

# Updates to 0-RTT-BDP

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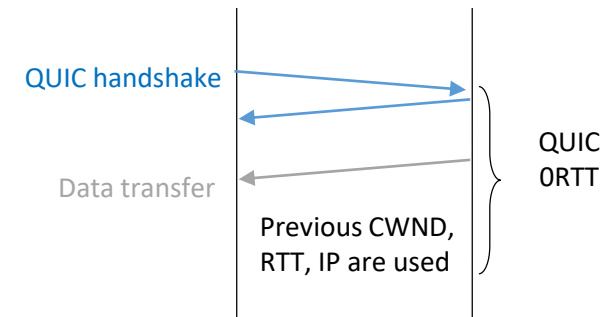
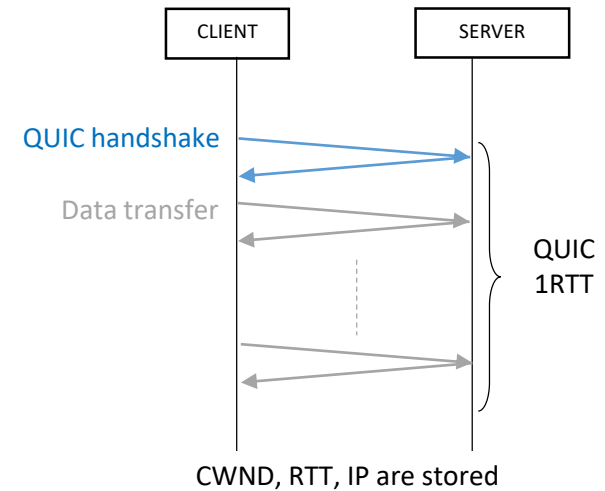
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# ORTTBDP

## Core idea

1. During a previous session, current RTT (`current_rtt`), CWND (`current_cwnd`) and client's current IP (`current_client_ip`) are stored as `saved_rtt`, `saved_cwnd` and `saved_client_ip`;

2. When resuming a session, the server might set the `current_rtt` and the `current_cwnd` to the `saved_rtt` and `saved_cwnd` of a previous connection.



# Rationale behind the safety guidelines

Previously measured `saved_rtt` and `saved_cwnd` should not be used as-is to avoid potential congestion collapse:

- Rationale #1: An Internet method needs to be robust to network conditions that can differ between sessions.
- Rationale #2: Information sent by a malicious client would not be relevant since it might try to convince servers to use a CWND higher than required. This could increase congestion.

# Solutions and associated trade-offs

Rationale	Solution	Advantage	Drawback
#1 : Variable network	#1 : set_current_* to saved_*	Ingress optimization	Risks of adding congestion
	#2 : implement safety check	Reduce risks of adding congestion	Negative impact on ingress optimization
#2 : Malicious client	#1 : Local storage	Enforced security	Client can not decide to reject Malicious server could fill client's buffer Limited use-cases
	#2 : NEW_TOKEN	Save resource at server Opaque token protected	Malicious client may change token even if protected Malicious server could fill client's buffer Server may not trust client
	#3 : BDP extension	Extended use-cases Save resource at server Client can read and decide to reject BDP extension protected	Malicious client may change BDP even it protected Server may not trust client

# Next steps

## Status

draft-kuhn-quick-Ortt-bdp includes 3 methods

- 2 methods are implemented in picoquic
  - BDP frame - <https://github.com/private-octopus/picoquic/pull/1209>
  - local storage of CWND, RTT parameters - <https://github.com/private-octopus/picoquic/pull/1204>
- **Next**
  - Looking for other implementers
  - Integration in QUIC interop matrix