



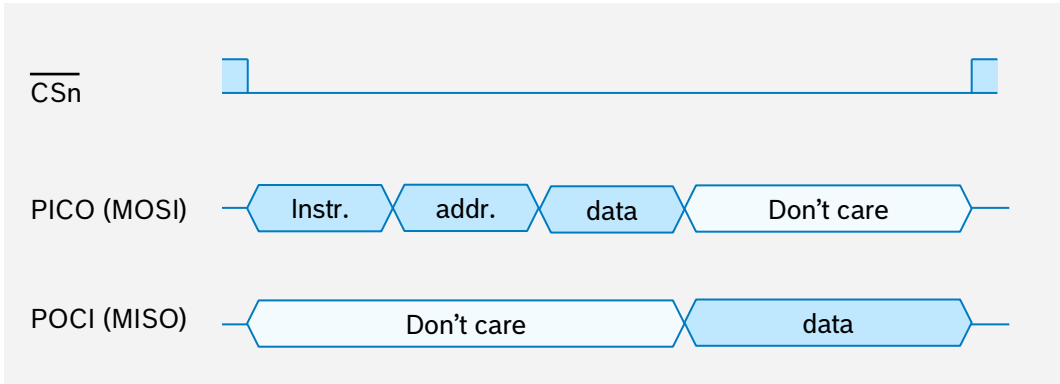
Full-Duplex SPI over GBB – Part III

Adriaan Niess,
Bosch XC/EYA2,
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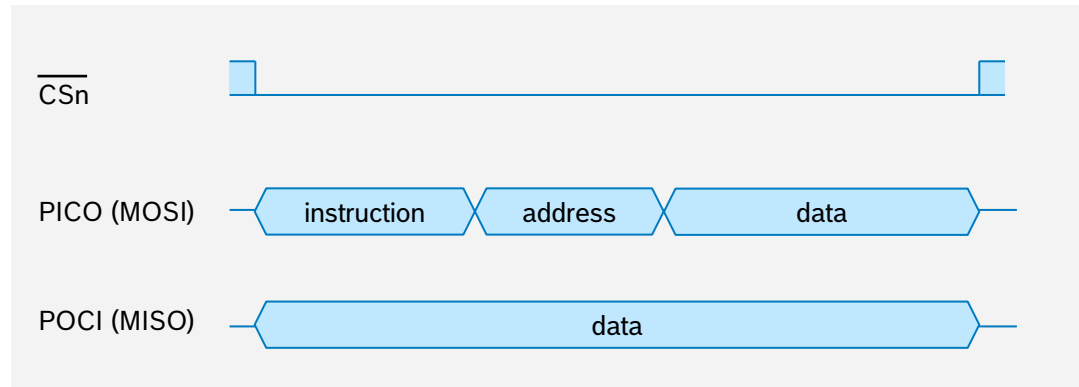
SPI over GBB

What is missing from Annex O?

Status quo according to Annex O - SPI Device operating in half-duplex mode



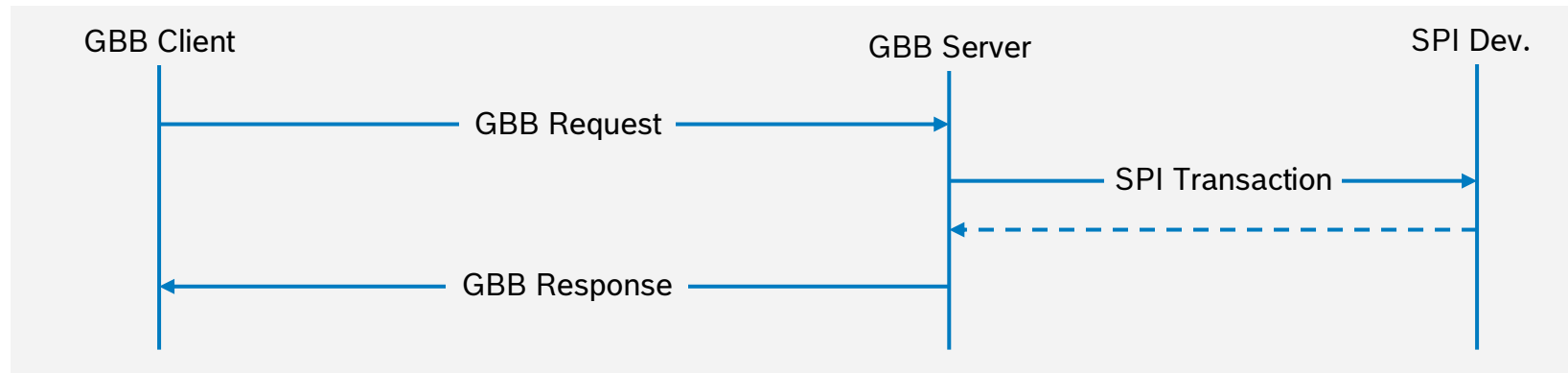
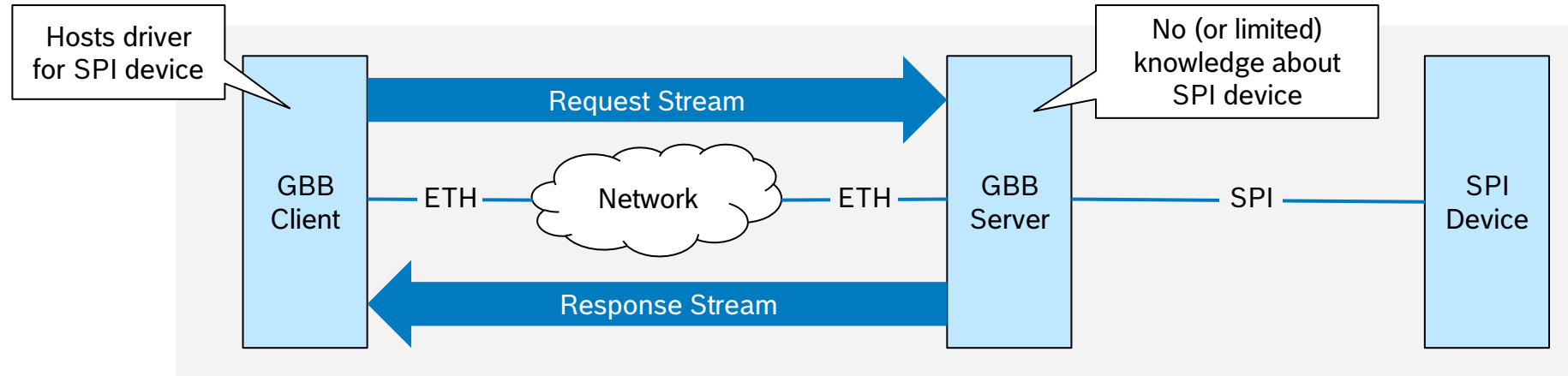
What is missing? SPI Devices operating in full-duplex are not supported by Annex O!



There are SPI devices that might alternate between half- and full-duplex SPI transfers

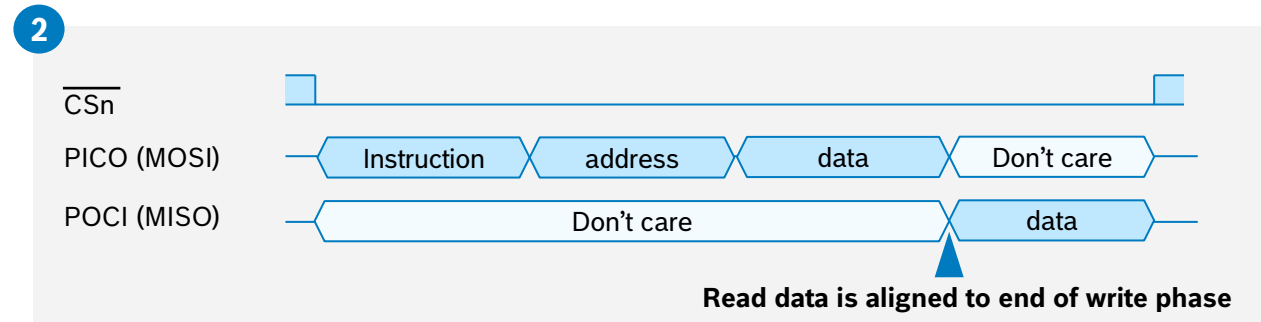
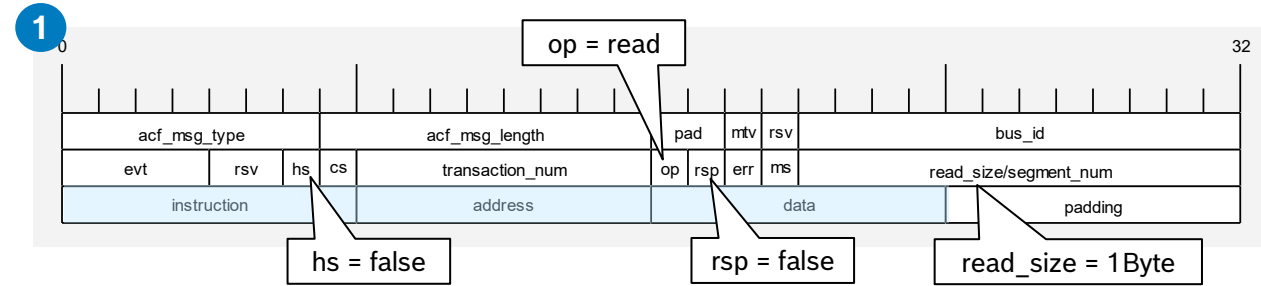
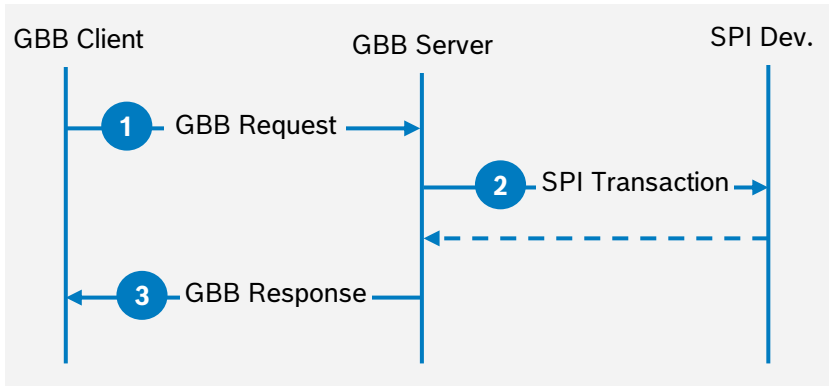
SPI over GBB

System View and Terminology



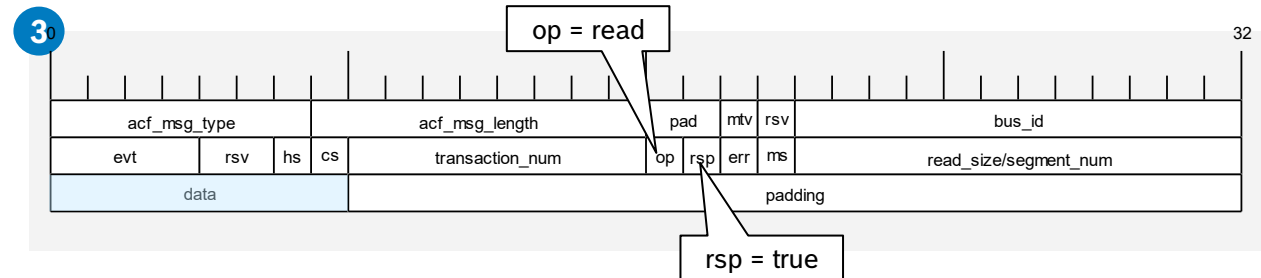
SPI over GBB

Half-Duplex SPI Transfer over GBB (Status Quo)



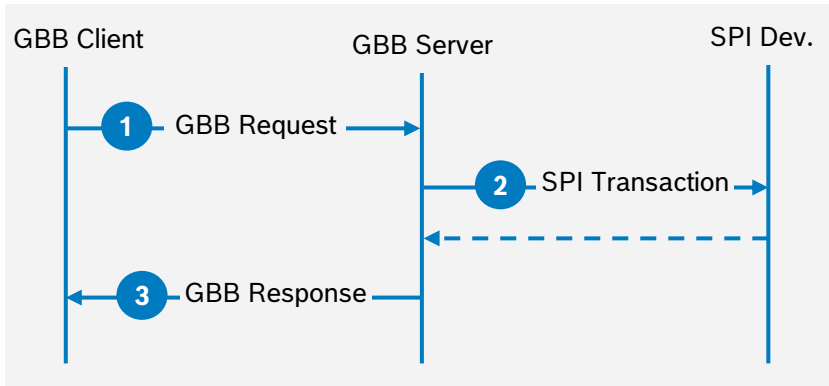
Summary:

- Write/Read phases are non-overlapping
- Don't care data not transported in GBB request/response
- $\text{spi_transfer_len} = \text{acf_payload_len} + \text{read_size}$
- hs-bit is not used for SPI over GBB, set to false.



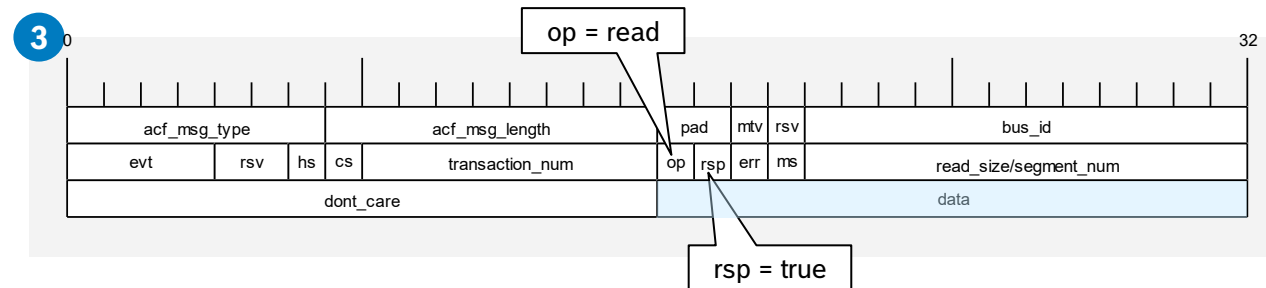
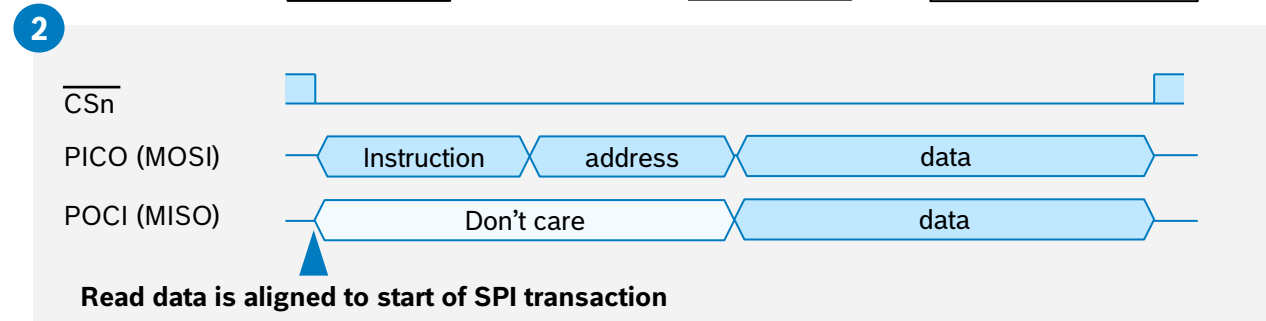
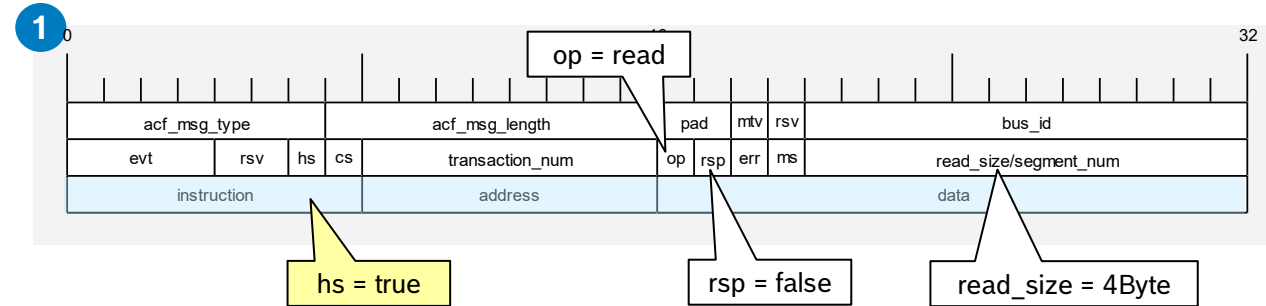
SPI over GBB

Full-Duplex SPI Transfer over GBB (Proposal)



Summary:

- Write/Read phases are overlapping
- Don't care data is transported in GBB request/response
- hs-bit used as full-duplex bit
- Typically for full-duplex transfers the don't care part is relatively small (about 1-4 bytes). It's more efficient to just transport don't care data, than to specify e.g. an offset.
- GBB Client has the knowledge to remove the don't care bytes (if needed)
- $\text{spi_transfer_len} = \max(\text{acf_payload_len}, \text{read_size})$



SPI over GBB

Previous Presentations

https://grouper.ieee.org/groups/1722/contributions/2024/2024_08_27_spi_proposal_1722c.pdf

https://grouper.ieee.org/groups/1722/contributions/2024/2024_09_24_spi_proposal_1722c_part2.pdf