



Introducing IBIS Version 7.0

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<http://www.ibis.org/ver7.0/>

(Presented by Michael Schaefer, Zuken)

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Agenda

What IBIS 7.0 Contains

Key Features

- New Interconnect support
- AMI Improvements
- Traditional and Multi-lingual IBIS Improvements

Development Timeline

What's Next?

References



What IBIS 7.0 Contains

- IBIS Version is now available
 - 12 chapters, 331 pages
 - Available at <http://www.ibis.org/ver7.0/>
- 17 BIRDS addressed
 - 5 interconnect/packaging or related changes
 - 6 IBIS-AMI changes
 - 6 traditional IBIS and multi-lingual syntax changes



BIRDs Included in IBIS 7.0

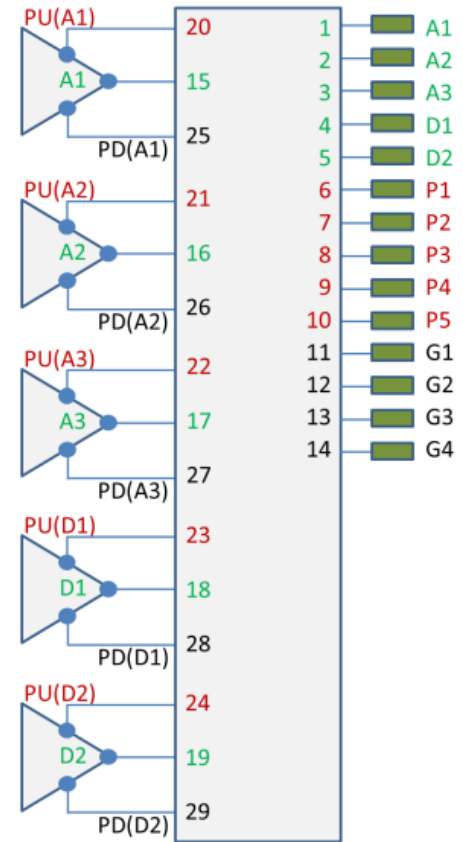
Number	Issue Title	Date First Submitted	Date Approved	Days Open
196.1	Prohibit Periods at the End of File Names	25-Sep-18	12-Oct-18	17
194	Revised AMI Ts4file Analog Buffer Models	2-May-18	29-Jun-18	58
193	Figure 29 corrections	10-Jan-18	23-Mar-18	72
192.1	Clarification of List Default Rules	22-Aug-17	15-Sep-17	24
191.2	Clarifying Locations for Si location and Timing_location	28-Jun-17	15-Sep-17	79
189.7	Interconnect Modeling Using IBIS-ISS and Touchstone	27-Jan-17	29-Jun-18	518
188.1	Expanded Rx Noise Support for AMI	13-Dec-16	17-Feb-17	66
187.3	Format and Usage Out Clarifications	13-Dec-16	21-Apr-17	129
186.4	File Naming Rules	29-Nov-16	14-Jul-17	227
185.2	Section 3 Reserved Word Guideline Update	13-Sep-16	6-Jan-17	115
184.2	Model_name and Signal_name Restriction for POWER and GND Pins	1-Sep-16	6-Jan-17	127
183	[Model Data] Matrix Subparameter Terminology Correction	30-Aug-16	14-Oct-16	45
182	POWER and GND [Pin] signal_name as [Pin Mapping] bus_label	30-Aug-16	14-Oct-16	45
180	Require Unique Pin Names in [Pin]	17-Feb-16	14-Oct-16	240
179	New IBIS-AMI Reserved Parameter Special_Param_Names	13-Oct-15	18-Dec-15	66
165.1	Parameter Passing Improvements for [External Circuit]s	9-Jan-14	15-Dec-17	1436
158.7	AMI Ts4file Analog Buffer Models	20-Feb-13	27-Oct-17	1710
147.6	Back-channel Support	18-Oct-11	10-Mar-17	1970



* Other names and brands may be claimed as the property of others

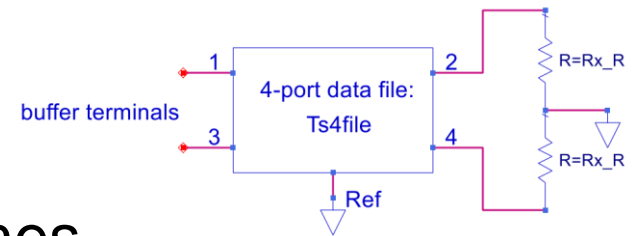
IBIS Interconnect Support

- Improved package modeling is finally here!
 - Touchstone and IBIS-ISS directly supported
 - Explicit locations for buffer, pin, plus die pad
 - On-die power delivery networks
- More detail shared at previous Summits
 - <http://ibis.org/summits/feb18/mirmak.pdf>
- Additional modifications
 - Voltage and timing measurement locations updated
 - Model, signal name clarifications for POWER and GND
 - Updates to [Pin Mapping] and bus label concepts



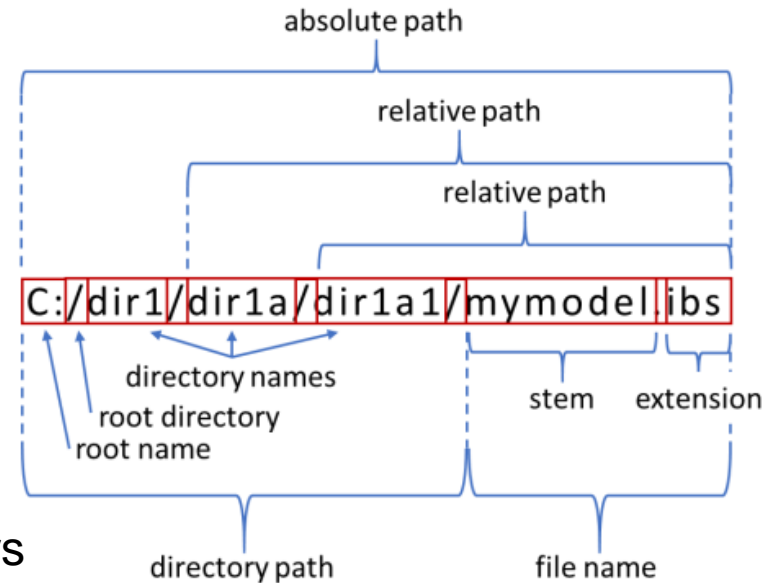
AMI Improvements

- Backchannel support!
 - Buffer models negotiate equalization
- Touchstone for analog buffer models
 - 4-port through paths for Tx and Rx
- New parameter `Special_Param_Names`
 - Enables EDA functions or user interactions under `Model_Specific` parameters beyond current IBIS definitions
- Clarifications to Format and Usage Out (parser bug fix)
- Clarification of Format List rules, including default value
- Expanded receiver noise support
 - Alternate name for `Rx_Noise`: `Rx_GaussianNoise`
 - New `Rx_UniformNoise` parameter



Traditional & Multi-Lingual IBIS Changes

- Parameters may be passed to instances of [External Circuit]
- File and directory clarifications
 - Naming rules for files and directories
 - Cross-OS support is ensured
- [Pin] list names now must be unique
 - Avoids unintentional shorts or other errors
- Reserved word (e.g., GND) rules relaxed
- Package matrices are no longer “subparameters”



Other Changes

- Organization
 - Three numbered levels
 - Lists of Tables and Figures
 - Hyperlinked Figures and Tables
- Readability improvements
 - Fixes made to grammar and spelling

- ▲ 7 Package Modeling
 - 7.1 Introduction
 - 7.2 Rules of Precedence
 - 7.3 Keyword Definitions
- ▲ 8 Electrical Board Description
 - 8.1 Introduction
 - 8.2 Keyword Definitions
- 9 Notes on Data Derivation Method
- ▲ 10 Algorithmic Modeling
 - ▲ 10.1 Algorithmic Modeling Interface (AMI)
 - 10.1.1 Introduction
 - 10.1.2 Keyword Definitions
 - ▲ 10.2 AMI Executable Model File Programming Guide
 - 10.2.1 Overview
 - ▷ 10.2.2 Application Scenarios
 - 10.2.3 Function Signatures

These improvements create a more readable and more usable document



IBIS 7.0 Timeline

Actual Date	Milestone
4/21/2017	Vote to establish 7.0 as the next IBIS version passes
	<i>BIRD review and acceptance (30 meetings)</i>
7/20/2018	7.0 BIRD set accepted
	<i>Editorial task group drafts IBIS 7.0</i>
12/19/2018	Editorial announces IBIS 7.0 Draft 1 ready Review period begins 12/21 at Open Forum
	<i>Work begins to address comments</i>
1/18/2019	Editorial announces IBIS 7.0 Draft 2 ready
1/25/2019	Editorial announces IBIS 7.0 Draft 3 ready
2/22/2019	Vote to ratify 7.0 scheduled for next meeting
3/15/2019	IBIS 7.0 ratified



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BIRDS Excluded from IBIS 7.0

BIRD	Title
166.2	Resolving problems with Redriver Init Flow
181.1	I-V Table Clarifications
190	Clarification for Redriver Flow
195.1	Enabling [Rgnd] and [Rpower] Keywords for Input Models
197.2	New AMI Reserved Parameter DC_Offset

- Two of these expand or clarify traditional IBIS
 - Voltage referencing continues to be point of debate
- Two clarify AMI repeater treatment (re-drivers)
 - Tabled in IBIS-ATM
- DC_Offset looks ahead to DDR5
 - Current focus of IBIS-ATM

Targeted for the next IBIS version –
possibly 7.1 or beyond



What's Next?

- A Known Editorial Issues document is available
 - Mostly clarifications needed in a future release
- An ibischk7 version 7.0.0 parser has been commissioned for IBIS 7.0
 - One BUG discovered by parser developer to be fixed.

Your feedback is vital



References

- IBIS Web site: www.ibis.org
 - Links to Task Groups, including Editorial, available there
- Version 7.0 Specification
 - www.ibis.org/ver7.0/
 - Includes evolution and extended keyword hierarchy information
- Summit Presentations
 - www.ibis.org/summits/





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