

Synopsys and Zenverge

Zenverge Achieves First-Pass Silicon Success for ZN200 Media Content Transcoder Using DesignWare IP for USB, DDR, and PCI Express



With our tight timeframes, first-time-right silicon is key for us to absolutely minimize our customers' time-to-market. Using production-proven DesignWare PHY and Controller IP from Synopsys reduced our design risk to help us get our large, complex design working and bug-free quickly”

Kent Goodin

Executive Vice President of Engineering, Zenverge

Business

Zenverge, a leading developer of advanced content networking ICs, enables content from pay-TV sources to be displayed on multiple screens throughout the home, while ensuring a high quality of service and adapting to the capabilities of target devices. Their technology supports processing of high-definition (HD) content for multiple devices in a single, cost effective IC. Zenverge ICs were the first in the industry to achieve quad-stream HD transcoding. Their ICs are a preferred content networking solution for pay-TV service providers, such as Comcast and Verizon, as well as manufacturers of Gateways, Media Streamers, and Home Media NAS devices.

Challenges

- ▶ Obtain a full portfolio of proven IP solutions
- ▶ Accelerate software development and reduce the product development cycle to speed time-to-market
- ▶ Minimize design risk and overall cost

Synopsys Solution

- ▶ DesignWare® IP including:
 - USB 2.0 PHY and Controller
 - DDR 2/3-Lite PHY and Universal DDR Controller
 - PCI Express® 1.1 PHY and Dual-Mode Controller
- ▶ Discovery™ Verification IP (VIP)

Benefits

- ▶ Achieved first-pass silicon success
- ▶ Reduced integration risk with silicon-proven DesignWare PHY and Controller IP
- ▶ Minimized development costs to fit into their “startup sized budget” by using IP to enable the team to be sized to focus only on unique technology development
- ▶ Received excellent technical support from an experienced support team that helped accelerate and ease the integration process

Overview

Zenverge's ZN200 Quad Stream Transcoder can transcode up to four HD streams simultaneously, and enables next-generation digital media devices to support many transcoding functions with its powerful TranAll™ transcoding engine. Its transcoding technology is used in premium set-top boxes, DVRs, and gateway platforms. It is more than just a transcoder, however: it also incorporates security-related functions, re-encrypts content to be viewed on mobile devices, and allows content to be consumed in multiple formats. The ZN200 handles multiple simultaneous functions, including audio transcoding, frame rate conversion, and bit rate conversion.

As the ZN200 is a very complex system-on-chip (SoC), and fast time-to-market for their customers was paramount, Zenverge needed to ensure that it had reliable IP that would work perfectly and help



Using Synopsys DesignWare IP gave us more than high-quality IP—it gave us the confidence to minimize the size of the team based on the assumption that the IP would be easy to use.”

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them achieve first silicon success. To minimize risk, they required production-proven IP that worked as advertised and would enable the SoC to process a large volume of media quickly and effortlessly.

With Synopsys’ DesignWare IP for USB, DDR, and PCI Express, along with Discovery VIP, Zenverge found the high-quality IP they required to free their engineering resources to work on proprietary technology and distinguish itself in a highly competitive market.

High-Quality DesignWare IP

Zenverge needed to differentiate itself by offering unique functionality while minimizing their total development costs. They required an IP vendor that they could trust to deliver easy-to-use products that would work together effortlessly, and do all of this under extreme time-to-market pressure. “Minimizing risk and total development costs were paramount when choosing our third-party IP vendor,” said Kent Goodin, Executive Vice President of Engineering. “We needed to know that the IP we selected would work well together on arrival. Selecting Synopsys DesignWare IP gave us confidence that we could hit our schedules and we could reserve our engineering resources for developing unique functionality.”

Zenverge found value beyond the IP itself, as well. “While we wanted the lowest price on IP, the IP needed to meet our expectations for excellence and functionality once deployed in the field,” said Goodin. “We had used DesignWare IP on a previous design, and selecting Synopsys for this design brought us value not only in the IP’s function, but in the staff hours saved and in peace of mind.”

“The IP is the best that we’ve had at Zenverge,” said John Alphonso-Gibbs, Director of Design Verification. “We were able to integrate the IP easily, and we are pleased with its overall value.”

Accelerated IP Verification

High-quality VIP was critical to bringing the ZN200 to market quickly. “Our effort needs to go into making sure that our product and technology works, but in design verification, we are responsible for overall delivery,” said Alphonso-Gibbs. “Synopsys’ qualified Discovery VIP took us beyond the basic installation. It also verified external devices to give us an opportunity to accelerate that process and move on to other aspects of product development. By using the combination of Synopsys’ PHY, Controller, and VIP, we were able to shave a significant amount of time from our development schedule.”

“We are creating new media technology that distinguishes us from our competitors. It is critical that we focus our engineering resources on developing proprietary technology. Synopsys DesignWare IP brought us value by including all of the ‘standard’ features our product required, which let us focus our engineering team on custom development.

Paul Porter

Director of Hardware Engineering, Zenverge





From a software development perspective, the most important part of selecting third-party IP is its compatibility with devices. We found that Synopsys DesignWare IP is simply superior to all others in this regard—we can connect an off-the-shelf device to our product and the DesignWare IP just works. Version to version, we drop it in, and with minimum modifications, it functions as expected. Overall, the IP is very high quality.”

David Tao

Director of System Software, Zenverge

Future Product Development

Now that Zenverge’s ZN200 quad-stream transcoder has been successfully deployed to the market, they are deep into product development for their next-generation design. “We have used Synopsys for our first two products, and consider it to be the ‘gold standard’ of IP,” said Kent Goodin, EVP of Engineering. “While there are other IP vendors, with our great success using Synopsys DesignWare IP and Discovery VIP, Synopsys will be our first stopping point for IP in future designs.”