

Waypoint Optimizer

Route planning, GPS tracking and billable-time measurement for field technicians, fully integrated into GLPI.

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Overview



What Waypoint Optimizer does

Waypoint Optimizer is designed for organisations whose technicians **travel to different locations to resolve tickets**. The technician selects the tickets to visit in the mobile app, and the system calculates the most efficient order of stops. From that moment on, every journey and every intervention is measured and stored: how far the technician actually travelled, how long each trip took, how long the work at each site lasted, and how much of that is billable.

The result is a field operation that can be planned, audited and invoiced with real data instead of estimates.

Key benefits

- **Optimised route planning:** select the tickets and the system calculates the most efficient order of stops using the Google Routes API.
- **Automatic time tracking:** travel time and on-site working time are recorded separately, with no paperwork for the technician.
- **Real distance vs. estimate:** every stop stores both what Google predicted and what the technician actually drove, so deviations are visible.
- **Live visibility for supervisors:** follow the team's position and active routes from the GLPI web interface.
- **Full audit trail:** every route is versioned. Changes made on the road never overwrite the original plan.
- **Data export:** download all journey data as CSV, with per-technician and per-day totals, for invoicing or analysis.

How it works: the model

Understanding four concepts is enough to use the plugin correctly.

2.1 A route contains several tickets

A **route** is a day's itinerary: one technician, several stops. Each **stop** corresponds to one GLPI ticket that has a location assigned. The plugin decides the best order in which to visit them.

A route is not tied to a single ticket — it groups all the tickets the technician plans to visit in that journey.

2.2 Two different timers

The plugin measures two things that must not be confused:

- **Waypoint (travel):** the trip from where the technician is to the ticket's location. Starts when the technician taps *Start* before setting off, and stops on arrival.
- **ActualTime (work):** the time spent actually resolving the ticket on site. It starts **automatically** the moment the technician stops the travel timer, and is recorded against the ticket through the ActualTime plugin.

NOTE

The two never run at the same time: stopping the travel timer is what starts the work timer.

2.3 Route versions

A route can be modified while it is in progress — adding a stop, removing one, or reordering. Each modification creates a **new version** of the route instead of overwriting it. The web interface keeps the complete version history, so it is always possible to see what was originally planned and what actually happened.

2.4 Four distance and time metrics

Each stop stores several measurements. They answer different questions and are **not interchangeable** — this is the part most worth understanding before reading any report.

Metric	What it measures	Where it comes from
Actual	What the technician really travelled on that leg.	Measured between the GPS position where the trip started and where it ended.
Leg planned	What Google predicted for <i>that single leg</i> , when the trip started.	Google, calculated at the moment the technician sets off.
Route planned	What Google predicted for the <i>whole optimised route</i> . Identical for every stop of the same route.	Google, calculated once when the route is created.
Billing	What is charged to the customer for the trip. Not a measurement of the journey.	Distance from the base to the ticket (doubled if return-trip billing is enabled).

Why Actual and Leg planned can differ a lot: the estimate assumes a vehicle following the road network from the previous point, while the real measurement reflects what actually happened — a short walk between two nearby sites, a detour, or traffic. A large gap is information, not necessarily an error.

Why Billing is separate: it always measures base → ticket, regardless of the order in which stops were visited. This keeps invoicing predictable and independent of the route the technician happened to follow that day.



Requirements

Before installing, check every point in this list. The plugin will not work if any of them is missing.

- **GLPI 10.0.0 - 10.1.0.**
- **Required plugins:** `gappextended` (2.21.0 or later) and `actualetime`. Both must be installed *and enabled*.
- **Google API key** with the Routes API and Distance Matrix API enabled. Without a valid key **no route can be calculated** and distances will be empty.
- **The mobile app**, installed on the technicians' devices. Route creation and execution happen in the app; the GLPI web interface is used for configuration, supervision and reporting.
- **Technician accounts must be central users** (not self-service) for the Waypoint section to appear in the app.
- **Location permissions** granted to the app, including background location, so tracking continues while the phone is locked.

IMPORTANT

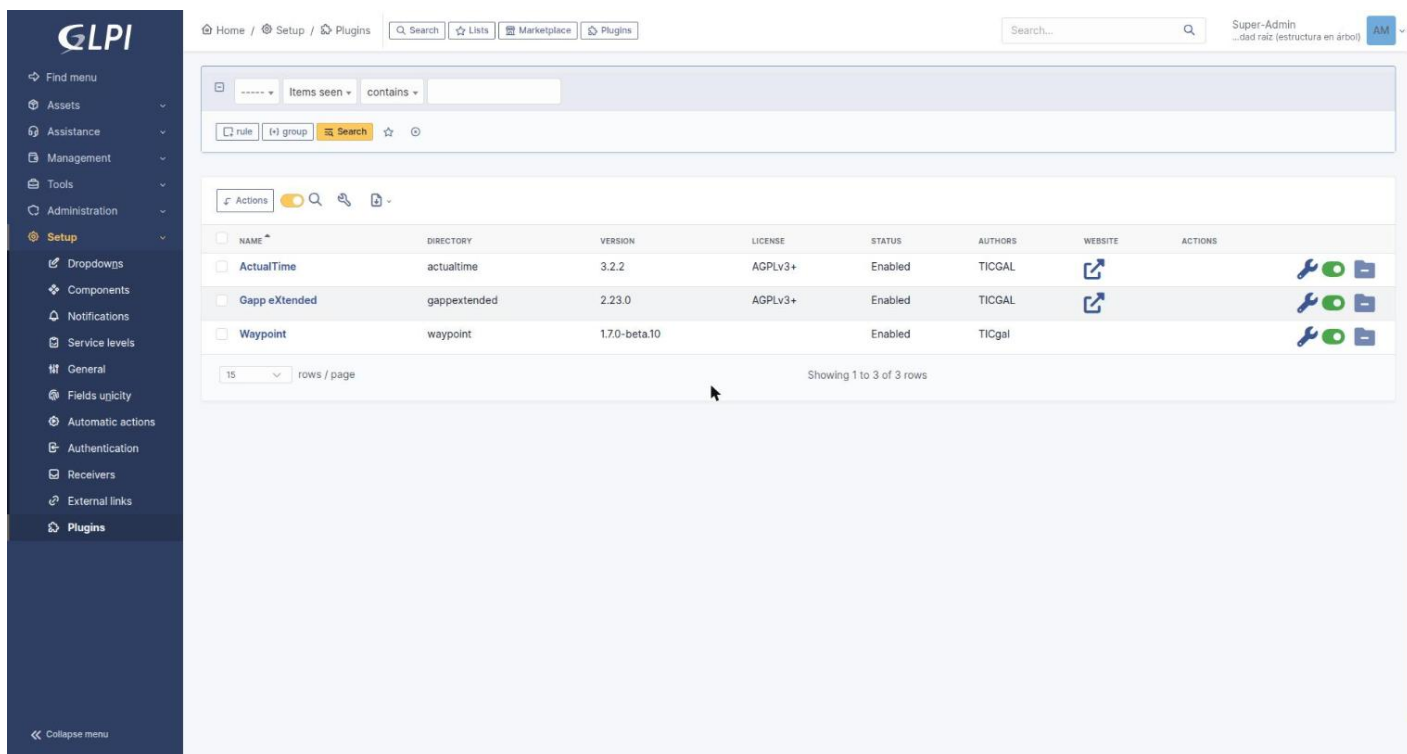
Waypoint depends on `gappextended`. If `gappextended` is disabled, Waypoint is disabled with it — a cascading failure worth remembering when troubleshooting.

Setup



Installation

- From the GLPI **Marketplace**: search for Waypoint and install it in one click.
- Manually: download the plugin from the repository, extract it into the GLPI `plugins` folder, then install and enable it from *Setup > Plugins*.



The screenshot shows the GLPI Setup > Plugins page. The left sidebar contains a menu with options like Find menu, Assets, Assistance, Management, Tools, Administration, Setup (selected), Dropdowns, Components, Notifications, Service levels, General, Fields upcity, Automatic actions, Authentication, Receivers, External links, and Plugins. The main content area displays a table of installed plugins. The table has columns for NAME, DIRECTORY, VERSION, LICENSE, STATUS, AUTHORS, WEBSITE, and ACTIONS. Three plugins are listed: ActualTime (version 3.2.2), Gapp eXtended (version 2.23.0), and Waypoint (version 1.7.0-beta.10). All three are marked as 'Enabled'. The bottom of the table shows 'Showing 1 to 3 of 3 rows'.

NAME	DIRECTORY	VERSION	LICENSE	STATUS	AUTHORS	WEBSITE	ACTIONS
ActualTime	actualtime	3.2.2	AGPLv3+	Enabled	TICGAL	Website	Settings Status Uninstall
Gapp eXtended	gappextended	2.23.0	AGPLv3+	Enabled	TICGAL	Website	Settings Status Uninstall
Waypoint	waypoint	1.7.0-beta.10		Enabled	TICgal		Settings Status Uninstall

GLPI Setup > Plugins — Waypoint, Gapp eXtended and ActualTime all installed and enabled.

Configuration

5.1 Plugin settings

All options below are grouped under *Setup > General > Gapp eXtended* (not a dedicated "Waypoint" page — Waypoint's settings share that tab with a few unrelated Gapp eXtended options, further up on the same screen).

Setting	Description
API	Mandatory. Your Google API key. Route optimisation and all distance calculations depend on it. If it is missing, routes cannot be created and distance fields stay empty.
Task categories with waypoints	Which GLPI task categories generate a travel waypoint.
Task categories with vehicle waypoints	Same as above, for journeys made with a company vehicle.
Max duration	Safety limit for a running timer. A timer left open beyond this duration is stopped automatically, so a forgotten timer does not record an entire night as travel time.
Enable user geolocation	General user tracking, independent of routes. Leave this disabled if you use Waypoint routes — the two tracking modes are not compatible and will interfere with each other.
Billing includes return trip (from 1.7.0)	No (default): only the outbound trip, base → ticket, is billed. This also halves the number of Google API calls. Yes : outbound and return distances and durations are added together.

Home / Setup / General

Search... Super-Admin ...dad raíz (estructura en árbol) AM

Security Map token
Performance Map url
API Credentials found
Impact analysis
GLPI Network
Historical 27
ActualTime
Gapp eXtended
All

File(s) (2 Mio max) i
Drag and drop your file here, or
Seleccionar archivo Ningún archivo seleccionado

Save

GLPI Extra Field

Field Category Mandatory field + Add

Field Mandatory field
Urgency Yes
Field Mandatory field

API
Task categories with waypoints Task categories with vehicle waypoints
Max duration Sh30
Enable user geolocation i No
Billing includes return trip i No

Save

Setup > General > Gapp eXtended — every Waypoint setting from the table above, on the lower half of the same tab (API key field masked).

5.2 Create locations with coordinates

Define in GLPI the locations your technicians will visit, and give each one its **latitude and longitude**. This step is mandatory: a ticket whose location has no coordinates cannot be included in a route.

Home / Setup / Dropdowns / Locations + Add Search Lists

Search... Super-Admin ...dad raíz (estructura en árbol) AM

Location - Client site - North

Location Client site - North
As child of
Postal code
State
Building number
Latitude 42.2615
Altitude
Location on map

Comments
Address
Town
Country
Room number
Longitude -8.7853

Delete permanently Save

A GLPI Location form with the Latitude and Longitude fields filled in.

5.3 Configure profile permissions

Go to *Administration > Profiles*, choose a profile and open its Waypoint section. Assign rights according to each role's responsibilities.

Right	What it allows	Typical role
View routes	Access the Routes administration area and its history.	Supervisor, manager
Link tickets to routes	Mark a ticket as eligible to be included in a route.	Dispatcher, technician
Export route data	Download the CSV export from the ticket list.	Manager, billing
View live routes	See routes currently in progress in real time.	Supervisor, dispatcher

The **Geolocation** section has its own separate right, provided by the `gappextended` plugin. Grant it to the profiles that need to see technician positions; without it, the Geolocation tabs are not accessible.

The screenshot shows the GLPI web interface. On the left is a dark sidebar with a menu where 'Administration' is expanded and 'Profiles' is selected. The main content area shows the breadcrumb 'Home / Administration / Profiles' and a sub-header 'Profile - Technician'. Below this is a table titled 'WAYPOINT' with four rows of permissions: 'View routes', 'Link tickets to routes', 'Export route data', and 'View live routes'. Each row has an unchecked checkbox on the right. A yellow 'Save' button is located below the table. On the left side of the table, a list of categories is visible, with 'Waypoint' highlighted by a mouse cursor. The top right of the interface shows a search bar, the user 'Super-Admin', and a page indicator '8/8'.

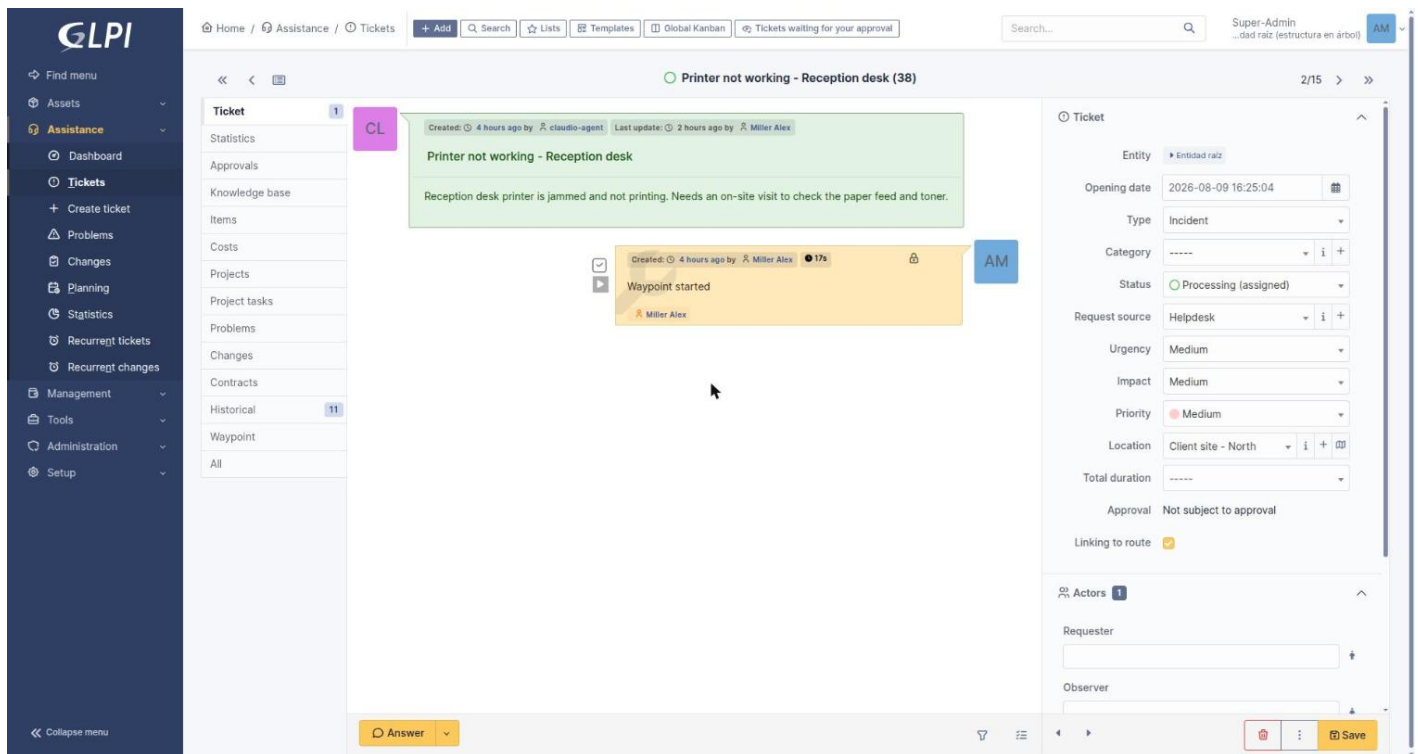
Administration > Profiles > Technician > Waypoint — the four rights matrix, all unchecked by default on a fresh profile.

5.4 Make tickets eligible for routes

For a ticket to appear in the app when building a route, **two conditions** must both be met:

1. The ticket has the **"Linking to route"** option set to Yes on its form, and a location with coordinates.
2. The ticket is **assigned to the technician** who is building the route.

If a ticket does not show up in the app's selection list, one of these two is almost always the reason.



A ticket form with "Linking to route" set to Yes and a Location assigned (right-hand panel).

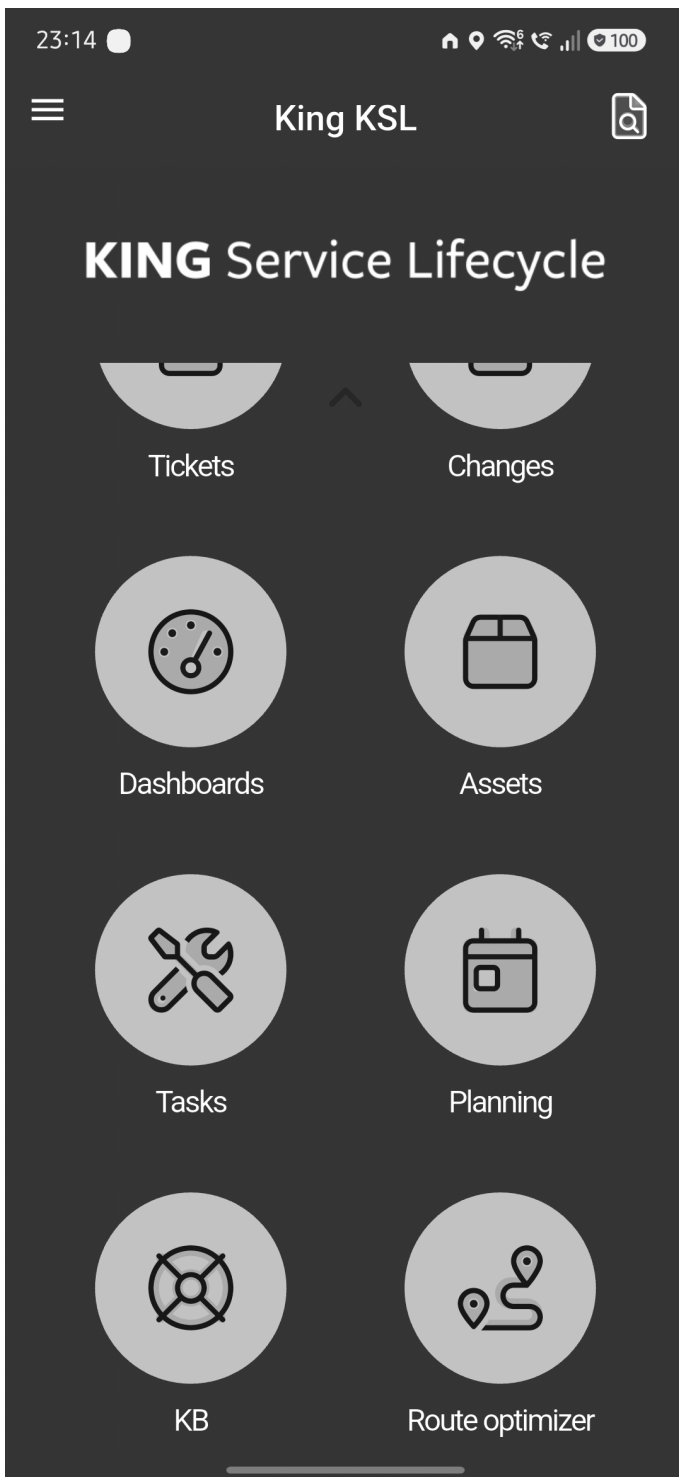
Daily use

Daily use — technician (mobile app)

6.1 Open the Waypoint section

Once the plugin is installed and the technician's profile has the right permissions, a **Waypoint** entry appears in the app's main menu.





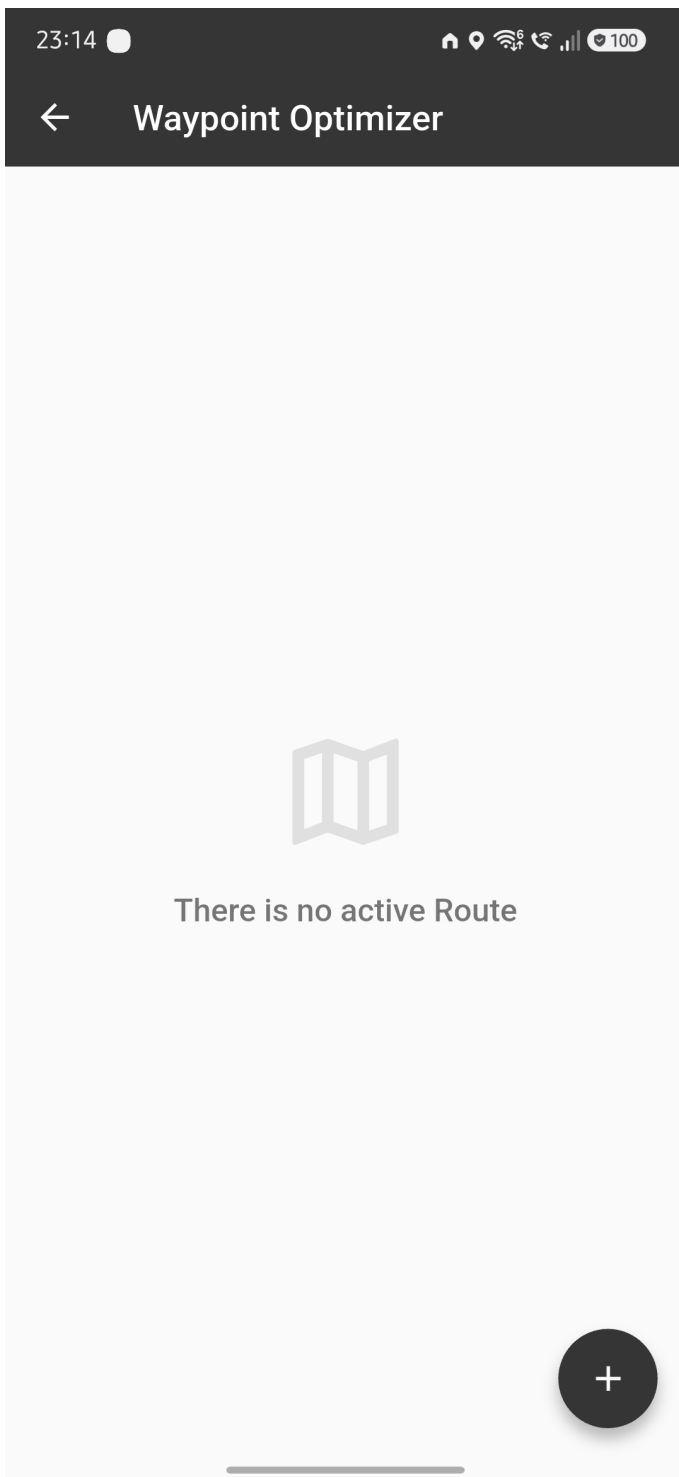
The app's main menu — "Route optimizer" among the other modules.

6.2 Create the route

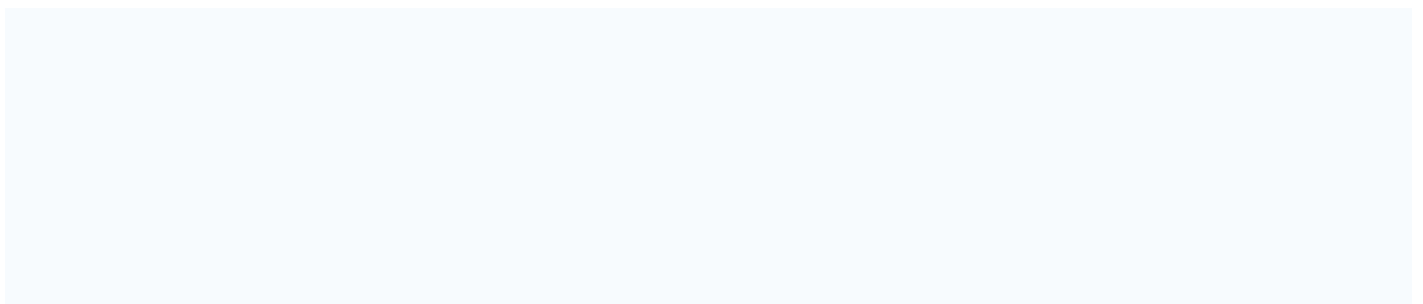
If there is no route in progress, the screen shows an empty state. Tap the "+" button to start planning.

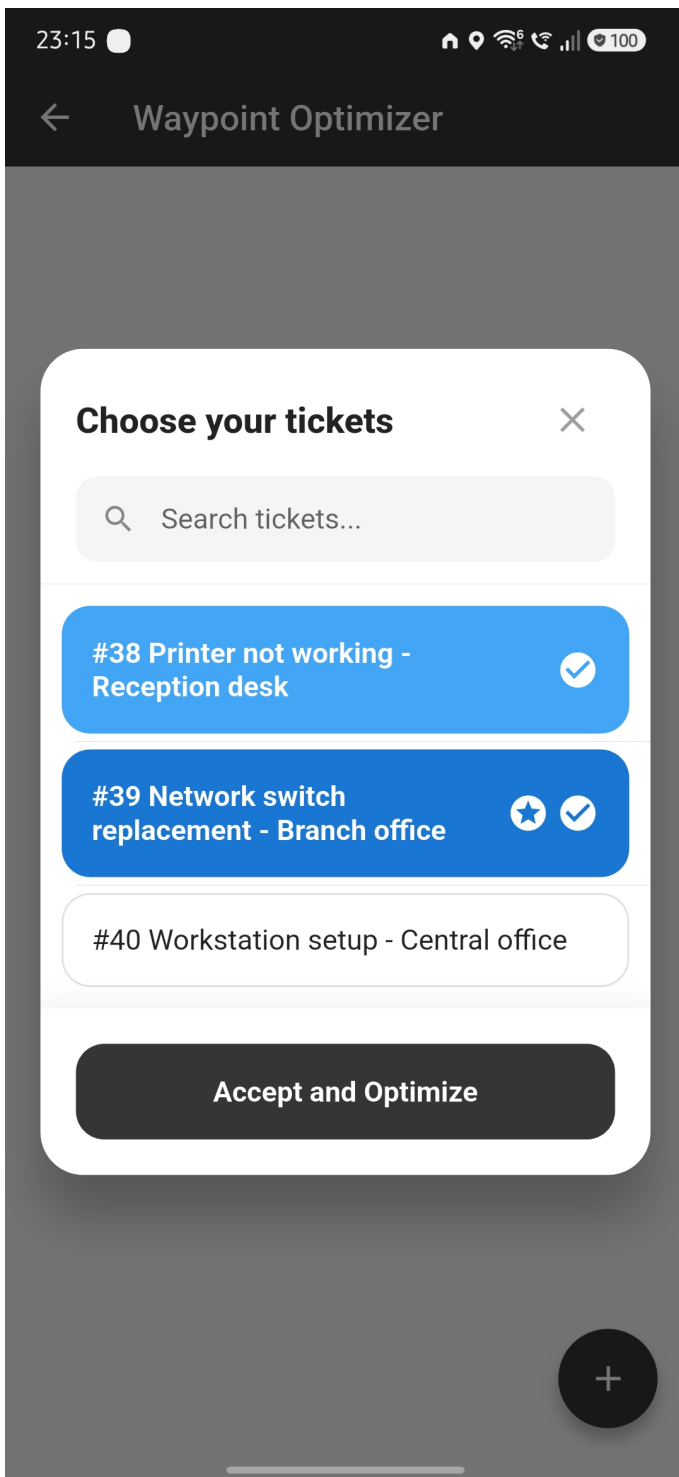
A list of eligible tickets opens — those linked to a route and assigned to the technician. Select the ones to visit. When you confirm, **the optimal order of stops is calculated automatically** based on distance and traffic conditions.

If a particular ticket must be visited first regardless of what the optimiser suggests, **long-press** it before confirming. A **star** marks it, and it will be placed as the first stop; the remaining stops are optimised around it.



"There is no active Route" — the empty state, with the "+" button to start planning.





"Choose your tickets" — two tickets selected, #39 additionally marked with the star that forces it as the first stop.

6.3 The route screen

Once created, the route is shown as an **ordered list of stops**, each with its ticket and location. Each stop offers two buttons:

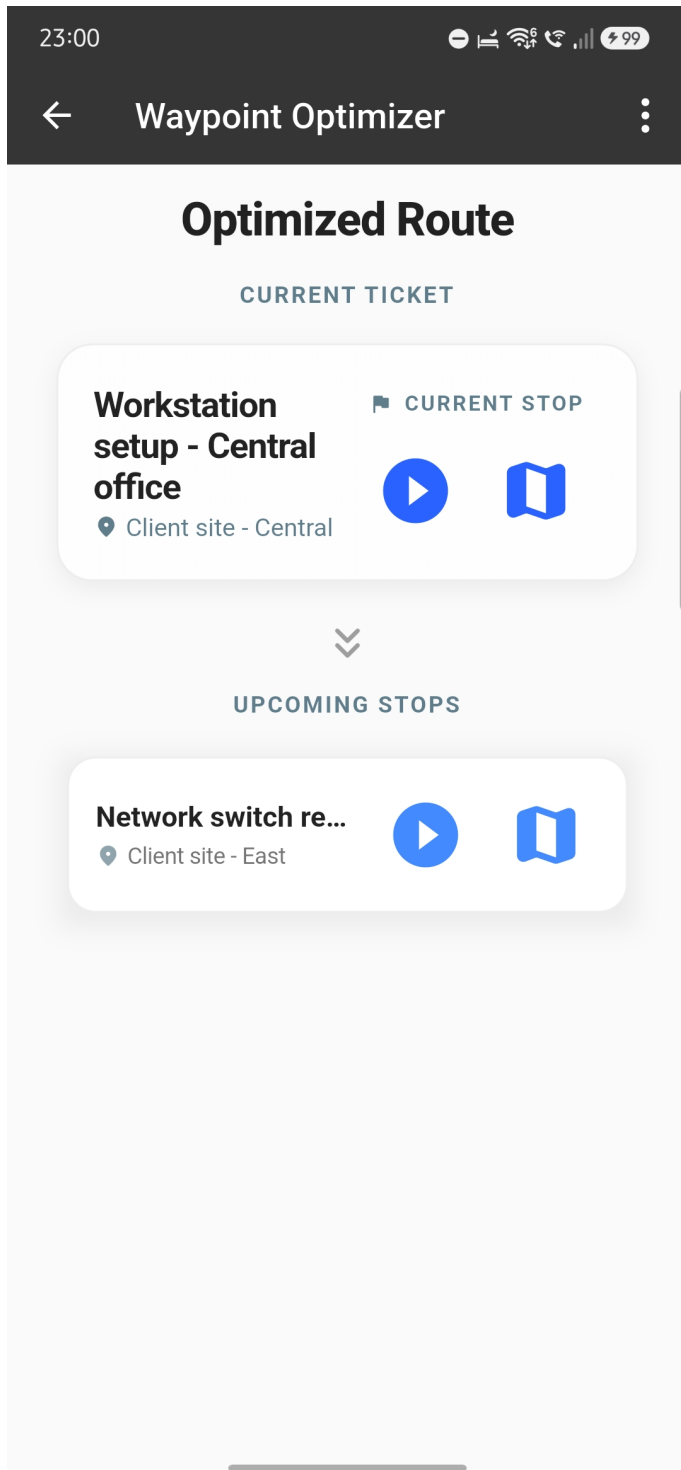
- **Play:** opens the travel panel for that stop, where the trip is started and stopped.

- **Map:** opens your usual maps application (Google Maps, Waze, etc.) with the destination already set, so you can start turn-by-turn navigation there.

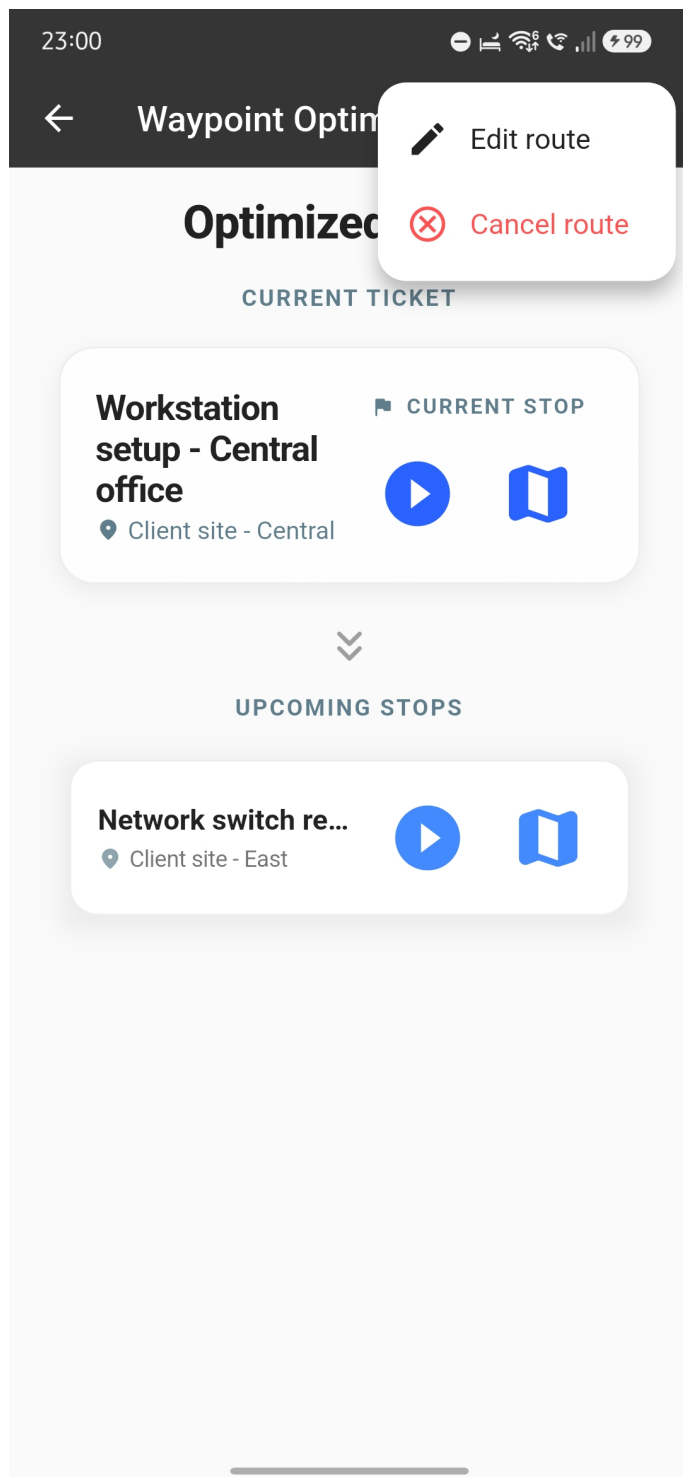
Tapping the body of a stop opens a **summary of the ticket** — title, location, status and assigned technician — with a shortcut to open the full ticket without leaving the route.

The **options menu (⋮)** at the top offers two actions:

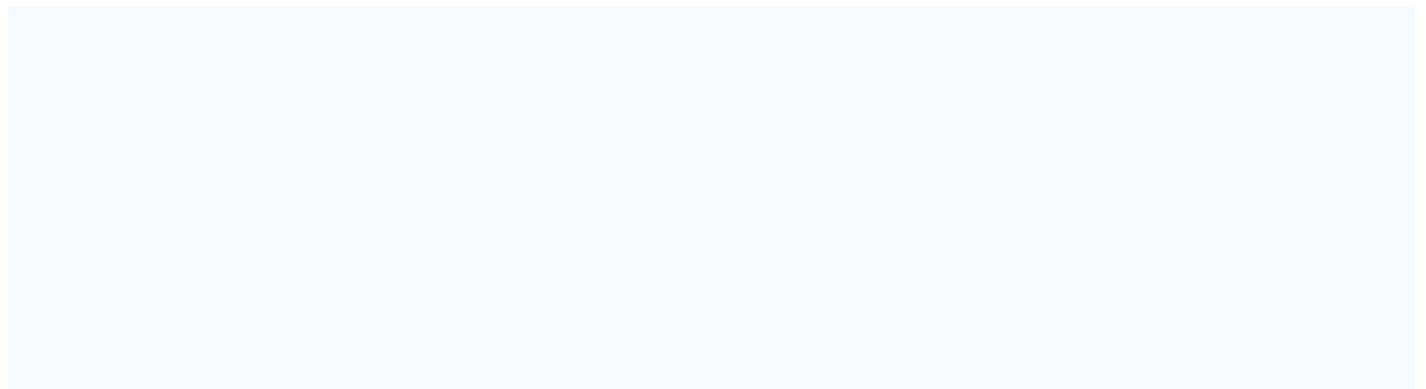
- **Edit route:** add stops, remove them or change the order. Each change creates a new version of the route and keeps the previous one in the history.
- **Cancel route:** ends and discards the current route if it will not be completed.

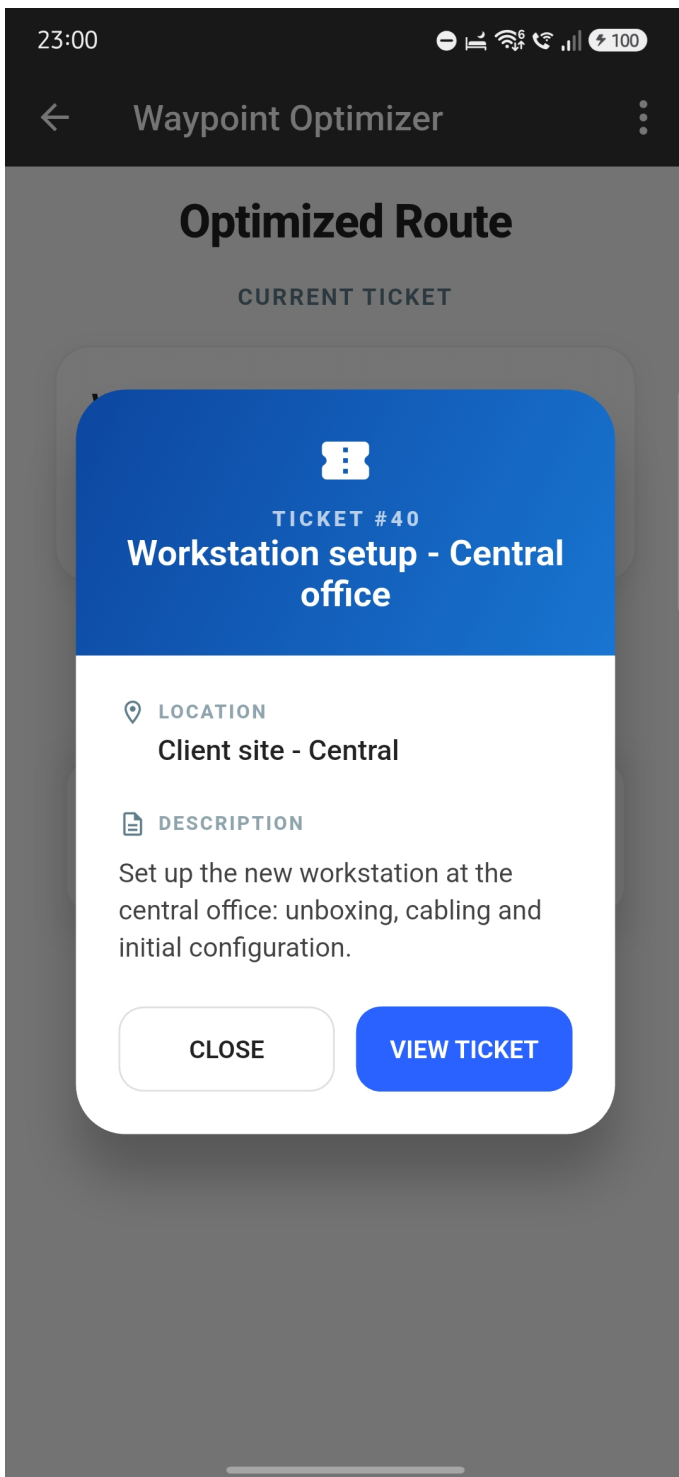


The route screen: current ticket, current stop and the upcoming stops queued below.



The options menu open, with "Edit route" and "Cancel route".





Ticket summary panel — location and description, with a shortcut to view the full ticket.

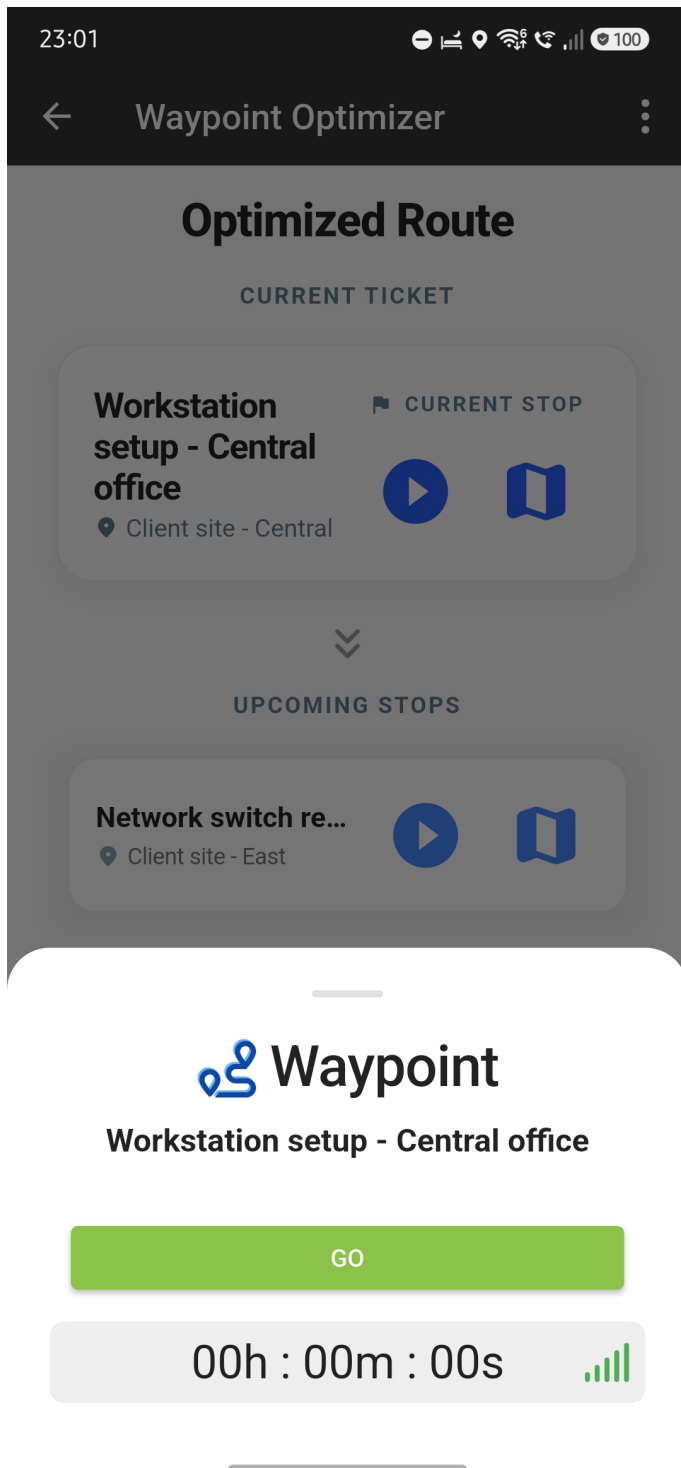
6.4 Complete a stop

This is the core cycle, repeated for every stop on the route.

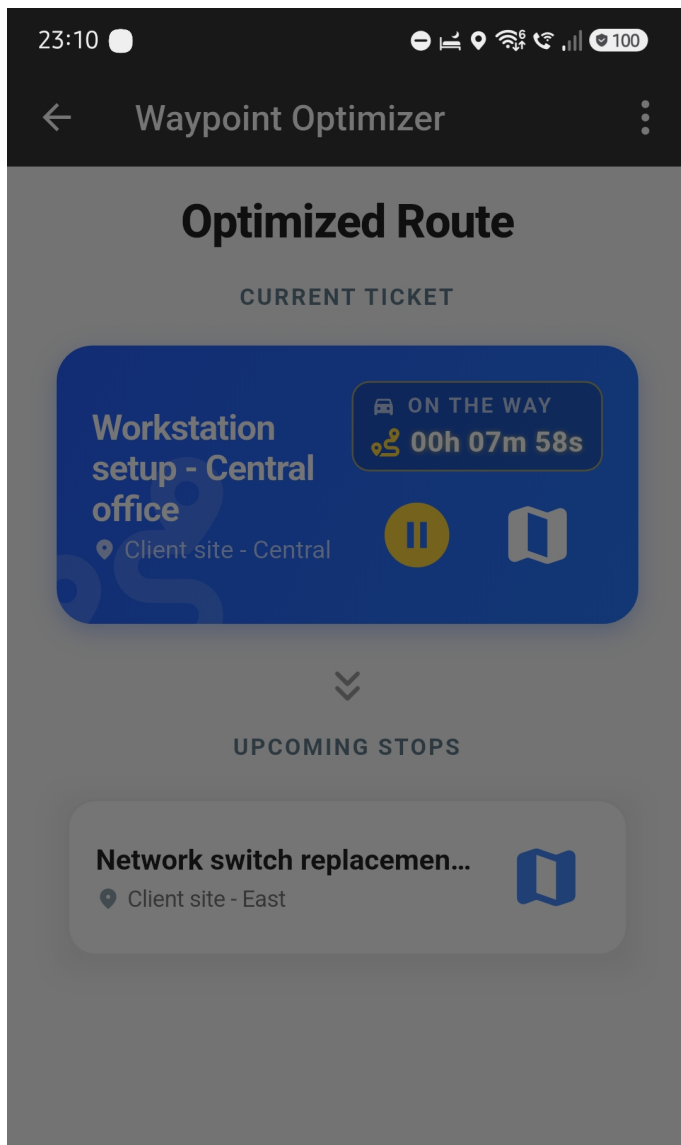
1. **Set off.** Tap **Play** on the stop and then **Start**. GPS tracking and the travel timer begin. Use the Map button whenever you want guided navigation.
2. **Arrive.** Tap **Stop**. The trip is closed, the distance actually travelled is recorded, and **the work timer starts on its own** — you do not need to start it manually.

3. **Work on the ticket.** The work timer keeps running, and a notification on the phone shows it is active even if you leave the app.
4. **Finish.** Tap **Stop** on the work timer. The stop is marked as completed and the route moves on to the next one.

When the last stop is completed, **the route is closed automatically**. There is no separate "finish route" button.



Travel panel before departure — GO button, timer at 00h 00m:00s.



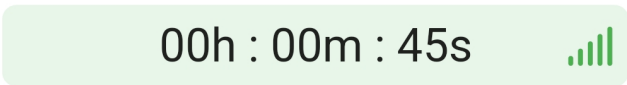
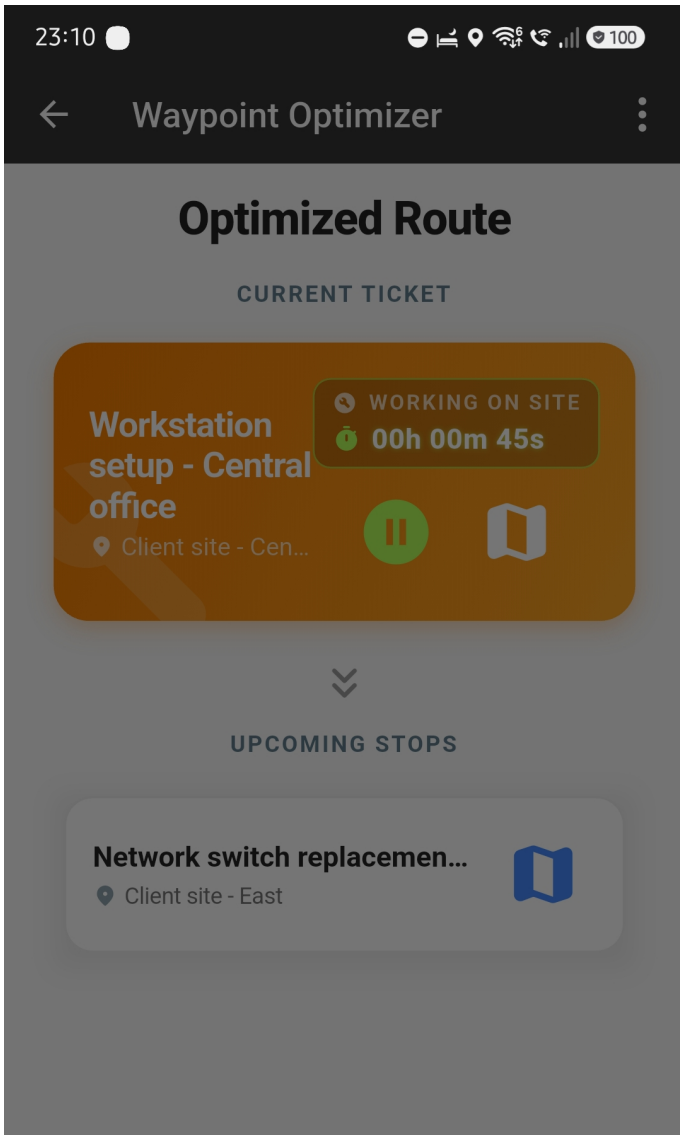
 Waypoint

END

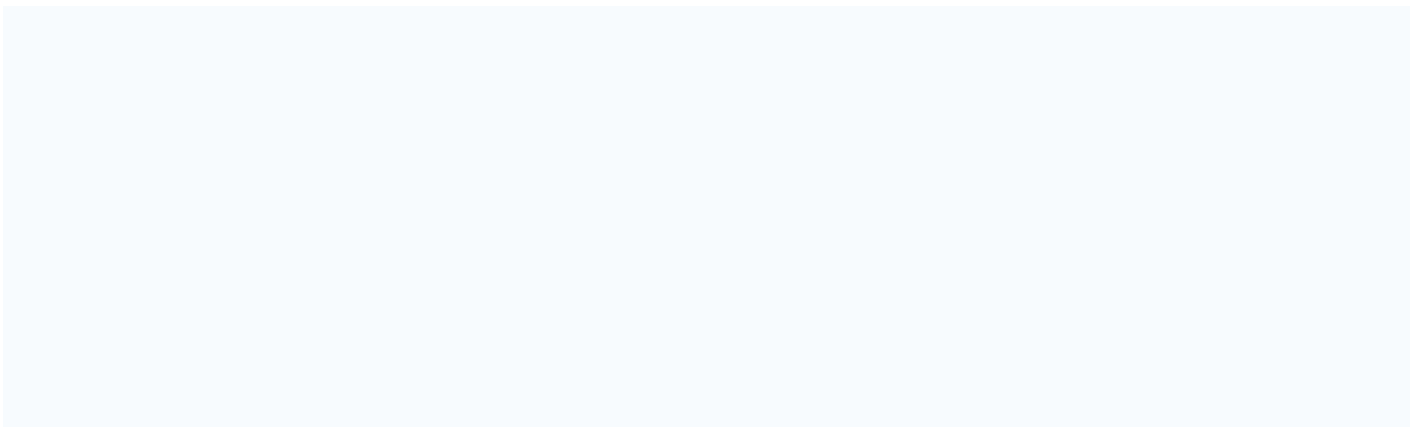
00h : 07m : 59s

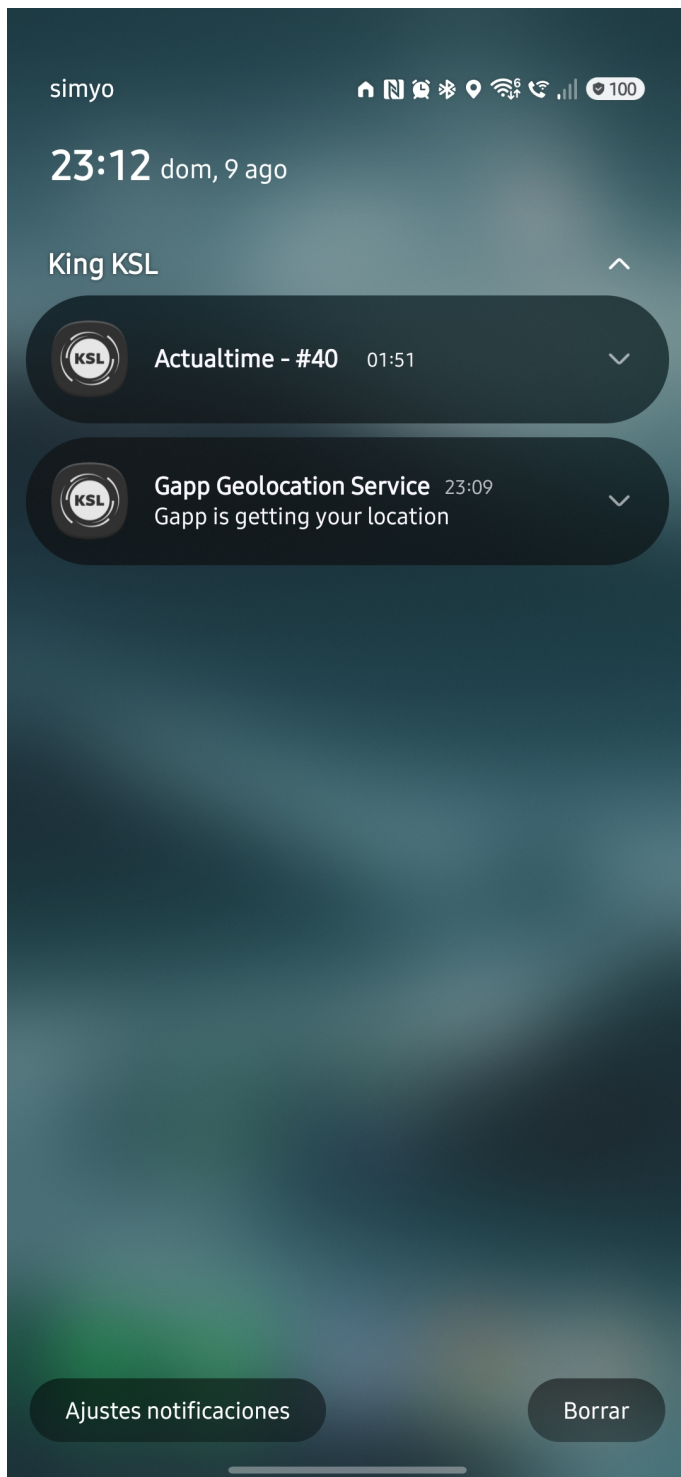


"On the way" — the travel timer running, END button to mark arrival.



"Working on site" — the work timer already running right after the trip was stopped, with no manual start needed.





The phone's notification tray showing the active ActualTime timer while the app is in the background.

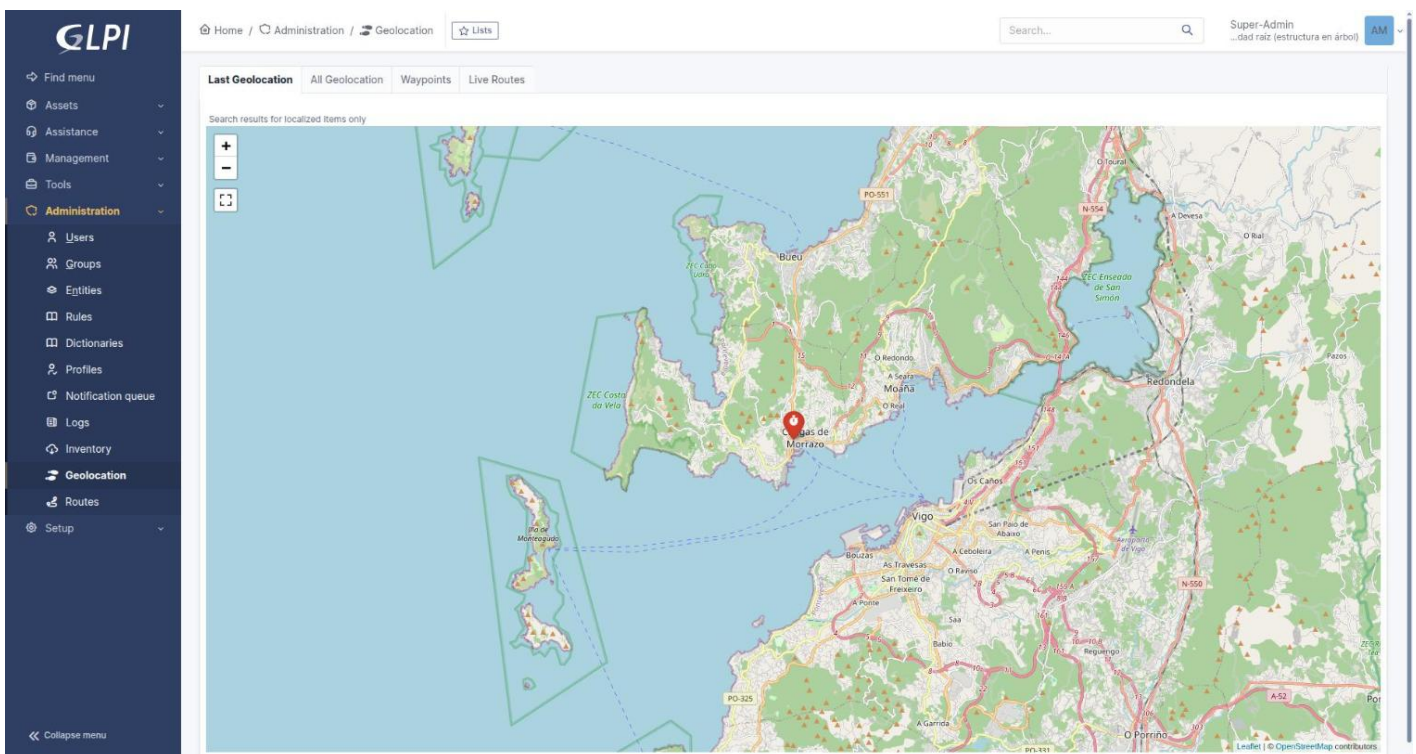
Daily use — supervisor (GLPI web)

Profiles with the corresponding rights get two new sections in the GLPI administration area.

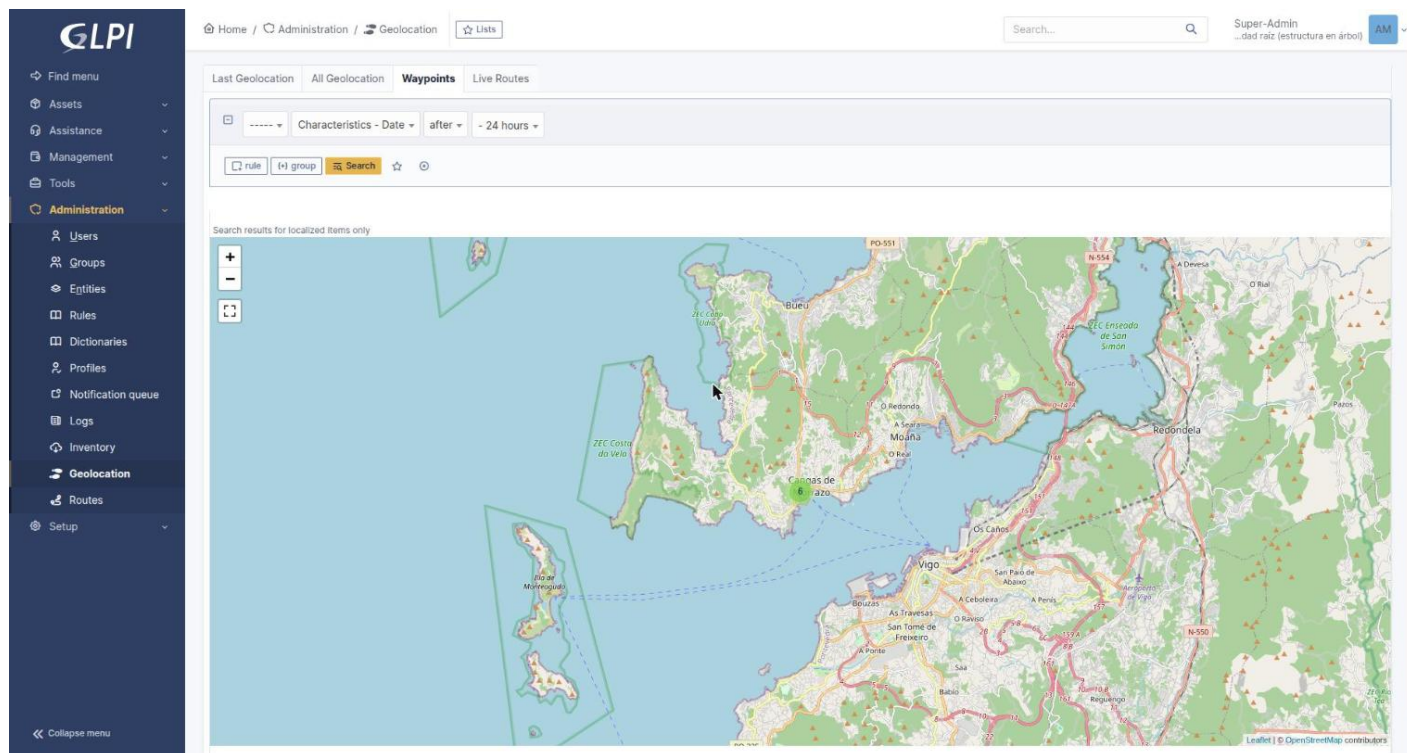
7.1 Geolocation

Focused on where technicians are. It has four tabs:

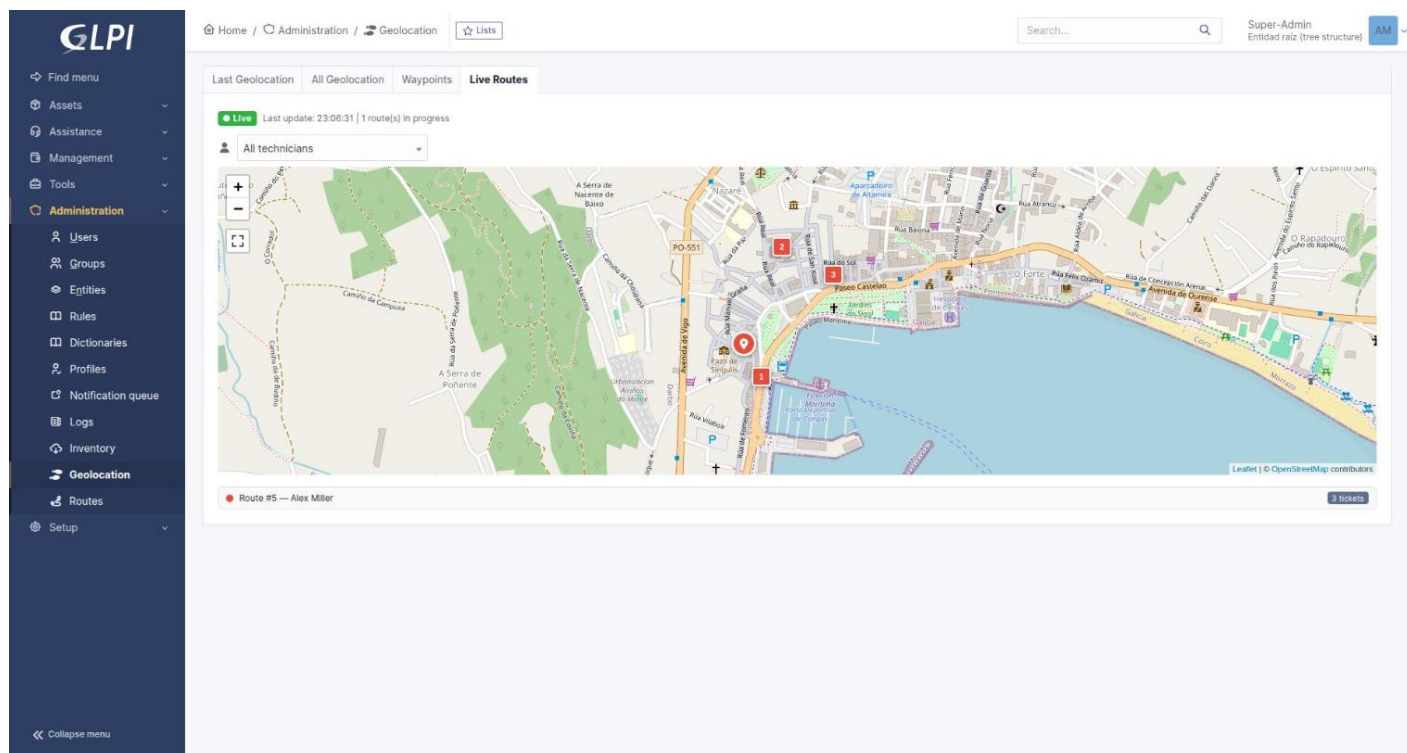
1. **Last Geolocation:** the most recent recorded position of each technician on an interactive map — where the team is right now.
2. **All Geolocation:** the full position history, using GLPI's standard search filters. Narrow the results by date range, technician, linked ticket or location, and export them for analysis.
3. **Waypoints:** the same kind of search, but over the raw GPS trail (every point recorded during a trip) rather than the start/end positions — useful to inspect exactly how a route was walked or driven.
4. **Live Routes:** only the routes currently in progress, for real-time follow-up of each technician.



"Last Geolocation" — the most recent position of each technician. Only one technician has reported a position in this environment.



"Waypoints" — searchable GPS trail, filterable by date, user and more. The cluster marker groups nearby points; click it to zoom in.



"Live Routes" with a technician actively running a route — the marker shows the current position, numbered pins are the remaining stops.

7.2 Routes

Focused on the detail and history of each journey. The list shows all routes, completed and in progress, with configurable columns: route, technician, creation date, status, number of stops, distance and accumulated time. As with any GLPI list, columns can be customised, sorted and filtered.

Opening a route shows its **itinerary on a map** with every geolocated point, making it easy to see the order followed, the distance between points and the partial times. It is the quickest way to analyse efficiency or spot a deviation from the plan.

Because a technician may add or skip stops on the road, each route keeps its **version history**. Reading a route means choosing which version you are looking at — the original plan, or the one that was actually executed.

ID	ACTIVE VERSION	TECHNICIAN	CREATION DATE	STATUS
5	1	Miller Alex	2026-08-09	Completed
6	1	Miller Alex	2026-08-07	Cancelled
7	2	Miller Alex	2026-08-08	Completed

The Routes list — Status added as an extra column via the column picker (⚙️), showing routes in different states.

GLPI Administration / Routes

Route #5 v1 **Completed**

Technician: Miller Alex
 Distance: 5 km 414 m
 Duration: 13 minutes 59 seconds
 Date: 2026-08-09 16:30

Map

Tickets 3

ORDER	ID	TICKET	STATUS	LOCATION	BILLING DISTANCE	BILLING DURATION	EXECUTED WAYPOINT
1	#38	Printer not working - Reception desk	Processing (assigned)	Client site - North	1 km 437 m	4 minutes 11 seconds	Yes
2	#40	Workstation setup - Central office	Processing (assigned)	Client site - Central	333 m	2 minutes 50 seconds	Yes
3	#39	Network switch replacement - Branch office	Processing (assigned)	Client site - East	4 km 924 m	10 minutes 35 seconds	Yes

Route detail: distance, duration and date at the top, the itinerary on the map, and the per-ticket breakdown (order, status, location, billing distance/duration) below.

GLPI Administration / Routes

Route #7 v2 **Completed** v2 — Completed v1 — Edited

Technician: Alex
 Distance: 5,414 km
 Duration: 13 minutes 59 seconds
 Date: 2026-08-08 09:15

Map

Tickets 2

ORDER	ID	TICKET	STATUS	LOCATION	BILLING DISTANCE	BILLING DURATION	EXECUTED WAYPOINT
1	#2	Recurring "Blue Screen of Death" (BSOD) on Dell Latitude Series	Processing (assigned)	Datacenter	333 m	2 minutes 50 seconds	No
2	#1	VPN Connection Failure - Authentication Timeout	Processing (assigned)	Backup Office	1,437 km	4 minutes 11 seconds	No

The version selector (top bar) on a route with two versions — "v2 — Completed" and "v1 — Edited".

7.3 Waypoint tab on the ticket

A ticket that has been visited within a route gains a **Waypoint** tab. It shows one card per trip made to that ticket, comparing the estimated, actual and billable figures described in section 2.4.

GLPI

Find menu

Assets

Assistance

Dashboard

Tickets

Create ticket

Problems

Changes

Planning

Statistics

Recurrent tickets

Recurrent changes

Management

Tools

Administration

Setup

« Collapse menu

Home / Assistance / Tickets

+ Add

Q Search

☆ Lists

⚙ Templates

📅 Global Kanban

Tickets waiting for your approval

Search...

Super-Admin
...dad raiz (estructura en árbol)

AM

Printer not working - Reception desk (38)

2/15

Ticket

Statistics

Approvals

Knowledge base

Items

Costs

Projects

Project tasks

Problems

Changes

Contracts

Historical

Waypoint

All

Waypoints details

Route #5 · Miller Alex

2026-08-09

	ESTIMATED	REAL	BILLING
Distance	408 m	371 m	1 km 437 m
Time	1m:32s	5m:28s	4m:11s

The Waypoint tab on a ticket — Estimated / Real / Billing comparison for one visit.



Daily use

Exporting data (CSV)

The export is launched from the **ticket list**, not from the Routes section:

1. Filter and select the tickets you want to report on.
2. Choose the **Export routes CSV** massive action.
3. Optionally set a **date range** to restrict the export to journeys made between those dates, or export everything.
4. Download the file.

The CSV contains one row per visit, with the route and its version, the position of the stop in the itinerary and whether it was marked as priority, the ticket and its title, the technician, start and end times, the four distance/time metrics from section 2.4, and the **time actually worked on the ticket**.

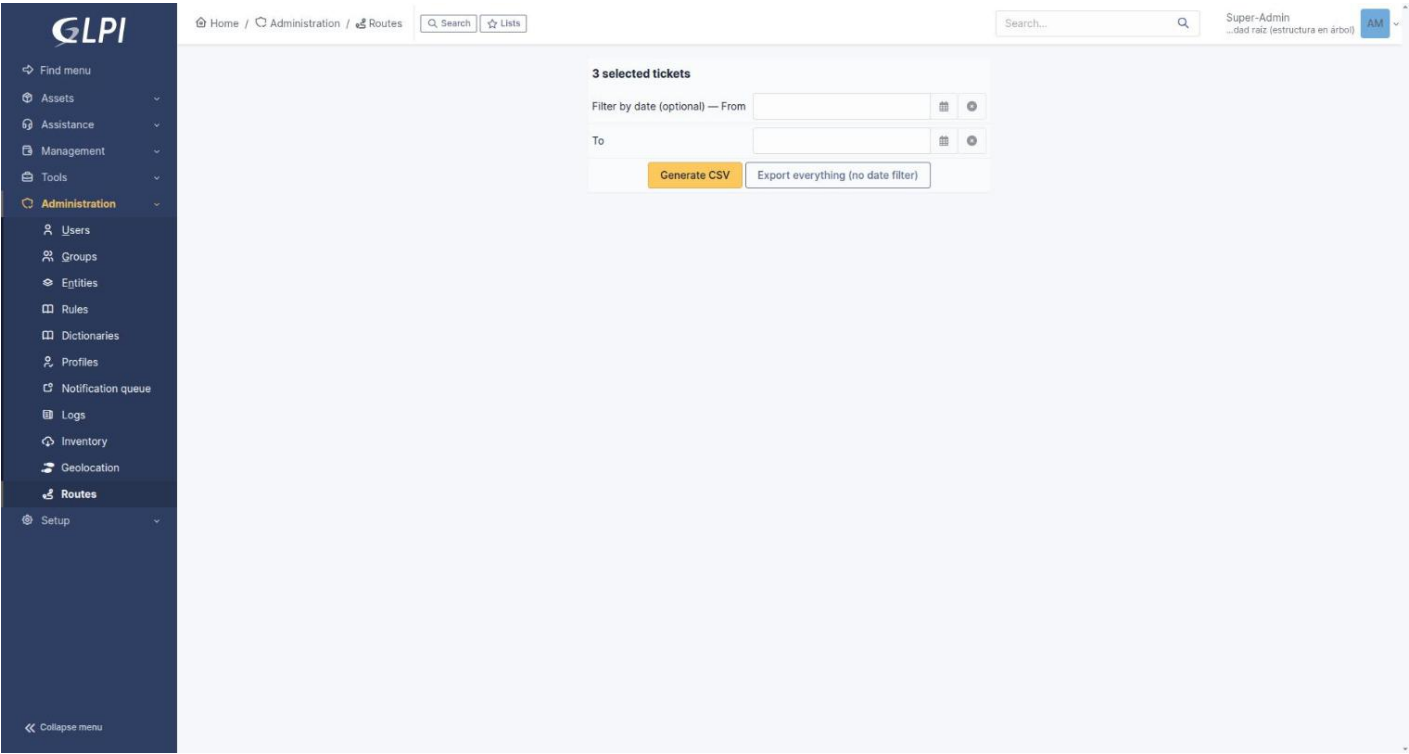
Two **summary blocks** are appended at the end of the file: totals **per technician** and totals **per day**, each with number of visits, distance, travel time, billable figures and time worked. This makes the file usable for invoicing without any further processing.

Durations are exported in **seconds** and distances in **metres**, deliberately: raw units are easier to aggregate in a spreadsheet than pre-formatted text.

The screenshot shows the GLPI interface with the 'Actions' menu open for a ticket list. The 'Export routes CSV' option is highlighted. Below the menu, a table of tickets is visible with columns for ID, Title, Entity, Status, Last Update, Opening Date, Priority, Requester, Assigned To, Category, Time to Resolve, and Waypoint. The table shows 39 tickets, with the first 15 displayed.

ID	TITLE	ENTITY	STATUS	LAST UPDATE	OPENING DATE	PRIORITY	REQUESTER - REQUESTER	ASSIGNED TO - TECHNICIAN	CATEGORY	TIME TO RESOLVE	WAYPOINT - IN ROUTE
40	Workstation setup - Central office	Entidad raíz	Processing (assigned)	2026-08-09 19:10	2026-08-09 16:25	Medium		Miller Alex i			✓
38	Printer not working - Reception desk	Entidad raíz	Processing (assigned)	2026-08-09 18:43	2026-08-09 16:25	Medium		Miller Alex i			✓
39	Network switch replacement - Branch office	Entidad raíz	Processing (assigned)	2026-08-09 18:23	2026-08-09 16:25	Medium		Miller Alex i			✓
34	Prueba waypoint - Paseo Marítimo	Entidad raíz	Processing (assigned)	2026-08-07 20:23	2026-08-07 18:54	Medium		Miller Alex i			✗
36	Prueba waypoint - Rua Real	Entidad raíz	Processing (assigned)	2026-08-07 20:22	2026-08-07 18:54	Medium		Miller Alex i			✗
35	Prueba waypoint - Praza de Galicia	Entidad raíz	Processing (assigned)	2026-08-07 20:19	2026-08-07 18:54	Medium		Miller Alex i			✗
27	Revisión	Entidad raíz	Processing (planned)	2026-08-07 12:19	2026-08-06 12:09	Medium	yago.otero@itgal.com i	yago.otero@itgal.com i	CRM system		✗
33	Ira X	Entidad raíz Yago	Processing (assigned)	2026-08-07 11:44	2026-08-07 11:44	Medium	yago.otero@itgal.com i	yago.otero@itgal.com i			✗

Three tickets selected in the ticket list, with "Export routes CSV" chosen from the massive action dropdown.



The optional date-range step — set a range and click "Generate CSV", or skip it with "Export everything".

waypoint_routes_20260809_213625.csv — Spreadsheet view																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Route	Order	Ticket #	Title	Priority	User	Start date	End date	Actual distance (m)	Actual duration (s)	Log planned distance (m)	Log planned duration (s)	Route planned distance (m)	Route planned duration (s)	Sitting distance (m)	Sitting duration (s)
2	49 v1	1	38	Printer not working - Reception desk	Yes	Yolter Alex	2026-08-09 18:35:54	2026-08-09 18:37:22	171	98	408	32	5404	839	1437	251
3	49 v1	3	39	Network switch replacement - Branch office	No	Yolter Alex	2026-08-09 18:37:53	2026-08-09 18:44:52	356	94	3380	490	5404	839	4924	935
4	49 v1	2	40	Workstation setup - Central office	No	Yolter Alex	2026-08-09 18:44:53	2026-08-09 18:49:39	1791	272	1791	272	5404	839	839	170
5																
6	Summary by technician															
7	User	Visits	Actual distance (m)	Actual duration (s)	Sitting distance (m)	Sitting duration (s)	Work duration (s)									
8	Yolter Alex	3	2458	452	3394	1008	32									
9																
10	Summary by day															
11	Day	Visits	Actual distance (m)	Actual duration (s)	Sitting distance (m)	Sitting duration (s)	Work duration (s)									
12	2026-08-09	3	2458	452	3394	1008	32									

The resulting CSV: one row per visit (columns A-Q), followed by the "Summary by technician" and "Summary by day" blocks.

Reference

Interaction with other plugins

- **ActualTime** — records the working time at each stop. When the technician stops the travel timer on arrival, Waypoint starts an ActualTime task on that ticket automatically. The resulting time is linked to both the ticket and the route.
- **gappextended** — provides the mobile API and the geolocation storage that Waypoint relies on, including the permission that controls access to the Geolocation section. Waypoint cannot run without it.

Impacted GLPI items

- **Assistance**
 - Tickets — "Linking to route" option and Waypoint tab
- **Administration**
 - Profiles — Waypoint rights
 - Geolocation — technician positions and live routes
 - Routes — route history and detail
- **Setup**
 - Locations — coordinates are required

Current scope and good to know

To set expectations correctly, this is what the plugin does *not* do today:

- **Navigation happens in your maps app.** The route screen is an ordered list of stops, not a map with turn-by-turn guidance. The Map button hands the destination over to Google Maps, Waze or whichever app the technician prefers, which is also what gives access to live traffic and voice guidance.
- **Arrival is confirmed by the technician, not detected automatically.** There is no geofence: the work timer starts when the technician stops the travel timer on arrival.
- **Timer notifications are local to the technician's phone.** They show that a timer is running; they are not GLPI e-mail notifications to supervisors. Supervisors follow progress through the Live Routes tab.
- **Reporting is done through GLPI lists and the CSV export,** not through dedicated KPI dashboards.
- **Every route calculation consumes Google API quota.** Creating or editing a route triggers several calls. Disabling *Billing includes return trip* roughly halves that consumption.
- **A ticket visited in more than one route appears once per visit** in the CSV. That is intentional — each visit is a separate journey with its own times and distances.

Troubleshooting

Symptom	Most likely cause
The Waypoint entry does not appear in the app.	The user is a self-service account, lacks Waypoint rights, or <code>gapextended</code> is disabled or below 2.21.0.
A ticket is missing from the selection list.	"Linking to route" is not set to Yes, the ticket is not assigned to that technician, or its location has no coordinates.
The route cannot be created.	Missing or invalid Google API key, or the required APIs are not enabled for it.
Distances are recorded as zero.	Location permissions were not granted, or the GPS had no fix when the trip was started or stopped.
Tracking stops when the phone is locked.	Background location permission is missing, or the operating system's battery optimisation is suspending the app.
Positions are recorded that do not belong to any route.	<i>Enable user geolocation</i> is switched on. It is not compatible with route tracking; disable it.