GPSD

Used symbols

Important

Important — Indicates a risk to personal safety or potential damage to the router. Follow these instructions precisely to prevent injury or equipment damage.

Warning

Warning — Highlights conditions that may cause malfunction, loss of data, or unexpected behavior in specific situations. Read carefully before proceeding.

Info

Info — Provides helpful tips, context, or references that improve understanding but are not strictly required to complete the task.

Code Example

```
Code Example - Copy-pasteable configuration snippets or CLI commands.
```
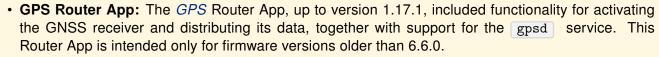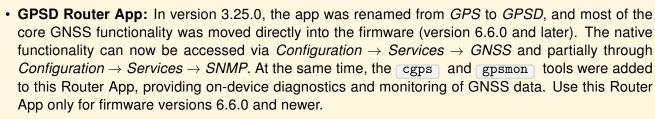
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1. Router App Description

> **Warning**
>
> **History, Differences, and Purpose of GPS and GPSD Router Apps**
>
> - **GPS Router App:** The *GPS* Router App, up to version 1.17.1, included functionality for activating the GNSS receiver and distributing its data, together with support for the `gpsd` service. This Router App is intended only for firmware versions older than 6.6.0.
> - **GPSD Router App:** In version 3.25.0, the app was renamed from *GPS* to *GPSD*, and most of the core GNSS functionality was moved directly into the firmware (version 6.6.0 and later). The native functionality can now be accessed via *Configuration* → *Services* → *GNSS* and partially through *Configuration* → *Services* → *SNMP*. At the same time, the `cgps` and `gpsmon` tools were added to this Router App, providing on-device diagnostics and monitoring of GNSS data. Use this Router App only for firmware versions 6.6.0 and newer.

> **Info**
>
> The GNSS service is provided by the cellular module. Its name can be verified in the GUI under *Status* → *Mobile WAN* → *Mobile Network Information* → *Model* (you must click on » *More Information* « to view the module details).

The *GPS* (Global Positioning System) functionality allows your router to provide location and time information in all weather conditions, anywhere on or near the Earth, provided there is an unobstructed line of sight to four or more GPS satellites.

The *GPSD* Router App enables the activation and configuration of the GPSD service, which manages the collection and distribution of GNSS data. This service can be utilized to make GNSS data available to other applications or network clients; see Chapter 2.2. Additionally, this application provides support for the `cgps` and `gpsmon` command-line tools; see Chapter 2.3.

2. Web Interface

The left sidebar of the web interface contains the menu with pages for monitoring (*Status*), *Configuration*, and *Administration* of the router. The *Administration* section allows you to return to the main router interface by clicking *Return*.

2.1 System Log

In case of any issues, you can view the system log by selecting the *System Log* menu item. This log displays detailed reports related to this Router App.

2.2 GPSD

`gpsd` is a service daemon that monitors the GPS receiver attached to the router, making all data on the location, course, and velocity of the sensors available to be queried on a TCP port of the host router.

With `gpsd`, multiple location-aware client applications can share access to supported sensors without contention or loss of data. Also, `gpsd` responds to queries with a format that is substantially easier to parse than the NMEA 0183 emitted by most GPS receivers.

> **Warning**
>
> Before enabling the GPSD daemon, you must activate the GNSS service in *Configuration → Services → GNSS → Enable GNSS service*. Failure to do so will result in an *Error during configuration update* message.

To activate the service, check the *Enable GPSD daemon* option. Once enabled, the router automatically starts listening on the ports specified below. This automatically adds a new remote destination to the GNSS configuration (*Configuration → Services → GNSS → Forward NMEA to Remote*). If an error is reported when enabling GPSD, check the syslog for a detailed error message.

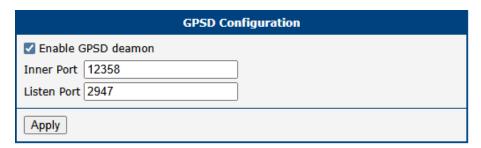| Item	Description
Enable GPSD daemon	Activates the GPSD service. Do not forget to activate the GNSS service first, as described above.
Inner Port	The internal UDP port on the device dedicated for GPS data communication (default is 12358).
Listen Port	The TCP/IP port on which the service listens for incoming connections from GPSD clients (default is 2947).

Table 1: GPSD configuration

Figure 1: GPSD configuration

2.3   Tools

This chapter describes the command-line tools provided by the GPSD Router App. These tools can be used for diagnostics and monitoring of GNSS data directly from the router's console (via SSH or Telnet).

2.3.1   `cgps` Tool

> **Info**
>
> The `cgps` tool requires the GPSD service to be active for proper operation; see Chapter 2.2.

The `cgps` utility is a client for the GPSD daemon. It provides a text-based interface to monitor the status of the GNSS receiver, displaying satellite data, position, time, and signal quality in real-time.

The syntax for this command is shown below:

```
cgps [-h] [-l {d|m|s}] [-m] [-s] [-V] [server[:port:[device]]]
```

Options for this command are described in the table below[1].

Item	Description
-?	Show this help, then exit
–debug DEBUG	Set debug level
–help	Show this help, then exit
–imu	Display IMU data, not GNSS data
–llfmt FMT	Select lat/lon format, same as -l
–magtrack	Display track as estimated magnetic track
–rtk	Display RTK data, not GNSS data
–silent	Be silent, don't print raw gpsd JSON
–units U	Select distance and speed units, same as -u
–version	Show version, then exit
-D DEBUG	Set debug level
-h	Show this help, then exit
-i	Display IMU data, not GNSS data
-l {d|m|s}	Select lat/lon format d = DD.ddddddd' m = DD MM.mmmmmm s = DD MM' SS.sssss"
-m	Display track as the estimated magnetic track
-r	Display RTK data, not GNSS data
-s	Be silent, don't print raw gpsd JSON
-u {i|m|k}	Select distance and speed units i = imperial m = metric n = nautical
-V	Show version, then exit

Table 2: cgps options

---

[1]For detailed documentation, refer to the official *cgps manual*.

The following figure shows an example of the `cgps` command output. You can terminate the program by pressing the `q` key or by using the key combination `Ctrl+c`.

```
                                              ─Seen 11/Used  8─
Time            2025-12-04T10:50:47.000Z ( 0)  GNSS  S PRN  Elev  Azim   SNR Use
Latitude            47.97003283 N              GP 10    10   7.0 334.0   36.0  Y
Longitude           16.36960850 E              GP 13    13  61.0 153.0   38.0  Y
Alt (HAE, MSL)    1265.420,    1121.063 ft     GP 14    14  45.0  60.0   50.0  Y
Speed                  0.00            mph      GP 15    15  65.0 241.0   35.0  Y
Track (true, var)    118.9,    4.6    deg       GP 19    19  23.0 133.0   31.0  Y
Climb                  0.00          ft/min     GP 22    22  61.0  71.0   36.0  Y
Status           3D FIX (55 secs)               GP 23    23  25.0 299.0   53.0  Y
Long Err  (XDOP, EPX)    0.59, +/- 28.8 ft      GP 24    24  37.0 281.0   52.0  Y
Lat Err   (YDOP, EPY)    0.74, +/- 36.6 ft      GP  5     5   4.0 203.0    0.0  N
Alt Err   (VDOP, EPV)    0.80, +/- 60.4 ft      GP 12    12   4.0 219.0    0.0  N
2D Err    (HDOP, CEP)    1.10, +/- 68.6 ft      GP 30    30  13.0  91.0    0.0  N
3D Err    (PDOP, SEP)    1.30, +/- 81.0 ft
Time Err  (TDOP)         0.99
Geo Err   (GDOP)         2.11
Speed Err (EPS)             +/- 49.9 mph
Track Err (EPD)         n/a
Time offset             1.776642509      s
Grid Square             JN89ex42
ECEF X, VX              n/a      n/a
ECEF Y, VY              n/a      n/a
ECEF Z, VZ              n/a      n/a
```

Figure 2: cgps output example

2.3.2 `gpsmon` Tool

The `gpsmon` utility is a real-time monitor and control tool for GPS packets. It displays the raw data streams coming from the GNSS receiver and interprets them into a readable format. It is useful for low-level diagnostics and verifying the raw output from the hardware.

The syntax for this command is shown below:

`gpsmon [OPTIONS] [server[:port:[device]]]`

Options for this command are described in the table below[1].

Item	Description
–debug DEBUGLEVEL	Set DEBUGLEVEL
–help	Show this help, then exit
–list	List known device types, then exit
–logfile FILE	Log to LOGFILE
–nocurses	No curses. Data only.
–nmea	Force NMEA mode
–type TYPE	Set receiver TYPE
–version	Show version, then exit
-a	No curses. Data only.
-?	Show this help, then exit
-D DEBUGLEVEL	Set DEBUGLEVEL
-h	Show this help, then exit
-L	List known device types, then exit
-l FILE	Log to LOGFILE
-n	Force NMEA mode
-t TYPE	Set receiver TYPE
-V	Show version, then exit

Table 3: gpsmon options

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[1]For detailed documentation, refer to the official *gpsmon manual*.

The following figure shows an example of the `gpsmon` command output. You can terminate the program by pressing the `q` key or by using the key combination `Ctrl+c`.
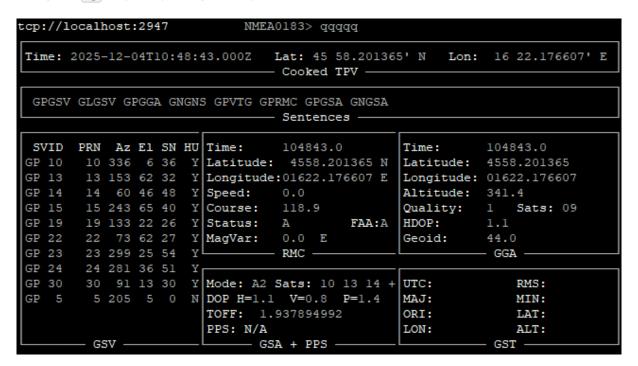

Figure 3: gpsmon output example

3. Related Documents

You can obtain product-related documents on the *Engineering Portal* at the *icr.advantech.com* address.

To get your router's *Quick Start Guide*, *User Manual*, *Configuration Manual*, or *Firmware*, go to the *Router Models* page, find the required model, and switch to the *Manuals* or *Firmware* tab, respectively.

The *Router Apps* installation packages and manuals are available on the *Router Apps* page.

For the *Development Documents*, go to the emphDevelopment page.