



nRF Cloud Services

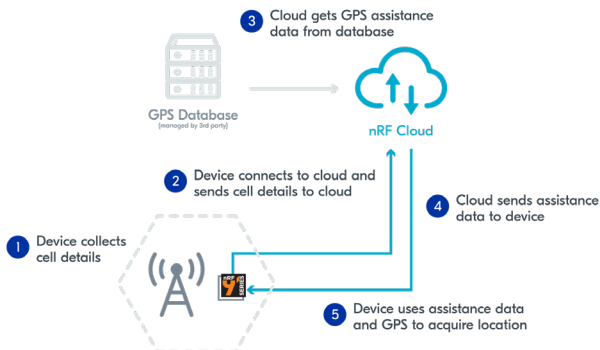
Providing accurate, low power and fast cloud location services for the nRF91 Series via nRF Cloud.

nRF Cloud is a versatile IoT connectivity enabler that can be used directly with Nordic's cellular devices or with our nRF52 and nRF53 Series via a gateway. nRF Cloud services support both Device-to-Cloud or Cloud-to-Cloud use cases. In the former, the device connects directly to nRF Cloud. In the latter, the device connects to a customer's cloud and that cloud connects to nRF Cloud's REST API.

It is an integral part of your cellular IoT development workflow, letting you easily manage your devices from anywhere in the world. It is compatible with most web browsers. nRF Cloud lets you easily manage iBasis SIM activation, monitor cellular data usage and easily visualize data with built in graphs. It is a great tool that lets you develop, test and evaluate Nordic's range of development kits and prototyping platforms.

Location Services

nRF Cloud Location Services is a set of services offered in nRF Cloud by Nordic Semiconductor. This includes GPS and cell based location services. The main goal is to enable customers to accurately and quickly get location data for their connected devices, thereby saving both time and energy.



GPS based location services

Conventional GPS works by receiving the GPS data (e.g. ephemeris, almanac) from a GPS satellite at ~50 bps throughput. This can lead to a time-to-first-fix (TTFF) of up to a minute for a cold start, which is a power hungry process. With Nordic's AGPS service, this TTFF can be as fast as a few seconds. Benefits include a seamless user experience with decreased latency, in addition to significantly improved power consumption. AGPS downloads the required assistance data via the LTE network at ~150 kbps to the device. Taking it a step further, the PGPS service downloads predictive data as well, enabling longer validity of the assistance data.

Cell based location services

Cell based location services use the cellular base stations to predict device location. Single-cell (SCELL) uses the nearest cell tower, whereas multi-cell (MCELL) uses multiple cell towers to triangulate a position. If power savings is more important than location accuracy, Nordic's cell-based services are a good option. For indoor positioning, cell based solutions are also beneficial.

Key features

- Assisted GPS (AGPS)
- Predictive GPS (PGPS)
- Single-Cell (SCELL)
- Multi-Cell (MCELL)
- Supports Cloud-to-Cloud use cases for devices provisioned to a different cloud provider

Applications

- Industrial
- Smart appliances
- Asset tracking and RTLS

Comparing nRF Cloud Location Services

AGPS	<ul style="list-style-type: none"> • High accuracy (≈3 meters) • Lower power consumption than GPS
PGPS	<ul style="list-style-type: none"> • High accuracy (≈3 meters) • Lower power consumption than AGPS
SCELL	<ul style="list-style-type: none"> • Low accuracy (≈1000 meters) • Lower power consumption than AGPS and PGPS because GPS modem is not required
MCELL	<ul style="list-style-type: none"> • Medium accuracy (≈300 meters, depends on nr of nearby cell towers) • Lower power consumption than AGPS and PGPS because GPS modem is not required

Supported Products

nRF9160 SiP	Low power SiP with integrated LTE-M/NB-IoT modem and GPS
nRF9160 DK	Development kit for the nRF9160 SiP
Nordic Thingy:91	Multi-fdPrototyping platform for the nRF9160 SiP

nRF Cloud supports both our short-range nRF52 and nRF53 Series (via a gateway), as well as our cellular IoT nRF91 Series.

nRF Cloud Location Services are currently only available for the nRF91 Series.