

IEEE 1905 Component

1.Introduction

IEEE 1905 is to have a mechanism that lets home devices discover each other and communicate. IEEE 1905 helps devices decide: thanks to the information that travels inside 1905 messages each node in the network knows the network topology, the speed of each interface, if there are congestion problems at some point, and then decides how to route traffic or even tells other devices how to route theirs.

1.1Abstraction Layer

Abstraction layer is the component in charge of running the core protocol. It controls a node's interfaces and uses them to send periodic broadcast discovery messages to notify other ALs (running in other devices) about its presence.

1.2High Layer Entity

High layer entity is the component that queries the AL (about all the information it has gathered using CMDUs) and then sends it control messages to modify its state (basically by creating/deleting new routing rules and/or changing the power state of one or more interfaces). These messages sent/received between one HLE and one AL are called "ALMEs".

The AL entity is executed like this:

```
$ ./al_entity -m <al_mac_address> -i <interfaces_list>
```

The HLE entity is executed like this:

```
$ hle_entity -a <ip address>:<tcp port> -m <ALME request type> [ALME arguments]
```

2.Source code organization:

At the root folder we have two folders (**src** and **output**) and two files ([README.md](#) and **Makefile**)

```
.
|-- Makefile
|-- README.md
|-- LICENSE
|-- PROJECT
|-- version.txt
|
|-- output
|   |-- tmp
|
|-- src
```

3.Execution:

```
root@TurrisOmnia-GW:/usr/bin# ./al_entity -m D8:58:D7:00:A6:B5 -i eth0 -v 8888
[000.000] WARNING : [PLATFORM] No platform flavour defined. Using default values when needed.
[000.087] WARNING : [PLATFORM] No platform flavour defined. Using default values when needed.
[000.087] INFO : --> CMDU_TYPE_TOPOLOGY_DISCOVERY (eth0)
[000.125] INFO : --> LLDP BRIDGE DISCOVERY (eth0)
[055.555] INFO : <-- ALME_TYPE_GET_INTF_LIST_REQUEST
[055.555] INFO : --> ALME_TYPE_GET_INTF_LIST_RESPONSE
[055.555] WARNING : [PLATFORM] No platform flavour defined. Using default values when needed.
[060.086] WARNING : [PLATFORM] No platform flavour defined. Using default values when needed.
[060.086] INFO : --> CMDU_TYPE_TOPOLOGY_DISCOVERY (eth0)
[060.125] INFO : --> LLDP BRIDGE DISCOVERY (eth0)
[120.086] WARNING : [PLATFORM] No platform flavour defined. Using default values when needed.
[120.086] INFO : --> CMDU_TYPE_TOPOLOGY_DISCOVERY (eth0)
[120.145] INFO : --> LLDP BRIDGE DISCOVERY (eth0)
```

```
root@TurrisOmnia-GW:/usr/bin# ./hle_entity -v -a 192.168.2.18:8888 -m ALME-GET-INTF-LIST.request
[3030050.373] INFO : Displaying contents of the ALME REQUEST that is going to be sent:
[3030050.373] INFO : Displaying the bit stream associated to this ALME REQUEST structure (1 byte(s) long):
[3030050.373] INFO : 0x01
[3030050.373] INFO : Sending bit stream to 192.168.2.18:8888 (len = 1)...
[3030050.374] INFO : Sending ALME request message (1 byte(s) long)...
[3030050.374] INFO : 1 byte(s) sent
[3030050.374] INFO : ALME request sent. Closing writing end of the socket descriptor...
[3030050.374] INFO : Waiting for the ALME reply...
[3030050.374] INFO : 12 byte(s) received
[3030050.374] INFO : ALME reply received (12 bytes in total). Closing socket...
[3030050.374] INFO : Displaying bit stream associated to the ALME RESPONSE/CONFIRMATION structure (12 byte(s) long):
[3030050.374] INFO : 0x02 0x01 0xd8 0x58 0xd7 0x00 0xa6 0xb5 0x00 0x01 0x00 0x00
interface_descriptors_nr: 1
interface_descriptors[0]->interface_address: 0xd8, 0x58, 0xd7, 0x00, 0xa6, 0xb5,
interface_descriptors[0]->media_type: 1
interface_descriptors[0]->bridge_flag: 0
interface_descriptors[0]->vendor_specific_info_nr: 0
```

```
./hle_entity -v -a 192.168.2.18:8888 -m ALME-GET-METRIC.request

[1130565.443] INFO : Displaying contents of the ALME REQUEST that is going to be sent:
[1130565.443] INFO : rule_id: 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
[1130565.443] INFO : Displaying the bit stream associated to this ALME REQUEST structure (7 byte(s) long):
[1130565.443] INFO : 0x0f 0x00 0x00 0x00 0x00 0x00 0x00
[1130565.443] INFO : Sending bit stream to 192.168.2.18:8888 (len = 7)...
[1130565.444] INFO : Sending ALME request message (7 byte(s) long)...
[1130565.444] INFO : 7 byte(s) sent
[1130565.444] INFO : ALME request sent. Closing writing end of the socket descriptor...
[1130565.444] INFO : Waiting for the ALME reply...
[1130565.444] INFO : 3 byte(s) received
[1130565.444] INFO : ALME reply received (3 bytes in total). Closing socket...
[1130565.444] INFO : Displaying bit stream associated to the ALME RESPONSE/CONFIRMATION structure (3 byte(s) long):
[1130565.444] INFO : 0x10 0x00 0x07

metrics_nr: 0
```