IKEv2 Optional SA&TS Payloads in Child Exchange

https://datatracker.ietf.org/doc/draft-kampati-ipsecme-ikev2-sa-ts-payloads-opt/

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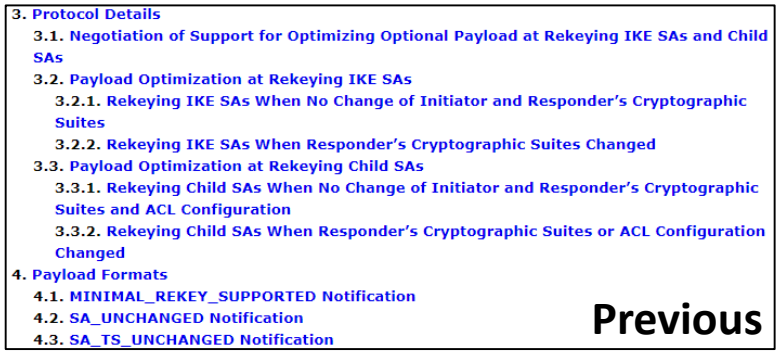
Updates from -02 to -07

- Whole solution is much simpler, text is more readable
  - 3 steps of optimization:
    - Negotiation of support for rekey optimization
    - Initiator and responder omit the SA payloads at rekeying IKE SAs
    - Initiator and responder omit the SA and TS payloads at rekeying Child SAs
  - No more consideration for the situation of configuration change
  - 2 new Notify Message type notifications are needed (Previous was 3)



- Two co-authors added: Paul Wouters (Aiven), Meiling Chen (CMCC)

3 Steps of Optimizations

- Negotiation of Support for OPTIMIZED REKEY

```
Initiator                           Responder
-----------------------------------------------------------------------
HDR, SK {IDi, [CERT,] [CERTREQ,]
    [IDr,] AUTH, SAi2, TSi, TSr,
    N(OPTIMIZED_REKEY_SUPPORTED)} -->
                                <-- HDR, SK {IDr, [CERT,] AUTH,
                                        SAr2, TSi, TSr,
                                        N(OPTIMIZED_REKEY_SUPPORTED)}
```

- Optimized Rekey of the IKE SA

```
Initiator                           Responder
-----------------------------------------------------------------------
HDR, SK {N(OPTIMIZED_REKEY),
    Ni, KEi} -->
                                <-- HDR, SK {N(OPTIMIZED_REKEY),
                                        Nr, KEr}
```

- Optimized Rekey of Child SAs

```
Initiator                           Responder
-----------------------------------------------------------------------
HDR, SK {N(REKEY_SA), N(OPTIMIZED_REKEY),
    Ni, [KEi,]} -->
                                <-- HDR, SK {N(OPTIMIZED_REKEY),
                                        Nr, [KEr,]}
```

Open questions

- 1) Should the SUPPORTED notify mean that peers MAY/SHOULD/MUST use this method?
- 2) Alternatively, the SUPPORTED notify could have a payload that signifies whether the old method is supported or not.
- 3) When a Child SA was negotiated with PFS, what should an optimized rekey do when there is no KE payload? Send INVALID_KE_PAYLOAD?

Next Steps

- Ask for WG adoption
- Discuss and close the open questions
- Looking for implementations to do interop testing