a hand-picked list (5, 10, 100 ...). A user never sees, searches or acts on an ONT outside its scope — in the lists, in ONT 360, in NOC or through the API.

4 Subscribed ONTs

The home page lists every ONT you can see: status (online / offline), PPPoE user, device ID, model and last contact. Type in the search box to filter by PPPoE user, device ID or model. Click a row to open its ONT 360.



Subscribed ONTs				
8 online 8 ONTs Search user / ID / model				
☐	STATUS	PPPOE USER	DEVICE ID	MODEL LAST INFORM
☐	online	ali.khan	00259E-HG8145X6-485754431001ABCD	HG8145X6 26s ago
☐	online	sana.malik	00259E-HG8145X6-485754431002ABCD	HG8145X6 26s ago
☐	online	bilal.ahmed	00259E-HG8145X6-485754431003ABCD	HG8145X6 26s ago
☐	online	zara.house12	00259E-HG8145X6-485754431004ABCD	HG8145X6 26s ago
☐	online	—	00259E-HG8145X6-485754431005ABCD	HG8145X6 26s ago
☐	online	—	00259E-HG8145X6-485754431006ABCD	HG8145X6 26s ago
☐	online	—	00259E-HG8145X6-485754431007ABCD	HG8145X6 26s ago
☐	online	hamza.queshi, acs-mgmt, ayesha.r, iptv.ayesha, bridge.cctv	00259E-HG8145X6-485754435880ABA8	HG8145X6 26s ago

Subscribed ONTs.

Bulk actions Big Bash

Tick the boxes on the left (or the header box for everything shown). A bar appears with **Refresh selected**, **Reboot selected** and **Clear**. Every ONT is handled one after another and each result is recorded in the audit log. View-only users do not see the tick boxes.

SysR00tTR-069Subscribed ONTsONT 360NOCLiveProvisioningUsersAuditSettingsadmin · AdminLogout

Subscribed ONTs

8 online8 ONTsSearch user / ID / model

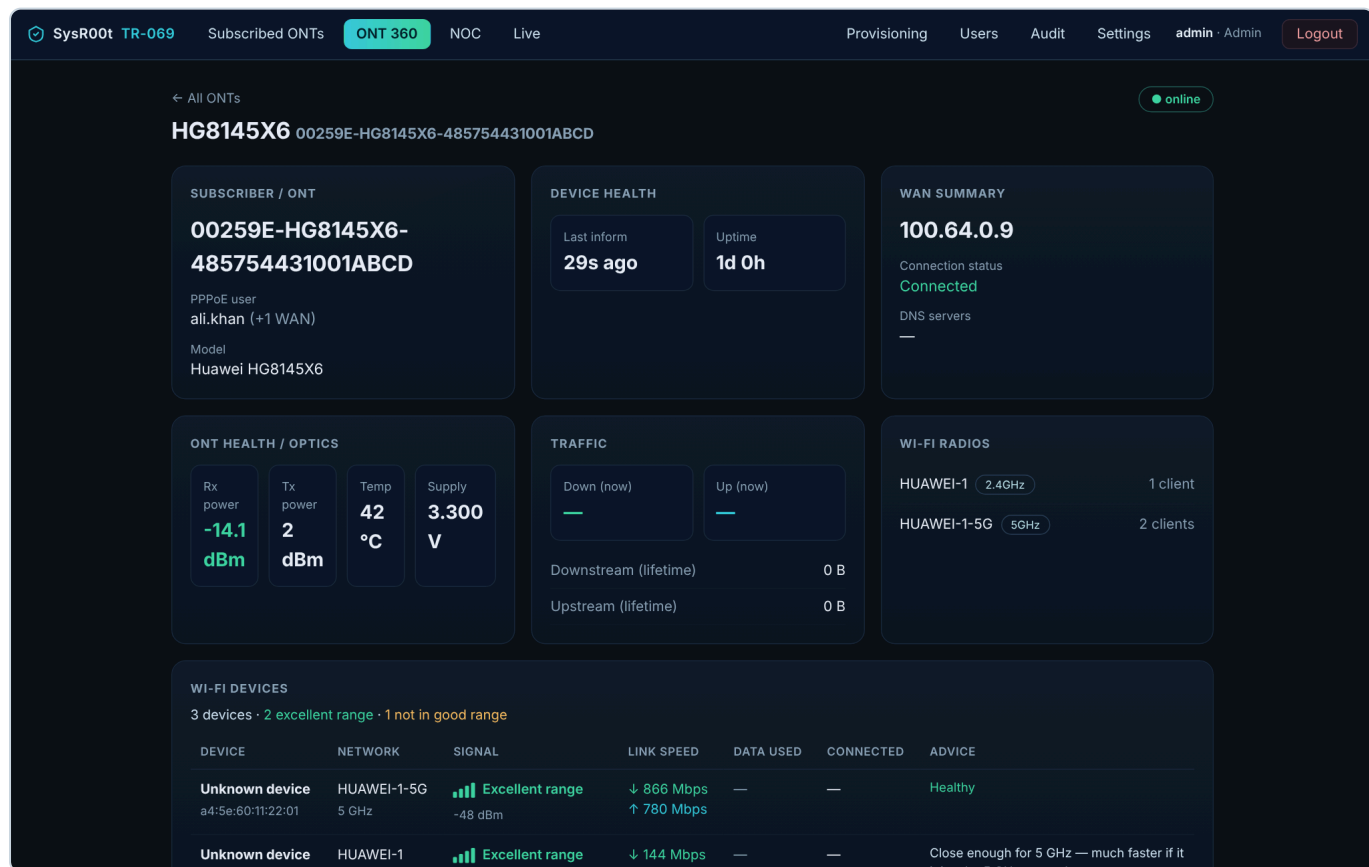
2 selectedRefresh selectedReboot selectedClear

	STATUS	PPPOE USER	DEVICE ID	MODEL	LAST INFORM
☒	online	ali.khan	00259E-HG8145X6-485754431001ABCD	HG8145X6	26s ago
☐	online	sana.malik	00259E-HG8145X6-485754431002ABCD	HG8145X6	26s ago
☒	online	bilal.ahmed	00259E-HG8145X6-485754431003ABCD	HG8145X6	26s ago
☐	online	zara.house12	00259E-HG8145X6-485754431004ABCD	HG8145X6	26s ago
☐	online	—	00259E-HG8145X6-485754431005ABCD	HG8145X6	26s ago
☐	online	—	00259E-HG8145X6-485754431006ABCD	HG8145X6	26s ago
☐	online	—	00259E-HG8145X6-485754431007ABCD	HG8145X6	26s ago
☐	online	hamza.queshi, acs-mgmt, ayesha.r, iptv.ayesha, bridge.cctv	00259E-HG8145X6-485754435880ABA8	HG8145X6	26s ago

Two ONTs selected for a bulk action.

5 ONT 360

ONT 360 is the complete picture of one subscriber. It refreshes itself while open.



ONT 360 for one subscriber.

Card	Shows
Subscriber / ONT	Device ID, PPPoE user(s), model.
Device health	Last contact with the ACS and uptime.
WAN summary	Public / CGNAT IP, connection status and DNS servers.
ONT health / optics	Rx and Tx power (dBm), temperature and supply voltage. Rx is amber outside -8 ... -27 dBm.
Traffic	Current down / up rate and lifetime byte counters.
Wi-Fi radios	Each SSID with its band and number of connected devices.

Actions

Run full scan reads the ONT's whole data model. **Refresh WAN / Refresh Wi-Fi** re-read just that part. **Reboot ONT** asks for confirmation first. View-only users do not see these buttons.

Wi-Fi Insight Pro Big Bash

Every connected device is listed with a plain-language signal rating, link speed, data used and advice:

Rating	Signal	Meaning
Excellent range	−55 dBm or better	Full speed.
Good range	−56 ... −67 dBm	Reliable for streaming and calls.
Not in good range	−68 ... −75 dBm	Slower, may drop — move closer or add a mesh point.
Out of range	below −75 dBm	Unusable — the device is too far away.

WI-FI DEVICES						
3 devices · 2 excellent range · 1 not in good range						
DEVICE	NETWORK	SIGNAL	LINK SPEED	DATA USED	CONNECTED	ADVICE
Unknown device a4:5e:60:11:22:01	HUAWEI-1-5G 5 GHz	 Excellent range −48 dBm	↓ 866 Mbps ↑ 780 Mbps	—	—	Healthy
Unknown device a4:c3:f0:11:22:33	HUAWEI-1 2.4 GHz	 Excellent range −52 dBm	↓ 144 Mbps ↑ 130 Mbps	—	—	Close enough for 5 GHz — much faster if it joins the 5 GHz network
Unknown device f0:99:b6:77:88:99	HUAWEI-1-5G 5 GHz	 Not in good range −71 dBm	↓ 58 Mbps ↑ 24 Mbps	—	—	Edge of 5 GHz range — expect drops; 2.4 GHz or a mesh point helps
 Excellent range  Good range  Not in good range  Out of range						

Wi-Fi Insight: rating, speed and advice per device.

ONT 360 tools Pro Big Bash

- **Health check** — one click checks reachability, fibre signal, laser, temperature, internet session, stability, device load and Wi-Fi, and gives a one-line verdict such as “line is healthy — complaints are most likely Wi-Fi coverage”.
- **Wi-Fi settings** — change the network name, password, channel and on / off per radio. Changes go straight to the ONT.
- **Network test** — ping or traceroute run from the ONT itself, which shows whether the line reaches the internet independent of the subscriber's devices.
- **Notes** — shared notes per subscriber, visible to your whole team, with author and time.

HEALTH CHECK

Run health check

Line and internet are healthy — complaints are most likely Wi-Fi coverage: 1 device not in good range.

✓

ONT reachable

Reported 32s ago

✓

Fibre signal (Rx)

-14.1 dBm — healthy

✓

ONT laser (Tx)

2 dBm — normal

✓

Temperature

42 °C — normal

✓

Internet session

Connected · 100.64.0.9 · ali.khan

✓

Stability

Up 1d 0h

✓

Device load

CPU 8% · Memory 40%

!

Wi-Fi

3 devices connected · 1 not in good range (f0:99:b6:77:88:99)

Checked 1:25:48 AM from the latest data the ONT reported · press "Run full scan" first if values look old.

WI-FI SETTINGS

Changes are sent straight to the ONT

NETWORK NAME	BAND	STATE	CHANNEL	DEVICES	
HUAWEI-1	2.4 GHz	On	6 (auto)	1	Edit
HUAWEI-1-5G	5 GHz	On	44 (auto)	2	Edit

NETWORK TEST FROM THE ONT

Ping

8.8.8.8

Run test

Running on the ONT...

Runs on the subscriber's ONT itself — shows whether the line reaches the internet, independent of their devices.

NOTES

1 note

Add a note for this subscriber — visible to your team

Add note

admin · 2026-10-12 20:25

Delete

ONT moved to the lounge on 12 Oct — customer prefers WhatsApp contact.

Health check, Wi-Fi settings, network test and notes.

View-only accounts see the same page without any edit controls:

SysR00t TR-069 Subscribed ONTs ONT 360 NOC Live

view1 · View only Logout

← All ONTs

online

HG8145X6 00259E-HG8145X6-485754431001ABCD

SUBSCRIBER / ONT

00259E-HG8145X6-485754431001ABCD

PPPoE user ali.khan (+1 WAN)

Model Huawei HG8145X6

DEVICE HEALTH

Last inform 1m ago

Uptime 1d 0h

WAN SUMMARY

100.64.0.9

Connection status Connected

DNS servers —

ONT HEALTH / OPTICS

Rx power -14.1 dBm

Tx power 2 dBm

Temp 42 °C

Supply 3.300 V

TRAFFIC

Down (now)

Up (now)

Downstream (lifetime) 0 B

Upstream (lifetime) 0 B

WI-FI RADIOS

HUAWEI-1 2.4GHz 1 client

HUAWEI-1-5G 5GHz 2 clients

WI-FI DEVICES

3 devices · 2 excellent range · 1 not in good range

DEVICE	NETWORK	SIGNAL	LINK SPEED	DATA USED	CONNECTED	ADVICE
Unknown device a4:5e:60:11:22:01	HUAWEI-1-5G 5 GHz	Excellent range -48 dBm	↓ 866 Mbps ↑ 780 Mbps	—	—	Healthy
Unknown device	HUAWEI-1	Excellent range	↓ 144 Mbps ↑ 165 Mbps	—	—	Close enough for 5 GHz — much faster if it joins the 5 GHz network

ONT 360 as a View-only user.

6 NOC and Live traffic

NOC is a dense engineering view of one ONT at a time — status, optics, every WAN with its IP and service, Wi-Fi radios, clients and recent events — with an *All parameters* browser for the full TR-069 tree. **Live** polls an ONT every few seconds and draws per-WAN throughput and per-device usage in real time.

The screenshot displays the SysR00t NOC interface for a specific ONT. The top navigation bar includes links for SysR00t, TR-069, Subscribed ONTs, ONT 360, NOC (active), and Live. A user menu shows 'admin · Admin' and a 'Logout' button. The main header shows 'SysR00t NOC' and a dropdown for 'ali.khan — 00259E-HG8145X6-485754431001ABCD'. Below this are buttons for 'Collapse all', 'All parameters', 'Live traffic', and 'updated 1:26:07 AM'.

The interface is divided into several sections:

- STATUS**: Displays device state (ONLINE), last inform time (51s ago), uptime (1d 0h 0m), CPU usage (8%), memory usage (40%), model (HG8145X6), firmware (—), and serial number (485754431001ABCD).
- OPTICS (GPON)**: Displays RX power (-14.1 dBm), TX power (2 dBm), temperature (42 °C), voltage (raw) (3.3), and bias (raw) (—).
- WAN**: A table showing WAN connections.
- WI-FI RADIOS**: A table showing Wi-Fi radio details.
- CLIENTS**: A section showing 0 clients.
- RECENT DEVICE EVENTS**: A section for recent events.

Connection	PPPoE user	Status	IP	Service
1_TR069_R_VID_200	—	Connected	—	TR069
PPP 2.1	ali.khan	Connected	100.64.0.9	INTERNET

#	SSID	State	Ch	Clients
1	HUAWEI-1	on	6	1
5	HUAWEI-1-5G	on	44	2

NOC view.

7 Provisioning and the WAN editor

Big Bash

New ONTs appear on the **Provisioning** page under *Waiting* the moment they first contact the ACS. Nothing is ever pushed automatically: an operator opens the ONT, reviews the proposed configuration, edits it and presses **Provision now**.

STATUS	ONT	CUSTOMER	PPPOE USER	FIRST SEEN
waiting	485754431009ABCD HG8145X6 · online	—	hamza.quareshi, acs-mgmt, ayesha.r, iptv.ayesha, bridge.cctv	10m ago
waiting	485754431005ABCD HG8145X6 · online	—	—	10m ago
waiting	485754431006ABCD HG8145X6 · online	—	—	10m ago
waiting	485754431007ABCD HG8145X6 · online	—	—	10m ago

New ONTs appear here when they first contact the ACS. Open one, review the proposed settings, and confirm — the panel pushes internet, Wi-Fi and management settings and labels the ONT. Existing settings are never deleted.

Designed by SysR00t Network Forensics

ONTs waiting to be provisioned.

What can be configured

Section	Settings
Customer	Name shown in the panel (e.g. "Ali Khan — House 12").
WAN connection	Create a new WAN or edit an existing one. Encapsulation PPPoE / IPoE · WAN mode Route / Bridge · service type INTERNET, VOIP, IPTV, OTHER, TR069 and their combinations · IP protocol IPv4, IPv6 or both · VLAN ID and 802.1p · PPPoE username, password and MRU · IPoE DHCP or static IP, mask, gateway, DNS and MTU · NAT · binding to LAN1–4 and SSID1–8. Existing WANs can also be removed.
Wi-Fi	2.4 GHz and 5 GHz names and passwords. Names follow the PPPoE username pattern from Settings until you type your own.
Management	Check-in interval, NTP server and time zone.

PROVISION — 485754431009ABCD
Review and edit, then confirm. Nothing is sent until you press "Provision now".

Customer

Customer name (shown in the panel)

Ayesha R. — House 21

WAN connection

6 on this ONT · TR069 management WAN is locked

+ New WAN connection

Encapsulation

PPPoE

WAN mode

Route WAN

Service type

INTERNET

IP protocol

IPv4

VLAN ID

650

802.1p

0

PPPoE username

ayesha.r

PPPoE password

.....

MRU

1492

☒ Enable NAT

Binding
☒ LAN1
☒ LAN2
☐ LAN3
☒ LAN4
☐ SSID1
☐ SSID2
☐ SSID3
☐ SSID4
☐ SSID5
☐ SSID6
☐ SSID7
☐ SSID8

A new WAN is created on the ONT, checked, and removed again if the ONT does not apply it exactly.

Wi-Fi

Currently: HUAWEI-9 · HUAWEI-9-5G

2.4 GHz name

ayesha.r

2.4 GHz password

QuZKNKVSPy

☒ Same password on 5 GHz

5 GHz name

ayesha.r-5G

5 GHz password

QuZKNKVSPy

Management

Currently checks in every 300 s

Check-in interval (seconds)

300

NTP server

pool.ntp.org

Time zone

Asia/Karachi

Provision now

Close

Creating a new PPPoE internet WAN on VLAN 650.

Safety rules

- The **TR-069 management WAN is locked**: it is listed but cannot be edited or removed, and a second TR-069 WAN cannot be created.
- A VLAN already used by another WAN is refused, naming that WAN.
- Each change is sent to the ONT in **one request**, then **read back**. If the ONT did not apply a value exactly, the step fails and names the value. A new WAN that fails is removed again, so no half-made connections are left behind.
- Steps already marked ✓ stay applied; nothing else is deleted.

Every step confirmed by the ONT.

8 WhatsApp alerts and settings

Big Bash **Settings** (admins only) connects the portal to WhatsApp through the official Meta Cloud API and sets the alert rules.

Connecting WhatsApp

1. In Meta Business Manager create a WhatsApp Business app and note the **Phone number ID**.
2. Create a **permanent access token** for a system user with WhatsApp permissions.
3. Create a **Utility** message template whose body is only `{{1}}` and wait for Meta to approve it.
4. Enter the phone number ID, token, template name and language, and the recipients (international format, one per line) and press **Save & send test**. Every recipient should receive the test.

The token is stored on your server only and is never shown again in the browser.

Alert rules

Alert	When
ONT offline / back online	No contact for the offline time (stretched automatically for ONTs that check in less often).
Low or dropping fibre signal	Rx below the threshold (default -27 dBm) or a sudden drop (default 3 dB) against the ONT's own history; recovery is reported too.
New ONT provisioned	Each successful provisioning, with customer name, PPPoE user and operator.

Checks run every 2 minutes. The first check after a restart only learns the current state. More than 5 alerts in one check are grouped into a single message.

SysR00t TR-069Subscribed ONTsONT 360NOCLiveProvisioningUsersAuditSettingsadmin · AdminLogout

Settings

WHATSAPP ALERTS · META CLOUD API

☒ Send alerts to WhatsApp

Phone number ID

123456789012345

Access token

Saved — leave blank to keep

Message type

Approved template (recommended)

Template name

ont_alert

Template language

en_US

Message prefix

NOVA TPC

Recipients — full numbers with country code, one per line

923001234567

Template: create a **Utility** template in Meta Business Manager whose body is just `{{1}}` — the panel puts the alert text there.

Save

Save & send test

ALERT RULES

☒ ONT offline / back online

☒ Low or dropping fibre signal

☒ New ONT provisioned

Alert after (minutes without contact)

Below (dBm)

Drop (dB)

15

-27

3

Checked every 2 minutes. The offline delay is automatically stretched for ONTs that check in less often. Bursts of more than 5 alerts are grouped into one message.

Save

WhatsApp and alert settings.

9 Users

Admins manage accounts on the **Users** page: create, edit, disable or delete users, set the role and choose which ONTs each user can see. Changes apply immediately; disabled or deleted users are signed out on their next click. Passwords are stored as script hashes.

Users 4 users + Add user

USERNAME	ROLE	ONT ACCESS	STATUS	UPDATED	
admin	you Admin	All ONTs	active	2026-10-12 15:01	Edit
noc.shift	Support	5 ONTs	active	2026-10-12 15:02	Edit Disable Delete
sup1	Support	All ONTs	active	2026-10-12 15:01	Edit Disable Delete
view1	View only	8 ONTs	active	2026-10-12 15:02	Edit Disable Delete

Admin: everything + users · Support: assigned ONTs + scan/refresh/reboot · View only: assigned ONTs, no actions. Changes apply immediately; deleted or disabled users are signed out on their next click.

Designed by SysR00t Network Forensics

Users and their ONT access.

10 Audit log

Big Bash Every sign-in and every change — scans, refreshes, reboots, Wi-Fi changes, tests, notes, provisioning, WAN removals, user changes and settings — is recorded with time, user, role and detail. Filter by activity or search for an ONT or user.

SysR00tTR-069Subscribed ONTsONT 360NOCLiveProvisioningUsersAuditSettingsadmin · AdminLogout

Audit log4 eventsAll activitySearch user / ONT / detail

TIME (UTC)	USER	ACTIVITY	DETAIL
2026-10-12 20:26:00	adminadmin	ztp.provision	00259E-HG8145X6-485754435880ABA8 · WAN INTERNET VLAN 650 ayesha.r, Wi-Fi
2026-10-12 20:25:54	adminadmin	Added note	00259E-HG8145X6-485754431001ABCD
2026-10-12 20:25:49	adminadmin	Ran ping	00259E-HG8145X6-485754431001ABCD · to 8.8.8.8
2026-10-12 20:25:41	adminadmin	Signed in	—

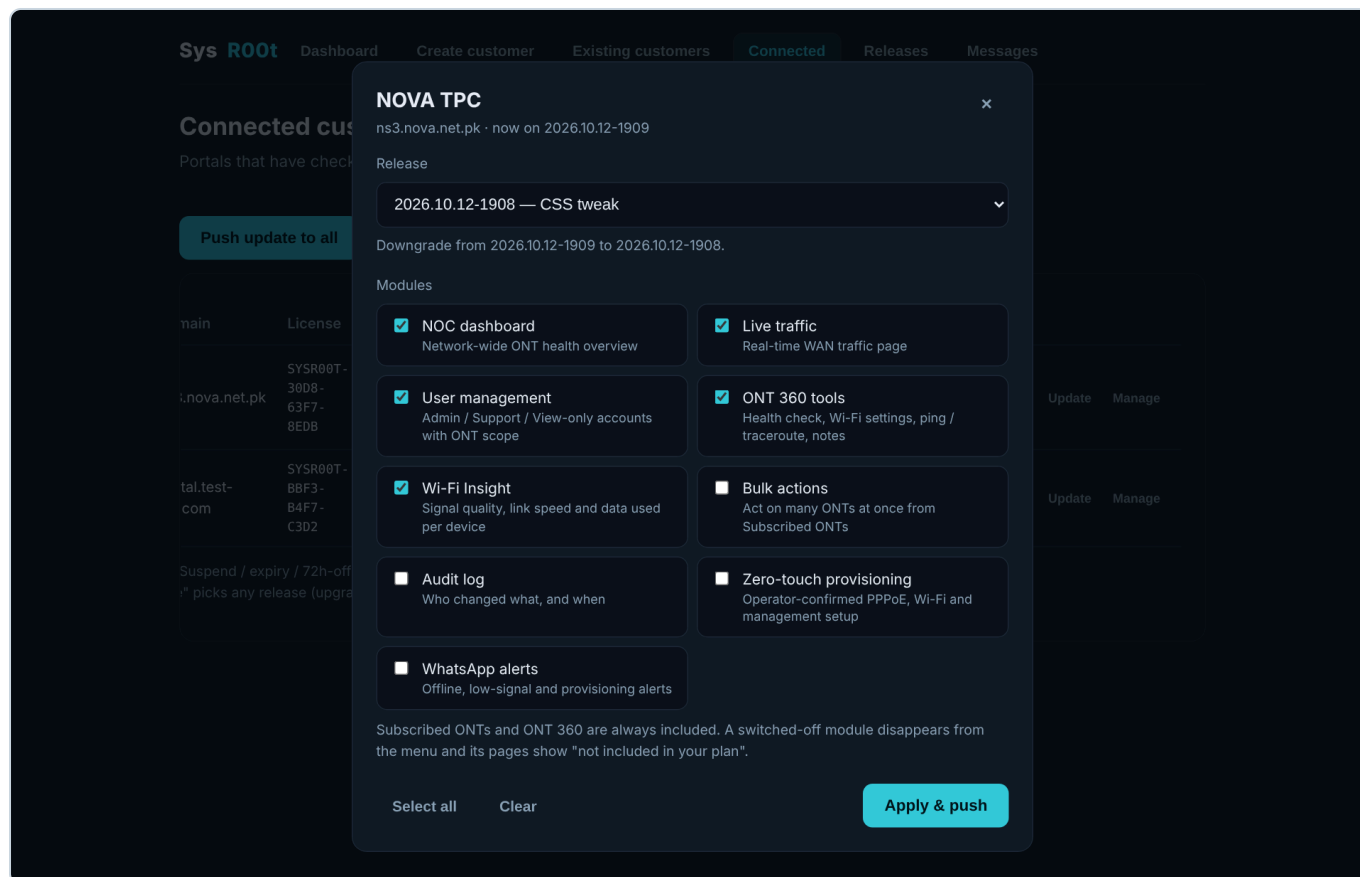
Designed by SysR00t Network Forensics

Audit log.

11 Updates, versions and licence

Your portal checks in with the publisher every few minutes and keeps a live connection open for updates. When a new release is published for you it downloads, verifies (SHA-256) and installs within seconds — no action needed on your side.

The publisher can move any site to any release, newer or older, and choose exactly which modules each licence includes. A module that is not included disappears from the menu and its pages show “This feature is not included in your plan”.



Publisher view: release and modules for one customer.

Renewal

Licences run for 12 months. Reminder emails go out 30, 7 and 1 day before the expiry date and on the day it expires. An expired, suspended or long-offline licence locks the portal until it is renewed; data and settings are kept.

12 Troubleshooting

Symptom	Check
ONT never appears	ACS URL on the ONT is exactly <code>http://<your-domain>:7547/</code> ; port 7547 is open end-to-end; the ONT can resolve your domain.
ONT shows offline	Its last contact is older than its check-in interval. Check power, fibre (Rx) and the TR-069 WAN.
Actions time out	Connection requests need the ACS to reach the ONT. If the ONT is behind NAT, actions run on its next check-in.
Provisioning step fails	Read the step text — it names the exact setting the ONT refused or did not apply. Correct it and run again.
No WhatsApp test message	Template must be approved, type Utility, body <code>{{{1}}}</code> ; the token must be permanent; numbers in international format.
Portal shows locked	The licence is expired, suspended or the server could not reach the publisher for 72 hours. Contact your provider.

Support: use the contact form at sysr00t.net/contact.html. Basic and Pro include paid annual support; Big Bash includes support free.