Scapy BTBB Demo

- This demo serves as a brief scapy tutorial but more importantly, it illustrates the btbb layer in Scapy
- it also demonstrates utilities and helpers provided by the library
- if you have issues installing the btbb scapy module, please refer to the documentation at hackgnar.com

library imports

- import everything from scapy for the demo
- import everything from the btbb Scapy module

In [2]:
```
from scapy.all import *
from btbb import *
```

Open btbb pcap file:

- btbb pcap files for this demo were created with Kismet and Ubertooth
- - these can also be created by other means such as USRP and Kismet, etc

In [3]:
```
btbb_pcaps = PcapReader('small.pcapbtbb')
```

Read one packet from the pcap file:

- btbb packet is read pcap file and instantiated as Scapy packet

In [4]:
```
pkt = btbb_pcaps.read_packet()
```

Packet sample:

- nothing special about this packet. Looks like a typical Ethernet packet
- btbb packets are layered on top of the ethernet layer much like the wireshark btbb layout
- when nothing is present in the btbb layer, these look exactly like ethernet packets

In [5]:
```
pkt.show()
```

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```
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```

```
###[ Ethernet ]###
  dst       = 00:00:00:00:00:00
  src       = 00:00:00:ed:1d:9c
  type      = 0xfff0
```

Interactively iterate through packets:

- we can run the following over and over to look though packets

In [6]:
```
pkt = btbb_pcaps.read_packet()
pkt.show()
```

...

In [7]:
```
pkt.summary()
```

Out[7]:
```
'00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)'
```

Conditionally iterate though btbb pcap file:

- iterate though the pcap file
- display summary data for all packets
- display detailed data if a btbb payload exists

In [8]:
```
for pkt in btbb_pcaps:
    print pkt.summary()
    if pkt.haslayer('BtbbPayload'):
        pkt.show()
        break
```

```
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket / BtbbPayload
###[ Ethernet ]###
  dst       = 00:00:00:00:00:00
  src       = 00:00:36:ed:1d:9c
  type      = 0xfff0
###[ btbb ]###
###[ meta ]###
        CLK       = 0x7000000L
        Channel   = 39L
        Padding   = 0L
        known address bits= 32 (NAP unknown)
```

```
        known clock bits= 6
###[ packet ]###
           type      = DH1/2-DH1
           LT_ADDR   = 0x1L
           SEQN_Flag = 1L
           ARQN_Flag = 0L
           FLOW_Flag = 1L
           HEC       = 0xc9
###[ payload ]###
              header_length= 3L
              header_flow= 1L
              header_LLID= 0L
              body      = '\x0e\x13\xd1'
              CRC       = 0x6209L
```

Packet list

- instantiate the rest of the packets into a list of packets

In [9]:
```
btbb_pkt_list = btbb_pcaps.read_all()
```

In [10]:
```
print len(btbb_pkt_list)
for item in btbb_pkt_list[:5]:
    print item.summary()
```

```
456
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
```

Write btbb pcap files:

- we can also write btbb packets back to new pcap files if we like

In [11]:
```
pcapbtbb_writer = PcapWriter('new_pcap_file.pcapbtbb')
pcapbtbb_writer.write(btbb_pkt_list)
```

In [12]:
```
!ls -li new_pcap_file.pcapbtbb
```

```
1897204  -rw-r--r--  1 ripper  staff  16408 Jul 10 21:44
```

```
new_pcap_file.pcapbtbb
```

In [13]:
```
new_btbb_pkts = PcapReader("new_pcap_file.pcapbtbb")
pkts = new_btbb_pkts.read_all()
print len(pkts)
for i in pkts[:5]:
    print i.summary()
```

```
412
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
```

In [14]:
```
new_btbb_pkts.close()
btbb_pcaps.close()
```

Btbb Pcap File Stream:

- Generic way to stream data from bluetooth baseband hardware
- Relies on the fact that they have a way to write btbb pcap files
- Allows for interactive real time packet monitoring

In [15]:
```
log_dir = "path/to/kismet/logs"
latest_file = !ls -t1 $log_dir|head -1
latest_file = log_dir + '/' + latest_file[0]
latest_file
```

Out[15]:
```
'path/to/kismet/logs/kismet-log.pcapbtbb'
```

In [16]:
```
btbb_stream = BtbbPcapStreamer(latest_file)
```

In [17]:
```
for pkt in btbb_stream.stream(output='packet'):
    print pkt.summary()
```

```
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
```

```
BtbbPacket / BtbbPayload
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
```

In [20]:
```
btbb_stream.close()
```

Btbb layer helper methods

- a sample of some of the helper methods provided by scapy btbb
- lets open a new pcap file, read in the packets and define some vars first

In [22]:
```
manuf_file='path/to/wireshark/manuf'
!wc -l $manuf_file
```

```
    20805 path/to/wireshark/manuf
```

In [23]:
```
btbb_pcaps = PcapReader('small.pcapbtbb')
pkts = btbb_pcaps.read_all()
```

In [24]:
```
for i in range(10):
    print i , pkts[i].summary()
```

```
0 00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
1 00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
2 00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
3 00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
4 00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
5 00:00:00:ed:1d:9c > 00:00:00:00:00:00 (0xfff0)
6 00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket / BtbbPayload
7 00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
8 00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
9 00:00:36:ed:1d:9c > 00:00:00:00:00:00 (0xfff0) / Btbb / BtbbMeta /
BtbbPacket
```

Vendor lookup:

- can lookup vendor based on a bluetooth address
- can lookup vendor based on packet
- vendor determination is more accurate when both nap and uap are known
- when only a uap is know, a list of possible vendors and associated nap is returned
- if your wireshark manuf file is not in a default location you must specify as seen below

```
In [25]: get_vendor('00:11:36:ed:1d:9c', manuf_file=manuf_file)
```

```
Out[25]: [('00:11:36', 'Goodrich')]
```

```
In [26]: possible_vendors = get_vendor(pkts[6],manuf_file=manuf_file)
```

```
In [27]: len(possible_vendors)
```

```
Out[27]: 60
```

```
In [28]: possible_vendors[:10]
```

```
Out[28]: [('00:00:36', 'Atari'),
          ('00:01:36', 'Cybertan'),
          ('00:02:36', 'Init'),
          ('00:03:36', 'ZetesTec'),
          ('00:04:36', 'ElansatT'),
          ('00:05:36', 'DanamCom'),
          ('00:06:36', 'JedaiBro'),
          ('00:07:36', 'DataVide'),
          ('00:09:36', 'Ipetroni'),
          ('00:0A:36', 'SynelecT')]
```

Distinct bluetooth address lookup:

- distinct bluetooth addresses can be looked up
- useful for quickly determining what devices are in a list of packets
- useful for passing to other tools/modules for analysis, exploitation, etc

```
In [29]: bt_addrs = get_btaddress(*pkts)
         bt_addrs
```

```
Out[29]: ['00:00:00:c3:ec:46',
          '00:00:00:db:c1:fa',
          '00:00:36:ed:1d:9c',
          '00:00:d2:59:84:d9',
          '00:00:00:ff:c4:ab']
```

- example of sending btaddr info to the pybluez bluetooth name lookup method

In [ ]:
```
import bluetooth
for addr in bt_addrs:
    print bluetooth.lookup_name(addr)
```