64-Bit Assembler Conversion Aid README

Note: Before using this information and the product it supports, read
the general information under "NOTICES" in this document.

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1.0 ABOUT THIS README FILE

This Readme file provides information about downloading, installing,
and using the 64-Bit Assembler Conversion Aid.

1.1 Who should read this Readme file

This Readme file is for anyone who wants to convert an assembler
program or application on z/Transaction Processing Facility (z/TPF)
for use in 64-bit mode.

1.2 How to get help

This tool is not formally supported by the TPF Development Lab and
is available for your use "as is". The "as is" tools are provided
with no support intended or implied. If errors are found in the code,
we make no commitment to correct them, although we might. Naturally,
IBM retains all the rights to the tools as stated in the "as is"
license that appears each time you download a tool.

2.0 CONVERSION AID OVERVIEW

The 64-Bit Assembler Conversion Aid helps you to convert z/TPF
programs and applications written in Basic Assembler Language (BAL)

for use in a 64-bit environment. The conversion aid is not intended
to address all conversion issues.

You can run the conversion aid on a Linux machine against the
following types of files:

o Assembler (*.asm)
o Copy Member or CSECT Copy Member (*.cpy)
o Macro (*.mac).

The conversion aid does the following:

o Converts register instructions for use in 64-bit mode; register
  instructions use 64-bit values rather than 32-bit values.

o Converts 31-bit and 32-bit values to 64-bit register values.

o Converts most branch instructions to branch relatives (see Note 1).

o Converts applicable literal instructions to immediate instructions
  where appropriate (see Notes 1 and 2).

o Converts macro names as needed (see note 3).

Notes:

1. This is one step in removing the 4-K (or base) register
   restriction. The conversion aid will not complete this process
   for you.

2. Instructions that are converted include the following:
   - Halfword instructions that use literals
   - Fullword instructions that use literal fullwords with a value
     less than 32,768.

3. For example, some macro names no longer include a
   dollar sign ($), so the conversion is to remove that symbol from
   the name of the macro.

3.0 DOWNLOADING THE CONVERSION AID

To download the 64-Bit Conversion Aid, do the following:

1. Go to the TPF Web site and click Downloads under Fast Links, or
   go directly to:

   http://www.ibm.com/software/htp/tpf/download/tools.htm

2. Download the cvtto64.tar.gz file and place it in a directory on
   Linux. When moving (FTPing) the file, make sure that you use
   binary mode.

4.0 INSTALLING THE CONVERSION AID

To install the 64-Bit Conversion Aid, do the following:

1. On the Linux system, unpack the cvtto64.tar.gz file:
   tar -xvzf cvtto64.tar.gz

2. Compile the cvtto64.c file and make sure that it has the execute
   file permissions:

   ```
   cc -o cvtto64.exe cvtto64.c
   chmod +x cvtto64.exe
   ```

3. Place the executable in a directory that is accessible via
   the PATH setting.

5.0 USING THE CONVERSION TOOL

To convert your assembler programs for running in 64-bit mode,
do the following:

1. At a Linux prompt, enter the command that does the desired
   conversion.

   Note: The following provides a basic overview of this command and
         information about how to use it. The opening commentary
         in the cvtto64.c file that you downloaded has additional
         information about the conversions. Refer to this
         information before using the conversion aid.

   The format for this command is:

   ```
   cvtto64.exe input_file output_file [flags]
   ```

   Where:
   - input_file is the path name of the .ASM, .CPY, or .MAC file
     that you want to convert.
   - output_file is the path name of the file that you want the
     new, converted code stored in.

   NOTE: The path names specified for input_file and output_file
         must not be the same. If you enter the same path name
         for both variables, your file will be destroyed.

   - [flags] are optional specifications for the conversions that
     are completed. When you do not specify any flags, the default
     conversion does the following:

     - Converts branch instructions
     - Converts applicable literal instructions
     - Converts register instructions
     - Uses '64MODE' as the SID code.

     However, if you specify any of the following flags, this
     default is ignored and only the actions of the specified
     flags will occur. You can specify any combination of the
     following, but omit the brackets ([ ]) when using these
     flags; they simply indicate that these flags are optional
     on the command line:

     - -br
       Converts most branch instructions.
     - -reg
       Converts most register instructions for use in 64-bit mode.
     - -mac

Converts appropriate macro names.

- -half
  Converts halfword instructions to 64-bit immediate instructions.
- -half31
  Converts halfword instructions to 31-bit immediate instructions.
- -sidcode xxx
  Specifies the SID code to use in columns 73-80, where xxx is the 8-character desired SID code. The default SID code, if this flag is not specified, is '64MODE'. If a line should be converted, but the conversion aid is unable to convert it, SID code '64TODO' is used.
- -verify
  Ensures that the input_file path name is for a .ASM, .CPY, or .MAC file.
- -spm
  Converts obsolete structured programming macros (SPMs) to their replacement. The following changes will be made:

```
#CASENTR -> #CAST        #ECASE   -> #ECAS
#ELOOP   -> #ELOP        #ELSEIF  -> #ELIF
#ESRCH   -> #EDO         #ORELSE  -> #OREL
#SRCEX   -> #DOEX        #STRTSRC -> #DO
```

3. The output will be similar to the following:

```
Sidcode used to mark changes is 64MODE
Register instructions will be converted
Branch instructions will be converted
Macros will be converted
Halfword instructions will be converted
Input file is /u/shershn/esame/cfac40.cpy
Output file is /u/shershn/source_updates/cfac40.cpy
Conversion complete
  254 lines converted
  0 lines not converted
  1332 total lines
```

6.0 KNOWN PROBLEMS AND WORKAROUNDS

Before using this conversion aid, see the opening commentary of the cvtto64.c file that you downloaded for warnings and details.

7.0 OTHER SOURCES OF INFORMATION

z/TPF product information is available at:
http://www.ibm.com/software/htp/tpf/pubs/tpfpubs.htm

The opening commentary of the cvtto64.c file that you downloaded has more detailed information about the conversion aid.

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