Fusiv®

Vx183/IFE-7

G.Vector Capable Communications Processor Chipset for Multi-mode VDSL2/ADSL2+ Residential Gateways
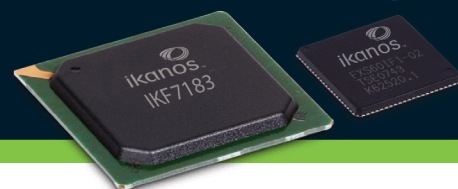
Target Applications

- A/VDSL2 Bridge and Routers
- A/VDSL2 Residential Voice and Wireless Gateways

Features

- Wire-speed Packet Processing
- Integrated A/VDSL2 datapump
- Single front end design for ADSL, ADSL2, ADSL2+, and VDSL2 (including 30a)
- Advanced power management
- Integrated dedicated voice processing engine
- Accelerator Processors to offload packet processing
- 2 x GMII/RGMII/MII/RMII
- 2 x PCIe interface for concurrent, dual-band 802.11n (2.4 GHz + 5.0 GHz)
- 2 x USB 2.0 high speed host
- DDR2 controller
- Flexible flash interface – integrated NAND flash controller, parallel flash, and high speed serial flash
- Pin-for-pin compatible with Fusiv Vx185 communications processor device

Software

- FusivWare™ advanced Linux-based software
- xDSL gateway drivers
- Full-chain voice processing
- Network device management
- IP middleware

Ikanos' Fusiv® Vx183 is a next-generation convergence device that leverages the advancements from the previous Fusiv family, while adding critical interfaces to form the foundation for next-generation residential gateways.

An advanced, multimode A/VDSL2 communication processor, the Vx183 provides leading edge processing power, VoIP, multi-mode DSL and wire-speed performance, while supporting carrier class quality of service (QoS) and VoIP. Ikanos' Vx183 supports all flavors of single line and bonded DSL, including ADSL, ADSL2, ADSL2+, and VDSL2, and further enhances IPTV and triple-play networks by offering features such as retransmission (G.INP), dynamic rate repartitioning (DRR), and seamless rate adaptation (SRA).
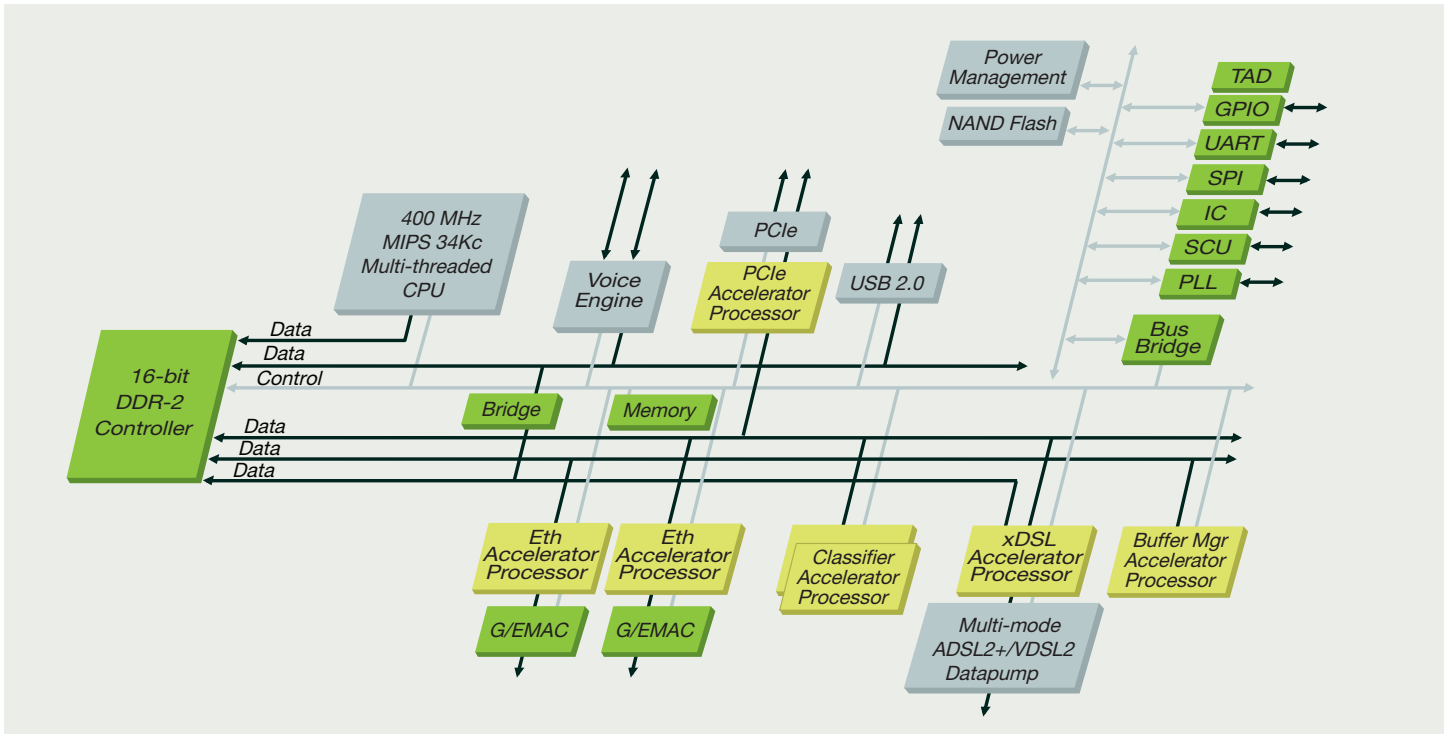
The Vx183 supports a rich set of interfaces that easily integrates with home networking technologies such as Gigabit Ethernet, 802.11n, MoCA™, HomePNA™, HomePlug®, ZigBee, Z-Wave, and G.hn. A SATA interface enables Network Attached Storage (NAS) without compromising performance. Also integrated is a dedicated DSP engine to deliver full-chain deployment-proven VoIP.

By employing industry-standard G.Vector (ITU-T G.993.5), the Vx183 is designed to enable telecommunications service providers to deploy 100 megabit-per-second (Mbps) service over traditional copper lines at 1/10th the cost of fiber. The Vx183 adds to Ikanos' NodeScale Vectoring architecture, which spans the central office, remote cabinets in fiber to the node (FTTN) networks, and now the customer premises.
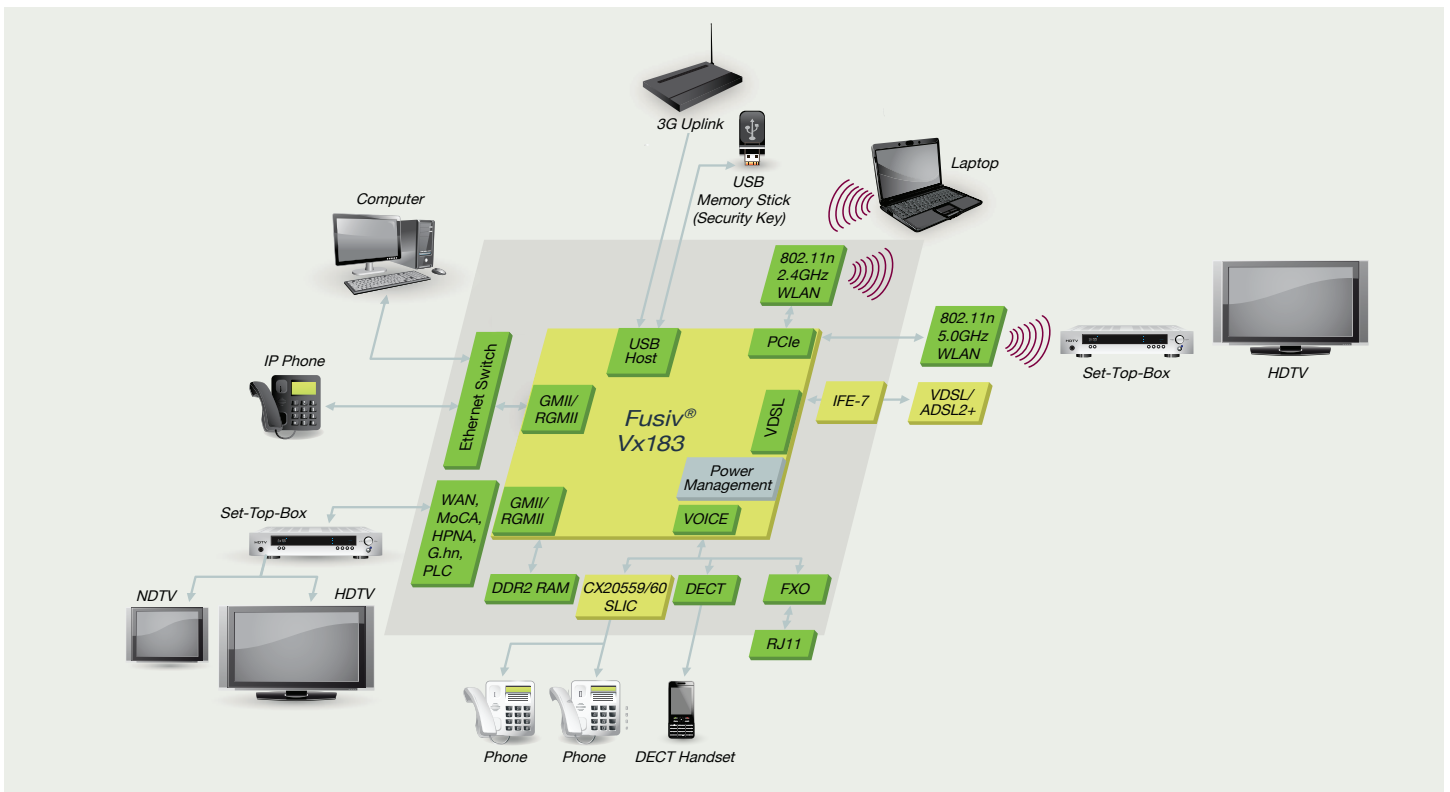
The Vx183 supports maximum interleaver and deinterleaver memory for high levels of impulse noise protection, as well as on-chip QoS, all of which optimize the viewing experience. With additional enhancements like Ikanos Quality Video (iQV™) support, the Vx183 provides the most robust video delivery solution in the market.

Ikanos provides a comprehensive suite of Vx183 software that includes operating system independent drivers for Ethernet, xDSL, and integrated peripherals. FusivWare™, Ikanos' Linux-based software, includes a networking stack, voice processing, and network management functions which enable system vendors to quickly design residential gateways.

ikanos™

Fusiv Vx183 – System Architecture

Fusiv Vx183-based Residential Gateway

ikanos™

Key Features

- Highly integrated Communications Processor leveraging the field-proven Fusiv architecture

- Dedicated voice processing engine (DSP subsystem) capable of handling 4 voice channels

- Enhanced Accelerator Processors running up to 400 MHz for data path processing
  - Accelerator Processors are programmable engines providing flexibility to support new packet handling requirements at wire-speed performance
  - PCI Express Accelerator Processor for WLAN host-based processing offload

- Industry-leading DSL solution providing true xDSL convergence
  - Supports all VDSL2 profiles: 8 MHz through 30 MHz
  - Full industry-standard G.Vector Compliant (ITU-T G.993.5)
  - Supports all ADSL standards and Annexes: ADSL 1/2/2+, Annexes A, B, I, J, M, and L
  - Single Integrated Front End (IFE) design for all ADSL and VDSL modes
  - Meets Broadband Forum performance requirements (TR-67, TR-100, and WT-114)
  - Erasure decoding

- Interfaces:
  - Two GMII/RGMII/MII/RMII
  - Two PCI Express v1.1 lanes
  - One Integrated Front End (IFE) interface
  - Two USB 2.0 HS/FS/LS hosts with UTMI-PHY
  - Two asynchronous serial UART ports
  - Serial peripheral interface (SPI)
  - Two SPORT (TDM) interfaces for the VoIP DSP subsystem connecting to FXS, FXO, or DECT port

- Dynamic power management, enabling support for:
  - European Code of Conduct compliancy through 2011 and beyond
  - Home Gateway Initiative (HGI) energy efficiency requirements

- On-chip DDR2 controller for 16-bit DDR2 up to 400 MHz

- On-chip asynchronous memory controller for asynchronous RAM, FLASH, and external devices
  - NAND controller
  - Serial Flash controller

- 32 kB local buffer and table memory for up to 128 flow rules storage

- Multiple on-chip buses to exploit the full bandwidth of the 400 MHz 16-bit DDR2 memory

- IEEE 1149.1-compliant JTAG interface

- General purpose timers

- Software features:
  - Software drivers such as Linux board support package and voice framework
  - Fast Path API (Application Programming Interface) for increased packet performance
  - Network software for TCP/IP, routing protocols, and network management
  - IP services/QoS software for QoS/ bandwidth management and firewall applications
  - DLNA Media server and UPnP
  - VoIP software for voice compression, echo cancellation, CNG, PLC, DTMF detection and generation, call progress tone generation, FSK caller ID generation, country-specific tones, and fax pass through
  - ATM WAN processing module

For more information, contact Ikanos.

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