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***Rocky Enterprise Linux 9.2 Manual Pages on command 'DSA\_meth\_get\_bn\_mod\_exp.3ossl'***

***\$ man DSA\_meth\_get\_bn\_mod\_exp.3ossl***

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

**NAME**

DSA\_meth\_new, DSA\_meth\_free, DSA\_meth\_dup, DSA\_meth\_get0\_name,  
DSA\_meth\_set1\_name, DSA\_meth\_get\_flags, DSA\_meth\_set\_flags,  
DSA\_meth\_get0\_app\_data, DSA\_meth\_set0\_app\_data, DSA\_meth\_get\_sign,  
DSA\_meth\_set\_sign, DSA\_meth\_get\_sign\_setup, DSA\_meth\_set\_sign\_setup,  
DSA\_meth\_get\_verify, DSA\_meth\_set\_verify, DSA\_meth\_get\_mod\_exp,  
DSA\_meth\_set\_mod\_exp, DSA\_meth\_get\_bn\_mod\_exp, DSA\_meth\_set\_bn\_mod\_exp,  
DSA\_meth\_get\_init, DSA\_meth\_set\_init, DSA\_meth\_get\_finish,  
DSA\_meth\_set\_finish, DSA\_meth\_get\_paramgen, DSA\_meth\_set\_paramgen,  
DSA\_meth\_get\_keygen, DSA\_meth\_set\_keygen - Routines to build up DSA  
methods

**SYNOPSIS**

```
#include <openssl/dsa.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):

```
DSA_METHOD *DSA_meth_new(const char *name, int flags);

void DSA_meth_free(DSA_METHOD *dsam);

DSA_METHOD *DSA_meth_dup(const DSA_METHOD *meth);

const char *DSA_meth_get0_name(const DSA_METHOD *dsam);
int DSA_meth_set1_name(DSA_METHOD *dsam, const char *name);

int DSA_meth_get_flags(const DSA_METHOD *dsam);
int DSA_meth_set_flags(DSA_METHOD *dsam, int flags);

void *DSA_meth_get0_app_data(const DSA_METHOD *dsam);
int DSA_meth_set0_app_data(DSA_METHOD *dsam, void *app_data);

DSA_SIG *(*DSA_meth_get_sign(const DSA_METHOD *dsam))(const unsigned char *,
                                                       int, DSA *);
int DSA_meth_set_sign(DSA_METHOD *dsam, DSA_SIG *(*sign)(const unsigned char *,
                                                         int, DSA *));

int (*DSA_meth_get_sign_setup(const DSA_METHOD *dsam))(DSA *, BN_CTX *, $
                                                       BIGNUM **, BIGNUM **);
int DSA_meth_set_sign_setup(DSA_METHOD *dsam, int (*sign_setup)(DSA *, BN_CTX *,
                                                                BIGNUM **, BIGNUM **));

int (*DSA_meth_get_verify(const DSA_METHOD *dsam))(const unsigned char *,
                                                    int, DSA_SIG *, DSA *);
int DSA_meth_set_verify(DSA_METHOD *dsam, int (*verify)(const unsigned char *,
                                                         int, DSA_SIG *, DSA *));
```

```
int (*DSA_meth_get_mod_exp(const DSA_METHOD *dsam))(DSA *dsa, BIGNUM *rr, BIGNUM *a1,  
    BIGNUM *p1, BIGNUM *a2, BIGNUM *p2,  
    BIGNUM *m, BN_CTX *ctx,  
    BN_MONT_CTX *in_mont);
```

```
int DSA_meth_set_mod_exp(DSA_METHOD *dsam, int (*mod_exp)(DSA *dsa, BIGNUM *rr,  
    BIGNUM *a1, BIGNUM *p1,  
    BIGNUM *a2, BIGNUM *p2,  
    BIGNUM *m, BN_CTX *ctx,  
    BN_MONT_CTX *mont));
```

```
int (*DSA_meth_get_bn_mod_exp(const DSA_METHOD *dsam))(DSA *dsa, BIGNUM *r, BIGNUM *a,  
    const BIGNUM *p, const BIGNUM *m,  
    BN_CTX *ctx, BN_MONT_CTX *mont);
```

```
int DSA_meth_set_bn_mod_exp(DSA_METHOD *dsam, int (*bn_mod_exp)(DSA *dsa,  
    BIGNUM *r,  
    BIGNUM *a,  
    const BIGNUM *p,  
    const BIGNUM *m,  
    BN_CTX *ctx,  
    BN_MONT_CTX *mont));
```

```
int (*DSA_meth_get_init(const DSA_METHOD *dsam))(DSA *);
```

```
int DSA_meth_set_init(DSA_METHOD *dsam, int (*init)(DSA *));
```

```
int (*DSA_meth_get_finish(const DSA_METHOD *dsam))(DSA *);
```

```
int DSA_meth_set_finish(DSA_METHOD *dsam, int (*finish)(DSA *));
```

```
int (*DSA_meth_get_paramgen(const DSA_METHOD *dsam))(DSA *, int,  
    const unsigned char *,  
    int, int *, unsigned long *,  
    BN_GENCB *);
```

```
int DSA_meth_set_paramgen(DSA_METHOD *dsam,  
    int (*paramgen)(DSA *, int, const unsigned char *,
```

```
int, int *, unsigned long *, BN_GENCB *));
```

```
int (*DSA_meth_get_keygen(const DSA_METHOD *dsam))(DSA *);
```

```
int DSA_meth_set_keygen(DSA_METHOD *dsam, int (*keygen)(DSA *));
```

## DESCRIPTION

All of the functions described on this page are deprecated.

Applications and extension implementations should instead use the OSSL\_PROVIDER APIs.

The DSA\_METHOD type is a structure used for the provision of custom DSA implementations. It provides a set of functions used by OpenSSL for the implementation of the various DSA capabilities.

DSA\_meth\_new() creates a new DSA\_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 DSA\_METHOD object.

It is the callers responsibility to free the original string. The flags will be used during the construction of a new DSA object based on this DSA\_METHOD. Any new DSA object will have those flags set by default.

DSA\_meth\_dup() creates a duplicate copy of the DSA\_METHOD object passed as a parameter. This might be useful for creating a new DSA\_METHOD based on an existing one, but with some differences.

DSA\_meth\_free() destroys a DSA\_METHOD structure and frees up any memory associated with it.

DSA\_meth\_get0\_name() will return a pointer to the name of this DSA\_METHOD. This is a pointer to the internal name string and so should not be freed by the caller. DSA\_meth\_set1\_name() sets the name of the DSA\_METHOD to name. The string is duplicated and the copy is stored in the DSA\_METHOD structure, so the caller remains responsible for freeing

the memory associated with the name.

`DSA_meth_get_flags()` returns the current value of the flags associated with this `DSA_METHOD`. `DSA_meth_set_flags()` provides the ability to set these flags.

The functions `DSA_meth_get0_app_data()` and `DSA_meth_set0_app_data()` provide the ability to associate implementation specific data with the `DSA_METHOD`. It is the application's responsibility to free this data before the `DSA_METHOD` is freed via a call to `DSA_meth_free()`.

`DSA_meth_get_sign()` and `DSA_meth_set_sign()` get and set the function used for creating a DSA signature respectively. This function will be called in response to the application calling `DSA_do_sign()` (or `DSA_sign()`). The parameters for the function have the same meaning as for `DSA_do_sign()`.

`DSA_meth_get_sign_setup()` and `DSA_meth_set_sign_setup()` get and set the function used for precalculating the DSA signature values  $k^{-1}$  and  $r$ . This function will be called in response to the application calling `DSA_sign_setup()`. The parameters for the function have the same meaning as for `DSA_sign_setup()`.

`DSA_meth_get_verify()` and `DSA_meth_set_verify()` get and set the function used for verifying a DSA signature respectively. This function will be called in response to the application calling `DSA_do_verify()` (or `DSA_verify()`). The parameters for the function have the same meaning as for `DSA_do_verify()`.

`DSA_meth_get_mod_exp()` and `DSA_meth_set_mod_exp()` get and set the function used for computing the following value:

$$rr = a1^{p1} * a2^{p2} \text{ mod } m$$

This function will be called by the default OpenSSL method during verification of a DSA signature. The result is stored in the `rr` parameter. This function may be NULL.

`DSA_meth_get_bn_mod_exp()` and `DSA_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 `DSA_sign_setup()`. The result is stored in the `r` parameter. This function may be NULL.

`DSA_meth_get_init()` and `DSA_meth_set_init()` get and set the function used for creating a new DSA instance respectively. This function will be called in response to the application calling `DSA_new()` (if the current default `DSA_METHOD` is this one) or `DSA_new_method()`. The `DSA_new()` and `DSA_new_method()` functions will allocate the memory for the new DSA object, and a pointer to this newly allocated structure will be passed as a parameter to the function. This function may be NULL.

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

`DSA_meth_get_paramgen()` and `DSA_meth_set_paramgen()` get and set the function used for generating DSA parameters respectively. This function

will be called in response to the application calling `DSA_generate_parameters_ex()` (or `DSA_generate_parameters()`). The parameters for the function have the same meaning as for `DSA_generate_parameters_ex()`.

`DSA_meth_get_keygen()` and `DSA_meth_set_keygen()` get and set the function used for generating a new DSA key pair respectively. This function will be called in response to the application calling `DSA_generate_key()`. The parameter for the function has the same meaning as for `DSA_generate_key()`.

## RETURN VALUES

`DSA_meth_new()` and `DSA_meth_dup()` return the newly allocated `DSA_METHOD` object or `NULL` on failure.

`DSA_meth_get0_name()` and `DSA_meth_get_flags()` return the name and flags associated with the `DSA_METHOD` respectively.

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

`DSA_meth_set1_name()` and all `DSA_meth_set_*`() functions return 1 on success or 0 on failure.

## SEE ALSO

`DSA_new(3)`, `DSA_dup(3)`, `DSA_generate_parameters(3)`,  
`DSA_generate_key(3)`, `DSA_dup_DH(3)`, `DSA_do_sign(3)`, `DSA_set_method(3)`,  
`DSA_SIG_new(3)`, `DSA_sign(3)`, `DSA_size(3)`, `DSA_get0_pqg(3)`

## HISTORY

The functions described here were deprecated in OpenSSL 3.0.

The functions described here were added in OpenSSL 1.1.0.

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