Source-specific routing

with a mandatory sub-TLV

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The routing decision depends both on the destination and source of the packet. Routing tables map pairs of prefixes (destination, source) to next-hop. The main use case is for host-centric multihoming (with PA addresses).
Source-specific routing in Babel

A natural solution for Babel is to add a source prefix:

- to data structures (source table, route table, etc.)
- to messages: Update, Route Request, Seqno Request.

→ the whole message MUST be ignored by legacy routers

Example: persistent routing loop with partially understood update.
From three TLV to one sub-TLV

Instead of defining three new TLVs, we define only one mandatory sub-TLV

The Source Prefix sub-TLV

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Type = TBD   |    Length     |  Source Plen  | Source Prefix...
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- Source-Specific Update
- Source-Specific Route Request
- Source-Specific Seqno Request

\[\text{draft-boutier-babel-source-specific-01}\]

\[\text{draft-boutier-babel-source-specific-03}\]
Incompatibility with 6126

RFC 6126 doesn't handle mandatory sub-TLVs

A 6126 router will:

→ ignore the sub-TLV,
→ install the route (as a legacy route),
→ announce the installed route.

persistent routing loop due to partially understood update.

-03: implement this draft
L: 6126 router (with or without -01 source-specific routing)
Implementation Status

It's implemented.

It works.

It uses an experimental sub-TLV type.
Wildcard requests

6126 says: « AE == 0 requests a full routing table dump »

Problems: a legacy router asks only for legacy routes.

- Does sending all routes break the semantics?
- Sending more routes is waste.
- If each extension define its requests, how to combine extensions?
Wildcard requests (2)

6126 says: « AE == 0 requests a full routing table dump »

Proposals overview (detailed in the draft):

- request a full dump, reply with a full dump,
- request for each extension and combination of extensions, reply with the requested routes,
- request for each extension, reply with the requested routes and combinations,
- deprecate wildcard route requests.
Remaining proposals

1. Put one Wildcard Route Request (WRR).

2. Put one WRR with all sub-TLVs you know but without mandatory bit.

3. Put one WRR per extension and per combinations.

4. Deprecate WRR.

5. Define a new sub-TLV with one field per extension. Send understood combinations.

6. Put one WRR per extension. Send understood combinations.
Wildcard updates

A wildcard update is, in fact, a wildcard retraction.

As Juliusz wrote:

*Think of a wildcard retraction as saying "I'm shutting down really soon now, please route around me."*

of course, you will also retract source-specific routes

→ no source-specific wildcard retraction
Conclusion

- Thanks to mandatory sub-TLVs.
- It's implemented, it works…
- Choosing a sub-TLV number for the Source Prefix sub-TLV: \( \rightarrow 128? \)
- Choosing a proposal for source-specific requests.

Working group adoption?