ISO 18441:2021-06 (E)

Space data and information transfer systems - Space link extension - Application program interface for transfer services - Core specification

CONTENTS

Section Page

1 INTRODUCTION 1-1

1.1 PURPOSE OF THIS RECOMMENDED PRACTICE 1-1
1.2 SCOPE 1-1
1.3 APPLICABILITY 1-2
1.4 RATIONALE 1-3
1.5 DOCUMENT STRUCTURE 1-4
1.6 DEFINITIONS 1-7
1.7 REFERENCES 1-10

2 DESCRIPTION OF THE SLE API 2-1

2.1 INTRODUCTION 2-1
2.2 SPECIFICATION METHOD AND NOTATION 2-2
2.3 LOGICAL VIEW 2-7
2.4 SECURITY ASPECTS OF CORE SLE API CAPABILITIES 2-58

3 SPECIFICATION OF API COMPONENTS 3-1

3.1 INTRODUCTION 3-1
3.2 API PROXY 3-1
3.3 API SERVICE ELEMENT 3-27
3.4 SLE OPERATIONS 3-52
3.5 SLE UTILITIES 3-56
3.6 SLE APPLICATION 3-64
3.7 HANDLING OF IN PROCESS THREADS AND EXTERNAL EVENTS 3-71

4 STATE TABLES 4-1

4.1 INTRODUCTION 4-1
4.2 NOTATION 4-1
4.3 GENERAL ERROR HANDLING CONVENTIONS 4-2
4.4 STATE TABLE FOR ASSOCIATIONS 4-2
4.5 STATE TABLES FOR SERVICE INSTANCES 4-15

ANNEX A SPECIFICATION OF COMMON INTERFACES (NORMATIVE) A-1
ANNEX B RESULT CODES (NORMATIVE) B-1
ANNEX C STRUCTURE OF THE SERVICE INSTANCE IDENTIFIER FOR VERSION 1 OF THE SLE SERVICES RAF, RCF, AND CLTU (NORMATIVE) C-1
ANNEX D SIMPLE COMPONENT MODEL (NORMATIVE) D-1

CONTENTS (continued)

Section Page

ANNEX E CONFORMANCE (NORMATIVE) **E-1**
ANNEX F INTERACTION OF COMPONENTS (INFORMATIVE) **F-1**
ANNEX G INTERFACE CROSS REFERENCE (INFORMATIVE) **G-1**
ANNEX H INDEX TO DEFINITIONS (INFORMATIVE) **H-1**
ANNEX I ACRONYMS AND ABBREVIATIONS (INFORMATIVE) **I-1**
ANNEX J INFORMATIVE REFERENCES (INFORMATIVE) **J-1**

Figure

1-1 SLE Services and SLE API Documentation 1-6
2-1 UML Stereotypes Used in This Recommended Practice 2-3
2-2 Top Level Decomposition of the API 2-7
2-3 Structure of the Package API Proxy 2-9
2-4 Reporting and Tracing by the Proxy 2-10
2-5 Configuration Database of the Proxy 2-20
2-6 Structure of the Package API Service Element 2-23
2-7 Reporting and Tracing by the Service Element 2-24
2-8 Sequential Control Interface Component Class Controlled Component 2-39
2-9 Concurrent Control Interface 2-43
2-10 Structure of the Package SLE Application 2-44
2-11 Reporting and Tracing Interfaces Provided by the Application 2-45
2-12 Operation Objects 2-49
2-13 Operation Object Interfaces for Common Association Management 2-53
2-14 Common SLE Operation Objects 2-54
2-15 SLE Utilities 2-56
4-1 Processing Context for the Association State Table 4-3
4-2 Processing Context for the Service Instance State Table 4-16
B-1 Structure of Result Codes B-1
F-1 Configuration of Components F-3
F-2 Configuration of Interfaces for Service Provisioning F-3
F-3 Interaction of API Components F-4
F-4 Initialization and Shutdown F-5
F-5 Collaboration Diagram for Use of Operation Objects F-8
F-6 Sequence Diagram for Use of Operation Objects F-9
F-7 User Side Binding (User Initiated Bind) F-12
F-8 User Side Unbinding (User Initiated Bind) F-13
F-9 Provider Side Binding (User Initiated Bind) F-14
F-10 Provider Side Unbinding (User Initiated Bind) F-16

Table

C-1 Identifiers and Abbreviations for Attributes C-3
E-1 Optional Features for the API Proxy E-3
E-2 Optional Features for the API Service Element E-6
E-3 Parameters That May Be Constrained by a Proxy E-9
E-4 Parameters That May Be Constrained by a Service Element E-10