Crystaline Infotek Pvt. Ltd. The e-business people...

Case Study on " System Integration of Video Streamer Board"

Company's background

This company is a US based company. We are working as design partner for this company. This company is mainly works in video domain. This company is a fabless semiconductor house and has their own MDSP chip. This chip has very complex architecture and is capable of doing audio video compression and streaming.

Need of this project

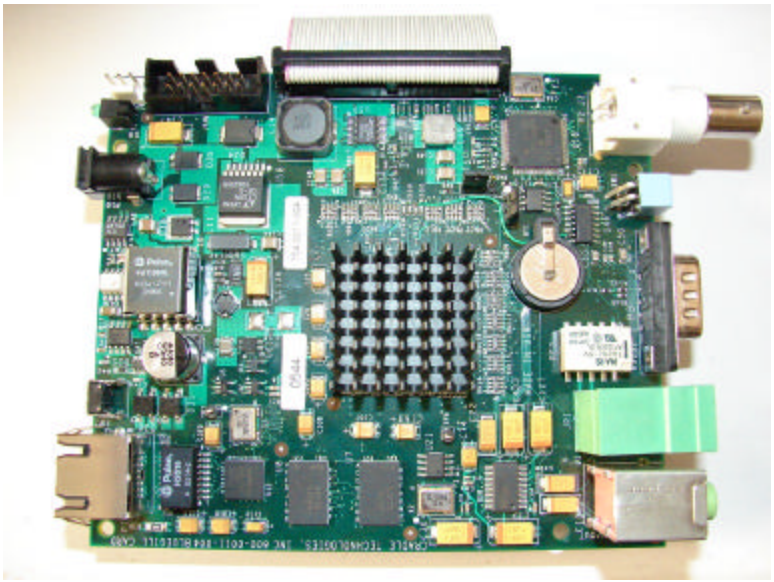
This company has developed the reference design board for their video streaming application. Being a chip making company, they didn't have the in-house resources and capability to do the system integration and productisation part. We helped them to identify the productisation needs and helped them to do the system integration.

Our Role

We have worked in the following areas.

- Development of Board Support Package (BSP) for the reference board.
- Hardware board designing for the reference board.
- Implementing and integrating the network stack on the MDSP chip.
- Implementing and integrating the IDE interface for the reference board.
- Integrating the audio codec (G.723).

Solution:



Above figure indicates the reference design board developed for video streaming application. This video streamer reference design is built around the client's MDSP chip. This chip is a new, high-performance, multiprocessor DSP designed for video, image, and audio processing applications. The device's DSP engines are capable of delivering upto 29.5 billion multiply-accumulate (MAC) operations per second on 8-bit data, running at a clock speed of 230 MHz. At the same time, the device's RISC engines provide overall system control, provide additional computing capability and control applications running on the DSP engines.

This chip has audio and video inputs. This chip takes these audio and video inputs, applies the compression and sends the video over the network. This board can also stores the video on the local hard disk.

We have also developed a Board Support Package (BSP) for this reference board. This BSP is a middle layer firmware, which will work between the hardware and the end application. When any user develops any application, he will have much more dependencies on the hardware. This BSP reduces the hardware dependencies. We have given the all the binaries related to the hardware to the end user, so he doesn't have to worry about the hardware and he can only concentrate on the end application. We have also integrated the G.723 code in the BSP to provide complete audio solution.

This chip has eCos as a RTOS ported on it. We have integrated the network stack on this chip for streaming the video files over the network. This board also has an IDE interface. We have implemented the IDE interface for this reference design board. We have connected a mini hard disk to this board and we are storing the raw video files on the hard disk. This board is connected to PC through Ethernet and we can view the video on the viewer software.

We have also developed a complex 6-layer board compliant to this reference board

Board Features:

Processor	Cradle CT3400 (Multiprocessor DSP)	456-pin BGA (27mm * 27mm)
Memory	FLASH	32MB Or 16 MB NAND
	SDRAM	64MB /133MHz /64bit/SDR
Network Support	X1 10/100baseTx Ethernet MACs	RJ45 with Speed and Link/Activity LEDs
Serial Ports	X2 UART	RS232 – 2 channels

General Purpose I/O Bus	24x General Purpose I/O	16 digital 0/Ps 8 digital I/Ps
Date/Time Support	Real time Clock	Battery (External) Backed
Mechanical	Standard Form Factor	90mm X 80mm
Power	+5V Only operation	5W typical
Environmental	Operating Temperature	Commercial (0°C to +55°C)
Board Size		80 * 90 MM
Thickness		The board is to be .062