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## ***Red Hat Enterprise Linux Release 9.2 Manual Pages on 'DH\_meth\_new.3ossl' command***

***\$ man DH\_meth\_new.3ossl***

DH\_METH\_NEW(3ossl)            OpenSSL            DH\_METH\_NEW(3ossl)

### NAME

DH\_meth\_new, DH\_meth\_free, DH\_meth\_dup, DH\_meth\_get0\_name,  
DH\_meth\_set1\_name, DH\_meth\_get\_flags, DH\_meth\_set\_flags,  
DH\_meth\_get0\_app\_data, DH\_meth\_set0\_app\_data, DH\_meth\_get\_generate\_key,  
DH\_meth\_set\_generate\_key, DH\_meth\_get\_compute\_key,  
DH\_meth\_set\_compute\_key, DH\_meth\_get\_bn\_mod\_exp,  
DH\_meth\_set\_bn\_mod\_exp, DH\_meth\_get\_init, DH\_meth\_set\_init,  
DH\_meth\_get\_finish, DH\_meth\_set\_finish, DH\_meth\_get\_generate\_params,  
DH\_meth\_set\_generate\_params - Routines to build up DH methods

### SYNOPSIS

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

The following functions have been deprecated since OpenSSL 3.0, and can be hidden entirely by defining OPENSSL\_API\_COMPAT with a suitable version value, see openssl\_user\_macros(7):

```
DH_METHOD *DH_meth_new(const char *name, int flags);
```

```
void DH_meth_free(DH_METHOD *dhm);
```

```

DH_METHOD *DH_meth_dup(const DH_METHOD *dhm);

const char *DH_meth_get0_name(const DH_METHOD *dhm);
int DH_meth_set1_name(DH_METHOD *dhm, const char *name);

int DH_meth_get_flags(const DH_METHOD *dhm);
int DH_meth_set_flags(DH_METHOD *dhm, int flags);

void *DH_meth_get0_app_data(const DH_METHOD *dhm);
int DH_meth_set0_app_data(DH_METHOD *dhm, void *app_data);

int (*DH_meth_get_generate_key(const DH_METHOD *dhm))(DH *);
int DH_meth_set_generate_key(DH_METHOD *dhm, int (*generate_key)(DH *));

int (*DH_meth_get_compute_key(const DH_METHOD *dhm))
(unsigned char *key, const BIGNUM *pub_key, DH *dh);
int DH_meth_set_compute_key(DH_METHOD *dhm,
int (*compute_key)(unsigned char *key, const BIGNUM *pub_key, DH *dh));

int (*DH_meth_get_bn_mod_exp(const DH_METHOD *dhm))
(const DH *dh, BIGNUM *r, const BIGNUM *a, const BIGNUM *p,
const BIGNUM *m, BN_CTX *ctx, BN_MONT_CTX *m_ctx);
int DH_meth_set_bn_mod_exp(DH_METHOD *dhm,
int (*bn_mod_exp)(const DH *dh, BIGNUM *r, const BIGNUM *a,
const BIGNUM *p, const BIGNUM *m, BN_CTX *ctx,
BN_MONT_CTX *m_ctx));

int (*DH_meth_get_init(const DH_METHOD *dhm))(DH *);
int DH_meth_set_init(DH_METHOD *dhm, int (*init)(DH *));

int (*DH_meth_get_finish(const DH_METHOD *dhm))(DH *);
int DH_meth_set_finish(DH_METHOD *dhm, int (*finish)(DH *));

```

```
int (*DH_meth_get_generate_params(const DH_METHOD *dhm))
    (DH *, int, int, BN_GENCB *);

int DH_meth_set_generate_params(DH_METHOD *dhm,
    int (*generate_params)(DH *, int, int, BN_GENCB *));
```

## DESCRIPTION

All of the functions described on this page are deprecated.

Applications should instead use the provider APIs.

The `DH_METHOD` type is a structure used for the provision of custom DH implementations. It provides a set of functions used by OpenSSL for the implementation of the various DH capabilities.

`DH_meth_new()` creates a new `DH_METHOD` structure. It should be given a unique name and a set of flags. The name should be a NULL terminated string, which will be duplicated and stored in the `DH_METHOD` object. It is the caller's responsibility to free the original string. The flags will be used during the construction of a new DH object based on this `DH_METHOD`. Any new DH object will have those flags set by default.

`DH_meth_dup()` creates a duplicate copy of the `DH_METHOD` object passed as a parameter. This might be useful for creating a new `DH_METHOD` based on an existing one, but with some differences.

`DH_meth_free()` destroys a `DH_METHOD` structure and frees up any memory associated with it.

`DH_meth_get0_name()` will return a pointer to the name of this `DH_METHOD`. This is a pointer to the internal name string and so should not be freed by the caller. `DH_meth_set1_name()` sets the name of the `DH_METHOD` to name. The string is duplicated and the copy is stored in the `DH_METHOD` structure, so the caller remains responsible for freeing the memory associated with the name.

DH\_meth\_get\_flags() returns the current value of the flags associated with this DH\_METHOD. DH\_meth\_set\_flags() provides the ability to set these flags.

The functions DH\_meth\_get0\_app\_data() and DH\_meth\_set0\_app\_data() provide the ability to associate implementation specific data with the DH\_METHOD. It is the application's responsibility to free this data before the DH\_METHOD is freed via a call to DH\_meth\_free().

DH\_meth\_get\_generate\_key() and DH\_meth\_set\_generate\_key() get and set the function used for generating a new DH key pair respectively. This function will be called in response to the application calling DH\_generate\_key(). The parameter for the function has the same meaning as for DH\_generate\_key().

DH\_meth\_get\_compute\_key() and DH\_meth\_set\_compute\_key() get and set the function used for computing a new DH shared secret respectively. This function will be called in response to the application calling DH\_compute\_key(). The parameters for the function have the same meaning as for DH\_compute\_key().

DH\_meth\_get\_bn\_mod\_exp() and DH\_meth\_set\_bn\_mod\_exp() get and set the function used for computing the following value:

$$r = a^p \text{ mod } m$$

This function will be called by the default OpenSSL function for DH\_generate\_key(). The result is stored in the r parameter. This function may be NULL unless using the default generate key function, in which case it must be present.

DH\_meth\_get\_init() and DH\_meth\_set\_init() get and set the function used

for creating a new DH instance respectively. This function will be called in response to the application calling `DH_new()` (if the current default `DH_METHOD` is this one) or `DH_new_method()`. The `DH_new()` and `DH_new_method()` functions will allocate the memory for the new DH object, and a pointer to this newly allocated structure will be passed as a parameter to the function. This function may be NULL.

`DH_meth_get_finish()` and `DH_meth_set_finish()` get and set the function used for destroying an instance of a DH object respectively. This function will be called in response to the application calling `DH_free()`. A pointer to the DH to be destroyed is passed as a parameter. The destroy function should be used for DH implementation specific clean up. The memory for the DH itself should not be freed by this function. This function may be NULL.

`DH_meth_get_generate_params()` and `DH_meth_set_generate_params()` get and set the function used for generating DH parameters respectively. This function will be called in response to the application calling `DH_generate_parameters_ex()` (or `DH_generate_parameters()`). The parameters for the function have the same meaning as for `DH_generate_parameters_ex()`. This function may be NULL.

## RETURN VALUES

`DH_meth_new()` and `DH_meth_dup()` return the newly allocated `DH_METHOD` object or NULL on failure.

`DH_meth_get0_name()` and `DH_meth_get_flags()` return the name and flags associated with the `DH_METHOD` respectively.

All other `DH_meth_get_*`() functions return the appropriate function pointer that has been set in the `DH_METHOD`, or NULL if no such pointer has yet been set.

DH\_meth\_set1\_name() and all DH\_meth\_set\_\*( ) functions return 1 on success or 0 on failure.

#### SEE ALSO

DH\_new(3), DH\_new(3), DH\_generate\_parameters(3), DH\_generate\_key(3),  
DH\_set\_method(3), DH\_size(3), DH\_get0\_pqg(3)

#### HISTORY

All of these functions were deprecated in OpenSSL 3.0.

The functions described here were added in OpenSSL 1.1.0.

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