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**SoftJin Introduces Mask Data File Compression Software Product, High Compression Ratio and Selective Decompression Saves Time and Cost**

*MEBES file compressor, MEBESzip, compresses MEBES data files up to 15X, Integrates with post-layout EDA products*

**SANTA CLARA, CA and BANGALORE, INDIA** – October 9, 2006 – SoftJin, an EDA (Electronic Design Automation) software development services company, today announced its latest offering in its line of EDA components, **MEBES zip**, a software product that compresses mask data files in MEBES™ format by a factor of 5-15X and significantly reduces file sizes as well as data transfer times. MEBESzip also allows selective decompression, eliminating the need of decompressing the entire file prior to use for any further processing.

MEBES zip addresses the challenge of handling increasingly large MEBES files sizes in the nanometer design era. It converts mask data in MEBES format into a highly compressed proprietary binary format. The binary format can be decompressed back to recover the original bit-for-bit matching MEBES file.

"Our understanding of post-layout and mask data formats and years of research in applicable compression technology made it possible for us to offer a unique time and money saving proposition," remarked Kamal Aggarwal, Vice President Marketing and Strategy at SoftJin. "Our R&D group was able to achieve a high level of compression by applying their prior experience and knowledge of working with layout design formats such as GDSII and OASIS to extend compression technology to mask data formats such as MEBES."

**Why MEBESzip-Large Mask Data Files Need Compression**

MEBES (Manufacturing Electron Beam Exposure System) is a proprietary mask data format from Applied Materials Inc. for exchange of fractured mask data. It is the most widely used format for representing and exchanging mask data and is considered as a de facto standard format in photomask industry.

As per the ITRS roadmap of 2005, for a 45nm half-pitch node that is expected to be in use by 2010, the mask data volume for a single layer is expected to reach up to 825 GB. The industry needs solutions that can deal with this enormous data explosion. Compression techniques better than generic and commonly used compressors like gzip will be required to address this problem. In recent benchmarks, comparing against generic compressors such as gzip, the MEBESzip has been consistently producing compression factors ranging between 2X and 8X better than gzip, with an average of 4X better compression across all tests runs. The compression ratio by MEBESzip is found to be dependent upon the CAD tool that generated MEBES data in the first place. Compression ratios produced by MEBESzip are significantly better than any other similar products.

When compared to post-layout data formats such as GDSII and OASIS, mask data is much more voluminous and more appropriate candidate for data compression due to various factors such as:

- The input data to the e-beam machines requires the fractured mask data to be essentially flat (very limited amount of hierarchy) which will bloat the size of the polygonal data
- Techniques such as RET (Resolution enhancement Techniques), or dummy fills, which are commonly required in current designs to improve yield, affect the volume of mask data more than layout data.
- By its very nature, the process of Fracturing, i.e. the operation that generates mask data from layout data creates several geometries out of what was originally a single polygon.
- Unlike GDSII, MEBES already has built into the language both syntactic and semantic representations that are more compact for representing fractured mask data. Because of this, generic compressors such as gzip are not able to produce as much compression on mask data as they are able to produce on layout data such as GDSII.

## **Benefits of MEBESzip**

### Cost and time savings

By compressing MEBES files by a factor of 5-15X, MEBESzip reduces the time taken to transfer these files across mask shops, foundries and manufacturing-related groups within Integrated Device Manufacturers (IDMs). MEBESzip reduces the disk space requirements for storing and archiving of MEBES files within these organizations.

### Integration with post-layout EDA Tools

MEBES zip can be integrated as a technology component of EDA tools, such as Mask Data Preparation (MDP), Resolution Enhancement Technology (RET), Manufacturing Rules Check (MRC), Mask Data Viewer and Mask Inspection tools that generate or consume MEBES data by using the Application Programming Interface (API) available with MEBESzip. It speeds up the entire mask data preparation, analysis and verification flow by eliminating the need for reading and writing entire MEBES files.

### Selective Compression and De-Compression

MEBES zip allows for segment-wise selective compression and decompression of MEBES files. This feature in conjunction with API-based integration with upstream and downstream EDA tools enables on-demand reading of compressed MEBES data without having to decompress the entire file before being able to operate on the data.

### Verification and Security

MEBES zip provides an optional in-built verifier that provides on-the-spot verification to check the fidelity of the compressed file. CRC-32 based checksum and MD-5 based fingerprint schemes are used in MEBES zip for verifying the data integrity.

MEBES zip offers the option of in-built data encryption and decryption to enhance the security during transfer of compressed data.

### **Who Uses MEBESzip**

MEBES zip is targeted to mask shops or mask-related groups at IDMs and foundries. The product is also useful for integrating with other EDA products that are either used by mask groups or generate mask data used by mask groups.

### **Price and Availability**

MEBES zip is available now, and is licensed in executable form as a stand-alone product or in object code form along with an API for companies that wish to integrate and sell it as part of their post-layout tools. Currently, MEBESzip is also available for a 1-month free evaluation. For further details regarding free evaluation, pricing and licensing models, please send email to

[sales@softjin.com](mailto:sales@softjin.com).

SoftJin products are sold directly in the United States, Europe and India and through channel partners in Japan and Asia Pacific.

### **About SoftJin**

SoftJin Technologies Pvt. Ltd. develops customized EDA tools for the specific requirements of semiconductor and EDA companies using a combination of EDA software development services and Re-usable Building Blocks. SoftJin's customized EDA software development approach offers the advantages of enhanced EDA software capability, flexible capacity and cost savings to customers. SoftJin was recently (June 5, 2006) included in a list of “Eight Indian Startups to Watch” by Red Herring magazine. More information is available at [www.softjin.com](http://www.softjin.com).

The company's headquarters are located at Unit No: 102, Mobius Tower, SJR I - Park, EPIP, White Field, Bangalore – 560066, Tel: +91-80- 41779999, E-mail: [sales@softjin.com](mailto:sales@softjin.com)

The USA office is located at 2900 Gordon Ave, Suite 100-11, Santa Clara, CA 95051, Tel: (408) 773-1714, Email: [sales\\_us@softjin.com](mailto:sales_us@softjin.com)

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### **Press Contact:**

Georgia Marszalek, ValleyPR for SoftJin, +650-345 7477, [Georgia@ValleyPR.com](mailto:Georgia@ValleyPR.com)

### **Notes to editors:**

A graphic of varying MEBES file sizes and compression results is available.

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