
**Information technology — Data
Management —**

**Part 3:
IRDS export/import facility**

*Technologies de l'information — Gestion de données —
Partie 3: Aide export/import IRDS*
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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. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 13238-3 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management services*.

ISO/IEC 13238 consists of the following parts, under the general title *Information technology — Data Management*:

— *Part 1: Export/import framework*

— *Part 2: SQL import/export*

— *Part 3: IRDS export/import facility*

Annex A forms an integral part of this part of ISO/IEC 13238. Annexes B to E are for information only.

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Introduction

ISO/IEC 13238 is a three part standard. Part 1 defines an overall framework for Export/Import facilities.

Part 2 defines facilities for export from and import to SQL databases that conform to ISO/IEC 9075.

This part, Part 3, defines facilities for export from and import to an IRD and or an IRD Definition that conform to ISO/IEC 10728.

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Information technology — Data Management —

Part 3:

IRDS export/import facility

1. Scope

This part of ISO/IEC 13238 enables the bulk transfer of all or part of the data contained in an Information Resource Dictionary (IRD) or in an Information Resource Dictionary Definition conforming to ISO/IEC 10728:1993 IRDS Services Interface.

This part of ISO/IEC 13238 defines a format for such a transfer and also services to generate the export file and services to import the file. These services are additional to the existing services defined in the IRDS Services Interface.

This version of this part of ISO/IEC 13238 defines a limited set of Export and Import services. It is expected that implementations will also provide more sophisticated services based on the use of the Transfer File structure defined in this part of ISO/IEC 13238.

The physical way in which the transfer takes place is outside the scope of this part of ISO/IEC 13238. Each transfer may be effected in one of several ways including the physical transfer of the data using a transportable storage device.

2. Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 13238. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 13238 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 6429:1992, *Information technology - Control functions for coded character sets.*

ISO/IEC 9075:1992, *Information technology - Database languages - SQL.*

ISO/IEC 10027: 1990, *Information technology - Information Resource Dictionary System (IRDS) framework.*

ISO/IEC 10646-1:1993, *Information technology - Universal Multiple-Octet Coded Character Set (UCS) - Part 1: Architecture and Basic Multilingual Plane.*

ISO/IEC 10728: 1993, *Information technology - Information Resource Dictionary System (IRDS) Services Interface.*

ISO/IEC 13238-1:—¹, *Information technology - Data Management - Part 1: Export/import framework.*

¹ To be published.

3. Definitions

For the purposes of this part of ISO/IEC 13238, the following definitions apply.

3.1 Terms from ISO/IEC 10027 IRDS Framework

3.1.1 Application level

3.1.2 IRD

3.1.3 IRD definition level

3.1.4 IRD definition schema level

3.1.5 IRD level

3.1.6 IRD schema

3.1.7 IRDS

3.2 Terms from ISO/IEC 10646-1 Universal Multiple-Octet Coded Character Set (UCS)

3.2.1 Basic Multilingual Plane (BMP)

3.2.2 Character

3.3 Terms from ISO/IEC 10728 IRDS Services Interface

3.3.1 IRD Object

3.3.2 Name

3.3.3 Object

3.3.4 Object Version

3.3.5 Variation Name

3.4 Additional definitions

3.4.1 **Clear text file encoding.** A class of techniques for representing data based on first defining a human readable representation using some specific character repertoire and then defining an encoding for that repertoire.

3.4.2 **Export IRD.** The export of data from an origin or source IRDS into a Transfer File.

3.4.3 **Export process.** The process of generating a Transfer File from a source environment.

3.4.4 **Exporter.** The agent of the export process.

- 3.4.5 Import IRD.** The import of data to a destination or target IRDS from an Transfer File.
- 3.4.6 Import process.** The process of incorporating the content of a Transfer File into a target environment.
- 3.4.7 Importer.** The agent of the import process.
- 3.4.8 IRDS-data.** A collection of data comprising the content of all or part of an IRD Definition and/or an IRD. This is a generic term used for convenience to describe the content of a Transfer File.
- 3.4.9 IRDS Transfer File.** A Transfer File containing data which defines and describes the content of an IRD or a subset of an IRD. It is made up of three components: Transfer File Header component, Transfer File IRD Definition component, and Transfer File IRD Content component.
- 3.4.10 Transfer file.** A file containing data to be interchanged. It is made up of a header, and a number of components. Components contain either data, or data definition data.
- 3.4.11 Transfer File Header.** The first component of a Transfer File. This component contains data that uniquely defines the Transfer File. It contains details of the export IRD identification and time stamp.
- 3.4.12 Transfer File IRD Definition.** The second (and optional) component of a Transfer File. This component contains the IRD definition that defines the following IRD content.
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- 3.4.13 Transfer File IRD Content.** The third (and optional) component of a Transfer File. This component contains the IRD content to be interchanged.

4. Abbreviations

Abbreviations used in this part of ISO/IEC 13238 are:

- a) BMP Basic Multilingual Plane ;
- b) BNF Bachus Naur Form;
- c) IRDS Information Resource Dictionary System;
- d) IRD Information Resource Dictionary;
- e) TF Transfer File;
- f) UTC Co-ordinated Universal Time.

5. Conventions

5.1 Definition of Data in the Transfer File

An extended Bachus Naur Form (BNF) is used to describe the sequence of data in the Transfer File. The form of BNF used is that defined in ISO/IEC 9075, 3.2.

The names of the syntax units start with a lower case alphabetic character and intermediate characters are capitalised when they start a word.

5.2 Definition of Services

The conventions used to define services in clause 8 are those used in ISO/IEC 10728:1993 and where operations on the abstract data structure are defined, they are in terms of the data structure defined in Clause 6 of ISO/IEC 10728.

6. Concepts and facilities

6.1 Overview

This clause describes the Transfer File format and the services which are used to export and import IRDS data.

The services specified provide for the creation of an operating system file of characters of a specified encoding and in a defined sequence and its subsequent use in the same or a different real system. The physical transfer of an Transfer File from one real system to another may take place by any appropriate means.

The character encoding to be used is specified by this International Standard and hence no translation of the Transfer File is required or permitted when the file is transferred from one real system to another.

6.2 Transfer File

6.2.1 Structure

An IRDS Transfer File may contain an IRD Definition (which contains information which defines the content of an IRD) or a subset of an IRD Definition and/or an IRD or a subset of an IRD. For ease of reference each of these combinations is referred to in this part of this International Standard as IRDS-data.

An IRDS Transfer File is made up of three components as follows:

- a) Transfer File Header;
- b) Transfer File IRD Definition;
- c) Transfer File IRD Content.

The Transfer File header is a mandatory component. Both the Transfer File IRD Definition data and the Transfer File IRD Content are optional. However, one of the two must be present. The presence or absence of each is indicated in the Transfer File Header.

There may be many Transfer File IRD Definition Data components and/or Transfer File IRD Content components. This standard requires one component per IRD Working Set.

The reason for the optionality of the IRD Definition Data component is to allow it to be omitted in situations where data conforming to the same IRD Definition is being transferred frequently between the same exporter and importer.

Optionality of the IRD Content component allows an IRD Definition to be exported without any conforming IRD Content. This facility may be used prior to a set of Transfer Files being created using the same IRD Definition, but containing different IRD Content.

The IRD Definition Data and the IRD Content are each composed of a number of sets of rows. Each set of rows represents selected data from a single working set.

All IRD Definition and IRD level tables can be exported. In the data for a working set, all the IRD Object and IRD Object Version rows are included that are referenced by any other rows selected from the working set.

In the data for a working set, rows from the IRD REFERENCE PATH table are included to describe all of the reference paths used by foreign keys in the rows selected from the working set.

6.2.2 Transfer File Header

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The Transfer File header contains information about the Transfer File, such as date time of file creation and information about the source of the file such as the person responsible for creation. Further user defined information may be added.

6.2.3 Transfer File IRD Definition

The Transfer File IRD Definition data consists of the definition of IRD Content which may then be exported as other components of a Transfer File IRD Content in the same or subsequent Transfer Files.

A Transfer File IRD Definition is for a set of IRD tables that a user of an IRDS-implementation has created and that a user wishing to export IRDS-data has selected.

Each IRD Definition has a name conforming to the rules for names in ISO/IEC 10728. This name is assigned by the exporter of the Transfer File in which the IRD Definition is used.

6.2.4 Transfer File IRD Content component

This component is the IRD Content. The Transfer File IRD Content shall conform (in the IRDS sense) to an IRD Definition which is named in the Transfer File header. The IRD Definition may or may not be present in the same Transfer File.

6.3 Export/import services

6.3.1 Export services

There are the following export services:

- a) Open a Transfer File for export;
- b) Select the rows to be exported from specified tables; this service may be invoked many times, to select multiple tables and/or multiple sets of rows from a single table;
- c) Clear a previous selection;
- d) Export the contents of a Working Set; this service may be invoked many times, to export both IRD Definition and IRD level working sets;
- e) to close the export file and make it available to other users.

The Open Export File Service generates the Transfer File header component.

The Export Working Set Service converts a working set in an IRD Definition or an IRD into the format defined for the Transfer File.

6.3.2 Import services (standards.iteh.ai)

There are the following import services:

- a) Open a Transfer File for import;
- b) Import Working Set;
- c) Close IRDS Import File.

Successful invocation of an Import Working Set service applied to an IRD Definition Working Set contained in the Transfer File, creates appropriate rows in the IRD Definition tables in the importing IRDS implementation.

Successful invocation of an Import Working Set service applied to an IRD Working Set contained in the Transfer File, creates appropriate rows in the IRD tables in the importing IRDS implementation.

If the Transfer File contains an IRD Working Set and the Transfer File IRD Definition component is not included, the import service makes use of the name of the IRD Definition given in the Transfer File header component to locate the named IRD Definition in the importing IRDS-implementation.

6.4 Working Sets

Each invocation of the export service generates rows from the single working set that represents the current or specified context. If Full Context is specified, additional rows may

be exported from referenced working sets, depending on the selection criteria. The tables from which rows are to be extracted can be selected using the IRDSSelectForExport service.

6.5 Import Control Tables

Tables are defined in clause 8 which can be populated by the IRDS User and by the import services to assist the process of matching objects in an import file with objects already stored in the IRD or IRD Definition.

6.6 Content Modules

Those rows that represent objects contained within one or more IRDS Content Modules may be selected by using the IRDSSelectForExport service and specifying the tables required and a WHERE clause that includes appropriate references to IRD_MODULE_OBJ_KEY and IRD_MODULE_WS_KEY defined in ISO/IEC 10728, 6.1.4.1 Table IRD Object.

7. Specification of the Transfer File

7.1 Character Set

An IRDS Transfer File shall consist of a string of the characters from the Basic Multilingual Plane (BMP) of ISO/IEC 10646-1.

The file header (syntax element <tfIrdHeader> defined in 7.6.2 below) shall contain only characters from Table 1 of ISO/IEC 10646-1.

7.2 Character Coding

Characters in a Transfer File shall be coded using the UCS-2 coding of ISO/IEC 10646.

7.3 Tokens

7.3.1 Terminal Tokens

The characters defined in ISO 9075, 5.1 and indirectly referenced below by reference to clauses in ISO/IEC 9075 are defined to be the respective characters defined in ISO/IEC 10646-1 Table 1.

The following terminal BNF tokens are used in the definition of the Transfer File:

| | |
|---------------------------------------------------|------------------------------------------------------------------|
| <space> ::= | Defined as the character at row 0 column 002 in ISO/IEC 10646-1. |
| <carriage return> ::= | Defined as the character at row D column 000 in ISO/IEC 10646-1. |
| Note: This conforms to ISO/IEC 6429:1992, 8.3.15. | |
| <exclamation> ::= | Defined as the character at row 1 column 002 in ISO/IEC 10646-1. |

| | |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <line feed> ::= | Defined as the character at row A column 000 in ISO/IEC 10646-1. |
| Note: This conforms to ISO/IEC 6429:1992, 8.3.75. | |
| <tab> ::= | Defined as the character at row 9 column 000 in ISO/IEC 10646-1. |
| Note: This conforms to ISO/IEC 6429:1992, 8.3.61. | |
| <double quote> ::= " | Defined as the character at row 2 column 002 in ISO/IEC 10646-1 and referenced in ISO/IEC 9075, 5.3. |
| <any character except double quote and newline> ::= | any character defined in the basic multilingual plane of ISO/IEC 10646-1 except <double quote> as defined above and <newline> as defined below. |
| <column name> ::= | as defined in ISO/IEC 9075, 5.4. |
| <right brace> ::= } | Defined as row D column 007 in ISO/IEC 10646-1 and referenced in ISO/IEC 9075, 5.4. |
| <left brace> ::= { | Defined as row B column 007 in ISO/IEC 10646-1 and referenced in ISO/IEC 9075, 5.4. |
| <minus sign> ::= - | Defined as row D column 002 in ISO/IEC 10646-1 and referenced in ISO/IEC 9075, 5.1. |
| <search condition> ::= | as defined in ISO/IEC 9075, 8.12. |
| <SQL language identifier> ::= | as defined in ISO/IEC 9075, 5.4. |
| <table name> ::= | as defined in ISO/IEC 9075, 5.4. |
| <timestamp literal> ::= | as defined in ISO/IEC 9075, 5.3. |
| <unsigned integer> ::= | as defined in ISO/IEC 9075, 5.3. |

7.3.2 Commonly used tokens

The following BNF tokens are used in a number of places in the definition of the file structure:

<newline> ::= <carriage return> | <line feed>

<double quote in character string literal> ::= <double quote><double quote>

```

<character string literal> ::=
                                <double quote>
                                { <character string literal element > } ..
                                <double quote>

<character string literal element > ::=
                                <any character except double quote and newline> |
                                <double quote in character string literal> |
                                <newline>

<any character except newline> ::=
                                <any character except double quote and newline> |
                                <double quote>

<startComment> ::=
                                <exclamation><exclamation>

<comment> ::=
                                <startComment>
                                { <any character except newline> } ...
                                <newline>

<separator> ::= { <comment> | <space> | <newline > | <tab> } ...

<endSeq> ::= <right brace>
<startSeq> ::= <left brace>

<quoted SQL language identifier> ::=
                                <double quote> <SQL language identifier> <double quote>

```

7.4 White Space

The syntactic token <separator> defines characters that are potentially white space.

Where such characters fall inside < character string literal > as defined above, they are part of the literal. Where such characters fall outside such character string literals they are termed “white space” and are ignored except in so far as they act to separate one token from another.

Rules for including <separator>s in the export/import file are as follows:

1. If two tokens in the BNF definition ARE NOT separated by a space , then <separator>s ARE NOT PERMITTED in the generated result. E.g. <double quote><double quote>.
2. If two tokens in the BNF definition ARE separated by a space, then <separator>s ARE PERMITTED in the generated result.
3. Where the BNF definition includes a constant value (e.g. TABLE_NAME), a <separator> is REQUIRED after this value, even though this is not explicitly shown in the BNF definition.
4. If a <separator> is REQUIRED between two tokens, this is explicitly shown in the syntax definition.