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**□** ARM **□** ENG **□** PAP **x** Input

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Agenda item [[2]](#footnote-2) 5.1.10

Technical Domain / Task Number 2

Author(s) / Submitter(s) China Maritime Safety Administration

VDES network layer protocol header design

# Summary

In order to achieve the most optimized data routing between the VDES network and the IP network, it is recommended to fixed length in the payload field of the VDE message as the VDE network layer header. Using the VDE network layer header can realize the data routing between the VDES network and the IP network, and can save the extra expenses of the VDE Payload than TCP+HTTP mode.

## Purpose of the document

The committee is invited to consider the proposal.

# Background

E-Navigation services require a large number of ship-to-shore digital exchange communications, and VDES is one of E-Navigation’s communication solutions. In order to realize that the shipboard application terminal requests data from the E-Navigation server through the VDES channel, it is necessary to establish a data routing channel between the VDES shipboard terminal and the server of the IP network. The China Maritime Safety Administration proposed the following VDES network layer design based on E-Navigation's construction experience.

# Discussion

In order to identify the VDES shipborne terminal and the server, a fixed length is designated as the network layer protocol in the Payload field of the VDES message. The VDES network layer protocol can be composed of "VDES shipborne terminal MMSI" and "service ID" two parameters, which can solve the information exchange requirements of two-way information routing.

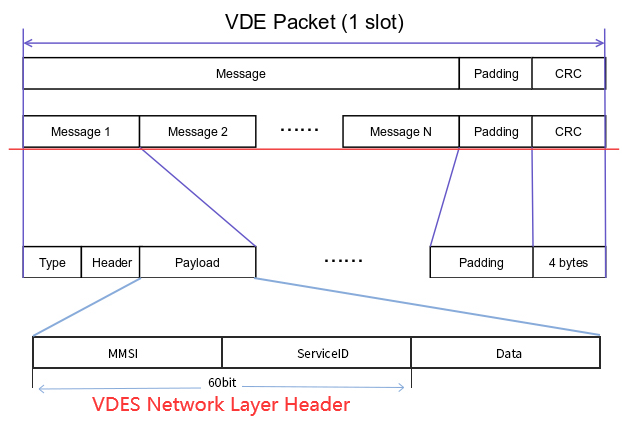


Figure 1 VDES Network Protocol Layer Header

1. VDES Network Protocol Layer Header design

|  |  |  |  |
| --- | --- | --- | --- |
| Serial number | Field | Content meaning | Length occupied（bit） |
| 1 | MMSI | Maritime Mobile Service Identify | 30 |
| 2 | ServiceID | Can identify 000000001-009999999 services | 30 |
| Total |  |  | 60 |

1. MMSI: As the maritime mobile communication service identification code, it is used to identify the use of VDES shipborne terminals, which is consistent with the MMSI of AIS.
2. Service ID: E navigation service is abstracted as a radio station. According to the requirements of "Recommendation ITU-R M.585-6, Part 2 Assignment and Use of Coast Station Identity", the service ID is designed as 0102M3I4D5X6X7X8X9, and 0102 is a fixed padding The representative is a radio station; M3I4D5 represents the competent authority, and the X6X7X8X9 competent authority allocates according to the actual situation of the area. Each area can be allocated up to 9997 services, of which 0000 and 9999 are reserved for future use.
3. The service ID can be registered on the MCP. Each service ID corresponds to a unique and complete URL address in the MCP. In fact, the service ID contains information such as IP + port (domain name) + interface name, and service request parameters or response results can be placed In the Data part of Payload in Figure 1.

5．Application example

Take the VDES route request recommendation as an example: MMSI = 412050030, service ID = 004149997, VDES Payload = VDES network layer header + data.

5.1. VDES Request (Route recommendation request)

**VDES Network Layer Header :** 412050030 + 004149997

**Data (Request) :**

"param":{

"mmsi": 999888777,

"draught":4,

"startPoint": "POINT(113.7825 22.45563)",

"endPoint": "POINT(113.64272 22.06279)"

}

5.2. VDES Response (Recommended Routes Response)

**VDES Network Layer Header :** 412050030 + 004149997

**Data (Response) :**

result":{code:200,"RouteId":2108,"geometry":"LINESTRING(113.78255 22.45563,113.78247 22.45108,113.76944 22.43991,113.762056 22.431667,113.755361 22.421722,113.75490 22.42082,113.755361 22.424639,113.755861 22.43133,113.75561 22.43844,113.75569 22.43202,113.7545 22.42480,113.75244 22.41744,113.74952 22.41108,113.74558 22.4025,113.75490 22.42082,113.75433 22.41605,113.75261 22.40611,113.75105 22.3952,113.73166 22.3089,113.7315 22.2694,113.65986 22.14655,113.63675 22.10375,113.64272 22.06279)"}

# References

1. IALA G1139

# Action requested of the Committee

The Committee is requested to consider the proposals and take action as appropriate.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)