IP Video Phone Solution

Benefits

- H.264 Video support for higher quality video calls within smaller bandwidth requirements

- Multi-way call support without the need of a bridge

- Complete software application integrating all major functionality for IP video telephony

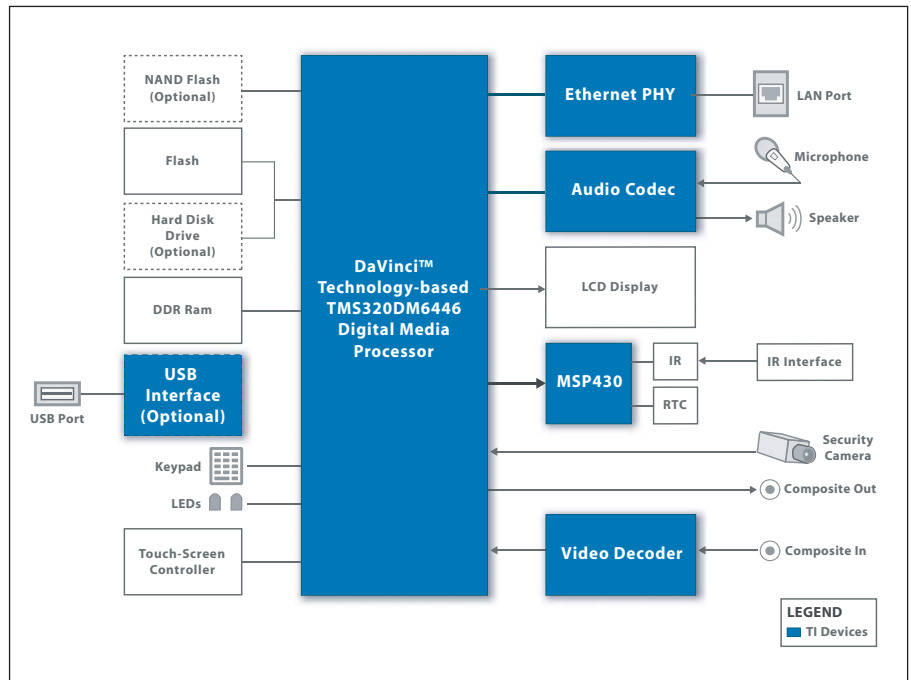- Application-specific development platform to accelerate time to market

Ittiam

Target Applications

- **Standalone IP Video Phone**

- **Set-Top Box with Video Phone capability**

- **PC accessory for Video Phone applications**

DAVINCI
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TI Third Party Network Member
DSP™
TEXAS INSTRUMENTS
Authorized Software Provider

The Ittiam IPVP6446 video phone reference design provides a complete software solution and application-specific reference platform for high-performance video telephony. Leveraging the performance of the TMS320DM6446 DaVinci™-based processor, the design utilizes the latest video compression technologies, including H.264, H.263 and MPEG4, and delivers multi-way personal conferencing.

System Example: IP Video Phone Solution

LEGEND
TI Devices

IP Video Phone Solution

Functional Description

- Full duplex audio and video
- Hands-free speaker phone
- Multi-way personal video and audio conferencing
- Supports multiple video coding standards including H.263, MPEG4 and H.264
- The relatively high processing overhead of H.264 harnessed through optimal innovative implementation on the DSP including four patent-pending ideas
- Supports multiple video resolutions at natural video frame rate
- Supports wide range of speech coding standards covering both narrow and wide band scenarios
- Supports SIP
- Fully integrated hardware and software solution
- Reference designs with built-in speaker and microphone, TFT color LCD and CCD camera with audio and video connections to interface to external TV or camera
- IP Connectivity with Ethernet and Wireless LAN interfaces

Contact Information for Questions/Support

To purchase this solution or for more information, please contact Siddharth Sinha at siddarth.sinha@ittiam.com

Component Selection

DSP	TMS320DM6446	TI
DDR RAM	MT47H64M16BT-5E:A	Micron
NOR Flash	AM29LV256MH123REI	AMD
NAND Flash	K9K1208Q0C-GCB0	Samsung
Video Decoder	TVP5146	TI
Audio Codec	TLV320AIC33IRGZ	TI
Ethernet PHY	LXT971ALE	National
Buck Converter	TPS54310	TI
Microcontroller	MSP430	TI

Hardware

- Processor: DaVinci™-based TMS320DM644x from Texas Instruments
- Audio/Video Interfaces
  - Built-in speaker and microphone
  - Microphone and line in
  - Headphone and line out
  - Composite video in and composite and component video out
  - VGA TFT LCD display
  - CCD camera with composite video
  - SPDIF optical out
- Communication Interfaces
  - 10/100 Base-T Ethernet port with Ethernet switch
  - WLAN through VLYNQ™ interface
  - High-speed USB master and slave
- Storage Media Interface
  - HDD
  - SD/MMC
  - Smart Card
- System Interfaces
  - Keypad
  - Touch screen
  - Remote control
  - UART port
  - JTAG port

Software

- Video Codecs
  - H.264 Base Profile
  - H.263 Profile 0
  - MPEG4 Simple Profile
- Speech Codecs
  - Narrow Band: G.711, G.723.1A, G.729AB
  - Wideband: G.722.1
- Multi-way Conferencing

- Post Processing Components
  - De-blocking filters for MPEG4 and H.263
  - Scaler
  - Compositor with alpha blending and chroma keying support
- Application-Specific Framework
  - Specific functions handled by modules/sub-systems plugged into the framework
  - Modules interconnected through well-defined APIs
  - Open architecture
  - Framework is abstracted from operating system and hardware
- Telephony Functions
  - Acoustic Echo Canceller with configurable echo tail lengths, rapid convergence and robust double talk detection for hands-free speaker phone operation
  - DTMF tone generator and detector
  - Call Progress Tones generator and detector
  - Voice Activity detection
  - Comfort Noise generation
  - Time Scale modification
  - Caller identification
- Call Control Functions
  - Based on SIP. Designed to be integrated with third-party SIP stacks
  - User Agent provided with session management, negotiation support for codecs, conferencing and handling of multiple calls
  - Compliant to related RFCs
  - NAT and STUN support
- Networking Support
  - Adaptive Jitter Buffers for audio and video
  - RTP/RTCP
  - TCP and UDP over IP
  - FTP and DHCP

Getting Started

Tools

IPVP6446 Application-Specific Development platform—contact Ittiam directly for licensing information

Documentation

All relevant technical documentation is available from Ittiam

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