

**NAME**

EVP\_PKEY\_missing\_parameters, EVP\_PKEY\_copy\_parameters, EVP\_PKEY\_parameters\_eq, EVP\_PKEY\_cmp\_parameters, EVP\_PKEY\_eq, EVP\_PKEY\_cmp - public key parameter and comparison functions

**SYNOPSIS**

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

```
int EVP_PKEY_missing_parameters(const EVP_PKEY *pkey);
int EVP_PKEY_copy_parameters(EVP_PKEY *to, const EVP_PKEY *from);
```

```
int EVP_PKEY_parameters_eq(const EVP_PKEY *a, const EVP_PKEY *b);
int EVP_PKEY_eq(const EVP_PKEY *a, const EVP_PKEY *b);
```

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)**:

```
int EVP_PKEY_cmp_parameters(const EVP_PKEY *a, const EVP_PKEY *b);
int EVP_PKEY_cmp(const EVP_PKEY *a, const EVP_PKEY *b);
```

**DESCRIPTION**

The function **EVP\_PKEY\_missing\_parameters()** returns 1 if the public key parameters of **pkey** are missing and 0 if they are present or the algorithm doesn't use parameters.

The function **EVP\_PKEY\_copy\_parameters()** copies the parameters from key **from** to key **to**. An error is returned if the parameters are missing in **from** or present in both **from** and **to** and mismatch. If the parameters in **from** and **to** are both present and match this function has no effect.

The function **EVP\_PKEY\_parameters\_eq()** checks the parameters of keys **a** and **b** for equality.

The function **EVP\_PKEY\_eq()** checks the keys **a** and **b** for equality, including their parameters if they are available.

**NOTES**

The main purpose of the functions **EVP\_PKEY\_missing\_parameters()** and **EVP\_PKEY\_copy\_parameters()** is to handle public keys in certificates where the parameters are sometimes omitted from a public key if they are inherited from the CA that signed it.

The deprecated functions **EVP\_PKEY\_cmp()** and **EVP\_PKEY\_cmp\_parameters()** differ in their return values compared to other **\_cmp()** functions. They are aliases for **EVP\_PKEY\_eq()** and

**EVP\_PKEY\_parameters\_eq()**.

The function **EVP\_PKEY\_cmp()** previously only checked the key parameters (if there are any) and the public key, assuming that there always was a public key and that private key equality could be derived from that. Because it's no longer assumed that the private key in an **EVP\_PKEY(3)** is always accompanied by a public key, the comparison can not rely on public key comparison alone.

Instead, **EVP\_PKEY\_eq()** (and therefore also **EVP\_PKEY\_cmp()**) now compares:

1. the key parameters (if there are any)
2. the public keys or the private keys of the two **EVP\_PKEYs**, depending on what they both contain.

**RETURN VALUES**

The function **EVP\_PKEY\_missing\_parameters()** returns 1 if the public key parameters of **pkey** are missing and 0 if they are present or the algorithm doesn't use parameters.

These functions **EVP\_PKEY\_copy\_parameters()** returns 1 for success and 0 for failure.

The functions **EVP\_PKEY\_cmp\_parameters()**, **EVP\_PKEY\_parameters\_eq()**, **EVP\_PKEY\_cmp()** and **EVP\_PKEY\_eq()** return 1 if their inputs match, 0 if they don't match, -1 if the key types are different and -2 if the operation is not supported.

**SEE ALSO**

**EVP\_PKEY\_CTX\_new(3)**, **EVP\_PKEY\_keygen(3)**

**HISTORY**

The **EVP\_PKEY\_cmp()** and **EVP\_PKEY\_cmp\_parameters()** functions were deprecated in OpenSSL 3.0.

The **EVP\_PKEY\_eq()** and **EVP\_PKEY\_parameters\_eq()** were added in OpenSSL 3.0 to replace **EVP\_PKEY\_cmp()** and **EVP\_PKEY\_cmp\_parameters()**.

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