Intro to Nordic's Cellular IoT offering

Nordic Tech Webinar

Martin Lesund – Technical Marketing Manager

13. October 2021

Today's hosts

Martin Lesund

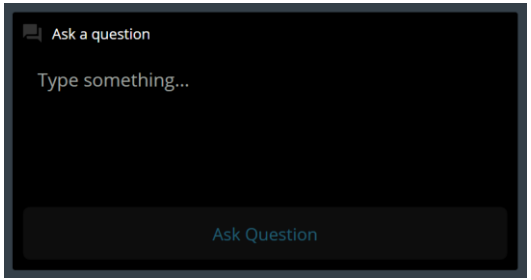
Technical Marketing Manager

Cellular IoT

NORDIC SEMICONDUCTOR

Practicalities

- Duration: ~45 minutes + Q&A
- Questions are encouraged!
  - Please type questions in the top of the right sidebar
  - All questions are anonymous
  - Try to keep them relevant to the topic
  - We will answer towards the end

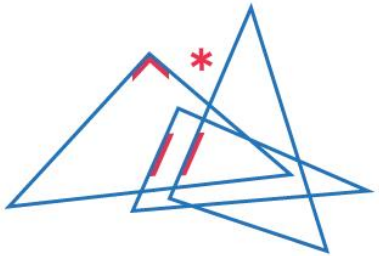


- The chat is not anonymous, do not use for questions
- Go to DevZone if you have questions after the webinar
- A recording of the webinar will be available together with the presentation at webinars.nordicsemi.com

{ DevZone

Content

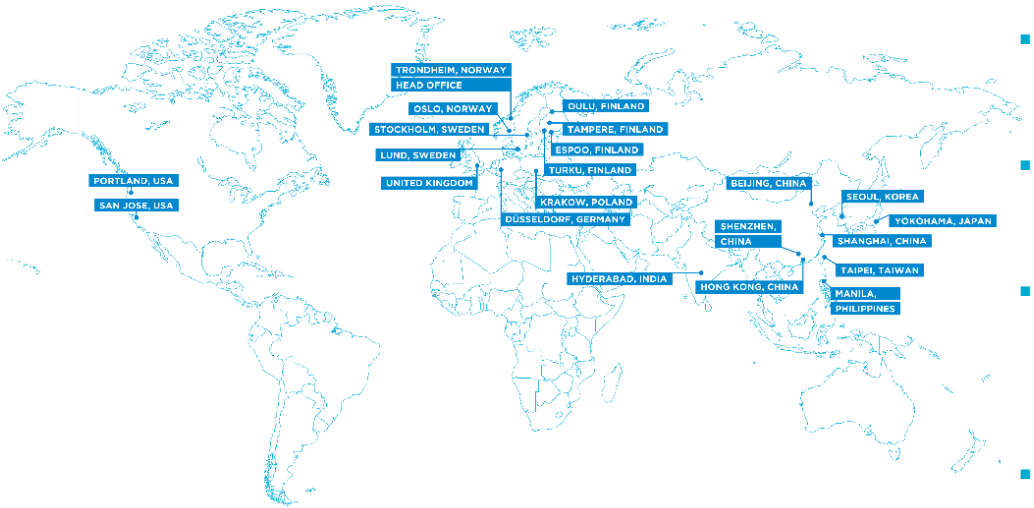
- About Nordic Semiconductor
- nRF9160 SiP overview
- Development hardware
- Development software
- Development tools
- Cloud services
- Getting started
- Q&A



NORDICTECH
WEBINARS

Nordic is enabling IoT

Through innovative low power wireless connectivity solutions



Founded	Employees	Oslo listing	Market Cap
1983	1,029 (~75% R&D)	OSEBX:NOD	~$5bn

- Fabless semiconductor company with world-class production and distribution partners
- Specialist in low power wireless connectivity and embedded processing
- Market leader in short-range IoT with Bluetooth Low Energy and multiprotocol solutions
- Early mover in cellular IoT with low power LTE-M and NB-IoT technologies
- Expanding into Wi-Fi connectivity

We are a driving force in connectivity

Low power connectivity is in our DNA

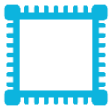
Short-range IoT

Bluetooth, 802.15.4/Thread, Zigbee and 2.4GHz RF SoCs
Built on decades of low power connectivity experience

Long-range IoT

Multimode cellular LTE-M / NB-IoT connected SiPs

Integrated circuits (ICs)



- Broad IC platform for maximum application coverage
- High integration for increased value proposition
- Optimized for long battery lifetime

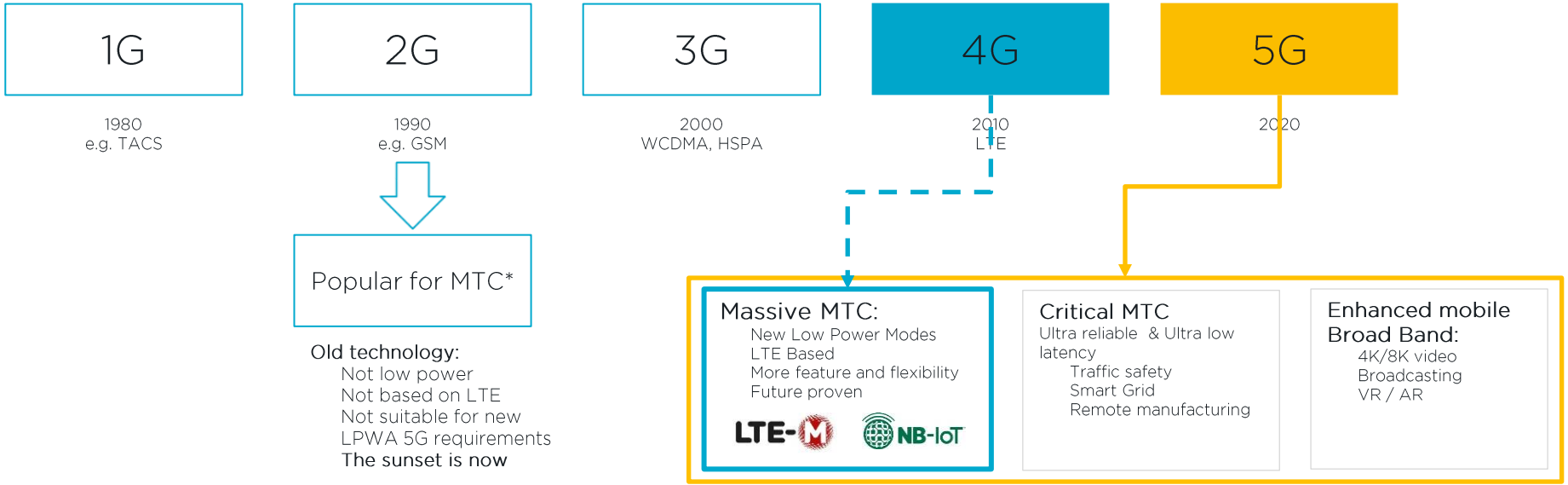
Embedded software

- Common software framework for short and long-range IoT
- Open-source philosophy and modern architecture
- Shortens time-to-market

Development tools

- Engineers and developers in focus
- Excellent tech support
- World-class open-forum developer community in ‘Nordic DevZone’

Standardizing low power connectivity: Cellular IoT

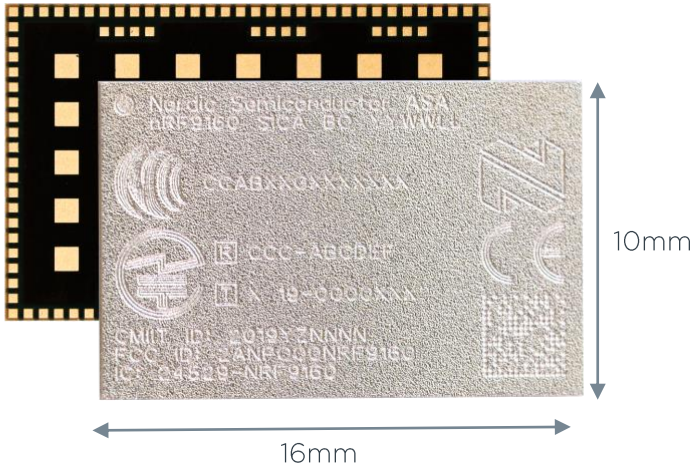


*MTC = Machine-Type Communications

nRF9160 – Voids Cellular Modules

- Based on **Nordic Dual Core SoC**:
  - **Arm® Cortex® M33 MCU** for the application
  - Multiband **LTE-M/NB-IoT** modem with GPS
- **Small** form factor - includes PMIC, RF FEM, passives and crystals
- **Ultra Low Power** – Avg. 18µA @ 81.92s eDRX
  - Power saving mode (PSM) floor current: 2.7 µA
- Multiband support for global coverage
- **Pre-certified** System-in-Package (SiP)

LTE-M NB-IoT GPS



nRF9160 SiP

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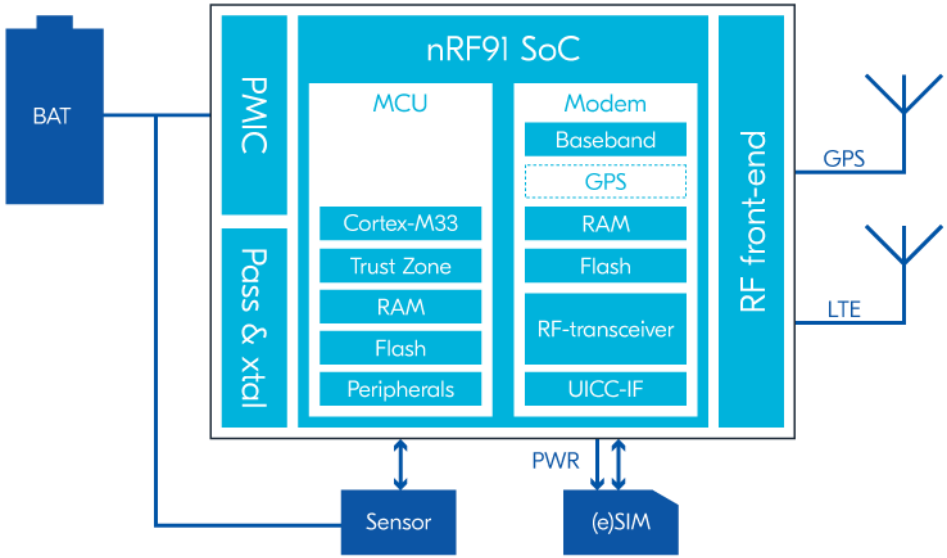
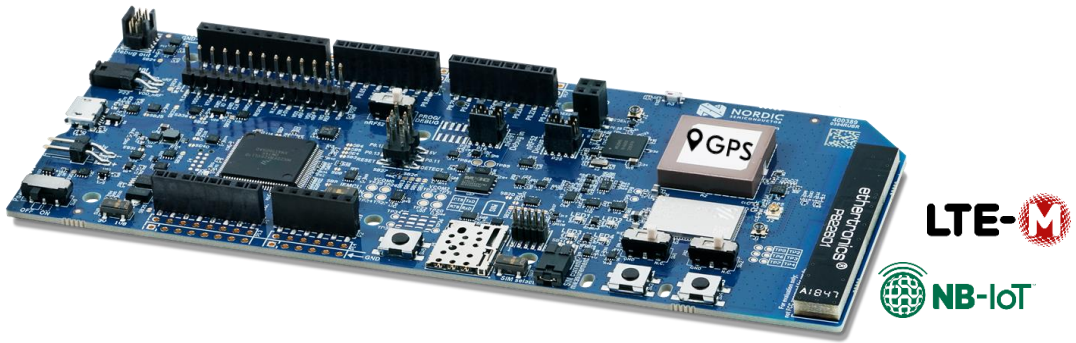


Development Hardware

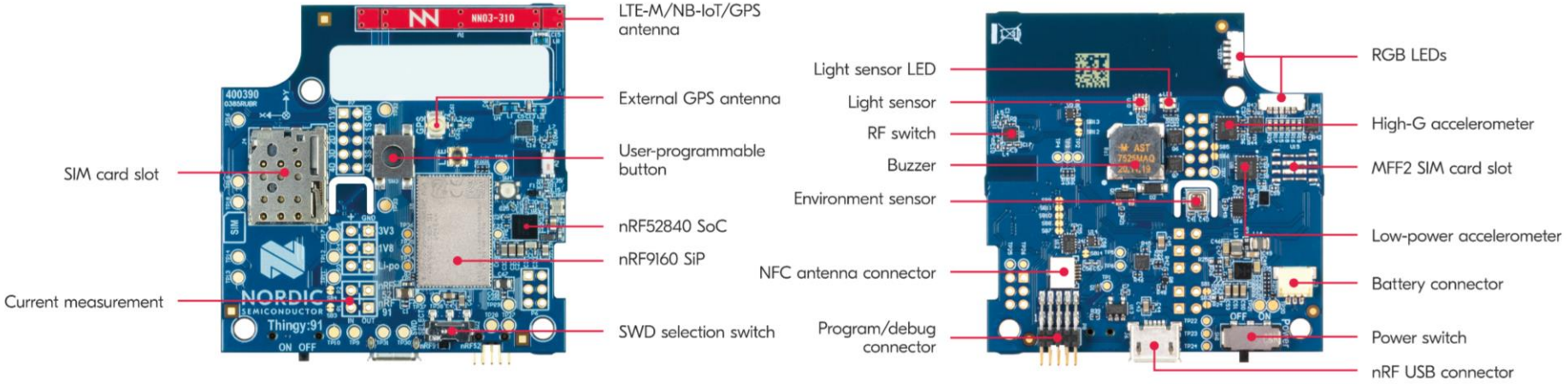
nRF9160 Development Kit (DK)

- Evaluate and develop on the nRF9160 SiP for LTE-M, NB-IoT and GPS
- Include on-chip debugger w/ USB connection
- All GPIOs and interfaces (SPI/TWI/UART), are available via connectors.
  - Arduino Uno Rev3 compatible
- Dedicated LTE-M/NB-IoT, GPS and 2.4GHz antennas on board



Nordic Thingy:91 Prototyping Platform

- Fully available hardware design online
- Includes a multitude of sensors and is battery powered
- Work with your antenna manufacturer on antenna design that fits your application!



Development Software

nRF Connect family

nRF Connect SDK

- Examples
- Application protocols
- RTOS
- Libraries
- Hardware drivers

nRF Connect for Desktop

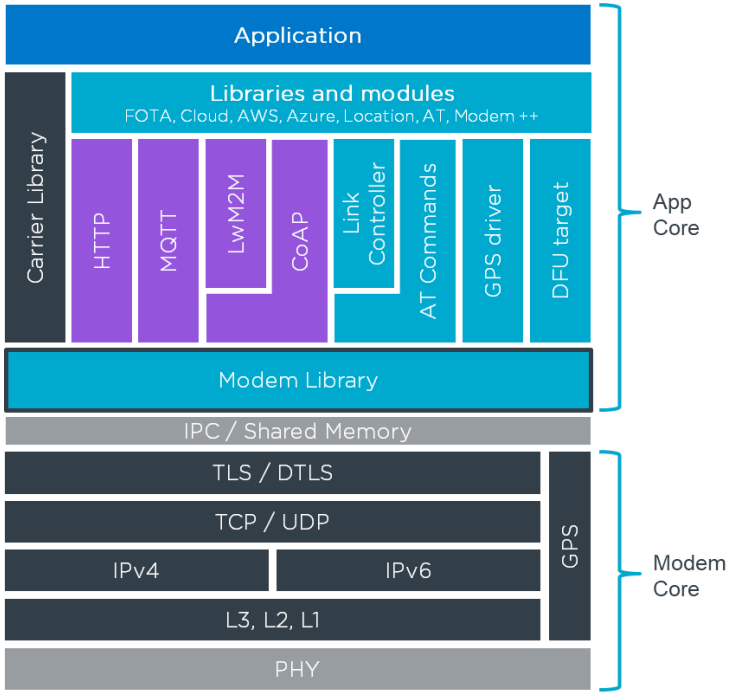
- Toolchain Manager
- Programmer
- LTE Link Monitor
- Trace Collector
- Power Profiler

nRF Cloud

- Location Services
- Examples
- Device management
- SIM management

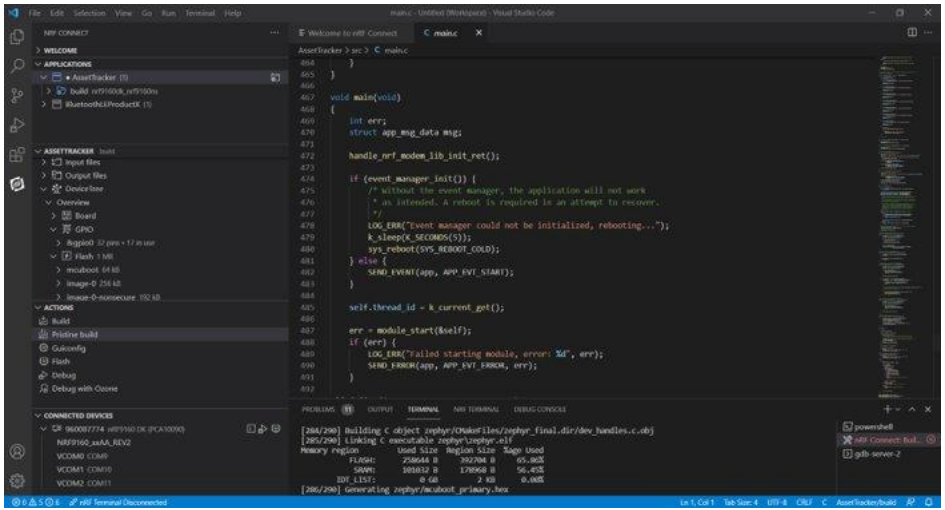
nRF Connect SDK

- Support for all major protocols
  - e.g. MQTT, CoAP, LWM2M, HTTP(S), etc
- Native in nRF Connect SDK
  - All open source and free of charge
  - Flexible sockets: connect to multiple Clouds and services
  - Robust and flexible FOTA
  - RTOS for a modular approach
  - Full application and cloud examples
  - Publicly hosted on Github
  - nRF Connect SDK v1.7.0 just released!
- Connectivity protocols seamlessly integrated with modem
  - Nordic owns of the entire solution – simple support
  - Focus on on your own application



nRF Connect for VS Code

- Built from the ground up for tight integration with nRF Connect SDK



- Create new custom board wizard
- CLI and GUI Interfaces
- Highly extendable and configurable
  - Build/flash/debug/configure
- Cross-platform support
  - Windows, MacOS, Linux

Development tools

nRF Connect family

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nRF Connect for Desktop

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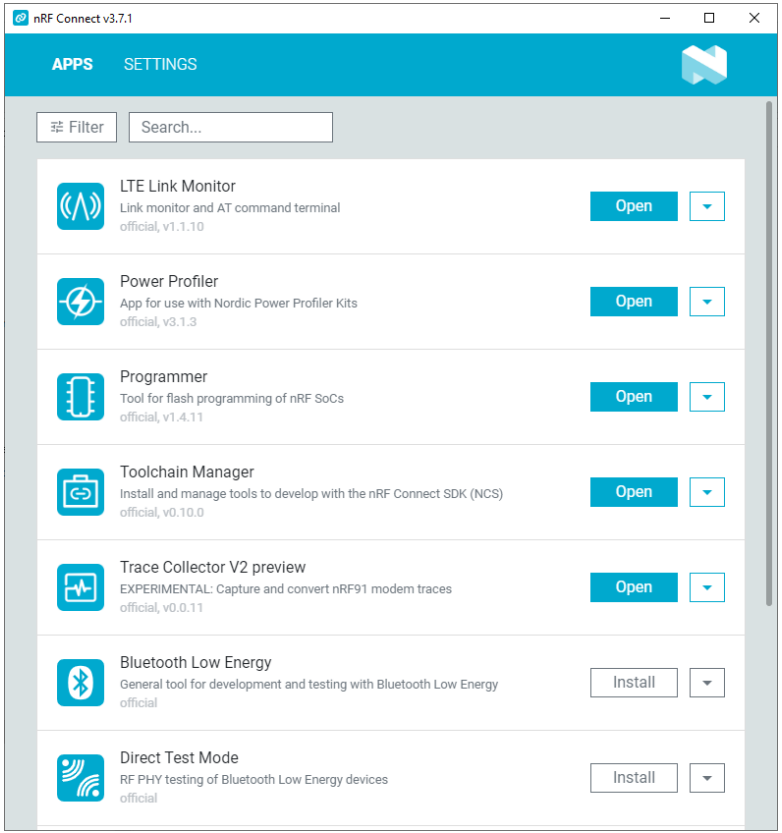
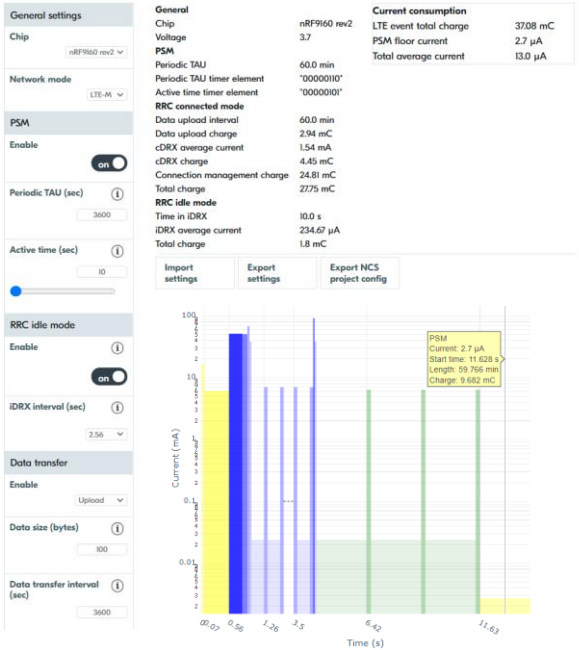
nRF Connect for Desktop

- Contains desktop apps for Windows, Linux and macOS
- Speeds up development

- LTE Link Monitor
- Power profiler
- Programmer
- Toolchain Manager
- Trace Collector v2



Online Power Profiler for cellular IoT



Made to also fit cellular "dummies"

- Extensive User Guide available

No expensive LTE call box needed anymore

- Control and set network parameters

Re-configure, test and learn quickly

- See what parameters affects power consumption and how

Export settings to nRF Connect SDK project

- Unified solution with the Power Profiler Kit 2

Online Power Profler Demo

DevZone | Search the DevZone | Support +

Tech Support | Community | Nordic content

Nordic content

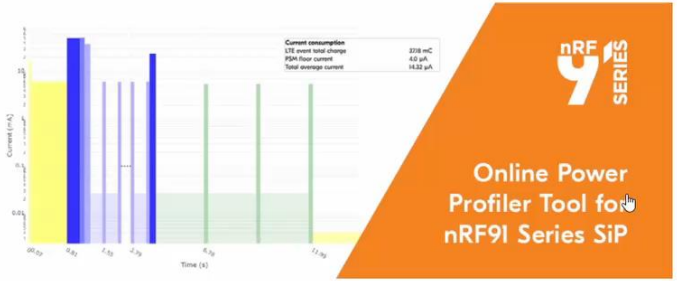
Online power profiler › opp

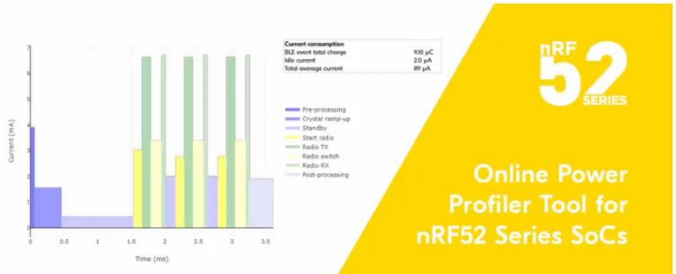
Online Power Profiler

Click below for either the nRF52 series version which calculates the current consumption when using the Bluetooth LE Softdevice, or the nRF9I version for LTE-M and NB-IoT current consumption

For more information on how to use the Online Power Profiler, click here

Contents





First-of-its-kind tool for cellular developers

Perfect to track and measure power consumption

- Simple, accurate and powerful

Easy to estimate battery life

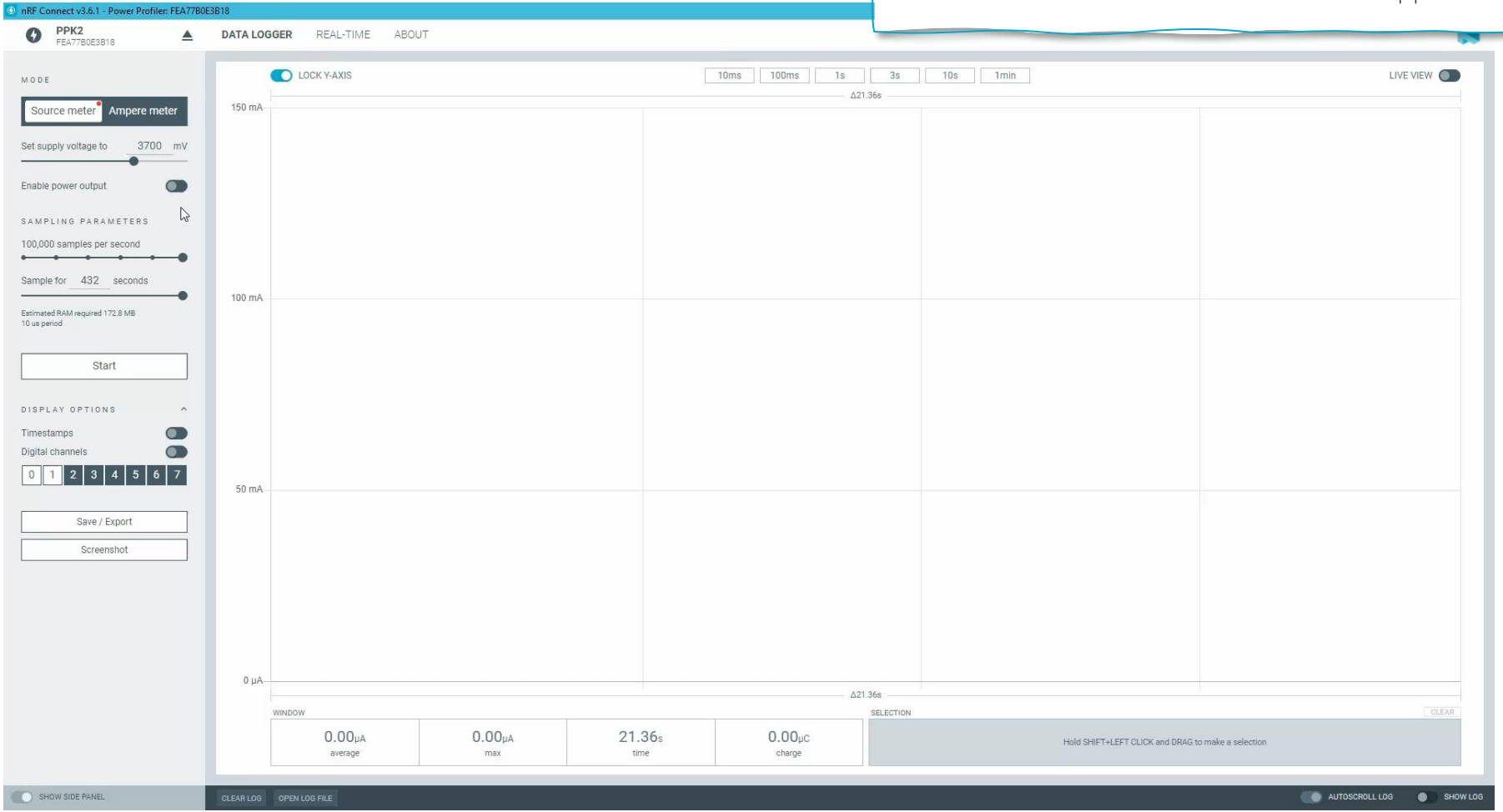
- Auto-calculates energy consumption

Spot and debug unwanted current drains

- Continuously during engineering cycle
- Compare with the Online Power Profiler

- Simple and cost-efficient ($89 retail price)

Power Profiler Kit 2 and Power Profiler app demo



Cloud Services

nRF Connect family

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- Examples
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nRF Connect for Desktop

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nRF Cloud

- Location Services
- Examples
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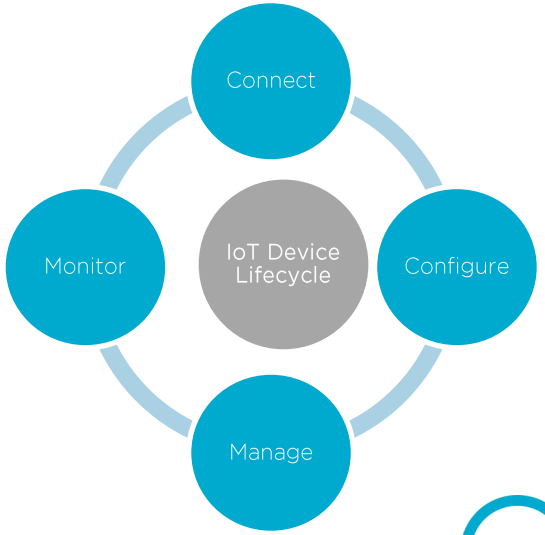
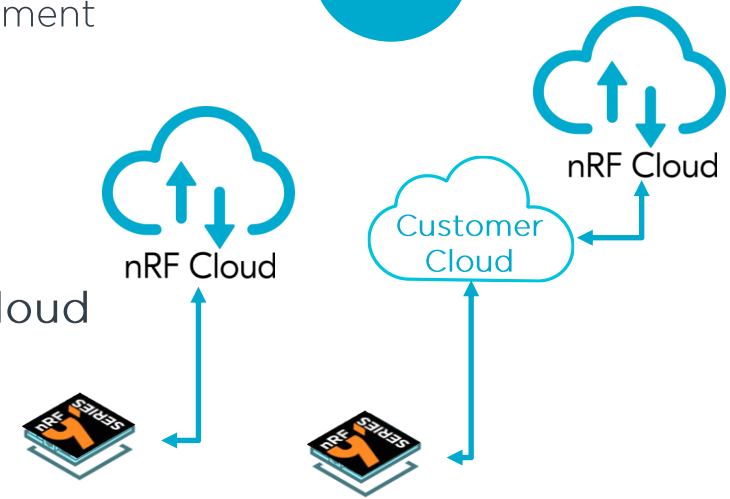
- SIM management

nRF Cloud

- Location Services
  - Single/Multi cell and Assisted/Predicted GPS
- Device management Services
  - nRF9160 DK, Thingy:91 & Custom nRF9160 HW
  - FOTA updates, Monitoring, Multi-users, SIM management
- Platform Services
  - Device API, Security, User data

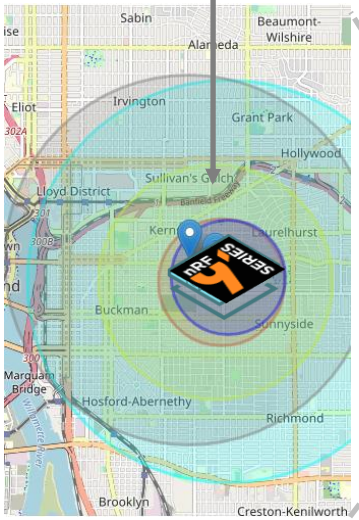
- Support for Device-to-cloud and Cloud-to-cloud
- Samples in nRF Connect SDK

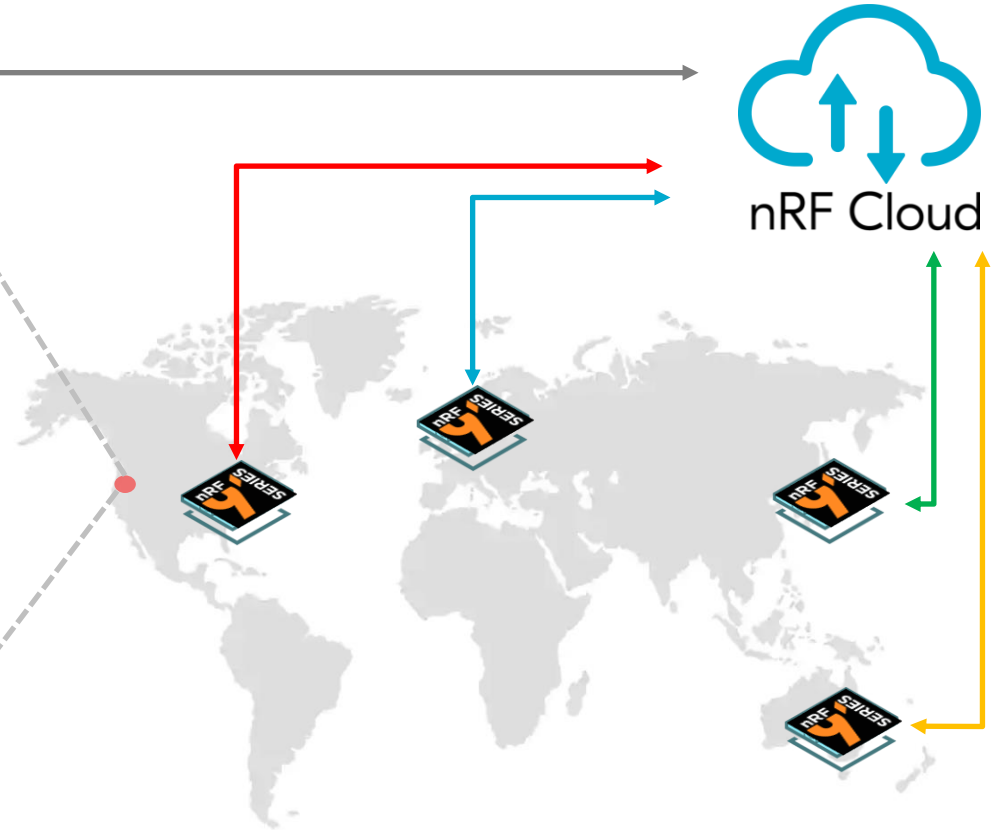




nRF Cloud LTE Location Services

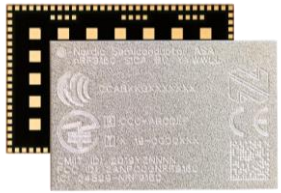
The best accuracy with the help of vendor data





Complete low power cellular IoT solution

nRF9160



Dedicated application processor and memory

Multimode LTE-M / NB-IoT modem with integrated RFFE and GPS support

Ultra Low Power

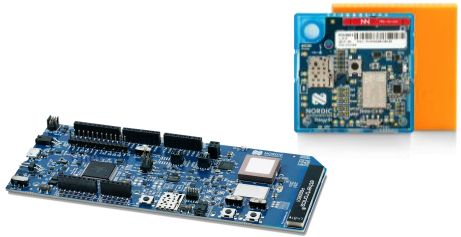
nRF Connect

nRF Connect SDK

nRF Connect for Desktop

nRF Connect for Mobile

nRF9160 DK & Thingy:91



Standalone development kit for the nRF9160 SiP

eSIM from iBasis + 10MB

nRF52840 board controller with Bluetooth LE

LTE, GPS, and 2.4 GHz antennas

nRF Cloud

Cloud-to-cloud support

Location services

FOTA services

More to come!

Support and community

nRF9160, firmware and SDK all developed and supported by Nordic!

So How to Get Started ?

1. Order a kit from our preferred Distributors today

- Thingy:91 – battery powered, includes many sensors, small and mobile*
- nRF9160 DK – include debugger and expansion headers*
  - *order a local SIM if the iBasis coverage is not sufficient

2. Create user account on nRF Cloud

- Unpack your kit and get connected - 8-step guide on nordicsemi.com/thingy91
- Configure and monitor your cellular device
- nRF Cloud documentation available here

3. Download nRF Connect for Desktop w/the Toolchain Manager

- Install the toolchain which includes the SES IDE or nRF Connect for VS code
- nRF Connect SDK is automatically downloaded from Toolchain manager
- Use Getting started assistant on Linux

All set to dive into our Getting started guides, videos and webinars.

Latest features

- Improved nRF9160 SiP (Revision 2)
- nRF Connect SDK v1.7.0
- Modem Firmware v1.3.0
- nRF Cloud Services
- nRF Connect for VS code

Register for upcoming Nordic Tech Webinars

webinars.nordicsemi.com

Q&A

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