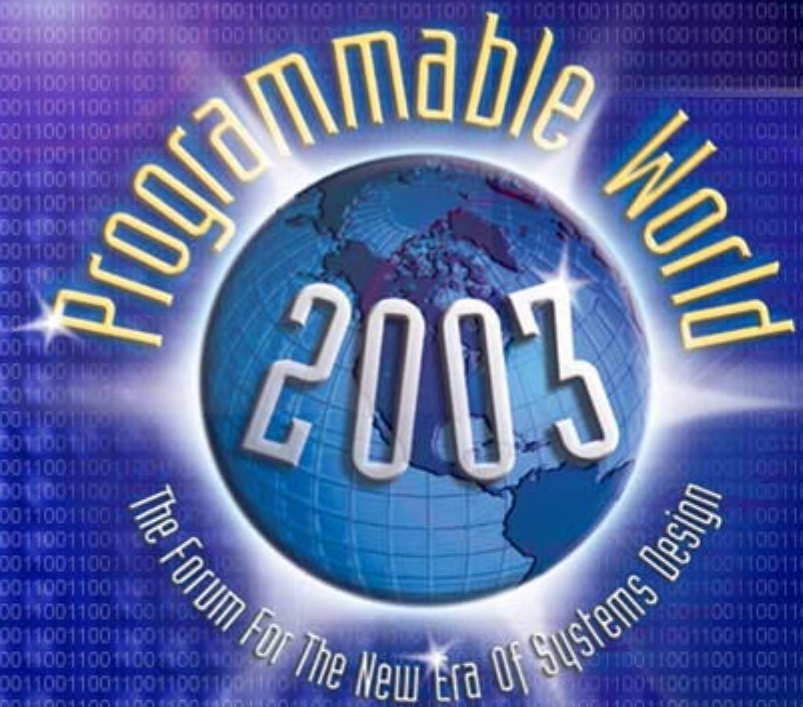
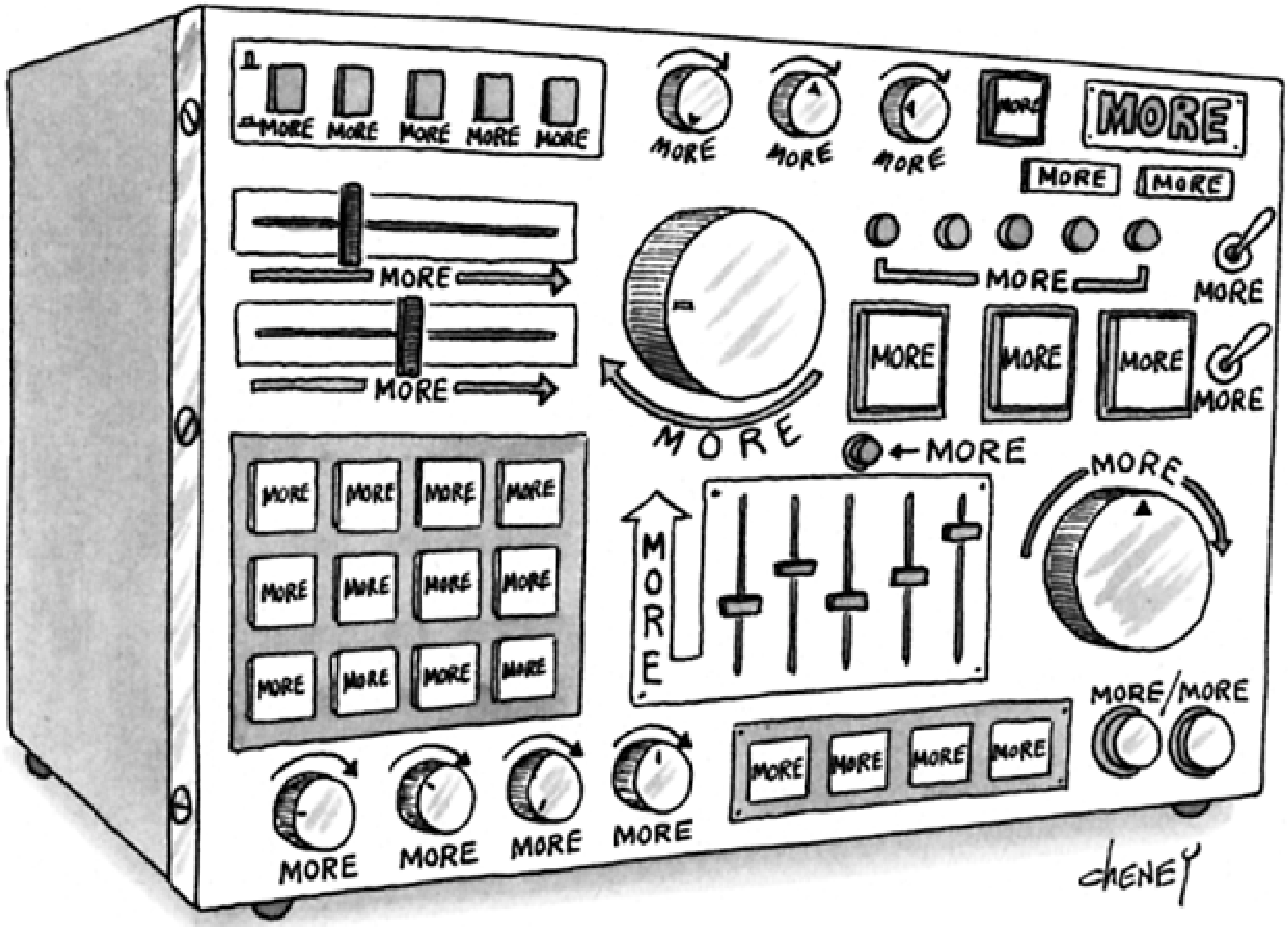
XILINX®



New 10G Products from Xilinx

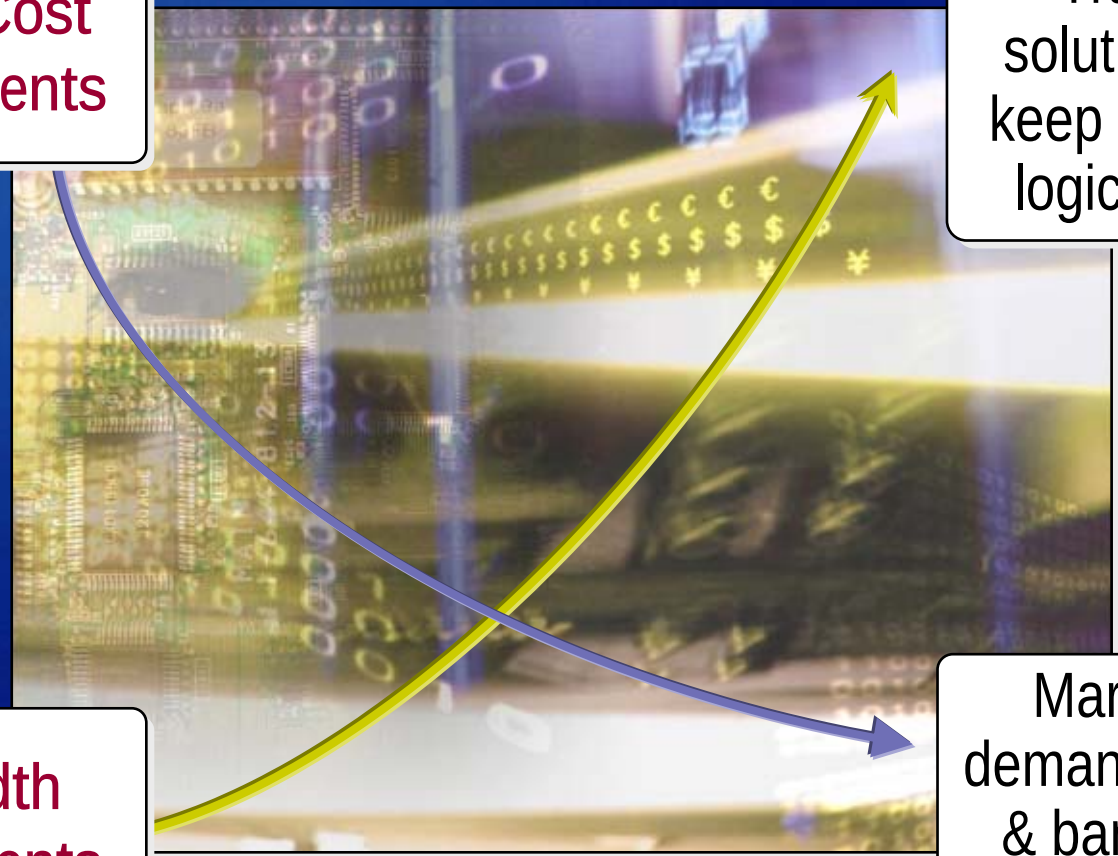
10 Gbps RocketPHY™ Family & Virtex-II Pro™ X Architecture



Higher Bandwidth at Lower Cost

System Cost Requirements

Traditional I/O solutions unable to keep pace with core logic performance

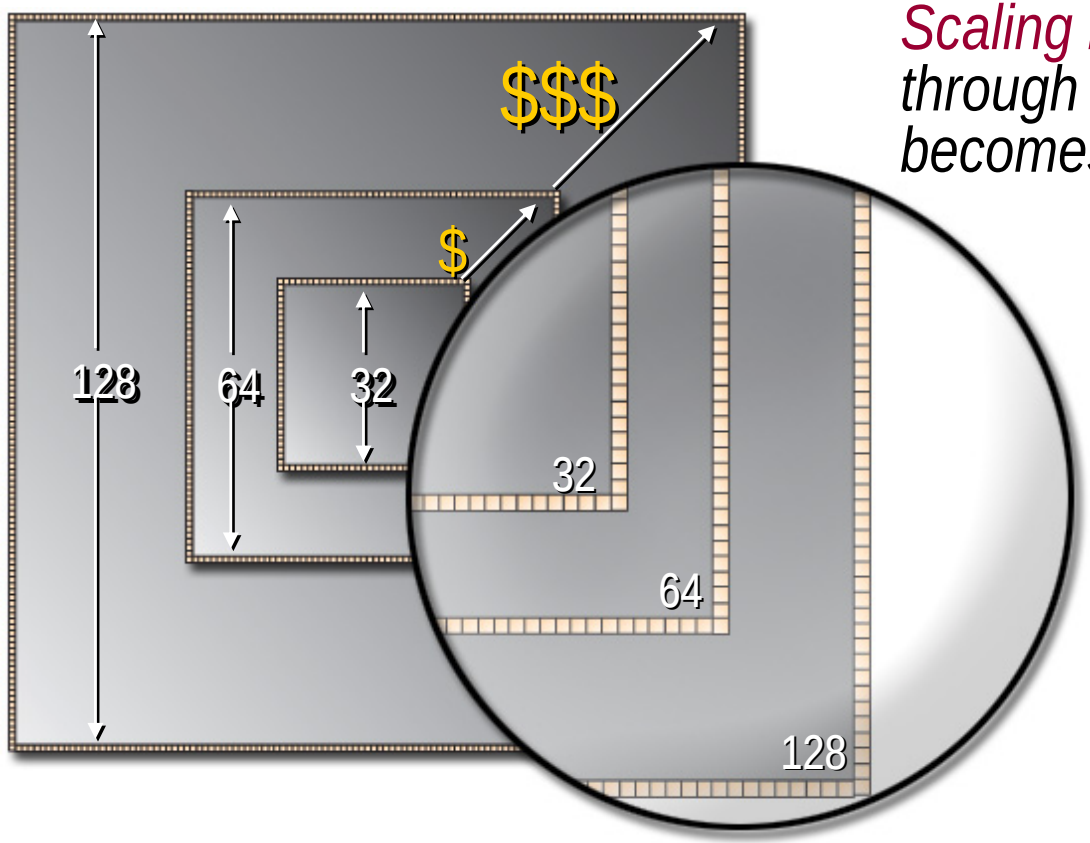


Bandwidth Requirements

Market pressures demand continued cost & bandwidth scaling

Time

Traditional Scaling Reaches Limits



Scaling bandwidth through increasing I/O becomes impractical

At 1 Gbps Parallel Signaling Hits a Brick Wall

- *Signal skew << 10pS*
- *High Power Consumption*
- *Simultaneous Switching Noise*
- *Radiated EMI*

The Solution is

Serial...

The Benefits of Going Serial

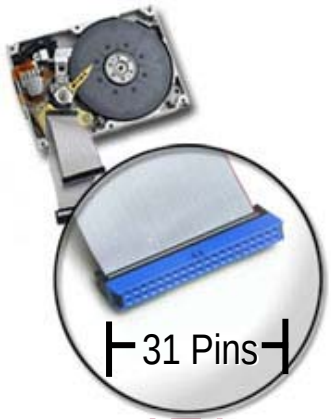
- Significant pin-count consolidation
  - Component, PCB, and connector costs significantly reduced
- Reduced power consumption & EMI emissions
  - Low voltage differential signaling
- Simplified design
  - Integrated clock eliminates clock skew design challenges

The Serial Tsunami

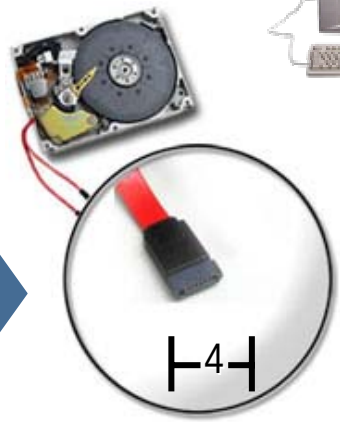
- Benefits of serial technology driving a “Tsunami” of new connectivity standards…
- With multiple speeds, protocols, and connectors…
- Addressing multiple interconnect hierarchies…
  - Box-to-box, board-to-board, chip-to-chip, & chip-to-optics
- With rapid adoption across multiple markets.
  - Communications, Storage, Computing, Video, Industrial, Instrumentation, Consumer…

Serial Signaling in Computers

Hard Drives - ATA



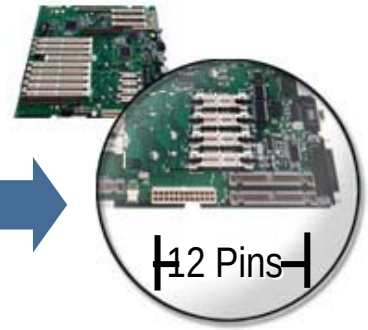
ATA



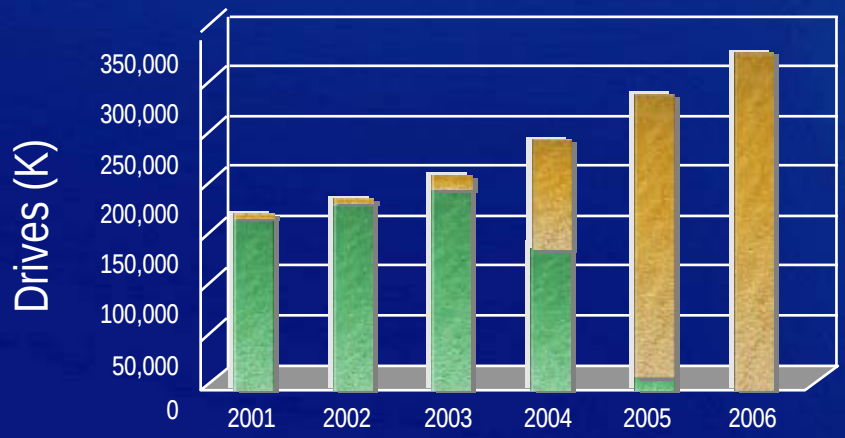
Serial ATA

Motherboards - PCI

PCI 64/66

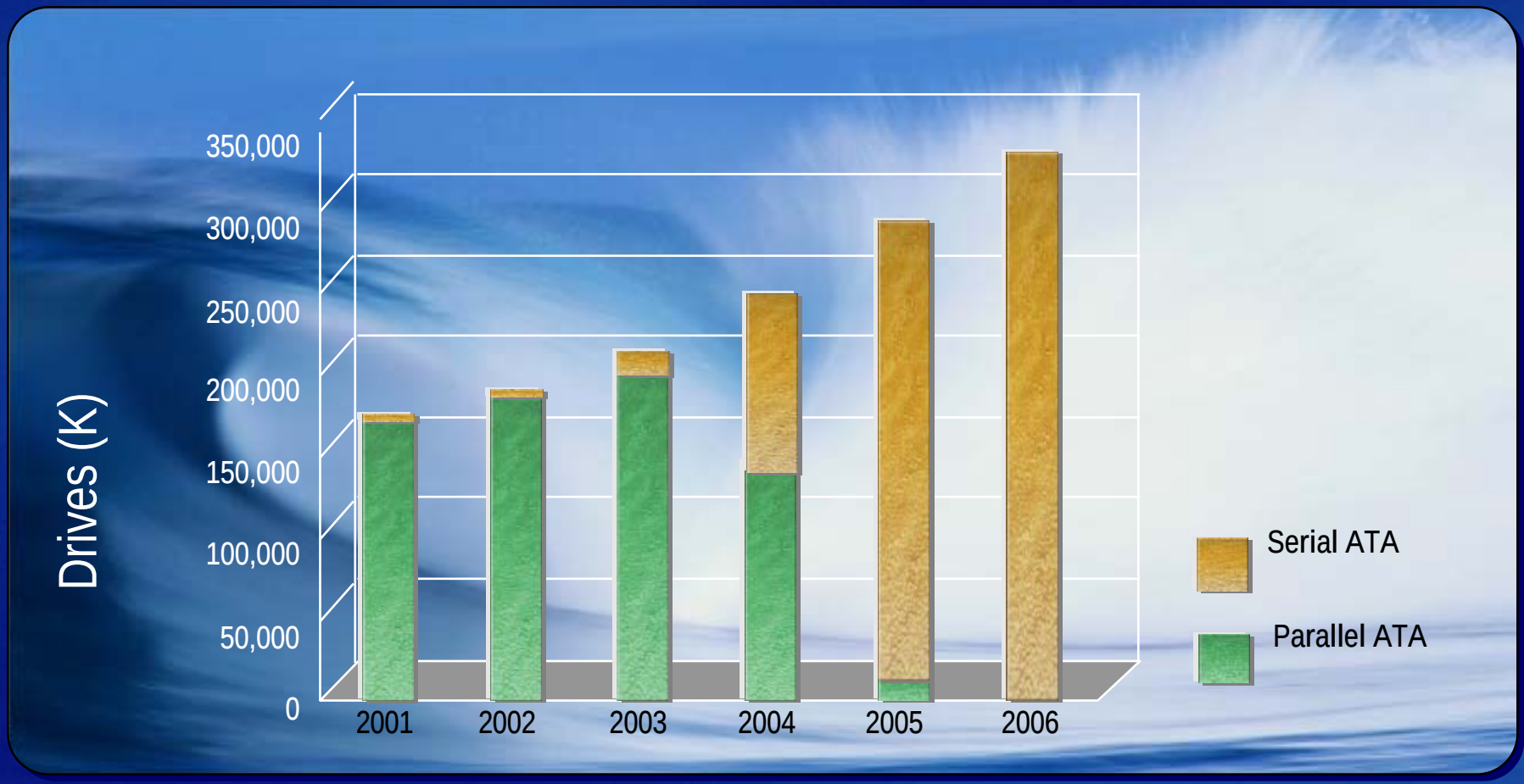


X1 PCI Express™



Serial	0.0%	0.3%	7.3%	42.8%	95.6%	100.0%
Parallel	100.0%	99.7%	92.7%	57.2%	4.4%	0.0%

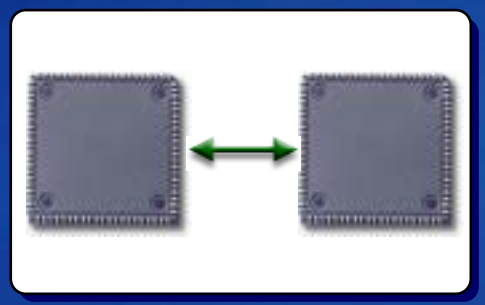
Parallel → Serial ATA



	2001	2002	2003	2004	2005	2006
Serial	0.0%	0.3%	7.3%	42.8%	95.6%	100.0%
Parallel	100.0%	99.7%	92.7%	57.2%	4.4%	0.0%

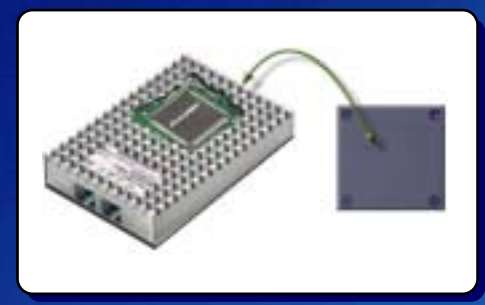
A Tsunami of Serial Standards

Chip-to-Chip



Board-to-Board

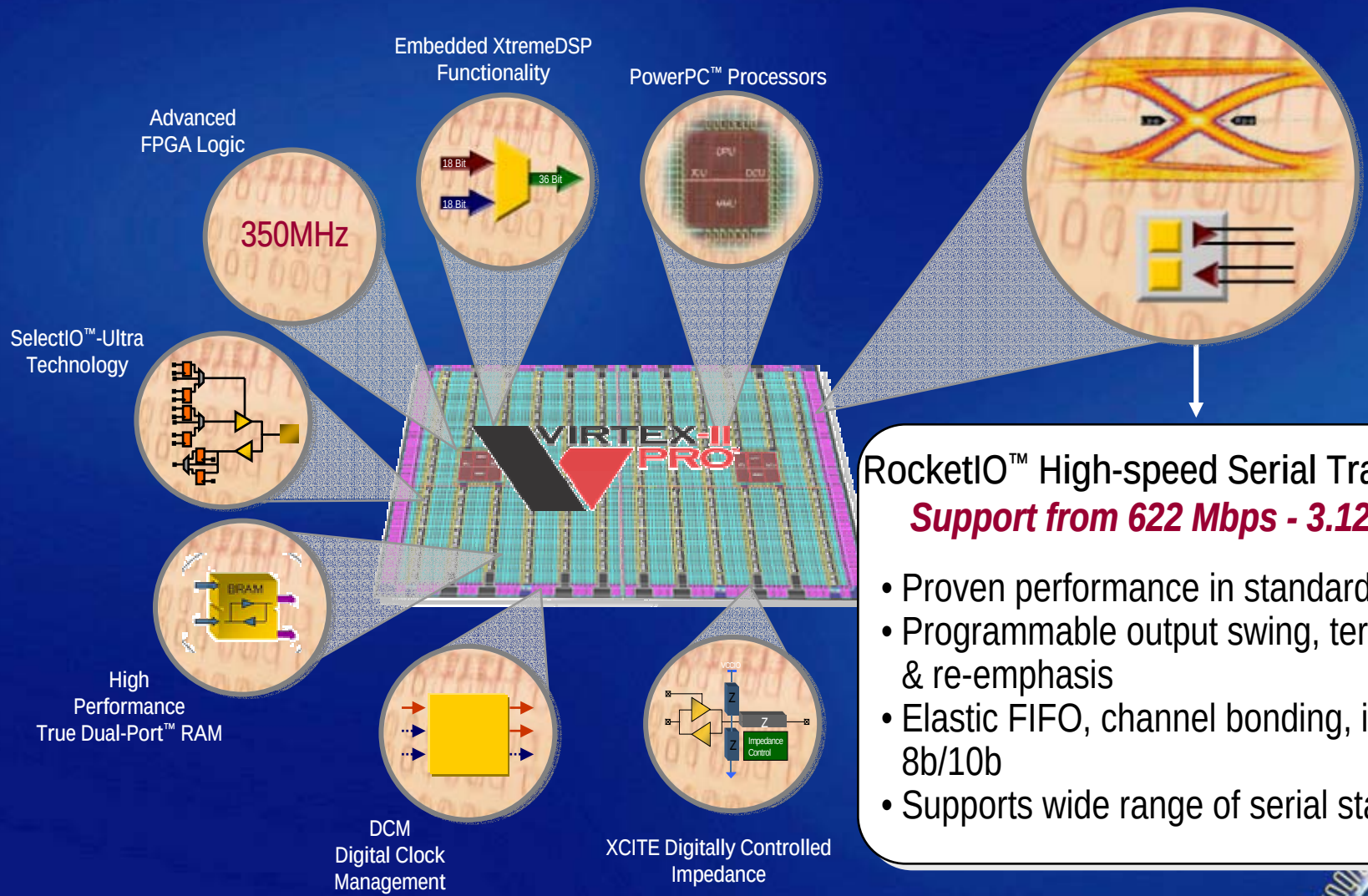
Chip-to-Optics



SONET Backplane	2.488,	9.9532 Gbps		
XAUI Backplane / Line Side	3.125 Gbps			
Ethernet Backplane	1.25,	10.3125 Gbps		
Proprietary Backplane	1.25,	5.0,	6.25,	10 Gbps
InfiniBand™	2.5 Gbps			
Fibre Channel	1.0625,	2.125,		10 Gbps
Serial RapidIO™	1.25,	2.5,		3.125 Gbps
PCI Express™	2.5 Gbps			
SFI-5 / SPI-5	2.488 Gbps			
SFI- 4.2	2.5 Gbps			

The Virtex-II Pro Platform FPGA

Defining the Industry Standard for Cost, Performance, & Flexibility

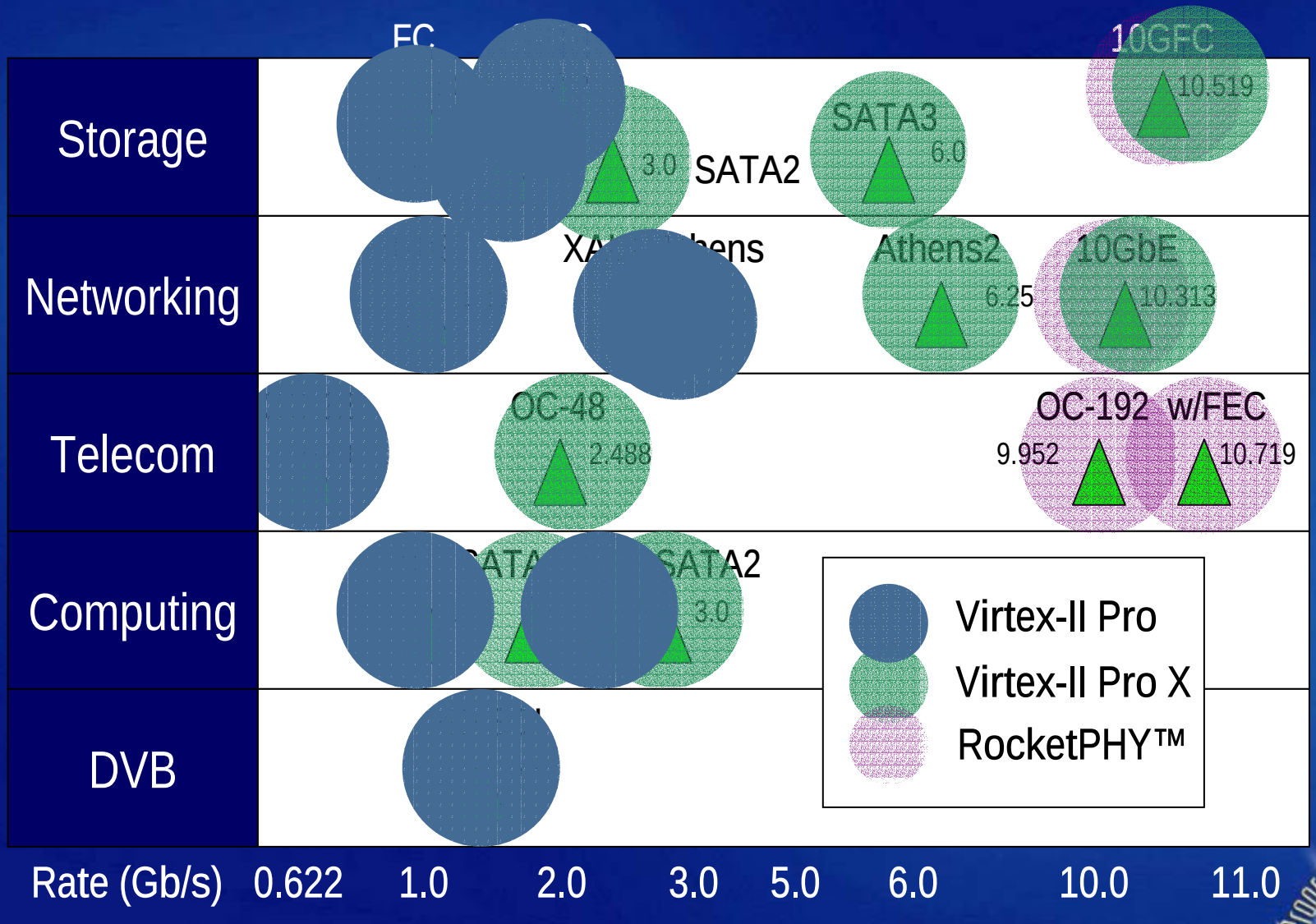


RocketIO™ High-speed Serial Transceivers

Support from 622 Mbps - 3.125 Gbps

- Proven performance in standard CMOS
- Programmable output swing, termination, & re-emphasis
- Elastic FIFO, channel bonding, integrated 8b/10b
- Supports wide range of serial standards

Multi-Gb Serial Terrain Map



Extending Solutions Leadership to 10 Gbps

RocketPHY™

RocketPHY

SONET Compliant 10 Gbps CMOS Physical Layer Transceiver Family

Sampling NOW

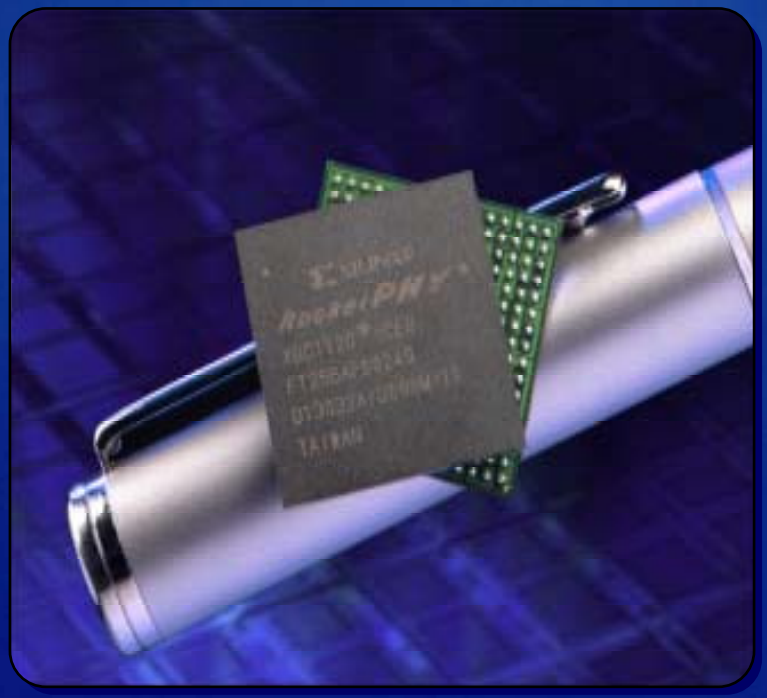
Virtex-II Pro™ X

Virtex-II Pro FPGA with integrated 10 Gbps

Sampling 2H 03

Redefining the *Industry Standard* *for Programmable Solutions…* ***Again***

RocketPHY™ 10G Physical Layer Transceivers



- Single-Chip CMOS PHY Devices
- Ultra-low jitter (< 1.0 ps RMS)
- 9.953 – 10.709 Gbps data rates
- Markets: WAN, MAN, LAN & SAN
  - SONET OC-192 (SDH STM-64) + FEC
  - 10GbE
  - 10G Fibre Channel
- 16-bit LVDS parallel interface
  - OIF SFI-4
  - XSBI IEEE 802.3ae compliant
    - DDR-XSBI Option
- FT256 BGA package

RocketPHY™ Family

RocketPHY™ 10G Ultra MSA

Multi-Rate OC-192+FEC/10GbE/10G FC with SFI-4/XSBI Interfaces

RocketPHY™ 10G SONET / SDH

OC-192 SONET (STM-64 SDH) with SFI-4 Interface

RocketPHY™ 10G Ethernet / Fibre Channel

10GE/10G FC Transceiver w/ 16-bit LVDS Interface (XSBI)

Unparalleled solutions for 10 Gbps applications

The 10G Optical Revolution

300-pin MSA

RocketPHY supports both MSA & XFP applications

RocketPHY

XFP MSA

- Traditional 10G MSA optical modules
  - – 200 – 300 Pins, fixed wavelength, CWDM & Tunable Laser
  - – Relatively high cost - $1800 ++
- Driving lower cost through XFP
  - –XFP – 10G Forum Factor Pluggable
  - –Protocol agnostic – LAN, WAN, SAN
  - –1/5 of the space, 1/2 of the power, 1/3 of the cost

300 MSA vs. XFP Cost Comparison

Cost Benefits & Density will Drive Rapid XFP Adoption

2004 estimated pricing

300-Pin MSA

$1800

SFI-4 / XSBI

Framer / MAC
V-II Pro FPGA

XFP

$700

~ $600

XFI

< $100

RocketPHY

SFI-4 / XSBI

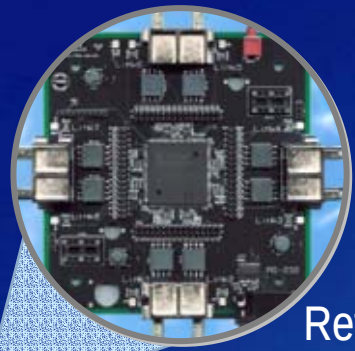
Framer / MAC
V-II Pro FPGA

Save Over $1000/Port

Comprehensive Serial Solutions

Serial Standards Signalling Support

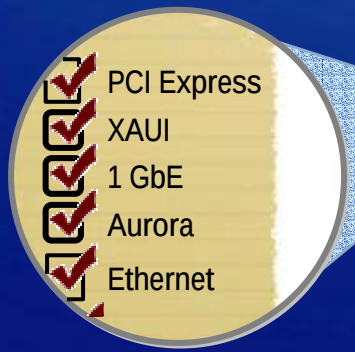
Serial Specialist FAEs



Reference Designs & Eval Boards

Comprehensive Solutions
to accelerate design time
and tame the Serial Tsunami

Interoperability Certification



Serial Standards Protocol & IP

Advanced Serial I/O IC Design Team

Comprehensive Characterization Reports

CTD Video

Extending Solutions Leadership to 10 Gbps

RocketPHY™

RocketPHY

SONET Compliant 10 Gbps CMOS Physical Layer Transceiver Family

Sampling NOW

Virtex-II Pro™ X

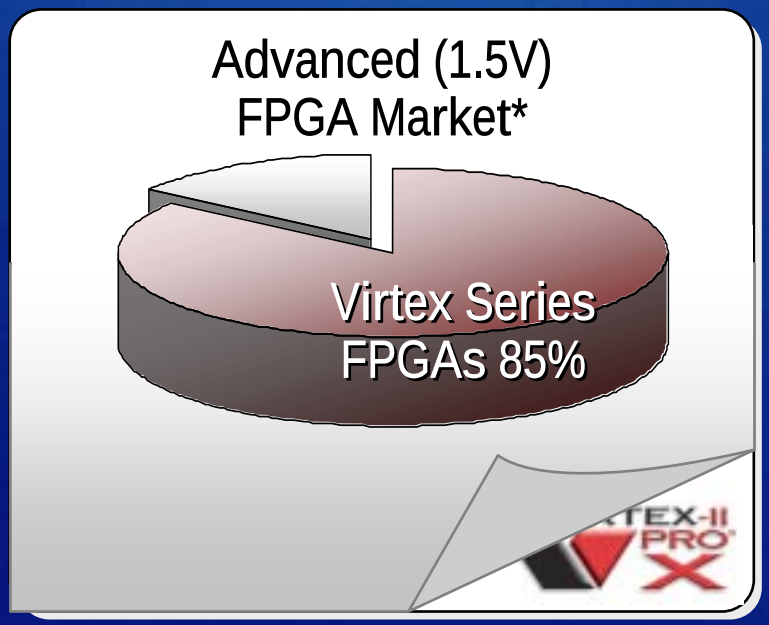
Virtex-II Pro FPGA with integrated 10 Gbps

Sampling 2H 03

Redefining the *Industry Standard* *for Programmable Solutions…. **Again***

Virtex-II Pro X Architecture

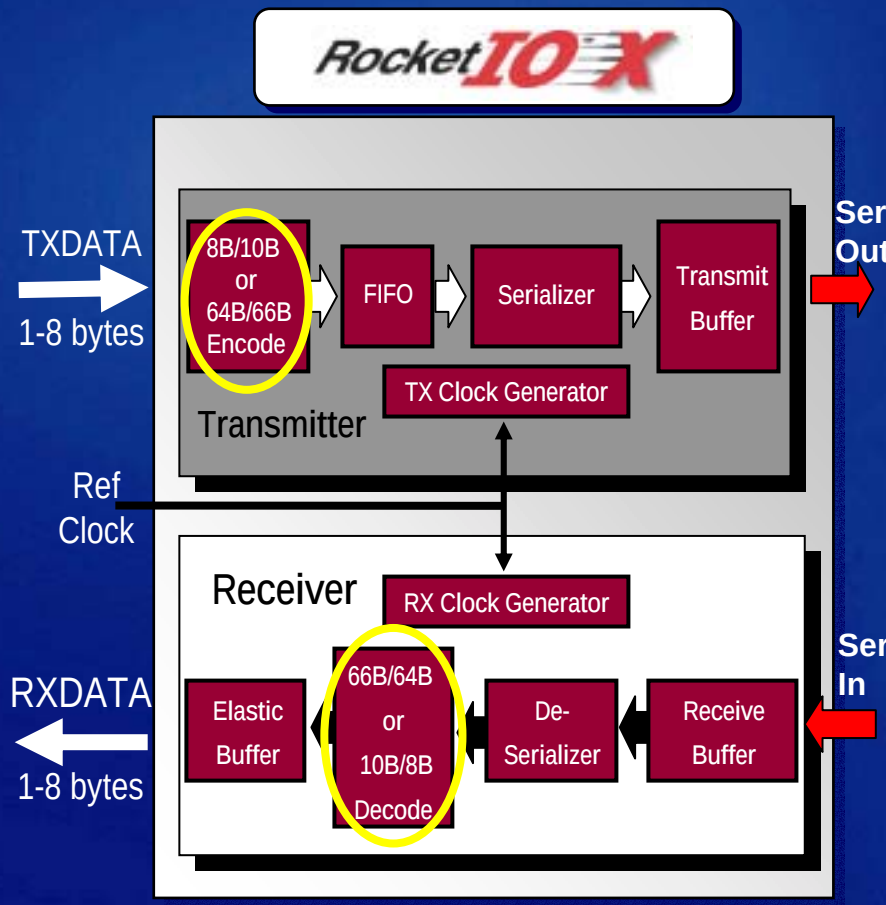
Virtex Series
Industry's most popular
Platform FPGA solution



- Extends most popular Platform FPGA family to 10Gbps serial
- Fully compatible with Virtex-II Pro
  - Same architecture
  - PowerPC processors cores
  - Pin-compatible
- Virtex-II Pro & Virtex-II Pro X = complete solutions from 622 Mbps to 10 Gbps
  - Chip-chip, board-board, chip-optics
  - New architecture ideally suited for 5/6/10 Gbps backplanes, 10G Base-R, and OC-48 compliant systems

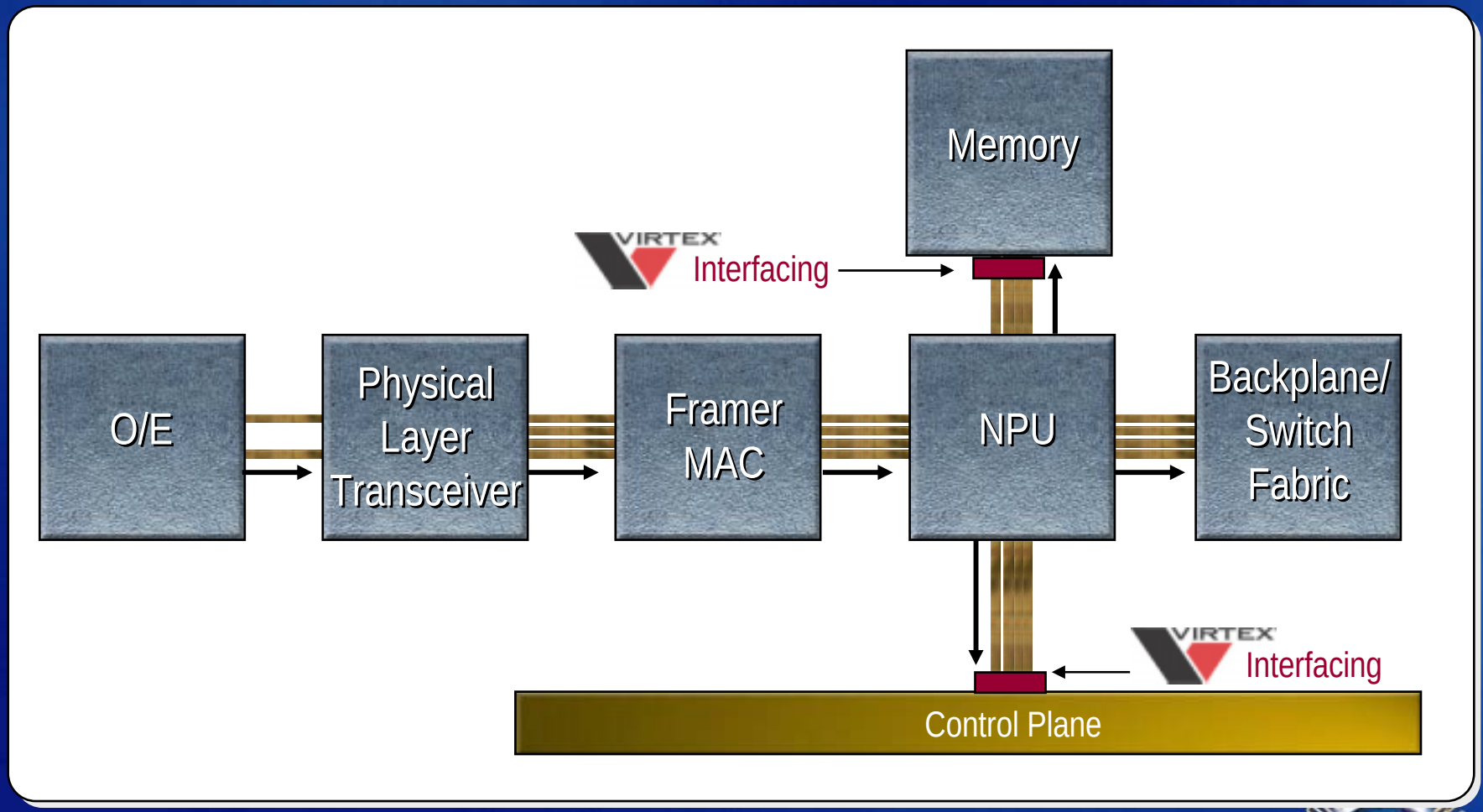
*Source: Company Reports, Xilinx Estimates Q1-Q4 CY '02 market data for 1.5 V FPGAs
Note: Share base estimates based on Top 2 vendors only: Altera and Xilinx (represent >90% of market)

RocketIO™ X Transceiver

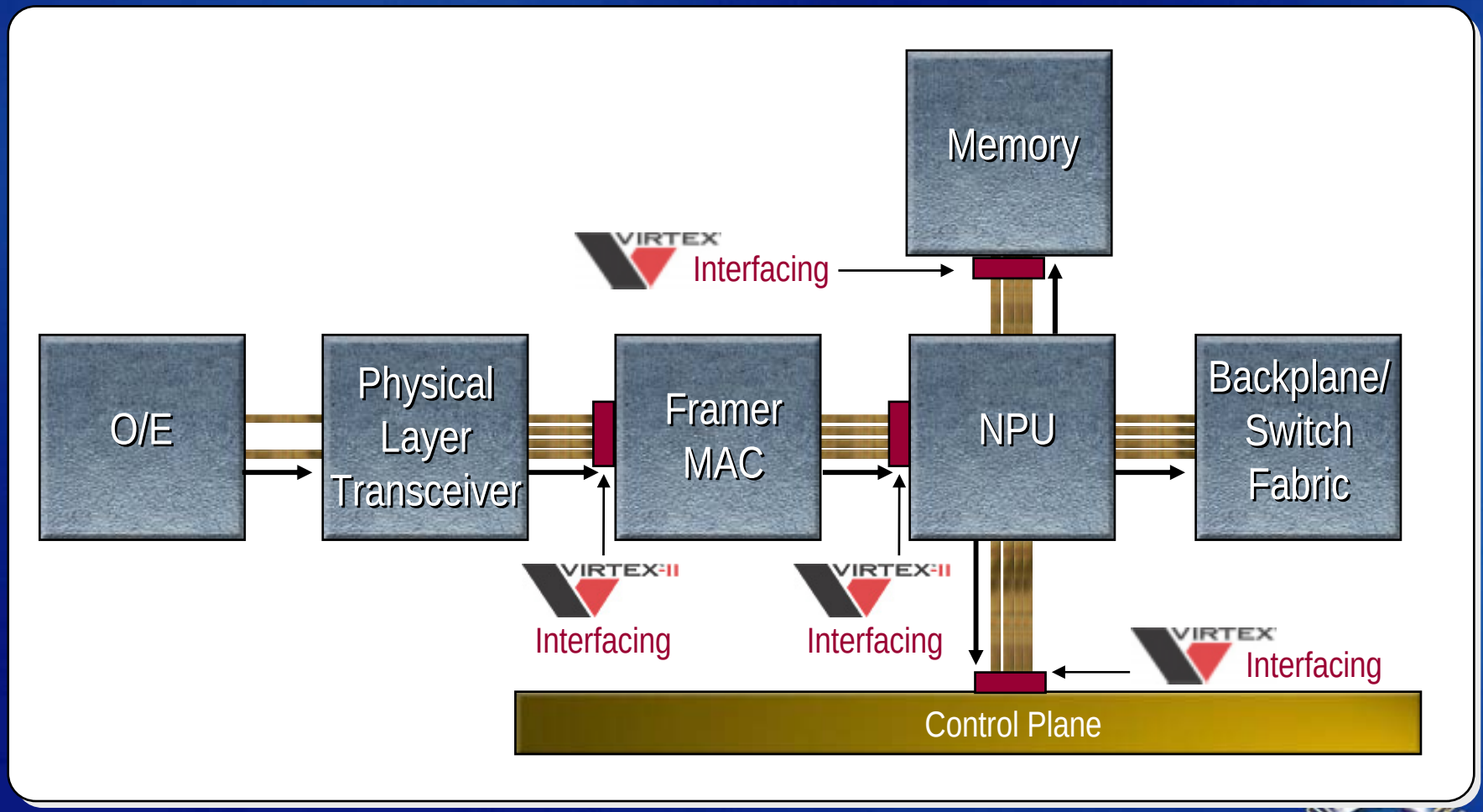


- 2.488 - 10.3125 Gbps per channel
- Enhanced SONET support
  - 8B/10B or 64B/66B encoding
  - x16 or x20 clock and data path
- Channel bonding
- Comma detect
- Programmable features for performance tuning and enhanced signal integrity
  - Pre-emphasis, receive equalization, output swing, and on-chip termination
- Bypass for encoding, FIFO, elastic buffer
- Built-in 10G Base-R circuitry
- Transceiver configuration port

A Continued Commitment to Delivering Solutions



A Continued Commitment to Delivering Solutions



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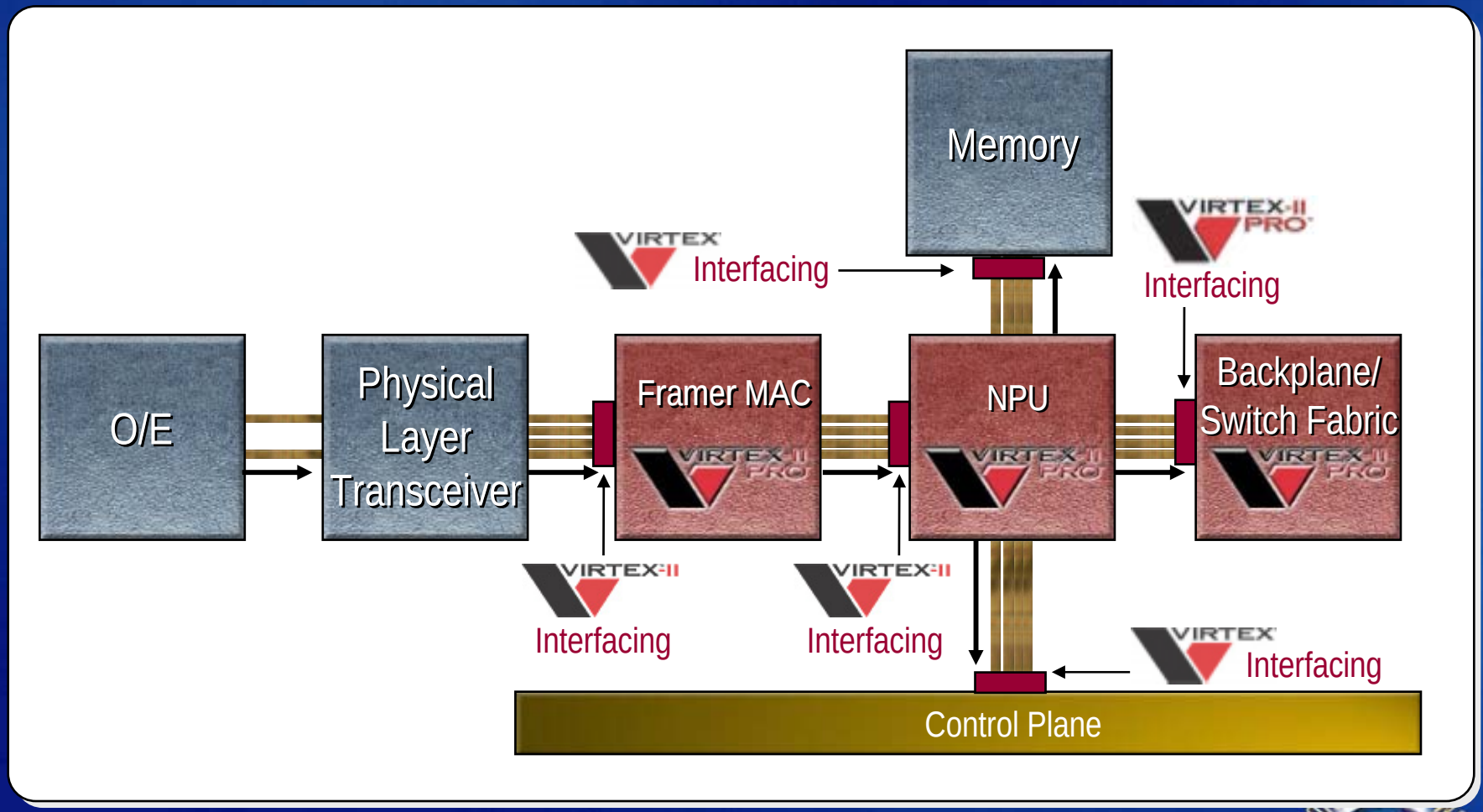
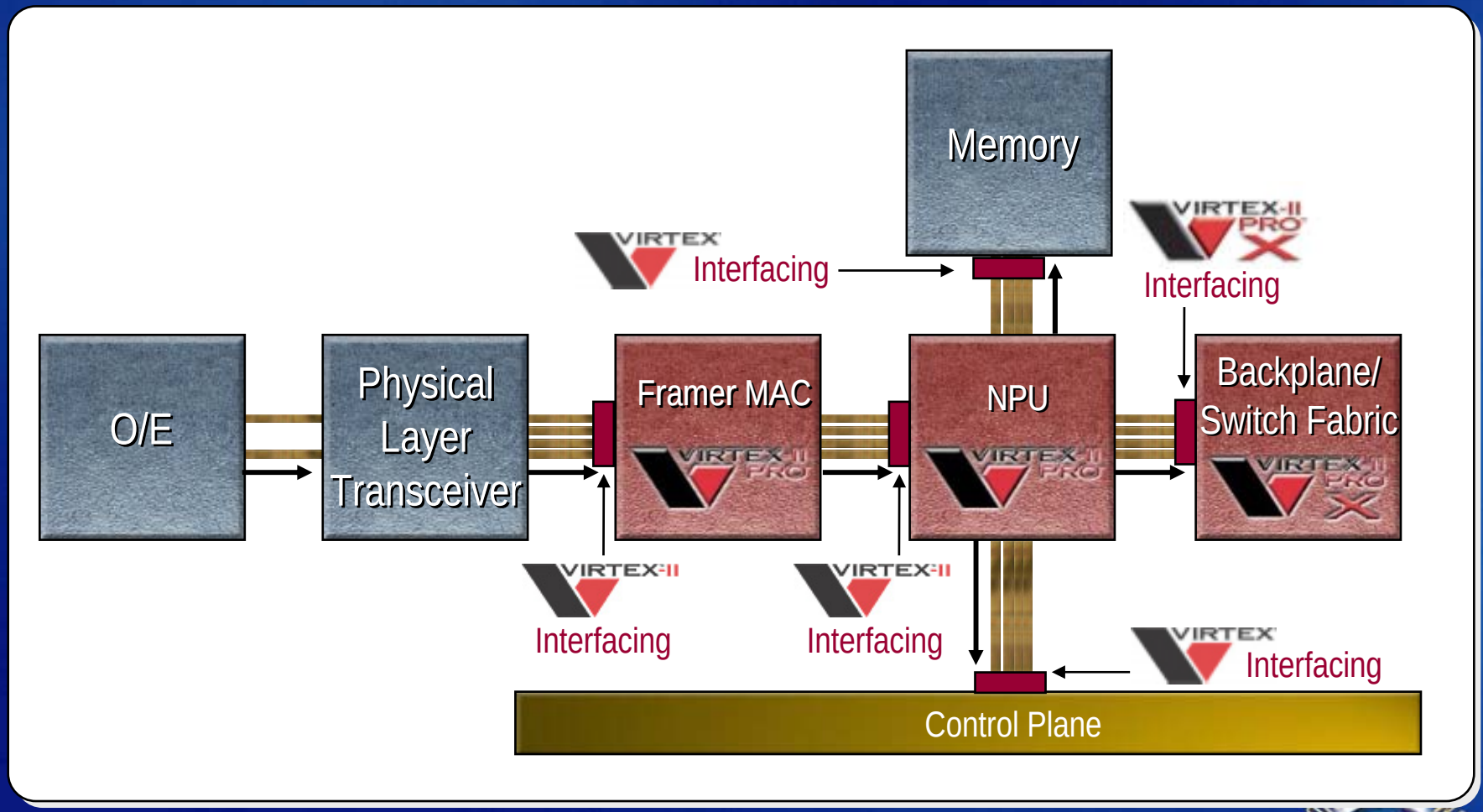
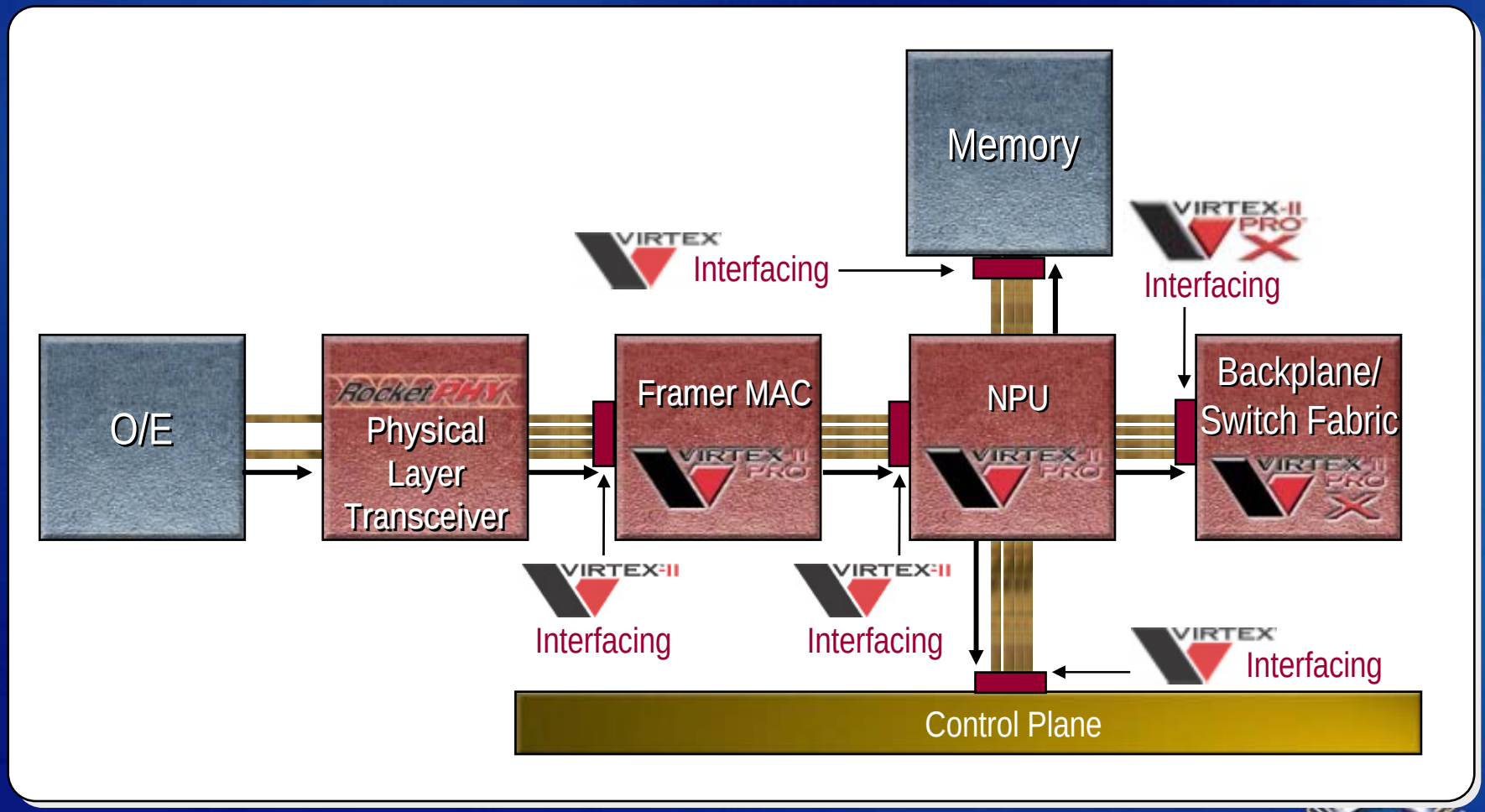


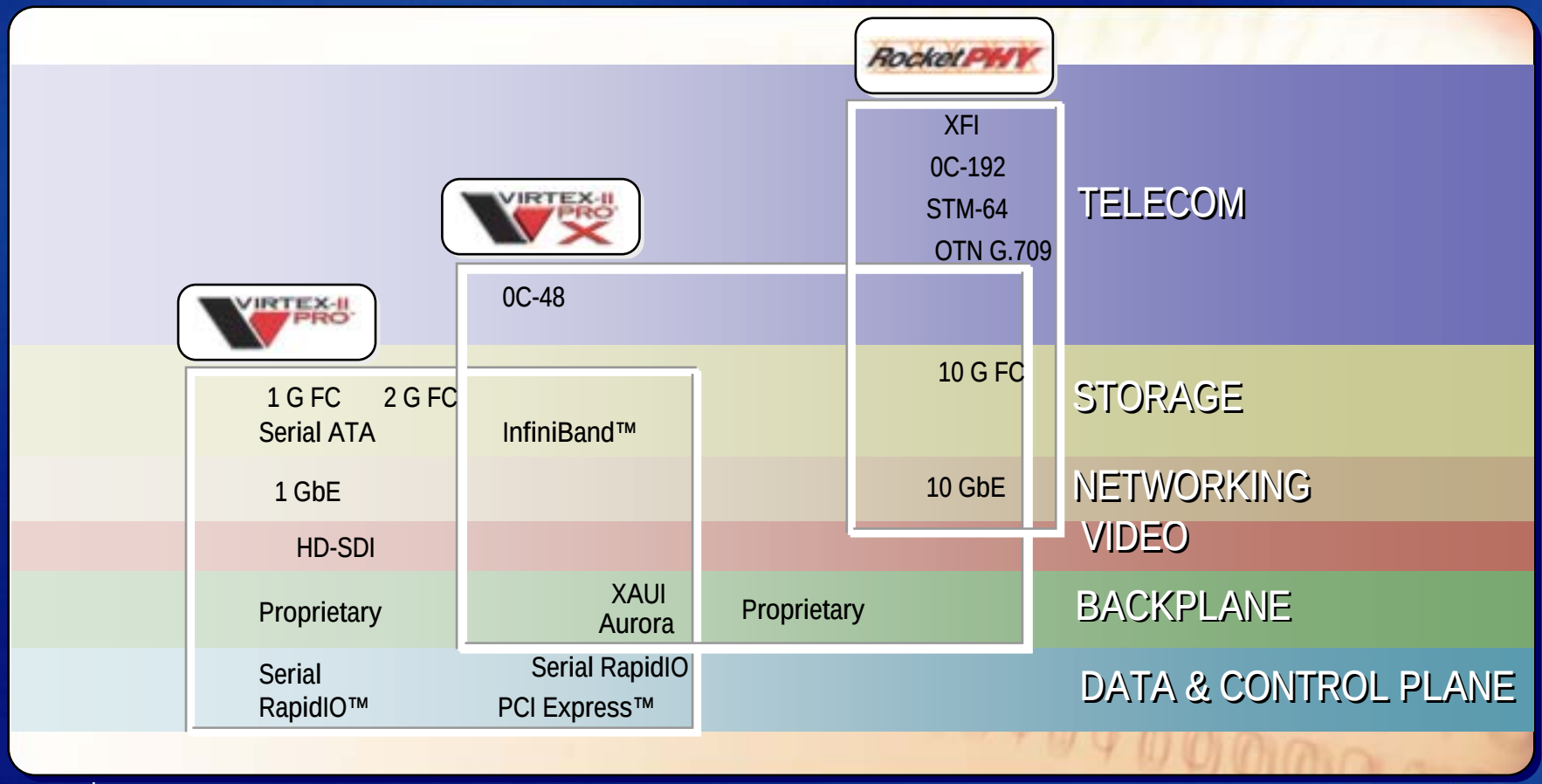
A Continued Commitment to Delivering Solutions



A Continued Commitment to Delivering Solutions



Seamless Serial Solutions from 622 Mbps to 10 Gbps



Summary

- Serial delivers higher bandwidth at lower cost
  - Driving Factor of the “Serial Tsunami”
  - Computing, Networking, Telecom, Storage, Video, Industrial, Military
- Xilinx committed to providing complete serial solutions
  - Silicon, Software, IP, Boards, Technical Support, Design Services
  - Covering speeds from 622 Mbps to 10 Gbps
  - Support for 14 connectivity standards
- Complete Range of Devices
  - Virtex-II Pro (9 Devices)
  - RocketPHY™ Family (3 Devices)
  - Virtex-II Pro X (coming in 2H03)