1 Compatibility

The following list of known problems and omissions applies to the occam 2 toolsets IMS D7205A, IMS D5205A, and IMS D4205A.

The tools within it (where applicable) supersede those provided with the ANSI C toolsets Ox214A and Ox214B. This is important if you are performing mixed language programming with both toolsets resident at the same time; this toolset and the tools and libraries within it should be used in preference to those in the above ANSI C toolsets.

2 Potential language change

The following section highlights an area of occam which may be subject to an implementation restriction in future toolset releases.

The length provided in a counted array protocol should not appear on the array side of the communication.

For instance, the following counted array protocol example:

   c ? length::[buffer FROM 0 FOR length]

should be re-written with the equivalent line:

   c ? length::buffer
3 Toolset errata

3.1 General

- The iserver used with this toolset can handle a maximum packet length of 1024 bytes. However, the occam Library has a maximum packet length of 512 bytes. This may lead to errors if the iserver should send a packet longer than 512 bytes to either an application or one of the tools in this toolset. This would only occur in extreme situations, such as using the getenv function to obtain an environment variable which is longer than 509 characters. This bug will be fixed in future releases of iserver.

Due to a minor problem in this release with the usage of TCOFF representation of processor capabilities between tools (eg. hardware breakpoint support, FPU etc.), a problem arises when collecting some single processor programs with icollect when using the 'T' option.

This problem does NOT affect the bootable code produced by the toolset.

The problem manifests itself by making transputer types appear to migrate to another processor type between different tools:

<table>
<thead>
<tr>
<th>Original type</th>
<th>Migrated type</th>
</tr>
</thead>
<tbody>
<tr>
<td>T222</td>
<td>-&gt;</td>
</tr>
<tr>
<td>T400</td>
<td>-&gt;</td>
</tr>
<tr>
<td>T801</td>
<td>-&gt;</td>
</tr>
<tr>
<td></td>
<td>T212</td>
</tr>
<tr>
<td></td>
<td>T425</td>
</tr>
<tr>
<td></td>
<td>T805</td>
</tr>
</tbody>
</table>

This is best illustrated by an example:

eg.

```
ooc foo.ooc /t400
ilink foo.tco hostio.lib /f occama.lnk /t400
icollect foo.1ku
```

Ilist will show the processor type as T425 in both foo.tco and foo.1ku. More importantly, idebug will generate a serious error message when breakpoint debugging because it has been told to expect a T425 (and it finds a T400). When post-mortem debugging, idebug will generate a warning.

Workaround
These problems primarily affect debugging where it is crucial that the transputer type used is the same as that specified in the configuration.

One solution is to configure for a single processor with occonf (i.e., don’t use the icollect single processor ‘T’ option).

If you must have single processor capability from icollect, the following table illustrates individual workarounds for the different processor types:

<table>
<thead>
<tr>
<th>Processor Type</th>
<th>Workaround (for icollect T option)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T222</td>
<td>none - idebug will happily think the processor is a T212.</td>
</tr>
<tr>
<td>T400</td>
<td>debug in TB (or TA) mode and commit to T400 mode when debugged.</td>
</tr>
<tr>
<td>T801</td>
<td>debug in TA mode and commit to T801 mode when debugged.</td>
</tr>
</tbody>
</table>

(0539)

- The driver programs for the transputer hosted tools (except idebug and idump) monitor the error flag as the tool executes in order to catch any internal errors of the tool should they occur. If your hardware is configured as a down system and consists of more than one transputer, then the driver programs may be fooled into thinking the tool has set the error flag if the error flag on one of the extra processors is already set when the tool starts. In order to overcome the problem, you should run ispy, a network check program (or similar), or boot a dummy program that uses all the transputer processors in the network.

Note that, once cleared, the error flag on a transputer will only become set again if you execute an erroneous program on the transputer, or if you power off the transputers. The state of the error flag is undefined (hence it may be set) when the power is turned on.

(0555)

- The following error message can be set by any of the PC hosted tools.

  Runtime error R6000 - stack overflow

This is a general error message that can occur using ANY of the tools. The message is generated at runtime by the Microsoft C runtime system and cannot be trapped by the tool. Work around by running the tool on a transputer.

(0680)
• In rare circumstances, the following error message (or variations of it with the tool name `<inmos library>`) can be produced by some tools.

**Fatal-<inmos library>-low level write failed 2**

Such an error can occur for instance, if the disk fills up during the writing of a file (although the tool itself will normally notice this and report the error in more detail).

(1180)

### 3.2 oc

• **ASSERT with INLINE test**

If the argument to ASSERT includes an INLINE FUNCTION call which expands to a constant, then the assertion is not tested at all (either at compile time or at run-time).

(1179)

• Running the compiler on different hosts can cause benign changes in the object code produced. These do not affect code behaviour, but can change code size.

(1195)

• **Counted array protocol**

When compiling code in STOP mode, oc may generate code which fails to detect invalid communication lengths (i.e. lengths which are not compatible with the size of the array being used in the communication).

(1202)

### 3.3 ilink

• **ilink** does not detect I/O errors when writing files. Thus, if a disk is full, it appears to run normally although no file is created, nor diagnostic given.

(0623)

### 3.4 icollect

• There is a bug in icollect, using the ‘T’ option, whereby it informs
idebug that the type of a T801 or T805 transputer is a T800. This will cause idebug to generate a serious error when breakpoint debugging, or a warning when post-mortem debugging.

Note that this is a different bug to that mentioned in section 3.1.

**Workaround**

Either use occonf to configure the program, or debug in TA mode.

(0540)

- **D7205 (PC hosted version) only**

Use of the icollect 'M' option to specify a memory size for non-configured programs does not work if you use a trailing M character to specify a Megabyte (eg. 1M).

**Workaround**

Either use the transputer version of icollect instead of the PC hosted version or specify the memory size in Kilobytes (eg. 1024K instead of 1M).

(1192)

- **D7205 (PC hosted version) only**

Use of icollect to build a bootfile for a boot-from-rom system fails with the collector complaining that it cannot find the system libraries.

**Workaround**

Use the transputer version of icollect instead of the PC hosted version when building boot-from-rom bootfiles.

(1193)

- **D7205 (PC hosted version) only**

Use of the icollect 'K' option with a T800 .lk file incorrectly creates a .rsc file for a T425 instead of a T800.

**Workaround**

Use the transputer version of icollect instead of the PC hosted version.
3.5 \textit{Imakef}

- \texttt{imakef} does not specify the name for a \texttt{.cfb} file generated by \texttt{icollect} when generating a \texttt{.bxx} file using the \texttt{T} option. This is only a problem if you create multiple \texttt{.bxx} bootables for different transputer types from the same source in the same directory.

\textbf{Workaround}

Rename the \texttt{.cfb} file after creating each \texttt{.bxx}.

3.6 \textit{Isim}

- \texttt{isim} does not perform a long shift if the shift value is not in the range
0 \leq N \leq 64. Rather than placing 0 in both the A and B registers, it leaves them with their original values.

(1189)

- **isim and ALTWT.**

When a low priority process causes a high priority process waiting in an ALTWT instruction (part of an OCCAM ALT) to be rescheduled, the simulator incorrectly provides the high priority process with a workspace pointer of MOSTNEG INT (NotProcess.p). This causes the high priority process to incorrectly restart and the program to incorrectly execute.

(1194)

### 3.7 Examples

- **oc examples**

  The example b6math.occ incorrectly includes a PC DOS path in a #USE statement

  ```
  #USE "m:\tdstools\libs\streamco.lib"
  ```

  It should be changed to read:

  ```
  #USE "streamco.lib"
  ```

  In addition, the following line should be added at the top of b6math.occ:

  ```
  #OPTION "N"
  ```

  (0893)

- **mixconf examples**

  The following makefiles in do not have TABS in them and consequently they will fail for those make utilities which require TABS:

  ```
  mixed1.mak
  mixed2.mak
  mixed3.mak
  ```

  (0892)
3.8 F editor

- D7205 (NEC PC version) only

The following files incorrectly refer to TDS files.

\d7205\f\data\tds3keys.ld
\d7205\f\data\doskeys.ld

They should contain:

- tds3keys.ld: \d7205\f\data\tds3keys.tbl
- doskeys.ld: \d7205\f\data\doskeys.tbl

respectively.

(0884)

- If one of the file write operations from an EXITALL operation fails (e.g., write permission denied) and the first such write has succeeded, F will loop forever if you were editing multiple files simultaneously.

(0888)

- Error in Sun help file sunfold.hlp

The Page down key in the INVERSE MAPPING section should read:

Page down
Esc Kpad Enter

3.9 TDS support tools

- Command line options

The following TDS support tools have different command line characteristics to that provided by other toolset tools:

- iflat
- iflist
- indirect

All three tools require that any command line option must appear after all other parameters.

In addition, iflat and iflist have the following requirements:
iflat

The PC hosted version requires the option switchchar to be '/', all other versions require it to be '-'.

iflist

All versions accept either '/' or '-' as the switchchar.

(0890)

4 Documentation omissions

• User manual Part 1, p339

The documentation for ieprom does not include the 'R' option.

The ieprom 'R' option causes ieprom to print out the absolute address of the code reference point. This address is intended to be used in conjunction with the icollect 'P' option (produce memory map).

(1170)

• User manual Part 1, p339

The documentation for ieprom does not state clearly enough the processor type to choose for all transputer variants.

The following list states the type to use with ieprom:

<table>
<thead>
<tr>
<th>transputer type</th>
<th>ieprom transputer type</th>
</tr>
</thead>
<tbody>
<tr>
<td>M212 -&gt;</td>
<td>T2</td>
</tr>
<tr>
<td>T212 -&gt;</td>
<td>T2</td>
</tr>
<tr>
<td>T222 -&gt;</td>
<td>T2</td>
</tr>
<tr>
<td>T225 -&gt;</td>
<td>T2</td>
</tr>
<tr>
<td>T400 -&gt;</td>
<td>T4</td>
</tr>
<tr>
<td>T414 -&gt;</td>
<td>T4</td>
</tr>
<tr>
<td>T425 -&gt;</td>
<td>T4</td>
</tr>
<tr>
<td>T800 -&gt;</td>
<td>T8</td>
</tr>
<tr>
<td>T801 -&gt;</td>
<td>T8</td>
</tr>
<tr>
<td>T805 -&gt;</td>
<td>T8</td>
</tr>
</tbody>
</table>

(1173)

• User manual Part 2, Appendix A, p157

72 TDS 282 00

March 12, 1991
All the names used for the OCCAM configuration language have been missed off the list of predefined names in Appendix A of the manual.

The **ASM** pseudo instructions are also missing.

The description at the beginning of the Appendix groups names into various classes. The missing names of course do not fit the existing classes, therefore the following class names have been defined:

1. **Configurer keyword.** Keyword defined by the current configurer implementation.
2. **Configurer predefined.** A name which is predeclared by the configurer.
3. **Configurer attribute.** Configuration attribute defined in the current configurer implementation.
4. **Assembler directives.** A name which is specially recognised by the compiler inside an **ASM** construct.

The missing names are as follows:
<table>
<thead>
<tr>
<th>Name</th>
<th>Class</th>
<th>Library</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFIG</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONNECT</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDGE</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAP</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAPPING</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NETWORK</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NODE</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ONTO</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SET</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TO</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WITH</td>
<td>configurer keyword</td>
<td></td>
<td></td>
</tr>
<tr>
<td>link</td>
<td>configurer attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>memsize</td>
<td>configurer attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>order.code</td>
<td>configurer attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>order.vs</td>
<td>configurer attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>root</td>
<td>configurer attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rootsize</td>
<td>configurer attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>type</td>
<td>configurer attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOST</td>
<td>configurer predefined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADDRESSOF</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BYTE</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDAB</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDABC</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDLABELDIFF</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAB</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STABC</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WORD</td>
<td>assembler directive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1201)