

Authentication With nRF Connect

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1 Introduction

nRF Connect for Mobile is a powerful generic tool provided by Nordic Semiconductor ASA, it allows to scan and explore Bluetooth Low Energy (BLE) devices and communicate with them.

It's available on both the Play Store and the App Store

Play Store

<https://play.google.com/store/apps/details?id=no.nordicsemi.android.mcp>

App Store

<https://apps.apple.com/fr/app/nrf-connect-for-mobile/id1054362403>

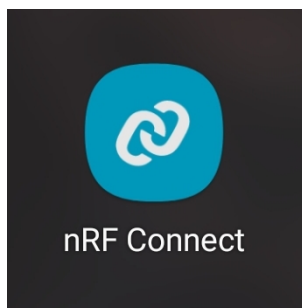


Figure 1: nRFConnect Icon

This document will guide you on using nRF Connect to establish a connection with the Munic dongle and write the authentication token

2 Authentication using nRF Connect

2.1 Find the Dongle

First start scan process (the Location feature should be on).

The dongle default name is MUNIC_<Serial Number><The last IMEI 2 digits>

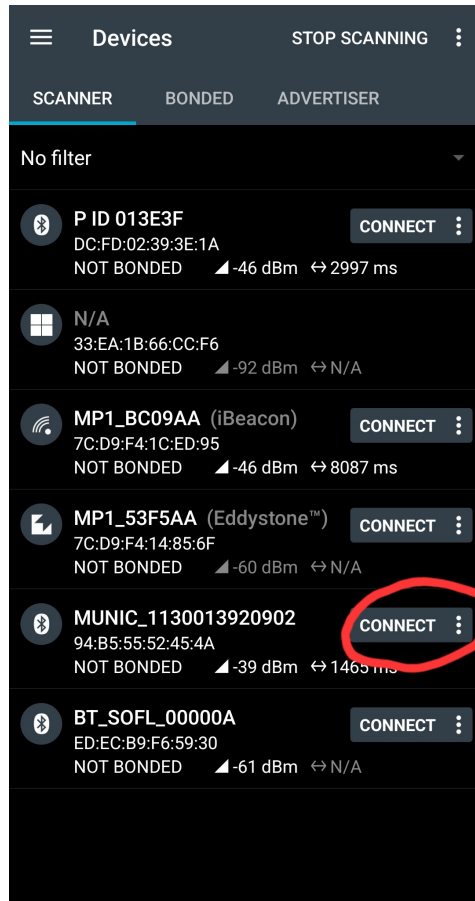


Figure 2: nRFConnect Scan

Click 'Connect' to initiate the LE Connection request once the Muncic dongle is discovered.

2.2 Select the Authentication Service

After a successful connection, a new tab will open, providing a comprehensive list of all available Generic Attribute Profile (GATT) services offered by all the connected Bluetooth devices.

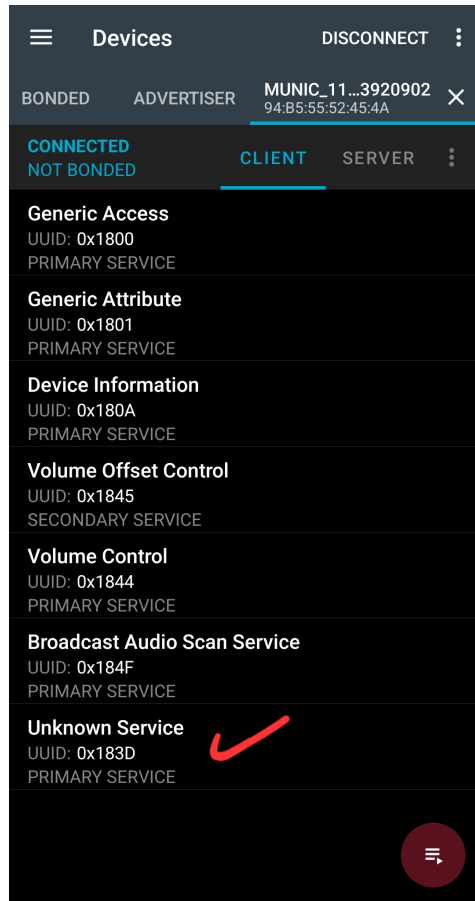


Figure 3: nRFConnect Select Service

The Authentication Service UUID is 0000183D-0000-1000-8000-00805F9B34FB.

nRF Connect shows the 16-bit version of the UUID which is 0x183D.

Click on the Authentication Service to show the characteristics list.

2.3 Write the token parts

As shown in the picture below, there are two characteristics:

Characteristic	UUID	Mandatory Properties
Payload	8ba5d3a5-b597-4ff7-ae8d-6a47b34c6d88	Write
Push	8ba5d3a6-b597-4ff7-ae8d-6a47b34c6d88	Write

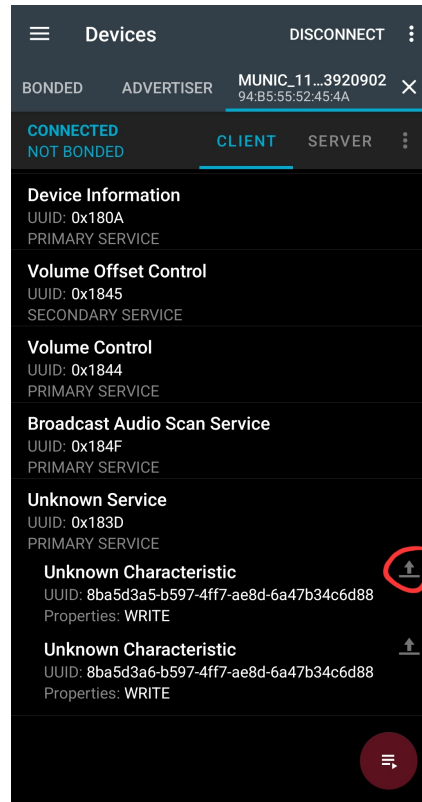


Figure 4: nRFConnect Write Token Part 1

Click on the write button at the right of the Payload characteristic (8ba5d3a5-b597-4ff7-ae8d-6a47b34c6d88) to send the token parts

Write the token first part in text mode as shown below and click on the Send button.

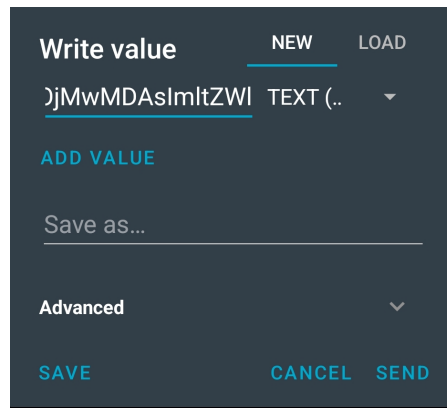
A dark-themed dialog box titled "Write value". It has two tabs at the top: "NEW" (selected) and "LOAD". Below the tabs is a text input field containing the value "JjMwMDAslmltZWl", which is underlined. To the right of the input field is a dropdown menu showing "TEXT (..)". Below the input field is a cyan button labeled "ADD VALUE". Underneath that is a "Save as..." label followed by a horizontal line for a filename. Below the filename field is a label "Advanced" with a downward-pointing chevron. At the bottom of the dialog are three cyan buttons: "SAVE", "CANCEL", and "SEND".

Figure 5: nRFConnect Write Token Part 1

The ATT MTU size is limited to 517, the token needs to be segmented to 512 bytes parts. See [Authentication Service Specification](#) for more details.

Repeat the operation until all the parts are sent.

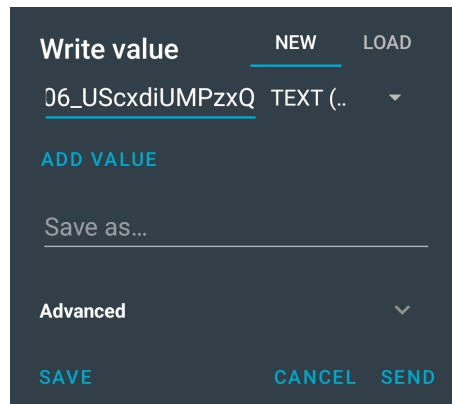
A dark-themed dialog box titled "Write value". It has two tabs at the top: "NEW" (selected) and "LOAD". Below the tabs is a text input field containing the value "06_UScxdUMPzxQ", which is underlined. To the right of the input field is a dropdown menu showing "TEXT (..)". Below the input field is a cyan button labeled "ADD VALUE". Underneath that is a "Save as..." label followed by a horizontal line for a filename. Below the filename field is a label "Advanced" with a downward-pointing chevron. At the bottom of the dialog are three cyan buttons: "SAVE", "CANCEL", and "SEND".

Figure 6: nRFConnect Write Token last Part

2.4 Validate the token

Click on the write button at the right of the Push characteristic (8ba5d3a6-b597-4ff7-ae8d-6a47b34c6d88) to push and validate the token parts

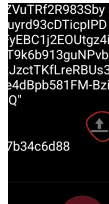


Figure 7: nRFConnect Write Push

Write the value 1 as an UINT8

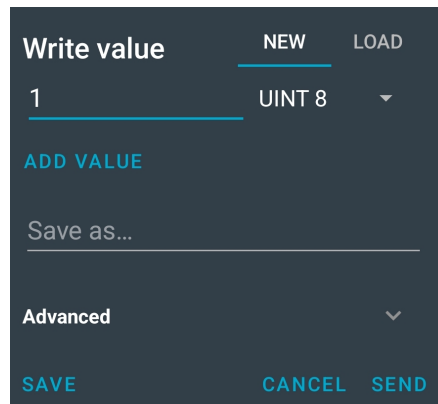


Figure 8: nRFConnect Write Push

If the authentication succeeds, the dongle will send the driver information to the Munic cloud.



Figure 9: nRFConnect Token

2.5 Checking the logs

A slide from the left to the right displays the log screen.

It can be used to check the exchanges between the phone and the dongle.

As shown below the MTU size was updated to the limit 517 bytes.

The green logs are used to inform that the operation has succeeded.

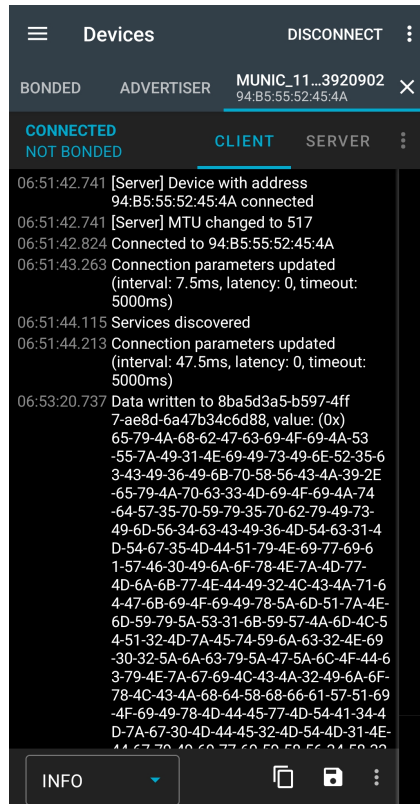


Figure 10: nRFConnect Log 1

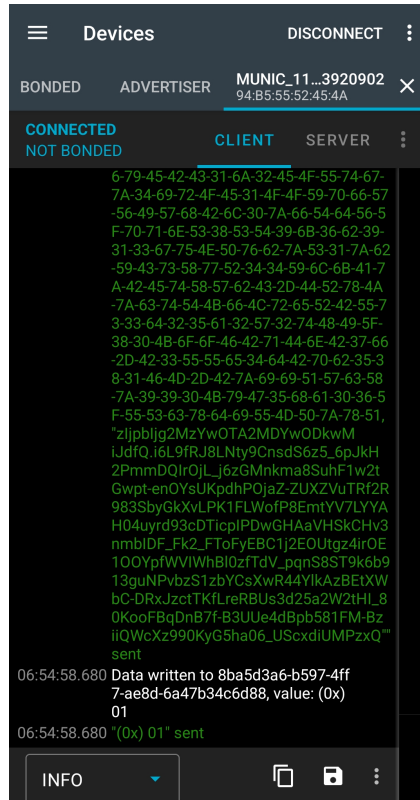


Figure 11: nRFConnect Log 2