



D T S W G M E E T I N G

meeting date	10-14.05.2004	ref./réf.	DTS-WG-14052004	page/page	1
					18
date de la réunion					
meeting place	Montreal	chairman	Y.Doat (ESA)		
lieu de la réunion		président			
minute's date	14-05-20034	participants	W.Hell (ESA), M.Pilgram (DLR), F.Brosi (GST) p.t. M.Togni (Telespazio) J.Noles (GST) Yasunori Iwana (JAXA) Ed Greenberg (JPL) p.t.		
dates de minute		participants			
subject/objet	CCSDS Data Transfer Services Working Group	copy/copie	Data Transfer Services Working Group Members		

Description/description	action/action	due date/date limite
Forward Services - State Transition Table. W.Hell, Y.Doat to prepare the pink sheet describing the state table using UML notation (Low priority action). 10.05.04 Initial work performed by M.Goetzelman	A#6.0703	15.05.2004
W.Hell. The document tree in the SLE API books has to be brought in line with the latest issues as contained in RCF. Update the references to point to the latest issues of the documents.	A#18.0703	15.05.2004
W.Hell to produce a cover note supporting the SLE API review process	A#19.0703	30.04.2004 15.05.2004
T.Pesquet to draft the transfer services combined book. Considering the results of the Spring Meeting the DTS Working Group agreed to cancel that activity	A#1.1003	Cancelled
Y.Doat. Identify all the parameters to be set by service management to configure the SLE API and to run the services and pass the list to the Service Management WG 15.05.2004 J.Noles and Y.Doat compiled the list. The list is attached to the Spring 2004 MoM	A#3.1003	Closed
Y.Doat to prepare the Red Book describing the procedure for Object Identifiers allocation.	A#8.1003	30.04.2004 30.05.2004



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Y.Doat to approach CNES to clarify CNES representation. <i>CNES will send a new representative for Fall Meeting</i>	A#1-0304	Closed
M.Pilgram will update RAF, RCF and CLTU books to be in line with the new terminology as in ROCF and FSP.	A#2-0304	Closed
M.Pilgram to update RCF to be in line with ROCF Data Continuity Annotation.	A#3-0304	Closed
M.Pilgram to update RCF and RAF accordingly: Transfer buffer size.	A#4-0304	Closed
M.Pilgram to update ASN.1 CarrierLockStatus and SymbolLockStatus to be in line with ROCF.	A#6-0304	Closed
M.Pilgram shall remove point 4 (Optional delivery of entire frame) at the end of section 2.4.1 of RAF.	A#7-0304	Closed
M.Pilgram to update RAF to reflect the decisions 4.7.1, 4.7.2, 4.7.4 of March 2004 MoM	A#11-0304	Closed
W.Hell to update ROCF START ('update mode', 'result', 'diagnostic') to reflect the ROCF, update mode 'change based' definition. <i>ROCF Section 3.4.2.10.2 has been updated</i> <i>ROCF Section 3.9.2.3 'number-of-frames-processed': Note rephrased</i> <i>ROCF Section 3.4.2.12.13: duplication removed</i> <i>Still to be done: Under which condition the 'invalid..' diagnostic applies</i>	A#13-0304	Closed
W.Hell to update ROCF and FSP with the ASN.1 definition of the Distinguished Name and the Object Identifiers definition.	A#14-0304	Closed
M.Pilgram to update RAF, RCF and CLTU with the ASN.1 definition of the Distinguished Name and the Object Identifiers definition.	A#15-0304	Closed
Y.Doat to investigate the consequences of a new type supporting a RCF 'private notification'. <i>14.05.2004 The private notification should be covered by possible new services</i>	A#16-0304	Closed
M.Stoloff to investigate the consequence of rejection of not supporting a RCF 'private notification'.	A#17-0304	15.05.2004
What is to be delivered in the case that a Turbo Decoded "frame" has delivered-frame-quality = 'erred'. Action Y.Doat to clarify the matter with coding expert. <i>The delivered-frame-quality parameter shall indicate the result of Reed-Solomon decoding or error control field decoding and shall contain one of the following values: 'good', 'erred', 'undetermined'.</i>	A#18-0304	Closed
M.Pilgram shall insert the Off-line Frame Buffer clarification text in RAF and RCF books.	A#19-0304	Closed
Y.Doat to check if the ESA TMTCS could implement the persistency of the on-line complete frame buffer until the end of the SI provision period	A#20-0304	Closed



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SICF: To be deleted: maximum CLTU delay; To be added: online complete delivery mode buffer size Delivery of RS check symbols always or for erred frames only Reserved keyword for local identifier M.Stoloff to confirm the above proposed 4 SICF changes	A#22-0304	15.05.2004
M.Pilgram to update RAF, RCF and CLTU with the new tagging proposed in Appendic C of he MoM.	A#23-0304	Closed
M.Pilgram to update RAF, RCF and CLTU books with the new "undefined" value. The ASN.1 shall also be updated.	A#26-0304	Closed
W.Hell to update ROCF and FSP books with the new "undefined" value. The ASN.1 shall also be updated.	A#27-0304	Closed
W.Hell / M.Pilgram to review the possible books discrepancies identified in Spring 2004 Meeting MoM Appendix B (Blue text)	A#1-0504	September 2004
Y.Doat to mail the list of Service Management references in SLE Books to the SM working group	A#2-0504	15.05.2004

10.05.2004: Input to the meeting

- W.Hell email: FSP Changes (05.05.2004), see Appendix A.
- E.Barkley RIDs

Agenda:

Review of actions;

Technical issues:

- TCP/IP Latency;
- FSP changes (W.Hell email)
- Return services: End of data notification.
- How to handle deferred mode in CLTU state table (deferred production interrupted notification)?
- Technical issues reported by Eric Barkley
- Backward compatibility between version 1 and version 2: Service Instance Identifier definition;
- Finalisation of the books:
 - RAF Blue 2
 - RCF Red 2
 - ROCF Red 1
 - CLTU Blue 2
 - FSP Red 2

SLE API:

- SLE API Books.



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- SLE API definition: update of ESA books

Return Services: Combined book;

Status of implementation by the Agencies

Plans for the next 6 months



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1. Review of Actions

A#1-1003. CNES will send a new representative to the WG. The work on the combined return book will most probably be delayed until end 2004 / beginning 2005.

Considering the results of the Spring Meeting the DTS Working Group agreed to cancel that activity.

2. Technical Issues

2.1 TCP/IP Latency

ESA reported that some internal work might be initiated for an end-to-end approach.

2.2 Multicasting

With the current definition the TM data may be transferred more than one time from a Service Provider to Service Users. To optimize the amount of transferred data, it may be wise to implement on Service User multicasting the received data to other Service Users located in the same area.

No further work was identified at this time

2.3 FSP – Mail from W.Hell

See Appendix A. W.Hell presented all items of his mail.

AD Terminated: The following figure explains the problem inherited from the current book.

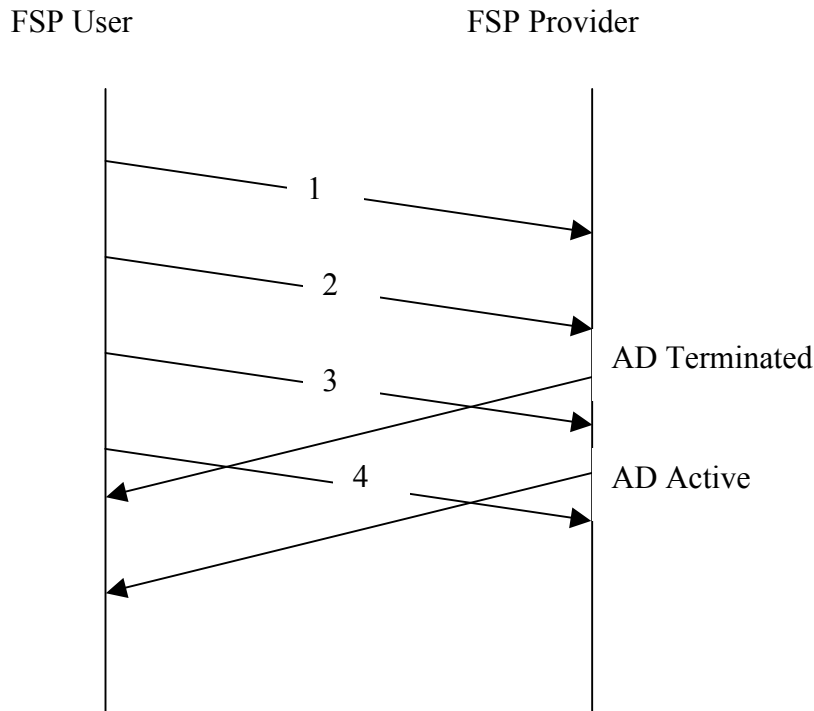


Figure 2-1 Loss of FSP Packet

In the case depicted above, the packet number '3' is discarded, but the packet number '4' is forwarded. In that case the following sequence has been sent to the spacecraft: '1', '2' and '4'. The number '4' is out of sequence.

The proposed solution is to introduce a new compound action that blocks the AD service until the FSP provider acknowledge the AD interruption.

The mail was reviewed during the meeting and various editorial modifications were introduced in FSP.

2.4 Return services: End of data notification (M.Goetzelmann mail from 05.05.2004)

Ambiguity in return service specification regarding 'end of data' notification: User specified end time in the START invocation and the ERT on the frame issued by the production process is later than the end time specified by the user. JPL implementation sends an 'end of data' notification. A pertinent requirement appears to be missing in the documents.

RAF, RCF and ROCF text was updated in the course of the meeting

2.5 CLTU & FSP: Deferred production interrupted notification

The books have been updated.

CLTU:



For notification mode 'deferred' when production status is interrupted and either a CLTU is in status 'radiation started' or the radiation of the CLTU has to be started based on the specified earliest-radiation-time and latest-radiation-time parameters.

FSP was updated using the same text as for CLTU.

The states table was updated in CLTU.

2.6 Reference Point for TM Earth Receive Time (E.Barkley RIDs)

See MoM March 2004 meeting in DLR

Books changed accordingly.

2.7 Undetermined Delivered Frame Quality (E.Barkley RIDs)

See Section 4.7.1, MoM March 2004 meeting in DLR

ASN.1 in the RAF book was checked for consistency.

2.8 New private notification Type and Values (E.Barkley RIDs)

Ed Greenberg reported that this request would be a mechanism to tunnel data through the existing services (See minutes of meeting, section 3.).

2.9 Data Link Continuity Parameter (E.Barkley RID)

See Section 4.1, MoM March 2004 meeting in DLR

The RCF book has been updated accordingly and does not need to be further updated.

2.10 RAF: Turbo and LDPC Codes (E.Barkley RID)

See Section 4.7.6, MoM March 2004 meeting in DLR.

Section 3.6.2.6 of RAF:

*The **delivered-frame-quality** parameter shall indicate the result of Reed-Solomon decoding or error control field decoding and shall contain one of the following values: 'good', 'erred', 'undetermined'.*

2.11 Space-link Terminology (E.Barkley RID)

See Section 2, MoM March 2004 meeting in DLR.

3. Evolution Towards New Services (BOF)

See Section 3, MoM March 2004 meeting in DLR.

- 12.05.2004: Ed.Greenberg described his needs for new services/new data: Frame accounting, Monitor data, CFDP directives.

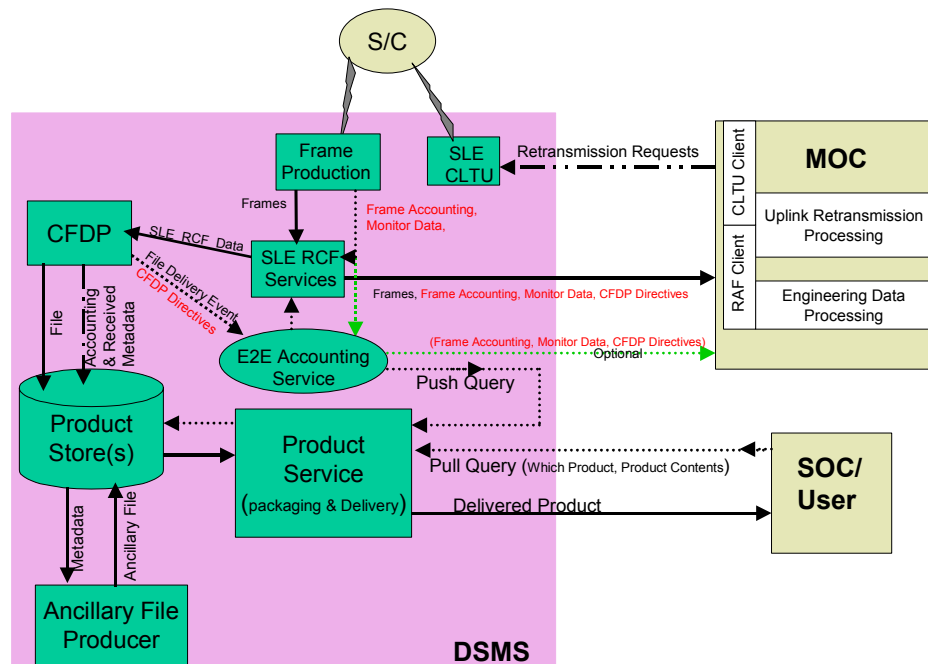


Figure 3-1 Ed.Greenberg Presentation

List of new services:

- Return All Data.
Bitstream service including sync mark, Reed-Solomon check symbols.
The Working Group does not recommend RAF extension to support that service.
- Radiometric and Tracking Data.
- Status and Accounting Reports.
- Monitoring Data (AGC, SNR: synchronous with TM (report) or Asynchronous with return services (annotation))
- Catalogue Service.
- Weather Data.
(Required, in Ka band, to determine the data rate that can be used reliably).

During the meeting, DTS WG presented a layered approach (See Figure 3-2 New Services "Toolbox") that should ease future new services definition.

1. From the existing SLE books identify all commonality in services and required operations;
2. Group the common elements (Association and Operation Management) into a "Toolbox" components that would be used as baseline for new service definition and implementation;
3. Validate the approach by prototyping two services (Radiometric and Return All (telemetry) Data).

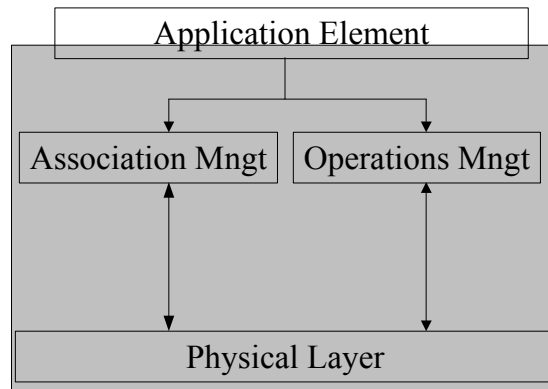


Figure 3-2 New Services "Toolbox"

4. DTS WG Plans

The WG proposes the following plans:

- As soon as charter approved: initiate "Toolbox" related activities.
- Send new books to secretariat: today;
- Agencies review: July and August 2004;
- Intermediate meeting: September 2004 at ESOC to review the RIDs;
- Fall meeting:
 - Approve the new books;
 - Submit SLE API Proxy white book.

The WG proposes to update the charter:

- Changes to current charter:
 - Remove Return Combined book;
 - Standardise SLE API proxy;
- Use the freed resources to:
 - Define the "Toolbox" for the new services;
 - Prototype:
 - Return All Data
 - Radiometric
 - Agree on other (Ground Domain) services



5. Appendix A - FSP Changes (W.Hell)

Changes to 912x3r2:

Book presented now as Red-2 rather than R2draft.

Issue date updated to May 2004-05-03

After 3.7.2.10.1 b), a note has been inserted that stresses that the packet-status changes to 'radiated' only when all constituents of that packet were successfully radiated.

In table 4-1, for the transmission mode mismatch event a new compound action {notify and block AD} has been introduced. The definition of this compound action has been added to table 4-5, and the definition in that table now covers the fact that AD packets may have to be discarded.

A new Boolean Flag "AD blocked" has been added to table 4-4.

The definition of the compound action {initiate stop} has been extended with setting "AD blocked" to FALSE.

In 3.6.2.9.1 b), a new transmission mode value 'sequence-controlled and unblock AD mode' has been introduced for unblocking of the AD mode. Sections 3.6.2.9.2 and 3.6.2.9.3 are new and specify the provider behaviour with respect to this new transmission mode value.

The new transmission mode value in combination with the new Boolean Flag necessitated distinguishing three cases for the FSP-TRANSFER-DATA invocation. The related entries in table 4-1 have been updated accordingly.

Note 3 following 3.7.2.3 e) has been updated in line 3 with the above outlined changes.

Section B3.3 has been modified in order to reflect the conditions under which the provider will defer the extraction of a Packet from the Packets Queue if either production status or transmission mode capability are not as required for the given packet. Note that in deviation from what I stated in the summary of our discussion, the Packet is kept as long as possible in the Requests Queue rather than the Packets Queue. This is necessary in order not to block the MAP multiplexing process. AS a consequence, the initial conclusion that one can live with a very short margin with respect to the latest-production-time is not correct. The guard period must be longer than the time that the given Packet will spend in the Packets Queue before it is extracted for insertion into the Segments Queue. Under odd conditions, the guard period may be too short and the incorrect notification may be sent.



After 3.6.2.7.5, a note 3 has been added that encourages users to specify the latest-production-time in order to benefit from the deferred processing (if needed).

3.6.2.18 k): The definition of the diagnostic ‘invalid transmission mode’ has been extended in order to accommodate the blocking and unblocking of the AD mode.

The parameter permitted-transmission-mode has been added to table 3-1.

The parameter permitted-transmission-mode has been added to table 3-11.

Note 1 following 3.7.2.3 e) has been updated to capture the information that the packet-status remains ‘radiated’ in case the transmission mode capability change occurred when the Packet had completed radiation, but was not yet acknowledged. That removes the conflict with 3.7.2.10.1 e).

Note 1 following 3.7.2.3 l) has been extended to capture the fact that deferring of the ‘production interrupted’ is also governed by the latest-production-time parameter value.

Notes have been added after 3.7.2.13 c) and d) to capture the fact that a production status change to ‘interrupted’ or ‘halted’ also implies a change of the transmission mode capability, thus requiring the pertinent notification be sent.

Note 3 has been added to 3.7.2.3 n) in order to capture that after any transition to the production-status ‘operational’ the sub-state is always ‘BD’.

A note 4 has been added after 3.7.2.3 e) to make clear that the ‘packet transmission mode mismatch’ event applies whenever an AD Packet has to be processed, but the production-status is not ‘operational’ with sub-state ‘AD and BD’. The equivalent clarification has been added to BBB3.3 a).

A note 2 has been added after table C-2 to warn users that directives invoked or events thrown while the production-status is not ‘operational’ are likely to fail.

Section 3.7.2.10.1 f) was extended in order to capture the two additional conditions that result in packet-status changing to ‘interrupted’: production-status changes to ‘halted’ or the directive ‘abort VC’ was executed.

Section 3.7.2.10.1 d) was added, introducing the new packet-status value ‘production not started’ equivalent to what in CLTU is called ‘undefined’.

A new notification type was added for the event that the SI that has the permission to invoke directives successfully binds (see 3.7.2.3 i)). The state table 4-1 has been extended accordingly and the event definition was added to table 4-2. A corresponding new gettable parameter (directive-invocation-online) has been added to table 3-11.



6. Appendix B - List of Service Management References in the SLE Books

FCLTU 2.1: “CLTU is within the maximum size set by service management”

RAF, CLTU, FSP, ROCF, RCF 2.3 “SLE service management determines the number and schedule of service instances to be provided, the resources required to enable those service instances, and the initial configuration of all service instances and their supporting resources”

RAF, ROCF, RCF 2.3 “Certain configuration parameters are associated with provision of RAF service while others are associated with production. Changes to RAF provision configuration parameters (e.g., quality of service) affect only a single service instance; the values of such parameters are initialized by service management when the service instance is created but may be modified subsequently by the user through RAF service operations specified in this Recommendation. Changes to RAF production configuration parameters (e.g., bit rate, frame length, coding type) potentially affect multiple service instances or potentially impact SLE Complex resources; consequently, those parameters may be modified only through service management.”

RAF, ROCF, RCF 2.3 “The form of initiation (user or provider initiated) that applies to a particular service instance is set by service management”. (See also 3.2.1.2)

RAF, ROCF, RCF 2.3 “The delivery mode applicable to a particular service instance is set by service management”

FSP 2.3: “Changes to FSP provision configuration parameters (e.g., the frequency at which status reports shall be generated) affect only a single service instance; the values of such parameters are initialized by service management”

RAF 2.4.1 “Optionally the provider shall have the capability to deliver always the Reed-Solomon check symbols for a given service instance as part of the data parameter. Configuration for this option is set by service management”

FCLTU 2.4.1: “CLCWs may be ignored, as an option set by Service Management”

RAF, FCLTU, FSP, ROCF, RCF 2.6.2: “SLE Utilization Management negotiates with SLE Complex Management to establish mutually agreed upon SLE service packages. Among other things, SLE service packages specify what service instances are to be provided, when those services are to be provided, and what resources are needed to enable those services.

Service packages also specify the initial values of the mission-dependent parameters required for service production and provision. Forward CLTU service production parameters include such things as bit rate,



modulation index, and subcarrier frequency. Provision parameters include such things as scheduled start and stop times of the Forward CLTU service instance.

Service production is guaranteed to occur only as needed to support service packages that have been scheduled and mutually agreed upon by SLE Complex Management and SLE Utilization Management”

FCLTU 2.6.3: “The Forward CLTU service relies on service management actions for establishment of the space link, management of the PLOP and, when possible, recovery from production interruption”

RAF, FCLTU, FSP, ROCF, RCF 2.6.4.6: “SLE Complex Management and SLE Utilization must mutually agree upon the value of the responder port identifier (and its translation) applicable to that service instance”

RAF, ROCF, RCF 2.6.4.6.2 Transfer buffer

“The size of this buffer is set by service management”

“The release timer counts down from an initial time value, named the latency limit, that is set by service management”

RAF, ROCF, RCF 2.6.4.6.3 On-line Frame Buffer – Off-line Frame Buffer

“The exact size of these buffers is set by service management”

FCLTU 2.7: “Modulation of the uplink signal with acquisition sequence and idle sequence, in accordance with the PLOP in effect, is under the control of service management”

RAF 2.7 Operational Scenario

“...the service instance is created by SLE Complex Management”

FCLTU 3.1.3.2: “the minimum delay time between CLTUs parameter as set by service management”

RAF, ROCF, RCF 3.1.4.1. “For each instance of RAF service, service management shall specify the authorized initiator and responder”

RAF, ROCF, RCF 3.1.9.2.15 “If the online frame buffer becomes full (e.g., because an extended communications outage prevents it from being emptied), the provider shall discard RafTransferData-Invocation and RafSyncNotifyInvocation records from the online frame buffer in oldest-first order. The number of frames to be discarded in such event is set by service management”

FCLTU, FSP 3.1.4.2: “The initiator shall have access to a registry of authorized responders and the responder shall have access to a registry of authorized initiators. These registries shall be maintained by SLE Complex Management and SLE Utilization Management, respectively”

[NOTE: Return services mention responder without specifying how it is set.](#)

FCLTU, FSP 3.1.4.4: “The initiator and responder shall indicate their identity by setting the parameters `initiator-identifier` and `responder-identifier` in the CLTU-BIND operation to the values assigned by service management”

[NOTE: This statement should probably be in the other books as well.](#)



RAF, FCLTU, FSP, ROCF, RCF 3.1.5.2: “SLE Complex Management and SLE Utilization Management shall agree on the level of authentication to be required for an association between a user and the Forward CLTU service provider”

RAF, FCLTU, FSP, ROCF, RCF 3.1.5.3: “SLE Complex Management and SLE Utilization Management shall agree on the algorithms used to generate and check credentials parameters and make these algorithms known to the service user and provider, together with associated parameters such as passwords or keys as necessary for the adopted algorithms”

RAF, ROCF, RCF 3.1.9.2.19 “During complete online service provision, the RAF service provider shall extract RafTransferDataInvocation and RafSyncNotify records from the online frame buffer, insert them into the transfer buffer, and pass RafTransferBuffer SLE-PDUs to the communications service without undue delay, subject only to limitations imposed by the underlying communications service, or to any maximum data rate limitation (‘metering’) that may be imposed through service management”

RAF, ROCF, RCF 3.1.9.2.20 “For complete online delivery mode, the size of the online frame buffer, the transfer buffer and the release timer shall be set by service management.”

RAF, FCLTU, FSP, ROCF, RCF 3.1.9.3: “Service management may further constrain the allowed values for a given service instance”

RAF, ROCF, RCF 3.1.9.3.13 “During offline service provision, the RAF service provider shall extract RafTransferDataInvocation records from the offline frame buffer, insert them into the transfer buffer, and pass RafTransferBuffer SLE-PDUs to the communications service without undue delay, subject only to limitations imposed by the underlying communications service, or to any maximum data rate limitation (‘metering’) that may be imposed through service management”

RAF, ROCF, RCF 3.1.9.3.14 “The size of the offline frame buffer and the transfer buffer shall be set by service management”

FCLTU, FSP 3.1.10.1: “The service package shall specify the amount of buffering the provider must maintain”

RAF, FCLTU, FSP, ROCF, RCF 3.2.1.4: “If the return from the invocation of CLTU-BIND is not received after a sufficiently long time (to be determined by service management)”

RAF, ROCF, RCF 3.2.1.5. “If the return from RAF-BIND is not received after a sufficiently long time, the initiator may attempt to recover by invoking the RAF-PEER-ABORT operation followed by another RAF-BIND. The length of the duration that constitutes ‘a sufficiently long time’ is determined by service management”

RAF 3.2.2.1.1. (i) “‘out of service’—the responder has been taken out of service for an indefinite period by management action (i.e., RAF production status is ‘halted’, see **Error! Reference source not found.**)”



RAF, ROCF, RCF 3.2.2.6. “SLE Complex Management and SLE Utilization Management must have previously agreed on the responder-port-identifier”

RAF, FCLTU, FSP, ROCF, RCF 3.2.2.11.1: “no such service instance”—the requested service instance is not defined by any agreed upon service package known to the responder”

RAF, FCLTU, FSP, ROCF, RCF 3.2.2.11.1: “invalid time”—the CLTU-BIND operation was invoked outside the service instance provision period agreed to in the service package”

RAF, FCLTU, ROCF, RCF 3.3.1.4. “If the return from RAF-UNBIND is not received after a sufficiently long time, the initiator should invoke the RAF-PEER-ABORT operation to abort the association. The length of the duration that constitutes ‘a sufficiently long time’ is determined by service management”

RAF, ROCF, RCF 3.4.2.6.6. “Offline processing latency is the length of time after a frame is acquired from the space link before it the frame or any fields contained in the frame is available for retrieval using the offline delivery mode. The actual value of offline processing latency is negotiated between SLE Complex Management and SLE Utilization Management.”

ROCF, RCF 3.4.2.7.1: “the selection of physical channel is determined through the service package”

RAF, FCLTU, FSP, ROCF, RCF 3.4.2.9.1 ““out of service”—the responder has been taken out of service for an indefinite period by management action (i.e., RAF production status is ‘halted’, see **Error! Reference source not found.**);”

NOTE: May be complex management and not necessarily service management

RAF, FCLTU, ROCF, RCF 3.4.3.2 RAF START negative result “if the provider’s SLE Complex Management determines that being ‘unable to comply’ is more than a transient problem, the provider may invoke the RAF-PEER-ABORT operation.”

NOTE: [May be complex management and not necessarily service management](#)

RAF, ROCF, RCF 3.6.2.4.2 “SLE Complex Management and SLE Utilization Management shall mutually agree upon the allowable values for antenna-ID and their interpretation”

RAF, ROCF, RCF 3.6.2.6: private annotation parameter
“if not ‘null’, there must be a prior arrangement between SLE Complex Management and SLE Utilization Management regarding the contents and interpretation of this parameter”

RAF 3.6.2.6.2 (3) “Whether Reed-Solomon coding is in use or not is managed information; i.e., it is not signaled in the data itself but must be known a priori. It is assumed that this information is conveyed through service management”

FSP 3.6.2.11.3: “Service management may elect to set the blocking-usage parameter to ‘not permitted’”



FCLTU, FSP 3.6.2.13.1: “‘invalid delay time’—the value of the delay-time is outside the range set in the service package”

ROCF, RCF 2.6.4.6.1: Transfer Buffer

“The size of this buffer is set by service management to achieve the appropriate level of ‘chunking’ of data”

FSP 3.7.2.3: “Packet Transmission Mode Mismatch”

“The requested mode may be disabled by service management”

RAF, FCLTU, FSP, ROCF, RCF 3.7.2.4.3. Production status halted “‘halted’—the RAF production process is stopped and production equipment is out of service due to management action;”

FCLTU, FSP Appendix G: “Direct management action is required, such as an operator directive causing the provider to halt production”

FSP 3.7.2.3: “The production process enters the halted status by service management decision, for example in case of malfunctioning equipment”

[NOTE: For RAF, ROCF, and RCF it is by management action. In FSP it is by service management decision. In FCLTU it is both.](#)

RAF, FCLTU, FSP, ROCF, RCF 3.8.2.8.1. “‘invalid reporting cycle’—the requested reporting-cycle value is outside the range mutually agreed upon by SLE Complex Management and SLE Utilization Management;”

[NOTE: FSP, FCLTU is by service management](#)

FSP 3.11.1.1: “In cases where underlying SLE transfer services (FTCF or Forward CLTU) are provided by a separate SLE Complex, the event handler must be set up such that FTCTF-THROW-EVENT or CLTU-THROW-EVENT operations are invoked on this separate Complex as necessary to achieve the desired updates of service management parameters”

RAF, FCLTU, FSP, ROCF, RCF 3.11.2.2. “‘unexpected responder ID’—the value of the responder-identifier parameter in the RAF-BIND return does not match the identity of the authorized responder for this service instance as specified by service management;”

FCLTU, FSP 3.11.2.6: “The event-qualifier parameter may be used to provide additional data constraining the actions to be performed by Complex Management in response to the event specified in event-identifier and shall be forwarded together with the event”

FCLTU, FSP 3.11.2.6: “The actual type and any constraints applicable to the data contained in the event-qualifier parameter depend on the event. These have to be checked by Complex Management”

FCLTU, FSP 3.11.3: “In order for the CLTU-THROW-EVENT to have an effect, there must be prior agreement between SLE Complex Management and SLE Utilization Management regarding the definition of event identifiers and the interpretation of any accompanying qualifying parameter”

RAF, FCLTU, FSP, ROCF, RCF 4.1.3. “For confirmed operations, if the invoker does not receive the return from the performer within a timeout period specified by service management, the invoker shall abort the association”



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RAF, FCLTU, FSP, ROCF, RCF 4.1.7.1. “An incoming invocation or return shall be ignored if the credentials parameter cannot be authenticated when, by management arrangement, credentials are required”

FCLTU, FSP Appendix G: “Direct management action is required, such as an operator directive restoring the desired configuration and setting the production-status to ‘configured’”