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# TECHNICAL REPORT

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
**ELCOM-90****Test procedures for Application Service Element**

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RESULT (summary)

This document specifies the conformance test procedure for ELCOM-90 application service element.

This .02 version is updated from the .01 version after FAT of the "Merge"-project for UNIX-versions and the Windows version.

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## KEYWORDS

SELECTED BY AUTHOR(S)	ELCOM	Communication Protocol
	FAT	Test procedures



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## INTRODUCTION

The test procedures defined in this document are used to:

- Test that the ELCOM-90 reference implementation of the application service element is conform with the ELCOM-90 specifications: [1], [2] and [3]. The expected state transitions for each procedure are described in [3], Appendix C. A reference to this document is given, when meaningful.
- Test that a supplier's implementation is conform and interoperates correctly with the reference implementation.
- Test that an ELCOM-90 implementation interoperates correctly with the ELCOM-83 reference version.

## REFERENCES

- [1] EFI TR A3701.02: "ELCOM-90. Application Programming Interface Specification".
- [2] EFI TR A3702.02: "ELCOM-90. Application Service Element. Service Definition".
- [3] EFI TR A3703.02: "ELCOM-90. Application Service Element. Protocol Specification".
- [4] EFI TR A3704.02: "ELCOM-90. Presentation Programming Interface Specification".
- [5] EFI TR A3705.02: "ELCOM-90. Presentation Service Definition".
- [6] EFI TR A3706.02: "ELCOM-90. Presentation Protocol Specification".
- [7] EFI TR A3825.02: "ELCOM-90 User Element Conventions".





## 1 ABBREVIATIONS AND DEFINITIONS

- Abcd = v** : Abcd is the formal input parameter found in ELCOM-90 Definition of Local Application Interface. v is the actual parameter or actual value used in the current procedure call.
- Efgh = x** : Efgh is the formal output parameter found in ELCOM-90 Definition of Local Application Interface. x is the actual value expected as the output of the current procedure call.
- Abcd  
:  
Efgh** : The : sign denotes a sequence of parameters. The actual sequence can be found in ELCOM-90 Definition of Local Application Interface. The sequence includes both Abcd and Efgh.
- Abcd = ( n. )  
or  
Abcd  
:  
Efgh = ( n. )** : The parameter Abcd or the parameter sequence Abcd to Efgh is to be found in step n of the current test procedure. The actual parameter values of the output parameter(s) of the current procedure call.
- = (default)** : Implies that the actual value of the formal input parameter is of no significance for the test, a default value can be used.
- = (undef.)** : Implies that the expected value of the formal parameter is undefined.
- /tekst/** : Additional information regarding a parameter.

Abbreviations and definitions used in ELCOM-90 Definition of Local Application Interface are also used in this document.

In the “Expected state transitions” part of the tests, ST0 is the same state as STC10. In document [3] this state is often called ST0I or ST0R, dependant of the entity being the Initiating or Responding Entity. For simplicity these states are called ST0 in this document.

Some of the tests will “Set time-out for service-user to infinite” (test 2.3, 3.3, 4.3, 5.3). During the connection termination part of these tests, some Result codes indicating errors will be given. This is because the provider needs to do some cleanup in the state machine, and is to be regarded as normal. These state transitions are not described in the “Expected state transitions”.

## 2 DEFINITIONS OF SPECIAL PURPOSE PROCEDURE

Two special purpose procedures are introduced, Test Data GENeration and Test Data CHeCK.

### 2.1 TDGEN

#### Function

The TDGEN procedure generates a sequence of test values. These values are so generated that their consistency with the original sequence can automatically be tested. The Length of the sequence is random.

#### Procedure call and arguments

TDGEN Data, Length

<u>Data</u>	Octets.
<u>Length</u>	Integer. Length of Data in octets.

### 2.2 TDCHCK

#### Function

The TDCHCK procedure checks if a given sequence of octets conforms to a sequence generated by the TDGEN procedure.

#### Procedure call and arguments

TDCHCK Data, Length, Status

Data	Octets.
Length	Integer. Length of Data in octets.
<u>Status</u>	Integer. Status on return
	- Result-ok
	- Mismatch.

### 3 SPECIFICATION OF TEST PROCEDURES

#### 3.1 ESTABLISHMENT AND TERMINATION

Test no: 1.1

Purpose:

To verify the correct establishment and termination of an application connection. The two actions are performed by the same system.

Expected results:

An application connection will be established and after that terminated. ([3], C1.1)

Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Start the two systems and initiate the communication software.		
1.	AATT	Entity-id : U:ACEP Type <u>Status</u> <u>P-ACEP</u>	= ( default )  = +1 / calling / <u>= +1</u> <u>= a</u>
2.		AATT	Entity-id : U:ACEP Type <u>Status</u> <u>P-ACEP</u>  = ( default )  = +2 / listener / <u>= +1</u> <u>= b</u>
3.	ACONRQ	P-ACEP Version Initiator : Acceptor User-data Length <u>Status</u>	= a = +19 / Class 3, Version 1 /  = ( default )  = 0 = +1
4.		ASWAIT	P-ACEP = b time-out = -1 <u>Status</u> = +1 <u>event</u> = +1
5.		ACONI	P-ACEP = b <u>Status</u> = +1 <u>Version</u> : <u>Length</u> = ( 3. )

6.				ACONRS	P-ACEP Version  Initiator : Acceptor Result User-data length <u>Status</u>	= b = +19 / Class 3, version 1 /  = (5.) = 0 / A-RO / = 0 = +1
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +2			
8.	ACONC	P-ACEP <u>Status</u> <u>Version</u> : <u>Length</u>	= 0 = +1  = (6.)			
9	ARELRQ	P-ACEP U-reason <u>Status</u>	= a = 0 = +1			
10.				ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 = +1 = +3
11.				ARELI	P-ACEP <u>Status</u> <u>U-reason</u>	= b = +1 = 0
12.				ARELRS	P-ACEP Result <u>Status</u>	= b = 0 / A-RO / = +1
13.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +4			
14.	ARELC	P-ACEP <u>Status</u> <u>Result</u>	= a = +1 = (12.)			
15.	ADET	Entity-id P-ACEP <u>Status</u>	= ( default ) = a = +1			
16.				ADET	Entity-id P-ACEP <u>Status</u>	= ( default ) = b = +1

Expected state transitions:

1. (STC0) → (STC1)
2. (STC0) → (STC3)
3. (STC3) → (STC10)
4. (STC1) → (STC10)
5. (STC10) → (STC2)
6. (STC10) → (STC4)
7. (STC4) → (STC0)
8. (STC2) → (STC0)

### Test no: 1.2

#### Purpose:

To verify the correct establishment and termination of an application connection. The two actions are performed by different systems.

#### Expected results:

An application connection will be established and after that terminated. ([3], C1.1)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Start the two systems and initiate the communication software.				
1.	AATT	Entity-id : U:ACEP Type Status <u>P-ACEP</u>	= (default)  = +1 / calling/ <u>= +1</u> <u>= a</u>		
2.			AATT	Entity-id : U:ACEP Type Status <u>P-ACEP</u>	= (default)  = +2 /listener/ <u>= +1</u> <u>= b</u>
3.	ACONRQ	P-ACEP Version Initiator : Acceptor User-data Length <u>Status</u>	= a = +19 /Class 3, version 1 /  = (default)  = 0 = +1		
4.			ASWAIT	P-ACEP time-out Status <u>event</u>	= b <u>= -1</u> <u>= +1</u> <u>= +1</u>
5.			ACONI	P-ACEP Status Version : <u>Length</u>	= b <u>= +1</u>  <u>= ( 3. )</u>

6.			ACONRS	P-ACEP Version  Initiator : Acceptor Result User-data Length <u>Status</u>	= b = +19 / Class 3, version 1 /  = (5.) = 0 / A-RO / = 0 = +1
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +2		
8.	ACONC	P-ACEP <u>Status</u> <u>Version</u> : <u>Length</u>	= 0 = +1  = (6.)		
9.			ARELRQ	P-ACEP U-reason <u>Status</u>	= b = 0 = +1
10.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +3		
11.	ARELI	P-ACEP <u>Status</u> <u>U-reason</u>	= a = +1 = 0		
12.	ARELRS	P-ACEP Result <u>Status</u>	= a = 0 / A-RO / = +1		
13.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 = +1 = +4
14.			ARELC	P-ACEP <u>Status</u> <u>Result</u>	= b = +1 = (12.)
15.	ADET	Entity-id P-ACEP <u>Status</u>	= ( default ) = a = +1		
16.			ADET	Entity-id P-ACEP <u>Status</u>	= ( default ) = b = +1

Expected state transitions:

1. (STC0) → (STC1)
2. (STC0) → (STC3)
3. (STC3) → (STC10)
4. (STC1) → (STC10)
5. (STC10) → (STC2)
6. (STC10) → (STC4)
7. (STC4) → (STC0)
8. (STC2) → (STC0)



Test no: 1.3
**Purpose:**

To verify the correct performance when a connection request is refused by the responding application user.

**Expected results:**

An application connection will not be established. ([3], C1.1)

**Performance:**

System A (Initiating entity)

System B (Responding entity)

0.	Start the two systems and initiate the communication software.				
1.	AATT	Entity-id : U:ACEP Type Status <u>P-ACEP</u>	= (default)  = +1 / calling / <u>= +1</u> <u>= a</u>		
2.			AATT	Entity-id : U:ACEP Type Status <u>P-ACEP</u>	= (default)  = +2 / listener / <u>= +1</u> <u>= b</u>
3.	ACONRQ	P-ACEP Version  Initiator : Acceptor User-data Length <u>Status</u>	= A = +19 /Class 3, Version 1 /  = (default)  = 0 <u>= +1</u>		
4.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b <u>= -1</u> <u>= +1</u> <u>= +1</u>
5.			ACONI	P-ACEP <u>Status</u> <u>Version</u> : <u>Length</u>	= b <u>= +1</u>  <u>= ( 3. )</u>

6.			ACONRS	P-ACEP Version Initiator : Acceptor Result User-data Length <u>Status</u>	= b = +2 / Class 2 , version 0/  = (5. )  = +13 / A-RC13 /  = 0 = +1
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +2</u>		
8.	ACONC	P-ACEP = 0 <u>Status</u> <u>Version</u> : <u>Length</u>	<u>= +1</u>  <u>= (6. )</u>		
9.	ADET	Entity-id P-ACEP <u>Status</u>	= ( default ) = a <u>= +1</u>		
10.			ADET	Entity-id P-ACEP <u>Status</u>	= ( default ) = b <u>= +1</u>

Expected state transitions:

1. (STC0) → (STC1)
2. (STC0) → (STC3)
3. (STC3) → (STC0)
4. (STC1) → (STC0)

Test no: 1.4
**Purpose:**

To verify the correct performance when the presentation layer issues a provider abort indication.

**Expected results:**

An application connection will be established and after that abnormally terminated. ([3], C1.1)

**Performance:**

System A (Initiating entity)

System B (Responding entity)

0.	Start the two systems and initiate the communication software.				
1.	AATT	Entity-id : U:ACEP Type Status <u>P-ACEP</u>	= (default)  = +1 / calling / <u>= +1</u> <u>= a</u>		
2.			AATT	Entity-id : U:ACEP Type Status <u>P-ACEP</u>	= (default)  = +2 / listener / <u>= +1</u> <u>= b</u>
3.	ACONRQ	P-ACEP Version Initiator : Acceptor User-data Length Status	= a = +19 /Class 3,          Version 1 /  = (default)  = 0 <u>= +1</u>		
4.			ASWAIT	P-ACEP time-out Status <u>event</u>	= b <u>= -1</u> <u>= +1</u> <u>= +1</u>
5.			ACONI	P-ACEP Status Version : <u>Length</u>	= b <u>= +1</u>  <u>= ( 3. )</u>

6.			ACONRS	P-ACEP Version Initiator : Acceptor Result User-data Length <u>Status</u>	= b = +19 / Class 3, version 1 /  = (5.)  = ( default )  = 0 <u>= +1</u>
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +2</u>		
8.	ACONC	P-ACEP <u>Status</u> <u>Version</u> : <u>Length</u>	= a <u>= +1</u>  <u>= (6.)</u>		
9.	Force N-reset or N-disconnect in both systems				
10.	ARELRQ	P-ACEP U-reason <u>Status</u>	= a = 0 <u>= -4 / Illegal use /</u>		
11.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +5</u>		
12.	APABT	P-ACEP <u>Status</u> <u>Reason</u>	= a <u>= +1</u> <u>= See note</u>		
13.			ASWAIT	P-ACEP <u>Time-out</u> <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +5</u>
14.			APABT	P-ACEP <u>Status</u> <u>Reason</u>	= b <u>= +1</u> <u>= See note</u>
15.	ADET	Entity-id P-ACEP <u>Status</u>	= ( default ) = a <u>= +1</u>		
16.			ADET	Entity-id P-ACEP <u>Status</u>	= ( default ) = b <u>= +1</u>

Note: Reason = A-RCxx/30-50/No-available-lower-level-connection  
or  
A-RSYSTEM/128-254/System-implementation-dependant-reason

Expected state transitions:

1. (STC0) → (STC1)
2. (STC0) → (STC3)
3. (STC3) → (STC10)
4. (STC1) → (STC10)
5. (STC10) → (STC0)
6. (STC10) → (STC0)

Test no: 1.5
**Purpose:**

To verify the correct performance when a presentation layer issues an abort indication during a disconnect operation.

**Expected results:**

An application connection will be established and after that abnormally terminated. ([3], C1.1)

**Performance:**

System A (Initiating entity)

System B (Responding entity)

0.	Start the two systems and initiate the communication software.				
1.	AATT	Entity-id : U:ACEP Type Status <u>P-ACEP</u>	= (default)  = +1 / calling / <u>= +1</u> <u>= a</u>		
2.			AATT	Entity-id : U:ACEP Type Status <u>P-ACEP</u>	= (default)  = +2 / listener / <u>= +1</u> <u>= b</u>
3.	ACONRQ	P-ACEP Version Initiator : Acceptor User-data Length Status	= a = +19 /Class 3, Version 1 /  = (default)  = 0 <u>= +1</u>		
4.			ASWAIT	P-ACEP time-out Status <u>event</u>	= b <u>= -1</u> <u>= +1</u> <u>= +1</u>
5.			ACONI	P-ACEP Status Version : <u>Length</u>	= b <u>= +1</u>  <u>= ( 3. )</u>

6.			ACONRS	P-ACEP Version Initiator : Acceptor Result User-data Length <u>Status</u>	= b = +19 / Class 3, version 1 /  = (5.)  = ( default )  = 0 <u>= +1</u>
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +2</u>		
8.	ACONC	P-ACEP <u>Status</u> <u>Version</u> : <u>Length</u>	= 0 <u>= +1</u>  <u>= (6.)</u>		
9.	ARELRO	P-ACEP U-reason <u>Status</u>	= a = 0 <u>= +1</u>		
10.			ASWAIT	P-ACEP <u>time-out</u> <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +3</u>
11.			ARELI	P-ACEP <u>Status</u> <u>U-reason</u>	= b <u>= +1</u> <u>= 0</u>
12.	Force N-reset or N-disconnect in both systems.				
13.			ARELRS	P-ACEP Result <u>Status</u>	= b = 0 / A-RO / = -4 / <u>Illegal use</u> /
14.			ASWAIT	P-ACEP <u>time-out</u> <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +5</u>
15.			APABT	P-ACEP <u>Status</u> <u>Reason</u>	= b <u>= +1</u> <u>= See note</u>
16.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +5</u>		
17.	APABT	P-ACEP <u>Status</u> <u>Reason</u>	= a <u>= +1</u> <u>= See note</u>		

Note: Reason = A-RCxx / 30-50 / No-available-lower-level-connection or  
A-RSYSTEM /128-254 / System-implementation-dependant-reason

Expected state transitions:

1. (STC0) → (STC1)
2. (STC0) → (STC3)
3. (STC3) → (STC10)
4. (STC1) → (STC10)
5. (STC10) → (STC2)
6. (STC10) → (STC4)
7. (STC4) → (STC0)
8. (STC2) → (STC0)



## 3.2 GROUP MANAGEMENT

Test no: 2.1

Purpose:

To verify the correct transfer of a group management request.

Expected results:

An A-Group-Mgmt confirmation with result code issued by remote service user. ([3], C2.1)

Performance:

System A (Initiating entity)

System B (Responding entity)

0. Establish an application connection between the two systems.

P-ACEP : = a

P-ACEP : = b

1. AGMRQ P-ACEP = a  
Function  
: = (default)  
Static  
Status = +1

2. ASWAIT P-ACEP = b  
time-out = -1  
Status = +1  
event = +11

3. AGMI P-ACEP = b  
Status = +1  
Function  
: = (1.)  
Static

4. AGMRS P-ACEP = b  
Function  
: = ( default )  
Result  
Status = +1

5. ASWAIT P-ACEP = a  
time-out = -1  
Status = +1  
event = +12

6. AGMC P-ACEP = a  
Status = +1  
Function  
: = (4.)  
Result

Expected state transitions:

1. (ST0) → (ST10)
2. (ST0) → (ST11)
3. (ST11) → (ST0)
4. (ST10) → (ST0)

### Test no: 2.2

#### Purpose:

To verify the supervision of the remote service user when an A-Group Mgmt request is performed.

#### Expected results:

An A-Group-Mgmt confirmation with result code equal to Remote-service-user-unavailable. ([3], C2.1)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.				
	P-ACEP := a		P-ACEP := b		
1.	AGMRQ	P-ACEP Function : Static <u>Status</u>	= a = (default) = <u>+1</u>		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 = <u>+1</u> = <u>+11</u>
3.			No action: let time-out expire.		
4.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = <u>+1</u> = <u>+12</u>		
5.	AGMC	P-ACEP <u>Status</u> <u>Function</u> : <u>Gnr</u> <u>Result</u>	= a = <u>+1</u> = (undef.) = <u>+79 / A-RD15 /</u>		

#### Expected state transitions:

1. (ST0) → (ST10)
2. (ST0) → (ST11)
3. (ST11) → (ST0)
4. (ST10) → (ST0)

### Test no: 2.3

#### Purpose:

To verify the supervision of the remote part of provider when an A-Group Mgmt request is performed.

#### Expected results:

An A-Group-Mgmt confirmation with result code equal to No-answer-from-remote-part-of-provider. ([3], C2.1)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
P-ACEP : = a		P-ACEP : = b	
1.		Set time-out for service-user to infinite.	
2.	AGMRQ	P-ACEP Function : Static <u>Status</u>	= a  = (default)  <u>= +1</u>
3.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +12</u>
4.	AGMC	P-ACEP <u>Status</u> <u>Function</u> : <u>Gnr</u> <u>Result</u>	= a <u>= +1</u>  <u>= (undef. )</u>  <u>= +78 / A-RD14 /</u>

#### Expected state transitions:

1. (ST0) → (ST10)
2. (ST0) → (ST11)
3. (ST10) → (ST0)

### Test no: 2.4

#### Purpose:

To verify the correct transfer of a group management request and the correct rejection of illegal procedure calls.

#### Expected results:

An A-Group-Mgmt confirmation with result code issued by remote service user. ([3], C2.1)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP	: = a	P-ACEP : = b
1.	AGMRQ	P-ACEP Function : Static <u>Status</u>	= a  = (default)  <u>= +1</u>
2.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b = -1 <u>= +1</u> <u>= +11</u>
3.	AGMRQ	P-ACEP Function : Static <u>Status</u>	= a  = ( default )  = -4 / <u>Illegal use</u> /
4.		AGMI	P-ACEP <u>Status</u> <u>Function</u> : <u>Static</u>  = b <u>= +1</u>  = (1. )
5.		AGMI	P-ACEP <u>Status</u> <u>Function</u> : <u>Static</u>  = b <u>= 0 / No event /</u>  = ( undef. )
6.		AGMRS	P-ACEP Function : Result <u>Status</u>  = b  = ( default )  <u>= +1</u>
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +12</u>

8.	AGMC	P-ACEP <u>Status</u> <u>Function</u> : <u>Result</u>	= a <u>= +1</u>  <u>= (6.)</u>
----	------	--	---

Expected state transitions:

1. (ST0) → (ST10)
2. (ST0) → (ST11)
3. (ST11) → (ST0)
4. (ST10) → (ST0)

### 3.3 GROUP DEFINITIONS

#### Test no: 3.1

##### Purpose:

To verify the correct transfer of repeated group definition requests to define a large group.

##### Expected results:

An A-Def-Group-Conf confirmation with result code issued by the remote service user for each request. ([3], C2.2)

##### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.			
	P-ACEP : = a		P-ACEP : = b	
1.	ADGRQ	P-ACEP G-type : Gnr Index1 Index2 Objid <u>Status</u>	= a = ( default ) = 1 = 1+ n = ( default ) = +1	
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u> = b = -1 = +1 = +13
3.			ADGI	P-ACEP <u>Status</u> <u>G-type</u> : <u>Objid</u> = b = +1 = ( 1. )
4.			ADGRS	P-ACEP Gtype : Result <u>Status</u> = b = ( default ) = +1
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +14	
6.	ADGC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = +1 = ( 4. )	

7.	ADGRQ	P-ACEP Gtype : Gnr Index1 Index2 Objid <u>Status</u>	= a  = ( default )  = 2 + n = ( m>n ) = ( default ) <u>= +1</u>
8.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b <u>= -1</u> <u>= +1</u> <u>= +13</u>
9.		ADGI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Objid</u>  = b <u>= +1</u>  <u>= (7.)</u>
10.		ADGRS	P-ACEP Gtype : Result <u>Status</u>  = b  <u>= ( default )</u>  <u>= +1</u>
11.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +14</u>
12.	AGMC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a <u>= +1</u>  <u>= ( 10. )</u>

Expected state transitions:

1. (ST0) → (ST12)
2. (ST0) → (ST13)
3. (ST13) → (ST0)
4. (ST12) → (ST0)
5. (ST0) → (ST12)
6. (ST0) → (ST13)
7. (ST13) → (ST0)
8. (ST12) → (ST0)



### Test no: 3.2

#### Purpose:

To verify the supervision of the remote service user when an A-Def-Group-Conf request is performed.

#### Expected results:

An A-Def-Group-Conf confirmation with result code equal to Remote-service-user-unavailable. ([3], C2.2)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP := a	P-ACEP := b	
1.	ADGRQ	P-ACEP Gtype : Objid <u>Status</u>	= a  = (default)  <u>= +1</u>
2.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b = -1 <u>= +1</u> <u>= +13</u>
3.		No action; let time-out expire.	
4.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +14</u>
4.	ADGC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Gnr</u> <u>Result</u>	= a <u>= +1</u>  = (undef.)  <u>= +79 / A-RD15 /</u>

#### Expected state transitions:

1. (ST0) → (ST12)
2. (ST0) → (ST13)
3. (ST13) → (ST0)
4. (ST12) → (ST0)

### Test no: 3.3

#### Purpose:

To verify the supervision of the remote part of provider when an A-Def-Group-Conf request is performed.

#### Expected result:

An A-Def-Group-Conf confirmation with result code equal to No-answer-from-remote-part-of-provider. ([3], C2.2)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP := a	P-ACEP := b	
1.		Set time-out for service-user to infinite.	
2.	ADGRQ	P-ACEP Gtype : Objid <u>Status</u>	= a = (default) <u>= +1</u>
3.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +14</u>
4.	ADGC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a <u>= +1</u>  = ( undef. ) <u>= +78 / A-RD14 /</u>

#### Expected state transitions:

1. (ST0) → (ST12)
2. (ST0) → (ST13)
3. (ST12) → (ST0)

### 3.4 READOUT OF GROUP DEFINITIONS

#### Test no: 4.1

##### Purpose:

To verify the correct transfer of a group configuration to the requestor.

##### Expected results:

An A-Get-Group-Def confirmation with result code issued by the remote service user.  
([3], C2.3)

##### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.				
P-ACEP : = a			P-ACEP : = b		
1.	AGGRQ	P-ACEP Gtype : Gnr Index 1 Index 2 <u>Status</u>	= a  = (default)  <u>= 1</u> <u>= n</u> <u>= +1</u>		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +15</u>
3.			AGGI	P-ACEP <u>Status</u> <u>G-type</u> : <u>Index 2</u>	= b <u>= +1</u>  = ( 1. )
4.			AGGRS	P-ACEP G-type : Result <u>Status</u>	= b  = ( default )  <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +16</u>		
6.	AGGC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a <u>= +1</u>  = ( 4. )		

Expected state transitions:

1. (ST0) → (ST14)
2. (ST0) → (ST15)
3. (ST15) → (ST0)
4. (ST14) → (ST0)

### Test no: 4.2

#### Purpose:

To verify the supervision of the remote service user when an A-Get-Group-Def request is performed.

#### Expected results:

An Get-Group-Def confirmation with result code equal to Remote-service-user-unavailable. ([3], C2.3)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.				
	P-ACEP := a		P-ACEP := b		
1.	AGGRQ	P-ACEP Gtype : Index 2 <u>Status</u>	= a  = (default)  = +1		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 = +1 = +15
3.			No action; let time-out expire.		
4.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +16		
5.	AGGC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Objid</u> <u>Result</u>	= a = +1  = ( undef. )  = 79 / A-RD15 /		

#### Expected state transitions:

1. (ST0) → (ST14)
2. (ST0) → (ST15)
3. (ST15) → (ST0)
4. (ST14) → (ST0)

### Test no: 4.3

#### Purpose:

To verify the supervision of the remote part of provider when as A-Get-Group-Conf request is performed.

#### Expected results:

An A-Get-Group-Conf confirmation with result code equal to No-answer-from-remote-part-of-provider. ([3], C2.3)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP : = a	P-ACEP : = b	
1.		Set time-out for service-user to infinite.	
2.	AGGRQ	P-ACEP Gtype : Index 2 <u>Status</u>	= a  = (default)  <u>= +1</u>
3.	ASWAIT	P-ACEP time-out <u>Status</u> event	= a = -1 <u>= +1</u> = +16
4.	AGGC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Objid</u> <u>Result</u>	= a = +1  = ( undef. )  <u>= +78 / A-RD14 /</u>

#### Expected state transitions:

1. (ST0) → (ST14)
2. (ST0) → (ST15)
3. (ST14) → (ST0)

### 3.5 INFORMATION TRANSFER (INITIATED)

#### Test no: 5.1

#### Purpose:

To verify a normal initiated group transfer of data consisting of one block of data.

#### Expected results:

Data should be transferred. ([3], C1.2)

#### Performance:

System A (Initiating entity) System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP : = a	P-ACEP : = b	
1.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a = (default) <u>= +1</u>
2.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u> = b = -1 <u>= +1</u> <u>= +17</u>
3.		AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u> = b <u>= +1</u> <u>= ( 1. )</u>
4.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : <u>Result</u> <u>Status</u> = b = ( default ) = +1 / Init. / = ( default ) = false = ( default ) <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> event	= a = -1 <u>= +1</u> <u>= +18</u>

6.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = ( default ) = +1  = ( 4. )		
7.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = ( default )  <u>+ 1 / Init. /</u> = ( default ) <u>= +1</u>		
8.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
9.			ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  <u>= ( 7. )</u>

Expected state transitions:

1. (ST0) → (ST1)
2. (ST0) → (ST2)
3. (ST2) → (ST3)
4. (ST1) → (ST4)
5. (ST4) → (ST0)
6. (ST3) → (ST0)



### Test no: 5.2

#### Purpose:

To verify the supervision of the remote service user.

#### Expected results:

Data indication with result code equal to Remote-service-user- unavailable. ([3], C1.2)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP	: = a	P-ACEP : = b
1.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  <u>= +1</u>
2.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b = -1 <u>= +1</u> <u>= +17</u>
3.			No action; let time-out expire.
4.	ASWAIT	P-ACEP time-out <u>Status</u> event	= a = -1 <u>= +1</u> <u>= +18</u>
5.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Gnr</u> <u>Transmod</u> <u>Index 1</u> : <u>Data</u> <u>Length</u> <u>Result</u>	= a = ( default ) <u>= +1</u>  = ( undef. )  = +1 / <u>Init.</u> /  = ( undef. )  = 0 <u>= +79 / A-RD15 /</u>

#### Expected state transitions:

1. (ST0) → (ST1)
2. (ST0) → (ST2)
3. (ST2) → (ST0)
4. (ST1) → (ST0)

### Test no: 5.3

#### Purpose:

To verify the supervision of the remote part of provider.

#### Expected results:

Data indication with result code equal to No-answer-from-remote-part-of provider. ([3], C1.2)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP : = a	P-ACEP : = b	
1.		Set time-out for service-user to infinite.	
2.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  <u>= +1</u>
3	ASWAIT	P-ACEP time-out <u>Status</u> event	= a = -1 <u>= +1</u> = +18
4.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : Gnr <u>Transmod</u> <u>Index 1</u> : <u>Data</u> <u>Length</u> <u>Result</u>	= a = ( default ) <u>= +1</u>  <u>= ( undef. )</u>  <u>= +1 / Init. /</u>  = ( undef. )  = 0 <u>= +78 / A-RD14 /</u>

#### Expected state transitions:

1. (ST0) → (ST1)
2. (ST1) → (ST0)

### Test no: 5.4

#### Purpose:

To verify data transfer of several data blocks.

#### Expected results:

Several data blocks are transferred. ([3], C1.2)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP	: = a	P-ACEP : = b
1.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  <u>= +1</u>
2.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b = -1 <u>= +1</u> <u>= +17</u>
3.		AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>  = b <u>= +1</u>  <u>= ( 1. )</u>
4.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>  = b = ( default ) = +1 / Init. / = ( default ) = true = ( default ) <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>

6.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = ( default ) <u>= +1</u>  = ( 4. )		
7.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : <u>Result</u> <u>Status</u>	= b   = +1 / Init. / = ( default )  = true = ( default )  <u>= +1</u>
8.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : <u>Result</u> <u>Status</u>	= b  = ( default )  = +1 / Init. / = ( default )  = true = ( default )  <u>= +1</u>
9.	ASWAIT	P-ACEP time-out <u>Status</u> event			= a = -1 <u>= +1</u> <u>= +18</u>
10.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>			= a = ( default ) <u>= +1</u>  = ( 7. )

11.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  =  = +1 / Init. /  = ( default )  = false  = ( default )  <u>= +1</u>
12.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
13.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = ( default ) <u>= +1</u>  <u>= ( 8 )</u>		
14.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
15.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = ( default ) <u>= +1</u>  <u>= ( 11 )</u>		
16.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = ( default )  = +1 / Init. / = ( default ) <u>= +1</u>		
17.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +19</u>
18.			ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b = +1  = ( 16. )



Expected state transitions:

- |     |       |   |       |       |   |       |
|-----|-------|---|-------|-------|---|-------|
| 1.  | (ST0) | → | (ST1) |       |   |       |
| 2.  |       |   |       | (ST0) | → | (ST2) |
| 3.  |       |   |       | (ST2) | → | (ST2) |
| 4.  | (ST1) | → | (ST1) |       |   |       |
| 5.  |       |   |       | (ST2) | → | (ST2) |
| 6.  |       |   |       | (ST2) | → | (ST2) |
| 7.  | (ST1) | → | (ST1) |       |   |       |
| 8.  |       |   |       | (ST2) | → | (ST3) |
| 9.  | (ST1) | → | (ST1) |       |   |       |
| 10. | (ST1) | → | (ST4) |       |   |       |
| 11. | (ST4) | → | (ST0) |       |   |       |
| 12. |       |   |       | (ST3) | → | (ST0) |

### Test no: 5.5

#### Purpose:

To verify the reception of an unrequested confirm data indication.

#### Expected results:

The confirm data indication is received. ([3], C1.2)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP : = a	P-ACEP : = b	
1.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  <u>= +1</u>
2.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b = -1 <u>= +1</u> <u>= +17</u>
3.		AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>  = b <u>= +1</u>  <u>= ( 1. )</u>
4.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>  = b = ( default ) = +1 / Init. / = ( default ) = true = ( default )  <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>



Expected state transitions:

- Note: Any result value  $> 0$  is appropriate.

Test no: 5.6
**Purpose:**

To verify the supervision of the remote service user.

**Expected results:**

Confirm data indication with result code equal to Remote-service-user-unavailable. ([3], C1.2)

**Performance:**

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP : = a	P-ACEP : = b	
1.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  <u>= +1</u>
2.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b = -1 <u>= +1</u> <u>= +17</u>
3.		AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>  = b <u>= +1</u>  <u>= ( 1. )</u>
4.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>  = b = ( default ) = +1 / Init. / = ( default ) = false = ( default )  <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> event	= a = -1 <u>= +1</u> <u>= +18</u>

6.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = ( default ) = +1 = ( 4. )
7.	No action; let time-out expire.		
8.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u> = b = -1 = +1 = +19
9.		ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Transmod</u> <u>Result</u> = b = +1 = (undef. ) = +79 / A-RD15/

Expected state transitions:

1. (ST0) → (ST1)
2. (ST0) → (ST2)
3. (ST2) → (ST3)
4. (ST1) → (ST4)
5. (ST4) → (ST0)
6. (ST3) → (ST0)

### Test no: 5.7

#### Purpose:

To verify the supervision of the remote part of provider when a confirmation is expected.

#### Expected results:

Confirm data indication with result code equal to No-answer-from-remote-part-of-provider.  
([3], C1.2)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.				
P-ACEP : = a			P-ACEP : = b		
1.	Set time-out for service-user to infinite.				
2.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  <u>= +1</u>		
3.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +17</u>	
4.		AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>	= b <u>= +1</u>  <u>= ( 2. )</u>	
5.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = ( default )  = +1 / Init. /  = ( default )  = false  = ( default )  <u>= +1</u>	
6.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>	

7.	ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Gnr</u> <u>Transmod</u> <u>Result</u>	= b = +1 = (undef. ) = +1 / Init. / = +78 / A-RD14 /
----	------	--	--

Expected state transitions:

1. (ST0) → (ST1)
2. (ST0) → (ST2)
3. (ST2) → (ST3)
4. (ST3) → (ST0)

### Test no: 5.8

#### Purpose:

To verify a normal initiated group transfer of data consisting of one block of data and to verify the correct rejection of illegal procedure calls.

#### Expected results:

Data should be transferred. ([3], C1.2)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.				
P-ACEP := a			P-ACEP := b		
1.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  = +1 / Init. / = ( default ) = -4 / <u>Illegal use</u> /		
2.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = ( default )  = +1 / Init. /  = ( default )  = false  = ( default )  = +4 / <u>Illegal use</u> /
3.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  = +1		
4.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 = +1 = +17
5.			AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>	= b = +1  = ( 3. )

6.				ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = ( default )  = +1 / Init. /  = ( default )  = false  = ( default )  <u>= +1</u>
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>			
8.	ADTI	P-ACEP Size <u>Status</u> <u>G-type</u> : <u>Result</u>	= a = ( default ) <u>= +1</u>  <u>= ( 6. )</u>			
9.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = ( default )  = -4 / <u>Illegal use</u> /			
10.	ACDRQ	P-ACEP G-type : Gnr Transmod Result <u>Status</u>	= a  = ( default )  = +1 / Init. / = ( default ) <u>= +1</u>			
11.				ATCRQ	P-ACEP <u>Status</u>	= b <u>= -4 / Illegal use /</u>
12.				ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b <u>= -1</u> <u>= +1</u> <u>= +19</u>
13.				ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  <u>= ( 10. )</u>

Expected state transitions:

1. (ST0) → (ST1)
2. (ST0) → (ST2)
3. (ST2) → (ST3)
4. (ST1) → (ST4)
5. (ST4) → (ST0)
6. (ST3) → (ST0)



Test no: 5.9
**Purpose:**

To verify initiated group transfer of data on two different connections.

**Expected results:**

Data should be transferred. ([3], C1.2)

**Performance:**

System A (Initiating entity)

System B (Responding entity)

0.	Establish two application connections between the two systems.				
	P-ACEP := a1 and a2		P-ACEP := b1 and b2		
1.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a1 = (default) = +1		
2.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a2 = (default) = +1		
3.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b1 = -1 = +1 = +17
4.			AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>	= b1 = +1 = ( 1. )
5.			TDGEN	<u>Data</u> <u>Length</u>	= Ds = Ls
6.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data Length Result <u>Status</u>	= b1 = ( default ) = +1 / Init. / = ( default ) = true = Ds = Ls = 0 / A-R0/ = +1

7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b2 = -1 = +1 = +17
8.	AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>	= b2 = +1 = ( 2. )
9.	TDGEN	<u>Data</u> <u>Length</u>	= Ds = Ls
10.	ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data Length Result <u>Status</u>	= b2 = ( default ) = +1 / Init. / = ( default ) = true = Ds = Ls = 0 / A-R0 / = +1
11.	TDGEN	<u>Data</u> <u>Length</u>	= Ds = Ls
12.	ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data Length Result <u>Status</u>	= b1 = ( default ) = +1 / Init. / = ( default ) = false = Ds = Ls = 0 / A-R0 / = +1
13.	TDGEN	<u>Data</u> <u>Length</u>	= Ds = Ls

14.			ADTRO	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data Length Result <u>Status</u>	= b2  = ( default )  = +1 / Init. /  = ( default )  = false = Ds = Ls = 0 / A-R0 / <u>= +1</u>
15.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a1 = -1 <u>= +1</u> <u>= +18</u>		
16.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>More-D</u> <u>Data</u> <u>Length</u> <u>Result</u>	= a1 = (default) <u>= +1</u>  <u>= ( 6. )</u>  <u>= Dr</u> <u>= Lr</u> <u>= 0 / A-R0 /</u>		
17.	TDCHCK	P-ACEP <u>Length</u> <u>Status</u>	= Dr = Lr <u>= S</u>		
if S < > OK then PRINT "TDCHCK error"					
18.	ASWAIT	P-ACEP Size <u>Status</u> <u>event</u>	= a1 = -1 <u>= +1</u> <u>= +18</u>		
19.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>More-D</u> <u>Data</u> <u>Length</u> <u>Result</u>	= a1 = (default) <u>= +1</u>  <u>= ( 12. )</u>  <u>= Dr</u> <u>= Lr</u> <u>= 0 / A-R0 /</u>		
20.	TDCHCK	P-ACEP <u>Length</u> <u>Status</u>	= Dr = Lr <u>= S</u>		
if S < > OK then PRINT "TDCHCK error"					

21.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a1  = ( default )  = +1 / Init. / = ( default ) <u>= +1</u>
22.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a2 = -1 <u>= +1</u> <u>= +18</u>
23.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>More-D</u> <u>Data</u> <u>Length</u> <u>Result</u>	= a2 = ( default ) <u>= +1</u>  <u>= ( 10. )</u>  <u>= Dr</u> <u>= Lr</u> <u>= 0 / A-R0 /</u>
24.	TDCHCK	Data Length <u>Result</u>	<u>= Dr</u> <u>= Lr</u> <u>= S</u>
if S < > OK then PRINT "TDCHCK error"			
25.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a2 = -1 <u>= +1</u> <u>= +18</u>
26.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>More-D</u> <u>Data</u> <u>Length</u> <u>Result</u>	= a2 = ( default ) <u>= +1</u>  <u>= ( 14. )</u>  <u>= Dr</u> <u>= Lr</u> <u>= 0 / A-R0 /</u>
27.	TDCHCK	Data Length <u>Result</u>	<u>= Dr</u> <u>= Lr</u> <u>= S</u>
if S < > OK then PRINT "TDCHCK error"			

28.	ACDRO	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a2  = (default )  = +1 / Init. / = ( default) <u>= +1</u>
29.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b1 = -1 <u>= +1</u> <u>= +19</u>
30.		ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>  = b1 <u>= +1</u>  = ( 21. )
31.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b2 = -1 <u>= +1</u> <u>= +19</u>
32.		ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>  = b2 <u>= +1</u>  = ( 28. )
33.	if "auto test" then GO TO 1.		

Expected state transitions:

	Connection: 1	Connection: 2	Connection: 1	Connection: 2
1.	(ST0) → (ST1)			
2.		(ST0) → (ST1)		
3.			(ST0) → (ST2)	
4.			(ST2) → (ST2)	
5.				(ST0) → (ST2)
6.				(ST2) → (ST2)
7.			(ST2) → (ST3)	
8.				(ST2) → (ST3)
9.	(ST1) → (ST1)			
10.	(ST1) → (ST4)			
11.	(ST4) → (ST0)			
12.		(ST1) → (ST1)		
13.		(ST1) → (ST4)		
14.		(ST4) → (ST0)		
15.			(ST3) → (ST0)	
16.				(ST3) → (ST0)

### 3.6 SPONTANEOUS DATA MANAGEMENT

#### Test no: 6.1

#### Purpose:

To verify the correct transfer of a spontaneous management request.

#### Expected results:

An A-Spont-Mgmt confirmation with result code issued by the remote service user. ([3], C2.4)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
	P-ACEP	: = a	P-ACEP : = b
1.	ASMRQ	P-ACEP Function : Gnr <u>Status</u>	= a = (default)  <u>= +1</u>
2.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b = -1 <u>= +1</u> <u>= +20</u>
3.		ASMI	P-ACEP <u>Status</u> <u>Function</u> : <u>Gnr</u>  = b <u>= +1</u>  <u>= ( 1. )</u>
4.		ASMRS	P-ACEP Function : Result <u>Status</u>  = b = ( default )  <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +21</u>
6.	ASMC	P-ACEP <u>Status</u> <u>Function</u> : <u>Result</u>	= a <u>= +1</u>  <u>= ( 4. )</u>

Expected state transitions:

1. (ST0) → (ST16)
2. (ST0) → (ST17)
3. (ST17) → (ST0)
4. (ST16) → (ST0)



### Test no: 6.2

#### Purpose:

To verify the supervision of the remote service user when an A-Spont-Mgmt request is performed.

#### Expected results:

An A-Spont-Mgmt confirmation with result code equal to Remote-Service-user-unavailable.  
([3], C2.4)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.				
	P-ACEP : = a		P-ACEP : = b		
1.	ASMRQ	P-ACEP Function : Gnr <u>Status</u>	= a = (default) = +1		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 = +1 = +15
3.			No action; let time-out expire.		
4.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +21		
5.	ASMC	P-ACEP <u>Status</u> <u>Function</u> : Gnr <u>Result</u>	= a = +1 = (undef. ) = +79 / A-RD15 /		

#### Expected state transitions:

1. (ST0) → (ST16)
2. (ST0) → (ST17)
3. (ST17) → (ST0)
4. (ST16) → (ST0)

### Test no: 6.3

#### Purpose:

To verify the supervision of the remote part of provider when an A-Spont-Mgmt request is performed.

#### Expected results:

An A-Spont-Mgmt confirmation with result code equal to No-answer-from-remote-part-of-provider. ([3], C2.4)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems.		
P-ACEP : = a		P-ACEP : = b	
1.	Set time-out for service-user to infinite.		
2.	ASMRQ	P-ACEP Function : Gnr <u>Status</u>	= a  = (default)  <u>= +1</u>
3.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +21</u>
4.	ASMC	P-ACEP <u>Status</u> <u>Function</u> : <u>Gnr</u> <u>Result</u>	= a <u>= +1</u>  = ( undef. )  <u>= +78 / A-RD14 /</u>

#### Expected state transitions:

1. (ST0) → (ST16)
2. (ST0) → (ST17)
3. (ST16) → (ST0)

### 3.7 INFORMATION TRANSFER (SPONTANEOUS AND INITIATED)

Test no: 7.1

Purpose:

To verify the correct transfer of one group of information spontaneously initiated by the responding service user.

Expected result:

One group of information is received by the initiating service user and the confirmation is delivered to the sending service user. ([3], C2.5)

Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems			
	P-ACEP : = a		P-ACEP : = b	
1.			ADTRQ	P-ACEP Gtype : = b : = (default) Gnr Transmod = +2 /Spont./ Index1 : = (default) : T More-D : = false Data : = (default) : Result Status = +1
2.	ASWAIT	P-ACEP time-out Status event	= a = -1 = +1 = +18	
3.	ADTI	P-ACEP Size Status Gtype : Result	= a = (default) = +1 = (1.)	
4.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result Status	= a = (default) = +2 /Spont./ = (default) = +1	

5.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
6.		ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  <u>= (4.)</u>

Expected state transitions:

1. (STS0) → (STS4)
2. (STS0) → (STS3)
3. (STS3) → (STS0)
4. (STS4) → (STS0)

Test no: 7.2
**Purpose:**

To verify the correct transfer of two groups of information spontaneously initiated by the responding service user.

**Expected result:**

Two groups of information are received and confirmed with one A-Conf-Data request.  
([3], C2.5)

**Performance:**
**System A (Initiating entity)**
**System B (Responding entity)**

0.	Establish an application connection between the two systems.		
	P-ACEP = a	P-ACEP = b	
1.		ADTRO	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u> = b = (default) = +2 /Spont./ = (default) = true = (default) = +1
2.	ASWAIT	P-ACEP Size Status <u>event</u> = a = -1 = +1 = +18	
3.	ADTI	P-ACEP Size Status <u>Gtype</u> : <u>Result</u> = a = (default) = +1 = (1.)	

4.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = false  = (default)  <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
6.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (4.)</u>		
7.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  = +2 /Spont./ = (default) <u>= +1</u>		
8.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
9.			ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  <u>= (7.)</u>

Expected state transitions:

1. (STS0) → (STS2)
2. (STS0) → (STS1)
3. (STS2) → (STS4)
4. (STS1) → (STS3)
5. (STS3) → (STS0)
6. (STS4) → (STS0)

### Test no: 7.3

#### Purpose:

To verify the correct transfer of four groups of information spontaneously initiated by the responding service user.

#### Expected result:

Four groups of information are received and confirmed with one A-Conf-Data request.  
([3], C2.5)

#### Performance:

System A (initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a		P-ACEP = b		
1.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = true  = (default)  <u>= +1</u>
2.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
3.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (1.)</u>		
4.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = true  = (default)  <u>= +1</u>



5.				ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = true  = (default)  <u>= +1</u>
6.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>			
7.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>result</u>	= a = (default) <u>= +1</u>  <u>= (4.)</u>			
8.				ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = false  = (default)  <u>= +1</u>
9.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>			
10.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (5.)</u>			
11.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>			

12.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (8.)</u>		
13.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  = +2 /Spont./ = (default) <u>= +1</u>		
14.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
15.			ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  <u>= (13.)</u>

Expected state transitions:

1. (STS0) → (STS2)
2. (STS0) → (STS1)
3. (STS2) → (STS2)
4. (STS2) → (STS2)
5. (STS1) → (STS1)
6. (STS2) → (STS4)
7. (STS1) → (STS1)
8. (STS1) → (STS3)
9. (STS3) → (STS0)
10. (STS4) → (STS0)

Test no: 7.4
**Purpose:**

To verify the possibility to request confirmation of received data even when more information are to be delivered according to the More-D indication.

**Expected result:**

An A-Conf-Data indication with result code not equal to Result-ok given to the sending service user. ([3], C2.5)

**Performance:**

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a		P-ACEP = b		
1.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = true  = (default)  <u>= +1</u>
2.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
3.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (1.)</u>		
4.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  = +2 /Spont./ = +83 <u>= +1</u>		
5.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>

6.		ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= 6 <u>= +1</u> <u>= (4.)</u>
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Expected state transitions:

1. (STS0) → (STS2)
2. (STS0) → (STS1)
3. (STS1) → (STS0)
4. (STS2) → (STS0)

### Test no: 7.5

#### Purpose:

To verify the supervision of the sending service user when more data are to be delivered.

#### Expected result:

An A-Data indication with result code equal to Remote-service-user-unavailable is given to the receiving service user. ([3], C2.5)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems			
	P-ACEP = a		P-ACEP = b	
1.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u> = b = (default) = +2 /Spont./ = (default) = true = (default) = +1
2.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +18	
3.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) = +1 = (1.)	
4.			<u>No action; let time-out expire</u>	
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +18	

6.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Gnr</u> <u>Transmod</u> <u>Index 1</u> : <u>Data</u> <u>Length</u> <u>Result</u>	= a = (default) = +1  = (undef.)  = +2 /Spont./  = (undef.)  = 0 = +79 /A-RD15/
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Expected state transitions:

1. (STS0) → (STS2)
2. (STS0) → (STS1)
3. (STS2) → (STS0)
4. (STS1) → (STS0)

Test no: 7.6
**Purpose:**

To verify the supervision of the remote service provider when more data are to be delivered, but neither data nor error indications are received.

**Expected result:**

An A-Data indication with result code equal to No-answer-from-remote-part-of-provider.  
([3], C2.5)

**Performance:**

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems		
	P-ACEP = a	P-ACEP = b	
1.		Set time-out for service-user to infinite	
2.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u> = b = (default) = +2 /Spont./ = (default) = true = (default) = +1
3.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +18
4.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) = +1 = (1.)
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +18

6.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Gnr</u> <u>Transmod</u> <u>Index 1</u> : <u>Data</u> <u>Length</u> <u>Result</u>	= a = (default) = +1  = (undef.)  = +2 /Spont./  = (undef.)  = 0 = +78 /A-RD14/
----	------	---	--

Expected state transitions:

1. (STS0) → (STS2)
2. (STS0) → (STS1)
3. (STS1) → (STS0)



Test no: 7.7
**Purpose:**

To verify the supervision of the receiving service user when a confirmation request is expected.

**Expected result:**

An A-Conf-Data indication with result code equal to Remote-service-user-unavailable is given to the sending service user. ([3], C2.5)

**Performance:**

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a		P-ACEP = b		
1.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = false  = (default)  <u>= +1</u>
2.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
3.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (1.)</u>		
4.	No action: let time-out expire				
5.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
6.			ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : Gnr <u>Transmod</u> <u>Result</u>	= b <u>= +1</u>  <u>= (undef.)</u>  = +2 /Spont./ <u>= 79 /A-RD79/</u>

Expected state transitions:

1. (STS0) → (STS4)
2. (STS0) → (STS3)
3. (STS3) → (STS0)
4. (STS4) → (STS0)

### Test no: 7.8

#### Purpose:

To verify the supervision of the receiving service provider.

#### Expected result:

An A-Conf-Data indication with result code equal to No-answer-from-remote-part-of-provider.  
([3], C2.5)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems			
	P-ACEP = a	P-ACEP = b		
1.	Set time-out for service user to infinite			
2.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = false  = (default  <u>= +1</u>
3.		ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
4.		ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Gnr</u> <u>Transmod</u> <u>Result</u>	= b <u>= +1</u>  <u>= (undef.)</u>  <u>= +2 /Spont./</u> <u>= +78</u>

#### Expected state transitions:

1. (STS0) → (STS4)
2. (STS0) → (STS3)
3. (STS4) → (STS0)

### Test no: 7.9

#### Purpose:

To verify the correct transfer of one group of information spontaneously initiated by the responding service user and to verify the correct rejection of illegal procedures calls.

#### Expected result:

One group of information is received by the initiating service user and the confirmation is delivered to the sending service user. ([3], C2.5)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems		
	P-ACEP = a	P-ACEP = b	
1.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u> = b = (default) = +2 /Spont./ = (default) = false = (default) = +1
2.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u> = a = -1 = +1 = +18	
3.	ADTI	P-ACEO Size <u>Status</u> <u>Gtype</u> : <u>Result</u> = a = (default) = +1 = (1.)	

4.	ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= a  = (default)  = +1 /Init./  = (default)  = false  = (default)  <u>= -4 /Illegal use/</u>		
5.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  = +2 /Spont./ = (default) <u>= +1</u>		
6.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = false  = (default)  <u>= -4 /Illegal use/</u>
7.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
8.			ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  <u>= (5.)</u>

Expected state transitions:

1. (STS0) → (STS4)
2. (STS0) → (STS3)
2. (STS3) → (STS0)
4. (STS4) → (STS0)

Test no: 7.10

## Purpose.

To verify the correct transfer of both spontaneous and initiated information groups.

## Expected result:

One group of initiated and two groups of spontaneous information are transferred. The two transfers are confirmed with A-Conf-Data requests. ([3], C2.5 and C1.2)

## Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a		P-ACEP = b		
1.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  <u>= +1</u>		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +17</u>
3.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./ = = (default)  = true  = (default)  <u>= +1</u>
4.			AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>	= b = +1  <u>= (1.)</u>
5.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +1 /Init./  = (default)  = false  = (default)  <u>= +1</u>

6.			ADTRO	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = false  = (default)  <u>= +1</u>
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
8.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (3.)</u>		
9.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
10.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (5.)</u>		
11.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
12.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (6.)</u>		
13.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  = +2 /Spont./ (default) <u>= +1</u>		



14.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  = +1 /Init./ = (default) <u>= +1</u>			
15.				ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
16.				ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  = (13.)
17.				ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
18.				ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  = (14.)

Expected state transitions:

- |     |        |   |        |        |          |
|-----|--------|---|--------|--------|----------|
| 1.  | (ST0)  | → | (ST1)  |        |          |
| 2.  |        |   |        | (ST0)  | → (ST2)  |
| 3.  |        |   |        | (STS0) | → (STS2) |
| 4.  | (STS0) | → | (STS1) |        |          |
| 5.  |        |   |        | (ST2)  | → (ST3)  |
| 6.  | (ST1)  | → | (ST4)  |        |          |
| 7.  |        |   |        | (STS2) | → (STS4) |
| 8.  | (STS2) | → | (STS3) |        |          |
| 9.  | (STS3) | → | (STS0) |        |          |
| 10. |        |   |        | (STS4) | → (STS0) |
| 11. | (ST4)  | → | (ST0)  |        |          |
| 12. |        |   |        | (ST3)  | → (ST0)  |

### 3.8 TEST CONNECTION

#### Test no. 8.1

##### Purpose:

To verify the reachability and “liveness” of the remote application entity and user.

##### Expected result:

An A-Test-Connection confirmation with result code issued by remote service user. ([3], C1.3)

##### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a		P-ACEP = b		
1.	ATCRQ	P-ACEP <u>Status</u>	= a <u>= +1</u>		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +22</u>
3.			ATCI	P-ACEP <u>Status</u>	= b <u>= +1</u>
4.			ATCRS	P-ACEP Result <u>Status</u>	= b = 0 /A-R0/ <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +23</u>		
6.	ATCC	P-ACEP <u>Status</u> <u>Result</u>	= a <u>= +1</u> <u>= 0 /A-R0/</u>		

##### Expected state transitions:

1. (ST0) → (ST100)
2. (ST0) → (ST101)
3. (ST101) → (ST0)
4. (ST100) → (ST0)

## Test no: 8.2

### Purpose:

To verify the supervision of the remote service user when an A-Test-Connection request is performed.

### Expected result:

An A-Test-Connection confirmation with result code equal to Remote-service-user-unavailable. ([3], C1.3)

### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a			P-ACEP = b	
1.	ATCRQ	P-ACEP Status	= a = +1		
2.			ASWAIT	P-ACEP time-out Status event	= b = -1 = +1 = +22
3.			No action; let time-out expire		
4.	ASWAIT	P-ACEP time-out Status event	= a = -1 = +1 = +23		
5.	ATCC	P-ACEP Status Result	= a = +1 = +79 /A-RD15/		

### Expected state transitions:

1. (ST0) → (ST100)
2. (ST0) → (ST101)
3. (ST101) → (ST0)
4. (ST100) → (ST0)

### Test no: 8.3

#### Purpose:

To verify the supervision of the remote part of provider when an A-Test-Connection request is performed.

#### Expected result:

An A-Test-Connection confirmation with result code equal to No-answer-from-remote-part-of-provider. ([3], C1.3)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems		
	P-ACEP = a	P-ACEP = b	
1.		Set time-out for service-user to infinite	
2.	ATCRQ	P-ACEP <u>Status</u>	= a <u>= +1</u>
3.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +23</u>
4.	ATCC	P-ACEP <u>Status</u> <u>Result</u>	= a <u>= +1</u> <u>= +78 /A-RD14/</u>

#### Expected state transitions:

1. (ST0) → (ST100)
2. (ST0) → (ST101)
3. (ST100) → (ST0)

### 3.9 COMMAND AND SETPOINT TRANSFER

#### Test no: 9.1

#### Purpose:

To verify a normal spontaneous transfer of a command consisting of one block of data.

#### Expected result:

The command should be transferred. ([3], C4.1)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a		P-ACEP = b		
1.	ACTRQ	P-ACEP Gtype : Length <u>Status</u>	= a  = (default)  <u>= +1</u>		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +25</u>
3.			ACTI	P-ACEP <u>Status</u> <u>Size</u> : <u>Length</u>	= b <u>= +1</u>  = (1.)
4.			ACTRS	P-ACEP Gtype : Length Result <u>Status</u>	= b  = (default)  = +1 <u>= +1</u>
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +26</u>		
6.	ACTC	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (4.)</u>		

Expected state transitions:

1. (ST0) → (ST18)
2. (ST0) → (ST9)
3. (ST19) → (ST0)
4. (ST18) → (ST0)

### Test no: 9.2

#### Purpose:

To verify the supervision of the remote service user when an A-Command-transfer request is performed.

#### Expected result:

An A-Command-transfer confirmation with result code equal to Remote-service-user-unavailable. ([3], C4.1)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a		P-ACEP = b		
1.	ACTRQ	P-ACEP Gtype : Length <u>Status</u>	= a = (default) = +1		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 = +1 = +25
3.			No action: let time-out expire		
4.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +26		
5.	ACTC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Length</u> <u>Result</u>	= a = +1 = (undef) = +79 /A-RD15/		

#### Expected state transitions:

1. (ST0) → (ST18)
2. (ST0) → (ST19)
3. (ST19) → (ST0)
4. (ST18) → (ST0)



### Test no: 9.3

#### Purpose:

To verify the supervision of the remote part of provider when an A-Command transfer request is performed.

#### Expected result:

An A-Command transfer confirmation with result code equal to No-answer-from-remote-part-of-provider. ([3], C4.1)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems		
	P-ACEP = a	P-ACEP = b	
1.		Set time-out for service user to infinite.	
2	ACTRQ	P-ACEP Gtype : Length <u>Status</u>	= a  = (default)  = +1
3.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +26
4.	ACTC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Length</u> <u>Result</u>	= a = +1  = (undef.)  = +78 /A-RD14/

#### Expected state transitions:

1. (ST0) → (ST18)
2. (ST0) → (ST19)
3. (ST18) → (ST0)

### Test no: 9.4

#### Purpose:

To verify the correct transfer of a command transfer request and the correct rejection of illegal procedure calls.

#### Expected result:

An A-Command-transfer confirmation with result code issued by remote service user.  
([3], C4.1)

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application connection between the two systems				
	P-ACEP = a		P-ACEP = b		
1.	ACTRQ	P-ACEP Gtype : Length <u>Status</u>	= a  = (default)  <u>= +1</u>		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +25</u>
3.	ACTRQ	P-ACEP Gtype : Length <u>Status</u>	= a  = (default)  <u>= -4 /Illegal use/</u>		
4.			ACTI	P-ACEP <u>Status</u> <u>Gtype</u> : Length	= b <u>= +1</u>  <u>= (1.)</u>
5.			ACTI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Length</u>	= b <u>= 0 /No event/</u>  <u>= (undef.)</u>
6.			ACTRS	P-ACEP Gtype : Result <u>Status</u>	= b  = (default)  <u>= +1</u>

7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +26</u>			
8.	ACTC	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a <u>= +1</u>  <u>= (6.)</u>			

Expected state transitions:

1. (ST0) → (ST18)
2. (ST0) → (ST19)
2. (ST19) → (ST0)
3. (ST18) → (ST0)

### 3.10 MIXED DATA TRANSFER AND MIXED DATA ERROR

Test no: 10.1

Purpose:

To verify the normal use of mixed data transfer and the normal use of mixed data error.

Expected result:

The request will be transferred with appropriate error code if there is an error. ([3], C4.2)

Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Establish an application association between the two systems				
	P-ACEP = a		P-ACEP = b		
1.			AMDRQ	P-ACEP T : Length <u>Status</u>	= b  = (default)  <u>= +1</u>
2.	ASWAIT	P-ACEP time-out <u>status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +27</u>		
3.	AMDI	P-ACEP Size <u>Status</u> I : <u>Length</u>	= a = (default) <u>= +1</u>  <u>= (1.)</u>		
4.	AMDERQ	P-ACEP Gnr Result <u>Status</u>	= a = (default) = +83 /Spont. not init./ <u>= +1</u>		
5.			ASWAIT	P-ACEP time-out <u>status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +28</u>
6.			AMDEI	P-ACEP <u>Status</u> <u>Gnr</u> <u>Result</u>	= b <u>= +1</u> <u>= (undef.)</u> <u>= +83</u>
7.	Send spont. management for two groups with different group types. A is the initiating entity.				

8.			AMDRO	P-ACEP T : Length <u>Status</u>	= b  = (default)  <u>= +1</u>
9.	ASWAIT	P-ACEP time-out <u>status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +27</u>		
10.	AMDI	P-ACEP Size <u>Status</u> I : <u>Length</u>	= a = (default) <u>= +1</u>  <u>= (8.)</u>		
11.			AMDRO	P-ACEP T : Length <u>Status</u>	= b  = (default)  <u>= +1</u>
12.	ASWAIT	P-ACEP time-out <u>status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +27</u>		
13.	AMDI	P-ACEP Size <u>Status</u> I : <u>Length</u>	= a = (default) <u>= +1</u>  <u>= (11.)</u>		
15.	AMDERQ	P-ACEP Gnr Result <u>Status</u>	= a = 100 = +66 /Gnr out of range/ <u>= +1</u>		
16.			ASWAIT	P-ACEP time-out <u>status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +28</u>
17.			AMDEI	P-ACEP <u>Status</u> <u>Gnr</u> : <u>Result</u>	= b <u>= +1</u>  <u>= (15.)</u>

Expected state transitions:

1. (STS0R) → (STS0R)
2. (STS0I) → (STS0I)
3. (STS0I) → (STS0I)
4. (STS0R) → (STS0R)
5. (ST0I) → (ST16)
6. (ST0R) → (ST17)
7. (ST17) → (ST0R)
8. (ST16) → (ST0I)
9. (ST0I) → (ST16)
10. (ST0R) → (ST17)
11. (ST17) → (ST0R)
12. (ST16) → (ST0I)
13. (STS0R) → (STS0R)
14. (STS0I) → (STS0I)
15. (STS0R) → (STS0R)
16. (STS0I) → (STS0I)
17. (STS0I) → (STS0I)
18. (STS0R) → (STS0R)

## Test no. 10.2

### Purpose:

To verify the simultaneous use of mixed data transfer and spontaneous transfer.

### Expected result:

The mixed data requests will not be transferred when there are unacknowledged data. Mixed data will not be sent when all spontaneous data are acknowledged. ([3], C4.2)

### Performance:

System A (initiating entity)

System B (responding entity)

0.	Establish an application association between the two systems				
	P-ACEP = a		P-ACEP = b		
1.	Send the spontaneous management for two groups with different group types. A is the initiating entity.				
2.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = true  = (default)  <u>= +1</u>
3.	ASWAIT	P-ACEP time-out <u>status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
4.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (2.)</u>		
5.			AMDRQ	P-ACEP T : Length <u>Status</u>	= b  = (default)  <u>= -4 /Illegal use/</u>

6.				ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  <u>= +2 /Spont./</u>  false  = (default)  <u>= +1</u>
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>			
8.				AMDRQ	P-ACEP T : Length <u>Status</u>	= b  = (default)  <u>= -4 /Illegal use/</u>
9.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (6.)</u>			
10.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  + 2 /Spont./ = (default) <u>= +1</u>			
11.				ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
12.				ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b <u>= +1</u>  <u>= (10.)</u>
13.				AMDRQ	P-ACEP T : Length <u>Status</u>	=b  =(default)  = +1



14.	ASWAIT	P-ACEP time-out <u>status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +27</u>
15.	AMDI	P-ACEP Size <u>Status</u> I : <u>Length</u>	= a = (default) <u>= +1</u>  <u>= (13.)</u>

Expected state transitions:

1. (ST0I) → (ST16)
2. (ST0R) → (ST17)
3. (ST17) → (ST0R)
4. (ST16) → (ST0I)
5. (ST0I) → (ST16)
6. (ST0R) → (ST17)
7. (ST17) → (ST0R)
8. (ST16) → (ST0I)
9. (STS0R) → (STS2)
10. (STS0I) → (STS1)
11. (STS2) → (STS4)
12. (STS1) → (STS3)
13. (STS3) → (STS0I)
14. (STS4) → (STS0R)
15. (STS0R) → (STS0R)
16. (STS0I) → (STS0I)
17. (STS0I) → (STS0I)

### Test no. 10.3

#### Purpose:

To verify the simultaneous use of mixed data transfer and initiated data transfer.

#### Expected result:

The mixed data requests will be transferred when there are unacknowledged data. ([3], C4.2)

#### Performance:

System A (initiating entity)

System B (responding entity)

0.	Establish an application association between the two systems			
	P-ACEP = a		P-ACEP = b	
1.	AITRQ	P-ACEP Gtype : Periods <u>Status</u>	= a  = (default)  = +1	
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>  = b = -1 = +1 = +17
3.			AITI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Periods</u>  = b = +7  = (1.)
4.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>  = b = (default) = +1 /Init./ = (default) = true = (default) = +1
5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +18	

6.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) = +1  = (4.)			
7.				AMDRO	P-ACEP T : Length <u>Status</u>	= b  = (default) = +7
8.	ASWAIT	P-ACEP Time-out <u>Status</u> <u>Event</u>	= a = -1 = +1 = +27			
9.	AMDI	P-ACEP Size <u>Status</u> I : <u>Length</u>	= a = (default) = +1  = (7.)			
10.				ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : <u>Result</u> <u>Status</u>	= b  (default)  = +1 /Init./  (default)  = false  = (default)  = +1
11.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = - 1 = +1 = +18			
12.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) = +1  = (10.)			

13.	ACDRQ	P-ACEP Gtype : Gnr Transmod Result <u>Status</u>	= a  = (default)  = +1 /Init./ = (default) <u>= +1</u>		
14.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +19</u>
15.			ACDI	P-ACEP <u>Status</u> <u>Gtype</u> : <u>Result</u>	= b = +1 = <u>= (13.)</u>

Expected state transitions:

1. (ST0I) → (ST1)
2. (ST0R) → (ST2)
3. (ST2) → (ST2)
4. (ST1) → (ST1)
5. (STS0R) → (STS0R)
6. (STS0I) → (STS0I)
7. (ST2) → (ST3)
8. (ST1) → (ST4)
9. (ST4) → (ST0I)
10. (ST3) → (ST0R)

### **3.11 COMPATIBILITY BETWEEN ELCOM 90 AND ELCOM 83**

#### Test no. 11

**Purpose:**

This test shall verify that an Elcom 90 implementation is compatible with the Elcom 83 implementation when the Version parameter in the ACONRQ call is set to 2.

**Expected result:**

Elcom 90 shall behave as an Elcom 83 implementation when the Version is set to 2.

**Performance:**

This test is performed by running the complete Elcom 83 version of the test procedures, either with an Elcom 83 system as partner or an accepted Elcom 90 implementation with the Version set to 2. The test shall be performed twice, first with the test system as an initiator, subsequently as a responder.

### 3.12 MULTIPLE ASSOCIATIONS

#### Test no.: 12

##### Purpose:

To verify that the ELCOM-90 implementation can serve several active ELCOM associations over a time period.

##### Expected result:

A sequence of connection establishment, spontaneous data transfer and connection termination shall be performed correctly for 20 ELCOM associations.

##### Performance:

The test will be performed by means of the ELCOM-90 load test programs (ref. ELCOM-90 System documentation). A total of 32767 bytes will be transferred from System A (initiator) to System B (responder). The initiator will split the data into the necessary number of ADTRQ calls. The contents of the data field will be numbered in a way that enables the responder to check the correctness of the received data. A data transfer sequence will be completed by ACDRQ call from the responder. The test will be aborted if errors occur during connection establishment/termination or if incorrect data is detected by the responding entity.

The load test programs use version 19 (Class, 3, version 1) by connection establishment. Addresses, entity and U-ACEP identifications are input parameters to the programs. The status of the provider during the test can be monitored by the ELCOM-90 Supervisor.

##### Requirements:

A pair of load test programs (initiator and responder) represent one ELCOM association. Thus, to run the test a total of 20 pairs of load test processes will be needed. The test machine must be configured for 100 TLI/socket connections (120 if loopback test or two providers on the same machine), plus the number of required listen ports in the ELCOM-90 system, depending on the configuration used. The ELCOM-90 provider must be configured for 60 TLI/socket file descriptors (80 if loopback test), plus the number of required listen ports for the provider. Furthermore, the provider must be configured for 40 user entities ("SAP's") and 40 ELCOM associations ("CEP's")

A set of shell scripts to start the test and to supply the test programs with necessary information must be available for the test. The scripts will supply the load test programs with unique addresses and entity/U-ACEP identifications. The suffices will be in the range from "aa" to "au" (aa, ab ... at) for the initiating entities with odd entity/U-ACEP id's (1, 3, ..., 39), while the suffices for the responding entities will be in the range "ba" to "bu" (ba, bb, ..., bt) with the even entity/U-ACEP id's (2, 4, ..., 40).

### 3.13 TESTING PRIMITIVE PARAMETER LIMITS

**Purpose:** To verify that parameter limits are treated correctly by the Application Service Provider.

**Expected result:** Status = -2 when a parameter value is below its lower limit or exceeds its upper specified limit.

A test is made by performing 4 invocations of each service primitive per recommended parameter, each with the following parameter value:

- : Highest illegal value below lower limit (Status = -2) (Test 1)
- : Lowest legal value above lower limit (Status = 1) (Test 2)
- : Highest legal value below upper limit (Status = 1) (Test 3)
- : Lowest illegal value above upper limit (Status = -2) (Test 4)

Tests where the expected Status value = 1 could be included in a suitable test from the test procedures. Index 1 must be less or equal to Index2.

Each service primitive is tested with the following suggested parameter:

Test no.: 13.1 Service primitive AGMRQ

Parameter	Lower limit	Upper limit	Notes	Test result			
				1	2	3	4
Function	1	4					
Gtype	0	255					
Gnr	0	32767					
Gsize	0	255					
Objlength	0	255					
Priorityclass	0	15					
<u>Test no.: 13.2 Service primitive ADGRQ</u>							
Gtype	0	255					
Gnr	0	32767					
Index1	0	32767					
Index2	0	32767					

Test no.: 13.3 Service primitive AGGRS

Parameter	Lower limit	Upper limit	Notes	1	2	3	4
Gtype	0	255					
Gnr	0	32767					
Index1	0	32767					
Index2	0	32767					
Priorityclass	0	15					
Gsize	0	255					
Index1	0	32767					
Index2	0	32767					
Objlength	0	255					
<u>Test no.: 13.4 Service primitive AITRQ</u>							
Gtype	0	255					
Gnr	0	32767					
Index1	0	32767					
Index2	0	32767					
T0(1)	0	254	or -1				
T0(2)	1	12					
T0(3)	1	31					
T0(4)	0	24					
T0(5)	0	59					
T0(6)	0	59					
T0(7)	0	999					
Dt	1	255					
T-Unit	1	7					
Periods	0	32767					



Test no.: 13.5 Service primitive ADTRQ

Parameter	Lower limit	Upper limit	Notes	1	2	3	4
Gtype	0	255					
Gnr	0	32767					
Transmod	1	2					
Index1	0	32767					
Index2	0	32767					
T(1)	0	254					
T(2)	1	12					
T(3)	1	31					
T(4)	0	24					
T(5)	0	59					
T(6)	0	59					
T(7)	0	999					

Test no.: 13.6 Service primitive ACDRO

Gtype	0	255
Gnr	0	32767
Transmod	1	2

Test no.: 13.7 Service primitive ASMRQ

Function	1	2
Gtype	0	255
Gnr	0	32767

Test no.: 13.8 Service primitive ACTRQ

Parameter	Lower limit	Upper limit	Notes	1	2	3	4
Gtype	0	255					
Gnr	0	32767					
Index1	0	32767					
Index2	0	32767					
T(1)	0	254					
T(2)	1	12					
T(3)	1	31					
T(4)	0	24					
T(5)	0	59					
T(6)	0	59					
T(7)	0	999					
Time mode	0	3	1 not used				
Com.type	1	3	+ 252				

Test no.: 13.9 Service primitive ACTRS

Gtype	0	255
Gnr	0	32767
Index1	0	32767
Index2	0	32767
T(1)	0	254
T(2)	1	12
T(3)	1	31
T(4)	0	24
T(5)	0	59
T(6)	0	59
T(7)	0	999
Time mode	0	1
Com.type	4	6

Test no.: 13.10 Service primitive AMDRQ

Parameter	Lower limit	Upper limit	Notes	1	2	3	4
T(1)	0	254					
T(2)	1	12					
T(3)	1	31					
T(4)	0	24					
T(5)	0	59					
T(6)	0	59					
T(7)	0	999					
Length	0	245					

Test no.: 13.11 Service primitive AMDERQ

Gnr                      0                      32767

### 3.14 MESSAGE THROUGHPUT

#### Test no.: 14.1

**Purpose:**

To verify that the ELCOM-90 implementation can send A-DATA PDU's through the ELCOM provider with an average transfer time of 15 ms. when the adaptation process is not used.

**Expected result:**

After association establishment, spontaneous data shall be transferred through the ELCOM provider. The association will be disconnected when the transfer is finished. The average transfer time will be calculated.

**Configuration:**

The test will be performed between two machines, each running the ELCOM provider. The communication protocol between them will be TCP/IP.

**Performance:**

The test will be performed by means of the ELCOM-90 load test program (ref. ELCOM-90 System documentation). A total of 32767 bytes will be transferred from System A (initiator) to System B (responder). The initiator will split the data into the necessary number of ADTRQ calls. The data transfer sequence will be completed by a ACDRQ call from the responder. The test will be aborted if errors occur during the association establishment/termination or if incorrect data is detected by the responding entity.

The load test programs use version 19 (class 3, version 1) at association establishment. Addresses, entity and U-ACEP identifications are input parameters to the programs. The status of the providers during the test can be monitored by the ELCOM-90 Supervisors (in each machine).

The measurements will be done as follows:

- I) Messages sent to the network
  - a) When data is received from A-lib:  
The ELCOM provider will register the time when the data event is received.
  - b) When data is sent to the network:  
The ELCOM provider will register the time when the network specific "send data" routine (e.g. the TLI routine t\_snd or the socket routine send) is completed.
- II) Messages received from the network:
  - a) When data is received from the network:  
The ELCOM provider will register the time when the data event is received.
  - b) When data is sent to A-lib:  
The ELCOM provider will register the time when the "send data" routine (i.e. the TLI t\_snd) is completed.

The transit time is calculated as the difference between b) and a).

**Requirements:**

The standard ELCOM configuration is sufficient for the test. However, the ELCOM provider must be compiled with the TRANSIT\_TIME option turned on. When ELCOM provider is terminated, it will print the following:

- Maximum and minimum transit time
- Average transit time
- Standard deviation

Test no.: 14.2**Purpose:**

To verify that the ELCOM-90 implementation can send A-DATA PDU's through the ELCOM provider with an average transfer time of 15 ms. when the adaptation process is used.

**Expected result:**

After association establishment, spontaneous data shall be transferred through the ELCOM provider. The association will be disconnected when the transfer is finished. The average transfer time will be calculated.

**Configuration:**

The test will be performed between two machines, each running the ELCOM provider. The communication protocol between them will be X.25.

**Performance:**

The test will be performed by means of the ELCOM-90 load test program (ref. ELCOM-90 System documentation): A total of 32767 bytes will be transferred from System A (initiator) to System B (responder). The initiator will split the data into the necessary number and ADTRQ call from the responder. The test will be aborted if errors occur during the association establishment/termination or if incorrect data is detected by the responding entity.

The load test programs use version 19 (class 3, version 1) at association establishment. Addresses, entity and U\_ACEP identifications are input parameters to the programs. The status of the providers during the test can be monitored by the ELCOM-90 Supervisors (in each machine).

The measurements will be done as follows:

**I) Messages sent to the network:**

- a) When data is received from A-lib:  
The ELCOM provider will register the time when the data event is received.
- b) When data is sent to the network:  
The ELCOM provider will register the time when the network specific "send data" routine (eg. the TLI routine t\_snd or the socket routine send) is completed.

**II) Messages received from the network:**

- a) When data is received from the network:  
The ELCOM provider will register the time when the data event is received.
- b) When data is sent to A-lib:  
The ELCOM provider will register the time when the "send data" routine (ie. the TLI t\_snd) is completed.

The transit time is calculated as the difference between b) and a).

**Requirements:**

The standard ELCOM configuration is sufficient for the test.

However, the ELCOM provider must be compiled with the TRANSIT\_TIME option turned on.

When ELCOM provider is terminated, the measurements are saved on two files; one for the ELCOM provider measurements and one for the adaptation measurements. The program transit\_calc will be used to obtain the following:

- Maximum and minimum transit time
- Average transit time
- Standard deviation

### 3.15 UNDEFINED PRIMITIVES AND PARAMETERS

Test no.: 15

Purpose:

To verify the correct rejection of undefined primitives and parameters when ELCOM-90 is connected to a responder with version = 2 (Class 2, version 0).

Expected result:

When a Class 3 primitive or parameter is issued from the service user, the ELCOM provider shall return status code = -8; incompatible version.

Configuration:

The test will be performed between two machines, and the initiating part runs the ELCOM-90 service provider.

Performance:

System A (Initiating entity)  
(ELCOM-90 provider)

System B (Responding entity)

0.	Attach one service user to each service provider.				
	P-ACEP	: =a		P-ACEP	: =b
1.	ACONRQ	P-ACEP Version  Initiator : Acceptor User data Length <u>Status</u>	= a = + 18/Class 2 version 1/  = (default)  = 0 <u>= +1</u>		
2.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 = <u>+1</u> = <u>+1</u>
3.			ACONI	P-ACEP <u>Status</u> Version : Length	= b = <u>+1</u>  = (1. )
4.			ACONRS	P-ACEP Version  Initiator : Acceptor Result User-data Length <u>Status</u>	= b = + 2/Class 2 version 0/  = (3.)  = (default)  = 0 <u>= +1</u>

5.	ASWAIT	P-ACEP time-out <u>Status</u> <u>Event</u>	= a = -1 <u>= +1</u> <u>= +2</u>	
6.	ACONC	P-ACEP <u>Status</u> Version : Length	= a = +1  = (4.)	
7.	ACTRQ	P-ACEP Gtype : Time mode Com. type Data Length <u>Status</u>	= a  (default)  = +1  = 0 <u>= -8 /Incompatible version/</u>	
8.	AMDRO	P-ACEP T : Length Status	= a  (default)  <u>= -8/Incompatible version/</u>	
9.	AMDERQ	P-ACEP Gnr : Result <u>Status</u>	= a  (default)  <u>= -8 /Incompatible version/</u>	
10.	AGMRQ	P-ACEP Function Gtype : Static Priorityclass <u>Status</u>	= a = +4  (default)  = 0 <u>= -8 /Incompatible version/</u>	(Legal values 1 – 3)
11.	AGMRQ	P-ACEP Function Gtype : Result Priorityclass <u>Status</u>	= a = +1  = (default)  = 1 = -8 /Incompatible version/	(Legal value 0)
12.	ADGRQ	P-ACEP Gtype Gnr Index1 Index2 Objid <u>Status</u>	= a = + 4 = (default) = 0 = 0 = (default) <u>= -8 /Incompatible version/</u>	(Legal values 1 – 3)



13.	ADGRQ	P-ACEP Gtype Gnr Index1 Index2 Objid <u>Status</u>	= a = +1 (default) 1 1 (default) = <u>-8/Incompatible version/</u>	(Legal value 0)
14.	ADGRQ	P-ACEP Gtype Gnr Index1 Index2 Objid <u>Status</u>	= a = +1 = (default) = 0 = 1 = (default) = <u>-8/Incompatible version/</u>	(Legal value 0)
15.	AGGRQ	P-ACEP Gtype Gnr Index1 Index2 Objid <u>Status</u>	= a = +4 = (default) = 0 = 0 = (default) = <u>-8/Incompatible version/</u>	(Legal values 1 – 3)
16.	AGGRQ	P-ACEP Gtype Gnr Index1 Index2 Objid <u>Status</u>	= a = +1 = (default) = 1 = 1 = (default) = <u>-8/Incompatible version/</u>	(Legal value 0)

State transitions will not have significance during this test, and are therefore omitted.

### 3.16 ATTACH AND CONNECT SUPERVISION

#### Test no.: 16.1

##### Purpose:

To verify the correct acceptance of correct attaches and the correct rejection of attempts to attach the ELCOM provider in ways that are not specified as legal.

##### Expected result:

An AATT service procedure shall return an error code when an illegal combination of parameters is issued.

##### Configuration:

One ELCOM service provider is sufficient.

##### Performance:

System A (Initiating entity)

0.	Initiate the communication software		
1.	AATT	Entity Id A-Suffix U-ACEP Type <u>Status</u> <u>P-ACEP</u>	= +1 = AA = +1 = +1 = +1 = <u>a</u>
2.	Testing that same A-Suffix from same entity-id is legal		
	AATT	Entity Id A-Suffix U-ACEP Type Status <u>P-ACEP</u>	= +1 = AA = +2 = +1 = +1 = <u>b</u>
3.	Testing that same U-ACEP from same entity-id is rejected		
	AATT	Entity Id A-Suffix U-ACEP Type <u>Status</u> <u>P-ACEP</u>	= +1 = BB = +1 = +1 = <u>-2/Illegal argument/</u> = <u>(undef)</u>
4.	Start a second process with different entity-id and same A-suffix as an already attached process		
	AATT	Entity Id A-Suffix U-ACEP Type <u>Status</u> <u>P-ACEP</u>	= +2 = AA = +3 = +1 = <u>-2 /Illegal argument/</u> = <u>(undef)</u>

5.	Testing that an AATT procedure call with different entity-id and repeated U-ACEP is legal.		
	AATT	Entity Id A-Suffix U-ACEP Type <u>Status</u> <u>P-Acep</u>	= +2 = BB = +1 = +1 = +1 = <u>b</u>

### Test no.: 16.2

#### Purpose:

To verify the correct rejection of attempts to establish an ELCOM connection using illegal parameter values.

#### Expected result:

An A Connect Request procedure call should return status error code when an illegal combination of parameters is issued.

#### Configuration:

The test is performed between two machines each running the ELCOM-90 provider. Lower level protocols are optional.

#### Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Initiate the communication software			
1.	AATT	Entity Id A-Suffix U-ACEP Type <u>Status</u> <u>P-ACEP</u>	= +1 = AA = +1 = +1 /calling/ = +1 = <u>a</u>	
2.	AATT	Entity Id A-Suffix U-ACEP Type <u>Status</u> <u>P-ACEP</u>	= +1 = AB = +2 = +1 /calling/ = +1 = <u>b</u>	
3.		AATT	Entity Id A-Suffix U-ACEP Type <u>Status</u> <u>P-ACEP</u>	= +1 = BB = +1 = +2 /Listener/ = +1 = c
4.		AATT	Entity Id A-Suffix U-ACEP Type <u>Status</u> <u>P-ACEP</u>	= +1 = BC = +2 = +2 /Listener/ = +1 = <u>d</u>

5.	Testing connection establishment with illegal A-suffix and P-ACEP combination				
	ACONRQ	P-ACEP Version Initiator Init A-suff. Acceptor Acce A-suff. User data Length <u>Status</u>	= a = +19 /Class 3, version 1/ = (default) = AB = (default) = BB  = 0 <u>-2 /Illegal use/</u>		
6.	Testing the remote part's rejection of an undefined A-suffix				
	ACONRQ	P-ACEP Version Initiator Init A-suff. Acceptor Acce A-suff. User data Length <u>Status</u>	= a = +19 /Class 3, version 1/ = (default) = AA = (default) = BD  = 0 =		
7.			AGWAIT	Entity Id time-out <u>Status</u> <u>U-ACEP</u>	= +1 = - 1 = (undef) = (undef)
8.	ASWAIT	P-ACEP time-out <u>Status</u> <u>Event</u>	= a = -1 = <u>+1</u> = <u>+2</u>		
9.	ACONC	P-ACEP Status Version : Acceptor <u>Result</u> User data Length	= a = +1  = (default)  = <u>30 / Remote party clears/</u>  = 0		

### 3.17 FLOW CONTROL

#### Test no: 17

##### Purpose:

To verify that flow control is handled correctly when the Initiating entity is not able to receive data as fast as the Responding entity is sending.

##### Expected result:

The Responding entity should receive Status=-1 when flow control problems are detected by the provider, and Event=+7 when the provider is able to receive more data. Data transfer shall then be continued. ([1], 5.8.3 and 5.10)

##### Configuration:

The test will be performed between two machines, and repeated for each lower level protocol.

##### Performance:

##### System A (Initiating entity)

##### System B (Responding entity)

0.	Establish an application connection between the two systems.			
	P-ACEP = a	P-ACEP = b		
1.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b = (default) = +2 /Spont./ = (default) = true = (default) = <u>+1</u>
2.	Set the System A provider in PAUSE mode			

3.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = true  = (default)  <u>= +1</u>  Repeat ADTRQ until flow blocked
4.			ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = true  = (default)  <u>= -1</u> /Flow Blocked/
5.	Reset PAUSE mode on System A, and let the Initiating entity receive data until flow control problem is solved on System B.				
6.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 <u>= +1</u> <u>= +18</u>		
7.	ADTI	P-ACEP Size <u>Status</u> <u>Gtype</u> : <u>Result</u>	= a = (default) <u>= +1</u>  <u>= (1.)</u>  Repeated as long as more data to receive.		
8.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b = -1 <u>= +1</u> <u>= +7</u> /The AS provider is now ready to accept information transfer in the direction from AS user to AS provider/

9.		ADTRQ	P-ACEP Gtype : Gnr Transmod Index1 : T More-D Data : Result <u>Status</u>	= b  = (default)  = +2 /Spont./  = (default)  = true  = (default)  <u>= +1</u>
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### **3.18 ADDRESS FORMATS**

Test no: 18

Purpose:

To verify that connection can be established between two computers using both new and old address formats for X.25.

Expected result:

Connection shall be established for both formats. See [7], “Appendix G, Address Formats” for a description of the formats.

Configuration:

The test will be performed between two machines, and repeated for each address format.

Performance:

1. Establish a connection between the two computers, using the old Elcom-83 address format for X.25.
2. Release the connection.
3. Establish a connection between the two computers, using the new address format for X.25.
4. Release the connection.

### 3.19 PONG

Test no: 19

Purpose:

Verify that a connection can be supervised by the PONG functionality in the P-provider.

Expected result:

When a TCP/IP connection is broken, the Elcom User Element shall receive a Provider Abort.

Reference: PONG will be described in a Technical Report later.

Configuration:

The test will be performed between two machines, connected with a LAN. The Elcom configuration file, "elc-conf", must have the parameter PONG\_TIMER with a value = 10. This must be configured in both machines.

Performance:

System A (Initiating entity)

System B (Responding entity)

0.	Start the two systems and initiate the communication software.				
1.	AATT	Entity-id : U:ACEP Type <u>Status</u> <u>P-ACEP</u>	= (default)  = +1 / calling / <u>= +1</u> <u>= a</u>		
2.			AATT	Entity-id : U:ACEP Type <u>Status</u> <u>P-ACEP</u>	= (default)  = +2 / listener / <u>= +1</u> <u>= b</u>
3.	ACONRQ	P-ACEP Version Initiator : Acceptor User-data Length <u>Status</u>	= a = +19 /Class 3,      Version 1 /  = (default TCP/IP)  = 0 <u>= +1</u>		
4.			ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= b <u>= -1</u> <u>= +1</u> <u>= +1</u>

5.			ACONI	P-ACEP <u>Status</u> <u>Version</u> : <u>Length</u>	= b = +1  = ( 3. )
6.			ACONRS	P-ACEP Version Initiator : Acceptor Result User-data Length <u>Status</u>	= b = +19 / Class 3, version 1 /  = (5. )  = ( default )  = 0 = +1
7.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +2		
8.	ACONC	P-ACEP <u>Status</u> <u>Version</u> : <u>Length</u>	= a = +1  = (6. )		
9.	Break the connection by unplugging the cable from one of the machines.				
10.	ASWAIT	P-ACEP time-out <u>Status</u> <u>event</u>	= a = -1 = +1 = +5		
11.	APABT	P-ACEP <u>Status</u> <u>Reason</u>	= a = +1 = 41		
12.			ASWAIT	P-ACEP <u>time.out</u> <u>Status</u> <u>event</u>	= b = -1 = +1 = +5
13.			APABT	P-ACEP <u>Status</u> <u>Reason</u>	= b = +1 = 41

**APPENDIX A TEST PROTOCOL FORM****Hardware Configuration**

<b>System A</b>	<b>Description</b>
Machine type	
Memory	
Disk	
Communication hardware	
Additional information	

<b>System B</b>	<b>Description</b>
Machine type	
Memory	
Disk	
Communication hardware	
Additional information	

## Software Configuration

<b>System A</b>	<b>Description</b>
Operating System	
Database	
Support software used	
Additional information	

<b>System B</b>	<b>Description</b>
Operation System	
Database	
Support software used	
Additional information	

## Test protocol

Test no	Passed	Date	Sign	Comment / reference
1.1				
1.2				
1.3				
1.4				
1.5				
2.1				
2.2				
2.3				
2.4				
3.1				
3.2				
3.3				
4.1				
4.2				
4.3				

Test protocol (cont.)

Test no	Passed	Date	Sign	Comment / reference
5.1				
5.2				
5.3				
5.4				
5.5				
5.6				
5.7				
5.8				
5.9				
6.1				
6.2				
6.3				

Test protocol (cont.)

Test no	Passed	Date	Sign	Comment / reference
7.1				
7.2				
7.3				
7.4				
7.5				
7.6				
7.7				
7.8				
7.9				
7.10				
8.1				
8.2				
8.3				



Test protocol (cont.)

Test no	Passed	Date	Sign	Comment / reference
9.1				Test 13 has a special test protocol (see 3.13)
9.2				
9.3				
9.4				
10.1				
10.2				
10.3				
10.4				
11				
12				
13				
14.1				
14.2				
15				
16.1				
16..2				
17				
18				
19				

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