IBISCHK6 V6.1.3 and Executable Model File Checking

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Goals and Contents

- New ibischk6 V6.1.3 executables available at the same location:

  www.ibis.org/ibischk6/
- Fixes 7 bugs
- Differences (new ibischk6 file names)
- New – executable model file checking per BUG179 enhancement for [Algorithmic Model] Executable lines
- Source code quality assurance tests
- Some limitations

New BUGs 174-180 Fixed

www.ibis.com/bugs/ibischk/

180	Error with Legal List_Tip in Reserved_Parameters with Format List	Mike LaBonte, Signal Intergrity Software (SiSoft)
179	DLL SO Checking and Functional Existence and Platform Information	Mike LaBonte, SiSoft; Bob Ross, Teraspeed Labs; Lance Wang, IO Methodology
178	Error with Same Platform_Compiler_Bits for Rx and Tx of I/O* in IBIS-AMI	Michael Schaeder, Zuken; Bob Ross, Teraspeed Labs
177	Empty [Node Declarations] Stops Parser Completion	Arpad Muranyi, Mentor Graphics; and Bob Ross, Teraspeed Labs
176	[External Model] Error Not Issued for Ports List With Undeclared Port	Arpad Muranyi, Mentor Graphics; and Bob Ross, Teraspeed Labs
175	Incorrect Model References Through [Model Selector] Not Reported	Walter Katz, SiSoft
174	File Not Found Line Printed Under Some Operating Systems	Mike LaBonte, SiSoft and Bob Ross, Teraspeed Labs

New Names for ibischk6

- Command line operation:
- Windows:
  - ibischk6_32.exe (versus ibischk6.exe)
  - ibischk6_64.exe (versus ibischk6.exe)
- Linux (Ubuntu):
  - ibischk6_32 (versus ibischk6)
  - ibischk6_64 (versus ibischk6)
- Used for source code quality assurance tests per BUG179
- Macintosh osx_32, osx_64 (also uploaded), but not part of source code release

New Command Line Based on ibischk6 Name

Example: ibischk6_32.exe ➔"ibischk6_32" command

```
IBISCHK6 V6.1.3

IBISfile validation:
This program has been provided free to the electrical
engineering community by the IBIS Open Forum.  The
purpose of this program is to validate that the contents
of ASCII device data in a file specified conform to the
IBIS specification.
Usage: ibischk6_32          <IBS filename>
     : ibischk6_32  -ebd <EBD filename>
     : ibischk6_32  -pkg <PKG filename>
     : ibischk6_32  -ami <AMI filename>
Usage: ibischk6_32  -caution -numbered      <IBS filename>
     : ibischk6_32  -caution -numbered -ebd <EBD filename>
     : ibischk6_32  -caution -numbered -pkg <PKG filename>
     : ibischk6_32  -caution -numbered -ami <AMI filename>
The flags prior to the file name can be in any order, and the -caution and/or -
numbered flags are optional.
```

Can Rename ibischk6 File (Examples Below)

- **ibischk6.exe as in earlier versions for "ibischk6" command**
- **ibischk613_32.exe showing version and bits detail for "ibischk613_32" command**
- **Etc. - the new ibischk6 file name shows up in the Usage: lines, as shown on previous slide**

Syntax and Notation Related to BUG179

- **Under [Algorithmic Model] Executable, Executable_Rx and Executable_Tx lines have this information:**

Platform_Compiler_Bits File_Name Parameter_File

- **Platform is operating system such as Linux, Windows**
- **Bits is 32 or 64 for common platforms**
- **File_Name is "executable model file" name such as abc.dll or abc.so**
- **Parameter_File is the .ami file**

Testing and Executable Combinations

- 32-bit and 64-bit operating system, ibischk6_* and executable model files are done consistent with the platform operating system
  - Ibischk6_32 will work on 64-bit platforms, but will load and test 32 bit executable model files
- Specification does not impose a requirement, but internal Windows requires executable names with at least a dot "."
- Message will give the recommended (but not required) extension

bug179-1.ami
Full Function Existence Checking

```
(bug179
   (Reserved_Parameters
        (AMI_Version (Usage Info)(Type String)(Value "6.1"))
        (Init_Returns_Impulse (Usage Info)(Type Boolean)(Value True))
        (GetWave_Exists (Usage Info)(Type Boolean)(Value True))
        (Resolve_Exists (Usage Info)(Type Boolean)(Value True))
   )
)
```

Function Existence Testing

Each DLL/SO file must contain code symbols for exported functions in one of four possible combinations:

A. Case 1: Executable model file has AMI_Init, AMI_GetWave and AMI_Close. (IBIS 5.0 and above)
B. Case 2: Executable model file has AMI_Init and AMI_Close. (IBIS 5.0 and above)
C. Case 3: Executable model file has AMI_Resolve, AMI_Resolve_Close, AMI_Init, AMI_GetWave and AMI_Close. (IBIS 6.0 and above)
D. Case 4: Executable model file has AMI_Resolve, AMI_Resolve_Close, AMI_Init and AMI_Close. (IBIS 6.0 and above)

Test file names:
: noicgr No "C" combinations above and below
A: icg AMI_Init, AMI_Close, AMI_GetWave
B: ic AMI_Init, AMI_Close
C: icgr AMI_Init, AMI_Close, AMI_GetWave, AMI_Resolve, AMI_Resolve_Close
D: icr AMI_Init, AMI_Close, AMI_Resolve, AMI_Resolve_Close

Some Tests for ibischk6_32.exe when Checked with bug179-1.ami

```
| Normal case: GetWave and ResolveExists return true
|
Executable Windows_1_32 noicgr_32.dll    bug179-1.ami  ← 5 Errors
Executable Windows_2_32 ic_32.dll        bug179-1.ami  ← 3 Errors
Executable Windows_3_32 icg_32.dll       bug179-1.ami  ← 2 Errors
Executable Windows_4_32 icgr_32.dll      bug179-1.ami  ← Good
Executable Windows_5_32 icr_32.dll       bug179-1.ami  ← 1 Error
Executable Windows_6_64 noicgr_64.dll    bug179-1.ami  ← Executable
Executable Windows_7_64 ic_64.dll        bug179-1.ami    lines for 64-bit
Executable Windows_8_64 icg_64.dll       bug179-1.ami    Windows lines
Executable Windows_9_64 icgr_64.dll      bug179-1.ami    not checked
Executable Windows_10_64 icr_64.dll      bug179-1.ami
|
```

Lines 112 to 121

Partial Report for ibischk6_32.exe with New Error Codes

```
E4702 (line  112) - Code file noicgr_32.dll does not contain required AMI_Init() function
E4703 (line  112) - Code file noicgr_32.dll does not contain required AMI_Close() function
E4704 (line  112) - Code file noicgr_32.dll does not contain AMI_GetWave() function, required
because GetWave_Exists=True in AMI file bug179-1.ami
E4705 (line  112) - Code file noicgr_32.dll does not contain AMI_Resolve() function, required
because Resolve_Exists=True in AMI file bug179-1.ami
E4706 (line  112) - Code file noicgr_32.dll does not contain AMI_Resolve_Close() function,
required because Resolve_Exists=True in AMI file bug179-1.ami
E4704 (line  113) - Code file ic_32.dll does not contain AMI_GetWave() function, required because
GetWave_Exists=True in AMI file bug179-1.ami
E4705 (line  113) - Code file ic_32.dll does not contain AMI_Resolve() function, required because
Resolve_Exists=True in AMI file bug179-1.ami
E4706 (line  113) - Code file ic_32.dll does not contain AMI_Resolve_Close() function, required
because Resolve_Exists=True in AMI file bug179-1.ami
E4705 (line  114) - Code file icg_32.dll does not contain AMI_Resolve() function, required
because Resolve_Exists=True in AMI file bug179-1.ami
E4706 (line  114) - Code file icg_32.dll does not contain AMI_Resolve_Close() function, required
because Resolve_Exists=True in AMI file bug179-1.ami
E4704 (line  116) - Code file icr_32.dll does not contain AMI_GetWave() function, required
because GetWave_Exists=True in AMI file bug179-1.ami
```

Line 115 is Good (0 Errors):

```
Executable  Windows_4_32  icgr_32.dll  bug179-1.ami
```

Summary for Platforms/Bits Test for Full Test Case

```
... Status of [Algorithmic Model] Executables for Windows 32:
icr_64.dll:          Windows 64:          Not Checked
icgr_64.dll:         Windows 64:          Not Checked
icg_64.dll:          Windows 64:          Not Checked
ic_64.dll:           Windows 64:          Not Checked
icr_32.dll:          Windows 32:          Checked
icgr_32.dll:         Windows 32:          Checked
icg_32.dll:          Windows 32:          Checked
ic_32.dll:           Windows 32:          Checked
noicgr_64.dll:       Windows 64:          Not Checked
icr_32.dll:          Windows 64:          Not Checked
icgr_32.dll:         Windows 64:          Not Checked
icg_32.dll:          Windows 64:          Not Checked
ic_32.dll:           Windows 64:          Not Checked
noicgr_32.dll:       Windows 64:          Not Checked
icr_64.dll:          Windows 32:          Checked, has platform issue
icgr_64.dll:         Windows 32:          Checked, has platform issue
icg_64.dll:          Windows 32:          Checked, has platform issue
ic_64.dll:           Windows 32:          Checked, has platform issue
noicgr_64.dll:       Windows 32:          Checked, has platform issue
noicgr_32.dll:       Windows 32:          Checked
```

Summary for Platforms/Bits Test for Full Test Case (Continued)

```
icr_64.so:          Linux 64:          Not Checked
icgr_64.so:         Linux 64:          Not Checked
icg_64.so:          Linux 64:          Not Checked
ic_64.so:           Linux 64:          Not Checked
icr_32.so:          Linux 32:          Not Checked
icgr_32.so:         Linux 32:          Not Checked
icg_32.so:          Linux 32:          Not Checked
ic_32.so:           Linux 32:          Not Checked
noicgr_64.so:       Linux 64:          Not Checked
icr_32.so:          Linux 64:          Not Checked
icgr_32.so:         Linux 64:          Not Checked
icg_32.so:          Linux 64:          Not Checked
ic_32.so:           Linux 64:          Not Checked
noicgr_32.so:       Linux 64:          Not Checked
icr_64.so:          Linux 32:          Not Checked
icgr_64.so:         Linux 32:          Not Checked
icg_64.so:          Linux 32:          Not Checked
ic_64.so:           Linux 32:          Not Checked
noicgr_64.so:       Linux 32:          Not Checked
noicgr_32.so:       Linux 32:          Not Checked
... This IBISCHK6 executable supports Windows 32 bit only

Errors  : 28

File Failed
```

Status Report Lines

- Checked
- Not checked
- Checked, has platform issue
  - Platform bits different than operating system platform Bits
  - Executable model file does not have dll or so extension
  - Ibischk6_32 cannot load 64-bit executable model files and visa versa
- "… This IBISCHK6 executable supports Windows 32 bit only"
  - Refers to ibischk6_32.exe used in test

Recommended Extensions

- **Windows: dll**
- **Linux: so**
- **No requirement but some Windows versions require executable names with at least a dot "."**
- **Other messages may suggest .dll for Windows or .so for Linux)**

Limits and Issues

- ibischk6_32 works on 64-bit platforms if 32-bit executable model files load and work on the platform
- Platform name examples shown in the IBIS Specification – some may be specified in the future
  - Case insensitive Windows
  - Case insensitive Linux
- For unknown platform names, ibischk6 will try to load executable model file and run the functional existence test

Future and Conclusion

- **No reference IBIS-AMI waveform checking**
- **Some commercial vendors offer reference IBIS-AMI waveform checking**
- **ibischk6 V6.1.3 valuable for function existence testing for Reserved_Parameters documented in the .ami file**