INTERNATIONAL STANDARD

ISO/IEC 4396-5

Telecommunications and information exchange between systems — Recursive inter-network architecture —

Part 5:
Incremental enrolment procedures

Télécommunications et échange d'information entre systèmes — Architecture récursive inter-réseaux —

Partie 5: Procédures d'enrôlement incrémentiel

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6 *Telecommunications and information exchange between systems*.

A list of all parts in the ISO/IEC 4396 series can be found on the ISO and IEC websites.

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Telecommunications and information exchange between systems — Recursive inter-network architecture —

Part 5:
Incremental enrolment procedures

1 Scope

This document defines the procedure executed by a Member of a distributed inter-process communication (IPC) facility (DIF) or distributed application facility (DAF) to initialize a new Member as a fully functioning Member. This document defines the procedure for a new Member to enrol when the new Member was recently a Member of the DIF or DAF. This document is defined for use with DIFs, but it can be used equally well by a DAF that wants to assign synonyms with a scope limited to the DAF.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4396-1, *Telecommunications and information exchange between systems — Recursive Inter-Network Architecture — Part 1: Reference Model*

ISO 4396-2, *Telecommunications and information exchange between systems — Recursive inter-network architecture — Part 2: Common application connection establishment procedure (CACEP)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4396-1 and ISO 4396-2 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Overview of the procedures

Enrolment is the procedure by which an IPC-process joins an existing DIF. Enrolment occurs after an IPC-Process establishes an application connection with another IPC-Process, which is a Member of a DIF. Once the CDAP Connection is established this enrolment procedure may proceed.

This procedure is intended to minimize the amount of data to send to the new Member on the assumption that it had been a Member and lost contact with the DIF, either through a crash or failure of the physical media. Other enrolment procedures are possible.

The Member reads the new Member's address. If null or expired, it assigns a new address; otherwise, it assumes the new Member was very recently a Member. The new Member then reads the information it does not have, taking into account how new it is. These parameters characterize the operation of this DIF and can include parameters, e.g. max PDU size, various time-out ranges, ranges of policies. Once complete, the new Member becomes a Member and this triggers a normal resource information base (RIB) update.

5   Detailed specification of the procedures

5.1   Common elements

RIB: The DIF-Allocator has access to the RIB information consistent with the access control policies. This system is a Member of, and is participating in, the directory chain associated with this DIF-Allocator.

5.2   Enrolment

5.2.1   General

Once the CDAP connection is established and the authentication policy is executed successfully which is signalled by receiving a Connect_Response, Enrolment may proceed. It is recognized that several sequences are possible, so other Enrolment procedures are possible. This Enrolment procedure attempts to efficiently include the case of the momentary loss of a Member, e.g. a router crashes and immediately comes back up. There are three types of enrolment information:

a)   static, part of the definition of the DIF;

b)   near static, may change but very infrequently, i.e. the address or adding a new QoS-cube;

c)   dynamic information, e.g. DIF-Allocator, Directory, and routing information.

5.2.2   When sent

Enrolment begins when the CDAP connection is established.

5.2.3   Action upon receipt

The following procedure is used to facilitate an existing Member becoming partitioned and re-joining. The basic idea is that if the Member is out of the DIF for less than the lifetime of an address assignment, the initialization can be shortened. If there are any errors or unexpected occurrences by either process, the process should send an A_Release (with no Response requested) and invoke Deallocate.

The Member sending a positive A_Connect_Response indicates that enrolment may start.

When the New Member receives the A_Connect Response, the new Member copies Current_Address to Saved_Address. sends

—A_Start Enrolment (address, Address_expiration_time, other data about new Member)

The new Member is telling the existing Member what it knows. Primarily this is derived from the address (NULL or not), and the expiration life-time of the address if non-NULL. Since addresses are generally assigned for hours or minutes, tight time synchronization is not required. (Even for DIFs with fast turnover, fairly long assignment times are still prudent.)*/

The Member sends

← A_Start_R Enrolment (address (potentially different), Application Process Name, Current_Address, Address_Expiration)

Using the information provided by the new Member, the existing Member sends

← A_Create (zero or more) to initialize the static and near static information required. When finished and the new Member has sent all necessary → A_Create_Rs

the existing Member sends a

← A_Stop Enrolment (Immediate:Boolean)