JAWS

- Bluetooth itself provides no multihop functionality
  - software like JAWS must handle this (connections and packet transports)

- Communication Layer: L2CAP (connectionless)
  - packet-oriented
  - Multiplexing: PSM

```
l2cap_cl_init(bt_stack, psmux);
```
Connection Manager

- autonomous construction of a topology

```
cm_init(bt_stack, psmux, CM_PSM, con_table_cb, CM_COD);
```
Connection Manager (TCM)

- Tree CM

```
#include <cm/cm_tree.h>
```

```
multihop services

TM

CM

Bluetooth
```

```
#include <cm/cm_tree.h>
```
Connection Manager (XCM)

- XTC CM (recommended)

```cpp
#include <cm/cm_xtc.h>
```

```
#include <cm/cm_xtc.h>
```
Transport Manager

- forwards packets to the destination

```
mhop_cl_init(bt_stack, psmux, MHOP_PSM, FWD_PSM, fwd_bufs, con_table_cb);
```
Initialisation

- \( \text{mhop}\_\text{init} = \text{l2cap}\_\text{cl}\_\text{init} + \text{cm}\_\text{init} + \text{mhop}\_\text{cl}\_\text{init} \)
Multihop Services

- register psm/service
  
  ```c
  service_nr = bt_psm_service_register(psmux, SERVICE_PSM, data_cb, cb_arg);
  ```

- set packet buffer
  
  ```c
  bt_psm_service_set_buffers(psmux, service_nr, pkt_bufs, msg_bearer);
  ```

- send packet (multihop)
  
  ```c
  mhop_cl_send_pkt(&payload, len, SOURCE_RECORD, VERBOSE, ttl, dest_addr, SERVICE_PSM);
  ```
Further Readings

- Example code: btnut/app/mhop-blink