

MCR10171

Fix issue with long lines output using tty_ Revision 1.1

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1 Problem Description

Ticket <https://multics-trac.swenson.org/ticket/368> describes a problem where long line output using the `tty_` I/O module results in whitespace being inserted at unexpected places.

The issue is that the include file `w tcb.incl.pl1` defines a field, `outcol` that is declared as `fixed bin (9) unsigned unaligned`, but this value is copied into a `fixed bin (17)` automatic variable, where it is incremented for characters emitted. With long lines, and a `tty` mode of `"^ll"`, for example, this automatic copy can exceed 512 characters (after at least that many characters on a line have been output). This automatic copy is written back to `outcol`, truncating the value. In a subsequent write of more characters on the line, `outcol` no longer reflects the correct column count. A separate variable `white_col` in `w tcb.incl.pl1` is declared `fixed bin (17)` as is an automatic copy of that variable. This value increments as well, but when written back to the `white_col` value, doesn't truncate. So that values accurately reflects the column count.

The two values get out of sync when they are copied from automatic storage to the wired terminal control block (WTCB) and then back to the automatic copies.

Note that the issue doesn't occur when using the video system, which uses the `tc_io_` I/O module rather than the `tty_` I/O module.

2 Proposed Fix

The proposed fix is simple: change the declaration of `outcol` to `fixed bin (17) unaligned`. That change keeps the value from overflowing and keeps `outcol` and `write_col` correctly matching the current column positions.

The `w tcb.incl.pl1` structure already contains a `bit (36)` pad value, so moving the `outcol` field into the first 18 bits of that pad, and defining a new pad of 18 bits keeps the structure the same size. In place of the original `fixed bin (9) unsigned unaligned` value, another pad keeps the structure in the correct word alignment.

Various programs need to get recompiled as a result of the change.

The change to the `w tcb.incl.pl1` segment is shown below:

```
cpa >ldd>incl>wtcb.incl.pl1 ==

A81          2 actcol fixed bin (9) unsigned unaligned,          /* tty column position */
Changed by B to:
B81          2 pad3 bit (9) unaligned,                          /* padding */

A102         2 pad2 bit (36);
Changed by B to:
B102         2 actcol fixed bin (17) unaligned,                  /* tty column position */
B103         2 pad2 bit (17) unaligned;
```

Comparison finished: 2 differences, 5 lines.

3 Documentation

No changes to the documentation are required as none of this is documented now.

4 Test

The updated hardcore with this fix has been tested on GHM-TEST, and there appear to be no adverse effects. And, of course, the correct output is now seen from the test case included in the ticket.

5 Version History

2026-09-03	1.0	Initial version of the MCR.
2026-09-03	1.1	Fixed typo and added note that the issue doesn't happen with the video system.