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ISO/IEC ISP 11187-1

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Information technology — International Standardized Profiles AVT1n, AVT2n — Virtual Terminal Basic Class — Application Profiles —

Part 1:
Common VT Protocol Requirements

Technologies de l'information — Profils normalisés internationaux AVT1n, AVT2n — Classe de base du terminal virtuel — Profils d'application —

Partie 1: Prescriptions communes pour protocole VT

Reference number
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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75% of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 11187-1 was prepared with the collaboration of

- OSI Asia-Oceania Workshop (AOW);
- European Workshop for Open Systems (EWOS);
- Open Systems Environment Implementors' Workshop (OIW).

ISO/IEC ISP 11187 consists of the following parts, under the general title *Information technology — International Standardized Profiles AVT1n, AVT2n — Virtual Terminal Basic Class — Application Profiles*:

- *Part 1: Common VT Protocol Requirements*
- *Part 2: Common Supporting Layers Requirements*
- *Part 3: AVT22 — S-mode Forms Application Profile*
- *Part 4: AVT23 — S-mode Paged Application Profile*
- *Part 5: AVT16 — A-mode Generalized Telnet Application Profile*
- *Part 6: AVT15 — A-mode Transparent Application Profile*

Annex A forms an integral part of this part of ISO/IEC ISP 11187.

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Introduction

ISO/IEC ISP 11187 is defined within the context of Functional Standardization, in accordance with the principles specified in ISO/IEC TR 10000, "Framework and Taxonomy of International Standardized Profiles". The context of Functional Standardization is one part of the overall field of Information Technology (IT) standardization activities, covering base standards, profiles and registration mechanisms.

This International Standardized Profile contains Open Systems Interconnection (OSI) Application Profiles (A-profiles) defined within the framework of ISO/IEC TR 10000 for the Virtual Terminal Basic Class Service and Protocol that is specified in ISO 9040 and ISO 9041.

This part of ISO/IEC ISP 11187 contains requirements that are common to more than one Application Profile. It does not itself contain the specification of any one OSI Application Profile. The requirements it contains are instead incorporated by reference into other parts of ISO/IEC ISP 11187 that do contain such specifications.

This part of ISO/IEC ISP 11187 was developed in close cooperation between the three Regional OSI Workshops, namely the OSE Implementors' Workshop (OIW) of the United States, the European Workshop for Open Systems (EWOS) and the OSI Asia-Oceania Workshop (AOW). The text is harmonized between these three Workshops and it has been ratified by the plenary assemblies of each Workshop.

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Information technology — International Standardized Profiles AVT1n, AVT2n — Virtual Terminal Basic Class — Application Profiles —

Part 1:
Common VT Protocol Requirements

1 Scope

1.1 General

The concept of Profiles for OSI, and the structure of the International Standardized Profiles that document them, are defined in ISO/IEC TR 10000-1. Such Profiles are divided into a number of different classes and sub-classes. Two of these classes contain sub-classes comprising functions of the Virtual Terminal Basic Class Service and Protocol specified in the base standards ISO 9040 and ISO 9041. These are the Application Profiles (A-Profiles) and the Interchange Format and Representation Profiles (F-Profiles).

The relationship between A-Profiles and F-Profiles is described in 7.3.2 of ISO/IEC TR 10000-1 and is as follows. Application Layer base standards require, implicitly or explicitly, the structure of information carried or referenced by them to be specified for each instance of communication. It is the purpose of F-Profiles to specify Information Objects that provide these structures. Particular functional requirements may then be met by the combination of an A-Profile with one or more F-Profiles.

Establishment of a VT-association involves the selection by negotiation of a particular Virtual Terminal Environment profile (VTE-profile), and of particular values for any arguments of that VTE-profile. The VTE-profile specification, and possibly also the values of certain VTE-profile arguments, may in turn reference the definitions of VT control object types and assignment types. These VTE-profiles, control object types and assignment types are therefore Information Objects that require explicit reference within the VT protocol. Particular instances of these Information Objects are fully defined within the base standards, but the base standards also provide for further instances to be defined by registration. Each registered instance constitutes an F-Profile within the framework of ISO/IEC TR 10000.

The Virtual Terminal Basic Class Service and Protocol may be used to realise a wide range of distinct functions. Particular functions may be realised through the selection of appropriate VT functional units, F-Profiles and other VTE-profile argument values. The specification of the selection required to realise a particular function and to promote interoperability constitutes a Virtual Terminal A-Profile within the framework of ISO/IEC TR 10000.

The three International Registers of VT information objects and the specifications of VT Application Profiles are each published as a separate multi-part ISP as follows:

— ISO/IEC ISP 11184 is the Register of VTE-profiles;

— ISO/IEC ISP 11185 is the Register of control object type definitions;

— ISO/IEC ISP 11186 is the Register of assignment-type definitions;

— ISO/IEC ISP 11187 contains the specifications of VT Application Profiles.

It is a requirement of ISO/IEC 9646-7 that the specification of an Information Object shall provide an Information Object Implementation Conformance Statement (ICS) proforma. This is a document in the form of a questionnaire or checklist to be completed by the supplier or implementor of an implementation for which conformance is claimed to the Information Object concerned. It is also a requirement of ISO/IEC 9646-7 that the specification of a Profile shall provide a Profile Requirements List (Profile RL) which modifies the ICS proformas of the referenced base standards. A Profile specification may in addition provide a Profile Specific ICS proforma.

This part of ISO/IEC ISP 11187 provides guidance on the interpretation of these requirements for Profiles of the Virtual Terminal Basic Class Service and Protocol. It also specifies a Common RL for the VT Protocol that shall be incorporated by reference into each VT Application Profile specified in other parts of ISO/IEC ISP 11187.

1.2 Position within the taxonomy

The taxonomy of International Standardized Profiles for OSI is laid down in ISO/IEC TR 10000-2. Within the classification scheme of this taxonomy, Profiles of the Virtual Terminal Registered Objects subclass of the class of Interchange Format and Representation Profiles (F-Profiles) have taxonomy identifiers of the form FVT*abc*. Profiles of the Virtual Terminal subclass of the class of Application Profiles requiring connection-mode Transport Service have taxonomy identifiers of the form AVT*bc*. In these identifiers, *abc* and *bc*

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are structured numerical identifers in which the values of *a* and *b* are single digits but *c* is an integer that is not necessarily a single digit. These numerical identifiers identify the position of the Profile within the hierarchy of levels of subdivision of the subclass.

The guidance on RLs and ICS proformas given in this part of ISO/IEC ISP 11187 is applicable to all Profiles in either of these two subclasses. The Common RL for the VT Protocol given in this part of ISO/IEC ISP 11187 is applicable to all Application Profiles with identifiers of the form AVT1*c* or AVT2*c*. Other parts of this ISP give either further common requirements or the specification of an individual Application Profile with an identifier of one of these forms. The value of the identifier component *b* in the identifiers AVT*bc* distinguishes between permitted modes of operation of the Virtual Terminal Service as follows:

— *b* = 1 for Basic Class A-mode (asynchronous mode);

— *b* = 2 for Basic Class S-mode (synchronous mode).

Values of *b* greater than 2 are reserved for future developments.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 11187. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this part of ISO/IEC ISP 11187 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and ITU-T maintains published editions of its current Recommendations.

ISO/IEC 7498-1:1994, *Information technology — Open Systems Interconnection — Basic Reference Model: The Basic Model.* (See also ITU-T Recommendation X.200).

ISO/IEC 8824-1:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation* (third edition). (See also ITU-T Recommendation X.680).

ISO/IEC 8825-1:1995, *Information technology — ASN.1 encoding rules — Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)* (third edition). (See also ITU-T Recommendation X.690).

ISO 9040:1990, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Service.*

ISO 9041-1:1990, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 1: Specification.*

ISO 9041-1:1990:Cor.1:1992, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 1: Specification. Technical Corrigendum 1.*

ISO 9041-1:1990/Cor.2:1993, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 1: Specification. Technical Corrigendum 2.*

ISO 9041-1:1990/Amd.2:1992, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 1: Specification. Amendment 2: Additional functional units.*

ISO/IEC 9041-2:1993, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*

ISO/IEC 9646-1:1994, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 1: General concepts* (second edition). (See also ITU-T Recommendation X.290).

ISO/IEC 9646-6:1994, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 6: Protocol profile test specification.* (See also ITU-T Recommendation X.295).

ISO/IEC 9646-7:1995, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 7: Implementation conformance statements.* (See also ITU-T Recommendation X.296).

ISO/IEC 9834-4:1991, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities — Part 4: Register of VTE Profiles.*

ISO/IEC TR 10000-1:1995, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 1: General principles and documentation framework* (third edition).

ISO/IEC TR 10000-2:1995, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 2: Principles and Taxonomy for OSI profiles* (fourth edition).

ISO/IEC 10731:1994, *Information technology — Open Systems Interconnection — Basic Reference Model — Conventions for the definition of OSI services.* (See also ITU-T Recommendation X.210).

ISO/IEC 10739-1:1994, *Information technology — Open Systems Interconnection — Conformance test suite for ISO 9041-1 — Virtual terminal basic class protocol — Part 1: Test suite structure and test purposes.*

ISO/IEC ISP 11188-1:1995, *Information technology — International Standardized Profile — Common upper layer requirements — Part 1: Basic connection oriented requirements.*

3 Definitions

For the purposes of this part of ISO/IEC ISP 11187, the following definitions apply.

3.1 General OSI terminology

3.1.1 This part of ISO/IEC ISP 11187 makes use of the following terms defined in ISO/IEC 10731:

a) service primitive;

b) service-provider.

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3.1.2 This part of ISO/IEC ISP 11187 makes use of the following term defined in ISO/IEC 8824:

a) object identifier.

3.1.3 This part of ISO/IEC ISP 11187 makes use of the following terms defined in ISO/IEC 9646-1:

a) dynamic conformance requirement;

b) implementation conformance statement (ICS);

c) implementation conformance statement proforma;

d) profile requirements list (Profile RL);

e) profile specific ICS;

f) protocol implementation conformance statement (PICS);

g) requirements list (RL);

h) semantically invalid test event;

i) static conformance requirement;

j) static conformance review.

3.2 Terminology of VT standards

3.2.1 This part of ISO/IEC ISP 11187 makes use of the following terms defined in ISO 9040:

a) A-mode (Asynchronous mode);

b) S-mode (Synchronous mode);

c) VT-association;

d) VT-environment (VTE);

e) VT-user;

f) VTE-parameter;

g) VTE-profile;

h) VTE-profile argument.

3.2.2 This part of ISO/IEC ISP 11187 makes use of the following term defined in ISO 9041-1:

a) protocol element.

4 Abbreviations

For the purposes of this part of ISO/IEC ISP 11187, the following abbreviations apply.

ASN.1	Abstract Syntax Notation One;
ICS	Implementation Conformance Statement;
PDU	Protocol Data Unit;
PICS	Protocol Implementation Conformance Statement;
RL	Requirements List;
SCS	System Conformance Statement;
VT	Virtual Terminal;
VTE	Virtual Terminal Environment;
VTPM	Virtual Terminal Protocol Machine.

All other abbreviations used are defined in ISO 9041-1, including in particular the acronyms defined in 4.3 of ISO 9041-1 for VT protocol elements.

5 Principles of conformance to VT Profiles

5.1 Conformance to an OSI Profile

The supplier of a system that is claimed to conform to an OSI International Standardized Profile is required to describe the supported capabilities of the system by providing a Profile Implementation Conformance Statement (Profile ICS) for the system in accordance with ISO/IEC 9646-7. The general requirements of that Standard are as follows.

A Profile ICS contains a Protocol ICS (PICS) or Information Object ICS for each OSI Protocol or Information Object respectively that is referenced by the Profile specification. Each such constituent ICS is a statement of the capabilities and options that have been implemented for the particular Protocol or Information Object concerned. In addition the Profile ICS contains a Profile Requirements List (Profile RL) that places constraints on the answers permitted in each constituent ICS. It may also contain a Profile Specific ICS that gives any necessary further statement of capabilities and options implemented, related to the Profile but not concerning the conformance requirements of any specific Protocol or Information Object.

Each constituent ICS, including the Profile Specific ICS if present, is produced by the completion of an ICS proforma that is a questionnaire or checklist associated with the relevant Specification but not forming part of it. The ICS proforma assigns a status value to each capability or option to indicate whether its implementation is mandatory, optional, prohibited, not applicable or is any of these depending on whether one or more other capabilities or options are also implemented. These status values constrain the answers permitted in the completed questionnaire or checklist. They are not a normative statement of static conformance requirements of the associated Specification; these requirements must be stated elsewhere in the Specification and the status values are accompanied by a well-defined mapping, by references, to these static conformance requirements.

The Profile RL forms part of the specification of the Profile concerned. It may further strengthen the requirements placed on the implementation by modifying the status values for each referenced ICS proforma; modification that weakens the requirements is not permitted. In contrast to the situation for an ICS proforma, an RL is a normative statement of requirements of the Profile concerned; A.5.3 of ISO/IEC TR 10000-1 states that preference shall be given to recording as much as possible of the Profile requirements once and once only in the Profile RL.

The first stage in the test operations phase of the conformance assessment process for an implementation is the static conformance review. This assesses the extent to which the static conformance requirements of the Profile are met. It is accomplished by a review of the answers provided in the ICS to ensure that they are consistent with the status values given in both the ICS proformas and the Profile RL.

5.2 Effect of configurability

It is recognised in ISO/IEC 9646-7 that a system which includes an implementation of an OSI Application Layer

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protocol may be configurable to conform to a number of different OSI Profiles for that protocol by means outside the scope of any one of those Profiles. The means of configuration may be static, *i.e.* determined outside of a particular instance of communication, or dynamic, *i.e.* determined during a particular instance of communication, possibly by negotiation.

A capability or option that is implemented for the system as a whole may in fact be disabled or otherwise unavailable in some configurations of that system and so should be considered as not implemented *for those particular configurations*. An ICS proforma may be completed with reference to a particular configuration of the system, in which case the answers will be determinate, or with reference to the system as a whole, in which case the answers may be conditional answers for which the predicates reference the configuration of the system. The notation to be used for conditional support answers is given in 9.3.2 of ISO/IEC 9646-7. The static conformance review will refer to the determinate answers obtained by evaluating the conditional expressions for the configuration that is to be tested.

5.3 The situation for Virtual Terminal Profiles

5.3.1 Dynamic configurability

The VT-ASSOCIATE-REQ (ASQ) PDU has a profile parameter that identifies a specific VTE-profile, possibly in conjunction with a particular VT Application Profile; see clause 6 below. This provides a mechanism for dynamic configurability of a VT protocol implementation. The ability to negotiate a VT-association in accordance with the requirements of a particular profile is subject to conformance testing; the semantically invalid behaviour tests described in ISO/IEC 10739-1 include tests of valid behaviour during association setup when the incoming ASQ PDU is not valid according to the profile referenced by the profile parameter.

5.3.2 VT PICS proforma

The Protocol ICS (PICS) proforma specified in ISO/IEC 9041-2 pre-dates the publication of ISO/IEC 9646-7 and needs interpretation in the light of the general requirements of that Standard. Although entitled a Protocol ICS proforma, it contains the tables required for an Information Object ICS proforma for a VTE-profile or VT control object type in addition to those of direct relevance to the VT Protocol Specification of ISO 9041-1.

The effect of this is that the specification of a VTE-profile or VT control object type should provide a Requirements List to augment the status values of the relevant tables of ISO/IEC 9041-2, instead of providing a full Information Object ICS proforma. Requirements additional to those covered by the tables of ISO/IEC 9041-2 may need an additional Specific ICS proforma.

The specifications of VT Information Objects and VT Application Profiles are both issued as Profiles in parts of an ISP. Nevertheless the nature of a VTE-profile or VT control object as an Information Object is distinct from the nature of a VT Application Profile. This distinction will be reflected in differing natures of the corresponding Profile RLs and Profile Specific ICS proformas. In particular a VT Application Profile may place constraints on the support requirements both for the VT Protocol and for one or more VT Information Objects.

5.3.3 Status and support notation

The use of RLs for VT Information Objects as well as for VT Application Profiles means that a Profile ICS may contain a number of separate RLs that apply to the same ICS proforma. More than one RL may reference the same item in the ICS proforma, so that this proforma needs to be completed in a manner consistent with each RL.

NOTE — The formal position is that the RL of the Application Profile incorporates the other relevant RLs by reference, so that there is conceptually only one RL for the Profile.

The guidance on the meaning of ICS status values and support answers that is given in annex A of ISO/IEC 9646-7 presents difficulties in this situation when one RL specifies a capability to be out of scope (status 'i') and another specifies it as mandatory or optional (status 'm' or 'o'). If the capability is supported, this guidance indicates that an answer 'yes' should be given when the status value is 'm' or 'o' but that no answer should be given (entered as 'n/a' or equivalent) when the status value is 'i'. To avoid this difficulty it is recommended that RLs for VT should permit a support answer 'yes' to be given to a status value 'i'. A detailed description of a suitable notation is given in A.2 of the RL given in annex A to this part of ISO/IEC ISP 11187.

5.4 Interpretation of the PICS proforma

The following subclauses give guidance on the interpretation of the PICS proforma of ISO/IEC 9041-2, which will for simplicitly be referenced as 'the PICS proforma', in the light of the situation described in 5.3.

5.4.1 PICS clause A.1: Identification

Subclauses A.1.1 to A.1.4 of the PICS proforma provide space for the identification of the implementation in accordance with 8.3.4 of ISO/IEC 9646-7.

According to 8.3.5 and 8.3.6 of ISO/IEC 9646-7 an ICS proforma should also identify the protocol, information object or profile to which it applies and should provide space to indicate which amendments and corrigenda have been implemented. As described above, in the case of VT the PICS may apply simultaneously both to the VT protocol and to one or more VT information objects. For the protocol aspect the necessary identification is provided in A.1.5.1 to A.1.5.3 of the PICS. Provision for this identification for the VT information objects referenced by a VT Application Profile should be provided in a Profile Specific ICS proforma for the Application Profile concerned.

The VT Application Profiles supported by the implementation, or by a particular configuration, should be identified in A.1.5.4 of the PICS. The RL and Profile Specific ICS for each supported Application Profile so identified are then included in the overall ICS, which may be either a single or a multiple profile ICS. The Profile Specific ICS proformas will include the requirements of the Application Profiles concerning mandatory or optional support for particular VT information objects. The Application Profile RLs will incorporate by reference the RLs of the mandatory VT information objects and of those optional information objects that are specified in the completed Profile Specific ICS as supported. In this way the constitution of the complete ICS for the implementation is fully determined and the presence of all necessary individual ICSs and RLs may be verified during the static conformance review.

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5.4.2 PICS clause A.2: VT service options

Clause A.2 of the PICS proforma provides space in which to specify which VT functional units and modes of operation are supported by the protocol implementation. The answers place no requirement on the invocation of supported functional units in a particular instance of communication.

A VTE-profile specification should state which VT functional units are required, which are optional and which are prohibited for operation using that VTE-profile; see A.7 of ISO/IEC 9834-4. An attempt to set up a VT association with a particular VTE-profile but without satisfying its conditions on the use of VT functional units shall be considered as requesting an invalid VTE-profile name rather than an invalid set of functional units. As such it is subject to conformance testing through the semantically invalid behaviour tests of ISO/IEC 10739-1. Such an attempt constitutes failure to conform to the VTE-profile as an Information Object, not failure to conform to the VT protocol itself.

5.4.3 PICS clause A.3: VT environment parameters

Clause A.3 of the PICS proforma provides space in which to specify which VTE-parameters are supported by the implementation, which values are supported for each supported VTE-parameter and whether or not the value to be used is negotiable.

The tables of this clause should be used, in conjunction with an RL provided by the specification of a VT Information Object, as an ICS proforma for that Information Object. All the tables are relevant in the case of a VTE-profile; only subclause A.3.8 is relevant for a VT control object. The answers given to the questions in these tables have no direct bearing on the VT protocol; the protocol aspects of negotiation of VTE-parameter values are covered separately in A.6 of the PICS proforma.

In addition to permissible modifications to the status values, the RL for a VTE-profile shall specify for each VTE-parameter whether or not its value is negotiable as a VTE-profile argument; clause 11 of ISO 9040 shows that there is no implementation choice in this matter. For each VTE-parameter that is not negotiable, the RL shall specify the value of that parameter as required by the VTE-profile. A VTE-profile specification should place no constraints on the values of negotiable VTE-parameters; that is a matter for the RL of a VT Application Profile.

5.4.4 PICS clause A.4: Supported VT PDUs

Clause A.4 of the PICS proforma provides space in which to specify whether initiator or responder roles, or both, are supported by the VT protocol implementation for initiation of a VT-association. It also asks which capabilities are supported within supported optional functional units. A VT Application Profile may place constraints on these answers but a VT Information Object should not do so.

5.4.5 PICS clause A.5: VTPDU parameters

Clause A.5 of the PICS proforma provides space in which to specify which parameters of each supported VTPDU are supported by the implementation and which values are supported for each supported PDU parameter. Answers are required separately for sending and receiving roles.

The PICS proforma provides status values concerning the support of each parameter but places no constraints on parameter values. The Common RL given in annex A places additional constraints that shall be incorporated, by reference to this part of ISO/IEC ISP 11187, into the specification of each VT Application Profile given in other parts of ISO/IEC ISP 11187.

5.4.6 PICS clause A.6: Lower level negotiation elements

Clause A.6 of the PICS proforma concerns the VTPDUs used during establishment of a VT-association and negotiation of a VTE. It provides space in which to specify for these VTPDUs which subparameters of their hierarchically defined profile argument offer list and profile argument value list parameters are supported. For each supported subparameter it also provides space to specify which values are supported.

The use of these subparameters may be constrained by a VT Application Profile and is closely related to any requirements placed by such a Profile on the support of values for VT environment parameters; see 5.4.3. There are no common requirements placed by this part of ISO/IEC ISP 11187 on these subparameters beyond the status values specified in the PICS proforma.

5.5 Implications for service-users

The constraints placed by a VT Application Profile upon a VT Information Object concerning the support of VTE-parameter values may in turn impose constraints on the use of VT service primitives by the service-user. When this occurs, the behaviour of a protocol implementation is undefined if it is driven by service primitives that do not obey these constraints. Such behaviour will not be exercised during conformance testing; see note 3 to A.3 of this part of ISO/IEC 11187.

Conformance to the requirements of a VT Application Profile permits, but does not require, a VT protocol implementation to enforce conformance of its VT service-user to such constraints. A service primitive that does not conform may therefore either be rejected by the VTPM through local means or be accepted by the VTPM and passed to the peer VTPM. The peer VTPM, on the other hand, is required to accept the incoming VTPDU as valid since it conforms to the protocol specification even though it does not do so to the Application Profile specification. It shall pass the non-conforming parameter values to its service-user when required to do so by the semantics of the parameters concerned. It is for the service-user to take whatever action is appropriate on account of the failure to conform to the Application Profile.

6 Profile names

The VT-ASSOCIATE-REQ (ASQ) PDU carries an ASN.1 object identifier that is supplied by the service-user as the name of a specific VTE-profile. The VTE-profiles that are registered in accordance with the procedures of ISO/IEC 9834-4 are included in the taxonomy of ISO/IEC TR 10000-2 with taxonomy identifiers of the form FVT*abc*, as described in 1.2 above. The register entry for each such VTE-profile includes an object identifier form for the name of the VTE-profile for use in this way. This part of ISO/IEC ISP 11187 assigns the object identifier

{ iso standard 11187 1 profiles(1) *abc de* }

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as a synonym for the name of the VTE-profile FVT*abc* to designate its use in accordance with the VT Application Profile that has taxonomy identifier AVT*de*.

NOTE — Use of this name in an ASQ PDU enables negotiation of a mutual agreement between the two communicating VT service-users to operate in accordance with a specific VT Application Profile. Certain VTE-profile specifications provide that default mechanisms given in the VT Application Profile take precedence over default mechanisms given in the VTE-profile specification when such a mutual agreement exists; see FVT121 as specified in ISO/IEC ISP 11184-1 for an example.

7 Operational requirements

The RL given in annex A references the following dynamic conformance requirements on the use of the VT protocol. These are incorporated into a VT Application Profile through reference to this RL.

7.1 VT-P-ABORT (APQ)

The 'Reason' parameter shall take the value "P" (VT protocol-error) when the PDU results from Specific action 'Perr'; see table A.4 of ISO 9041-1. This parameter shall take the value "L" (local-error) when the PDU results from Common action 103; see tables 8 and A.7 of ISO 9041-1. There are no other protocol actions that generate this PDU.

7.2 VT-ASSOCIATE (ASQ, ASR)

7.2.1 Functional units

The value of this optional parameter of an ASQ or ASR is an ASN.1 bitstring. Its absence shall be treated as equivalent to its presence with all bits having value 0.

In an outgoing ASQ or ASR that results from an incoming VT service primitive (Sector 1 actions 2, 3 and 4; see table A.9 of ISO 9041-1), the bit corresponding to each functional unit shall take value 1 if both

a) the functional unit is listed in the VT-functional-units parameter of the service primitive, see 28.1.3.5 of ISO 9040, and

b) the functional unit is specified as supported in the implementation as configured, according to A.2.1 of the PICS;

otherwise it shall take value 0.

In an outgoing ASR that results from an incoming ASQ (Sector 1 action 17), the bit corresponding to each functional unit shall take value 1 if predicate b) alone is satisfied, otherwise it shall take value 0.

When an incoming ASQ or ASR results in an outgoing VT service primitive (Sector 1 actions 15, 16 and 17), the VT-functional-units parameter of the service primitive shall list all functional units for which both:

c) the bit corresponding to the functional unit is set in the incoming ASQ or ASR, see 28.1.3.5 of ISO 9040, and

d) the functional unit is specified as supported in the implementation as configured, according to A.2.1 of the PICS.

7.2.2 Profile

7.2.2.1 The name component of this parameter of an ASQ is optional. When present it takes a value that is an ASN.1 object identifier. Its absence shall be treated as equivalent to its presence with the value specified in C.1.2.1 of ISO 9040 for the Default VTE-profile appropriate to the selected mode of operation, for which see 7.2.3 below.

The value of the name component shall be either the identifier assigned to a standard VTE-profile in ISO 9040 or to a registered VTE-profile in ISO/IEC ISP 11184, or shall be an identifier constructed in accordance with clause 6 of this part of ISO/IEC ISP 11187. The PDU has a valid construction only if the functional units listed in the PDU (see 7.2.1) include all those defined as required according to the specification of the referenced VTE-profile. Conformance to a VT Application Profile may require the inclusion of other functional units as well, but their absence does not render the PDU invalid as far as the VT protocol is concerned.

7.2.2.2 The profile argument offer list component of this parameter is also optional. It may include offers for zero, one or more VTE-parameters or special-profile-arguments that are defined as VTE-profile-arguments according to the specification of the VTE-profile referenced by the name component. If any other offers are included then the PDU is invalid. Conformance to a VT Application Profile may place further requirements on the content of the profile argument offer list, but failure to conform to these requirements does not render the PDU invalid; see 5.5.

7.2.3 Mode

The 'either' parameter in an ASQ is used in an outgoing ASQ in conjunction with the selection of Session functional units, to specify the initial mode of operation and whether or not mode switching is to be allowed. These choices are specified in the corresponding incoming VT-ASSOCIATE request service primitive.

When the 'name' component of the Profile parameter is present (see 7.2.2.1), the PDU is valid only if the initial mode of operation is that required by the VTE-profile which it references. If mode switching is supported in the implementation as configured then its use is optional and shall be selectable independently of the values of all other parameters of the PDU.

NOTE — The ASQ VTPDU is enclosed successively within an AARQ APDU, a CP PPDU and a CN SPDU. By 11.1.1 of ISO 9041-1 the VT mode and the choice of whether or not to use mode switching are carried by a combination of the optional 'either' parameter of the ASQ VTPDU and the Session User Requirements parameter of the CN SPDU. If the Session duplex functional unit is specified then the 'either' parameter should be absent and the corresponding mode value is A-mode without mode switching. If the Session half-duplex functional unit is specified then absence of the 'either' parameter and presence with values 0 and 1 correspond respectively to S-mode without mode switching, A-mode with mode switching and S-mode with mode switching.

7.2.4 Result

Presence of the Result3 parameter in an outgoing ASR is mandatory.

7.2.4.1 In an outgoing ASR that results from an incoming VT-ASSOCIATE response service primitive (Sector 1 actions 3 and 4; see table A.9 of ISO 9041-1), the Result3 parameter and its subparameters carry transparently the VT-result and,

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where appropriate, the VT-user-failure-reason of that service primitive.

7.2.4.2 In an outgoing ASR that results directly from an incoming ASQ (Sector 1 action 17), the Result3 parameter shall take the value 'fail'. The 'provider' sub-parameter shall be present but its value is out of scope of these common requirements.

7.2.5 Profile argument value list

The profile argument value list parameter of an ASR is absent if the result is 'fail', otherwise it is optional. If present it may include values for zero, one or more VTE-parameters or special-profile-arguments that are defined as VTE-profile-arguments of the draft-VTE that will have been created by a previous ASQ. If any other values are included then the PDU is invalid. Conformance to a VT Application Profile may place further requirements on the content of the profile argument value list, but failure to conform to these requirements does not render the PDU invalid.

7.2.6 Protocol version

The specification of the ASQ and ASR PDUs include the explicit default value of 'version1' for the Protocol Version parameter. At the time of publication of this ISP, this is the only version of the VT protocol that has been issued; ISO 9041-1/Amd.2 does not change the protocol version. This ISP permits this version to be specified either explicitly or by default in any instance of these PDUs.

7.3 VT-BREAK (BKQ, BKR)

Presence of the 'standard' parameter in an outgoing BKQ or BKR VTPDU is mandatory for any configuration that conforms to any part of ISO/IEC ISP 11187. It shall convey a value of the display pointer, and if the Fields functional unit is selected then also a value of the logical pointer, in accordance with 34.1.3.2 of ISO 9040.

7.4 VT-DATA (NDQ)

The 'update' parameter of the VT-DATA PDU is structured with four levels of subparameter that are described in tables 52 to 64 of the PICS. The status values specified in these tables determine whether or not a value for this parameter has a valid syntax. A value with valid syntax is intended to be passed transparently between the two communicating VT service-users by their associated VTPMs. The limitations on the supported values are therefore those of the encoder and decoder of the transfer syntax. General constraints on encoders and decoders operating in accordance with the ASN.1 Basic Encoding Rules of ISO/IEC 8825-1 are specified in clause 8 of ISO/IEC ISP 11188-1. This common RL requires that a value of the 'update' parameter should be encoded for transmission in accordance with these constraints and that all values consistent with these constraints shall be supported on reception. A request from the local VT service-user that would involve the encoding of a value beyond the capabilities of the VTPM should be handled by local means; reception from the peer VTPM of a VTPDU with a value beyond the capabilities of the receiving decoder will result in a local error that will generate a provider abort.

7.5 VT-SWITCH-PROFILE (SPQ, SPR)

The SPQ2 and SPR2 VTPDUs defined in ISO 9041-1/Amd.2 shall not be used when the Context Retention functional unit is not selected. Use of VT-SWITCH-PROFILE when the Context Retention functional unit is selected is outside the scope of these common requirements.

7.5.1 Profile

The requirements of 7.2.2 concerning the Profile parameter of the ASQ VTPDU apply equally to this parameter.

NOTE — The new VTE-profile is not required to be different from the current VTE-profile.

7.5.2 Result

Presence of the Result2 parameter in an outgoing SPR is mandatory.

7.5.2.1 In an outgoing SPR that results from an incoming VT-SWITCH-PROFILE response service primitive (Sector 2 actions 3 and 7; see table A.11 of ISO 9041-1), the Result2 parameter and its subparameters carry transparently the VT-result and, where appropriate, the VT-user-failure-reason of that service primitive.

7.5.2.2 In an outgoing SPR that results directly from an incoming SPQ (Sector 1 actions 24 and 30, sector 2 actions 15 and 20), the Result2 parameter shall take the value 'fail'. The 'provider' sub-parameter shall be present but its value is out of scope of these common requirements.

7.5.3 Profile argument value list

The profile argument value list parameter of an SPR is absent if the result is 'fail', otherwise it is optional. If present it may include values for zero, one or more VTE-parameters or special-profile-arguments that are defined as VTE-profile-arguments of the draft-VTE that will have been created by a previous SPQ. If any other values are included then the PDU is invalid. Conformance to a VT Application Profile may place further requirements on the content of the profile argument value list, but failure to conform to these requirements does not render the PDU invalid.

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Annex A
(normative)

Common Requirements List for the VT Protocol

A.1 General

This annex provides a Common Requirements List (RL) for the VT protocol specified in ISO 9041-1:1990, in compliance with ISO/IEC 9646-7. This RL shall be incorporated, by reference to this part of ISO/IEC ISP 11187, into the RL for all VT Application Profiles defined in another parts of ISO/IEC ISP 11187.

This RL expresses restrictions upon answers allowed in the PICS proforma specified by:

— ISO/IEC 9041-2:1993

This RL incorporates by reference the requirements specified in the RLs contained in the following ISPs:

— ISO/IEC ISP 11187-2:1996;
— ISO/IEC ISP 11188-1:1995.

A.2 Notation

A.2.1 Item references

Each table entry in this RL corresponds to an item in the PICS proforma of ISO/IEC 9041-2 as referenced above. Individual items in the proforma are referenced by the means specified in 9.5 of ISO/IEC 9646-7. Such a reference has the form *y/z* where *y* is a reference within the ICS proforma to the smallest subclause that contains the item concerned and *z* is the reference number of the item within that subclause.

A.2.2 Item names

Each table entry in this RL includes the item name that is given in the PICS proforma of ISO/IEC 9041-2. For PDU parameters these item names correspond to ASN.1 types, or to the identifiers of named types, that are used in the specification of the structure of VT PDUs given in clause 12 of ISO 9041-1. Where the type concerned is a structured type and the following entries in the RL refer to its components, the item names for the components are indented to indicate this relationship.

A.2.3 Normative references

Each table entry in this RL for a PDU parameter may optionally contain a reference to additional normative requirements that are given in the body of the specification to which this RL is annexed.

NOTE — The status values in an RL are themselves normative requirements of the profile that do not require reference to static conformance requirements given elsewhere in the profile specification; see A.5.3 of ISO/IEC TR 10000-1. This is in contrast to the situation for a PICS proforma as specified in 8.3 of ISO/IEC 9646-7, so that the reference columns serve different purposes in these two contexts.

A.2.4 Status columns

The status value assigned to a capability in the PICS proforma determines the support answers that are permitted for an implementation that is claimed to conform to the base standard. It also determines the implications of the answers for a test of conformance to the base standard.

Status values specified in this RL may strengthen those specified in the PICS proforma for an implementation that is claimed to conform to the profile. This strengthening may refer to the permitted answers, or to the implications for conformance testing, or both.

NOTE — The incorporation of nested RLs occurs similarly. When two RLs both specify a status value for the same capability, the strongest one applies.

A.2.4.1 PICS support answers

The support columns in the PICS proforma are used to specify whether or not a particular capability is claimed to be supported. When the PICS proforma is being completed as part of an ICS for an Application Profile, the following notation should be used wherever possible, in accordance with ISO/IEC 9646-7:

'yes' or 'y' the capability is claimed to be supported;

'no' or 'n' the capability is claimed to be not supported;

'n/a' or '–' no answer is being given.

Depending on the context, no answer means either that an answer is logically meaningless or that no claim is being made as to the level of support.

The above notation differs from that specified in the PICS proforma itself. Where the answers 'y', '–' and 'Ig' would be given as defined in the PICS proforma, the corresponding appropriate answers as defined above are 'yes', 'no' and 'n/a' or equivalents; see A.2.4.5 in particular concerning support of syntax but not semantics. The notation of ISO/IEC 9646-7 used above postdates that of the PICS proforma, is more precisely defined and 'no answer', *i.e.*'n/a', is permitted in situations where none of the notations defined in the PICS proforma are appropriate.

A.2.4.2 Profile status notation

The columns headed 'Status' or 'Sts' in this RL specify Profile status values. The following notation is used in these status columns:

m mandatory — this capability shall be supported. The only support answer permitted is "yes" (or equivalent).

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o optional — this capability may, but need not, be supported. The support answers permitted are "yes", "no" and "n/a" (or equivalents). For the purposes of conformance testing, an answer "no" should be treated as if the answer were "n/a".

i irrelevant, out-of-scope — this capability may, but need not, be supported. The support answers permitted are "yes", "no" and "n/a" (or equivalents). For the purposes of conformance testing, answers "yes" and "no" should be treated as if the answer were "n/a".

x excluded — this capability shall not be supported. The only support answer permitted is "no" (or equivalent).

- not applicable — the dynamic conformance requirements of the base standards are such that this capability is not available in the context concerned, so that the question of its support does not arise. The only support answer permitted is "n/a" (or equivalent).

Where the status of a capability is dependent on whether or not some other capability is supported, the following additional conventions are used:

c<integer> conditional status;

o.<integer> restricted optional status.

A conditional status is a status that involves a prerequisite. Its scope is a single item and it evaluates to one of the above status values according to the value of a predicate. The conditional expression is given in a footnote to the table concerned.

A restricted optional status is a status that involves a co-requisite. Its scope is a group of items within a single table, each of which is individually optional but where there is a restriction on the set of permitted support answers. The integer identifies a unique group of options and the corresponding restriction is given in a footnote to the table concerned.

NOTE — The period in the status notation o.<integer> signifies that the restriction applies jointly to all items with the same integer. In contrast, if a status c<integer> is assigned to more than one item in the same table then it applies individually to each item. This notation follows 9.2 of ISO/IEC 9646-7.

The status values of subparameters are indented to correspond to the pattern of the item names; see A.2.2. The status value given for a subparameter is conditional on the support of the parent parameter, *i.e.* the closest preceding parameter with one fewer level of indent, otherwise the subparameter is not applicable. This follows the conventions adopted in the PICS proforma.

A.2.4.3 Interpretation of 'supported'

For a functional unit, support means that the functions of the unit are implemented and available for use in accordance with the protocol specification.

For a PDU, support means that the PDU is capable of being sent or received, according to the role concerned, in the context of supported functional units.

For a PDU parameter, support means that the implementation is capable of handling the parameter, *i.e.* sending or receiving it according to the role concerned, for the value range specified in the PICS as supported. The capability to send the parameter does not require the parameter to be present in every instance of the PDU concerned. The capability to receive the parameter includes taking such action as is required in accordance with the semantics of the received value.

NOTE — The action appropriate to the semantics of a received parameter value is often simply to pass the decoded value transparently to the service user.

A.2.4.4 Interpretation of 'not supported'

A support answer of "no" is a specific statement that a capability is not supported.

If a functional unit is not supported, it means that the functions of the unit are not available for use, either through not being implemented or through being explicitly disabled.

The VT protocol has no PDUs for which a support answer of "no" is valid.

If a PDU parameter is not supported in a sending role, it means that the parameter will not be present in any instance of the PDU concerned that is generated by the implementation.

If a PDU parameter is valid according to the protocol specification, a claim that it is not supported in a receiving role can occur within the provisions of this RL only if the parameter is excluded from being sent by a conforming peer implementation; see clause A.3. If the parameter is received, the implementation may either reject the PDU or may accept it and respond correctly to it within the protocol specification; see 7.3.4 of ISO/IEC 9646-6. If it accepts the PDU then the implementation is operating outside of this profile; the peer implementation is necessarily not conformant to the profile. Such acceptance is not a case of non-conformance, nor shall it be considered to contradict the claim that the parameter is not supported *when the implementation is configured to this profile*.

NOTE — Some VT PDUs have parameters whose use is conditionally prohibited according to the protocol specification, such as those for the negotiation of VTE-parameter values that are not permitted arguments of the VTE-profile concerned. It is a protocol error if an implementation receives a VT PDU that includes such an invalid parameter.

A.2.4.5 Interpretation of 'no answer'

If the status of a capability permits an answer 'n/a' then an implementation may provide partial support for the capability, for which neither "yes" nor "no" would be a correct description. Any behaviour that is permitted by the protocol specification is also permitted by the profile; in particular the capability may be fully supported.

For a capability that has separate sending and receiving roles, this support answer can occur in a receiving role within the provisions of this RL only if the parameter is excluded from being sent by a conforming peer implementation; see clause A.3. In this context it should be used if the syntax, but not the semantics, is supported for receiving, a situation for which the notation 'Ig' is specifically defined in the support notation of the PICS proforma.

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A.2.5 Value columns

In principle there is no distinction between a PDU parameter and a parameter value, since for a parameter whose value is a value of a structured ASN.1 type, each component type appears in the PICS proforma as a subparameter with its own status value. However, a PICS specifies the status values and support answers for parameter values in a different manner than that for other capabilities.

A.2.5.1 PICS proforma allowed values

The PICS proforma includes 'allowed values' and 'supported values' for PDU parameters separately in both sending and receiving roles. The 'allowed values' columns specify the values that are permitted to be included in the 'supported values' columns of the completed PICS.

The entries in the 'allowed values' columns of a PICS proforma shall be interpreted as assigning a status value 'optional' to each allowed value. All other values of the ASN.1 type concerned are prohibited according to the protocol specification. Where the PICS proforma does not contain an entry in the 'allowed values' column, all values of the ASN.1 type concerned shall be considered as allowed.

NOTE — The PICS proforma does not contain entries in the 'allowed values' columns for structured types, such as sequence-of and set-of types, if the protocol places restrictions only on the component types that have separate entries in the PICS proforma. Nevertheless this RL may place constraints on the permitted size of such sequences and sets, so the concept of allowed values is still required.

A.2.5.2 Profile values

A.2.5.2.1 Status notation for values

This RL may modify the status of an allowed value, as it may do for any other capability. Since a profile status may be assigned independently to each allowed value, an abbreviated notation is used in this RL as follows.

A status symbol is prefixed to a set of values. If it is one of the basic status values 'm', 'o', 'x' or 'n/a' then it applies individually to each member of the set; there is no implication for values not in the set. If it is a reference to a conditional expression of the form c<integer> then it applies individually to each member of the set but the referenced expression may also assign a status value to all allowed values not in the set. If it is a reference of the form o.<integer> to an expression of restricted optional status then its scope is the specified set of values but again the referenced expression may also assign a status value to all allowed values not in the set.

NOTE 1 — A restricted option may, for example, be used to specify that at least one value in the set shall be supported and that all values not in the set are excluded.

It is sometimes convenient to specify the scope of a restricted option by exclusion, so that the restriction applies to the allowed values that are not in the specified set. In this case a modified notation is used in this RL, of the form <status>.<integer>, where <status> is the basic status value that applies to the remaining values, *i.e.* those that are in the specified set.

NOTE 2 — A restricted option of the form m.<integer> may, for example, be used to specify that support for all values in a specific range of consecutive integer values is mandatory and that all other values are optional but with the requirement that the supported values, including the mandatory ones, shall all be consecutive.

This notation is also used in the case in which the restriction on the optional values is the extreme one of them all being excluded.

A.2.5.2.2 Specification of value sets

The status notation described in A.2.6.2.1 requires a notation for the specification of subsets from the set of allowed values.

A PDU parameter takes values of a specific ASN.1 type. A subset of the allowed values is specified in this RL by an ASN.1 element set specification in the notation of clause 44 of ISO/IEC 8824-1, the parent type being the type defined in the protocol specification for the parameter concerned. Where a status applies to all allowed values, the notation 'ALL' is used.

NOTES

1 Clause 44 of ISO/IEC 8824-1 permits a subset to be defined by exclusion, through the 'ALL EXCEPT xxx' construction, but does not permit the set of exceptions to be empty. ASN.1 has no need for an element set specification that specifies all elements permitted for the parent type, but an unqualified 'ALL' is the natural extension for this purpose.

2 The RL may use an element set specification to specify size constraints on ASN.1 sequence-of and set-of types even though the PICS proforma does not contain a corresponding entry in the allowed values column.

A.2.5.3 PICS supported values

The entries in the 'supported values' columns of a PICS shall be interpreted as assigning a support answer 'yes' to each listed value. The support answer implied for an allowed value that is not in the list of supported values depends as follows on the status assigned to the value concerned:

— a support answer 'no' is assigned to each value for which the status is 'excluded';

— a support answer 'n/a', *i.e.* no answer, is assigned to each value for which the status is 'optional' or 'out-of-scope'.

A.2.5.4 Interpretation

The interpretation of the support answers for PDU parameter values is as specified in A.2.4.3 to A.2.4.5 for PDU parameters, for reasons given above.

A.3 Asymmetric requirements

The static conformance requirements of a profile may be different with respect to different roles, such as sending/receiving or initiating/responding. For example, a profile may require an implementation to be able to receive, and to respond correctly, to a wider range of values for a PDU parameter than may be sent to it by a conforming peer implementation. By 6.6.3 of ISO/IEC TR 10000-1, a profile shall clearly identify, for each conformance requirement, whether there is, or is not, an asymmetry. If there is asymmetry, the profile shall identify the asymmetric requirements.

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This RL specifies no requirements that are asymmetric between initiator and responder roles, other than those already contained in the base standards.

This RL specifies no requirements that are asymmetric between terminal and application roles, other than those already contained in the base standards.

This RL identifies an asymmetry between sending and receiving. Its requirements in a sending role are specified explicitly in the tables of the RL. It places no explicit requirements on a protocol implementation in a receiving role beyond those contained in the base standards. According to A.3.2.1 of ISO/IEC 9646-7, support of a PDU parameter is defined as being able to handle, in send and receive mode, the syntax of the parameter, its definition, its value range and other characteristics, and to use the parameter contents or its semantics to take an action. A terminal or application implementation shall be considered to satisfy these requirements if it can handle in this manner the entire range of values that may be sent to it by a conforming application or terminal implementation respectively, namely all values that are not explicitly excluded for sending.

NOTES

1 Many Application Profiles will identify an asymmetry between terminal and application roles and will require separate table entries for the two roles.

2 A protocol base standard may specify requirements concerning behaviour on reception of a parameter value that is outside the range permitted by the base standard. These requirements still apply for conformance to any profile that includes the protocol concerned.

3 The behaviour of an implementation is undefined if it receives a parameter value that is prohibited by a profile but permitted by the base standard; see A.2.5.4. By 7.4.3.1 of ISO/IEC 9646-6, in a test of conformance the means of testing shall only exhibit "in profile" behaviour and shall not attempt to coerce the receiving system under test to operate outside of the profile. This implies for this Application Profile that the means of testing shall not send parameter values to an implementation under test that are excluded from being sent by a conforming peer implementation.

A.4 Claimed compliance to standards

The replies given in tables 5 and 6 of the PICS concerning compliance to standards shall include those given in tables A.1 and A.2 below.

Table A.1 — Corrigenda implemented

Item Ref. (9041-2)	Number	Description
A.1.5.2/1	ISO 9041-1:1990/ Cor.1:1992	Technical Corrigendum 1 to ISO 9041-1:1990
A.1.5.2/1	ISO 9041-1:1990/ Cor.2:1993	Technical Corrigendum 2 to ISO 9041-1:1990

Table A.2 — Defect Report Solutions implemented

Item Ref. (9041-2)	Number	Description
A.1.5.3/1	9041/004	VT Defect Report 4
A.1.5.3/2	9041/005	VT Defect Report 5
A.1.5.3/3	9041/006	VT Defect Report 6
A.1.5.3/4	9041/007	VT Defect Report 7
A.1.5.3/5	9041/008	VT Defect Report 8
A.1.5.3/6	9041/009	VT Defect Report 9
A.1.5.3/7	9041/016	VT Defect Report 16
A.1.5.3/8	9041/017	VT Defect Report 17
A.1.5.3/9	9041/018	VT Defect Report 18
A.1.5.3/10	9041/019	VT Defect Report 19
A.1.5.3/11	9041/022	VT Defect Report 22
A.1.5.3/12	9041/026	VT Defect Report 26

A.5 VT service options

This clause gives requirements concerning the VT service options that are listed in A.2 of the PICS.

A.5.1 Functional units

The requirements of this RL concerning VT functional units are specified in table A.3. Additional requirements may be given in each referencing Profile RL.

Table A.3 — Functional units

Ref. (9041-2)	Feature	Sts
A.2.1/1	Switch Profile Negotiation	c1
A.2.1/2	Multiple Interaction Neg.	i
A.2.1/3	Negotiated Release	i
A.2.1/11	Ripple	i
A.2.1/12	Exceptions	i
A.2.1/13	Context	i
c1:	IF answers in (9041-2)A.1.5.4 state that more than one AVT*nn* Profile is supported in the implementation as configured THEN m ELSE o.	

NOTE — If a system supports more than one AVT*nn* Profile but does not support the Switch Profile Negotiation functional unit then the different Profiles correspond to different configurations of the system. This is not a case of non-conformance to this RL.

A.5.2 Mode

The requirements concerning VT modes of operation are specified in table A.4.

NOTE — If a system supports both A-mode and S-mode but does not support mode switching then the different modes of operation correspond to different configurations of the system. This is not a case of non-conformance to this RL.

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Table A.4 — VT mode

Ref. (9041-2)	Feature	Sts
A.2.2/3	Mode switching	c1
c1: IF S-MODE AND A-MODE THEN m ELSE i. S-MODE = (9041-2)A.2.2/1 A-MODE = (9041-2)A.2.2/2		

A.6 VT environment parameters

VT environment parameters are listed in A.3 of the PICS. They form part of an Information Object ICS proforma for a VTE-profile and as such, they are not covered by this Common RL for the VT Protocol; see 5.4.3 of this part of ISO/IEC ISP 11187.

A.7 Supported VT PDUs

This Common RL places no constraints on the answers to be given in A.4 of the PICS concerning the support of VT PDUs. Such constraints may, but need not, be imposed by the Profile RL of a VT Application Profile.

A.8 VTPDU Parameters

VTPDU parameters are listed in A.5 of the PICS. The requirements of this RL concerning these parameters are given in tables A.5 to A.12 below.

A.9 Lower level negotiation elements

This Common RL places no constraints on the answers to be given in A.6 of the PICS concerning the support of lower level negotiation elements; see 5.4.6 of this part of ISO/IEC ISP 11187.

Table A.5 — VT-P-ABORT (APQ)

Item ref. (9041-2)	Name of item	Norm-ative ref.	SENDING	
			Sts	Values
A.5.1/1	Reason	7.1	m	m.1: "P"|"L"
m.1: It is mandatory to support all the values of the set, all values not in the set are excluded.				

Table A.6 — VT-ASSOCIATE-REQ (ASQ)

Item ref. (9041-2)	Name of item	Norm-ative ref.	SENDING	
			Sts	Values
A.5.2/2	ImplementationIdent		i	
A.5.2/3	implementationIdentifier		i	
A.5.2/4	implementationName		i	
A.5.2/5	implementationVersion		i	
A.5.2/6	FunctionalUnits	7.2.1	m	c1: ALL
A.5.2/7	Profile		m	
A.5.2/8	name	7.2.2.1	m	c2: ALL
A.5.2/10	ProtocolVersion	7.2.6	m	m: {version1}
A.5.2/11	either	7.2.3	c3	c4: 0 c5: 1
c1: IF value represents all functional units supported according to answers to (9041-2)A.2.1 THEN m ELSE o c2: IF value identifies a VT Application Profile supported according to answers to (9041-2)A.1.5.4 OR 'name' identifies the Default VTE-profile appropriate to the mode of operation THEN m ELSE i c3: IF MODESWITCH THEN m ELSE i c4: IF A-MODE AND MODESWITCH THEN m ELSE i c5: IF S-MODE AND MODESWITCH THEN m ELSE i S-MODE = (9041-2)A.2.2/1 A-MODE = (9041-2)A.2.2/2 MODESWITCH = (9041-2)A.2.2/3				

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Table A.7 — VT-ASSOCIATE-RESP (ASR)

Item ref. (9041-2)	Name of item	Norm-ative ref.	SENDING	
			Sts	Values
	Result3			
A.5.3/1	success	7.2.4	m	
A.5.3/2	fail		m	
A.5.3/4	userB	7.2.4	m	
A.5.3/6	success-with-warning		c1	
A.5.3/8	userB	7.2.4	m	
A.5.3/9	ImplementationIdent		i	
A.5.3/13	ProtocolVersion	7.2.6	m	m: {version1}
A.5.3/15	FunctionalUnits	7.2.5	m	c2: ALL

c1: IF SWITCHPROFILE THEN m ELSE i
c2: IF value represents all functional units supported according to answers to (9041-2)A.2.1 THEN m ELSE o

SWITCHPROFILE = (9041-2)A.2.1/1

Table A.8 — VT-BREAK-REQ (BKQ)

Item ref. (9041-2)	Name of item	Norm-ative ref.	SENDING	
			Sts	Values
A.5.5/1	standard		m	
A.5.5/2	(Explicit)Pointer	7.3	m	m: ALL
A.5.5/7	log(Exp)pointer	7.3	c1	m: ALL
A.5.5/11	profile		i	
A.5.5/14	stuser		i	

c1: IF FIELDS THEN m ELSE n/a

FIELDS = (9041-2)A.2.1/9

Table A.9 — VT-BREAK-RESP (BKR)

Item ref. (9041-2)	Name of item	Norm-ative ref.	SENDING	
			Sts	Values
A.5.6/1	standard		m	
A.5.6/2	(Explicit)Pointer	7.3	m	m: ALL
A.5.6/7	log(Exp)pointer	7.3	c1	m: ALL
A.5.6/11	profile		i	
A.5.6/14	stuser		i	

c1: IF FIELDS THEN m ELSE n/a

FIELDS = (9041-2)A.2.1/9

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Table A.10 — VT-SWITCH-PROFILE-REQ (SPQ)

Item ref. (9041-2)	Name of item	Norm-ative ref.	SENDING	
			Sts	Values
A.5.24/A A.5.24/1	Form 1 Profile name	7.5 7.5.1	m	c1: ALL
c1: IF value identifies a VT Application Profile supported according to answers to (9041-2)A.1.5.4 OR 'name' identifies the Default VTE-profile appropriate to the mode of operation THEN m ELSE i				

Table A.11 — VT-SWITCH-PROFILE-RESP (SPR)

Item ref. (9041-2)	Name of item	Norm-ative ref.	SENDING	
			Stat.	Values
A.5.25/4	Form 1 Result2 fail userB	7.5.2	m	

Table A.12 — VT-URGENT-DATA (UDQ)

Item ref. (9041-2)	Name of item	Norm-ative ref.	SENDING	
			Stat.	Values
A.5.26/1	COupdate		m	c1: ALL
c1: IF value satisfies the constraints of annex D of ISO 9040 THEN m ELSE i				

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