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Version 0.1

VeliSphere

VeliSphere
Data Exchange Format (VDEF)

Built on Open Standards and Open Technologies

Connected Things Lab

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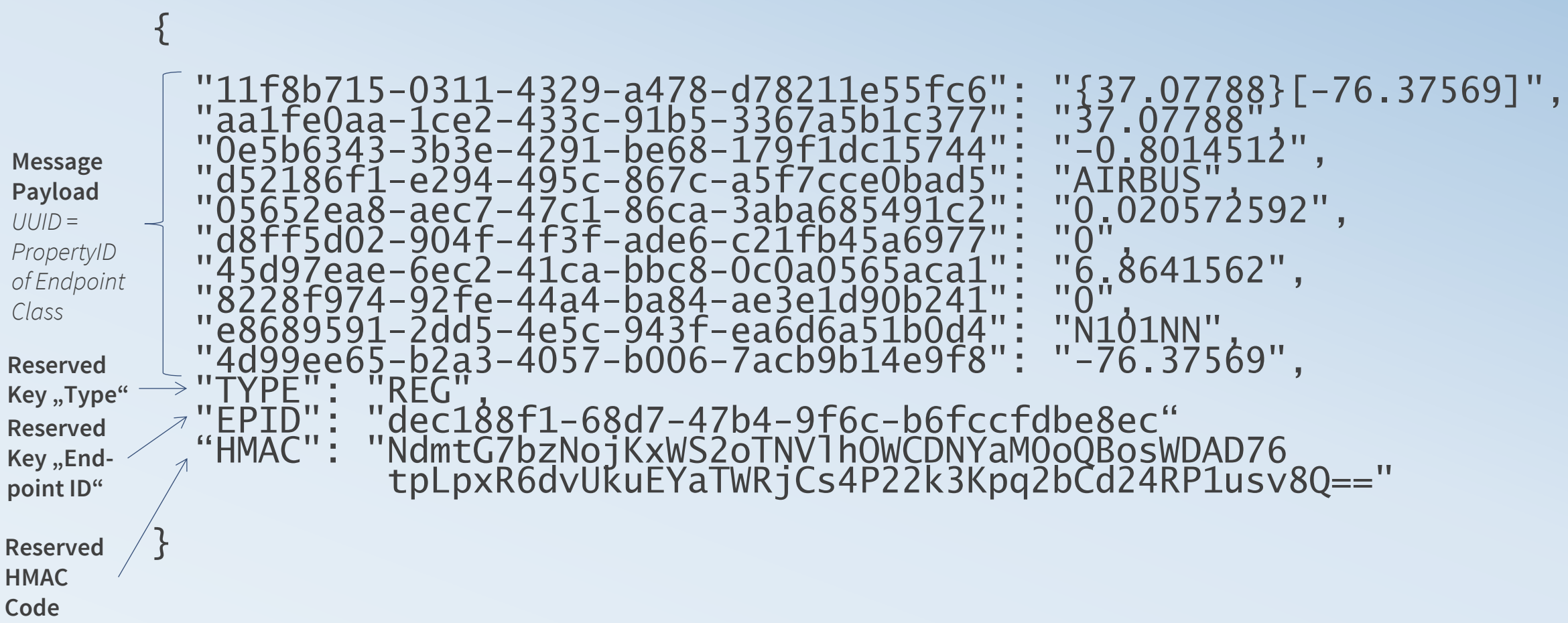
Definition

- VDEF is a data packaging format rather than a protocol
- It follows the principle of “Key X” / “Value Y”
- The key is either
  - A reserved key identifying control functions (such as „getIsAlive“ or „getAllProperties“
  - A 16 byte UUID representing a property of the sending endpoint‘s property class
- Key and value are always to be encoded as strings, the backend will convert them to the appropriate data type as needed
- One or more key/value pairs form a message. The message is serialized into standard JSON.
- The VDEF JSON message forms the main communication piece that gets transported to/from the VeliSphere Controller
- VDEF can be sent over any VeliSphere-supported application layer protocol
- VDEF provides built-in authentication (HMAC SHA-1 based), for encryption it relies on the underlying protocol (HTTPS, AMQP-TLS)
- VDEF does not handle security in any way
  - Authentication/Authorization/Encryption (SSL) is handled on the application layer protocol level (AMQP, HTTP-ReST, MQTT will be supported)



VDEF JSON Message Example

Message Types

- REG — Regular Messages, Controller will run them through business logic engine
- CTL — Control Message, will executed defined actions as defined by the reserved keys. Will bypass BLE
- CNF — Configuration Message, contains key=configurable property of endpoint, value = config value. Directly sent to endpoint via Toucan Web Service. Unidirectional, only to be sent to Endpoint, not to Controller.

- For messages to an endpoint:
  - Key: getIsAlive
    - request endpoint to submit current state as value to controller
  - Key: getAllProperties
    - request endpoint to submit a message containing the value of all sensor properties
- For messages to the controller
  - Key: setState→ Sets Endpoint State. Possible values: see seperate list

Reserved Keys

Montana/Endpoint/Endpointstate:

- UNKNOWN
- REACHABLE
- CONFOK
- CRITICAL
- CONFOFF

Values for ENDPOINT STATE