New command and response modes for AECP-AEM in 1722.1

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Purpose

• Current 1722.1 draft has 5 types of command and response modes

• These modes are not sufficient to handle all scenarios in an automotive environment.

• For example:
  ▪ Time consuming operations,
  ▪ Getting updates from devices as their value change,
  ▪ Increment some parameter without knowing its current value etc.
Purpose

• To handle these scenarios we are proposing new modes for commands and responses
• New command modes are:
  ▪ START_OPERATION
  ▪ ABORT_OPERATION
  ▪ REGISTER
  ▪ DEREGISTER
  ▪ SETGET
  ▪ INCREMENT
  ▪ DECREMENT
• New response modes are:
  ▪ PROCESSING
  ▪ RESULT
Time consuming operations

- Get and Set commands are meant to get a ‘property’ value.

- If a device needs to do a lot of processing for a particular command and takes long time to reply, then the controller can not know whether the command has succeeded or failed.

- Example for this is tuner command Auto store FM stations. This operation may take few seconds to complete.

- This can be solved using commands START_OPERATION, PROCESSING and response RESULT.
Time consuming operations

- For time consuming operations, controller sends `START_OPERATION`

- **Sequence**
  - On receiving `START_OPERATION`, the device immediately sends a response `PROCESSING` (with a status success or failure)
  - After finishing the operation tuner sends `RESULT` (final result with a status success or failure)
  - Optionally, the controller can stop an operation which is in progress using command `ABORT_OPERATION`
Property Updates

• We may need to continuously monitor some parameter (property) and get the new value whenever it changes. E.g. Current time of track in a CD player.

• This can be achieved by having a new command mode `REGISTER`.

• **Sequence:**
  - Controller will send `REGISTER` command to a device with some property (Address?)
  
    - Device `registers` (stores in a notification table?) this controller’s address and sends the response `ACKSET` (Or may be `VALUE`)
  
    - Whenever the value of this property changes the device sends an update with response message `VALUE`
  
    - Controller will send `DEREGISTER` command to stop receiving updates.
Increment/Decrement

• We may need to increment/decrement some parameter without knowing its current value

• E.g. Increment/Decrement sound volume of an amplifier

• Can be achieved through SET command, but the controller needs to know the exact value

• Sequence
  • Controller sends command **INCREMENT** or **DECREMENT** for a property
  • Device increments or decrements the **current value** of this property and sends the response **ACKSET** (or **VALUE**)
SetGet Mode

- Can be used to SET some property and GET its new value
- It is just an improvement over existing SET and GET commands
- Advantage is, we need only one set of command and response instead of two

**Sequence**
- Controller sends command SETGET with a some value to be set
  - Device sets this new value and sends the response VALUE