IAR SYSTEMS

Technical Note 36121

Absolute placement (EWARM v.5.x and 6.x) (in C source)

EW targets: ARM
EW component: C/C++ compiler
Keywords: "@" / #pragma locate, absolute address
Last update: November 18, 2010

IAR Systems website

Related Support notes:

Technical note 17934
Absolute placement (EWARM 5.x & 6.x) (in assembler source)

Technical note 40394
Should I upgrade to version 5 of EWARM?

Background - general
There are major changes in the EWARM between version 4.x and version 5.x. The link to the right gives some more information.

Background - specific
Absolute placement of constants are no longer allowed:

```
int const a @ 102030;
```

Problem
There is no way of express the above in an output file in the elf/dwarf format.

Solution 1 - (if you must use const)
The solution consists of two changes.
In the .c file place the variable in a named segment. In the .icf (for the linker) place the segment at a specific location.

The C source can have looked like this in 4.xx:

```
const char RELEASEDATE[16] @ 0x0000FF10 = __DATE__ ;
const char RELEASETIME[16] @ 0x0000FF20 = __TIME__ ;
```

This will be changed to this in the .c file in 5.xx:

```
#pragma location = "ConstSection1"
__root const char RELEASEDATE[16] = __DATE__ ;
#pragma location = "ConstSection2"
__root const char RELEASETIME[16] = __TIME__ ;
```

In the .icf file are these lines added:

```
place at address mem: 0x0000FF10    { readonly section ConstSection1 };
place at address mem: 0x0000FF20    { readonly section ConstSection2 };
```

The Ilink will then place the sections **ConstSection1** at address 0x0000FF10, and the section **ConstSection2** is placed at address 0x0000FF20.

Solution 2 - (if you dare not to use const)
The solution consists of a change from..

```
int const a @ 102030;
```

...to...

```
int a @ 102030;
```

...the **drawback** of this solution is that you disable the ICCARM which make checks for "do not write to const object". **So this solution can lead to run-time errors.**

Migration
It is also highly recommended that you have a look at the "The migration process" in the above guide. This will give you a good picture of what has to be done to migrate from version 4 to version 5 of the ARM IAR Embedded Workbench.