

IEC/IEEE 60802

IA-station Model

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IA-controllers and IA-devices in IA-stations

Motivation

- The term and concept of “IA-station” was newly introduced in D1.3 – and slightly changed during D1.3 comment resolution:

IA-station

material element or assembly of one or more end station components, and none, one or more bridge components

- The terms IA-controller and IA-device have been adopted in D1.3 from the IEC Electropedia:

IA-controller

functional unit, consisting of comparing element and controlling element, that performs a specified control function

IA-device

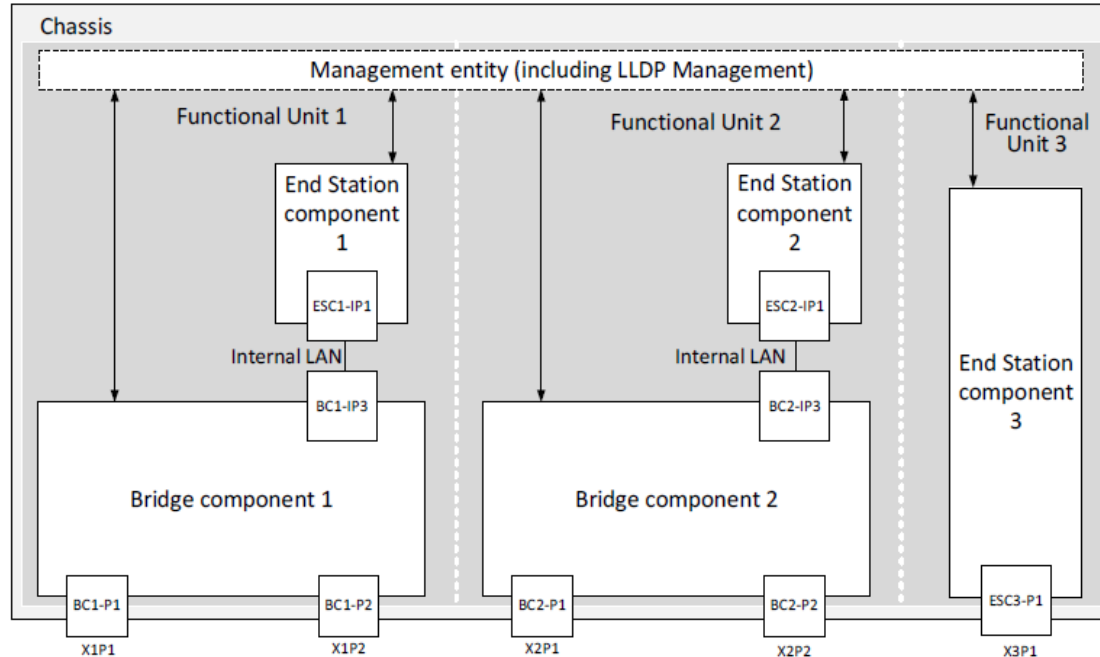
material element or assembly of such elements intended to perform a required function

- The relation between IA-stations and IA-controllers / IA-devices is not described in D1.3 – only a Note indicates:
Note 1 to entry: IA-controllers and IA-devices contain an IA-station
- The IA-station example in D1.3 (Figure 2) shows only a management view - without any IA-controller / IA-device instance.

→ This led to confusion and discussions!

60802 D1.3 IA-station model

Status quo (see Figure 2 – IA-station example): **Management view**



See D1.3 comments #127 and #140:

the relationship between **IA-stations** and **IA-controllers / IA-devices** should be described

IA-controllers and IA-devices in IA-stations

Rationale

- Talkers and Listeners are by definition located in end stations (see IEEE 802.1Q-2018).

end station: A functional unit in an IEEE 802[®] network that acts as a source of, and/or destination for, link layer data traffic carried on the network.

Listener: The end station that is the destination, receiver, or consumer of a stream.

Talker: The end station that is the source or producer of a stream.

- IA-controllers and IA-devices implement Talkers and Listeners.
→ **IA-controllers and IA-devices are end stations.**

Management in IA-stations

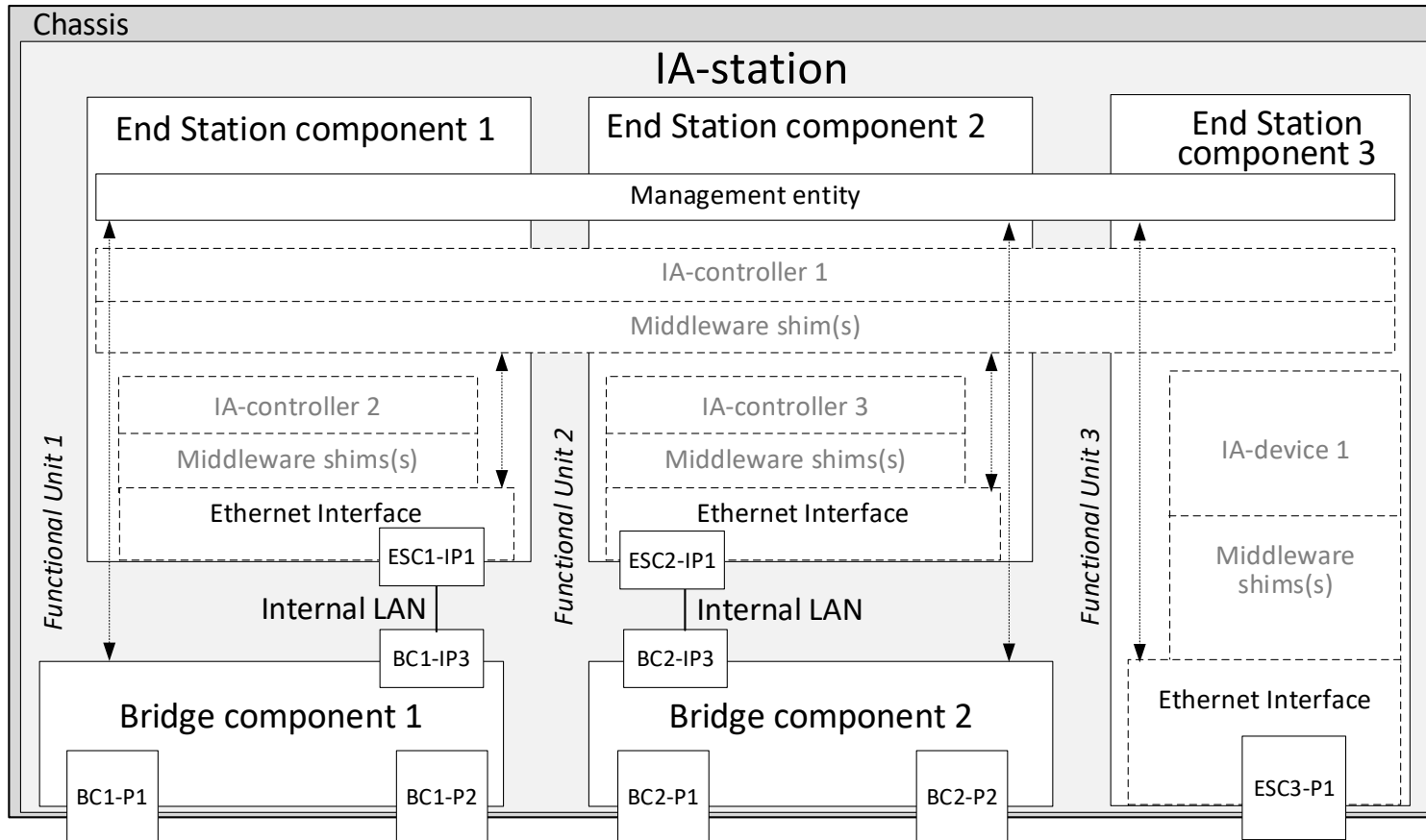
Rationale

end station: A functional unit in an IEEE 802[®] network that acts as a source of, and/or destination for, link layer data traffic carried on the network.

- Management entity acts as “*a source of, and/or destination for, link layer data traffic carried on the network*” (see IEEE 802-2014).
 - **Management entity is an end station.**

Industrial Applications in IA-stations

Proposal for enhanced Figure 2 (aligned to Figure 3 – Industrial Application)



- IA-station applications can
 - be assigned to a single end station component, or
 - encompass multiple end station components.
- Management entity is an IA-station application encompassing all end station components.
- IA-controller/-device and middleware shim(s) are out-of-scope for IEC/IEEE 60802.

Industrial Applications in IA-stations

impact on Term Definitions: proposal (2)

1. Change **IA-controller** definition:

~~functional unit~~ industrial automation function, consisting of comparing element and controlling element, that performs a specified control function

2. Change **IA-device** definition:

~~material element or assembly of such elements intended to performs a required function~~
industrial automation function, using sensor and/or actuator elements to read and/or write process data

3. Change **IA-station** definition:

material element or assembly of one or more end station components, and none, one or more bridge components that supports a claim of conformance to the TSN-IA profile

Note 1 to entry: IA-controller and IA-device ~~contain an IA-station~~ are industrial automation functions of IA-stations.

Note 2 to entry: IA-stations are often colloquially called “IA-controller” or “IA-device” based on their primary function, for example “IA-controller” for IA-stations including an IA-controller function and an IA-device function.

Industrial Applications in IA-stations

impact on Conformance specification: proposal (1)

Align conformance specifications to IEEE 802.1Q-2018:

IEEE 802.1Q-2018

Common **IA-station** requirements / options (5.5 – 5.6)

- PHY and MAC (external ports)
- Topology Discovery (IA-station as a whole)
- Security (IA-station as a whole)
- Synchronization (PTP Instances)

C-VLAN Bridge conformance (5.9)

IA-station bridge **component** requirements / options (5.7 – 5.8)

C-VLAN Component conformance (5.5)

IA-station end station **component** requirements / options (5.9 – 5.10)

End station implementation requirements (5.25 – 5.28)

Questions ?