

**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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