

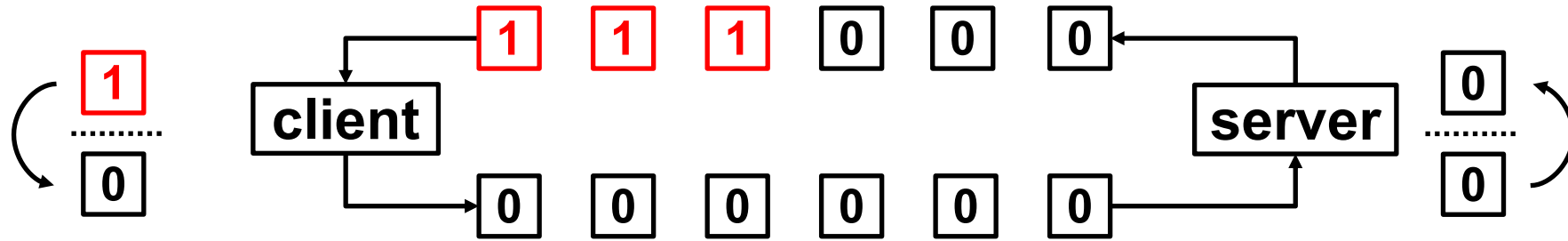
Putting the Spin Bit under the Microscope

work in progress

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RWTH Aachen University

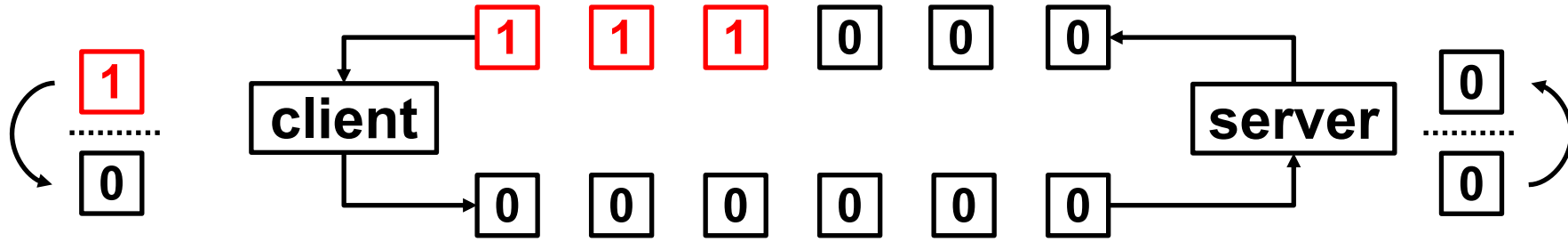
The Spin Bit & IETF-118 Recap

- *Optional*, explicit RTT measurement signal in QUIC



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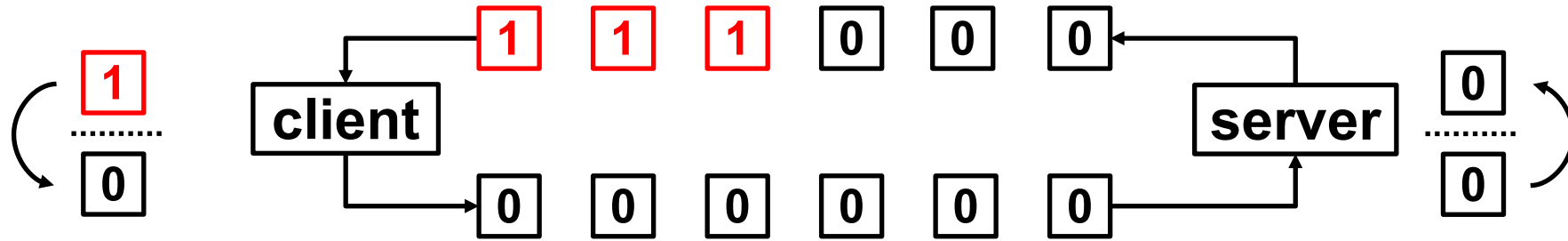


- **Spin bit** findings of our longitudinal QUIC web measurements (IMC '23 paper [1])
 - ▶ Used by ~10% of domains with QUIC support and supported by ~50% of underlying hosts

[1] <https://doi.org/10.1145/3618257.3624844>

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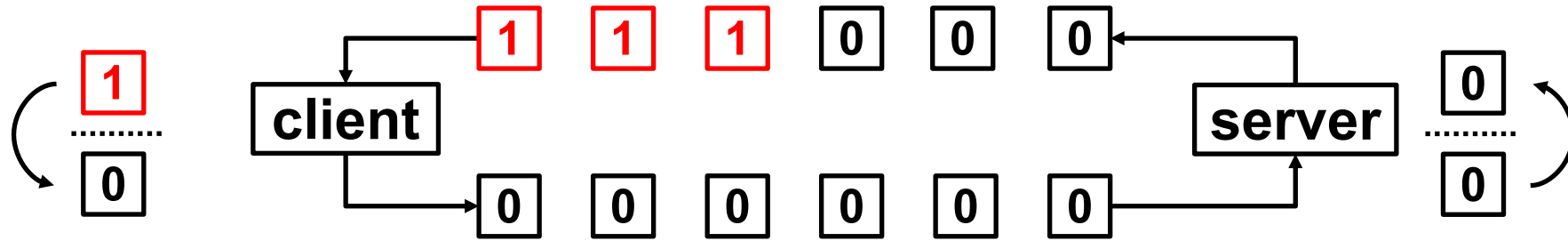


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 - But: limited methodology

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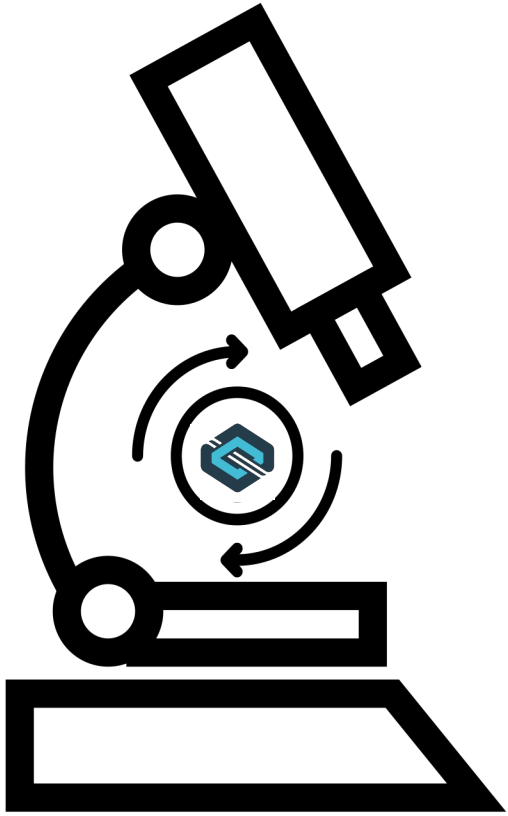
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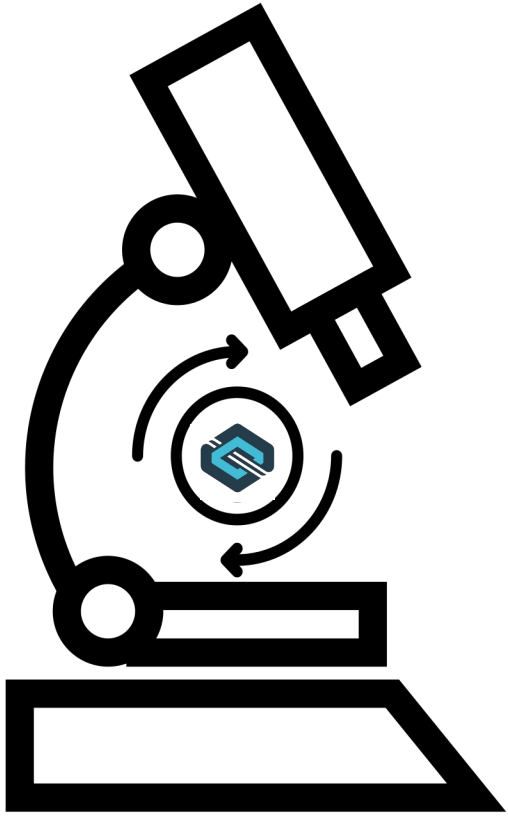
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 - But: limited methodology
- ▶ Very accurate (diff < 25%) for one third of connections
 - But: very inaccurate (diff > 400%) for more than half of connections

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Digging into mandatory disabling compliance

- Extensions to our measurement pipeline
 - Selective checks of domains that spin

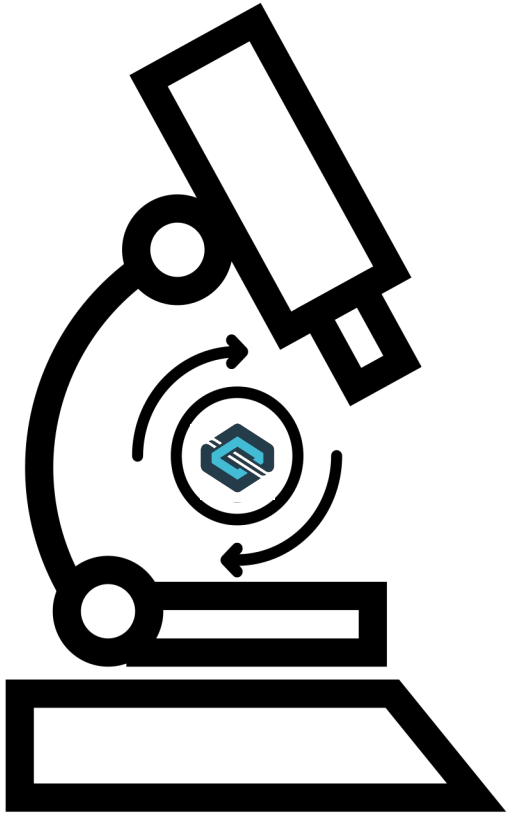


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Understanding the real-world RTT overestimations

- In-depth RTT estimation analysis
 - A more fine-grained view into the RTT estimations



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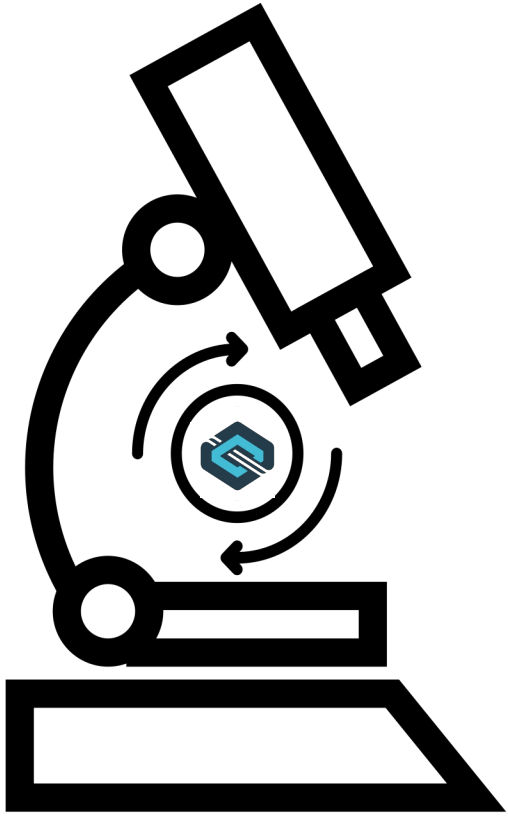
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- Testbed (parameter/configuration) study of different QUIC stacks
 - Do stacks & their configurations affect the RTT estimations?



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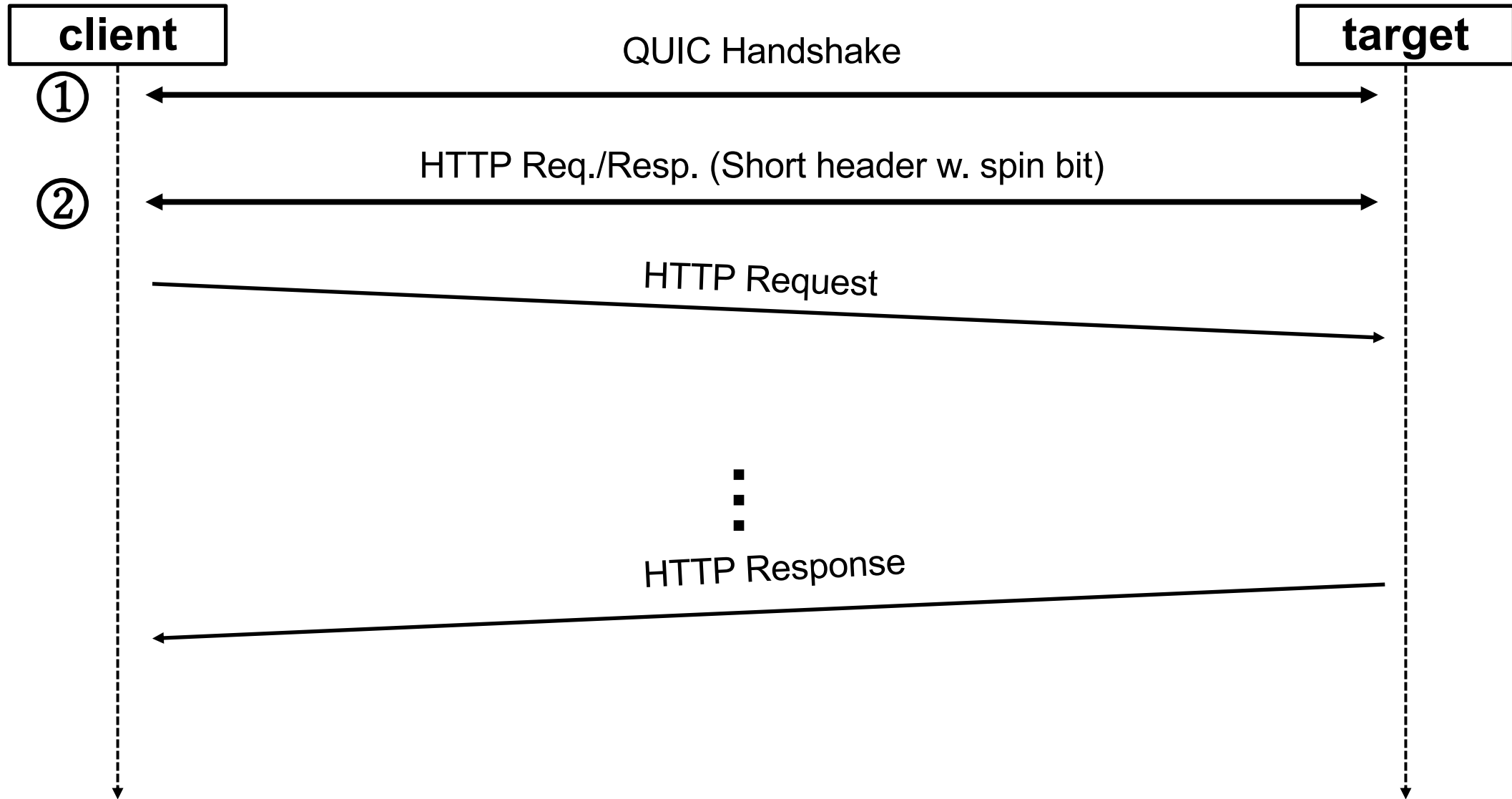
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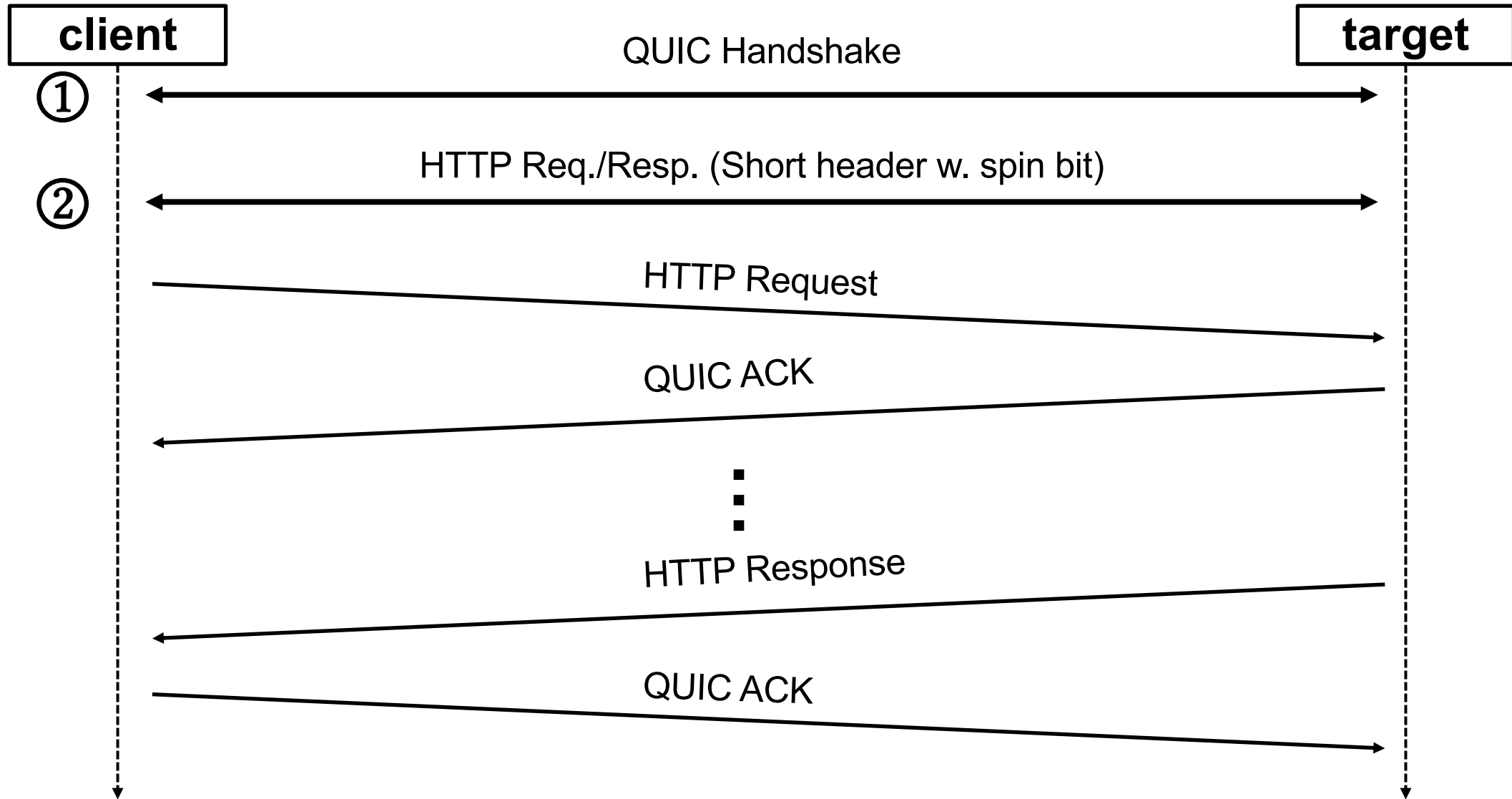
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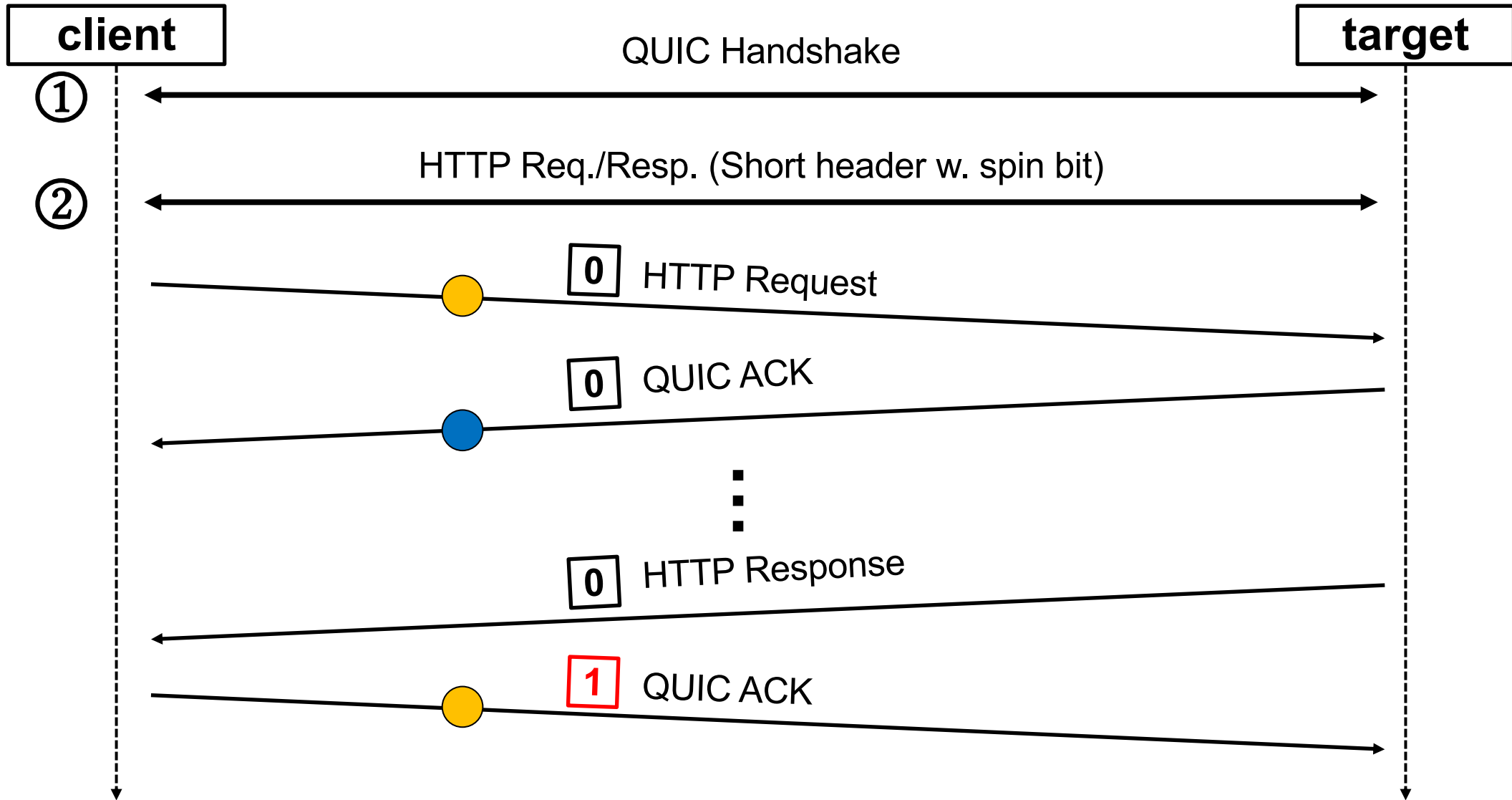
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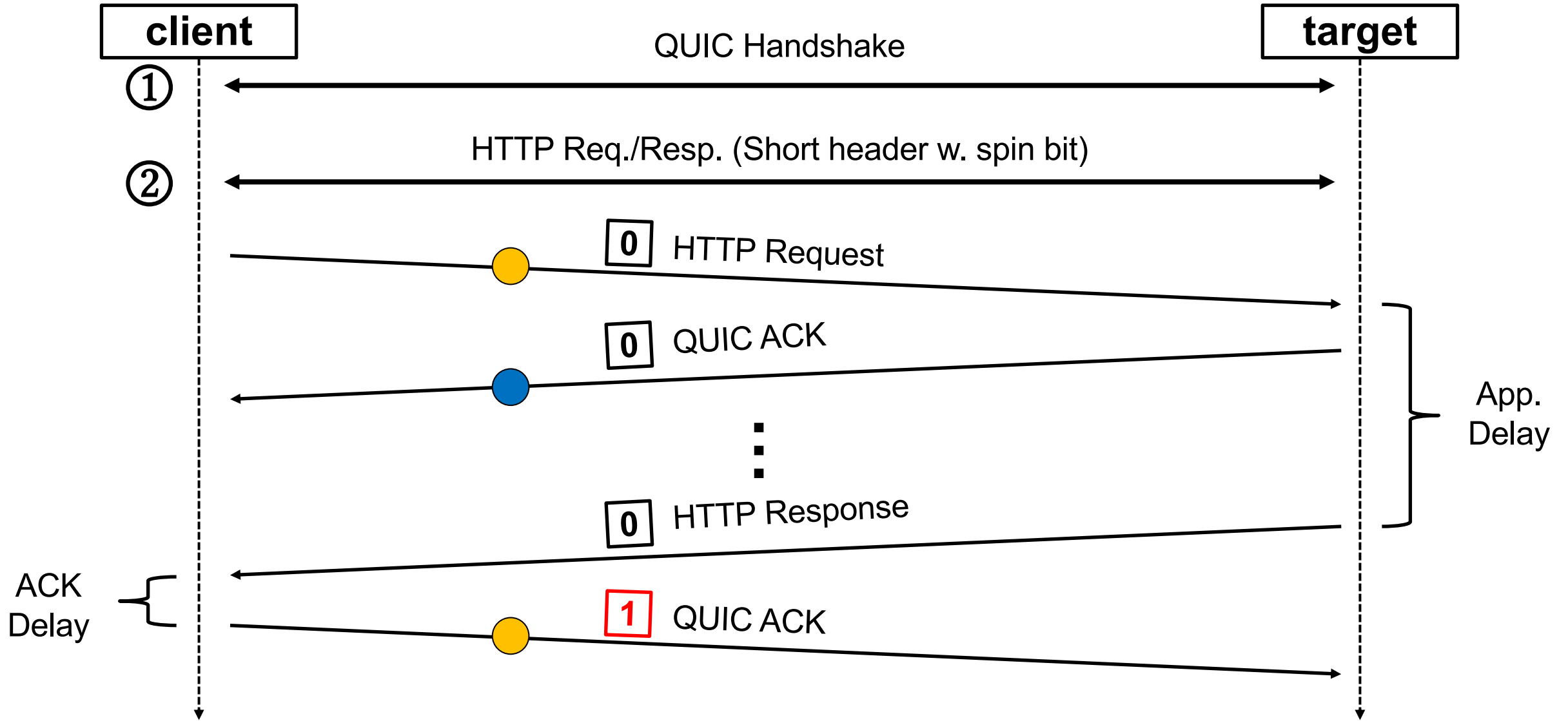
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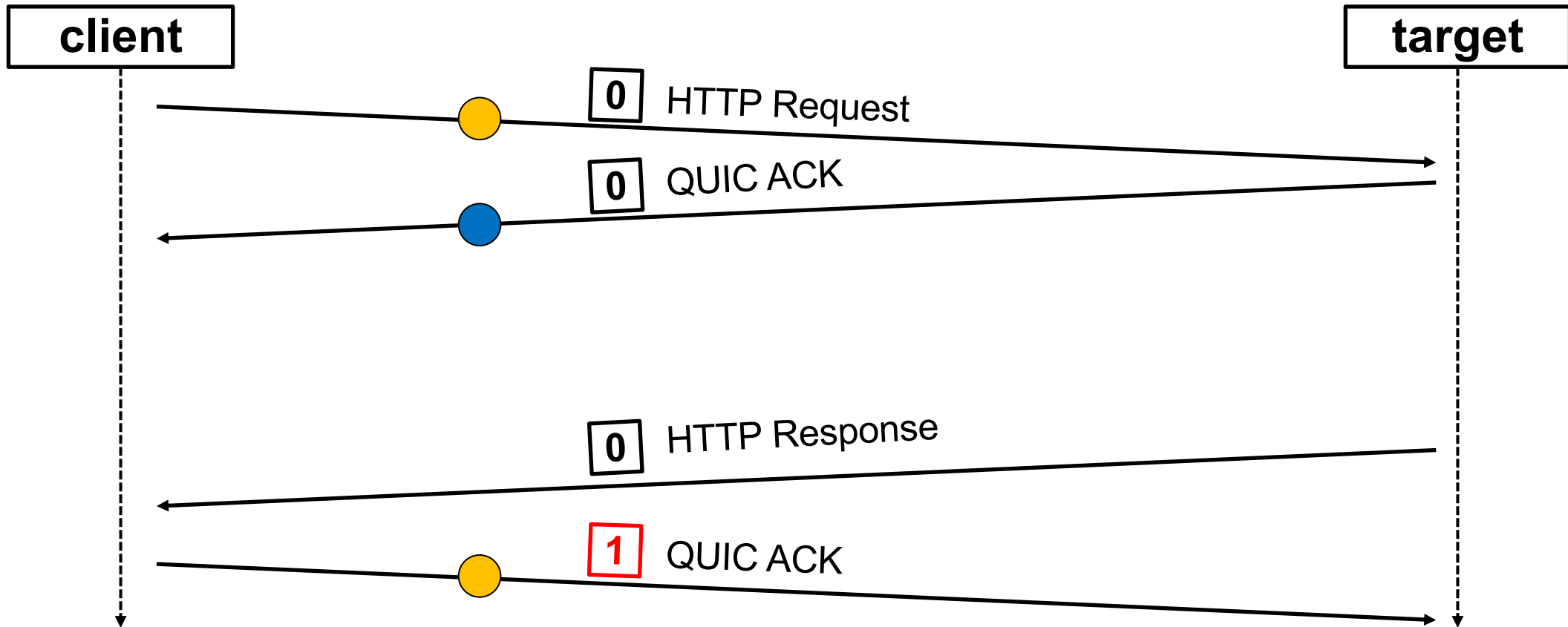


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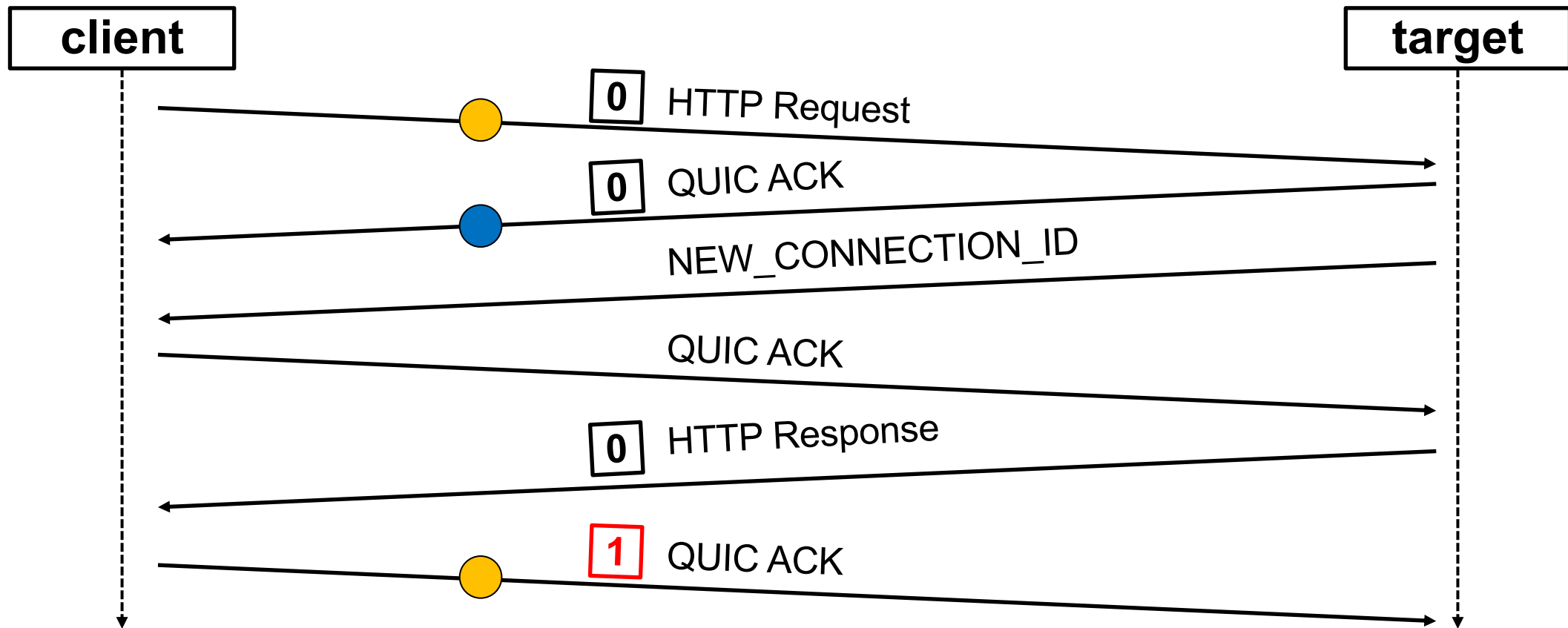
QUIC “Control Traffic” Patterns Impact Spin Bit Estimations

- NEW_CONNECTION_ID / RETIRE_CONNECTION_ID



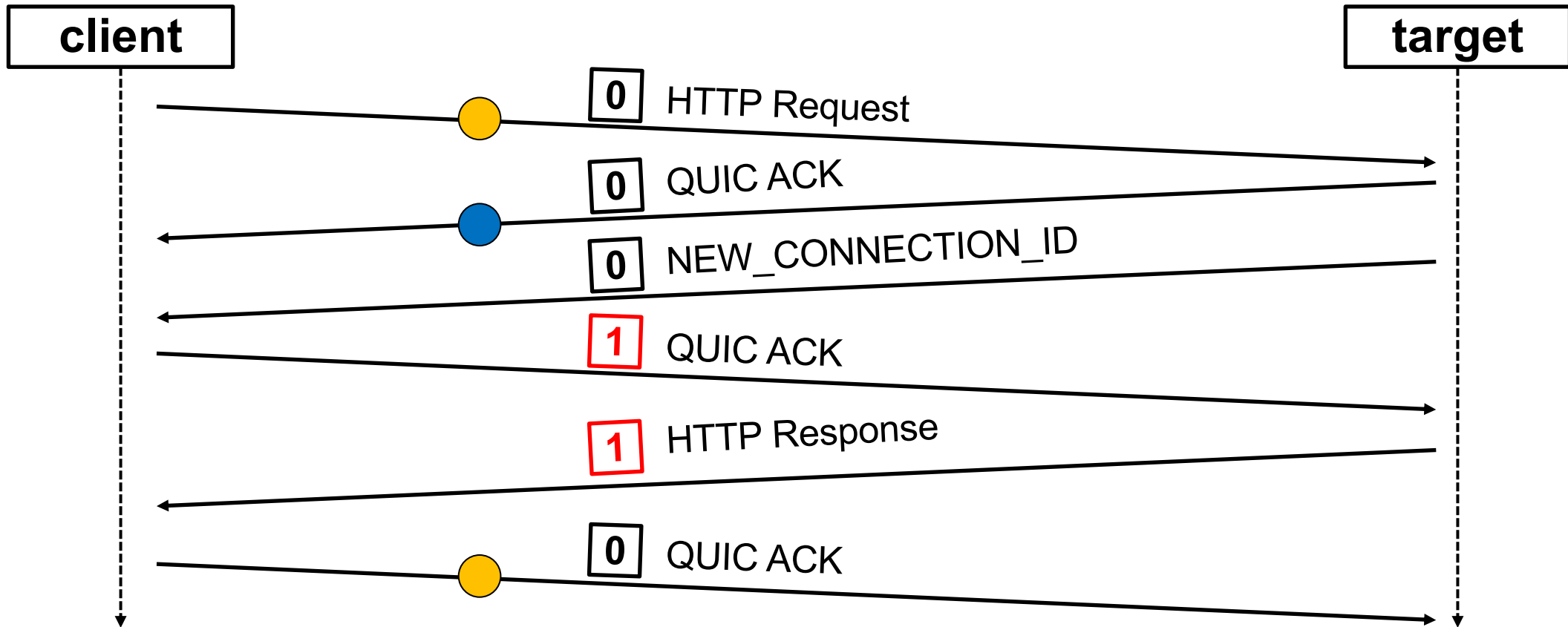
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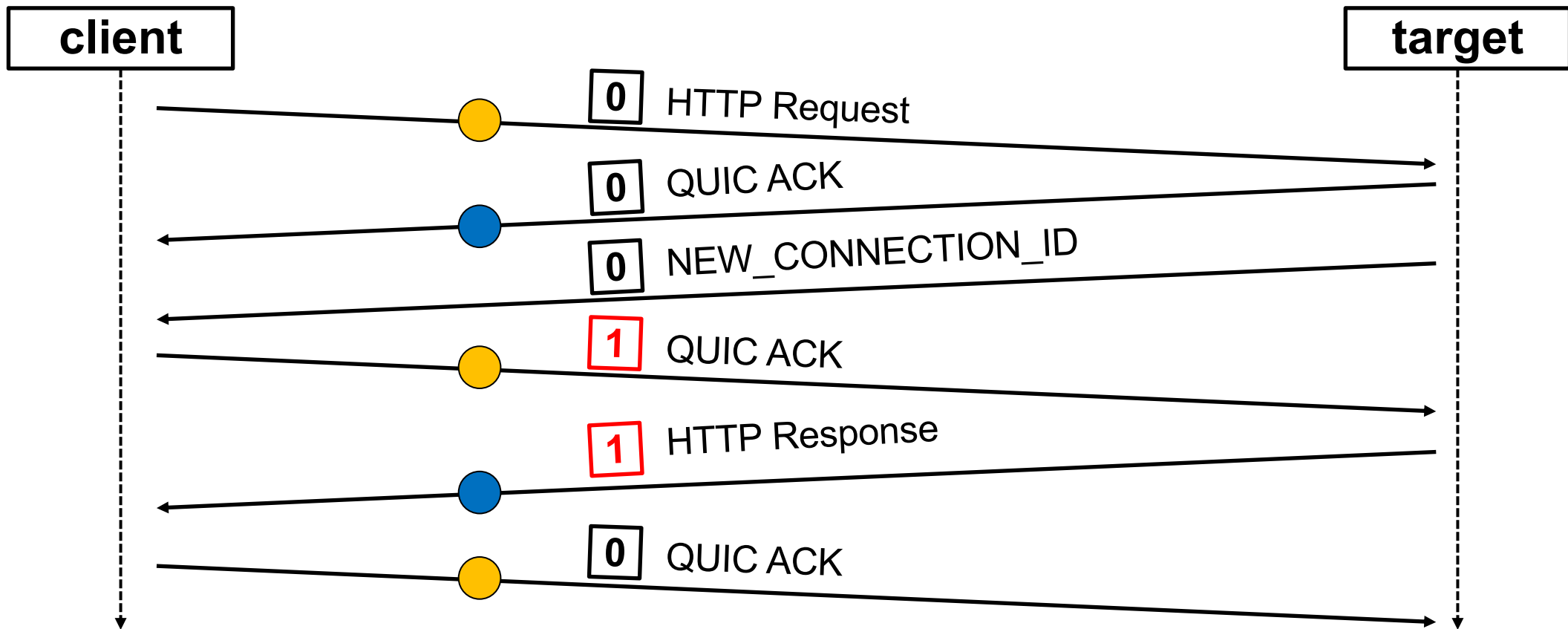
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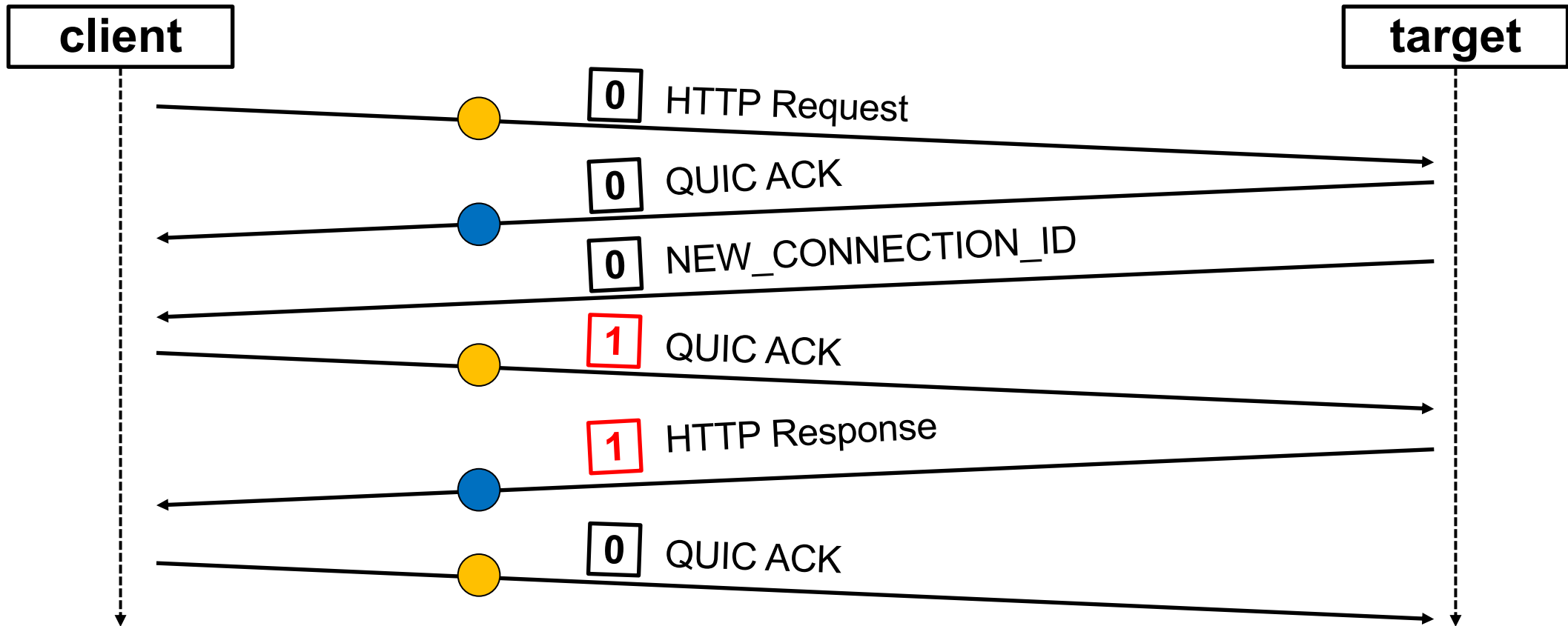
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- **Planned next steps**
 - ▶ Testbed study to investigate impact/behavior of different stacks and parameterizations

Conclusion

- **Spin bit**
 - ▶ used in the wild
 - ▶ real-world behavior not yet fully understood
- **Ongoing work to dig deeper into**
 - ▶ Mandatory disabling
 - ▶ Real-world RTT overestimation
 - ▶ Stack-specific behavior
- **Interested in contributing?**
 kunze@comsys.rwth-aachen.de

