AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL

Working Group 3

Rio (Brazil) 16-20 March 1998

Elements of management information related to the ATN Application Layer

Prepared by ATNP/WG3/SG3

Presented by F. Picard

SUMMARY

This document is the first draft of specification of management information related to the application layer within an ATN system.

The ATN Application Layer Management Information is defined by specifying:

- the managed object class definition of ATN Application Layer MOs following the MO template that has been proposed for use in ATN SARPs.
- the action type operations on the attributes of ATN Application Layer MOs that are available to ATN System Management

WG3 is invited to review the material presented in this document.

DOCUMENT CONTROL LOG

SECTION	DATE	REV. NO.	REASON FOR CHANGE OR REFERENCE TO CHANGE
	02/98	1.0	Creation - Gatwick - Output from joint meeting WG1/SG3 - WG3/SG3.
	05/03/98	1.1	Input to the 3rd March Convergence Task Team meeting.
	16/03/98	2.0	Input to WG3 Rio meeting.

TABLE OF CONTENTS

1. Introduction

1.1 Scope

This document is the first draft of specification of management information related to the Application layer within an ATN system. It is intended to be included in the SARPs Sub-volume VI.

The ATN Application Layer Management Information is defined by specifying:

- the managed object class definition of ATN Application Layer MOs following the MO template that has been proposed for use in ATN SARPs,
- the action type operations on the attributes of ATN Application Layer MOs that are available to ATN System Management.

1.2 Status

MO classes related to the ATN ground applications (namely AIDC and AMHS) and systems management application are not considered in this document.

Configuration related MOs are considered out of the scope of the standardisation. The resources to be configured and the way they are configured (management protocol, file exchanges, etc...) is defined on a management domain basis. As configuration parameters are not supposed to be exchanged between system management authorities, no standardisation is required in this area.

1.3 Recommendation

WG3 is invited to review this material and to provide comments before its insertion in the SARPs Sub-Volume VI (section "Managed Objects for ATN Applications).

1.4 References

[1] ITU-T Rec. X.721 | OSI/IEC IS 10165-2 - Information Technology - Open systems Interconnection - Structure of Management Information: Definition of Management Information.

[2] ITU-T Rec. X.723 | ISO/IEC IS 10165-5:1995 - Information Technology - Open Systems Interconnection - Structure of Management Information: Generic Management Information.

[3] ITU-T Rec. X.726 | ISO/IEC CD 10165-8 - Information Technology - Open Systems Interconnection - Structure of Management Information: Managed Objects for Supporting Upper Layers.

[4] ITU-T Rec. X.731 | ISO/IEC 10164-2:1993 - - Information Technology - Open systems Interconnection - Systems Management: State Management Function.

2. Elements of ATN Application layer management information

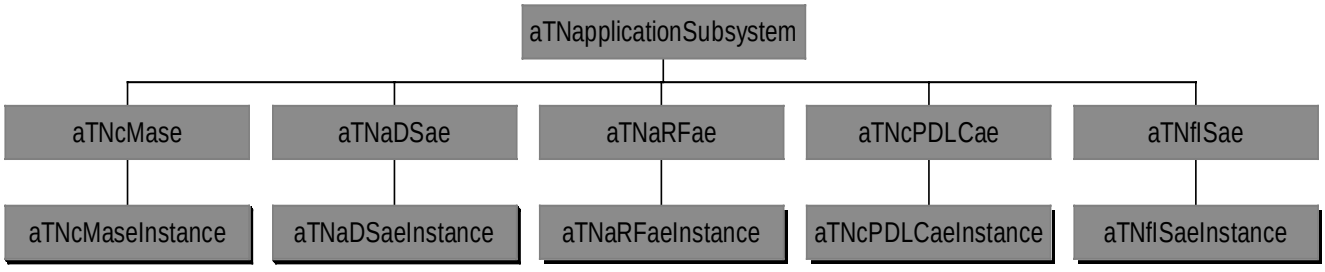
2.1 Summary of managed object classes

The following set of managed object classes are defined for the ATN Application layer:

- applicationSubsystem (section 2.4),
- aTNcMae (section 2.5),
- aTNcMaeInstance (section 2.6),
- aTNaDSae (section 2.7),
- aTNaDSaeInstance (section 2.8),
- aTNaRFae (section 2.9),
- aTNaRFaeInstance (section 2.10),
- aTNcPDLCae (section 2.11),
- aTNcPDLCaeInstance (section 2.12),
- aTNfISae (section 2.13), and
- aTNfISaeInstance (section 2.14).

2.2 Containment hierarchy

The containment hierarchy is illustrated in figure 1. Managed objects which can have multiple instances are illustrated by shadowed boxes. These objects are defined in detail in the following sections.



The two levels of MOC identified in the containment hierarchy - i.e. AE MOC and AE Instance MOC - allows for distinguishing between management of the static aspects of the ATN application entities and dynamic aspects related to application association (e.g., per invocation).

2.3 Symbols, abbreviations and terms

In each table, the "ISO Status" column indicates the conformance requirement as specified in the ISO/IEC base standard that defines the MO. A hierarchy exists, so that the conformance requirements of a dependent feature only apply if the "parent" feature is supported (e.g. if an MO class is not supported, then none of the attributes will be supported, even if classified as "M"). Possible *value*s for ISO Status are:

M - Mandatory to implement

O - Optional to implement

C - Dependent upon some Condition explained in a footnote to the table

A - Feature is ATN-specific, i.e. not present in base standard.

The "ATN Status" column indicates the conformance requirement as specified in the ATN SARPs. Notes may be used to expand on the support requirement, e.g. to differentiate between different types of ATN system. Possible *value*s for ATN Status are:

M - Mandatory to implement (equivalent to a "shall" statement)

R - Recommended to implement (equivalent to a "should" statement)

O - Optional to implement (i.e. an implementation is free to implement the feature or not)

X - Prohibited to implement.

ISO-defined Managed Object Classes have been used as much as possible. When the ISO-defined MOC is retained without any modification, the ISO name is kept. Otherwhise, when attributes are added to the ISO definition, or when the behaviour of the MOC is customized, the prefix "aTN" is added to the ISO name.

2.4 The applicationSubsystem managed object

2.4.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	applicationSubsystem There is one such MO within an ATN system. It exists to provide a container for all ATN Application Layer specific MOs. This subclass of "Rec. X.726 | ISO/IEC CD 10165-8": **Application subsystem** holds reference information about an ATN application subsystem. It specializes by adding only behaviour. The applicationSubsystem MO can not be created or deleted explicitly by management operation. It exists inherently in an ATN system; created and deleted as part of system operation.	A	M
2.	Naming attribute	SubsystemId	A	M
3.	Superior in Naming Tree	ATNsystem		

2.4.2 Attributes

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	SubsystemId Naming attribute GraphicString Initial value = " applicationSubsystem"	GET	A	M

2.4.3 Actions

None.

2.4.4 Notifications

None.

2.5 The aTNcMae managed object

2.5.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNcMae There is one such MO per ATN Application Subsystem supporting the CM application. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **communicationsEntity** holds reference information about a CM ATN application entity. It specializes by adding the mandatory package **aTNcMaeP1** and the conditional package **aTNcMP2**. Its definition permits it to be created or deleted explicitly by management operation, but in some systems it will exist inherently and neither creation nor deletion by management operation will be possible	A	M
2.	Naming attribute	CommunicationsEntityId	A	M
3.	Superior in Naming Tree	applicationSubsystem		

2.5.2 Mandatory Attributes (aTNcMaeP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	communicationsEntityId Naming attribute as defined in ISO/IEC 10165-5. GraphicString Initial value = " aTNcMae"	GET	M	M
2.	operationalState Operational state as defined in ISO/IEC 10164-2. ENUMERATED {disabled(0), enabled(1)} *Note: value is "disabled" for any ATN system supporting the CM application but with the application not activated.*	GET	M	M
3.	localSapNames Set of distinguished names of underlying layers SAPs at which services are provided to the application entity. SET OF OCTET STRING *Note. This attribute contains the Transport selector locally defined for the CM application entity.*	GET	M	M

4.	CMaSEfu Subsetting rules supported by the local CM ASE. INTEGER *Note. Values are taken from the list of conformant configuration identifiers listed in the SARPs chapter 8.*	GET	A	M
5.	maxCMAEInstances Maximum observed number of CM AE instances running in parallel. INTEGER{initial value=0} *Rationale: interesting to monitor the workload the ATN end system in terms of CM activity.*	GET - DEFAULT SET	A	M

Note: A number of configuration attributes are not proposed to be retained for standardisation in the ATN SARPs:

AETtile	*The AE title of the local CM AE.*
CMASEVersion	*The version of the CM protocol operated by the CM ASE entity. This parameter identifies as well the Application Context in use.*
ACSEfu	*The ACSE functional units selected.*
CMPriority	*The application priority requested by the CM application for all messages.*
CMRER	*The Residual Error Rate requested by the CM application for all messages.*
t-logon, t-update, t-contact, t-forward, t-end	*CM Technical Timers*

2.5.3 Conditional Attributes (aTNcMP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity level.

1.	cMAbortCounter Number of times the CM dialogue was terminated by an abort (generated by the user, the ASE or the communication service). INTEGER {initial value=0}	GET	A	O
2.	cMSuccessfulLogonCounter Number of CM Logon exchanges successfully performed. INTEGER {initial value=0}	GET	A	O
3.	cMUnsuccessfulLogonCounter Number of CM Logon exchanges unsuccessfully performed. INTEGER {initial value=0}	GET	A	O
4.	cMLogonMeanDelay Mean value of the observed round trip delays during a logon exchange (from CM-logon request to CM-logon confirmation). INTEGER	GET	A	O
5.	cMLogonMaxDelay Max value of the observed round trip delays during a logon exchange (from CM-logon request to CM-logon confirmation). INTEGER	GET	A	O

6.	cMSuccessfulContactCounter Number of CM Contact exchanges successfully performed. INTEGER {initial value=0}	GET	A	O
7.	cMUnsuccessfulContactCounter Number of CM Contact exchanges unsuccessfully. INTEGER {initial value=0}	GET	A	O
8.	cMContactMeanDelay Mean value of the observed round trip delays (from CM-contact request to CM-contact confirmation). INTEGER	GET	A	O
9.	cMContactMaxDelay Max value of the observed round trip delays (from CM-contact request to CM-contact confirmation). INTEGER	GET	A	O
10.	cMUpdateCounter Number of CM Update exchanges performed. INTEGER {initial value=0}	GET	A	O
11.	cMSuccessfulForwardCounter Number of CM Forward exchanges successfully performed. INTEGER {initial value=0}	GET	A	O
12.	cMUnsuccessfulForwardCounter Number of CM Forward exchanges unsuccessfully performed. INTEGER {initial value=0}	GET	A	O
13.	cMForwardMeanDelay Mean value of the observed round trip delays (from CM-forward request to CM-forward confirmation). INTEGER	GET	A	O
14.	cMForwardMaxDelay Max value of the observed round trip delays (from CM-forward request to CM-forward confirmation). INTEGER	GET	A	O

2.5.4 Actions

None.

2.5.5 Notifications

Index	**Notification Name** **(Description)**	**ISO Status**	**ATN Status**
1.	stateChange stateChange notification as defined in ISO/IEC 10165-2. Used to report the changes to the operationalState attribute. *Rationale: it is a basic requirement for the manager to know whether a protocol entity is operational or not.*	A	M

2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the MO attributes. None of the other optional parameters are used. *Rationale: needed for the logging of the actual value of the MO attributes.*	M	M

Note: A number of standard notifications are not proposed to be retained for standardisation in the ATN SARPs; the rationale is provided below:

objectCreation	*This notification allows the manager to dynamically discover that the managed system implements the MO, or to confirm a create operation, and allows to report initial MO attribute values. ATN systems are required to support one such MO. Manager are therefore assumed to a-priori know that one instance of this MO will exist. The stateChange notification will allow knowing when the MO is operational. No requirement for the logging of initial attribute values is identified for this MO.*

2.6 The aTNcMaeInstance managed object

2.6.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNcMaeInstance This MO represents an instance of the CM AE. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **singlePeerConnection** holds reference information about an instance of the CM ATN application entity. Conditional package singlePeerConnectionP2 is absent. It specializes by adding the mandatory package **aTNcMaeiP1** and the conditional package **aTNcMP2**. There may be multiple instances of these MOs for a CM AE. Each corresponds to dialogue established with a peer CM AE. A CM AE instance is created and deleted automatically as part of system operation.	A	M
2.	Naming attribute	connectionId	A	M
3.	Superior in Naming Tree	aTNcMae		

2.6.2 Mandatory Attributes (aTNcMAaeiP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	connectionId The AE instance identifier. GraphicString	GET	M	M
2.	underlyingConnectionNames Contains the distinguished names of the managed objects that represent the underlying Presentation connection. OBJECT IDENTIFIER *Note. Due to the ATN UL profile, this attributes points to the underlying Transport connection.*	GET	M	M
3.	peerAETitle The AE Title identifying the peer CM AE in communication with the local CM AE instance. OBJECT IDENTIFIER *Rationale: to keep trace of the identity of the peer CM ES. Needed for investigation of any potential problem.*	GET	A	M

4.	aTSCclassOfCommunicationService The ATSC class of communication service as requested by the initiator CM-user. ENUMERATED {'A'(0) to 'H'(7), no-preference(8)}	GET	A	M
5.	dialogueEstablishmentRole The role of the local AE instance during the establishment of the underlying dialogue. ENUMERATED {initiator(0), receptor(1)}	GET	A	M
6.	mode Indicates the nature of the dialogue. ENUMERATED {air-ground(0), forward (1)}	GET	A	M
7.	maintainOptionUsed Indicates whether the dialogue maintain option has been used. ENUMERATED {yes (0), no (1), default=no}	GET	A	M

2.6.3 Conditional Attributes (aTNcMP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity Instance level. This package is described in section 2.5.3.

2.6.4 Actions

None.

2.6.5 Notifications

Index	**Notification Name** **(Description)**	**ISO Status**	**ATN Status**
1.	objectCreation Generated whenever an instance of the managed object class is created. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. None of the other optional parameters are used, with the exception of the "additionalInformation" field which contains the following parameters: - connectionId, - peerAETitle, - dialogueEstablishmentRole, - mode, - aTSCclassOfCommunicationService. *Rationale: needed for the logging of every AE instance creation.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the following MO attributes: – terminationMode, – aSEAbortReason. *Rationale: needed for the logging of the actual value of the MO attributes.*	M	M

The following attributes are associated with the **objectDeletion** notification:

1.	terminationMode The way the local AE instance has been terminated. ENUMERATED {normal-termination (0), version-incompatibility (1), forward-function-not-supported (2), local-user-abort (3), peer-user-abort (4), local-AE-abort (5), peer-AE-abort (6), provider-abort(7)} *Rationale: interesting for the off-line analysis of the ASE's behavior.*	GET	A	M
2.	aSEabortReason The reason of the dialogue abort, if aborted by an ASE. ENUMERATED {timer-expired (0), undefined-error(1), invalid-PDU (2), not-permitted-PDU (3), dialogue-acceptance-not-permitted (4), dialogue-end-not-permitted (5), communication-service-error (6), communication-service-failure (7), invalid-QOS-parameter (8)} *Note. This attribute is relevant when the dialogue is aborted by the local or the peer ASE.*	GET	A	M

2.7 The aTNaDSae managed object

2.7.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNaDSae There is one such MO per ATN Application Subsystem supporting the ADS application. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **communicationsEntity** holds reference information about a ADS ATN application entity. It specializes by adding attributes. . It specializes by adding the mandatory package **aTNaDSaeP1** and the conditional package **aTNaDSP2**. Its definition permits it to be created or deleted explicitly by management operation, but in some systems it will exist inherently and neither creation nor deletion by management operation will be possible	A	M
2.	Naming attribute	CommunicationsEntityId	A	M
3.	Superior in Naming Tree	applicationSubsystem		

2.7.2 Mandatory Attributes (aTNaDSaeP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	communicationsEntityId Naming attribute as defined in ISO/IEC 10165-5. GraphicString Initial value = " aTNaDSae"	GET	M	M
2.	operationalState Operational state as defined in ISO/IEC 10164-2. ENUMERATED {disabled(0), enabled(1)} *Note: value is "disabled" for any ATN system supporting the ADS application but with the application not activated.*	GET	M	M
3.	localSapNames Set of distinguished names of underlying layers SAPs at which services are provided to the application entity. SET OF OCTET STRING *Note. This attribute contains the Transport selector locally defined for the ADS application entity.*	GET	M	M

4.	ADSaSEfu Subsetting rules supported by the local ADS ASE. INTEGER *Note. Values are taken from the list of conformant configuration identifiers listed in the SARPs chapter 8.*	GET	A	M
5.	maxADSAEInstances Maximum observed number of ADS AE instances running in parallel. INTEGER {initial value=0} *Rationale: interesting to monitor the workload the ATN end system in terms of ADS activity.*	GET-DEFAULT SET	A	M

Note: A number of configuration attributes are not proposed to be retained for standardisation in the ATN SARPs:

AETitle	*The AE title of the local ADS AE.*
ADSASEVersion	*The version of the ADS protocol operated by the ASE entity. This parameter identifies as well the Application Context in use.*
ACSEfu	*The ACSE functional unit selected.*
ADSPriority	*The application priority requested by the ADS application for all messages.*
ADSRER	*The Residual Error Rate requested by the ADS application for all messages.*
t-DC-1, t-DC-2, t-EC-1, t-EC-2, t-PC-1, t-PC-2, t-PC-3, t-EM-1, t-EM-2, t-EM-3, t-LI-1	*ADS Technical Timers.*

2.7.3 Conditional Attributes (aTNaDSP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity level.

1.	aDSAbortCounter Number of times the ADS dialogue was terminated by an abort (generated by the user, the ASE or the communication service). INTEGER {initial value=0}	GET	A	O
2.	aDSReportCounter Number of ADS reports sent or received. INTEGER {initial value=0}	GET	A	O
3.	successfulADSDemandCounter Number of successful ADS demand contracts fully established (an aDSreport with a positive acknowledgement is sent or received). INTEGER {initial value=0}	GET	A	O
4.	nonComplianceADSDemandCounter Number of ADS demand contracts partially supported (a non compliance notification is sent or received). INTEGER {initial value=0}	GET	A	O
5.	unsuccessfulADSDemandCounter Number of unsuccessful ADS demand contracts refused (a negative acknowledgement is sent or received). INTEGER {initial value=0}	GET	A	O

6.	successfulADSEventCounter Number of successful ADS event contracts fully established (an aDSreport with a positive acknowledgement or a positive ADS-event-contract rsp/cnf is invoked or received). INTEGER {initial value=0}	GET	A	O
7.	nonComplianceADSEventCounter Number of ADS event contracts partially supported (a non compliance notification is sent or received). INTEGER {initial value=0}	GET	A	O
8.	unsuccessfulADSEventCounter Number of unsuccessful ADS event contracts refused (a negative acknowledgement is sent or received). INTEGER {initial value=0}	GET	A	O
9.	successfulADSPeriodicCounter Number of successful ADS periodic contracts fully established (an aDSreport with a positive acknowledgement or an positive ADS-periodic-contract rsp/cnf is invoked or received). INTEGER {initial value=0}	GET	A	O
10.	nonComplianceADSPeriodicCounter Number of ADS periodic contracts partially supported (a non compliance notification is sent or received). INTEGER {initial value=0}	GET	A	O
11.	unsuccessfulADSPeriodicCounter Number of unsuccessful ADS periodic contracts refused (a negative acknowledgement is sent or received). INTEGER {initial value=0}	GET	A	O
12.	aDSCancelContractCounter Number of ADS contracts cancellation (an ADS positive acknowledgement is sent or received after an ADS-cancel). INTEGER {initial value=0}	GET	A	O
13.	aDSCancelAllContractsCounter Number of ADS contracts multiple cancellation (an ADS positive acknowledgement is sent or received after an ADS-cancel-all). INTEGER {initial value=0}	GET	A	O
14.	aDSEmergencyContractsCounter Number of ADS emergency contracts (an initial ADS emergency report is sent or received). INTEGER {initial value=0}	GET	A	O
15.	aDSEmergencyReportCounter Number of ADS emergency reports sent or received. INTEGER {initial value=0}	GET	A	O
16.	successfulADSEmergencyModifyCounter Number of ADS emergency contract modifications accepted (an ADS positive acknowledgement is sent or received after an ADS-modify-emergency-contract). INTEGER {initial value=0}	GET	A	O

17.	unsuccessfulADSEmergencyModifyCounter Number of ADS emergency contract modifications refused (an ADS negative acknowledgement is sent or received after an ADS-modify-emergency-contract). INTEGER {initial value=0}	GET	A	O
18.	aDSCancelEmergencyContractCounter Number of ADS emergency contract cancellations (an ADS cancel emergency acknowledgement is sent or received). INTEGER {initial value=0}	GET	A	O
19.	aDScontractEstablishmentMeanDelay Mean value of the observed round trip delays during an ADS contract establishment exchange (from ADS-demand/event/periodic request to ADS-demand/event/periodic confirmation or ADS-report indication with a positive acknowledgement). INTEGER	GET	A	O
20.	aDScontractEstablishmentMaxDelay Max value of the observed round trip delays during an ADS contract establishment exchange (from ADS-demand/event/periodic request to ADS-demand/event/periodic confirmation or ADS-report indication with a positive acknowledgement). INTEGER	GET	A	O

2.7.4 Actions

None.

2.7.5 Notifications

Index	**Notification Name** **(Description)**	**ISO Status**	**ATN Status**
1.	stateChange stateChange notification as defined in ISO/IEC 10164-2. Used to report the changes to the operationalState attribute. *Rationale: it is a basic requirement for the manager to know whether a protocol entity is operational or not.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the MO attributes. None of the other optional parameters are used. *Rationale: needed for the logging of the actual value of the MO attributes.*	M	M

Note: A number of standard notifications are not proposed to be retained for standardisation in the ATN SARPs; the rationale is provided below:

objectCreation	*This notification allows the manager to dynamically discover that the managed system implements the MO, or to confirm a create operation, and allows to report initial MO attribute values. ATN systems are required to support one such MO. Manager are therefore assumed to a-priori know that one instance of this MO will exist. The stateChange notification will allow knowing when the MO is operational. No requirement for the logging of initial attribute values is identified for this MO.*

2.8 The aTNaDSaeInstance managed object

2.8.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNaDSaeInstance This MO represents an instance of the ADS ASE protocol machine. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **singlePeerConnection** holds reference information about an instance of the ADS ATN application entity. Conditional package singlePeerConnectionP2 is absent. It specializes by adding the mandatory package **aTNaDSaeiP1** and the conditional package **aTNaDSP2**. There may be multiple instances of these MOs for a ADS ASE. Each corresponds to dialogue established with a peer ADS ASE. A ADS ASE instance is created and deleted automatically as part of system operation.	A	M
2.	Naming attribute	connectionId	A	M
3.	Superior in Naming Tree	aTNaDSae		

2.8.2 Mandatory Attributes (aTNaDSaeiP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	connectionId The AE instance identifier. GraphicString	GET	M	M
2.	underlyingConnectionNames Contains the distinguished names of the managed objects that represent the underlying Presentation connection. OBJECT IDENTIFIER *Note. Due to the ATN UL profile, this attributes points to the underlying Transport connection.*	GET	M	M
3.	peerAETitle The AE Title identifying the peer ADS AE in communication with the local ADS AE instance. OBJECT IDENTIFIER *Rationale: to keep trace of the identity of the peer ES. Needed for investigation of any potential problem.*	GET	A	M

4.	aTSCclassOfCommunicationService The class of communication service as requested by the initiator ADS-user. ENUMERATED {'A'(0) to 'H'(7), no-preference(8)}	GET	A	M

2.8.3 Conditional Attributes (aTNaDSP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity Instance level. This package is described in section 2.7.3.

2.8.4 Actions

None.

2.8.5 Notifications

Index	Notification Name (Description)	ISO Status	ATN Status
1.	objectCreation Generated whenever an instance of the managed object class is created. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. None of the other optional parameters are used, with the exception of the "additionalInformation" field which contains the following parameters: - connectionId, - peerAETitle, - aTSCclassOfCommunicationService. *Rationale: needed for the logging of every AE instance creation.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the following MO attributes: – terminationMode, – aSEAbortReason. *Rationale: needed for the logging of the actual value of the MO attributes*	M	M

The following attributes are associated with the **objectDeletion** notification:

1.	terminationMode The way the local AE instance has been terminated. ENUMERATED {normal-termination (0), local-user-abort (1), peer-user-abort (2), local-AE-abort (3), peer-AE-abort (4), provider-abort (7)} *Rationale: interesting for the off-line analysis of the ASE's behavior.*	GET	A	M

2.	aSEabortReason The reason of the dialogue abort, if aborted. ENUMERATED {communications-service-failure (0), unrecoverable-system-error (1), invalid-PDU (2), sequence-error (3), timer-expiry (4), cannot-establish-contact (5), undefined-error (6), dialogue-end-not-accepted (7), unexpected-PDU (8), decoding-error (9), invalid-qos-parameter (10)} *Note. This attribute is relevant when the dialogue is aborted by the local or the peer ASE.*	GET	A	M

2.9 The aTNaRFae managed object

2.9.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNaRFae There is one such MO per ATN Application Subsystem supporting the ARF application. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **communicationsEntity** holds reference information about a ARF ATN application entity. It specializes by adding the mandatory package **aTNaRFaeP1** and the conditional package **aTNaRFP2**. Its definition permits it to be created or deleted explicitly by management operation, but in some systems it will exist inherently and neither creation nor deletion by management operation will be possible	A	M
2.	Naming attribute	CommunicationsEntityId	A	M
3.	Superior in Naming Tree	applicationSubsystem		

2.9.2 Mandatory Attributes (aTNaRFaeP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	communicationsEntityId Naming attribute as defined in ISO/IEC 10165-5. GraphicString Initial value = " aTNaRFae"	GET	M	M
2.	operationalState Operational state as defined in ISO/IEC 10164-2 NUMERATED {disabled(0), enabled(1)} *Note: value is "disabled" for any ATN system supporting the ARF application but with the application not activated.*	GET	M	M
3.	localSapNames Set of distinguished names of underlying layers SAPs at which services are provided to the application entity. SET OF OCTET STRING *Note. This attribute contains the Transport selector locally defined for the ARF application entity.*	GET	M	M

4.	ARFaSEfu Subsetting rules supported by the local ARF ASE. INTEGER *Note. Values are taken from the list of conformant configuration identifiers listed in the SARPs chapter 8.*	GET	A	M
5.	maxARFAEInstances Maximum observed number of ARF AE instances running in parallel. INTEGER {initial value=0} *Rationale: interesting to monitor the workload the ATN end system in terms of ARF activity.*	GET-DEFAULT SET	A	M

Note: A number of configuration attributes are not proposed to be retained for standardisation in the ATN SARPs:

AETitle	*The AE title of the local AE.*
ARFASEVersion	*The version of the ARF protocol operated by the ASE entity. This parameter identifies as well the Application Context in use.*
ACSEfu	*The ACSE functional unit selected.*
ARFPriority	*The application priority requested by the ARF application for all messages.*
ARFRER	*The Residual Error Rate requested by the ARF application for all messages.*
t-RF-1, t-RF-2	*ARF technical timers.*

2.9.3 Conditional Attributes (aTNaRFP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity level.

1.	aRFAbortCounter Number of times the ADS forward dialogue was terminated by an abort (generated by the user, the ASE or the communication service). INTEGER {initial value=0}	GET	A	O
2.	successfulARFContractCounter Number of ADS forward contracts fully established (a positive D-START is invoked or received). INTEGER {initial value=0}	GET	A	O
3.	unsuccessfulARFContractCounter Number of ADS forward contracts refused (a negative D-START is invoked or received). INTEGER {initial value=0}	GET	A	O
4.	aRFReportCounter Number of ADS forward reports sent or received. INTEGER {initial value=0}	GET	A	O
5.	aRFcontractEstablishmentMeanDelay Mean value of the observed round trip delays during an ARF contract establishment exchange (from ADS-start-forward request to ADS-start-forward confirmation). INTEGER	GET	A	O

6.	aDScontractEstablishmentMaxDelay Max value of the observed round trip delays during an ADS contract establishment exchange (from ADS-demand/event/periodic request to ADS-demand/event/periodic confirmation or ADS-report indication with a positive acknowledgement). INTEGER	GET	A	O

2.9.4 Actions

None.

2.9.5 Notifications

Index	**Notification Name** **(Description)**	**ISO Status**	**ATN Status**
1.	stateChange stateChange notification as defined in ISO/IEC 10165-2. Used to report the changes to the operationalState attribute. *Rationale: it is a basic requirement for the manager to know whether a protocol entity is operational or not.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the MO attributes. None of the other optional parameters are used. *Rationale: needed for the logging of the actual value of the MO attributes.*	M	M

Note: A number of standard notifications are not proposed to be retained for standardisation in the ATN SARPs; the rationale is provided below:

objectCreation	*This notification allows the manager to dynamically discover that the managed system implements the MO, or to confirm a create operation, and allows to report initial MO attribute values. ATN systems are required to support one such MO. Manager are therefore assumed to a-priori know that one instance of this MO will exist. The stateChange notification will allow knowing when the MO is operational. No requirement for the logging of initial attribute values is identified for this MO.*

2.10 The aTNaRFaeInstance managed object

2.10.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNaRFaeInstance This MO represents an instance of the ARF ASE protocol machine. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **singlePeerConnection** holds reference information about an instance of the ARF ATN application entity. Conditional package singlePeerConnectionP2 is absent. It specializes by adding the mandatory package **aTNaRFaeiP1** and the conditional package **aTNaRFP2**. There may be multiple instances of these MOs for a ARF ASE. Each corresponds to dialogue established with a peer ARF ASE. A ARF ASE instance is created and deleted automatically as part of system operation.	A	M
2.	Naming attribute	connectionId	A	M
3.	Superior in Naming Tree	aTNaRFae		

2.10.2 Mandatory Attributes (aTNaRFaeiP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	connectionId The AE instance identifier. GraphicString	GET	M	M
2.	underlyingConnectionNames Contains the distinguished names of the managed objects that represent the underlying Presentation connection. OBJECT IDENTIFIER *Note. Due to the ATN UL profile, this attributes points to the underlying Transport connection.*	GET	M	M
3.	peerAETitle The AE Title identifying the peer ARF AE in communication with the local ARF AE instance. OBJECT IDENTIFIER *Rationale: to keep trace of the identity of the peer ARF ES. Needed for investigation of any potential problem.*	GET	A	M

4.	aTSCclassOfCommunicationService The class of communication service as requested by the initiator ARF-user. ENUMERATED {'A'(0) to 'H'(7), no-preference(8)}	GET	A	M
5.	dialogueEstablishmentRole The role of the local AE instance during the establishment of the underlying dialogue. ENUMERATED {initiator(0), receptor(1)}	GET	A	M

2.10.3 Conditional Attributes (aTNaRFP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity Instance level. This package is described in section 2.9.3.

2.10.4 Actions

None.

2.10.5 Notifications

Index	**Notification Name** **(Description)**	**ISO Status**	**ATN Status**
1.	objectCreation Generated whenever an instance of the managed object class is created. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. None of the other optional parameters are used, with the exception of the "additionalInformation" field which contains the following parameters: - connectionId, - peerAETitle, - dialogueEstablishmentRole, - aTSCclassOfCommunicationService. *Rationale: needed for the logging of every AE instance creation.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the following MO attributes: – terminationMode, – aSEAbortReason. *Rationale: needed for the logging of the actual value of the MO attributes*	M	M

The following attributes are associated with the **objectDeletion** notification:

1.	terminationMode The way the local AE instance has been terminated. ENUMERATED {normal-termination (0), version-incompatibility (1), local-user-abort (2), peer-user-abort (3), local-AE-abort (4), peer-AE-abort (5)} *Rationale: interesting for the off-line analysis of the ASE's behavior.*	GET	A	M

2.	aSEabortReason The reason of the dialogue abort, if aborted. ENUMERATED {communications-service-failure (0), unrecoverable-system-error (1), invalid-PDU (2), sequence-error (3), timer-expiry (4), cannot-establish-contact (5), undefined-error (6), dialogue-end-not-accepted (7), unexpected-PDU (8), decoding-error (9), invalid-qos-parameter (10)} *Note. This attribute is relevant when the dialogue is aborted by the local or the peer ASE.*	GET	A	M

2.11 The aTNcPDLCae managed object

2.11.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNcPDLCae There is one such MO per ATN Application Subsystem supporting the CPDLC application. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": communicationsEntity holds reference information about a CPDLC ATN application entity. . It specializes by adding the mandatory package **aTNcPDLCaeP1** and the conditional package **aTNcPDLCP2**. Its definition permits it to be created or deleted explicitly by management operation, but in some systems it will exist inherently and neither creation nor deletion by management operation will be possible	A	M
2.	Naming attribute	CommunicationsEntityId	A	M
3.	Superior in Naming Tree	applicationSubsystem		

2.11.2 Mandatory Attributes (aTNcPDLCaeP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	communicationsEntityId Naming attribute as defined in ISO/IEC 10165-5. GraphicString Initial value = " aTNcPDLCae"	GET	M	M
2.	operationalState Operational state as defined in ISO/IEC 10164-2. ENUMERATED {disabled(0), enabled(1)}. *Note: value is "disabled" for any ATN system supporting the CPDLC application but with the application not activated.*	GET	M	M
3.	localSapNames Set of distinguished names of underlying layers SAPs at which services are provided to the application entity. SET OF OCTET STRING *Note. This attribute contains the Transport selector locally defined for the CPDLC application entity.*	GET	M	M

4.	CPDLCaSEfu Subsetting rules supported by the local CPDLC ASE. INTEGER *Note. Values are taken from the list of conformant configuration identifiers listed in the SARPs chapter 8.*	GET	A	M
5.	maxCPDLCAEInstances Maximum observed number of CPDLC AE instances running in parallel. INTEGER {initial value=0} *Rationale: interesting to monitor the workload the ATN end system in terms of CPDLC activity.*	GET-DEFAULT SET	A	M

Note: A number of configuration attributes are not proposed to be retained for standardisation in the ATN SARPs:

AETittle	*The AE title of the local AE*
CPDLCASEVersion	*The version of the CPDLC protocol operated by the ASE entity. This parameter identifies as well the Application Context in use.*
ACSEfu	*The ACSe functional units selected.*
CPDLCPriority	*The application priority requested by the CPDLC application for all messages.*
CPDLCRER	*The Residual Error Rate requested by the CPDLC application for all messages.*
CPDLC-start, CPDLC-forward, DSC-start	*CPDLC Technical Timers.*

2.11.3 Conditional Attributes (aTNcPDLCP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity level.

1.	cPDLCAbortCounter Number of times the CPDLC/DSC/Forward dialogue was terminated by an abort (generated by the user, the ASE or the communication service). INTEGER {initial value=0}	GET	A	O
2.	successfulCPDLCDialogueCounter Number of CPDLC dialogues fully established (a positive D-START is invoked or received). INTEGER {initial value=0}	GET	A	O
3.	unsuccessfulCPDLCDialogueCounter Number of CPDLC dialogues refused (a negative D-START is invoked or received). INTEGER {initial value=0}	GET	A	O
4.	successfulDSCDialogueCounter Number of DSC dialogues fully established (a positive D-START is invoked or received). INTEGER {initial value=0}	GET	A	O
5.	unsuccessfulDSCContractCounter Number of DSC dialogue refused (a negative D-START is invoked or received). INTEGER {initial value=0}	GET	A	O

6.	successfulForwardDialogueCounter Number of Forward dialogues fully established (a negative D-START cnf is invoked or received with user data contains the value *success).* INTEGER {initial value=0}	GET	A	O
7.	unsuccessfulForwardDialogueCounter Number of Forward dialogues refused (a negative D-START cnf is invoked or received with user data not containing the value *success*). INTEGER {initial value=0}	GET	A	O
8.	downlinkCPDLCMessageCounter Number of downlink messages sent or received on CPDLC dialogues. INTEGER {initial value=0}	GET	A	O
9.	uplinkCPDLCMessageCounter Number of uplink messages sent or received on CPDLC dialogues INTEGER {initial value=0}	GET	A	O
10.	downlinkDSCMessageCounter Number of downlink messages sent or received on DSC dialogues. INTEGER {initial value=0}	GET	A	O
11.	uplinkDSCMessageCounter Number of uplink messages sent or received on DSC dialogues INTEGER {initial value=0}	GET	A	O
12.	CPDLCdialogueEstablishmentMeanDelay Mean value of the observed round trip delays during a CPDLC contract establishment exchange (from CPDLC-start request to CPDLC-start confirmation). INTEGER	GET	A	O
13.	CPDLCdialogueEstablishmentMaxDelay Max value of the observed round trip delays during a CPDLC contract establishment exchange (from CPDLC-start request to CPDLC-start confirmation). INTEGER	GET	A	O
14.	DSCdialogueEstablishmentMeanDelay Mean value of the observed round trip delays during a DSC contract establishment exchange (from DSC-start request to DSC-start confirmation). INTEGER	GET	A	O
15.	DSCdialogueEstablishmentMaxDelay Max value of the observed round trip delays during a DSC contract establishment exchange (from DSC-start request to DSC-start confirmation). INTEGER	GET	A	O
16.	ForwarddialogueEstablishmentMeanDelay Mean value of the observed round trip delays during a Forward contract establishment exchange (from CPDLC-forward request to CPDLC-forward confirmation). INTEGER	GET	A	O
17.	ForwarddialogueEstablishmentMaxDelay Mean value of the observed round trip delays during a Forward contract establishment exchange (from CPDLC-forward request to CPDLC-forward confirmation). INTEGER	GET	A	O

2.11.4 Actions

None.

2.11.5 Notifications

Index	Notification Name (Description)	ISO Status	ATN Status
1.	stateChange stateChange notification as defined in ISO/IEC 10165-2. Used to report the changes to the operationalState attribute. *Rationale: it is a basic requirement for the manager to know whether a protocol entity is operational or not.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the MO attributes. None of the other optional parameters are used. *Rationale: needed for the logging of the actual value of the MO attributes.*	M	M

Note: A number of standard notifications are not proposed to be retained for standardisation in the ATN SARPs; the rationale is provided below:

objectCreation	*This notification allows the manager to dynamically discover that the managed system implements the MO, or to confirm a create operation, and allows to report initial MO attribute values. ATN systems are required to support one such MO. Manager are therefore assumed to a-priori know that one instance of this MO will exist. The stateChange notification will allow knowing when the MO is operational. No requirement for the logging of initial attribute values is identified for this MO.*

2.12 The aTNcPDLCaeInstance managed object

2.12.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNcPDLCaeInstance This MO represents an instance of the CPDLC AE protocol machine. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **singlePeerConnection** holds reference information about an instance of the CPDLC ATN application entity. Conditional package singlePeerConnectionP2 is absent. It specializes by adding the mandatory package **aTNcPDLCaeiP1** and the conditional package **aTNcPDLCP2**. There may be multiple instances of these MOs for a CPDLC AE. Each corresponds to dialogue established with a peer CPDLC AE. A CPDLC AE instance is created and deleted automatically as part of system operation.	A	M
2.	Naming attribute	connectionId	A	M
3.	Superior in Naming Tree	aTNcPDLCae		

2.12.2 Mandatory Attributes (aTNcPDLCCaeiP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	connectionId The AE instance identifier. GraphicString	GET	M	M
2.	underlyingConnectionNames Contains the distinguished names of the managed objects that represent the underlying Presentation connection. OBJECT IDENTIFIER *Note. Due to the ATN UL profile, this attributes points to the underlying Transport connection.*	GET	M	M
3.	peerAETitle The AE Title identifying the peer CPDLC AE in communication with the local CPDLC AE instance. OBJECT IDENTIFIER *Rationale: to keep trace of the identity of the peer CPDLC ES. Needed for investigation of any potential problem.*	GET	A	M

4.	aTSCclassOfCommunicationService The class of communication service as requested by the initiator CPDLC-user. ENUMERATED {'A'(0) to 'H'(7), no-preference(8)}	GET	A	M
5.	dialogueEstablishmentRole The role of the local AE instance during the establishment of the underlying dialogue. ENUMERATED {initiator(0), receptor(1)}	GET	A	M
6.	mode The mode of the local AE during the dialogue. ENUMERATED {cpdlc (0), dsc (1), forward (2)} *Rationale: to keep trace of the type of CPDLC dialogue.*	GET	A	M

2.12.3 Conditional Attributes (aTNcPDLCP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity Instance level. This package is described in section 2.11.3.

2.12.4 Actions

None.

2.12.5 Notifications

Index	**Notification Name** **(Description)**	**ISO Status**	**ATN Status**
1.	objectCreation Generated whenever an instance of the managed object class is created. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. None of the other optional parameters are used, with the exception of the "additionalInformation" field which contains the following parameters: - connectionId, - peerAETitle, - dialogueEstablishmentRole, - aTSCclassOfCommunicationService. *Rationale: needed for the logging of every AE instance creation.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the following MO attributes: – terminationMode, – aSEAbortReason. *Rationale: needed for the logging of the actual value of the MO attributes.*	M	M

The following attributes are associated with the **objectDeletion** notification:

1.	terminationMode The way the local AE instance has been terminated. ENUMERATED {normal-termination (0), version-incompatibility (1), ground-forward-function-not-supported (2), local-user-abort (1), peer-user-abort (2), local-AE-abort (3), peer-AE-abort (4)} *Rationale: interesting for the off-line analysis of the ASE's behavior*.	GET	A	M
2.	aSEabortReason The reason of the dialogue abort, if aborted. ENUMERATED {communications-service-failure (0), unrecoverable-system-error (1), invalid-PDU (2), sequence-error (3), timer-expiry (4), cannot-establish-contact (5), undefined-error (6), dialogue-end-not-accepted (7), unexpected-PDU (8), decoding-error (9), invalid-qos-parameter (10), user-abort-undefined (11), no-message-id-available (12), duplicate-message-id (12), no-longer-NDA (13), CDA-abort (14), command-termination (15), invalid-response(16)} *Note. This attribute is relevant when the dialogue is aborted by the local or the peer ASE.*	GET	A	M

2.13 The aTfISae managed object

2.13.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNfISae There is one such MO per ATN Application Subsystem supporting the FIS application. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **communicationsEntity** holds reference information about a FIS ATN application entity. . It specializes by adding the mandatory package **aTNfISaeP1** and the conditional package **aTNfISP2**. Its definition permits it to be created or deleted explicitly by management operation, but in some systems it will exist inherently and neither creation nor deletion by management operation will be possible	A	M
2.	Naming attribute	CommunicationsEntityId	A	M
3.	Superior in Naming Tree	applicationSubsystem		

2.13.2 Mandatory Attributes (aTNfISaeP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	communicationsEntityId Naming attribute as defined in ISO/IEC 10165-5. GraphicString Initial value = " aTNfISae"	GET	M	M
2.	operationalState Operational state as defined in ISO/IEC 10164-2. ENUMERATED {disabled(0), enabled(1)} *Note: value is "disabled" for any ATN system supporting the FIS application but with the application not activated.*	GET	M	M
3.	localSapNames Set of distinguished names of underlying layers SAPs at which services are provided to the application entity. SET OF OCTET STRING *Note. This attribute contains the Transport selector locally defined for the FIS application entity.*	GET	M	M

4.	FISaSEfu Subsetting rules supported by the local FIS ASE. INTEGER *Note. Values are taken from the list of conformant configuration identifiers listed in the SARPs chapter 8.*	GET	A	M
5.	maxFISAEInstances Maximum observed number of FIS AE instances running in parallel. INTEGER {initial value=0} *Rationale: interesting to monitor the workload the ATN end system in terms of FIS activity.*	GET-DEFAULT SET	A	M

Note: A number of configuration attributes are not proposed to be retained for standardisation in the ATN SARPs:

AETitle	*The AE title of the local AE.*
FISASEVersion	*The version of the FIS protocol operated by the ASE entity. This parameter identifies as well the Application Context in use.*
ACSEfu	*The ACSE functional units selected.*
ATISPriority	*The application priority requested by the FIS application for all messages.*
FISRER	*The Residual Error Rate requested by the FIS application for all messages.*
t-DC-1, t-DC-2, t-UC-1, t-UC-2, t-UC-3, t-CL-1, t-LI-1	*FIS Technical Timers.*

2.13.3 Conditional Attributes (aTNfISP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity level.

1.	fISAbortCounter Number of times the FIS contracts terminated by an abort (generated by the user, the ASE or the communication service). INTEGER {initial value=0}	GET	A	O
2.	successfulFISDemandCounter Number of successful FIS demand contracts fully established (an FISAccept APDU is sent or received after a FIS-demand-contract). INTEGER {initial value=0}	GET	A	O
3.	unsuccessfulFISDemandCounter Number of unsuccessful FIS demand contracts refused (a FISReject APDU is sent or received after a FIS-demand-contract). INTEGER {initial value=0}	GET	A	O
4.	successfulFISUpdateCounter Number of successful FIS update contracts fully established (an FISAccept APDU is sent or received after a FIS-update-contract). INTEGER {initial value=0}	GET	A	O
5.	fISUpdateReportCounter Number of FIS reports sent or received on FIS update contracts. INTEGER {initial value=0}	GET	A	O

6.	unsuccessfulFISUpdateCounter Number of unsuccessful FIS update contracts refused (a FISReject APDU is sent or received after a FIS-update-contract). INTEGER {initial value=0}	GET	A	O
7.	fISCancelUpdateContractCounter Number of FIS update contracts cancellation correctly operated (an FISCancelUpdateAccept APDU is sent or received). INTEGER {initial value=0}.	GET	A	O
8.	fISCancelAllContractsCounter Number of FIS contracts multiple cancellation correctly handled (an FISCancelContractsAccept APDU is sent or received). INTEGER {initial value=0}	GET	A	O
9.	FISdialogueEstablishmentMeanDelay Mean value of the observed round trip delays during a FIS contract (update or contract) establishment exchange (from FIS-demand/update-start request to FIS-demand/update-start confirmation). INTEGER	GET	A	O
10.	FISdialogueEstablishmentMaxDelay Max value of the observed round trip delays during a FIS contract (update or contract) establishment exchange (from FIS-demand/update-start request to FIS-demand/update-start confirmation). INTEGER	GET	A	O

2.13.4 Actions

None.

2.13.5 Notifications

Index	**Notification Name** **(Description)**	**ISO Status**	**ATN Status**
1.	stateChange stateChange notification as defined in ISO/IEC 10165-2. Used to report the changes to the operationalState attribute. *Rationale: it is a basic requirement for the manager to know whether a protocol entity is operational or not.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the MO attributes. None of the other optional parameters are used. *Rationale: needed for the logging of the actual value of the MO attributes.*	M	M

Note: A number of standard notifications are not proposed to be retained for standardisation in the ATN SARPs; the rationale is provided below:

objectCreation	*This notification allows the manager to dynamically discover that the managed system implements the MO, or to confirm a create operation, and allows to report initial MO attribute values. ATN systems are required to support one such MO. Manager are therefore assumed to a-priori know that one instance of this MO will exist. The stateChange notification will allow knowing when the MO is operational. No requirement for the logging of initial attribute values is identified for this MO.*

2.14 The aTNfISaeInstance managed object

2.14.1 MO Class Support

Index	Property	Description	ISO Status	ATN Status
1.	Managed Object Class	aTNfISaeInstance This MO represents an instance of the FIS ASE protocol machine. This subclass of "Rec. X.723 | ISO/IEC 10165-5:1994": **singlePeerConnection** holds reference information about an instance of the FIS ATN application entity. Conditional package singlePeerConnectionP2 is absent. It specializes by adding the mandatory package **aTNfISaeiP1** and the conditional package **aTNfISP2**. There may be multiple instances of these MOs for a FIS ASE. Each corresponds to dialogue established with a peer FIS ASE. A FIS ASE instance is created and deleted automatically as part of system operation.	A	M
2.	Naming attribute	connectionId	A	M
3.	Superior in Naming Tree	aTNfISae		

2.14.2 Mandatory Attributes (aTNfISaeiP1 Package)

Index	Attribute Name (Description) Syntax	Operations	ISO Status	ATN Status
1.	connectionId The AE instance identifier. GraphicString	GET	M	M
2.	underlyingConnectionNames Contains the distinguished names of the managed objects that represent the underlying Presentation connection. OBJECT IDENTIFIER *Note. Due to the ATN UL profile, this attributes points to the underlying Transport connection.*	GET	M	M
3.	peerAETitle The AE Title identifying the peer FIS AE in communication with the local FIS AE instance. OBJECT IDENTIFIER *Rationale: to keep trace of the identity of the peer CPDLC ES. Needed for investigation of any potential problem.*	GET	A	M

4.	aTSCclassOfCommunicationService The class of communication service as requested by the initiator FIS-user. ENUMERATED {'A'(0) to 'H'(7), no-preference(8)}	GET	A	M

2.14.3 Conditional Attributes (aTNfISP2 Package)

This package is present if user activity and AE performance is to be monitored at the Application Entity Instance level. This package is described in section 2.13.3.

2.14.4 Actions

None.

2.14.5 Notifications

Index	Notification Name (Description)	ISO Status	ATN Status
1.	objectCreation Generated whenever an instance of the managed object class is created. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. None of the other optional parameters are used, with the exception of the "additionalInformation" field which contains the following parameters: - connectionId, - peerAETitle, - aTSCclassOfCommunicationService. *Rationale: needed for the logging of every AE instance creation.*	A	M
2.	objectDeletion Generated whenever an instance of the managed object class is deleted. The "sourceIndicator" parameter shall be set to the value 'resourceOperation'. The "attributeList" parameter shall be used to report the values of the following MO attributes: – terminationMode, – aSEAbortReason. *Rationale: needed for the logging of the actual value of the MO attributes*	M	M

The following attributes are associated with the **objectDeletion** notification:

1.	terminationMode The way the local AE instance has been terminated. ENUMERATED {normal-termination (0), local-user-abort (1), peer-user-abort (2), local-AE-abort (3), peer-AE-abort (4)} *Rationale: interesting for the off-line analysis of the ASE's behavior.*	GET	A	M

2.	aSEabortReason The reason of the dialogue abort, if aborted. ENUMERATED {timer-expiration (0), protocol-error (1), sequence-error (2), decoding-error (3), unrecoverable-internal-error (4), invalid-contract-number (5), dialogue-end-not-supported (6), undefined (7), invalid-qos-parameter (8)} *Note. This attribute is relevant when the dialogue is aborted by the local or the peer ASE.*	GET	A	M