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APIs by Example: Change IFS Attributes

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This installment of APIs by Example presents the CHGIFSATR (Change IFS Attributes) command. The command is based on the QpolSetAttr API, which will set or, to use another term, change a given IFS object attribute.

Unlike the QpolGetAttr (Get Attributes) API, which uses the same attribute buffer, the QpolSetAttr API is only capable of handling one attribute at a time. You have to perform separate calls for each attribute you want to change.

The sharing of the attribute buffer structure enables a certain level of interaction between the Get and Set Attributes APIs. The buffer can be retrieved using the Get Attributes API, the appropriate attribute values be changed, and the buffer passed on to the Set Attributes API on multiple calls, one buffer entry at a time.

Here's the layout of the attribute buffer parameter:

```

**-- Get/Set attribute buffer:
D Buffer          Ds          Qualified  Align
D  OfSNextAttr   10u  0
D  AttrId        10u  0
D  SizAttr       10u  0
D                4a    Inz( *Allx'00' )
D  AttrDta       128a

```

The 'OfSNextAttr' subfield specifies the location of the next attribute entry in the buffer and is calculated based on the beginning of the buffer parameter. A value of zero in this field indicates that this is the last entry in the attribute list.

Note that the 'OfSNextAttr' subfield is relevant only when retrieving the attribute buffer using the Get Attributes API and is ignored by the Set Attributes API.

The Attribute ID subfield is a numeric value identifying the different IFS object attributes. For example, a value of 4 indicates the object creation timestamp. Refer to the API documentation for the complete list of attribute IDs.

Subfield 'SizAttr' holds the size of the field containing the attribute value, which is located at the end of the structure and named 'AttrDta'. In between 'SizAttr' and 'AttrDta' is a reserved field that must be set to all hexadecimal zeros.

And now on to the CHGIFSATR command; when you prompt the command, the following panel is presented:

```

=====

Change IFS Attributes (CHGIFSATR)

Type choices, press Enter.

IFS object . . . . .

Symbolic link . . . . . *NO *NO, *YES

=====

```

When you specify an IFS object name and press Enter, the current attribute values are retrieved by the prompt override program CBX127O. You will then see the following panel:

```

=====

Change IFS Attributes (CHGIFSATR)

Type choices, press Enter.

IFS object . . . . . > '/qopensys/filename.txt'

Symbolic link . . . . . *NO *NO, *YES
Read only . . . . . *NO *NO, *YES, *SAME
Hidden . . . . . *NO *NO, *YES, *SAME
System file . . . . . *NO *NO, *YES, *SAME
Object changed - PC . . . *YES *NO, *YES, *SAME
Object changed - System . . *NO *NO, *YES, *SAME
Allow write during save . . *NO *NO, *YES, *SAME
Coded character set ID . . . 819 1-65533, *SAME
Disk storage option . . . . *NORMAL *NORMAL, *MINIMIZE...
Main storage option . . . . *NORMAL *NORMAL, *MINIMIZE...
Set effective user ID . . . *NO *NO, *YES, *SAME
Set effective group ID . . . *NO *NO, *YES, *SAME

=====

```

The current attribute values are retrieved using the Get Attributes API that was described in great detail in the article entitled "How to Retrieve the Create Date of an IFS File" in the November 11, 2004, issue of this newsletter. ProVIP members can read the story online at <http://www2.systeminetwork.com/nwn/story.cfm?ID=19553>.

The CHGIFSATR command includes the following objects:

```

CBX127 - Command processing program that performs the actual
        change of the specified attributes

```

```

CBX127O - Prompt override program the retrieves the current
          attribute values and formats the command prompt string

```

CBX127V - Validity checking program that verifies the existence of the specified IFS object

CBX127H - Command help text panel group

Once the command objects, specified above, have been successfully compiled, running the following command will create the command object itself:

```
CrtCmd      Cmd( CHGIFSATR )
             Pgm( CBX127 )
             SrcMbr( CBX127X )
             VldCkr( CBX127V )
             HlpPnlGrp( CBX127H )
             HlpId( *CMD )
             PmtOvrPgm( CBX127O )
```

Three attributes do not apply to directory object types. The following attributes are therefore protected by the command prompter when a directory name is specified for the IFS object parameter:

- Allow write during save
- Disk storage option
- Main storage option

New attribute IDs have been added to both the QpolSetAttr and QpolGetAttr APIs in every release since they were introduced at V4R4 and V4R3 respectively. Some were added as late as V5R2! To run the CHGIFSATR command successfully on releases prior to V5R2 will require changes to some of the command parameters. Please refer to the CBX127 and CBX127O source headers for more details.

This article demonstrates the following APIs:

Set Attributes (QpolSetAttr):

<http://publib.boulder.ibm.com/series/v5r2/ic2924/info/apis/qsetattr.htm>

Get Attributes (QpolGetAttr):

<http://publib.boulder.ibm.com/series/v5r2/ic2924/info/apis/qgetattr.htm>

Determine File Accessibility (access):

<http://as400bks.rochester.ibm.com/series/v5r2/ic2924/info/apis/access.htm>

Send Program Message (QMHSNDPM):

<http://publib.boulder.ibm.com/series/v5r2/ic2924/info/apis/QMHSNDPM.htm>

The following MI built-in function is demonstrated in this article:

_MEMMOVE -- Copy Memory

http://publib.boulder.ibm.com/series/v5r1/ic2924/tstudio/tech_ref/mi/MEMMOVE.htm

The following functions from the ILE C runtime library are demonstrated in this article:

memset -- Set Bytes to Value

<http://publib.boulder.ibm.com/series/v5r2/ic2924/books/c415607107.htm#HDRMEMSET>

strerror -- Set Pointer to Run-Time Error Message

<http://publib.boulder.ibm.com/series/v5r2/ic2924/books/c415607107.htm#HDRSTRERRO>

You can retrieve the source code for this utility from

<http://www2.systeminetwork.com/noderesources/code/clubtechcode/ChgIfsAtr.zip> .

The above article was written by Carsten Flensburg. If you have any questions, you can contact Carsten at <mailto:flensburg@novasol.dk> .

Source URL: <http://iprodeveloper.com/rpg-programming/apis-example-change-ifs-attributes>