

## NAG Library Function Document

### nag\_glopt\_bnd\_mcs\_optset\_string (e05jdc)

#### 1 Purpose

nag\_glopt\_bnd\_mcs\_optset\_string (e05jdc) may be used to supply individual optional parameters to nag\_glopt\_bnd\_mcs\_solve (e05jbc). The initialization function nag\_glopt\_bnd\_mcs\_init (e05jac) **must** have been called before calling nag\_glopt\_bnd\_mcs\_optset\_string (e05jdc).

#### 2 Specification

```
#include <nag.h>
#include <nage05.h>

void nag_glopt_bnd_mcs_optset_string (const char *optstr,
    Nag_E05State *state, NagError *fail)
```

#### 3 Description

nag\_glopt\_bnd\_mcs\_optset\_string (e05jdc) may be used to supply values for optional parameters to nag\_glopt\_bnd\_mcs\_solve (e05jbc). It is only necessary to call nag\_glopt\_bnd\_mcs\_optset\_string (e05jdc) for those arguments whose values are to be different from their default values. One call to nag\_glopt\_bnd\_mcs\_optset\_string (e05jdc) sets one argument value.

Each optional parameter is defined by a single character string, consisting of one or more items. The items associated with a given optional parameter must be separated by spaces, or equals signs [=]. Alphabetic characters may be upper or lower case. The string

```
Static Limit = 100
```

is an example of a string used to set an optional parameter. For each optional parameter the string contains one or more of the following items:

- a mandatory keyword;
- a phrase that qualifies the keyword;
- a number that specifies an integer or real value. Such numbers may be up to 40 contiguous characters.

For nag\_glopt\_bnd\_mcs\_optset\_string (e05jdc), each user-specified optional parameter is not normally printed as it is defined, but this printing may be turned on using the keyword **List**. Thus the statement

```
e05jdc ("List", &state, &fail);
```

turns on printing of this and subsequent options. Printing may be turned off again using the keyword **Nolist**.

Optional parameter settings are preserved following a call to nag\_glopt\_bnd\_mcs\_solve (e05jbc) and so the keyword **Defaults** is provided to allow you to reset all the optional parameters to their default values before a subsequent call to nag\_glopt\_bnd\_mcs\_solve (e05jbc).

A complete list of optional parameters, their symbolic names and default values is given in Section 12 in nag\_glopt\_bnd\_mcs\_solve (e05jbc).

#### 4 References

None.

## 5 Arguments

- 1: **optstr** – const char \* *Input*  
*On entry:* a string defining a single optional parameter (as described in Section 3 and in Section 12 in nag\_glopt\_bnd\_mcs\_solve (e05jbc)). The implied data type (character, integer or real) of each value to set **must** match that expected by the optional parameter.
- 2: **state** – Nag\_E05State \* *Communication Structure*  
**state** contains information required by other functions in this suite. You must not modify it directly in any way.
- 3: **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\_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\_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.

### NE\_NOT\_INIT

Initialization function nag\_glopt\_bnd\_mcs\_init (e05jac) has not been called.

### NE\_NOT\_PARSED

The value to be set could not be parsed. Check that it specifies a valid integer or real value.

### NE\_OPT\_NOT\_READ

The supplied optional parameter is invalid. A keyword or keyword combination was not recognized.

### NE\_OUT\_OF\_RANGE

Attempt to assign an illegal value of **Local Searches** (*lcsrch*):  $lcsrch = \langle value \rangle$ .

Attempt to assign an illegal value of **Repeatability** (*repeat*):  $repeat = \langle value \rangle$ .

Attempt to assign a non-positive value of **Function Evaluations Limit** (*nf*):  $nf = \langle value \rangle$ .

Attempt to assign a non-positive value of **Local Searches Limit** (*loclim*):  $loclim = \langle value \rangle$ .

Attempt to assign a non-positive value of **Static Limit** (*stclim*): *stclim* =  $\langle value \rangle$ .

Attempt to assign an out-of-bounds value of **Infinite Bound Size** (*infbnd*): *infbnd* =  $\langle value \rangle$ .

Attempt to assign too small a value of **Local Searches Tolerance** (*loctol*): *loctol* =  $\langle value \rangle$ .

Attempt to assign too small a value of **Target Objective Error** (*objerr*): *objerr* =  $\langle value \rangle$ .

Attempt to assign too small a value of **Target Objective Safeguard** (*objsg*): *objsg* =  $\langle value \rangle$ .

## 7 Accuracy

Not applicable.

## 8 Parallelism and Performance

`nag_glopt_bnd_mcs_optset_string` (e05jdc) is threaded by NAG for parallel execution in multithreaded implementations of the NAG Library.

Please consult the x06 Chapter Introduction for information on how to control and interrogate the OpenMP environment used within this function. Please also consult the Users' Note for your implementation for any additional implementation-specific information.

## 9 Further Comments

`nag_glopt_bnd_mcs_optset_file` (e05jcc), `nag_glopt_bnd_mcs_optset_char` (e05jec), `nag_glopt_bnd_mcs_optset_int` (e05jfc) or `nag_glopt_bnd_mcs_optset_real` (e05jgc) may also be used to supply optional parameters to `nag_glopt_bnd_mcs_solve` (e05jbc).

## 10 Example

See Section 10 in `nag_glopt_bnd_mcs_optset_file` (e05jcc).

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