

This is a C code project for learning about Ethereum communication.

For example, consider the following documentation from the Ethereum project website.<sup>1</sup>

Alice wants to send an encrypted message that can be decrypted by Bob's static private key  $k_B$ . Alice knows about Bob's static public key  $K_B$ .

To encrypt the message  $m$ , Alice generates a random number  $r$  and corresponding elliptic curve public key  $R = r * G$  and computes the shared secret  $S = P_x$  where  $(P_x, P_y) = r * K_B$ . She derives key material for encryption and authentication as  $k_E \parallel k_M = \text{KDF}(S, 32)$  as well as a random initialization vector  $\text{iv}$ . Alice sends the encrypted message  $R \parallel \text{iv} \parallel c \parallel d$  where  $c = \text{AES}(k_E, \text{iv}, m)$  and  $d = \text{MAC}(\text{sha256}(k_M), \text{iv} \parallel c)$  to Bob.

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<sup>1</sup><https://github.com/ethereum/devp2p/blob/master/rlpx.md>