

Asymmetric OSPF Hold Timer

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Problem Statement

- Networking infrastructure is now critical for businesses.
 - Vendors support high availability and built-in redundancy to meet customer needs.
- For routing protocols like OSPF, these needs translate to support for:
 - Stateful recovery in cases such as a process crash.
 - In-Service System Upgrade (ISSU)

Applicable Use Cases

- State restoration based recovery has advantages over Graceful Restart.
 - + No co-operation needed from adjacent routers.
 - + No additional control plane traffic between neighbors
 - + No requirement that topology remain stable during this window.
 - OSPF process may be busy during state restoration and may not be able to send out HELLOs on time, especially with aggressive HELLO timers.
 - Use Asymmetric hold timers to overcome this limitation.

Applicable Use Cases

1. Asymmetric HELLOs may be useful in other scenarios such as differently loaded routers (e.g., routers in a hub and spoke topology).
2. Useful in ISSU scenario to temporarily bump the hold time while ISSU is in progress

Asymmetric hold timers

- Goals
 1. Allow different ends of OSPF adjacency to have different hold timers.
 2. No explicit handshake should be needed when the (asymmetric) hold timer changes.
 3. Allow for graceful adjacency bring down if routers don't support the asymmetric hold timers (backward compatibility)

Sending HELLOs

- Sending HELLOs with Asymmetric hold timers
 - Use CLI to configure the hold timer(s).
 - Add a new LLS block to the HELLO packet. Set the L bit.
 - A new TLV will be introduced for this purpose.
 - The value of the hold timer (potentially asymmetric) will be specified in this block.
 - OSPF HELLO packet MUST set the HELLO and dead interval to 0.
 - To stop announcing the asymmetric hold timer, OSPF routers will simply revert back to the non-zero values in the HELLO packet.

Receiving HELLOs

- Routers that recognize this new extended options will set the value of the neighbor dead interval to the value specified in the LLS block TLV.
- Routers that do not recognize the extended options would drop adjacency as it will not match with the configured (or default) HELLO or dead interval as specified in Sec 10.5 of RFC 2328.
- If the HELLO **and** dead interval both are not set to 0, then a router **MUST** not process the new LLS block.

Next Steps

- Adopt as a WG Document
 - Category: Proposed Standard.

Backup

1. BFD and OSPF. It is possible to use BFD for fast link-down detection, but,
 - OSPF HELLOs cannot be eliminated as they are used for neighbor discovery (and other sanity checks).
 - End-to-end BFD support may not exist in customer environments.
 - BFD approach has its own performance limitations.