

# Standard Representation Of Domain Sequence

draft-ietf-pce-pcep-domain-sequence-01

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# Updates from -00

- Document two mechanisms for encoding the domain-sequence sub-objects in IRO:
  - **a New IRO Type:** With new processing rules like order, Loose/Strict, unknown sub-object handling etc.
  - **Use of IRO Type 1 (RFC 5440):** New sub-objects encoding in the IRO, with no inherent order and existing processing rules.
- Section on the use of such Domain Sequence sub-objects in XRO, ERO, EXRS.
- Manageability, Security and IANA considerations
- Comments and suggestions from Adrian's Mails [<http://www.ietf.org/mail-archive/web/pce/current/msg02782.html>] (*Thanks Adrian!*)
  - Added both options for IRO in the draft
  - Clarified the encoding of sub-objects and the difference with TLVs
  - Loose handling for the new IRO type
  - Mode of operations
  - Unknown sub-object handling v/s constraints not met
  - Relationship with PCE Sequence

# Updates from -00: sub-object encoding

- Text added for the sub-object encoding description.
- Length and description is in aligned with RFC 4920 [which defines TLV carried in IF\_ID ERROR\_SPEC Object]
- The encoding with respect to alignment and Code-Space for Type are different
- Need joint work with CCAMP WG

<b>Autonomous system (4 byte)</b>	<pre> 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 +-----+-----+-----+-----+-----+-----+-----+-----+  L    Type       Length       Reserved     +-----+-----+-----+-----+-----+-----+-----+-----+   AS Id (4 bytes)   +-----+-----+-----+-----+-----+-----+-----+-----+ </pre>
<b>OSPF Area Id</b>	<pre> 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 +-----+-----+-----+-----+-----+-----+-----+-----+  L    Type       Length       Reserved     +-----+-----+-----+-----+-----+-----+-----+-----+   OSPF Area Id (4 bytes)   +-----+-----+-----+-----+-----+-----+-----+-----+ </pre>
<b>ISIS Area Id</b>	<pre> 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 +-----+-----+-----+-----+-----+-----+-----+-----+  L    Type       Length     Area-Len       Reserved     +-----+-----+-----+-----+-----+-----+-----+-----+   IS-IS Area ID   +-----+-----+-----+-----+-----+-----+-----+-----+ </pre>

# Updates from -00: use of sub-objects in

## IRO

- used to specify set of network elements (domains) that MUST be traversed
- Exact semantics depend on the retained choice

## XRO

- used to specify certain domains that MUST be excluded from whole path
- The X-bit indicates whether the exclusion is mandatory or desired

## ERO

- used to specify a computed path in the network.
- Parent PCE can use to calculate the domain-sequence and return it to PCE(1) in ERO [HPCE]

## EXRS

- used to specify exclusion of certain domains between a specific pair of nodes. EXRS are a sub-object inside the IRO

# IRO Options

New IRO Type		(b) Old IRO Type
<ul style="list-style-type: none"> <li>- Can include ordering constraints</li> <li>- Allows Loose and Strict</li> <li>- Separation of Scope</li> </ul>		<ul style="list-style-type: none"> <li>- Status Quo with only the addition of domain sub-objects and no processing rules changed (unknown sub-object handling etc.)</li> </ul>
<p><b>(a.1):</b> New IRO Type to denote domain-sequence only and Old IRO type used for intra-domain</p> <p>PCReq rules changes to allow &lt;IRO-List&gt;</p>	<p><b>(a.2):</b> New IRO Type to include both intra nodes and inter-domains nodes but the order of domain (as &amp; area) is strict. (non-ordered intra-domain nodes can exist)</p> <p>Basically a new IRO type with defined rules for domain sequence ordering</p>	<ul style="list-style-type: none"> <li>- No strict Order (PCE must find the sequence on its own<sup>(1)</sup>) but at the same time in case of doubt, or when doable, PCE can apply the ordering as specified in IRO.</li> <li>-No Loose (L Bit) handling for the sub-objects</li> <li>- Coexistence of intra-domain nodes, boundary nodes and domain nodes in the same IRO List. It is the job of PCE to figure out the scope and apply the processing rules accordingly<sup>(2)</sup></li> </ul>
<p>(1) Domain-sequence is either administratively configured or computed by Parent PCE, in both case the order could be easily dictated, reducing the complexity at PCE. Further PCE may have to crankback and try multiple permutations before figuring out the correct sequence.</p> <p>(2) The nodes in the IRO which are recognized by the PCE are handled locally and others are forwarded to next PCE hoping they would handle them, the aggregating PCE (PCE(1) or Parent) must make sure that all nodes in IRO are handled.</p>		

# WG Poll



oRequest the WG members to provide their preference preferably with clarifying text on the mailing list.

Questions  
&  
Comments?

Thanks!