Amendment to DIS 10747 (IDRP) to Allow Interaction and Exchange of Routeing Information with ISO 10589 (IS-IS)

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1. Introduction

There are two IS-to-IS routeing information exchange protocols defined within the OSI Network layer: IS 10589,″Intermediate system to Intermediate system Intra-domain routeing information exchange protocol for use in conjunction with the protocol for providing the connectionless-mode Network Service (ISO 8473)″, defines the protocol used by intermediate systems (ISs) located within a single routeing domain, while DIS 10747, ″Protocol for the Exchange of Inter-Domain Routeing Information Among Intermediate Systems to Support Forwarding of ISO 8473 PDU″, defines the protocol used by boundary intermediate systems (BISs), which may be located in the same or adjacent routeing domains. The amendment to DIS 10747 that is described in this document will provide an optional facility for use within DIS 10747 that will allow IS 10747 to import routeing information from IS 10589, and conversely will allow IS 10747 to export routeing information into IS 10589. Since DIS 10747 does not require the use of IS 10589 within a routeing domain as the intra-domain routeing protocol, the functions described in this amendment are optional, rather than mandatory.

In order to fully make use of the functions described in this amendment, a system must also support the complementary amendment to IS 10589, ?????, which allows IS 10589 to export routeing information into DIS 10747 and also allows IS 10589 to import routeing information from DIS 10589.

In order to avoid the need for one protocol to directly process internal state information maintained by the complementary protocol, all interactions between IS 10589 and DIS 1074 will be expressed, to the extent possible, through the representation of the information to be exchanged in terms of GDMO management data structures. To make use of the optional features described in this amendment, a system must contain an instance of both IS 10589 and DIS 10747 within a single open system.

The body of this amendment lists the changes that need to be made to the clauses of DIS 10747 to support this optional function. These changes are consistent with the technical approach discussed at the July 1992 meeting of the Routeing Group of SC6 WG2 at its San Diego meeting; this approach is outlined in SC6 N7531.

2. Changes to ″1. Scope and Field of Application″

Add the following bullet item to the paragraph beginning ″This international standard specifies...″:

> *—the procedures for the exchange of routeing information with a co-resident implementation of ISO 10589*

Add the following bullet item to the paragraph beginning ″These procedures are specified...″:

> *—optional interactions between a Boundary Intermediate System and a Level 2 Intermediate System*

3. Changes to ″2. Normative References″

The reference to ISO 10589, now contained in informative Annex B, ″Bibliography″, should be deleted from Annex B and inserted into clause 2 as a normative reference.

4. Changes to ″3. Definitions″

Include the following terms to the list in clause 3.5 (″Intra-domain Routeing Definitions″), observing correct alphabetic order:

— *Area Address*
— *Circuit*
— *Level 1 IS*
— *Level 1 LSP*
— *Level 2 IS*
— *Level 2 LSP*
— *Reachable Address Prefix*
— *Virtual Adjacency*

5. Changes to ″4. Symbols and Abbreviations″

No changes are needed,

6. Changes to ″5. General Protocol Information″

In clause 5.9 (″Routeing Information Exchange″), make the following changes:

a) Add the following item to the list in the first paragraph:

> *—rules for exchanging information with a co-resident Level 2 IS that is running an instance of ISO 10589*

b) In the last paragraph of the clause, add the words *″that is distributed to other BISs″* between ″Routeing information″ and ″is carried...″.

c) Add a new second sentence to the last paragraph, as follows:

> *Routeing information that is optionally exchanged with a co-resident Level 2 IS is structured according to the methods of clause 99.*

NOTE: ″Clause 99″ is used as a placeholder for the new normative material to be added. It is used to avoid confusion with the currently numbered clauses of DIS 10747. However, when the new material is integrated into the text of DIS 10747, the material in ″clause 99″ will probably appear as a new clause 9, and existing clauses 9, 10, 11, and 12 will be renumbered accordingly.

7. Changes to ″6. Structure of BISPDUs″

No changes are needed.

8. Changes to ″7. Elements of Procedure″

No changes are needed.

9. Changes to ″7. Receive Process″

No changes are needed.

10. Changes to ″8. Forwarding Process″

NOTE: I expect that the text of 8.4 will need to be changed, but have not worked out the details yet.

11. Changes to ″9. Interface to ISO 8473″

No changes are needed.

12. Changes to ″10. Constants″

No changes are needed.

13. Changes to ″11. System Management″

The attribute definitions in Annex A need to be added to the end of clause 11.4. The new ASN.1 descriptions in Annex A need to be included in clause 11.9, observing the correct alphabetic order.

14. Changes to ″12. Conformance″

Add a new clause 12.2.6, as follows:

> ***12.2.6 Information Exchange with a Co-resident Level 2 IS***
>
> *A BIS that claims to support exchange of routeing information with a co-resident implementation of a Level 2 IS that is running an instance of ISO 10589 shall do so in accordance with 99.*

15. New Clause 99

NOTE: Text for this clause will be based on SC6 N7531. This text is not yet available.

16. Changes to ″Annex A. PICS Proforma″

NOTE: A new Table 20 will be added, after the text of new clause 99 is complete.

17. Changes to "Annex B. Bibliography"

Remove the reference to ISO 10589, which will now appear as a normative reference in 2.

18. Changes to Annexes F through K

No changes are needed.

Annex A. New GDMO and ASN.1 Definitions

These are the new managed objects needed in IDRP (DIS 10747) to handle the exchange of information with ISIS (IS 10589):

```
   intradomainSummarizationPolicy ATTRIBUTE
      WITH ATTRIBUTE SYNTAX IDRP.SummaryMethod;
      MATCHES FOR EQUALITY
      BEHAVIOUR intradomainSummarizationPolicy-B
            BEHAVIOUR DEFINED AS This variable specifies the
            policy that IDRP will use to summarize Area Address
            and Reachable Address Prefix information that is
            carried in the L2 LSPs of IS 10589.  Three
            summarization  methods are possible: a) Automatic,
            b) Pre-configured, and c) None;;
      REGISTERED AS {atoi intradomainSummarization (46)};


   destinationsToImport ATTRIBUTE
      WITH ATTRIBUTE SYNTAX IDRP.NSAPprefix;
      MATCHES FOR EQUALITY;
      BEHAVIOUR destinationsToImport-B
            BEHAVIOUR DEFINED AS If IDRP's summarization policy is
            "pre-configured", then only ISIS destination areas or
            reachable address prefixes that match this managed
            object are eleigible for importation into IDRP as
            NLRI;;
      REGISTERED AS {atoi destinationsToImport (47)};


   intradomainCostThreshold ATTRIBUTE
      WITH ATTRIBUTE SYNTAX IDRP.intraThreshold;
      MATCHES FOR EQUALITY, ORDERING;
      BEHAVIOUR intradomainCostThreshold-B
            BEHAVIOUR DEFINED AS A 4-tuple that gives threshold
            values for the intradomain metrics: delay, expense,
            error, and default.  If the ISIS pathCost attribute
            for a given destination area has a value less than
            the threshold, then the area address can be imported
            individually into IDRP, irrespective of the
            summarization policy in force.  Otherwise, it must
            be summarized according to the policy specified in the
            intradomainSummarizationPolicy.  This attriubte
            is used to make tradefoffs between summarization and
            optimal routeing;;
   REGISTERED AS {atoi intradomainCostThreshold (48)};


   nLRIToExport ATTRIBUTE
      WITH ATTRIBUTE SYNTAX IDRP.ExportedNLRI;
      BEHAVIOUR nLRIToExport-B
            BEHAVIOUR DEFINED AS The NSAP address prefixes that
            can be exported to ISIS for use as reachable address
            prefixes.  This attribute also specifes the export
            policies that apply to the prefixes to be exported;;
      REGISTERED AS {atoi nLRIToExport (49)};
```

These are the new ASN1 definitions associated with these managed objects:

```
   SummaryMethod ::=ENUMERATED {
      automatic(1),
      preconfigured(2),
```

```
      none(3) }
   IntraMetric ::= INTEGER(0..63)
   ISISMetricType ::= ENUMERATED {
      internal(1),
      external(2) }
   IntraThreshold ::= SEQUENCE {
      delayMetric IntraMetric,
      errorMetric IntraMetric,
      expenseMetric IntraMetric,
      defaultMetric IntraMetric }
   ExportedNLRI ::= SET OF SEQUENCE {
      addressPrefix NSAPprefix,
      exportLonger BOOLEAN,
      metricType ISISMetricType,
      metricValue IntraMetric,
      useMultiExitMetric BOOLEAN }
```