



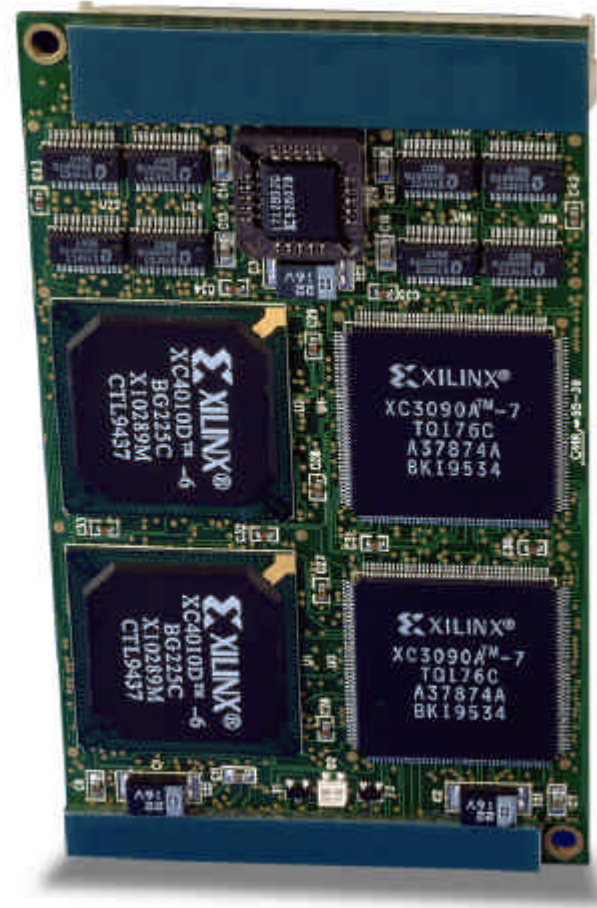
Introduction to Xilinx

Where Does Xilinx Fit In the Electronics Industry

Key components of an electronics system:

- ◆ Processor
- ◆ Memory
- ◆ *Logic*

Xilinx is the Leading Innovator of Complete Programmable Logic Solutions



Strategic Business Model Ensures Focus

- ◆ “Fabless” strategy
 - Leading edge IC process technology
 - Wafer capacity at competitive prices
 - Fastest, lowest cost, densest parts
- ◆ Independent sales organization (Reps & Distributors)
 - Sales is a variable cost
 - Permits greater reach—over 20,000 Customers
 - Over 10,000 “Feet On The Street”
- ◆ Focus on key strengths
 - Product design
 - Marketing
 - Applications & Technical Support

Xilinx Product Portfolio

Advanced Products Group



High Performance
High Density

General Products Division



High Volume
Low Cost

CPLD Division



Low Power
Low Cost

Software Solutions



IP Center



Alliance
CORE



XILINX
ONLINE
UPGRADABLE SYSTEMS

Xilinx General Products Group

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Xilinx - Leader in Core Solutions

Base Level Functions	- 82xx, UARTs, DMA - 66MHz DRAM, SDRAM I/F - Memory blocks - 29xx - Proprietary RISC Processors	- 8051 - IEEE 1284 - 200MHz SDRAM I/F - SGRAM, ZBTRAM I/F - Multi-channel DMA	- JAVA - Adv 32-bit RISC Processors - 64-bit RISC - DDR/QDR RAM - 622 Mbps LVDS	- 128-bit processors - Reconfigurable processors
Communication & Networking	- Cell assem/delin - CRC - T1 Framer - HDLC - Reed-Solomon - Viterbi - UTOPIA	- 10/100 Ethernet - ATM/IP Over SONET - Cell scram/descram - SONET OC3/12 - ADPCM - IMA	- Network processors - 1Gb Ethernet - SONET OC48/192 - CELP - VoIP - ADSL, HDSL, xDSL - UMTS, wCDMA	- Software Radio - Modems - Neural networking - Emerging Telecom and Networking Standards
DSP Functions	- Basic Math - Correlators - Filters: FIR, Comb - Multipliers - FFT, DFT - Sin/Cos	- DCT - Adaptive filters - Cordic - DES - DES - Divider - NCO - Satellite decoders	- MP3 - QAM - JPEG - Speech Recognition - DSP Processor I/Fs - Wavelet	- MPEG - DSP Functions > 200 MSPS - Programmable DSP Engines
Standard Bus Interfaces	- CAN - ISA PnP - I2C - PCI 32-bit - PCMCIA	- CardBus - FireWire - PCI 64-bit/66MHz - Compact PCI Hot-Swap - PC104 - VME	- AGP - PCI-X 133MHz	- InfiniBand - Emerging High-Speed Standard Interfaces

1998

1999

2000

2002

2004

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Introducing the Spartan-II FPGA

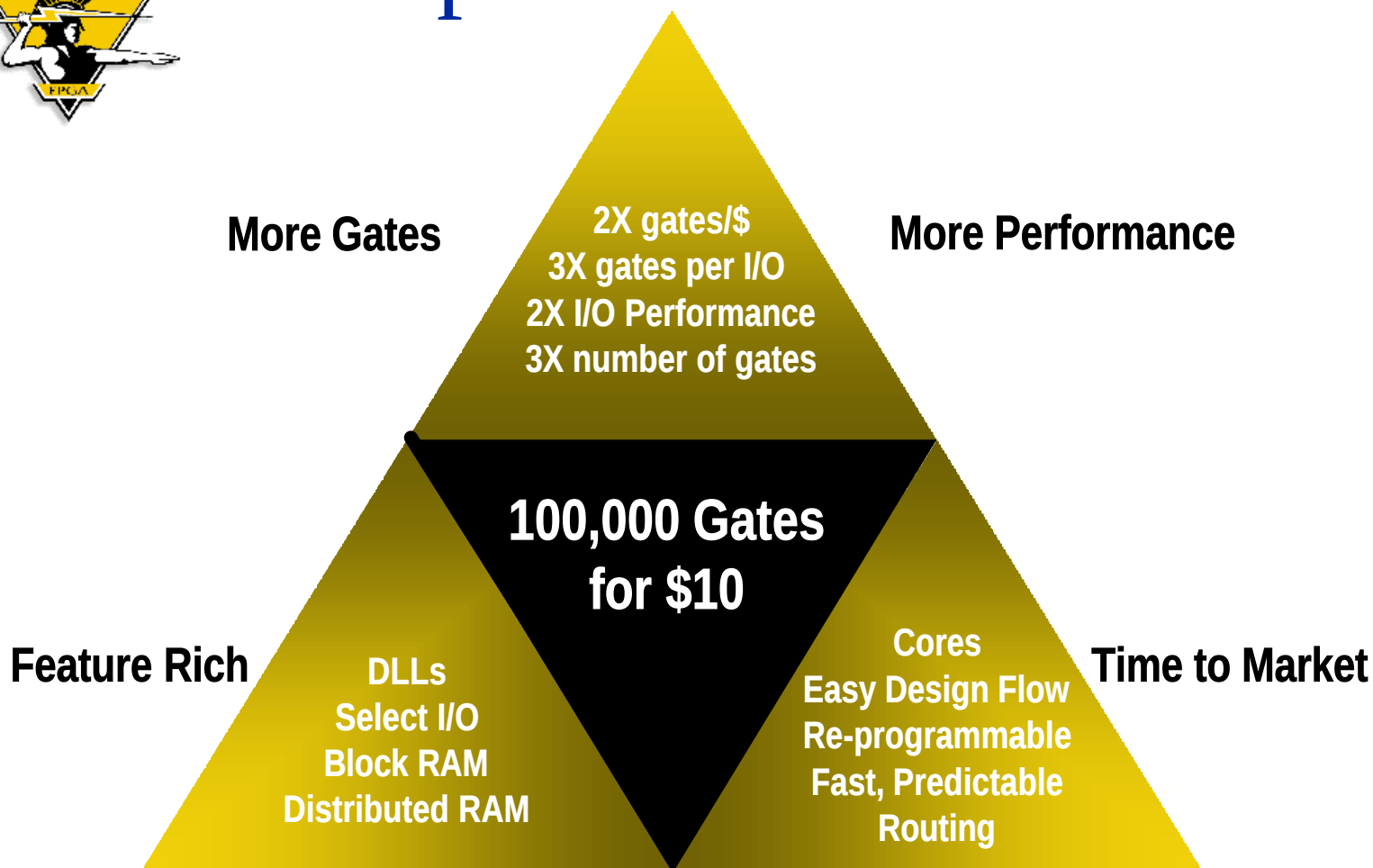


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Spartan-II: Extending the Spartan Series



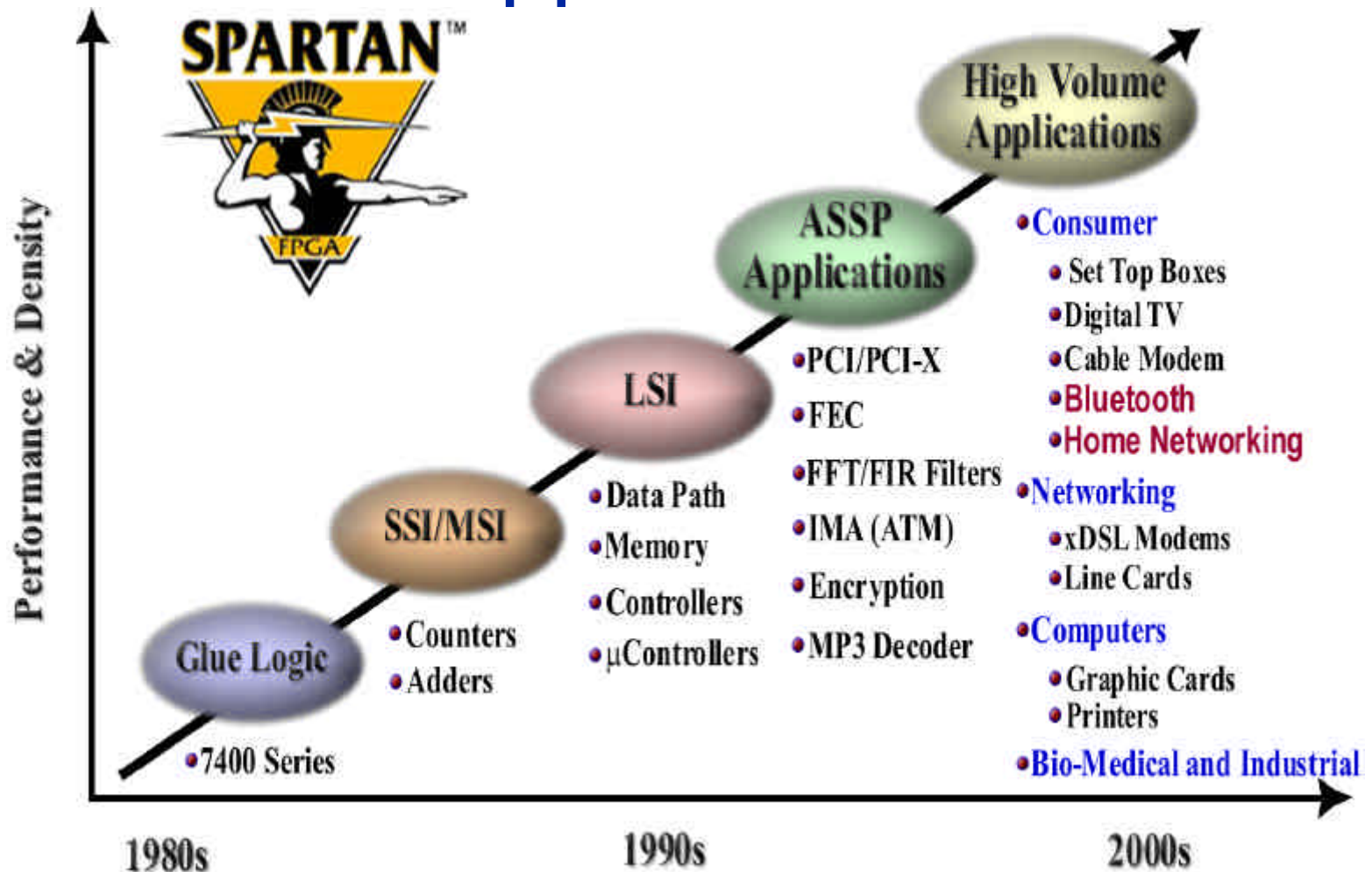
Programmable ASIC/ASSP Replacement!

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FPGA Application Trends



Programmable ASIC/ASSP Replacement!

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Spartan-II - Architecture Overview

Delay Locked Loop (DLL)

Clock Management:
Multiply clock
Divide clock
De-skew clock

Configurable Logic Blocks (CLB)

Configurable Logic Block Array and Distributed RAM

Select I/O™ Technology

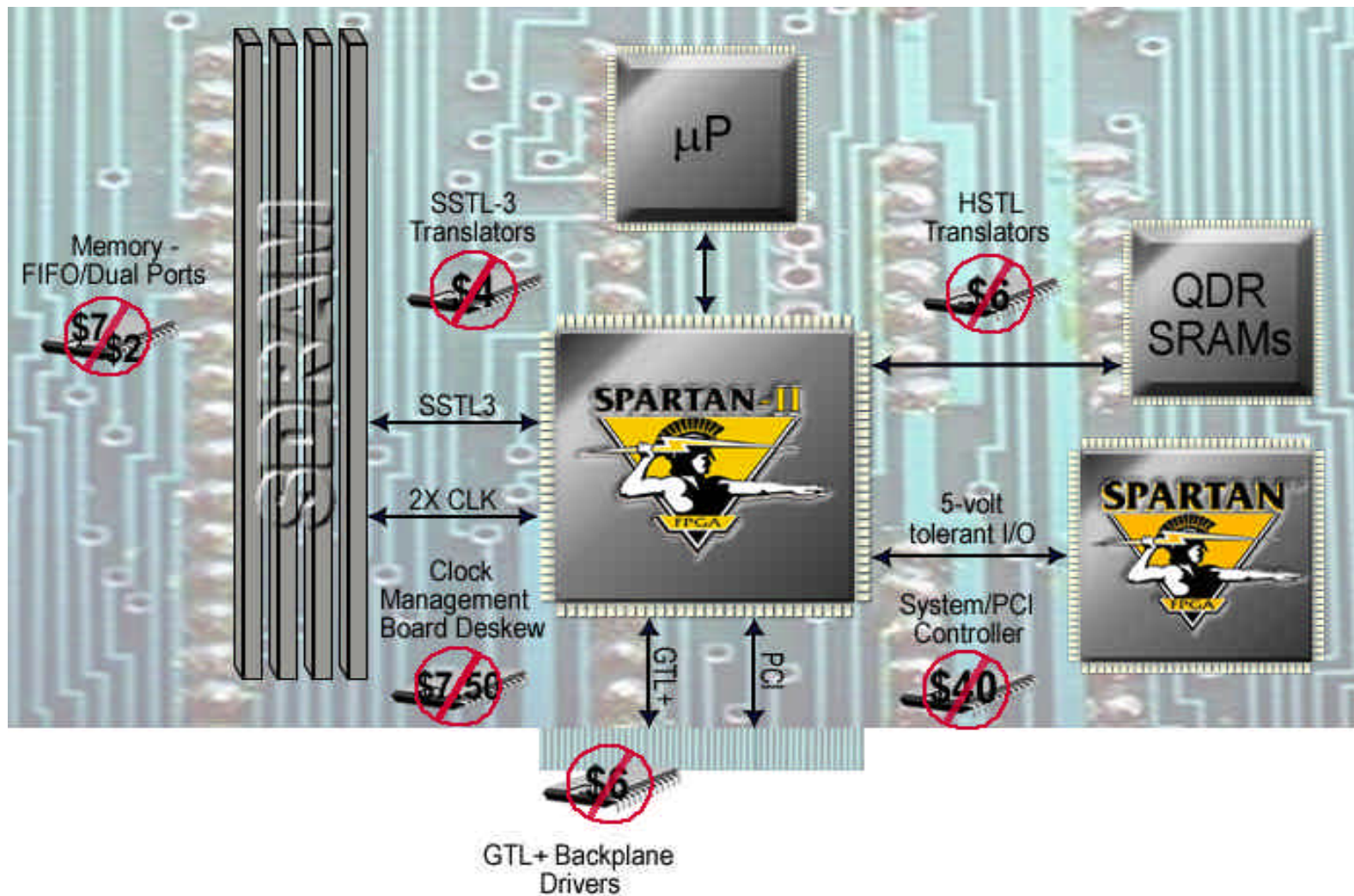
Chip to Backplane
PCI 33MHz 3.3V
PCI 33MHz 5.0V
PCI 66MHz 3.3V
GTL, GTL+, AGP
Chip to Memory
HSTL-I, HSTL-III
HSTL-IV
SSTL3-I, SSTL3-II
SSTL2-I, SSTL2-II
CTT
Chip to Chip
LVTTL, LVCMOS

Block Memory

True Dual-Port™
4K bit RAM
4Kx1
2Kx2
1Kx4
512x8
256x16

"The Spartan-II family, in our opinion, may be the closest that any FPGA has come to being at a low-enough price to compete against an ASIC"
--Dan Niles, Industry Analyst

Spartan-II - System Integration



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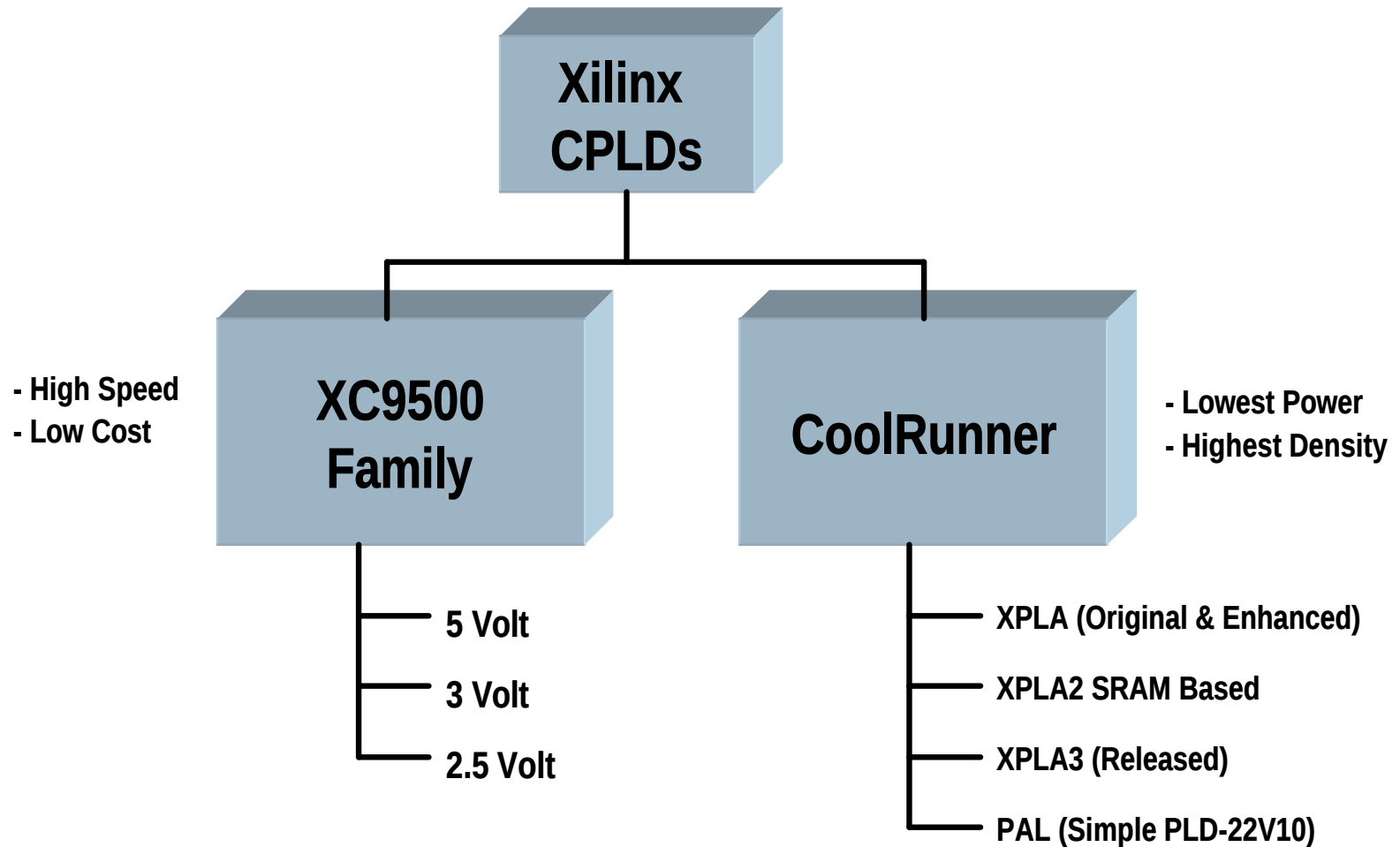
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XILINX®

Spartan-II Core Support

- ◆ On-chip memory & storage
 - Distributed, BlockRAM, FIFOs
- ◆ Bus products
 - PCI (64- & 32-bit, 33/66MHz), Arbiter, CAN bus interface
- ◆ DSP Functions (FIR filter)
- ◆ Error correction
 - Reed-Solomon, Viterbi
- ◆ Encryption (DES & triple DES)
- ◆ Microprocessor
 - ARC 32-bit configurable RISC, 8-bit 8051 microcontroller
- ◆ Memory controllers (10+)
 - SDRAM, QDR SRAM
- ◆ Communications
 - ATM (IMA, UTOPIA), Fast Ethernet (MAC)
- ◆ Telecom
 - CDMA matched filter, HDLC, DVB satellite, ADPCM speech codec
- ◆ Video & image processing
 - JPEG codec, DCT/IDCT, color space converter
- ◆ UARTs

Xilinx CPLD Families



Spartan-II End Applications

◆ Consumer

- Set Top Boxes/Digital VCRs
- DTV/HDTV
- Digital Modems
 - xDSL, Cable, Satellite
- Home Networking products
- Bluetooth appliances
- LCD/Flat-Panel Displays

◆ Networking

- Telecom linecards
- DSLAMs
- LAN Hubs/Switches
- SOHO Routers
- Cellular base stations

◆ Computer/Storage

- Printer/Scanner
- Multi-function office equipment
- Storage devices
- Home servers
- Audio/Video add-in cards

◆ Industrial/Medical

- Medical Imaging
- Industrial automation/control
- Data acquisition
- Video capture/editing
- Automated test equipment
- Automotive Info-tainment systems

CoolRunner Technology

- ◆ Full density range 32 to 960 macrocells
- ◆ World's only TotalCMOS CPLD
 - Bipolar style sense amps eliminated
 - Virtually no static power dissipation
- ◆ Advanced PLA Architecture
 - Product term sharing (no redundant logic)
 - No wasted product terms
- ◆ 3.3v and 5.0v devices
- ◆ ISP/JTAG compatible & full software support

The CoolRunner Advantage



- ◆ Industry's lowest power CPLDs
 - Standby current < 100uA
 - High speed TPD = 6 ns
 - Revolutionary XPLA architecture
 - Exceptional routability & pin-locking
 - Fast, predictable timing
 - Small form factor packaging
 - New 0.5mm 56-pin MicroBGA

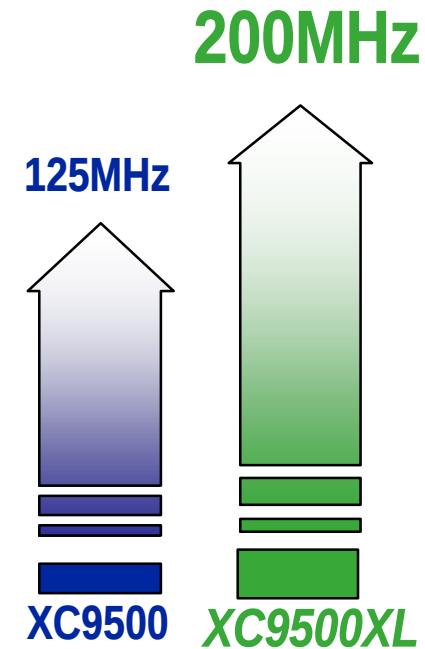


- ◆ No Speed / Power tradeoffs in scaling
 - Can build very large / very fast devices
 - 960 macrocell device @ 7.5 nsec t_{PD}



XC9500XL Key Features

- ◆ High performance
 - $t_{PD} = 5ns$, $f_{SYS} = 178MHz$
- ◆ 36 to 288 macrocell densities
- ◆ Lowest price, best value CPLD
- ◆ Highest programming reliability
- ◆ Most complete IEEE 1149.1 JTAG
- ◆ Space-efficient packaging, including chip scale pkg.



**Lowest Price
Per Macrocell**

XC9500XL/XV System Features

- ◆ I/O Flexibility
 - XL:5V tolerant; direct interface to 3.3V & 2.5V
 - XV:5V tolerant; direct interface to 3.3V, 2.5V & 1.8V
- ◆ Input hysteresis on all pins
- ◆ User programmable grounds
- ◆ Bus hold circuitry for simple bus interface
- ◆ Easy ATE integration for ISP & JTAG
 - Fast, concurrent programming times



System Block Diagrams for 1394 Solutions

Block Diagram Template / Index



Xilinx Solution



Or



Peripheral Components



Memory



Mixed Signal / RF / Analog Component

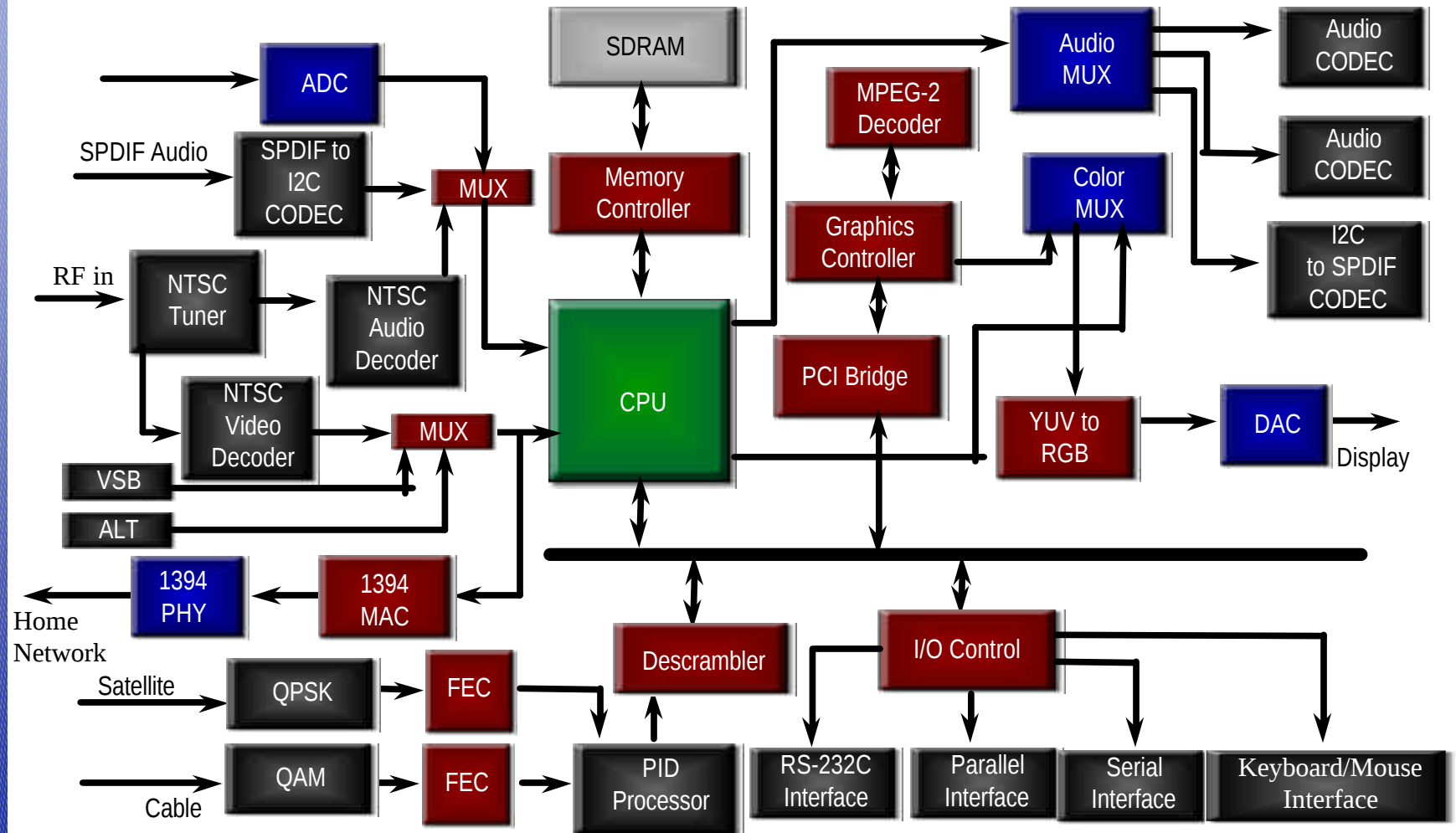


mP/ mC



Embedded Chip/ ASSP

HAVi-based Digital TV

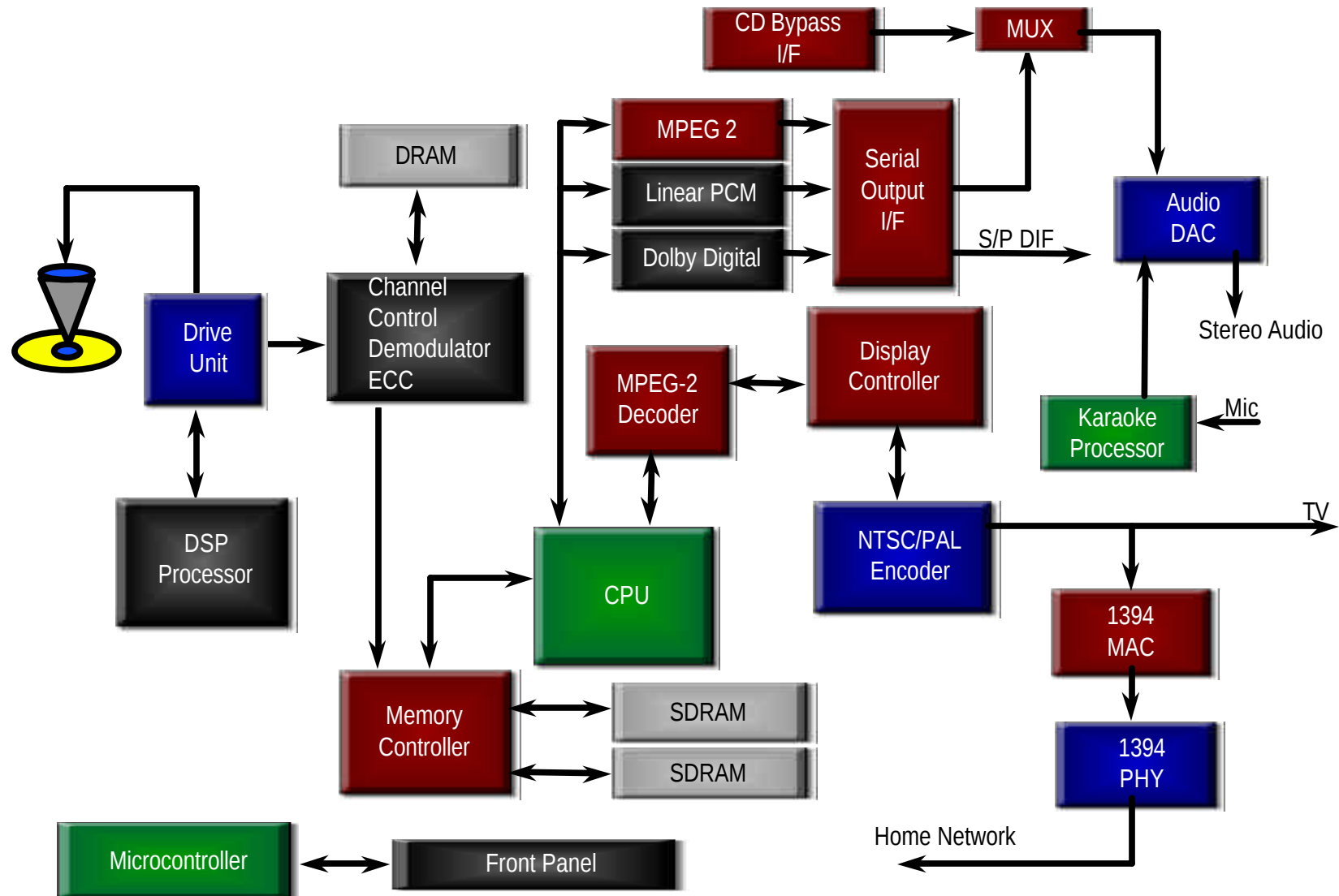


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HAVi-based DVD Player

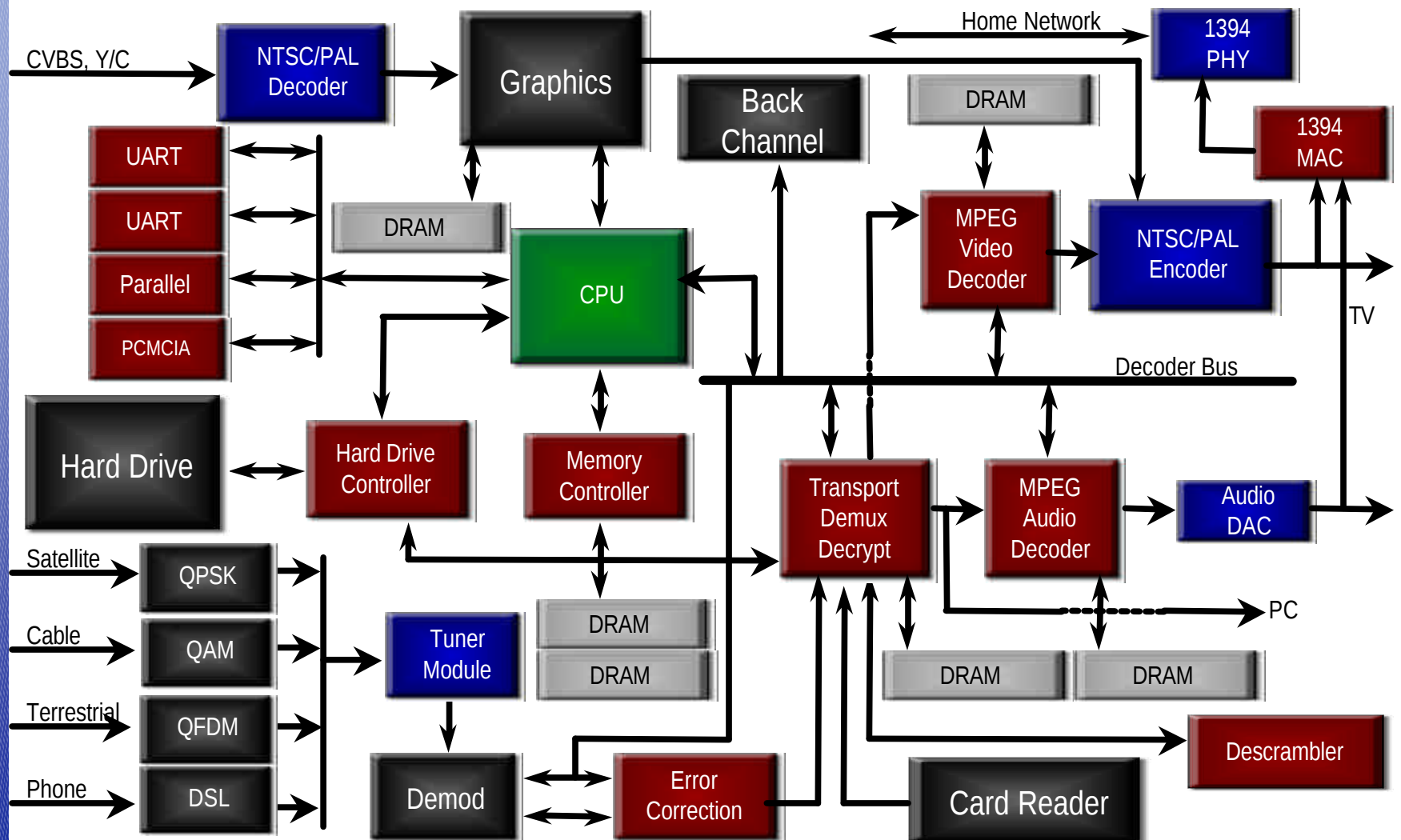


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HA Vi-based Set Top Box

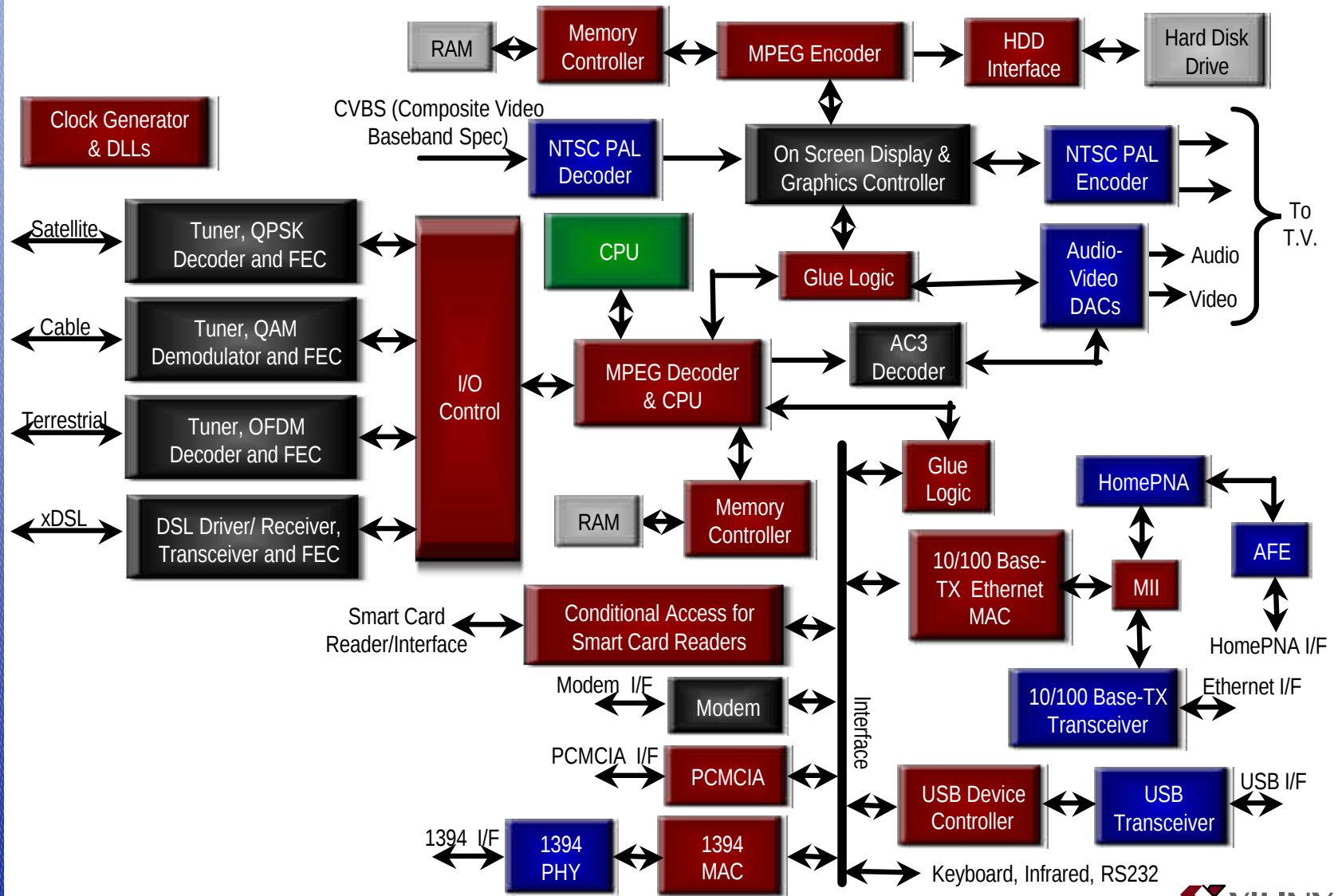


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HAVi-based DVCR Set-Top Box

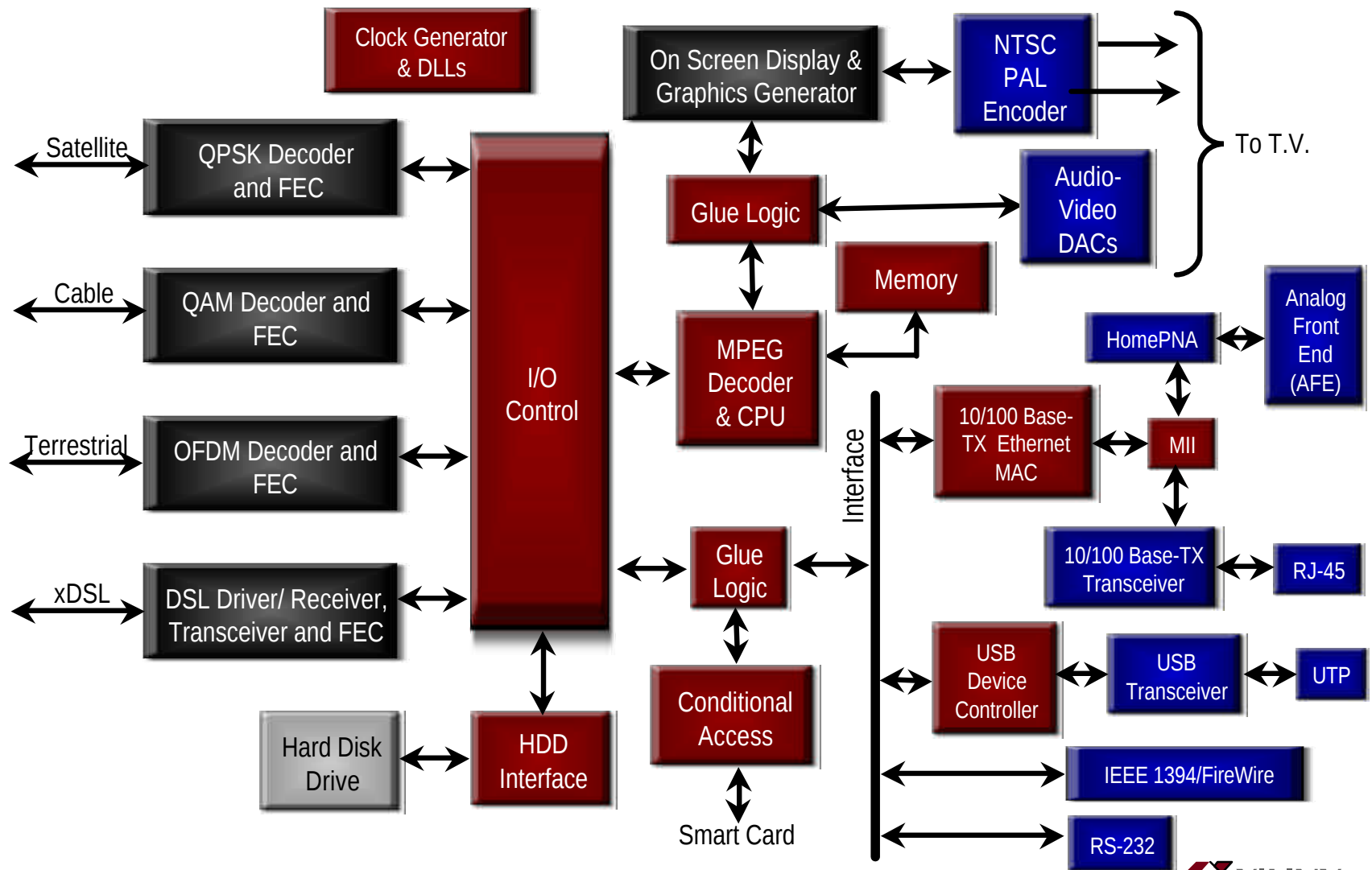


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HA Vi-based Residential Gateway (STB)

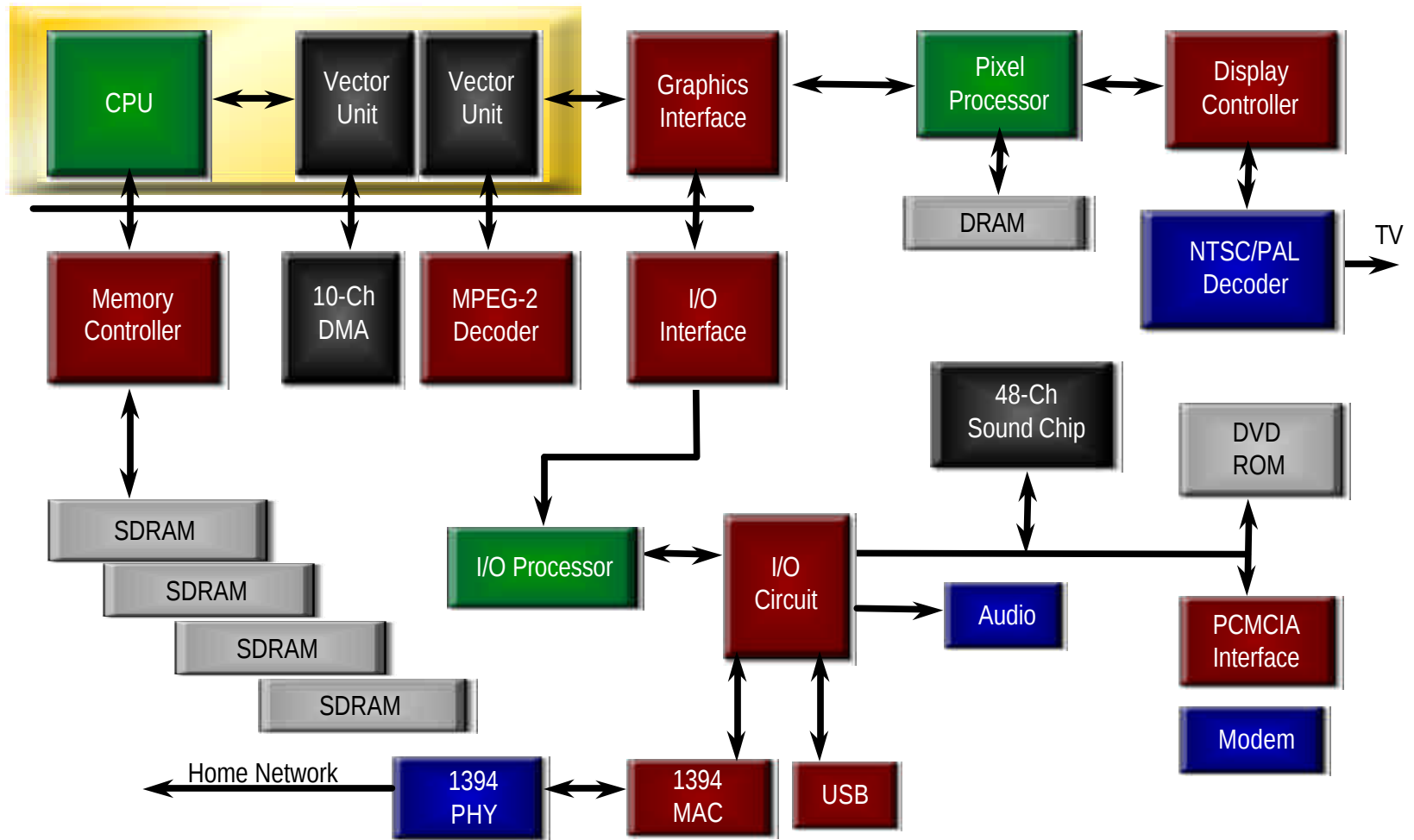


Xilinx General Products Group

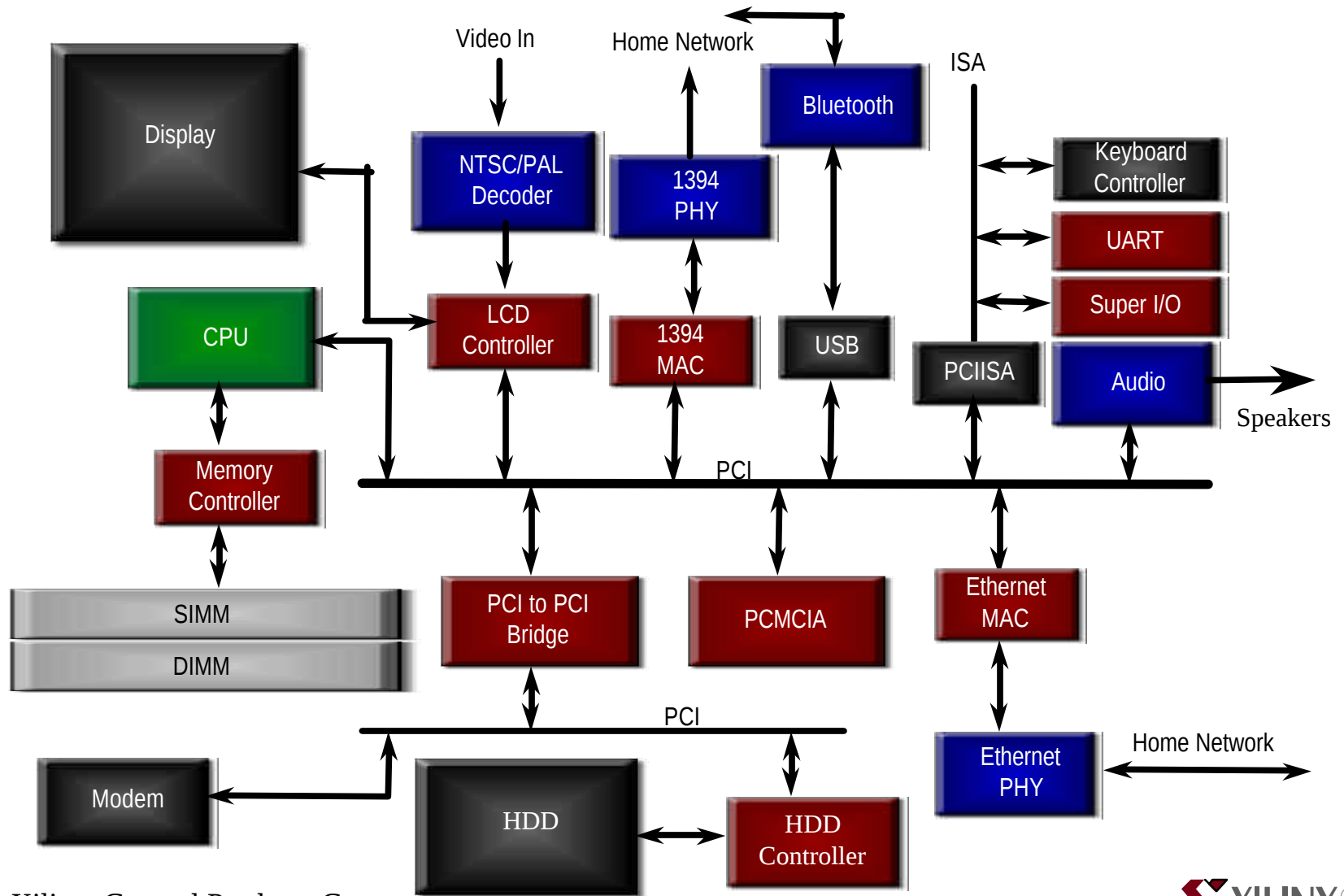
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HAVi-based Gaming Station



HA Vi-based Desktop PC

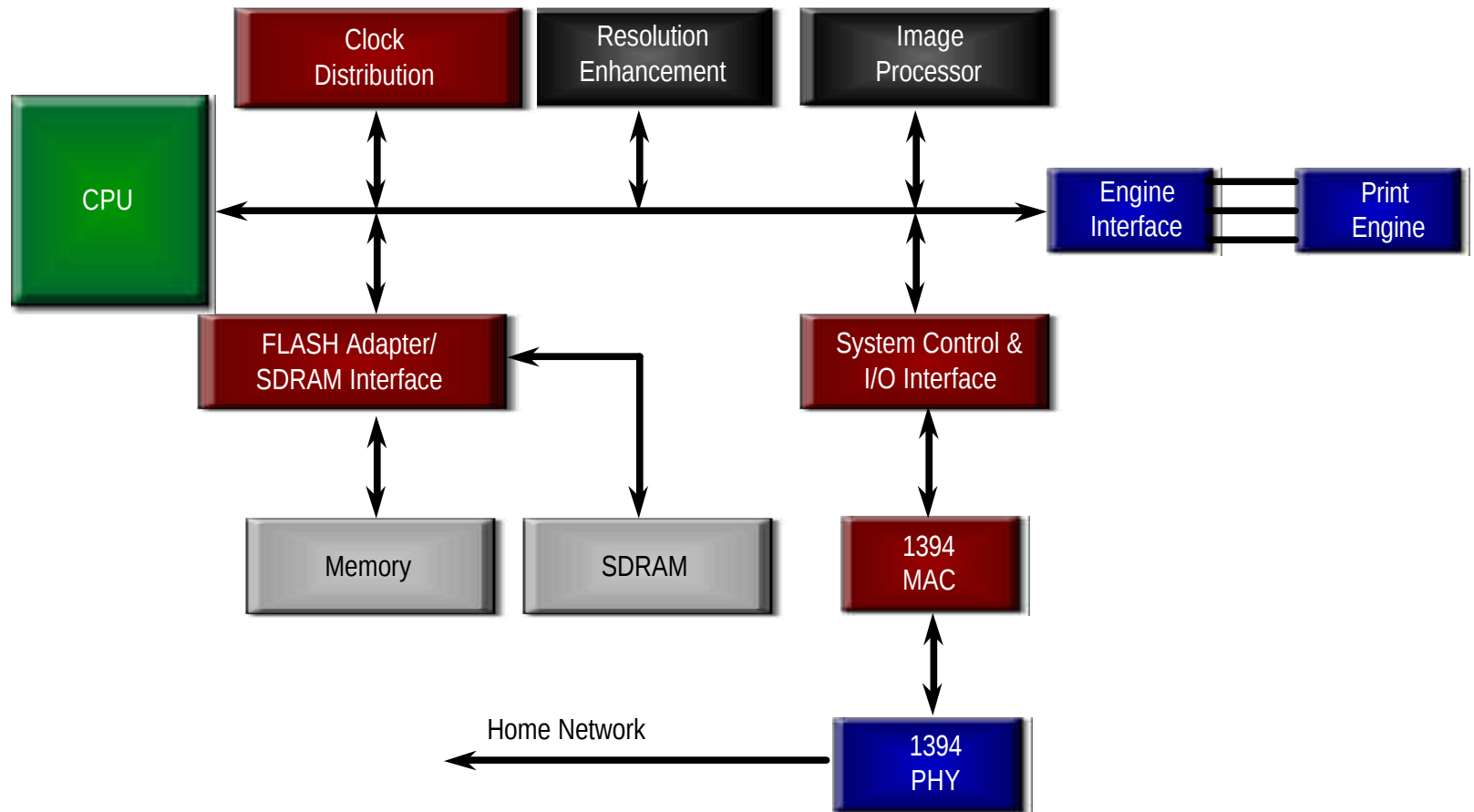


Xilinx General Products Group

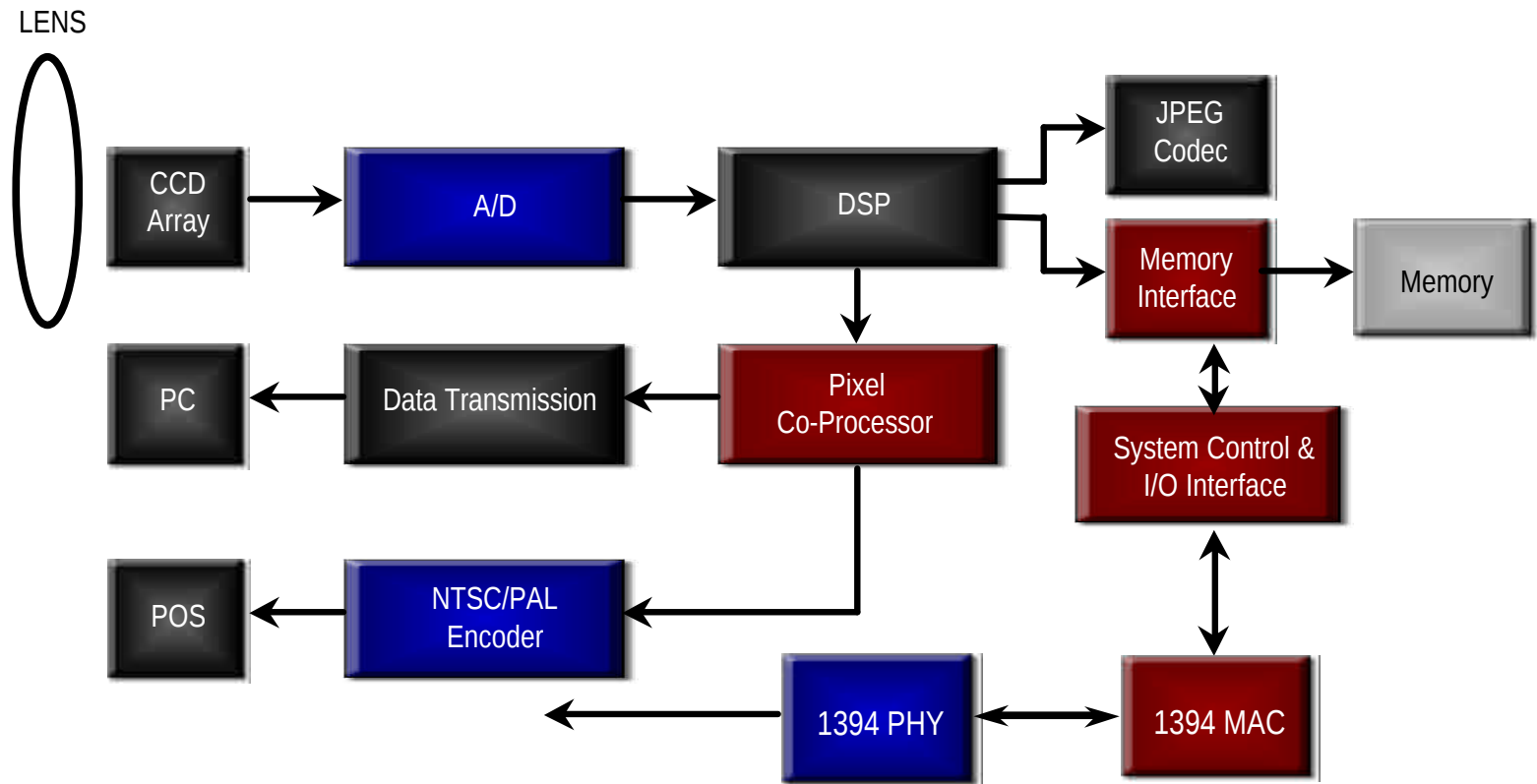
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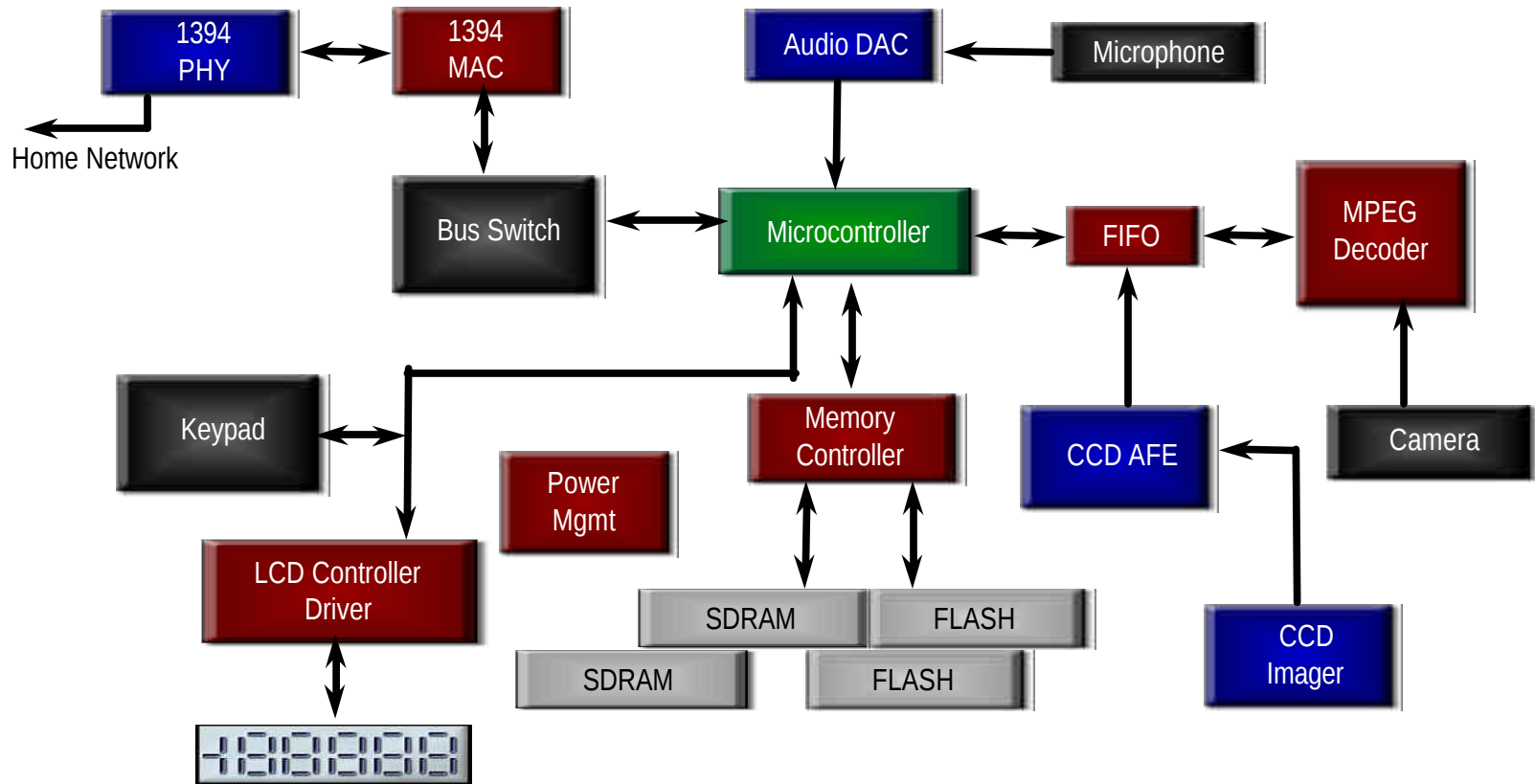
HAVi-based Printer



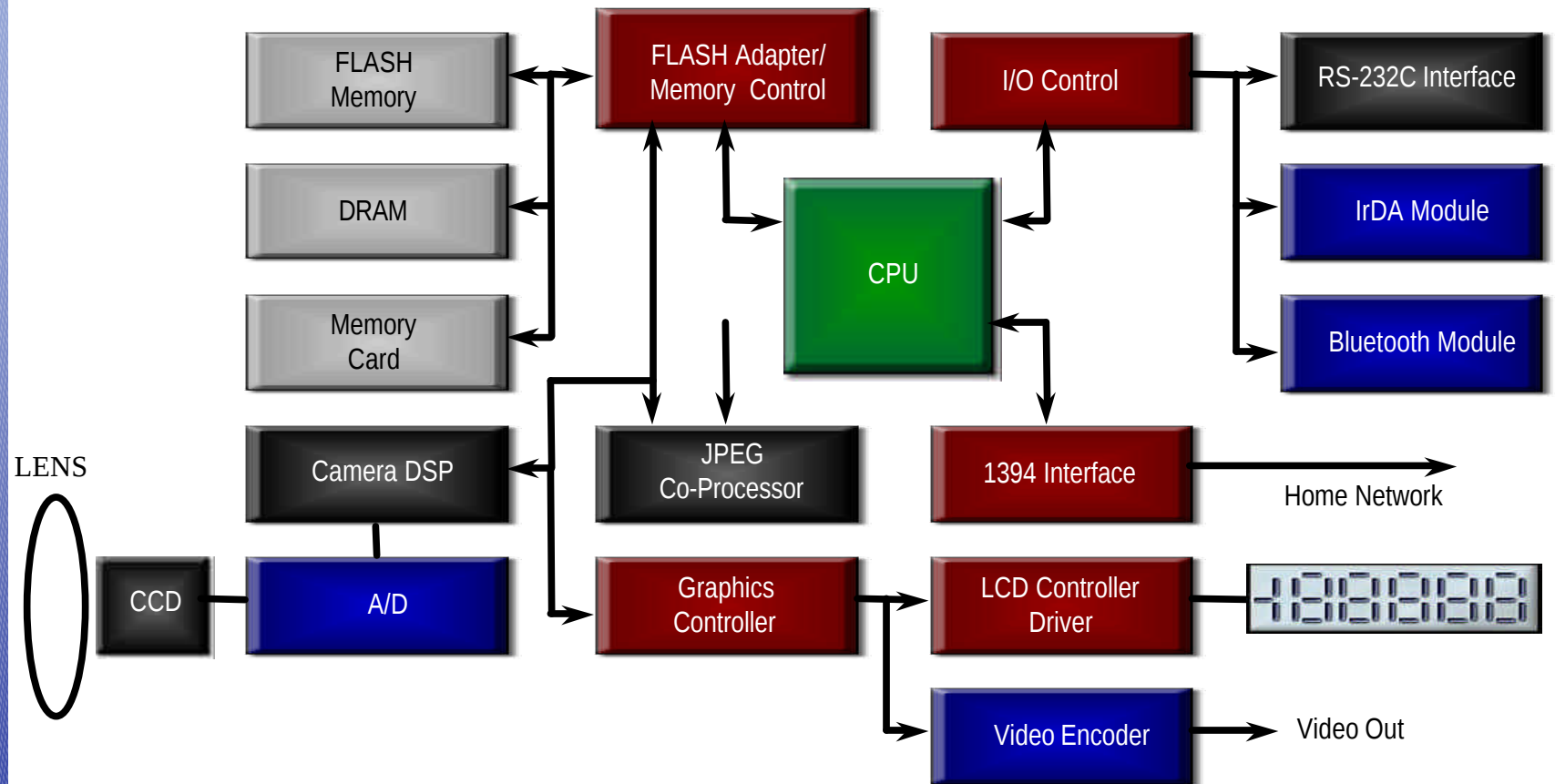
HAVi-based Scanner



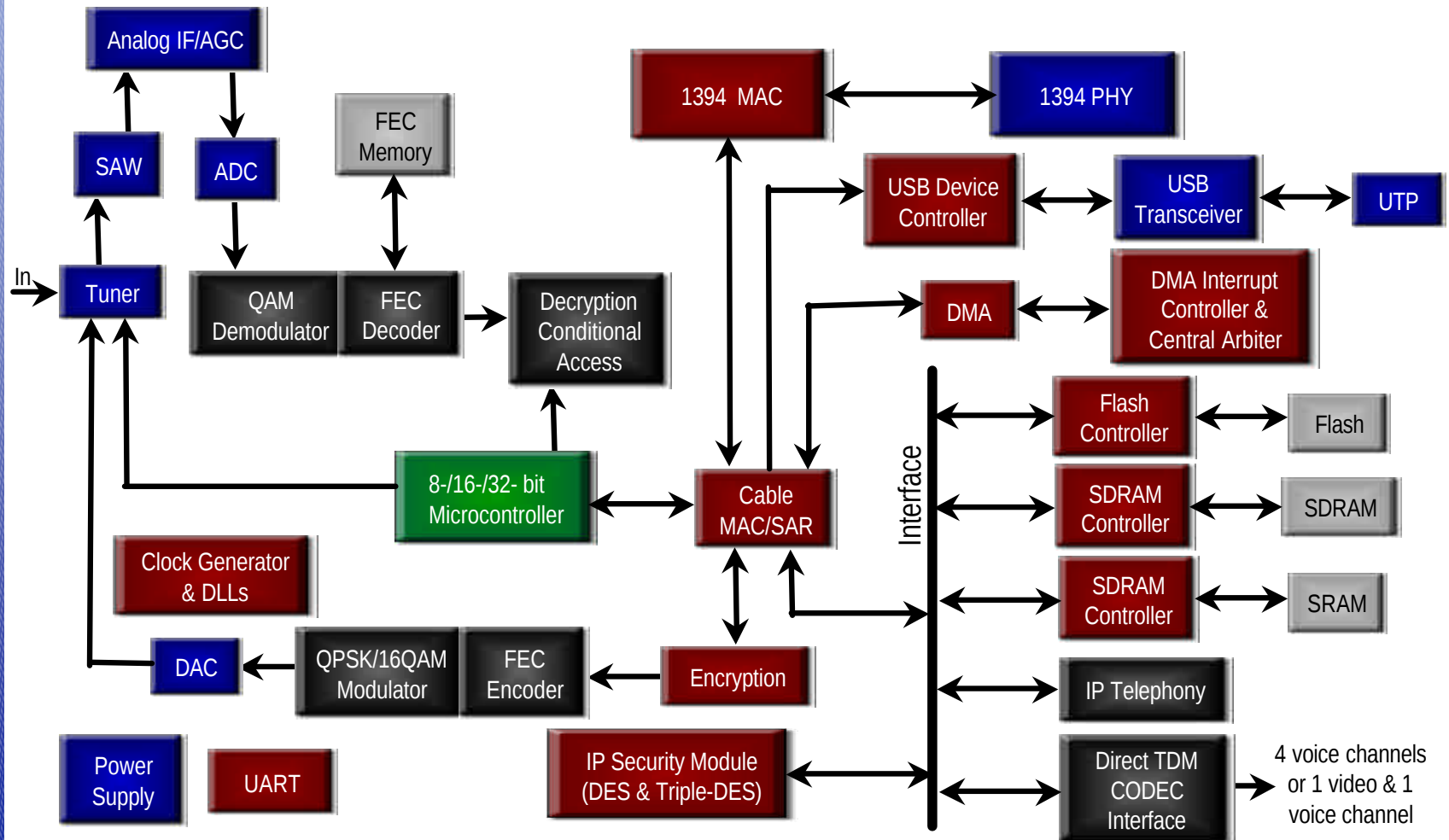
HAVi-based Home Security



HAVi-based Digital Camera



HAVi-based Cable Modem Residential Gateway



Device Type	Percentage
Smartphone	95%
Tablet	85%
Smartwatch	75%
Smart TV	65%
Smart Home Device	55%
Smart Car	45%



HAVi-based DSL CPE (Customer Premise Equipment)

