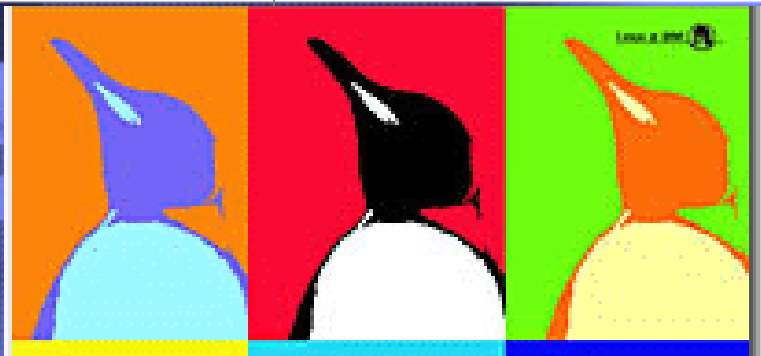




IBM's Migration Kit for Solaris OS to Linux - Version 2

An Overview



Migration Kit for Solaris OS to Linux

This toolkit is a no charge set of software tools and porting guides available to IBM business partners to assist in their Solaris OS to Linux migration opportunities. These tools help IBM Partners quickly migrate or assess the technical issues they will face in moving applications from Solaris OS to Linux on IBM eServer platforms.

The Migration Kit contains three software tools that run on Linux x86 systems, and analyze the following:

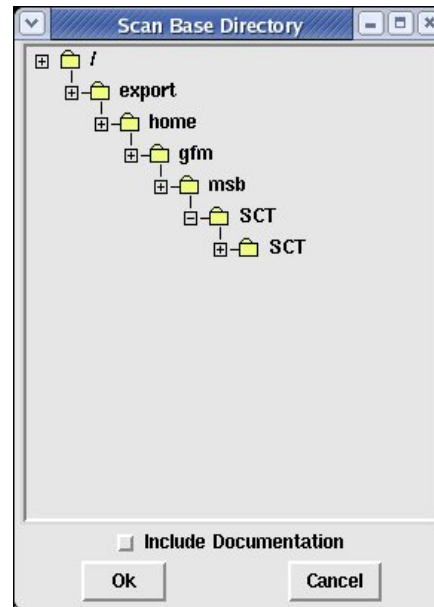
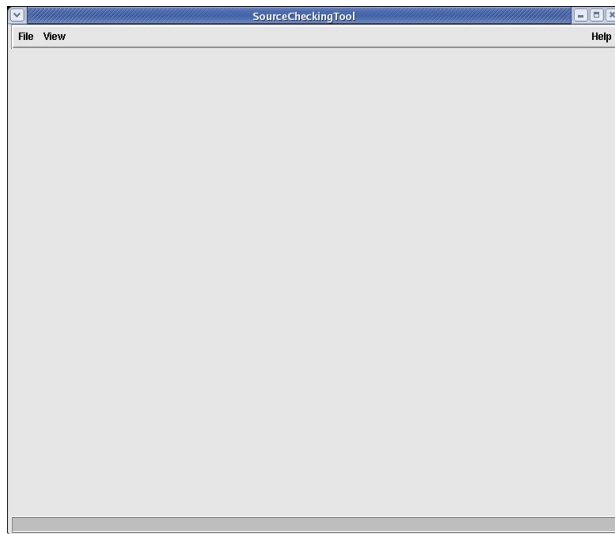
- C and C++ source code for portability issues
- Shell script for utility and file usage
- Endian byte ordering issues

The migration kit contains the following documentation and guides:

- Documentation for all tools
- IBM White Paper: “Guide to Application Porting from Solaris OS to Linux”

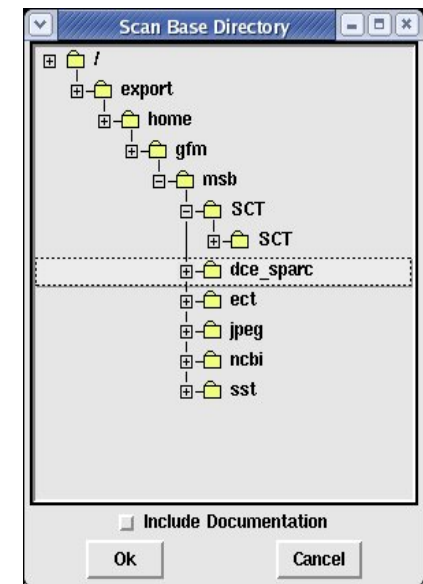


Source Code Tool



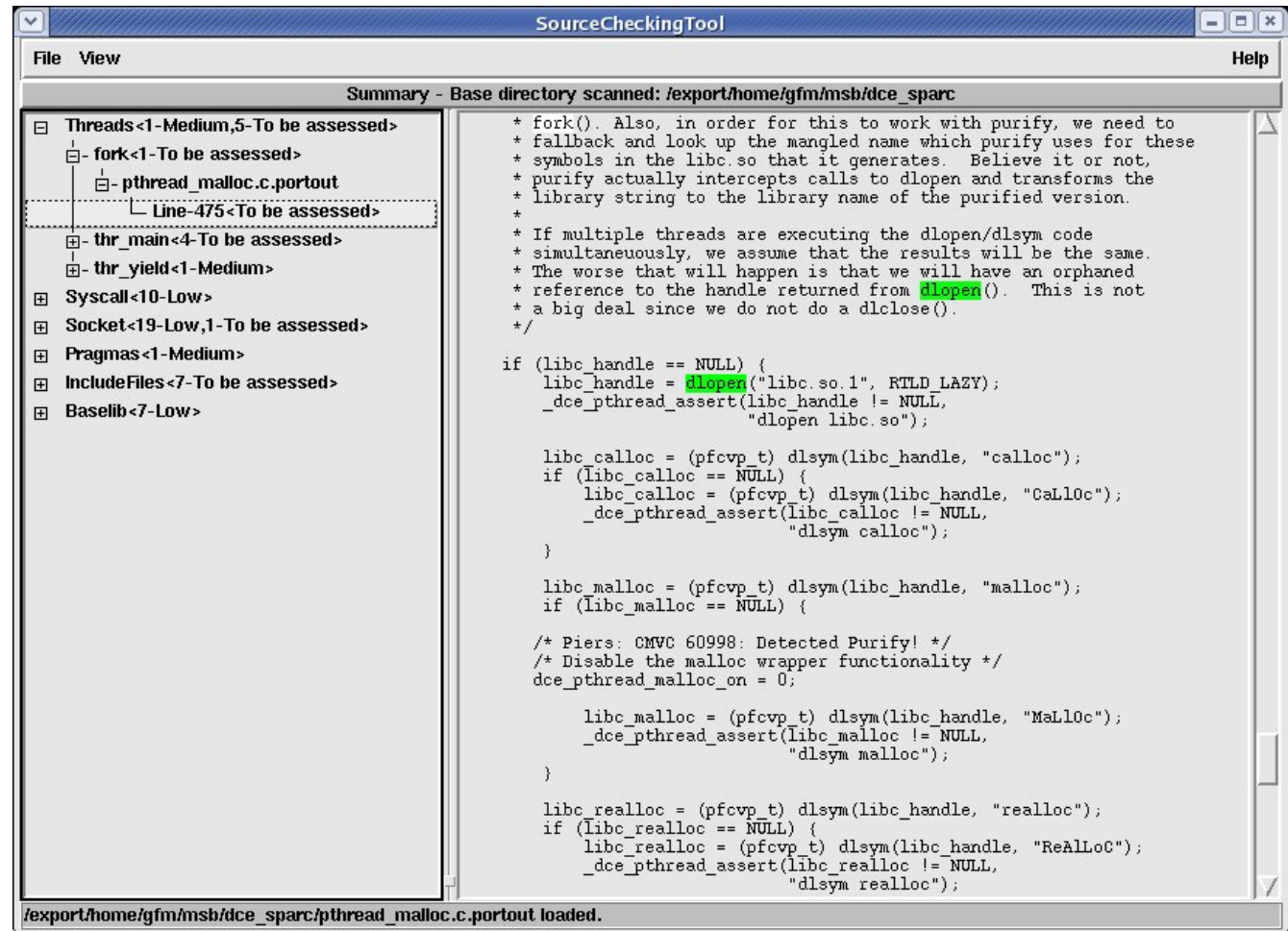
This tool goes over C/C++ files, or directories of C/C++ files, to find potential problems with API or compiler pragma usage.

After installing the tool, the developer uses a GUI to select which file or directory to scan.



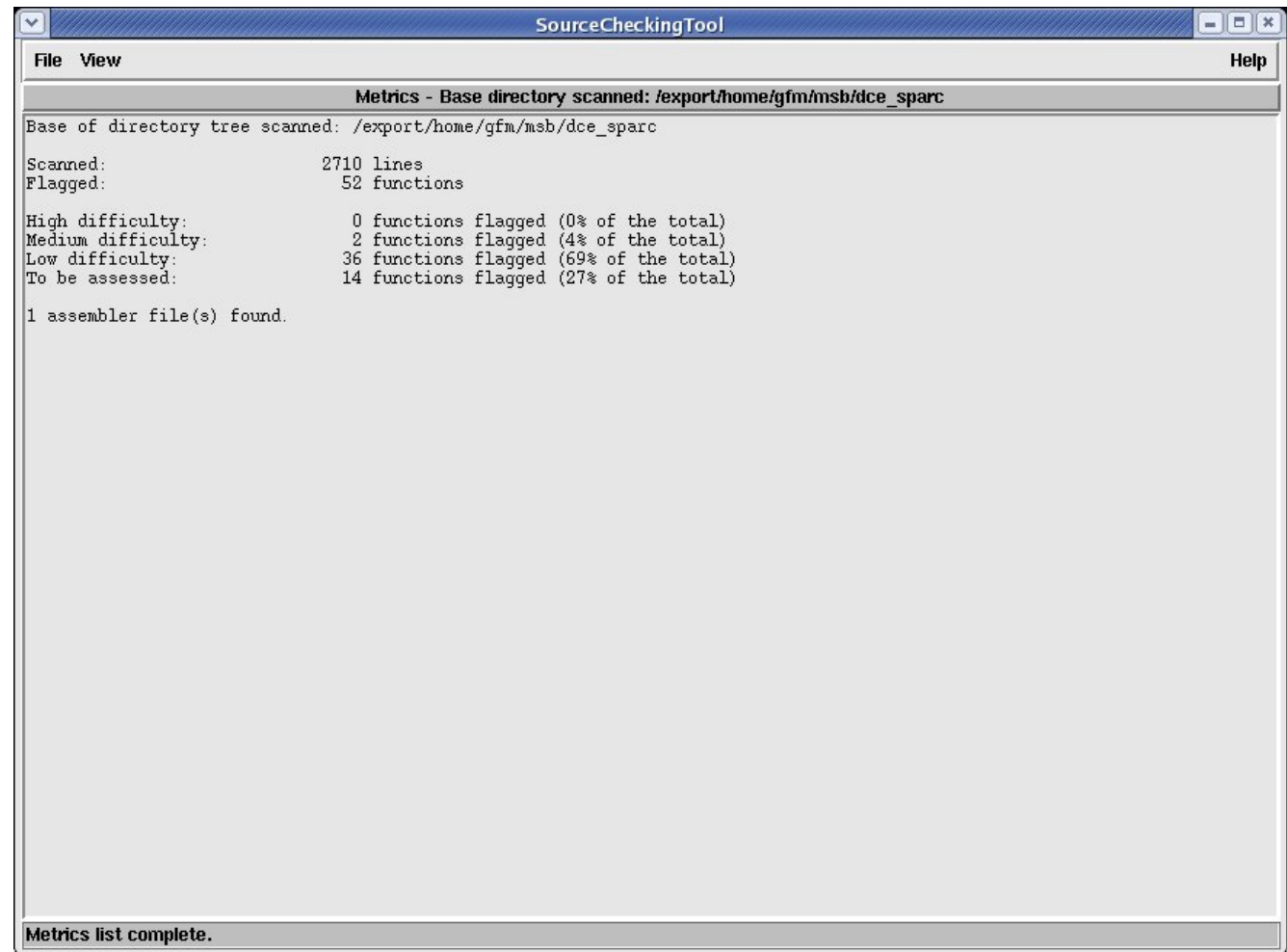
Source Code Tool

When the scan is complete, you make inspect each item discovered, file by file....



Source Code Tool

...or in terms of project metrics.



The screenshot shows a window titled "SourceCheckingTool" with a menu bar containing "File", "View", and "Help". The main content area displays the following metrics:

```
Metrics - Base directory scanned: /export/home/gfm/msb/dce_sparc
Base of directory tree scanned: /export/home/gfm/msb/dce_sparc
Scanned:                2710 lines
Flagged:                 52 functions

High difficulty:         0 functions flagged (0% of the total)
Medium difficulty:       2 functions flagged (4% of the total)
Low difficulty:          36 functions flagged (69% of the total)
To be assessed:          14 functions flagged (27% of the total)

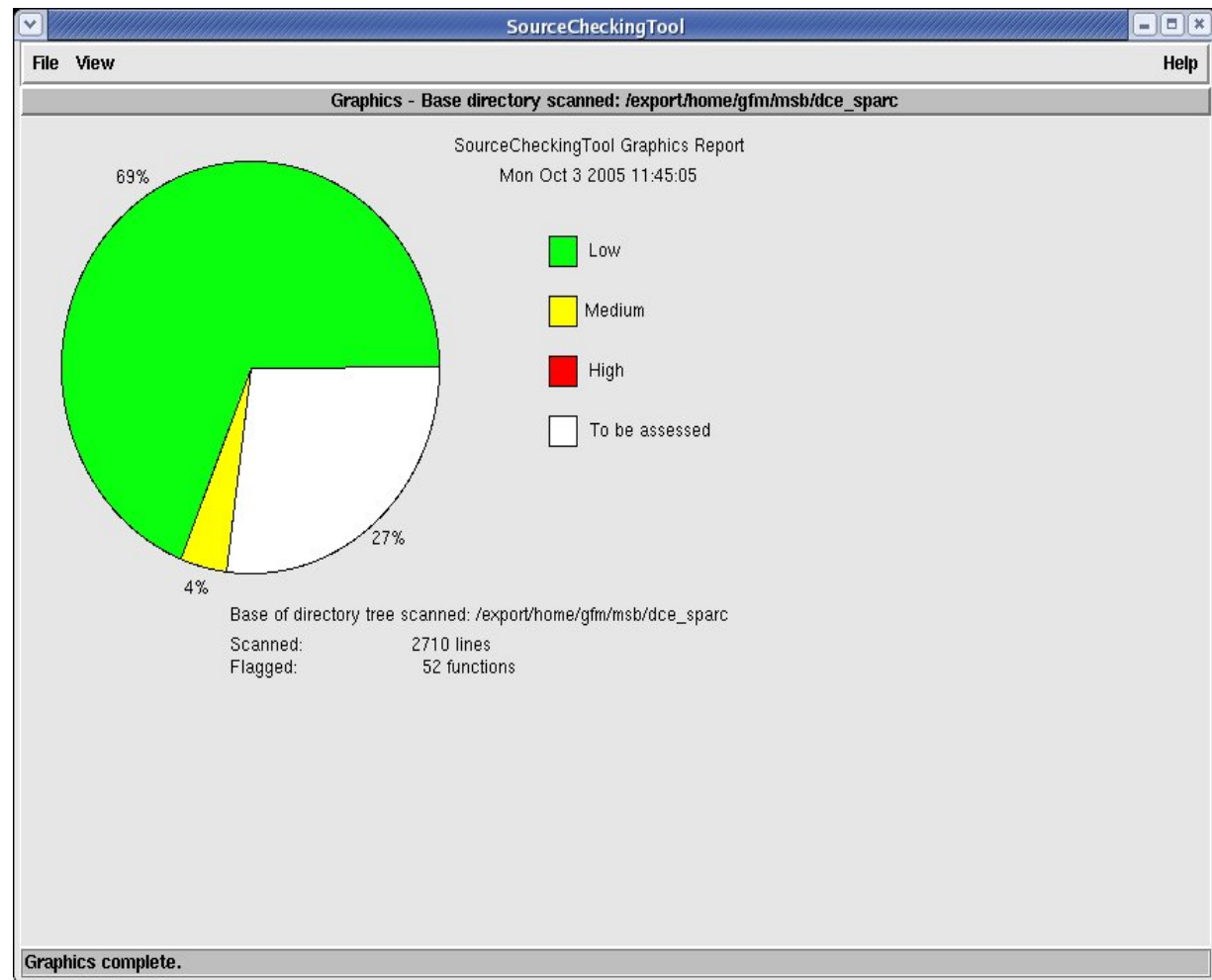
1 assembler file(s) found.
```

At the bottom of the window, a status bar indicates "Metrics list complete."



Source Code Tool

A graphical view is also available.



Shell Script Tool

The Shell script tool provides a way for developers to quickly find the changes needed in the following areas:

- Utilities
- Files
- Paths
- Devices
- and also, Makefiles

The tool flags these and provides recommendations on what changes might be necessary to gain similar results on Linux.

```

mbrown@msbwin:~
File Edit View Terminal Tabs Help
$
$
$ ./lintscript /etc/shutdown shutdown.out
+++ Summary Information for '/etc/shutdown'
24      Total Items identified

5      E2001 Items: Path to file has changed on Linux
4      E4001 Items: Directory structure or file path may not map directly on Li
nux
2      E6001 Items: File does not exist on Linux
1      E7002 Items: Solaris contains several versions of a command
8      E8001 Items: Command flags may be different on Linux
1      E8002 Items: Commonly used flags may be different on Linux
3      E8003 Items: Uncommonly used flags may be different on Linux

+++ Possible Error Code Resolutions
E2001 Update the script to use Linux Path for this command
E4001 Consult Linux man pages to determine the path the script should use.
E6001-E6003 Consult Solaris and Linux man pages to find a comparable Linux Comma
nd
E7002 Determine which version of the Solaris command you are using and consult t
he Linux man pages
      to determine how to get the same behavior for this command on Linux
E8001-E8004 Consult Solaris and Linux man pages to determine correct flags to us
e for these commands
$
$

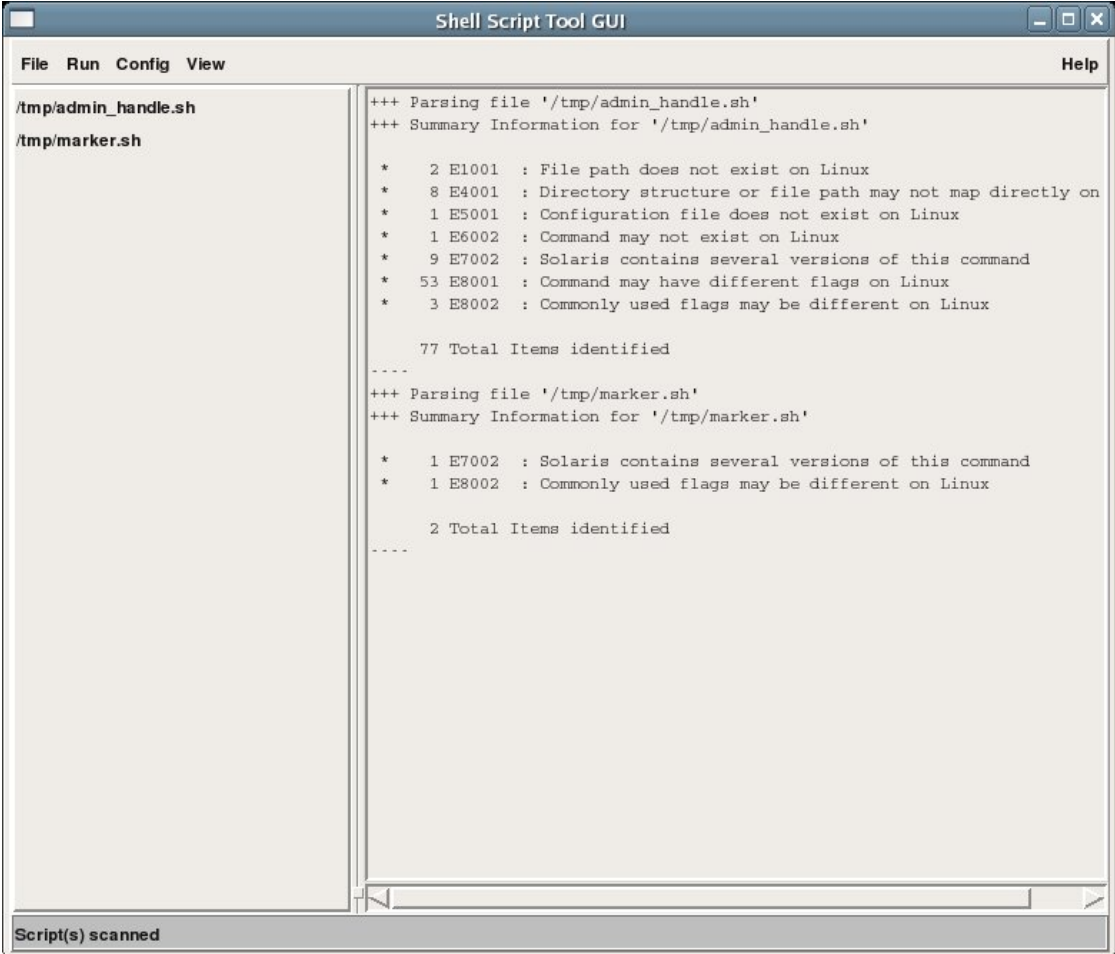
```



Shell Script Tool

The Shell script tool produces an output file with a detailed report on suspected problems and recommended changes.

Pictured is the GUI version of the tool, which allows for batching of scans and their results.



```
Shell Script Tool GUI
File Run Config View Help

/tmp/admin_handle.sh
/tmp/marker.sh

+++ Parsing file '/tmp/admin_handle.sh'
+++ Summary Information for '/tmp/admin_handle.sh'

*      2 E1001 : File path does not exist on Linux
*      8 E4001 : Directory structure or file path may not map directly on
*      1 E5001 : Configuration file does not exist on Linux
*      1 E6002 : Command may not exist on Linux
*      9 E7002 : Solaris contains several versions of this command
*     53 E8001 : Command may have different flags on Linux
*      3 E8002 : Commonly used flags may be different on Linux

77 Total Items identified
----
+++ Parsing file '/tmp/marker.sh'
+++ Summary Information for '/tmp/marker.sh'

*      1 E7002 : Solaris contains several versions of this command
*      1 E8002 : Commonly used flags may be different on Linux

2 Total Items identified
----

Script(s) scanned
```


Endian Checking Tool

The Endian Checking Tool, when installed with its prerequisites, allows the developer to review code for several potential causes of Endian byte-ordering problems.

The tool requires that the code to be analyzed, first be built (compiled) using the GNU development tools freely available on Linux. These are the same tools used by Linux developers and thus taking this step also readies the code for migration. This is further documented in the tool's manual, and the porting whitepaper provided with the Migration Kit.

Once the code is prepared, the tool can be used on a command-line or GUI basis.

```

mbrown@msbwin:~
File Edit View Terminal Tabs Help

$ export PATH=/opt/sfw/gcc-3/bin:/opt/sfw/bin:/usr/sfw/bin:$PATH
$ export LD_LIBRARY_PATH=/opt/sfw/gcc-3/lib/
$ ./bin/ect.bash ../jpeg/cjpeg cjpeg.out
0% Complete [14:38:44] - Staring ...
sparc-sun-solaris2.9
This might take a long time to complete.. please do not interrupt it..
Using ...
  ECT Bin direct: ./bin
  executable file: ../jpeg/cjpeg
  results file: cjpeg.out
  database direct: ./data/cjpeg.DB
  objdump file: ./data/cjpeg.DB/objdump.txt
10% Complete [14:39:32] - generated size table...
[crtgdb]: generating function definitions
[crtgdb]: generating gdb commands for function details.
[crtgdb]: gdb version = 6
[crtFuncDef]: generating type info
[crtFuncDef]: ++++++
20% Complete [14:39:41] - generated function definitions table...
[genObjFr]: generating function calls
[crtFuncRef]: #####
[crtFuncRef]: #####
[crtFuncRef]: #####
[crtFuncRef]: #####
[crtFuncRef]: #####
[crtFuncRef]: #####
[crtFuncRef]: #####
[crtFuncRef]: #####
[crtFuncRef]: #####
[crtFuncRef]: ##
30% Complete [14:39:44] - generated function references table...
40% Complete [14:39:44] - checked for risky API calls...
50% Complete [14:39:44] - checked for ioctl usage...
60% Complete [14:39:44] - checked for endian errors in function calls...
70% Complete [14:39:53] - checked for endian errors in global variable declarat
ions...
80% Complete [14:39:53] - checked for data size differences...
90% Complete [14:39:55] - checked for potentially invalid uses of __BUILTIN...
100% Complete [14:39:55] - Formulated results ...

      Found 1 warnings and
      0 errors in
      30 files

$

```



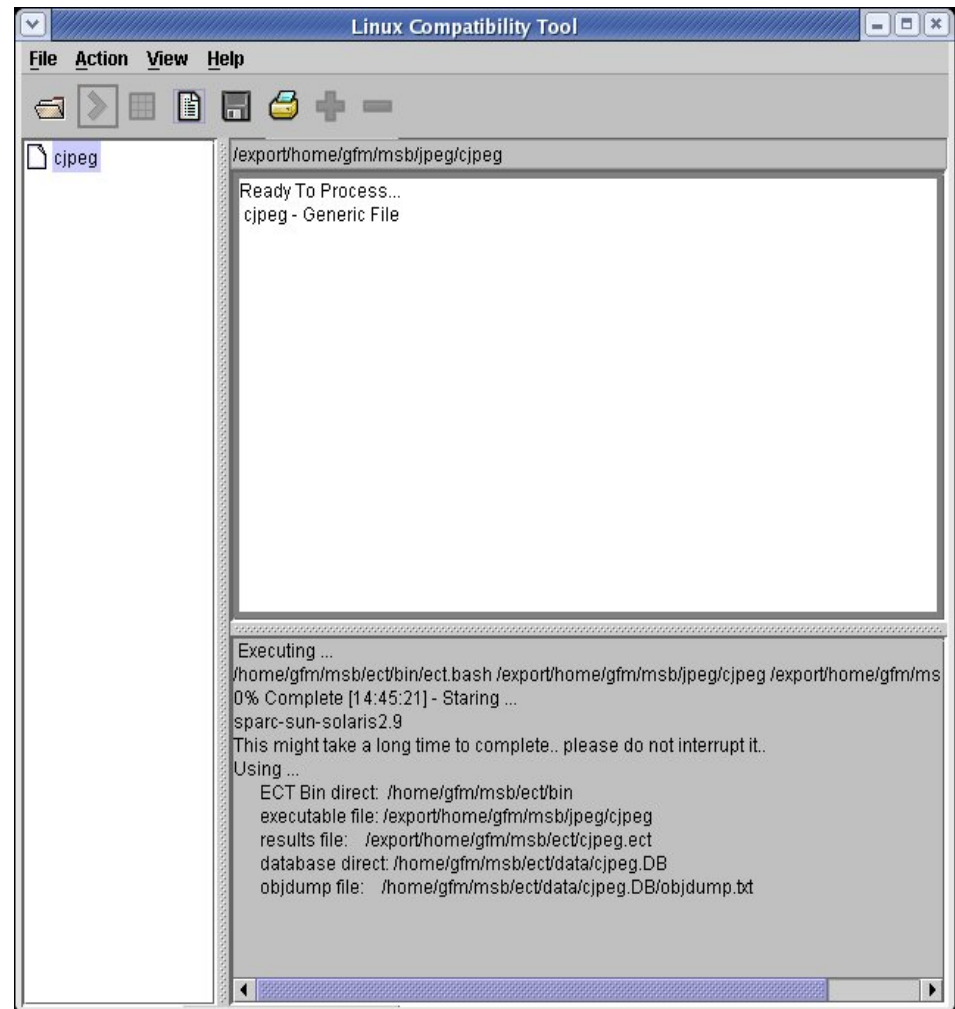
Endian Checking Tool

The Endian Tool produces reports with entries similar to the following:

```
/test/src/init.c - Line 199 E30001
Variable/parameter size mismatch
arg 2 size 4 in call to mystrncpy.
(Defined in /test/src/init.c at
line 190 size 1)
```

The manual contains explanations of the entry codes:

E30001 states that this is a variable/parameter size mismatch problem. In this case a size of 4 is expected but a size of 1 is passed.



Migration Kit for Solaris OS to Linux

The Migration Kit For Solaris OS to Linux is an effective tool to help your developers:

- Find potential problems in their C and C++ source code
- Locate necessary changes to shell scripts and Makefiles
- Avoid possible Endian conflicts in C/C++ data handling



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