

**NAME**

DH\_generate\_key, DH\_compute\_key - perform Diffie-Hellman key exchange

**SYNOPSIS**

```
#include <openssl/dh.h>
```

```
int DH_generate_key(DH *dh);
```

```
int DH_compute_key(unsigned char *key, BIGNUM *pub_key, DH *dh);
```

**DESCRIPTION**

*DH\_generate\_key()* performs the first step of a Diffie-Hellman key exchange by generating private and public DH values. By calling *DH\_compute\_key()*, these are combined with the other party's public value to compute the shared key.

*DH\_generate\_key()* expects **dh** to contain the shared parameters **dh->p** and **dh->g**. It generates a random private DH value unless **dh->priv\_key** is already set, and computes the corresponding public value **dh->pub\_key**, which can then be published.

*DH\_compute\_key()* computes the shared secret from the private DH value in **dh** and the other party's public value in **pub\_key** and stores it in **key**. **key** must point to **DH\_size(dh)** bytes of memory.

**RETURN VALUES**

*DH\_generate\_key()* returns 1 on success, 0 otherwise.

*DH\_compute\_key()* returns the size of the shared secret on success, -1 on error.

The error codes can be obtained by [ERR\\_get\\_error\(3\)](#).

**SEE ALSO**

[dh\(3\)](#), [ERR\\_get\\_error\(3\)](#), [rand\(3\)](#), [DH\\_size\(3\)](#)

**HISTORY**

*DH\_generate\_key()* and *DH\_compute\_key()* are available in all versions of SSLey and OpenSSL.