

# INTERNATIONAL STANDARDIZED PROFILE

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

### **Part 5:**

**AVT16 — A-mode Generalized Telnet  
Application Profile**

*Technologies de l'information — Profils normalisés internationaux AVT1n,  
AVT2n — Classe de base du terminal virtuel — Profils d'application —  
Partie 5: AVT16 — Profil d'application mode A de télé réseau généralisé*



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 Standards 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 11187-5 was prepared with the collaboration of

- 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 List*
- *Part 2: Common Supporting Layers Requirements List*
- *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*

Annexes A, B and C form an integral part of this part of ISO/IEC ISP 11187. Annex D is for information only.

## 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 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 Asia-Oceania Workshop (AOW). It was developed under the editorship of OIW from a functional standard specified in the OIW Stable Implementation Agreements Version 5. The text is harmonized between these three Workshops and it has been ratified by the plenary assemblies of each Workshop.

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

## Part 5

### AVT16 - A-mode Generalized Telnet Application Profile

#### 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 such information 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 realize a wide range of distinct functions. Particular functions may be realized through the selection of appropriate VT functional units, F-Profiles and other VTE-profile argument values. The specification of the selection required to realize 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 structures 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.

This part of ISO/IEC ISP 11187 is applicable to environments in which a terminal population requires access to application packages running on a variety of computers. It may be used where the connection between the terminal and the computer that hosts the application package is local, is made across a Local or Wide Area Network, or is made across a concatenation of such networks.

This part of ISO/IEC ISP 11187 contains the specification of the A-mode Generalized Telnet Application Profile. Virtual Terminal implementations that operate in accordance with this A-profile provide powerful general-purpose terminal capabilities which are suitable in particular for TELNET emulation. This A-profile specifies a mode of operation of, and a selection of options for use with, the A-mode Generalized Telnet VTE-profile FVT115. These are together designed to provide versatility and to promote interoperability between Virtual Terminal implementations which support that VTE-profile.

This part of ISO/IEC ISP 11187 also specifies a Profile ICS proforma for the A-mode Generalized Telnet Application Profile specified herein in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC [DIS] 9646-7. The supplier of an implementation which is claimed to conform to ISO/IEC ISP 11187-5 is required to complete a copy of the Profile ICS proforma as specified in 5.2 and is required to provide the information necessary to identify both the supplier and the implementation.

## 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, the OSI Profiles specified in this International Standardized Profile are in the Virtual Terminal sub-class of the class of Application Profiles.

A Profile within this subclass has a Profile identifier of the form AVTab, where ab is a

structured numerical identifier that identifies the position of the Profile within two levels of subdivision of the subclass. The value of a is a single digit but b is an integer that is not necessarily a single digit.

In principle the ISO Virtual Terminal model allows for multiple classes of operation, although at the time of publication of this International Standardized Profile only the Basic Class has been defined. The value of the identifier component a distinguishes between the permitted modes of operation of the Virtual Terminal Service as follows:

- a = 1 for Basic Class A-mode ( asynchronous mode );
- a = 2 for Basic Class S-mode ( synchronous mode ).

Values greater than 2 are reserved for future developments.

ISO/IEC ISP 11187 contains the specifications of the Profiles with identifiers of the form AVT1b and AVT2b. The component b distinguishes between different Application Profiles that make use of the same mode of operation.

This part of ISO/IEC ISP 11187 contains the specification of the Application Profile with the Profile identifier:

AVT16 - A-mode Generalized Telnet Application Profile.

## 1.3 Scenario

The VT Basic Class Service is defined in ISO 9040. It operates within the OSI Reference Model defined in ISO/IEC 7498-1 to provide facilities for interactive terminal-oriented communication between two application-processes. The aspects of an application-process that make use of these facilities constitute a VT-user as defined in ISO 9040. Figure 1 illustrates the elements of the OSI model that are concerned with communication between two VT-users in accordance with a VT Application Profile.

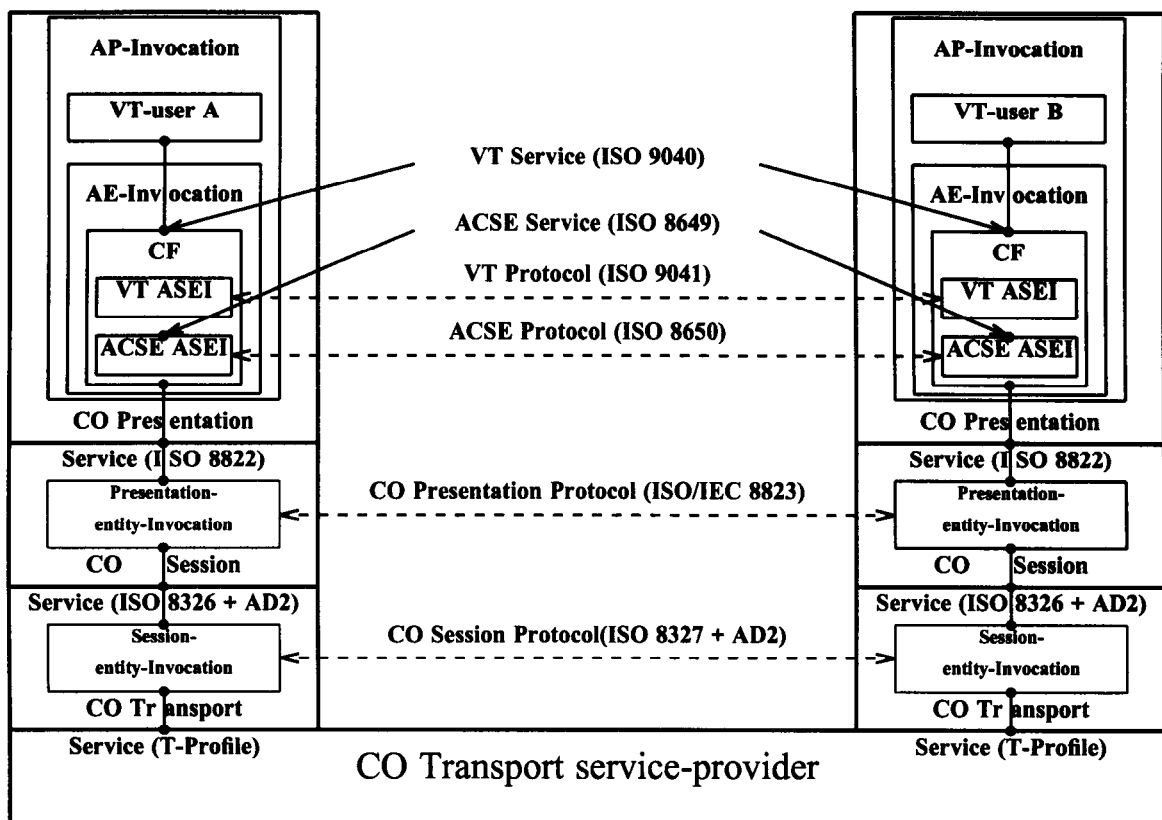


**Figure 1** - Interactive VT communication between two end systems

The VT-user component of an application-process (AP) communicates by invoking an application-entity (AE) to establish a VT-association with an application-entity of a peer application-process. In order to provide the VT Basic Class Service to their VT-users, two AE-invocations (AEIs) exchange information by means of both the VT Basic Class Protocol specified in ISO 9041-1 and the ACSE Protocol specified in ISO 8650. The VT Basic Class Service enables the VT-users to exchange data that may include control information related to virtual terminal functions and to real devices.

In the model of the OSI Application Layer given in ISO/IEC 9545 the AE is a composition of two application-service-elements (ASEs) and a Control Function (CF). It is the CF that provides the VT Service to the VT-user. The ASEs are the VT ASE and the ACSE. In an AEI the CF provides the functions of the VT Service by making coordinated use of the services provided to it by invocations of each of the two ASEs. Each ASE-

invocation (ASEI) in turn provides its services by an exchange of APDUs with its peer, for which it requires the use of the Connection-oriented Presentation Service. These requirements of the two ASEIs are passed to the CF, which coordinates them and makes the actual use of the Presentation Service.

An AEI operates in accordance with rules determined by an application-context. The definition of the application-context for a VT-association is provided by clause 11 of ISO 9041-1.

A VT Application Profile specifies constraints on the operation of an AEI within the application-context defined in ISO 9041-1. It also specifies constraints on the use of the Presentation Layer by such an AEI and on the consequent use of the Session Layer by the Presentation Layer. A VT Application Profile is intended to be used in conjunction with any Transport Profile (T-Profile) of ISO/IEC TR 10000-2 that provides a

connection-mode Transport Service for use by the Session Layer.

A VT Application Profile may also specify constraints on the exchange of control information between the VT-users and on the behavior of a VT-user in response to information exchanged.

An AP-invocation may make concurrent or consecutive use of more than one AE-invocation. An AE-invocation may be a partner in one or more application-associations, either concurrently or consecutively. A VT-association is an application-association capable of supporting communication between two VT ASEs.

The VT Application Profiles specified in ISO/IEC ISP 11187 are concerned solely with the operation of a VT- association. They place no constraint on any other application-associations of the AE-invocation concerned or on any other AE-invocation belonging to the AP-invocation concerned.

The VT Application Profile specified in this part of ISO/IEC ISP 11187 assumes a relationship between the two communicating end systems described below. One end system ( the keyboard side ) assumes an initiator function and the other side assumes the responder function ( the application side ). These two devices form part of the VT-user component of that end system and are modelled within the data structures of the VT Service.

## 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 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 646:1991, *Information technology - ISO 7-bit coded character set for information interchange*.

ISO/IEC 2022:1994, *Information technology - Character code structure and extension techniques*.

ISO 2375:1985, *Data processing - Procedure for registration of escape sequences*.<sup>1)</sup>

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

ISO 8326:1987<sup>2)</sup>, *Information processing systems - Open Systems Interconnection - Basic connection oriented session service definition*. (See also CCITT Recommendation X.215.)

ISO 8327:1987<sup>2)</sup>, *Information processing systems - Open Systems Interconnection - Basic connection oriented session protocol specification*. (See also CCITT Recommendation X.225.)

ISO/IEC 8327-2:<sup>3)</sup>, *Information technology - Open Systems Interconnection - Basic connection oriented session protocol specification - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma*.

ISO 8649:1988<sup>2)</sup>, *Information processing systems - Open Systems Interconnection - Service definition for the Association Control Service Element*. (See also CCITT Recommendation X.217.)

ISO 8650:1988<sup>2)</sup>, *Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element*. (See also CCITT Recommendation X.227.)

1) The registration authority for ISO 2375 is the European Computer Manufacturers Association (ECMA), 114 rue du Rhone, CH-1204 Geneva, Switzerland, from whom the corresponding register, the *ISO International Register of Coded Character Sets to be used with Escape Sequences*, may be obtained.

2) Currently under revision.

3) To be published.

ISO 8650:1988/Amd.1:1990, *Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element. Amendment 1.*

ISO/IEC 8650-2:1995, *Information technology - Open Systems Interconnection - Protocol specification for the Association Control Service Element: Protocol Implementation Conformance Statement (PICS) Proforma.*

ISO/IEC 8822:1994, *Information technology - Open Systems Interconnection - Presentation service definition.* (See also ITU-T Recommendation X.216.)

ISO/IEC 8823-1:1994, *Information technology - Open Systems Interconnection - Connection-oriented presentation protocol: Protocol specification.* (See also ITU-T Recommendation X.226.)

ISO/IEC 8823-2:1995, *Information technology - Open Systems Interconnection - Connection-oriented presentation protocol: Protocol Implementation Conformance Statement (PICS) Proforma.*

ISO/IEC 8824-1:1995 *Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation.* (See also ITU-T Recommendation X.208.)

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).* (See also ITU-T Recommendation X.209.)

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

ISO 9040:1990/Cor.1:1991, *Information technology - Open Systems Interconnection - Virtual Terminal Basic Class Service. Technical Corrigendum 1.*

ISO 9040:1990/Cor.2:1992, *Information technology - Open Systems Interconnection - Virtual Terminal Basic Class Service. Technical Corrigendum 2.*

ISO 9040:1990/Cor.3:1993, *Information technology - Open Systems Interconnection - Virtual Terminal Basic Class Service. Technical Corrigendum 3.*

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

ISO/IEC 9545:1994, *Information technology - Open Systems Interconnection - Application Layer structure.* (See also ITU-T Recommendation X.207.)

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

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

ISO/IEC 9834-5:1991, *Information technology - Open Systems Interconnection - Procedures for the operation of OSI Registration Authorities - Part 5: Register of VT Control Object Definitions.*

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

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

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

ISO/IEC ISP 11184-2:1996, *Information technology - International Standardized Profiles FVT1nn - Virtual Terminal Basic Class - Register of VTE-profiles - Part 2: FVT115 - A-mode Generalized Telnet VTE-profile.*

ISO/IEC ISP 11185-12:1995, *Information technology - International Standardized Profiles FVT2nn - Virtual Terminal Basic Class - Register of control object type definitions - Part 12: FVT2116, FVT2117, FVT2118, FVT2119 - Generalized Telnet Synch, Signal, Negotiation and Subnegotiation Control Objects.*

ISO/IEC ISP 11187-1:<sup>3)</sup>, *Information technology - International Standardized Profiles AVT1n, AVT2n - Virtual Terminal Basic Class - Application Profiles - Part 1: Common VT Protocol Requirements.*

ISO/IEC ISP 11187-2:<sup>3)</sup>, *Information technology - International Standardized Profiles AVT1n, AVT2n - Virtual Terminal Basic Class - Application Profiles - Part 2: Common Supporting Layers Requirements.*

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 7498-1:

- a. application-entity;
- b. application-process;

- c. real open system.

##### 3.1.2

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

- a. service primitive;
- b. service-provider.

##### 3.1.3

This part of ISO/IEC ISP 11187 makes use of the following terms defined in ISO/IEC 8824-1:

- a. component type;
- b. module;
- c. object identifier;
- d. sequence type;
- e. sequence-of type;
- f. set type;
- g. set-of type;
- h. structured type.

##### 3.1.4

This part of ISO/IEC ISP 11187 makes use of the following terms defined in ISO/IEC 9545:

- a. AE-invocation;
- b. application-association;
- c. application-context;
- d. application-service-element;
- e. ASE-invocation;
- f. control function.

##### 3.1.5

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;
- c. Implementation Conformance Statement proforma;
- d. Profile Requirements List;
- e. Profile specific Implementation Conformance Statement;
- f. Profile specific Implementation Conformance Statement proforma;