UDS and OBD Positioning in the ISO/OSI Layer Model

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Diagnostic Messages - Structures and Types

- **Type 1 Communication Flow**: Response Service-Identifiers are sent by the ECU.
- **Type 2 Communication Flow**: Request Service-Identifiers are sent by the ECU.

The Sub-Function Byte of UDS

- **Bit 0 to 6**: Sub-Function parameter values
- **Bit 7**: Indicates whether the message is a Response or Request

Periodic Message Types of UDS

- **Type 1**: Response on Event – RoE (Service $86)
- **Type 2**: Event Driven Communication Flow
- **Type 3**: Unacknowledged Segmented Data Transfer (USDT)

Service Overview

- **Request Default Session**
  - **01 Default Session**
    - Standardized values of Parameter “Diagnostic Session Type”

Simple/Polling Diagnostic Services

- **Three Potential Polling Communication Flows**
  - **Positive Response**: Response requested, response correctly sent by ECU.
  - **Negative Response**: No Response requested, response correctly sent by ECU.
  - **Response Suppressed**: Response requested, response suppressed by ECU.

Periodic Service Execution (Service $2A)

- **Periodic Communication Flow**
  - **Type 1 Communication Flow**: Request Service-Identifiers are sent by the ECU.
  - **Type 2 Communication Flow**: Response Service-Identifiers are sent by the ECU.

Response on Event – RoE (Service $86)

- **Pre-defined values for parameters Event Type (8 Bit) $35**
- **Start Event Control**: Change of Measurement's value, which is described by a data identifier.
- **Start Event Logic**: Change Event high

UDS Response Handling

- **Specific conditions driven Response Codes**
  - **Request Default Session**
  - **Request same or other Diagnostic Session**

Error Memory Functions

- **01 Diagnostic Session Restart (Diagnostic Turnaround)**
  - **Service $19 Diagnostic Session Restart (DTR)**
- **02 Sub-Functions for Service $19 Read DTC Information**
  - **Report DTC (Diagnosis Trouble Code) per DTC Number**
  - **Report DTC Information (DTC Information)**

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