



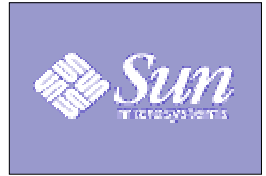
IBIS User Experiences

Tim Coyle

IBIS Summit Meeting

October 21, 2003





Model Maker to Model User

- Spent last 2 years making IBIS files
- Now using other people's IBIS files



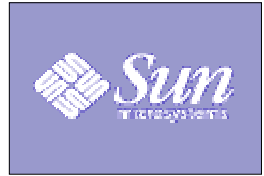
Where is IBIS at today?

- Well recognized modeling standard
- Over 25+ companies members of the IBIS Open Forum Group
- Solid 3.2 spec
- Future AMS enhancements



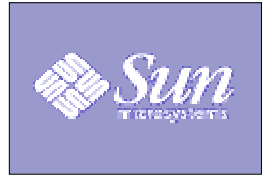
What do you get today for a 3.2 model?

- Almost all IBIS files will pass parser
 - Either it's a good model or a really bad model
- Timing load inlaced (vref,cref,rref)
- V/T data



So what's the problem?

- Accuracy is the problem
- So the IBIS file passes the parser, and the I/V and V/T curves look valid, but what is the accuracy of the model?



Why it's Important

- IBIS files used for timing margins
- If the model is off, then the timing is off
- People are basing designs off of simulation of IBIS files



How do you define accuracy?

- Have to overcome issues such as
 - What tests to use
 - What tool to use for verification
- Previous work done with Accuracy Handbook
- Current work being done with Quality group



How do you get accuracy?

- Don't count on manufacturers
 - How many manufacturer's have devoted resource to IBIS? Most are either designer or applications engineer playing an IBIS modeler
- Do manufacturer's understand how IBIS files are being used by the customer?
 - Is a curve check enough of a validation?



An example of my procedure

- Create min/typ/max HSPICE netlists from design database (no package, include esd)
- Simulate HSPICE models to ensure they meet datasheet spec
- Run simulations to extract I/V and V/T curve
- Check with parser, compare IBIS in t-line load to SPICE in t-line load
- But what did I miss? What is the accuracy spec missing?



What to do about accuracy?

- The proof is in the numbers
- Need to start having an open-dialog with your vendors
 - Understand their process for creating models
 - Ask for data such as tester data, char data, etc.
 - Ask them if they would make/break a system based upon model



It's not just accuracy...

- Other aspects of IBIS modeling that are still open-ended, some basic, some not...
 - Package models (ICM solution?)
 - ESD clamps (Kamps of current?)
 - Tool issues (it goes beyond tech support)

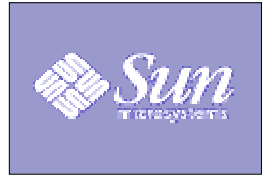


The IBIS Community

- For a non-proprietary specification, the IBIS community is rather quiet
- What are some possible factors
 - Slow economy
 - Maybe not as proprietary as you think
 - Modeling advantages
 - Software sales

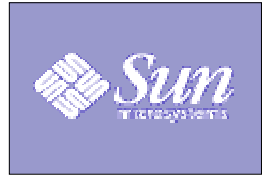
IBIS – The Paradox

- IBIS will always battle 2 questions:
 - Is it as accurate as SPICE?
 - How fast can it go?
- Where's the proof?



The Answer

- The only answer is involvement
- What if we gave a list of IBIS issues to the best modelers, put them in a room with no affiliation to company/self interest/etc., just pure engineering?



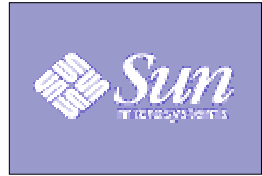
My Part

- Wanted to keep track of current going-ons of IBIS (new app notes, articles, etc.)
- Wanted a venue not associated with any company or organization to freely discuss IBIS issues
- Why not a website?



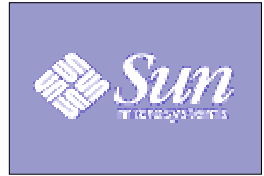
The Website

- www.ibisdeveloper.com
- Hosting out of my own pocket (no affiliation with Sun or anyone else)
- Will announce in a couple of weeks
- Worst Case scenario
 - A good links page for IBIS information
- Best Case scenario
 - A cohesive community of IBIS developers



The Website

- If you want to contribute
 - Timothy.Coyle@sun.com



Questions?