

IHO S-63 DATA PROTECTION SCHEME - Impact Assessment

Introduction

The IHO S-63 Standard was developed for encrypting, securing and compressing electronic navigational chart (ENC) data. It was first released in December 2002, and was based on the data distribution requirement, as they existed at that time.

There are several files within an IHO S-63 edition 1.2 encrypted ENC exchange set that currently carry no digital signatures for the purpose of authentication by data clients. These are:

- **Auxiliary text and picture files .TIF and .TIF**
- **CATALOG.031**
- **README.TXT**
- **PRODUCTS.TXT**
- **MEDIA.TXT**
- **SERIAL.ENC**
- **STATUS.LST**

The lack of authentication on these files is acknowledged as a weakness in the ENC supply chain which has the potential to be exploited.

In response to the increased threat of cyber-attacks on shipping the International Maritime Organization (IMO) issued *Guidelines on Maritime Cyber Risk Management* (MSC-FAL.1/Circ.3 - 5th July 2017) and updated Resolution MSC.428(98) 16th June 2017 to now include a new section on Maritime Cyber Risk Management in Safety Management Systems. In practice this means that by the first annual verification of a shipping company's document of compliance after 1st January 2021, a cyber risk assessment must have been conducted and measures taken to protect the vessel from cyber-attacks.

The delivery of encrypted ENC data with metadata files carrying no authentication measures may present a problem for OEMs and shipping companies who want systems that will comply with the future IEC standard IEC63154 ED1 *Maritime navigation and radiocommunication equipment and systems – Cybersecurity – General requirements, methods of testing and required test results*.

Impact Assessment

An impact assessment is required before a new edition of IHO S-63 is initiated to establish the likelihood of an attack and the possible outcomes, balanced against the time required to implement changes and the impact on OEMs and the shipping industry.

Proposal

A proposal to address the lack of digital signatures on the files listed above has been developed and a set of associated test data developed.

[proposal to be included in this document or, just refer to the proposal document.?)

The IHO are seeking feedback on the proposal and how this proposal, if implemented in S-63, would affect your business process.

IHO Impact

Tasks	<ul style="list-style-type: none"> • IHO S-63 new edition • IHO S-64 new edition • HSSC Approval • MS Approval
Estimated Time	2 years
Resource	ENCWG
Dependencies	
Benefit	Gap in ENC security closed, authorised ENC supply chain and OEMs can now type approve ECDIS against IEC 63154
Threats	<p>Timeline for S-100 is pushed out as OEMs must fix existing ECDIS to comply with new edition of S-63</p> <p>Possible increase in IHO S-63 management if new scheme participant is required</p>
Cost	NA
General Comments	

HO Impact

Comments on IHO Proposal and test data	
Tasks required	Sign .TXT and .TIF files
Estimated Time	
Resource	
Dependencies	
Benefit	
Threats	
Cost	
General Comments	

IHO Data server impact

Comments on IHO Proposal and test data	
Tasks	<p>Redevelopment of data server systems</p> <p>Management of migration of existing customers</p> <p>Testing</p>
Estimated Time	
Resource	
Dependencies	
Benefit	
Threats	
Cost	
General Comments	

What is the OEM Impact?

Comments on IHO Proposal and test data	
Tasks	Extension of digital signature verification to complete exchange set Testing Rollout to customer
Estimated Time	
Resource	
Dependencies	
Benefit	
Threats	
Cost	
General Comments	

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