INTERNATIONAL STANDARDIZED PROFILE

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Part 3:
FVT114 — A-mode Transparent VTE-profile

Technologies de l'information — Profils normalisés internationaux FVT1nn — Classe de base du terminal virtuel — Registre de profils VTE — Partie 3: FVT114 — Profil VTE transparent mode A

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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 11184-3 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 11184 consists of the following parts, under the general title *Information technology – International Standardized Profiles FVT1nn – Virtual Terminal Basic Class – Register of VTE-profiles:*

— *Part 1: FVT121, FVT122 – S-mode Forms and Paged VTE-profiles*

— *Part 2: FVT115 - A-mode Generalized Telnet VTE-profile*

— *Part 3: FVT114 - A-mode Transparent VTE-profile*

Annex A forms an integral part of this part of ISO/IEC ISP 11184.

Introduction

ISO/IEC ISP 11184 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.

The Open Systems Interconnection (OSI) Standard ISO 9040 for the Virtual Terminal Basic Class Service identifies a requirement for an International Register of VT Control Object type definitions. Procedures for the operation of this International Register are laid down in ISO/IEC 9834-5. ISO/IEC ISP 11184 provides this register. The individual entries in this register constitute Interchange Format and Representation Profiles (F-Profiles) within the framework of ISO/IEC TR 10000.

This part of ISO/IEC ISP 11184 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). It was developed under the editorship of OIW from a profile specification contained in the OIW Stable Implementation Agreements, Version 5 (December 1991). The text is harmonized between these three Workshops and it has been ratified by the plenary assemblies of each Workshop.

This part of ISO/IEC ISP 11184 is derived from the Transparent-1988 profile contained in the OIW Stable Implementation Agreements for Open Systems Interconnection Protocols.

Information technology - International Standardized Profiles FVT1nn - Virtual Terminal Basic Class - Register of VTE-profiles -

Part 3:

FVT114 - A-mode Transparent VTE-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 10000-1:1995 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.

The Virtual Terminal Basic Class Service and Protocol applies to applications requiring interactive communication with terminal systems through the transmission and manipulation of graphical images composed of character-box graphic elements. Through the selection by negotiation of various options, it may be used to realise a wide range of distinct functions. This process of negotiation involves the selection of a set of VT functional units together with a particular Virtual Terminal Environment profile (VTE-profile) and particular values for any arguments of that VTE-profile.

The specification of a VTE-profile and the permitted values for its arguments may themselves reference other types of object defined in accordance with ISO 9040. These are VT control object types and assignment types. The VTE-profiles, control object types and assignment types are thus information structures that require explicit reference within the VT protocol. Particular instances of these structures 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 specification of the selection of options 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 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 11184 contains the definitions of the A-mode Transparent Profile that may be used to provide a transparent mode of operation which allows VT-users to exchange transparently uninterpreted sequences of characters with the added benefit of delivery control to enable the VT-users to determine when the character sequences are to be delivered.

1.2 Position within the taxonomy

The taxonomy of International Standardized Profile 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 Registered Object sub-class of the class of Interchange Format and Representation Profiles requiring connection-mode Transport Services.

A Profile within this subclass has a Profile identifier of the form FVTabc, where abc is a structured numerical identifier that identifies the position of the Profile within each of three levels of subdivision of the subclass. The values of a and b are single digits but c 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 the International Standardized Profile only the Basic Class has been defined. The value of the identifier component a distinguishes between distinct type of information object as follows:

— a = 1 for Basic Class VTE-profiles;

— a = 2 for Basic Class Control Objects;

— a = 3 for Basic Class Assignment Types.

Values of a greater than 3 are reserved for future developments.

This International Standardized Profile ISO/IEC ISP 11184 contains the specifications of the Profiles with identifiers of the form FVT1bc. For this form of identifier, the component b distinguishes between the two modes of operation of the Virtual Terminal Service as follows:

— b = 1 for A-mode (asynchronous mode) operation;

— b = 2 for S-mode (synchronous mode) operation.

Values of b greater than 2 are reserved for new modes of operation that may be defined in future amendments to ISO 9040. The identifier component c distinguishes between different VTE-profiles with the same mode of operation. The procedures of ISO/IEC 9834-4 require a single register of VTE-profiles to be maintained without regard to their mode of operation. The value of the component c is therefore not directly related to the serial number of the VTE-profile in the register.

This part of ISO/IEC 11184 contains the definition of the A-mode Transparent VTE-profile with the Profile identifier:

FVT114 for A-mode Transparent VTE-profile.

1.3 Scenario

The specification of the Virtual Terminal Service is given in ISO 9040. It is based on a model in which two VT- users communicate by means of a shared Conceptual Communication Area (CCA) that is a conceptual part of the VT service-provider. Information exchange is modelled by one VT-user updating the content of the CCA and the changed state of the CCA then being made accessible to the peer VT-user. The Virtual Terminal Service has a basic capability that may be enhanced by the addition of one or more optional functional units

The CCA is structured by the Virtual Terminal Service into a number of components. There is a Conceptual Data Store (CDS) that contains one

or two display objects (DOs), a Control, Signal and Status store (CSS) that contains zero, one or more control objects (COs) and in addition there may be one or more device objects. Display objects and control objects have an information content that is modified during the data handling phase of the VT Service. Device objects model certain logical characteristics of real devices. They may also provide linkages between different objects of the CCA and between such objects and real devices.

There are two modes of operation of the VT Service. In synchronous mode (S-mode) there is a single display object that is updated alternately by the two VT-users while in asynchronous mode (A-mode) there are two display objects, each VT-user having permanent update access to one of them. The mode of operation, the functional units selected and the set of objects present in the CCA at any time constitutes a Virtual Terminal Environment (VTE).

The specification of the VTE, including the type definitions of the objects present, is held in the Data Structure Definition (DSD) component of the CCA. Ownership of the Write Access Variable (WAVAR) that is used during S-mode operation is held in the Access Control Store (ACS). These complete the set of components of the CCA.

A VTE is specified parametrically by a complete and consistent set of values for VTE-parameters defined in ISO 9040. The number of these VTE-parameters is large, so their values are themselves specified in a particular instance by a choice of VTE-profile together with values for any arguments of that VTE-profile. The type definitions of certain control objects may also specify that particular aspects of the CO, such as the initial value of its information content, are to be provided by any VTE-profile that references the CO concerned.

The VTE in use at any time is determined by negotiation between the two VT-users before entry into the data handling phase. This negotiation takes place by the exchange of VT service primitives that are available exclusively for this purpose, as is illustrated in figure 1. The negotiation shall determine whether or not the VTE is established in accordance with the VTE-profile defined in this part of ISO/IEC ISP 11184.

It is possible for the VTE to be changed during the lifetime of a VT- association but only by exit from and subsequent return to the data handling phase.

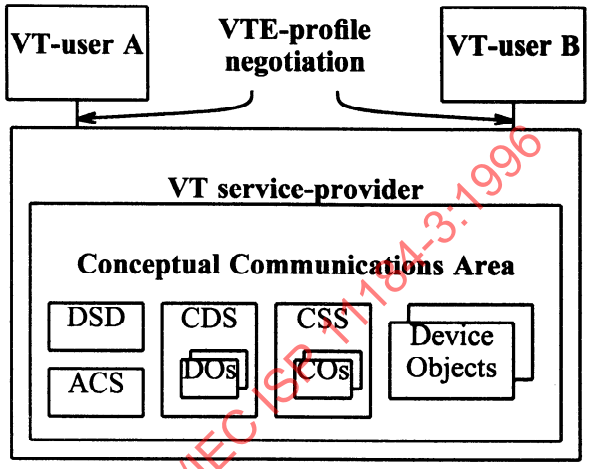

Figure 1 - Negotiation of a VTE through use of a VTE-profile

This part of ISO/IEC 11184 defines the A-mode Transparent VTE-profile. It provides for functionality that may be used to provide a transparent mode of operation.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 11184. 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 11184 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 2375:1985[1)], *Data processing - Procedure for registration of escape sequences.*

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.

ISO/IEC 7498-1:1994, *Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model.*

ISO/IEC 8822:1994, *Information technology - Open Systems Interconnection - Presentation Service Definition.*

ISO/IEC 8824:1990, *Information technology - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1).*

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/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.*

ISO/IEC 9834-1:1993, *Information technology - Open Systems Interconnection - Procedures for the operation of OSI Registration Authorities - General procedures.*

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 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.*

3 Definitions

For the purposes of this part of ISO/IEC ISP 11184, the following definitions apply.

3.1 General OSI terminology

3.1.1
This part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO/IEC 10731:

a. service primitive;

b. service-provider.

3.1.2
This part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO/IEC 8822:

a. abstract syntax;

b. presentation context.

3.1.3
This part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO/IEC 8824:

a. any type;

b. null type;

c. object descriptor type;

d. object identifier.

3.1.4
This part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO/IEC 9834-1:

a. registration;

b. registration-hierarchical-name.

3.2 Terminology of VT base standards

3.2.1
This part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO 9040:

a. A-mode;

b. array element;

c. character-repertoire;

d. control object;

e. device object;
f. object updating device;
g. primary attribute;
h. rendition attribute;
i. secondary-attribute;
j. VT-association;
k. VT-environment (VTE);
l. VT-user;
m. VTE-parameter;
n. VTE-profile;
o. VTE-profile argument.

3.2.2
This part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO 9041-1:

a. protocol-element.

4 Abbreviations

For the purposes of this part of ISO/IEC ISP 11184, the following abbreviations apply.

AOW	OSI Asia-Oceanic Workshop;
EWOS	European Workshop for Open Systems;
OIW	OSE Implementor's Workshop;
OSE	Open Systems Environment.

All other abbreviations used are defined in ISO/IEC TR 10000 or ISO 9040.

5 Principles of Conformance to VT Profiles

An implementation of the Virtual Terminal Protocol conforms to an FVT1nn Profile that specifies a VTE- profile if the protocol implementation is capable of sending and receiving PDUs for the establishment of a full-VTE in which the VTE-profile name is that specified in the FVT1nn Profile. If the VTE-profile specification includes the definition of any control object types in accordance with clause 14 of ISO 9040 then there is a further conformance requirement. In this case conformance to the VTE-profile requires in addition that the protocol implementation is capable of sending and receiving PDUs corresponding to all update operations permitted for that CO type whenever a CO of that type is present in the VTE.

Conformance of a protocol implementation to an FVT1nn Profile does not place requirements on which protocol elements of the VT Protocol may be used for the establishment of a full-VTE in accordance with that Profile.

NOTE - The conformance requirements would be satisfied, for example, if such a full-VTE could be established through use of the VT-SWITCH-PROFILE protocol elements but not through use of the VT-ASSOCIATE protocol elements.

A system that includes an implementation of the VT Protocol may be claimed to conform also to an AVTnn Profile. Conformance to an AVTnn Profile may place requirements on which protocol elements are to be used for the establishment of a full-VTE in accordance with a particular VTE-profile. Such conformance may also require that values for the emphasis attribute of a display object array element are interpreted by a VT-user in accordance with semantics defined within a VTE-profile specification in accordance with 13.2 of ISO 9040. Conformance to DO or CO semantics is not within the scope of conformance to any FVTnnn Profile.

The conformance requirements of the Virtual Terminal Protocol are specified in clause 13 of ISO 9041-1. The supplier of a protocol implementation which is claimed to conform to ISO 9041-1 is required to complete a copy of the PICS proforma provided in ISO/IEC 9041-2. Annex A of this part of ISO/IEC ISP 11184 provides an ISPICS Requirements List (IPRL) for the Profile FVT114 specified herein. This IPRL specifies constraints on the answers that may be given in the completed PICS for a protocol implementation that claims conformance to these Profiles.

6 Entry number

The remaining clauses of this part of ISO/IEC ISP 11184 provide the entry for the A-mode Transparent VTE-profile in the International Register of VTE-profiles. The entry is structured in accordance with the requirements of ISO/IEC 9834-4.

This Entry is the fourth in the International Register of VTE-profiles. This register assigns it the entry number:

VTE-04

7 Name of sponsoring authority

This entry is sponsored by the OSE Implementors' Workshop (OIW).

8 Date

The date of submission of this proposal was 1993-12-10.

9 Identifier

The name assigned to an information object by an International Register is required by ISO/IEC 9834-1 to be a registration-hierarchical-name. A registration-hierarchical-name may have more than one form. The permitted forms include an ASN.1 object identifier as defined in ISO/IEC 8824 and a distinguished name as defined in ISO/IEC 9594-2.

In accordance with A.4 of ISO/IEC 9834-4, this register assigns the following object identifier form for the name of this register entry:

{ iso(1) identified-organization(3) oiw(14) vtsig(12) vteProfile(1) transparent-1988(1) }.

This register does not assign any other form to the names of these entries.

NOTES

1 - The object identifiers given here identify the VTE-profiles as information objects distinct from their operation in accordance with any particular VT Application Profile. Other object identifiers defined by registration authorities operating outside the procedures of ISO/IEC 9834-4 may identify the use of one of these VTE-profiles in conjunction with a particular VT Application Profile. All such object identifiers shall be synonymous for the purposes of the VT Protocol of ISO 9041-1 when an explicit value is negotiated for each VTE-profile argument. However, the use of such an object identifier provides a means to create a mutual agreement between the two communicating VT-users to operate in accordance with a specific VT Application Profile. A VTE-profile specification may delegate the determination of default values for VTE-profile arguments and initial values for VT control objects to the VT Application Profile when such a mutual agreement exists; see for example 13.1 below.

2 - By ISO/IEC 9834-1 a distinguished name for the purposes of the OSI Directory may only be assigned together with an object identifier when the object identifier form is generated under the arc { joint-iso-ccitt(2) country(16) country-name }.

10 Descriptor value

The value of the ASN.1 object descriptor type assigned to this entry is:

"FVT114: A-mode Transparent Profile".

11 Mode

This VTE-profile is designed for operation in the asynchronous mode (A-mode) of the Virtual Terminal Service.

12 VT functional units

The operation of this VTE-profile may benefit as follows from the selection of additional VT functional units:

— from the Urgent Data functional unit by the expediting of the transmission of asynchronous terminal and application signals;

— from the Break functional unit by the ability to invoke a destructive interrupt if necessary.

All other functional units are out of scope.

13 Profile arguments

13.1 Interpretation

This VTE-profile has 1 VTE-profile argument that is named "r1" in accordance with A.8 of ISO/IEC 9834-4. "r1" is a multiple-occurrence VTE-parameter and correspondingly may occur more than once in an ordered list. All optional VTE-profile arguments have default values that are determined hierarchically. If there is a mutual agreement between the two communicating VT-users to operate this VTE-profile in accordance with a specific VT Application Profile then a default value specified by the Application Profile takes precedence over the default value specified in 13.2.

When a default value is defined for a multiple-occurrence VTE-profile argument and fewer occurrences are negotiated than are required by the value of a parent VTE-parameter, the

remaining occurrences take the specified default value. When the occurrences of such an argument form an ordered list, that argument may have a default value which depends on its position in the list.

13.2 VTE-profile argument definitions

r1 - is optional and enables negotiation of a value for the VTE-parameter repertoire-assignment for the two display objects (which always have the same value of repertoire assignment when the profile is called). The default value of this argument is the "Virtual Terminal Transparent Set" registered in the International Register under ISO 2375 register value 125, invoked by the escape sequence "<ESC> 2/5 2/15 4/2". This argument is identified by the identifier for repertoire-assignment for display object D1.

14 VTE-profile body

14.1 Specification

The values specified by this VTE-profile for all VTE-parameters are given below, using the notation defined in A.9 of ISO/IEC 9834-4

```
Display-objects = *(double occurrence)*
{
        {
        display-object-name   = D1,*(DISPLAY)*
        do-access             = "WACA",
        dimensions            = "one",
                x-dimension           =
                {
                        x-addressing = "not-permitted"
                },
        repertoire-assignment = profile-argument-r1
        },
        {
        display-object-name   = D2,*(KEYBOARD)*
        do-access             = "WACI",
        dimensions            = "one",
                x-dimension           =
                {
                        x-addressing = "not-permitted"
                },
        repertoire-assignment = profile-argument-r1
        }
},
type-of-delivery-control = "simple-delivery-control".
```

Annex A
(normative)

Profile Requirements List

A.1 Protocol requirements

This annex provides a Profile Requirements List (Profile RL) for the Profile FVT114 specified in this part of ISO/IEC ISP 11184. This RL is to be used in conjunction with the Protocol ICS (PICS) proforma for the Virtual Terminal Protocol that is given in ISO/IEC 9041-2. The relationship between the Profile RL and the Protocol ICS is described in clause 5 of this part of ISO/IEC ISP 11184.

The requirements of this RL are given in tables A.1 through A.3. The notation used in the tables is as follows. Individual items in a PICS proforma are referenced by the means specified in 9.3.8.3 of ISO/IEC 9646-7[2]. Such a reference has the form x-y/z, where x is the number of the ISO Standard that specifies the protocol, y is a reference within the PICS proforma of this Standard to the smallest subclause that contains the item concerned, and z is the reference number of the item within that subclause. Where this RL needs to present the constraints on a particular item as two or more separate cases, a suffix of the form '.n' is added to the item reference where n is a serial number that labels the different cases.

The item name is taken from the PICS proforma. The "status" columns of the RL tables take priority over the corresponding "status" columns of the PICS proforma and they use the notation of that proforma. They refine the PICS proforma status values by evaluating conditional expressions or converting optional values to a more specific form.

Where an RL table has a "Profile values" column, the status value applies separately to each listed Profile value.

For any column in an RL table that corresponds to an answer column in the PICS proforma, the values listed are the acceptable answers for the item concerned. The following special notation is used in these columns:

Any	The RL places no constraint on the answer;
n/a	The column is not relevant to this item.

2) ISO/IEC 9646-7:1995, *Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements.*