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FOREWORD

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ISO/IEC TR 14165-314, which is a technical report, has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

A list of all currently available parts of the ISO/IEC 14165 series, under the general title *Information technology – Fibre channel*, can be found on the IEC web site.

This Technical Report has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

INTRODUCTION

The Fibre Channel SCSI-3 Remote Direct Memory Access (FC-AE-RDMA) Technical Report defines a set of features necessary to implement a real-time Fibre Channel network (switched fabric or arbitrated loop) supporting the FC-AE-RDMA Upper Level Protocol.

FC-AE-RDMA is intended to support bi-directional communication between two N_Ports in a constrained and carefully defined environment, typical of avionics applications. The intended usage is avionic command, control, instrumentation, simulation, signal processing and sensor/video data distribution. These application areas are characterized by a variety of requirements, among them a need for high reliability, fault tolerance and deterministic behaviour to support real-time control/response.

FC-AE-RDMA follows the SCSI-3 FCP standard in its definition of the services necessary to support low-latency, low overhead communication between elements of a mission-critical avionics system. The key feature of FC-AE-RDMA is that it allows an Initiator to read data from or write data to a remote Target memory in peer-to-peer mode (similar to SCSI-3 processor device type) with lower latency.

This technical report is divided into 4 clauses:

Clause 1 is the scope.

Clause 2 enumerates the normative references.

Clause 3 describes the terms, definitions, abbreviations, and conventions.

Clause 4 defines the FC-AE-RDMA Upper Level Protocol. This clause lists features defined in the SCSI-3 FCP standard and indicates whether the features are Required, Prohibited, Allowed, or Invocable in this Technical Report. This Technical Report places certain restrictions on SCSI-3 FCP in order to improve support for low latency, real-time applications. This clause also defines some new features for FC-AE-RDMA that are not defined in SCSI-3 FCP.

Annex A gives an example of a profile for the FC-FS and FC-AL-2 standards for an example avionics Fibre Channel network that uses FC-AE-RDMA.

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1 Scope

This part of ISO/IEC 14165 defines the FC-AE-RDMA Upper Level Protocol. FC-AE-RDMA follows the SCSI-3 FCP standard in its definition of the services necessary to support low latency, low overhead communication between elements of a mission-critical avionics system.

This part of ISO/IEC 14165 is intended to serve as an implementation guide to maximize the likelihood of interoperability between conforming implementations. This technical report Prohibits or Requires features that are optional and Prohibits the use of some non-optional features that are referenced in some standards (see Clause 2).

In addition, this technical report simplifies implementations and their associated documentation, testing and support requirements.

This technical report does not define internal characteristics of conformant implementations. Nonetheless, it incorporates features from the standards listed in Clause 2.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 14165-122, *Information technology – Fibre channel – Part 122: Arbitrated loop-2 (FC-AL-2)*[1]

ISO/IEC 14165-251, *Information technology – Fibre channel – Part 251: Framing and signalling (FC-FS)*[2]

ISO/IEC 14776-411, *Information technology – Small computer system interface-3 (SCSI-3) – Part 411: Architecture model (SCSI-3 SAM)*[3]

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1 INCITS.332 – 1999 – *Information technology – Fibre channel Arbitrated Loop-2 (FC-AL-2).*

2 ANSI INCITS 373 – 2003 *Information technology – Framing and Signalling (FC-FS).*

3 ANSI INCITS 270 – 1996 *Information technology – SCSI-3 Architecture Model (SAM).*