

ISO 23103:2020-01 (E)

Space link extension - Cross support transfer service - Specification framework

Contents

Page

- 1 INTRODUCTION..... 1-1**
 - 1.1 PURPOSE..... 1-1
 - 1.2 SCOPE..... 1-1
 - 1.3 APPLICABILITY..... 1-1
 - 1.4 RATIONALE..... 1-2
 - 1.5 DOCUMENT STRUCTURE 1-2
 - 1.6 DEFINITIONS, NOMENCLATURE AND CONVENTIONS 1-5
 - 1.7 REFERENCES 1-19

- 2 DESCRIPTION OF CROSS SUPPORT SERVICES 2-1**
 - 2.1 OVERVIEW 2-1
 - 2.2 CROSS SUPPORT REFERENCE MODEL 2-3
 - 2.3 SERVICE MANAGEMENT 2-4
 - 2.4 ELEMENTS OF THE CSTS SPECIFICATION FRAMEWORK..... 2-5
 - 2.5 PRINCIPLES OF USING THE CSTS SPECIFICATION FRAMEWORK..... 2-9
 - 2.6 PROTOCOL DESCRIPTION 2-11

- 3 COMMON OPERATIONS..... 3-1**
 - 3.1 OVERVIEW 3-1
 - 3.2 GENERAL CONSIDERATIONS 3-1
 - 3.3 STANDARD OPERATION HEADER..... 3-6
 - 3.4 BIND (CONFIRMED) 3-9
 - 3.5 UNBIND (CONFIRMED)..... 3-14
 - 3.6 PEER-ABORT (UNCONFIRMED)..... 3-15
 - 3.7 START (CONFIRMED)..... 3-17
 - 3.8 STOP (CONFIRMED) 3-19
 - 3.9 TRANSFER-DATA (UNCONFIRMED)..... 3-20
 - 3.10 PROCESS-DATA (UNCONFIRMED / CONFIRMED)..... 3-22
 - 3.11 NOTIFY (UNCONFIRMED)..... 3-24
 - 3.12 GET (CONFIRMED) 3-26
 - 3.13 EXECUTE-DIRECTIVE (ACKNOWLEDGED) 3-31

- 4 PROCEDURES..... 4-1**
 - 4.1 OVERVIEW 4-1
 - 4.2 COMMON PROCEDURES BEHAVIOR 4-1
 - 4.3 ASSOCIATION CONTROL..... 4-3
 - 4.4 UNBUFFERED DATA DELIVERY 4-10

CONTENTS (continued)

<u>Section</u>	<u>Page</u>
4.5 BUFFERED DATA DELIVERY	4-15
4.6 DATA PROCESSING	4-39
4.7 BUFFERED DATA PROCESSING	4-54
4.8 SEQUENCE-CONTROLLED DATA PROCESSING	4-66
4.9 INFORMATION QUERY	4-83
4.10 CYCLIC REPORT	4-87
4.11 NOTIFICATION	4-98
4.12 THROW EVENT	4-109
ANNEX A IMPLEMENTATION CONFORMANCE STATEMENT	
PROFORMA (NORMATIVE)	A-1
ANNEX B PRODUCTION STATUS (NORMATIVE)	B-1
ANNEX C QUALIFIED PARAMETERS (NORMATIVE)	C-1
ANNEX D OBJECT IDENTIFIERS DEFINITION (NORMATIVE)	D-1
ANNEX E COMPOSITION OF PARAMETER, EVENT, AND DIRECTIVE	
NAMES AND PARAMETER AND EVENT LISTS (NORMATIVE)	E-1
ANNEX F DATA TYPES DEFINITION (NORMATIVE)	F-1
ANNEX G SERVICE STATE TABLES (NORMATIVE)	G-1
ANNEX H SECURITY, SANA, AND PATENT CONSIDERATIONS	
(INFORMATIVE)	H-1
ANNEX I INFORMATIVE REFERENCES (INFORMATIVE)	I-1
ANNEX J INDEX TO DEFINITIONS (INFORMATIVE)	J-1
ANNEX K ACRONYMS (INFORMATIVE)	K-1
ANNEX L OBJECT IDENTIFIERS (INFORMATIVE)	L-1
ANNEX M PUBLISHED IDENTIFIERS FOR FUNCTIONAL	
RESOURCES REGISTERED UNDER THE	
CROSSSUPPORTFUNCTIONALITIES NODE (INFORMATIVE)	M-1

Figure

1-1 Cross Support Service Documentation	1-4
2-1 CSTS Specification Framework Concept	2-2
2-2 Service and Procedure States (Stateful Prime Procedure)	2-13
2-3 Service and Procedure States (Stateless Prime Procedure)	2-14
2-4 Communications Realization of a Cross Support Transfer Service	2-17
4-1 Services Using a Buffered Data Delivery Procedure	4-18
4-2 Real-Time and Complete Buffered Data Delivery Service Instances and Supporting Buffering Mechanisms	4-19
A-1 Production Status Diagram	B-1
C-1 CSTS and Cross Support Resources Root Object Identifier Tree	D-2
C-2 'procedures' Subtree	D-6

CONTENTS (continued)

<u>Figure</u>	<u>Page</u>
C-3 ‘fwProceduresFunctionalities’ Subtree.....	D-8
C-4 ‘services’ Subtree.....	D-9
C-5 ‘service procedures’ Subtree.....	D-10
C-6 ‘crossSupportFunctionalities’ Subtree.....	D-12
C-7 ‘agenciesFunctionalities’ Subtree.....	D-14
L-1 Cross Support Services Part of the CCSDS Object Identifiers Tree	L-1
L-2 CSS Object Identifiers Tree.....	L-1
L-3 CSTS Object Identifiers Tree	L-2
L-4 CSTS Specification Framework Object Identifiers Tree.....	L-3
L-5 CSTS Services Object Identifiers Tree.....	L-4
L-6 CSTS Published Identifiers—Object Identifiers Tree	L-6
M-1 Example Cross Support Functional Resources.....	M-2
M-2 Subcarrier Related Parameters of the Rtn401SpaceLinkCarrierRecpt Functional Resource	M-3

Table

2-1 Common Operations Defined by the CSTS Specification Framework	2-6
2-2 Common Procedures Defined by the CSTS Specification Framework.....	2-8
2-3 Use of Operations by Common Procedures.....	2-9
3-1 Standard Confirmed Operation Header Parameters	3-6
3-2 Standard Unconfirmed Operation Header Parameters	3-6
3-3 BIND Operation Parameters.....	3-10
3-4 UNBIND Operation Parameters	3-14
3-5 PEER-ABORT Operation Parameters	3-15
3-6 START Operation Parameters	3-18
3-7 STOP Operation Parameters.....	3-19
3-8 TRANSFER-DATA Operation Parameters.....	3-20
3-9 PROCESS-DATA Operation Parameters.....	3-22
3-10 NOTIFY Operation Parameters.....	3-24
3-11 GET Operation Parameters.....	3-29
3-12 EXECUTE-DIRECTIVE Operation Parameters.....	3-32
4-1 Association Control Procedure Required Operations.....	4-7
4-2 Association Control Procedure Configuration Parameters.....	4-7
4-3 Association Control Procedure State Table.....	4-8
4-4 Procedure State Table Incoming Event Description References.....	4-9
4-5 Procedure State Table Predicate Descriptions.....	4-9
4-6 Procedure State Table Simple Action References.....	4-9
4-7 Procedure State Table Compound Action Definitions	4-9
4-8 Unbuffered Data Delivery Procedure Required Operations.....	4-12

CONTENTS (continued)

<u>Table</u>	<u>Page</u>
4-9 Unbuffered Data Delivery Procedure State Table	4-13
4-10 Procedure State Table Incoming Event Description References	4-13
4-11 Procedure State Table Predicate Descriptions	4-13
4-12 Procedure State Table Boolean Flags	4-14
4-13 Procedure State Table Simple Action References	4-14
4-14 Buffered Data Delivery Procedure Required Operations	4-25
4-15 START Extension Parameters	4-25
4-16 Buffered Data Delivery Procedure Configuration Parameters	4-31
4-17 Buffered Data Delivery Procedure State Table	4-32
4-18 Procedure State Table Incoming Event Description References	4-34
4-19 Procedure State Table Predicate Descriptions	4-34
4-20 Procedure State Table Boolean Flags	4-34
4-21 Procedure State Table Simple Action References	4-35
4-22 Procedure State Table Compound Action Definitions	4-35
4-23 Data Processing Procedure Required Operations	4-45
4-24 PROCESS-DATA Extension Parameter	4-45
4-25 NOTIFY Extension Parameters	4-46
4-26 Data Processing Procedure Configuration Parameters	4-50
4-27 Data Processing Procedure State Table	4-51
4-28 Procedure State Table Incoming Event Description References	4-52
4-29 Procedure State Table Predicate Descriptions	4-52
4-30 Procedure State Table Boolean Flags	4-53
4-31 Procedure State Table Simple Action References	4-53
4-32 Procedure State Table Compound Action Definitions	4-53
4-33 Buffered Data Processing Procedure Required Operations	4-60
4-34 Buffered Data Processing Procedure Configuration Parameters	4-61
4-35 Buffered Data Processing Procedure State Table	4-62
4-36 Procedure State Table Incoming Event Description References	4-64
4-37 Procedure State Table Predicate Descriptions	4-64
4-38 Procedure State Table Boolean Flags	4-65
4-39 Procedure State Table Simple Action References	4-65
4-40 Procedure State Table Compound Action Definitions	4-65
4-41 Sequence-Controlled Data Processing Procedure Required Operations	4-72
4-42 START Extension Parameters	4-72
4-43 PROCESS-DATA Invocation Extension Parameters	4-73
4-44 PROCESS-DATA Return Extension Parameters	4-73
4-45 Sequence-Controlled Data Processing Procedure Configuration Parameters	4-79
4-46 Sequence-Controlled Data Processing Procedure State Table	4-80
4-47 Procedure State Table Incoming Event Description References	4-81
4-48 Procedure State Table Predicate Descriptions	4-82
4-49 Procedure State Table Simple Action References	4-82

CONTENTS (continued)

<u>Table</u>	<u>Page</u>
4-50 Procedure State Table Compound Action Definitions	4-82
4-51 Information Query Procedure Required Operations.....	4-85
4-52 Information Query Procedure Configuration Parameters.....	4-85
4-53 Information Query Procedure State Table.....	4-86
4-54 Procedure State Table Incoming Event Description References.....	4-86
4-55 Procedure State Table Predicate Descriptions.....	4-86
4-56 Procedure State Table Simple Action References.....	4-86
4-57 Cyclic Report Procedure Required Operations.....	4-92
4-58 START Extension Parameters.....	4-93
4-59 Cyclic Report Procedure Configuration Parameters.....	4-96
4-60 Cyclic Report Procedure State Table.....	4-96
4-61 Procedure State Table Incoming Event Description References.....	4-97
4-62 Procedure State Table Predicate Descriptions.....	4-97
4-63 Procedure State Table Simple Action References.....	4-97
4-64 Procedure State Table Compound Action Definitions.....	4-97
4-65 Notification Procedure Required Operations.....	4-103
4-66 START Extension Parameters.....	4-103
4-67 Notification Procedure Configuration Parameters.....	4-107
4-68 Notification Procedure State Table.....	4-107
4-69 Procedure State Table Event Description References.....	4-108
4-70 Procedure State Table Predicate Descriptions.....	4-108
4-71 Procedure State Table Simple Action References.....	4-108
4-72 Procedure State Table Compound Action Definitions.....	4-108
4-73 Throw Event Procedure Required Operations.....	4-111
4-74 Throw Event Procedure Configuration Parameters.....	4-113
4-75 Throw Event Procedure State Table.....	4-113
4-76 Procedure State Table Incoming Event Description References.....	4-114
4-77 Procedure State Table Predicate Definitions.....	4-114
4-78 Procedure State Table Simple Action References.....	4-114
A-1 Production Status Semantic.....	B-2
A-2 Production Status Transitions.....	B-3
F-1 State Table for CSTSes with a Stateless Prime Procedure Instance.....	G-2
F-2 State Table for CSTSes with a Stateless Prime Procedure Instance: Event Description References.....	G-2
F-3 State Table for CSTSes with a Stateless Prime Procedure Instance: Predicate Descriptions.....	G-2
F-4 State Table for CSTSes with a Stateless Prime Procedure Instance: Compound Action Definitions.....	G-3
F-5 State Table for CSTSes with a Stateful Prime Procedure Instance.....	G-4

CONTENTS (continued)

<u>Table</u>	<u>Page</u>
F-6 State Table for CSTSes with a Stateful Prime Procedure Instance: Event Description References.....	G-5
F-7 State Table for CSTSes with a Stateful Prime Procedure Instance: Predicate Descriptions	G-5
F-8 State Table for CSTSes with a Stateful Prime Procedure Instance: Compound Action Definitions.....	G-5
G-1 Identification of PICS	A-3
G-2 Identification of Implementation Under Test	A-4
G-3 Identification of Supplier	A-4
G-4 Identification of Specification	A-4
G-5 Required Procedures	A-5
G-6 Required PDUs	A-6
G-7 BIND Invocation Parameters.....	A-7
G-8 BIND Return Parameters	A-8
G-9 PEER-ABORT Invocation Parameters.....	A-9
G-10 UNBIND Invocation Parameters	A-9
G-11 UNBIND Return Parameters	A-10
G-12 EXECUTE-DIRECTIVE Invocation Parameters.....	A-11
G-13 EXECUTE-DIRECTIVE Acknowledgement Parameters.....	A-13
G-14 EXECUTE-DIRECTIVE Return Parameters	A-14
G-15 GET Invocation Parameters.....	A-16
G-16 GET Return Parameters	A-17
G-17 PROCESS-DATA Invocation Parameters.....	A-19
G-18 PROCESS-DATA Return Parameters	A-21
G-19 START Invocation Parameters	A-23
G-20 START Return Parameters	A-25
G-21 STOP Invocation Parameters.....	A-27
G-22 STOP Return Parameters	A-28
G-23 NOTIFY Invocation Parameters.....	A-29
G-24 TRANSFER-DATA Invocation Parameters.....	A-31
M-1 Specification of the Subcarrier Level Estimate Parameter	M-4
M-2 Specification of the Subcarrier Lock Status Parameter	M-5