

**NAME**

openssl-dhparam, dhparam – DH parameter manipulation and generation

**SYNOPSIS**

```
openssl dhparam [-help] [-inform DER|PEM] [-outform DER|PEM] [-in filename] [-out filename]
[-dsaparam] [-check] [-noout] [-text] [-C] [-2] [-5] [-rand file...] [-writerand file] [-engine id]
[numbits]
```

**DESCRIPTION**

This command is used to manipulate DH parameter files.

**OPTIONS****-help**

Print out a usage message.

**-inform DER|PEM**

This specifies the input format. The **DER** option uses an ASN1 DER encoded form compatible with the PKCS#3 DHparameter structure. The PEM form is the default format: it consists of the **DER** format base64 encoded with additional header and footer lines.

**-outform DER|PEM**

This specifies the output format, the options have the same meaning and default as the **-inform** option.

**-in filename**

This specifies the input filename to read parameters from or standard input if this option is not specified.

**-out filename**

This specifies the output filename parameters to. Standard output is used if this option is not present. The output filename should **not** be the same as the input filename.

**-dsaparam**

If this option is used, DSA rather than DH parameters are read or created; they are converted to DH format. Otherwise, “strong” primes (such that  $(p-1)/2$  is also prime) will be used for DH parameter generation.

DH parameter generation with the **-dsaparam** option is much faster, and the recommended exponent length is shorter, which makes DH key exchange more efficient. Beware that with such DSA-style DH parameters, a fresh DH key should be created for each use to avoid small-subgroup attacks that may be possible otherwise.

**-check**

Performs numerous checks to see if the supplied parameters are valid and displays a warning if not.

**-2, -5**

The generator to use, either 2 or 5. If present then the input file is ignored and parameters are generated instead. If not present but **numbits** is present, parameters are generated with the default generator 2.

**-rand file...**

A file or files containing random data used to seed the random number generator. Multiple files can be specified separated by an OS-dependent character. The separator is `;` for MS-W indows, `,` for OpenVMS, and `:` for all others.

**[-writerand file]**

Writes random data to the specified *file* upon exit. This can be used with a subsequent **-rand** flag.

**numbits**

This option specifies that a parameter set should be generated of size *numbits*. It must be the last option. If this option is present then the input file is ignored and parameters are generated instead. If this option is not present but a generator (**-2** or **-5**) is present, parameters are generated with a default length of 2048 bits.

**-noout**

This option inhibits the output of the encoded version of the parameters.

**-text**

This option prints out the DH parameters in human readable form.

**-C** This option converts the parameters into C code. The parameters can then be loaded by calling the **get\_dhNNNN()** function.

**-engine id**

Specifying an engine (by its unique **id** string) will cause **dhparam** to attempt to obtain a functional reference to the specified engine, thus initialising it if needed. The engine will then be set as the default for all available algorithms.

**WARNINGS**

The program **dhparam** combines the functionality of the programs **dh** and **gendh** in previous versions of OpenSSL. The **dh** and **gendh** programs are retained for now but may have different purposes in future versions of OpenSSL.

**NOTES**

PEM format DH parameters use the header and footer lines:

```
-----BEGIN DH PARAMETERS-----  
-----END DH PARAMETERS-----
```

OpenSSL currently only supports the older PKCS#3 DH, not the newer X9.42 DH.

This program manipulates DH parameters not keys.

**BUGS**

There should be a way to generate and manipulate DH keys.

**SEE ALSO**

**dsaparam**(1)

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