

How to scan BLE devices

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This page lists the different operations needed to scan, connect and display BLE device information. BLE stands for **B**luetooth **L**ow **E**nergy

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1 Packages needed

- bluez5

2 Configuration

Init file modification for automatic Bluetooth start
/etc/udev/rules.d/10-local.rules:

```
# Set bluetooth power up  
ACTION=="add", KERNEL=="hci0", RUN+="/usr/bin/hciconfig hci0 up"
```

3 Existing tool selection

Bluez provides some tools, by default, to analyze Bluetooth networks.

hciconfig to configure hci connections

hcitool to scan, find a device, connect to a device, manage a device list.. deviceS may be normal or low energy

gatttool for BLE device management

3.1 BLE device connection step-by-step

Command to scan all low-energy Bluetooth hardware:

```
Board $> hciconfig hci0 up  
Board $> hcitool lescan
```

To scan available BLE devices:

```
Board $> hcitool lewladd <BLE_MAC_ADDRESS>
```

To add BLE device in the white list (optional):

```
Board $> hcitool lecc <BLE_MAC_ADDRESS>
```

To connect a BLE device:

Once a BLE device is identified, its characteristics (attributes) can be discovered, read and modified using [GATTTTOOL](#).

[GATTTTOOL](#) offers two working modes: interactive and non-interactive

3.1.1 Gatttool Interactive mode

```
Board $> gatttool -b <MAC Address> --interactive
```

In interactive mode, a new prompt is available to perform BLE commands.

connect: to connect to a specified device

primary: to disable all primary attributes

char-read-hnd <handle> to read specified handle/attribute values

char-write-cmd <handle> <value> to modify handle values

3.1.2 Gatttool Non-interactive mode:

In non-interactive mode, commands are issued one by one. At each command, [GATTTTOOL](#) performs device connection, action and disconnection.

Few a few examples are given below:

```
Board $> gatttool -b <Mac Address> --primary
```

```
Board $> gatttool -b <MAC Address> --characteristics
```

```
Board $> gatttool -b <MAC Address> --char-read
```

```
Board $> gatttool -b <MAC Address> --char-desc
```