

# NAG Library Function Document

## nag\_opt\_handle\_opt\_get (e04znc)

### 1 Purpose

nag\_opt\_handle\_opt\_get (e04znc) is an option getting routine for solvers from the NAG optimization modelling suite, namely nag\_opt\_handle\_solve\_ipopt (e04stc) and nag\_opt\_handle\_solve\_pennon (e04svc). It is used to query the value of optional parameters.

### 2 Specification

```
#include <nag.h>
#include <nage04.h>

void nag_opt_handle_opt_get (void *handle, const char *optstr,
    Integer *ivalue, double *rvalue, char *cvalue, Integer lcvalue,
    Nag_VariableType *optype, NagError *fail)
```

### 3 Description

nag\_opt\_handle\_opt\_get (e04znc) is used to query the current values of options. It can be especially useful to retrieve the optional parameters left for automatic choice by the solver.

This function will normally return either an integer, real or character value dependent upon the type associated with the optional parameter being queried. This is indicated by the returned value of **optype**.

Information relating to available option names is given in the documentation of the particular solver. See also nag\_opt\_handle\_init (e04rac) for a generic description of the suite.

### 4 References

None.

### 5 Arguments

- |    |  |               |
|----|--|---------------|
| 1: | <b>handle</b> – void *   | <i>Input</i>  |
|    | <i>On entry:</i> the handle to the problem. It needs to be initialized by nag_opt_handle_init (e04rac) and <b>must not</b> be changed.                             |               |
| 2: | <b>optstr</b> – const char *   | <i>Input</i>  |
|    | <i>On entry:</i> a string identifying the option whose current value is required. See the documentation of the particular solver for information on valid options. |               |
| 3: | <b>ivalue</b> – Integer *  | <i>Output</i> |
|    | <i>On exit:</i> if the optional parameter supplied in <b>optstr</b> is an integer-valued argument, <b>ivalue</b> will hold its current value.                      |               |
| 4: | <b>rvalue</b> – double *   | <i>Output</i> |
|    | <i>On exit:</i> if the optional parameter supplied in <b>optstr</b> is a real-valued argument, <b>rvalue</b> will hold its current value.                          |               |

- 5: **cvalue** – char \* *Output*  
**Note:** the string returned in **cvalue** will never exceed  $\min(\mathbf{lcvalue}, 41)$  characters in length, including the terminating **NULL** character.  
*On exit:* if the optional parameter supplied in **optstr** is a character-valued argument, **cvalue** will hold its current value.
- 6: **lcvalue** – Integer *Input*  
*On entry:* length of the string **cvalue**. At most **lcvalue** – 1 non-null characters will be written into **cvalue**.  
*Constraint:* **lcvalue** > 1.
- 7: **optype** – Nag\_VariableType \* *Output*  
*On exit:* indicates whether the optional parameter supplied in **optstr** is an integer, real or character-valued argument and hence which of **ivalue**, **rvalue** or **cvalue** holds the current value.  
**optype** = Nag\_Integer  
**optstr** is an integer-valued optional parameter; its current value has been returned in **ivalue**.  
**optype** = Nag\_Real  
**optstr** is a real-valued optional parameter; its current value has been returned in **rvalue**.  
**optype** = Nag\_Character  
**optstr** is a character-valued optional parameter; its current value has been returned in **cvalue**.
- 8: **fail** – NagError \* *Input/Output*  
The NAG error argument (see Section 2.7 in How to Use the NAG Library and its Documentation).

## 6 Error Indicators and Warnings

### NE\_ALLOC\_FAIL

Dynamic memory allocation failed.

See Section 2.3.1.2 in How to Use the NAG Library and its Documentation for further information.

### NE\_BAD\_PARAM

On entry, argument  $\langle value \rangle$  had an illegal value.

### NE\_HANDLE

The supplied **handle** does not define a valid handle to the data structure for the NAG optimization modelling suite. It has not been initialized by `nag_opt_handle_init` (e04rac) or it has been corrupted.

### NE\_INT

On entry, **lcvalue** =  $\langle value \rangle$ .  
*Constraint:* **lcvalue** > 1.

### NE\_INTERNAL\_ERROR

An internal error has occurred in this function. Check the function call and any array sizes. If the call is correct then please contact NAG for assistance.

An unexpected error has been triggered by this function. Please contact NAG.  
See Section 2.7.6 in How to Use the NAG Library and its Documentation for further information.

**NE\_INVALID\_OPTION**

On entry, the *option* supplied in **optstr** was not recognized: **optstr** =  $\langle value \rangle$ .

**NE\_NO\_LICENCE**

Your licence key may have expired or may not have been installed correctly.  
See Section 2.7.5 in How to Use the NAG Library and its Documentation for further information.

**NW\_TRUNCATED**

On entry, **optstr** indicates a character optional parameter, but **cvalue** is too short to hold the stored value. The returned value will be truncated.

**7 Accuracy**

Not applicable.

**8 Parallelism and Performance**

nag\_opt\_handle\_opt\_get (e04znc) is not threaded in any implementation.

**9 Further Comments**

None.

**10 Example**

See the example program associated with the solver nag\_opt\_handle\_solve\_pennon (e04svc) for a demonstration of how to use nag\_opt\_handle\_opt\_get (e04znc) to query options. See also Section 10 in nag\_opt\_handle\_init (e04rac) for links to all examples in the suite.

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