

$P_\omega$  : *payment.weiValue*  
 $P_\iota$  : *payment.time*  
 $P_\tau$  : *payment.timestamp*  
 $P_\rho$  : *payment.weiPaid*  
 $\tau_b$  : *block.timestamp*

$$paymentWeiOwed = \frac{P_\omega}{P_\iota} \min(\tau_b - P_\tau, P_\iota) - P_\rho$$

For a payment of 500 wei over 100 seconds created at block timestamp 50 the following would be true:

$P_\omega = 500$   
 $P_\iota = 100$   
 $P_\tau = 50$   
 $P_\rho = 0$

**Case 1** Assuming the current block timestamp is 50 (the time of payment creation), the following is true

$$\begin{aligned}
 paymentWeiOwed &= \frac{500}{100} \min(50 - 50, 100) - 0 \\
 &= 5 \min(0, 100) - 0 \\
 &= 5 * 0 - 0 \\
 &= 0
 \end{aligned}$$

**Case 2** Assuming the current block timestamp is 75 (25% into payment), the following is true

$$\begin{aligned}
paymentWeiOwed &= \frac{500}{100}min(75 - 50, 100) - 0 \\
&= 5min(25, 100) - 0 \\
&= 5 * 25 - 0 \\
&= 125
\end{aligned}$$

Assume the user has settled at block timestamp 75. 125 wei is transferred to the recipient balance and the following becomes true:

$$P_{\rho} = 125$$

**Case 3** Assuming the current block timestamp is 100 (50% into payment), the following is true

$$\begin{aligned}
paymentWeiOwed &= \frac{500}{100}min(100 - 50, 100) - 125 \\
&= 5min(50, 100) - 125 \\
&= 5 * 50 - 125 \\
&= 250 - 125 \\
&= 125
\end{aligned}$$

**Case 4** Assuming the current block timestamp is 200 (150% into payment), the following is true

$$\begin{aligned}
paymentWeiOwed &= \frac{500}{100}min(200 - 50, 100) - 125 \\
&= 5min(150, 100) - 125 \\
&= 5 * 100 - 125 \\
&= 500 - 125 \\
&= 375
\end{aligned}$$

Assume the user has settled at block timestamp 200. 375 wei is transferred to the recipient balance and the following becomes true:

$$P_{\rho} = 500$$

**Case 5** *Assuming the current block timestamp is 250 (200% into payment), the following is true*

$$\begin{aligned} paymentWeiOwed &= \frac{500}{100} min(250 - 50, 100) - 500 \\ &= 5 min(200, 100) - 500 \\ &= 5 * 100 - 500 \\ &= 500 - 500 \\ &= 0 \end{aligned}$$

paymentWeiOwed evaluates to 0 as the block timestamp approaches infinity; the payment is completed