

A**B****1. Send HTLC 't' with amount 'x' to B**

(Invoked after HTLC initiate for 't' has been processed on upstream channel S-A.)

If **queue** is empty and **balance** $\geq x$
balance $\mathrel{-=} x$

Add 't' to **in-flight outgoing**.

Send HTLC initiate for 't' to B.

Else add 't' to **queue**.

4. Process Ack for 't' received from B

Remove 't' from **in-flight outgoing**.

Send Balance Update for 't' to B.

Send Ack for 't' on channel S-A.

2. Process HTLC initiate for 't' received from A

Add 't' to **in-flight incoming**.

Find downstream channel B-C.

Invoke function to send 't' on B-C.

3. Send Ack for 't' to A

(Invoked after Ack for 't' has been processed on downstream channel B-C.)

Simply forward Ack for 't' to A.

5. Process Balance Update for 't' received from A

Remove 't' from **in-flight incoming**.

balance $\mathrel{+=} x$

Send as many HTLC in **queue** as possible to A.

HTLC initiate

Ack

Balance Update