

openHAB with Bluetooth

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During another problem/trouble shooting I ran:

```
sudo systemctl stop openhab2
sudo openhab-cli clean-cache
sudo systemctl start openhab2
```

That seems to remove the BT Bindings... but a reinstall fixed it (and no Things was lost)

As my [openHAB](#) installation is on a Laptop with Ubuntu 18-04 (Server, no UI) i knew that [Bluetooth](#) (BT) was somewhat available.

The main purpose of playing with BT is "whos home" and "when has a devices been seen last time" - do look at [this link](#), as we will use this excellent binding.

An interesting part to notice there is:



The easiest and most effective way to detect presence is to use so called "[Bluetooth beacon](#)" devices.

Normally, most of Bluetooth devices broadcast messages, however there are some devices that try to hide themselves from receivers providing privacy for their owners. Many of modern mobile phones (iPhone and Android) every so often (roughly every 10 minutes) randomly generate a new Bluetooth address and abandon old one making it impossible to track them by its address.

The latter part being a problem I think. Do read these links: [Bluetooth Technology Protecting Your Privacy](#) and [MAC address randomization joins Apples heap of iOS 8.....](#)



Theres a excellent community thread at <https://community.openhab.org/t/3rd-party-bluetooth-binding-beta-testers-needed> for this Binding

Add BT Support in Ubuntu

First discovery was that the Ubuntu OS had no BT installed, so we need to do this:

```

sudo apt-get install bluez
sudo systemctl status bluetooth
? bluetooth.service - Bluetooth service
   Loaded: loaded (/lib/systemd/system/bluetooth.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2019-01-23 18:27:43 UTC; 2 days ago
     Docs: man:bluetoothd(8)
  Main PID: 14880 (bluetoothd)
   Status: "Running"
    Tasks: 1 (limit: 3930)
   CGroup: /system.slice/bluetooth.service
           ??14880 /usr/lib/bluetooth/bluetoothd

Jan 23 18:27:43 robin systemd[1]: Starting Bluetooth service...
Jan 23 18:27:43 robin bluetoothd[14880]: Bluetooth daemon 5.48
Jan 23 18:27:43 robin bluetoothd[14880]: Starting SDP server
Jan 23 18:27:43 robin systemd[1]: Started Bluetooth service.
Jan 23 18:27:43 robin bluetoothd[14880]: Bluetooth management interface 1.14 initialized

```

Ok, so BT was up and running, and to make sure openHAB could use it:

```

sudo usermod -a -G bluetooth openhab
sudo systemctl daemon-reload
sudo systemctl restart bluetooth

```

Test discovery and functionality

A little testing of discovery etc:

```

sudo bluetoothctl
[NEW] Controller F0:03:8C:61:7E:2E Bluetooth robin [default]
[NEW] Device 08:6D:41:E7:FF:7B 08-6D-41-E7-FF-7B
[NEW] Device 53:EA:0B:88:DC:13 53-EA-0B-88-DC-13
Agent registered
[CHG] Device 08:6D:41:E7:FF:7B RSSI: -79
[bluetooth]# list
Controller F0:03:8C:61:7E:2E Bluetooth robin [default]
[bluetooth]#
[bluetooth]# show
Controller F0:03:8C:61:7E:2E (public)
    Name: robin
    Alias: Bluetooth robin
    Class: 0x0000010c
    Powered: yes
    Discoverable: no
    Pairable: yes
    UUID: Generic Attribute Profile (00001801-0000-1000-8000-00805f9b34fb)
    UUID: A/V Remote Control (0000110e-0000-1000-8000-00805f9b34fb)
    UUID: PnP Information (00001200-0000-1000-8000-00805f9b34fb)
    UUID: A/V Remote Control Target (0000110c-0000-1000-8000-00805f9b34fb)
    UUID: Generic Access Profile (00001800-0000-1000-8000-00805f9b34fb)
    Modalias: usb:v1D6Bp0246d0530
    Discovering: yes
[bluetooth]#

```

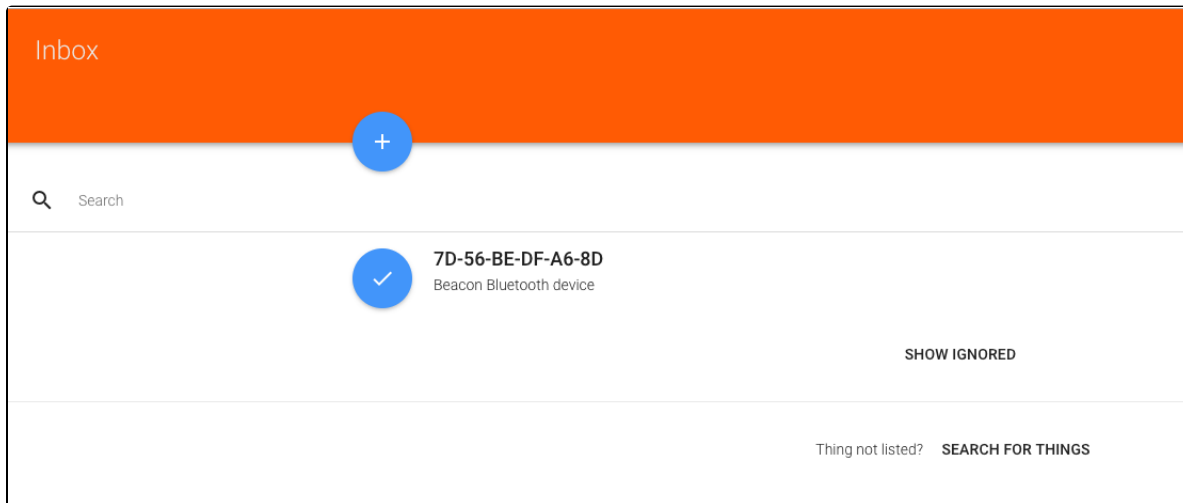
Scan for devices:

```
[bluetooth]# scan on
Discovery started
[CHG] Device 08:6D:41:E7:FF:7B RSSI: -79
[CHG] Device 08:6D:41:E7:FF:7B RSSI: -78
[CHG] Device 53:EA:0B:88:DC:13 RSSI: -75
[CHG] Device 53:EA:0B:88:DC:13 ManufacturerData Key: 0x004c
[CHG] Device 53:EA:0B:88:DC:13 ManufacturerData Value:
  0c 0e 08 f4 f0 09 f7 7f b0 f5 01 69 dd 37 b6 eb .....i.7..
[CHG] Device 53:EA:0B:88:DC:13 RSSI: -75
[CHG] Device 53:EA:0B:88:DC:13 ManufacturerData Key: 0x004c
[CHG] Device 53:EA:0B:88:DC:13 ManufacturerData Value:
  0c 0e 08 f5 f0 21 56 5b 46 b4 8c 0a 54 79 16 02 .....!V[F...Ty..
[CHG] Device 08:6D:41:E7:FF:7B RSSI: -78
[CHG] Device 53:EA:0B:88:DC:13 RSSI: -76
[CHG] Device 08:6D:41:E7:FF:7B RSSI: -81
[bluetooth]#
[CHG] Device 53:EA:0B:88:DC:13 RSSI: -78
```

Installing Addons in openHAB

OK - so we are ready for openHAB - the short story is to follow <https://github.com/sputnikdev/eclipse-smarthome-bluetooth-binding> - (remember to press "Save" in the Configuration System Market dialog 😊) You need to use a 3rd party BT binding that is not pr. default available in openHAB.

Follow the [installation](#), and You should be running - this should be quite clear in the inbox, it should be populated with discovered devices...



Managing BT Devices

This is actually where it gets tricky and I am partly **stucked**, as I am having a hard time pairing a lot (Yes, You have a lot of BT devices in Your home and the tip in the top Tip Box may play a part here) and their [MAC addresses](#) to real physical devices.

BT Devices has a [MAC address](#) like a Network Interface, and there are several ways to discover devices and addresses:

MACOS

```
batman:~ bnp$ system_profiler SPBluetoothDataType
Bluetooth:

    Apple Bluetooth Software Version: 6.0.9f2
```

Hardware, Features, and Settings:

Name: batman
Address: 08-6D-41-E7-FF-7B
Bluetooth Low Energy Supported: Yes
Handoff Supported: Yes
Instant Hot Spot Supported: Yes
Manufacturer: Broadcom
Transport: USB
Chipset: 20702B0
Firmware Version: v149 c9314
Bluetooth Power: On
Discoverable: Off
Connectable: Yes
Auto Seek Pointing: On
Remote wake: On
Vendor ID: 0x05AC
Product ID: 0x8289
HCI Version: 4.0 (0x6)
HCI Revision: 0x2462
LMP Version: 4.0 (0x6)
LMP Subversion: 0x4195
Device Type (Major): Computer
Device Type (Complete): Mac Desktop
Composite Class Of Device: 0x380104
Device Class (Major): 0x01
Device Class (Minor): 0x01
Service Class: 0x1C0
Auto Seek Keyboard: On

Devices (Paired, Configured, etc.):

Normann P. Nielsen's Mouse #2:
Address: B8-44-D9-F1-15-59
Major Type: Peripheral
Minor Type: Mouse
Services: Magic Mouse 2
Paired: Yes
Configured: Yes
Connected: Yes
Manufacturer: Broadcom (0x5, 0x240C)
Battery Level: 67%
Firmware Version: 0x0064
Vendor ID: 0x004C
Product ID: 0x0269
Class of Device: 0x05 0x20 0x0580
AFH: On
AFH Map: F9FFFF7FFFFDBFFFF7F
RSSI: -45
Role: Master
Connection Mode: Sniff Mode
Interval: 11.25 ms
Host Connectable: Yes
EDR Supported: Yes
eSCO Supported: No
SSP Supported: Yes

Soveværelse:

Address: D0-03-4B-E5-A3-73
Major Type: Miscellaneous
Minor Type: Unknown
Services:
Paired: No
Configured: Yes
Connected: No
Class of Device: 0x00 0x00 0x0000

Apple TV:

Address: C8-D0-83-C5-BB-4C
Major Type: Miscellaneous
Minor Type: Unknown
Services:
Paired: No
Configured: Yes
Connected: No
Class of Device: 0x00 0x00 0x0000

Anette W. Nielsens iPhone:
Address: 4C-7C-5F-7D-8A-4A
Major Type: Miscellaneous
Minor Type: Unknown
Services:
Paired: No
Configured: Yes
Connected: No
Class of Device: 0x00 0x00 0x0000

jarvis (2):
Address: 78-4F-43-A0-21-3A
Major Type: Miscellaneous
Minor Type: Unknown
Services:
Paired: No
Configured: Yes
Connected: No
Class of Device: 0x00 0x00 0x0000

Normann P. Nielsen's iPad:
Address: 54-AE-27-10-02-87
Major Type: Miscellaneous
Minor Type: Unknown
Services:
Paired: No
Configured: Yes
Connected: No
Class of Device: 0x00 0x00 0x0000

Normann P.'s iPhone:
Address: 90-B0-ED-99-75-28
Major Type: Miscellaneous
Minor Type: Unknown
Services:
Paired: No
Configured: Yes
Connected: No
Class of Device: 0x00 0x00 0x0000

iPhone:
Address: 80-EA-96-16-60-B7
Major Type: Miscellaneous
Minor Type: Unknown
Services:
Paired: No
Configured: Yes
Connected: No
Class of Device: 0x00 0x00 0x0000

Normann P.'s iPhone:
Address: 34-AB-37-EF-C3-CE
Major Type: Miscellaneous
Minor Type: Unknown
Services:
Paired: No
Configured: Yes
Connected: No
Class of Device: 0x00 0x00 0x0000

Services:

Bluetooth File Transfer:
Folder other devices can browse: ~/Public
When receiving items: Accept all without warning
State: Disabled

Bluetooth File Exchange:
Folder for accepted items: ~/Downloads
When other items are accepted: Save to location
When receiving items: Accept all without warning
State: Disabled

Bluetooth Internet Sharing:
State: Disabled

Incoming Serial Ports:
Bluetooth-Incoming-Port:
RFCOMM Channel: 3
Requires Authentication: No

```
batman:~ bnp$
```

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Please read this [document](#) to get more information about the newly released Data Center version.

Linux

```
sudo bluetoothctl
[NEW] Controller F0:03:8C:61:7E:2E Bluetooth robin [default]
[NEW] Device 08:6D:41:E7:FF:7B 08-6D-41-E7-FF-7B
[NEW] Device 53:EA:0B:88:DC:13 53-EA-0B-88-DC-13
Agent registered
[CHG] Device 08:6D:41:E7:FF:7B RSSI: -79
[bluetooth]# list
Controller F0:03:8C:61:7E:2E Bluetooth robin [default]
[bluetooth]#
[bluetooth]# show
Controller F0:03:8C:61:7E:2E (public)
    Name: robin
    Alias: Bluetooth robin
    Class: 0x0000010c
    Powered: yes
    Discoverable: no
    Pairable: yes
    UUID: Generic Attribute Profile (00001801-0000-1000-8000-00805f9b34fb)
    UUID: A/V Remote Control (0000110e-0000-1000-8000-00805f9b34fb)
    UUID: PnP Information (00001200-0000-1000-8000-00805f9b34fb)
    UUID: A/V Remote Control Target (0000110c-0000-1000-8000-00805f9b34fb)
    UUID: Generic Access Profile (00001800-0000-1000-8000-00805f9b34fb)
    Modalias: usb:v1D6Bp0246d0530
    Discovering: yes
[bluetooth]#
```

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iOS Apps

Sort

LightBlue | Explorer

Filter

Peripherals Nearby

**Stue**

-73

No services

**Unnamed**

-73

No services

**batman**

-91

No services

**Soveværelse**

-68

No services

**Unnamed**

-65

No services

**Normann P.'s iPhone**

-62

No services

**Unnamed**

???

No services

**BB-72B3**

-86

1 service

**Unnamed**

???

No services



Virtual Peripherals

**Create Virtual Peripheral**

Normann P.'s iPhone

UUID: 23B660EE-54D0-425D-9BB7-F2711CEB7A5E

Connected

ADVERTISEMENT DATA

[Show](#)

UUID: D0611E78-BBB4-4591-A5F8-487910AE4366

0x8667556C-9A37-4C91-84ED-54EE27D90049

Properties: Write Notify



UUID: 9FA480E0-4967-4542-9390-D343DC5D04AE

0xAF0BADB1-5B99-43CD-917A-A77BC549E3CC

Properties: Write Notify



Battery Service

Battery Level

58%



Current Time Service

Current Time

Properties: Read Notify



Local Time Information

Properties: Read



Device Information

Manufacturer Name String

Apple Inc.



Model Number String

iPhone8,2



UUID: 440FFB00-F6A5-491A-A3CE-9107B001DEA8



BB-72B3

UUID: 103D5844-075D-9E62-FEE5-791EA91682B8

Connected

ADVERTISEMENT DATA

[Show](#)

UUID: 22BB746F-2BA0-7554-2D6F-726568705327

0x22BB746F-2BA1-7554-2D6F-726568705327

Properties: Write



0x22BB746F-2BA6-7554-2D6F-726568705327

Properties: Notify



UUID: 22BB746F-2BB0-7554-2D6F-726568705327

0x22BB746F-2BB1-7554-2D6F-726568705327

Properties: Read Write



0x22BB746F-2BB2-7554-2D6F-726568705327

Properties: Write



0x22BB746F-2BB6-7554-2D6F-726568705327

Properties: Read Write Notify



0x22BB746F-2BB7-7554-2D6F-726568705327

Properties: Read Write



0x22BB746F-2BB8-7554-2D6F-726568705327

Properties: Read



0x22BB746F-2BB9-7554-2D6F-726568705327

Properties: Read



0x22BB746F-2BBA-7554-2D6F-726568705327

Properties: Read



0x22BB746F-2BBD-7554-2D6F-726568705327

Properties: Write



0x22BB746F-2BBE-7554-2D6F-726568705327

Properties: Read Write



0x22BB746F-2BBF-7554-2D6F-726568705327

Properties: Read Write



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What I do notice, it the the name of the devices is rarely present, and that the [MAC address](#) rarely matches the MAC addresses found in openHAB. That is currently an ongoing investigation. Any good clues here? Feel free to mail me at bnp@mos-eisley.dk or drop a comment

There are several lookup tools like <https://macaddresschanger.com/bluetooth-mac-lookup> that should help, but I find the reliability of them low... often my MACs are not resolved to a Vendor

A Thing in openHAB

A few samples of discovered BT [Things](#) in [openHAB](#), its worth noticing that the capabilities can differ quite a lot - refer to [Bluetooth on Wikipedia](#); currently the specs range from version 1 to 5:

Configuration > Things > Apple TV Soveværelse

Apple TV Soveværelse

BLE enabled Bluetooth device

This thing is used for newer versions of Bluetooth devices which supports BLE technology. All binding features are supported by this thing.

Status: **OFFLINE**

Channels

Online
bluetooth:ble:D0034BE5A373:online
Switch

Connected
bluetooth:ble:D0034BE5A373:connected
Switch

Authenticated
bluetooth:ble:D0034BE5A373:authenticated
Switch

Connection control
bluetooth:ble:D0034BE5A373:connection-control
Switch

Connected adapter
bluetooth:ble:D0034BE5A373:connected-adapter
String

Nearest adapter
bluetooth:ble:D0034BE5A373:adapter
String

Location
bluetooth:ble:D0034BE5A373:location
String



TomTom GPS Watch

BLE enabled Bluetooth device

This thing is used for newer versions of Bluetooth devices which supports BLE technology. All binding features are supported by this thing.

Status: **OFFLINE**

Channels



Online

bluetooth:ble:E4043943D0CB:online
Switch



Connected

bluetooth:ble:E4043943D0CB:connected
Switch



Authenticated

bluetooth:ble:E4043943D0CB:authenticated
Switch



Connection control

bluetooth:ble:E4043943D0CB:connection-control
Switch



Connected adapter

bluetooth:ble:E4043943D0CB:connected-adapter
String



Nearest adapter

bluetooth:ble:E4043943D0CB:adapter
String



Location

bluetooth:ble:E4043943D0CB:location
String



WOOFit JAM

Generic Bluetooth device

This thing is intended to be used for older versions of Bluetooth devices (prior to 4.0) which do not support BLE technology. Only Presence detection and Indoor positioning is available for this type of Bluetooth devices.

Status: **OFFLINE**

Channels



Online

bluetooth:generic:00230139C6CE:online
Switch



Nearest adapter

bluetooth:generic:00230139C6CE:adapter
String



Location

bluetooth:generic:00230139C6CE:location
String