Key3 Media Group PRESENTS NETWORLD+INTEROP
INTEROP

What's Happening in Hardware: Lessons from the *Real* World of Network Processors

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September 2001

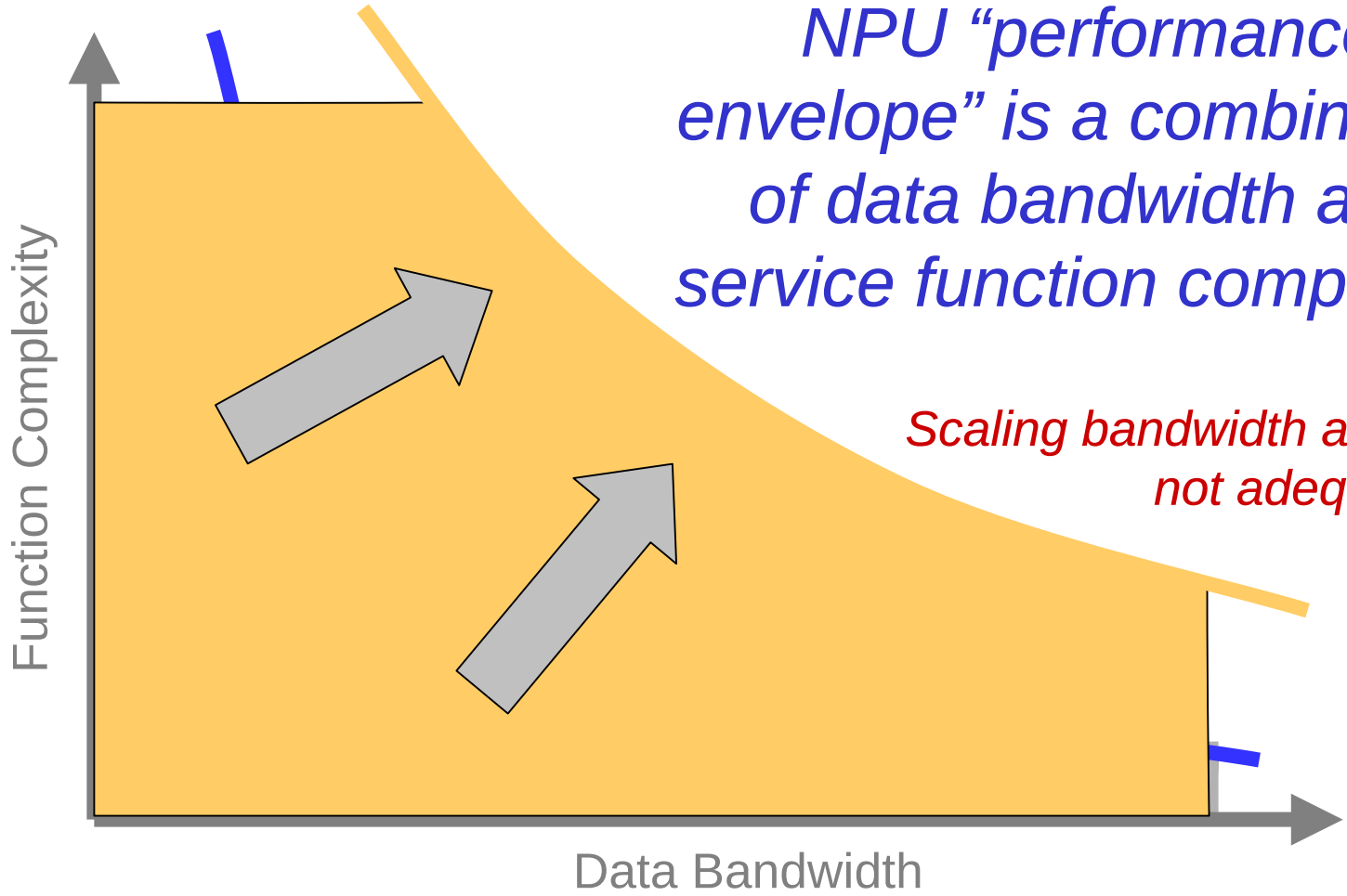
C-PORT™
A Motorola Company

Where NP's Are Being Deployed Today…..
(Sample of C-5 products currently in development)

- ADM-LAN/MAN
- Voice / Wireless-Data Switch / Gateway
- Transport Control Network
- LAN - WAN Edge router
- Multiservice Router
- Streaming Media Distribution
- Layer 4+ Router
- DSLAM / Aggregation
- Cable Head-end
- PON Head-end
- LAN-SAN Gateway
- Network traffic emulator / analyzer / monitor

Common application attributes:
New and advanced services across range of interface types and speeds

True NPU Performance is Much More than Mbps



NPU "performance envelope" is a combination of data bandwidth and service function complexity

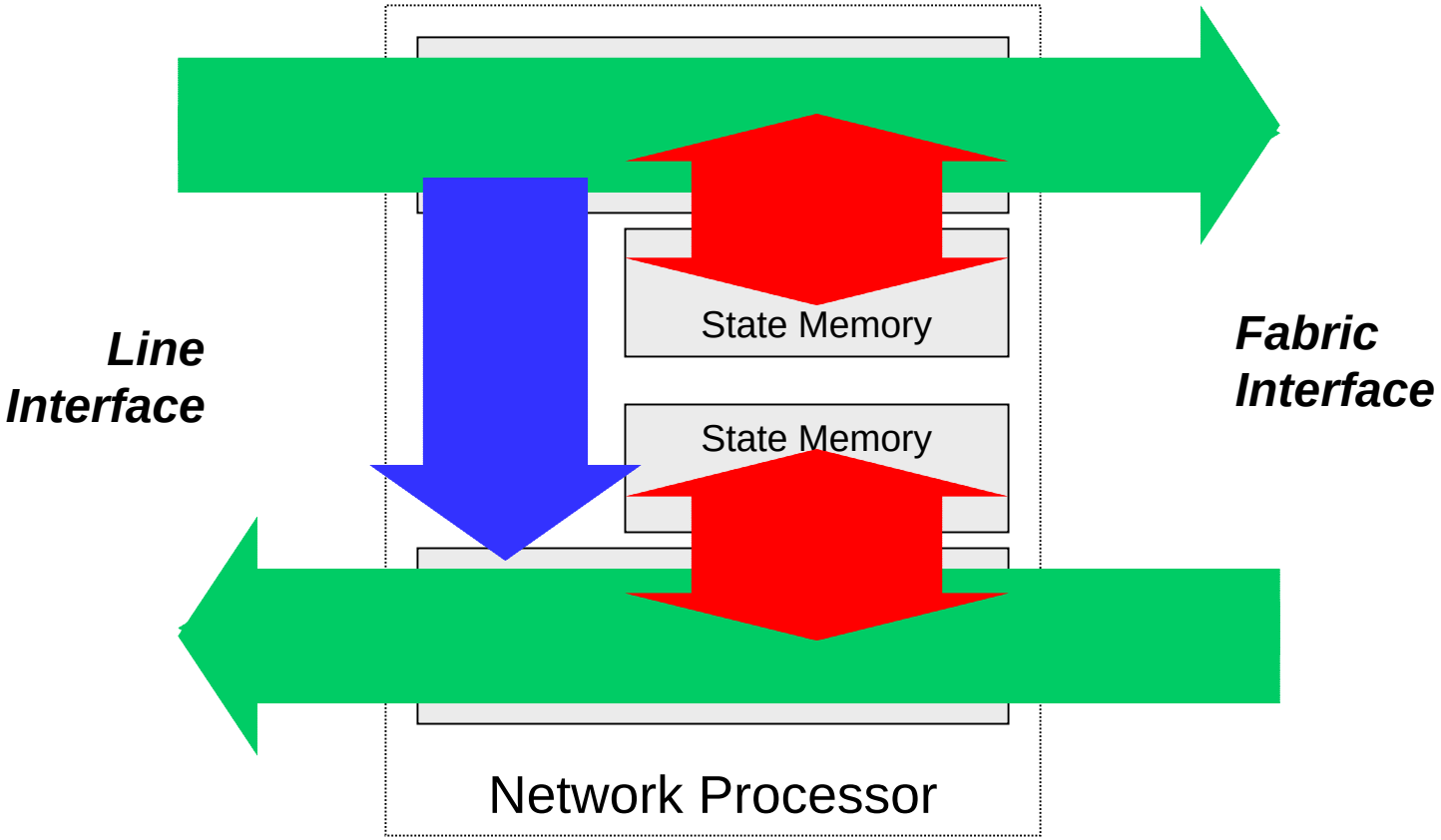
Scaling bandwidth alone is not adequate…

Challenge of Enabling Advanced Services

- New Services Mandate Complex Data/Control Flows
  - Complex, Hierarchical Encapsulations
  - Hi-Density TCP Termination
  - Content-Awareness -> Content-Manipulation
  - Unpredictable Fragmentation and Re-ordering
  - Security and Encryption Processing
- Function Complexity Drives Key NPU metrics
  - Raw Processor Performance
  - Lookup and Classification
    - Algorithms, Key Lengths, etc.
  - Queuing Operation Rate
  - Scheduling Sophistication
  - Application State and Statistics
    - Storage, Maintenance, Retrieval
  - Interconnect and I/O Bandwidth
  - And more…..

Flexible and intelligent coordination of NP functions and components is required

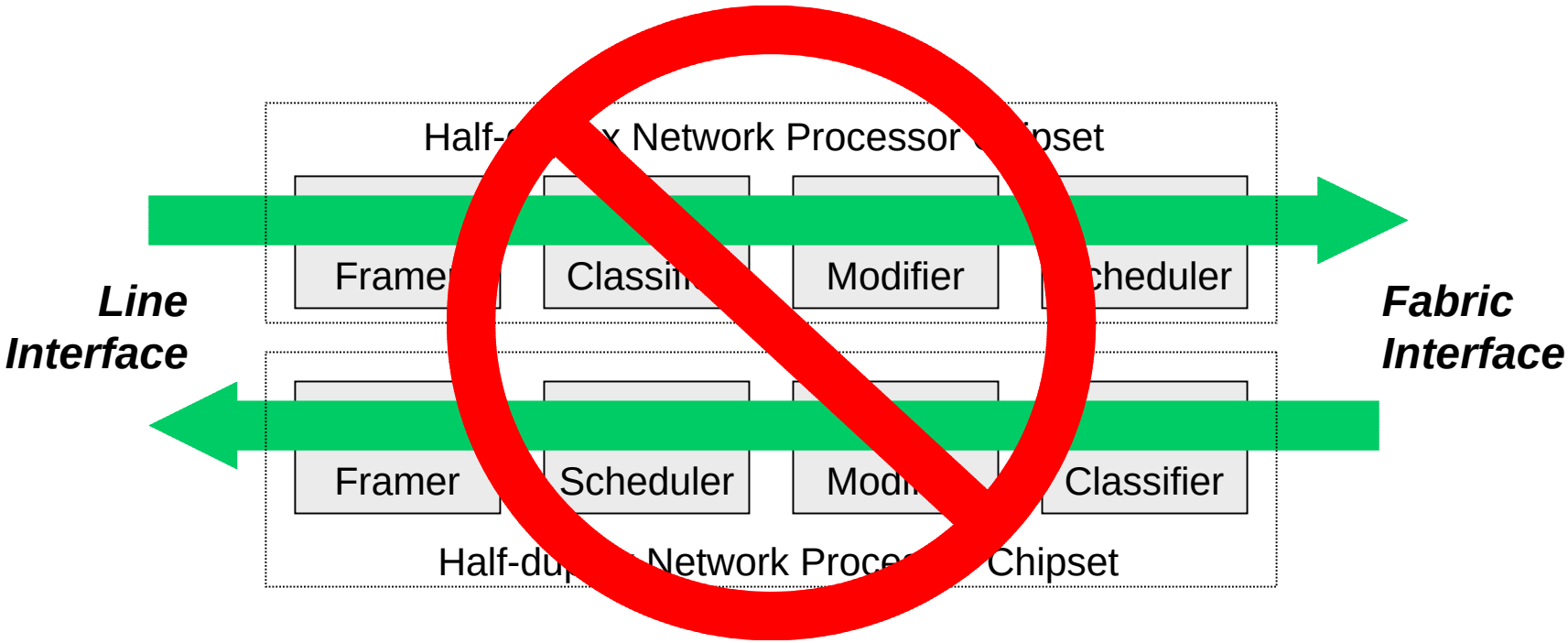
Bandwidth Scales… In Multiple Dimensions



Data throughput scales with increasing line rate…

Application demands scale state and tranceive bandwidth many times faster

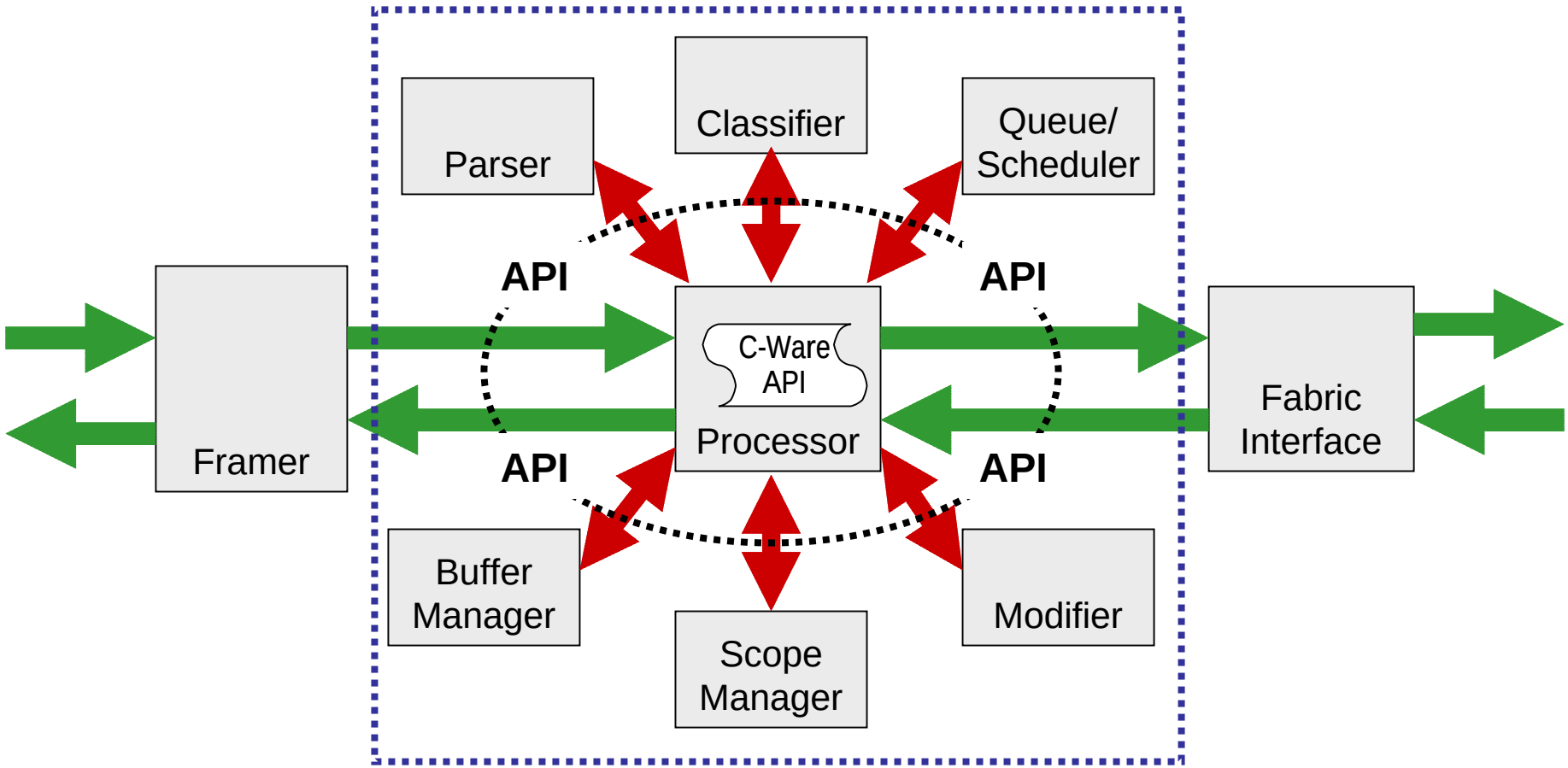
Simple Pipelines Can't Deliver Service Complexity



Useful only for basic layer 2/3/4 forward/filter applications

But, easy to scale data path bandwidth

Integrated NPUs Enables Services & Scaling



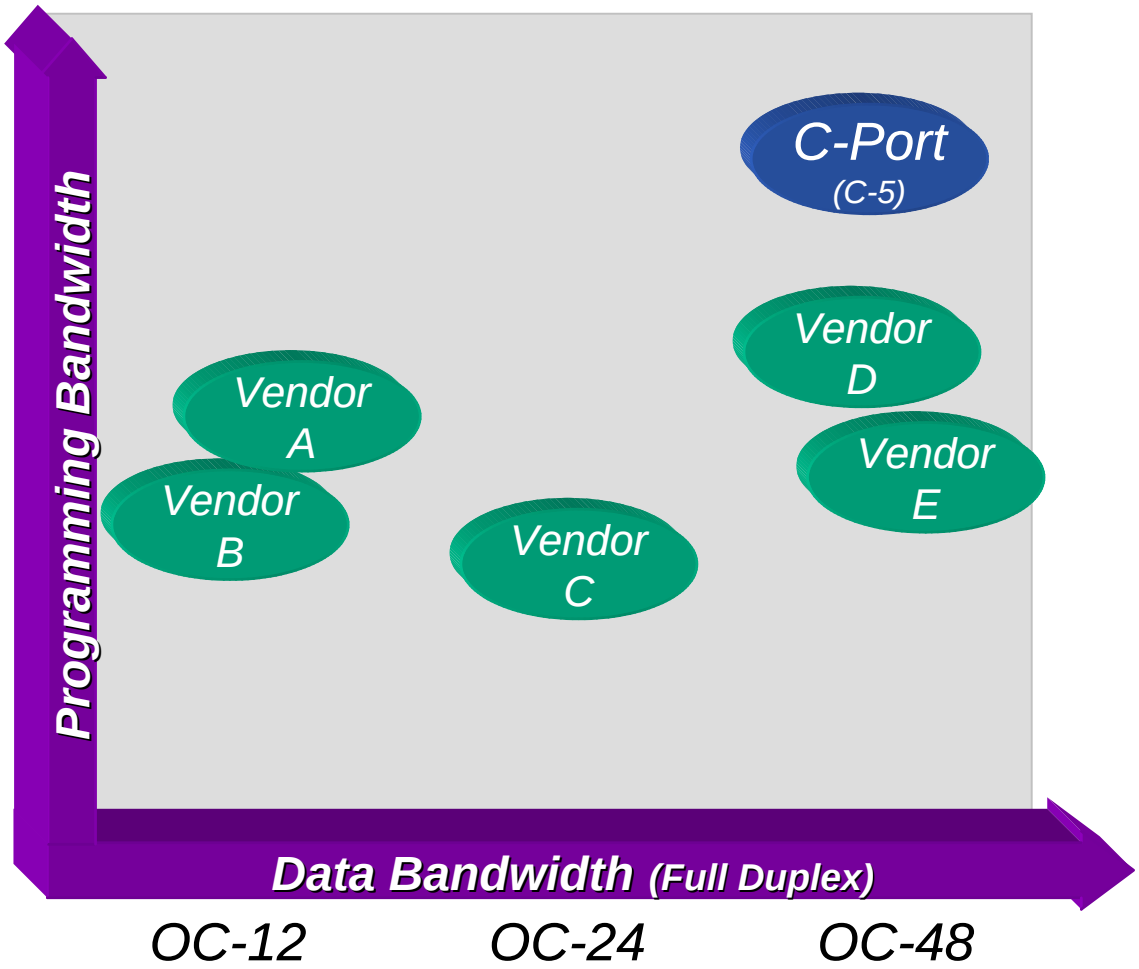
A Good API abstracts functions…Efficient and completely flexible

High level of chip integration unlocks performance and implementation efficiency

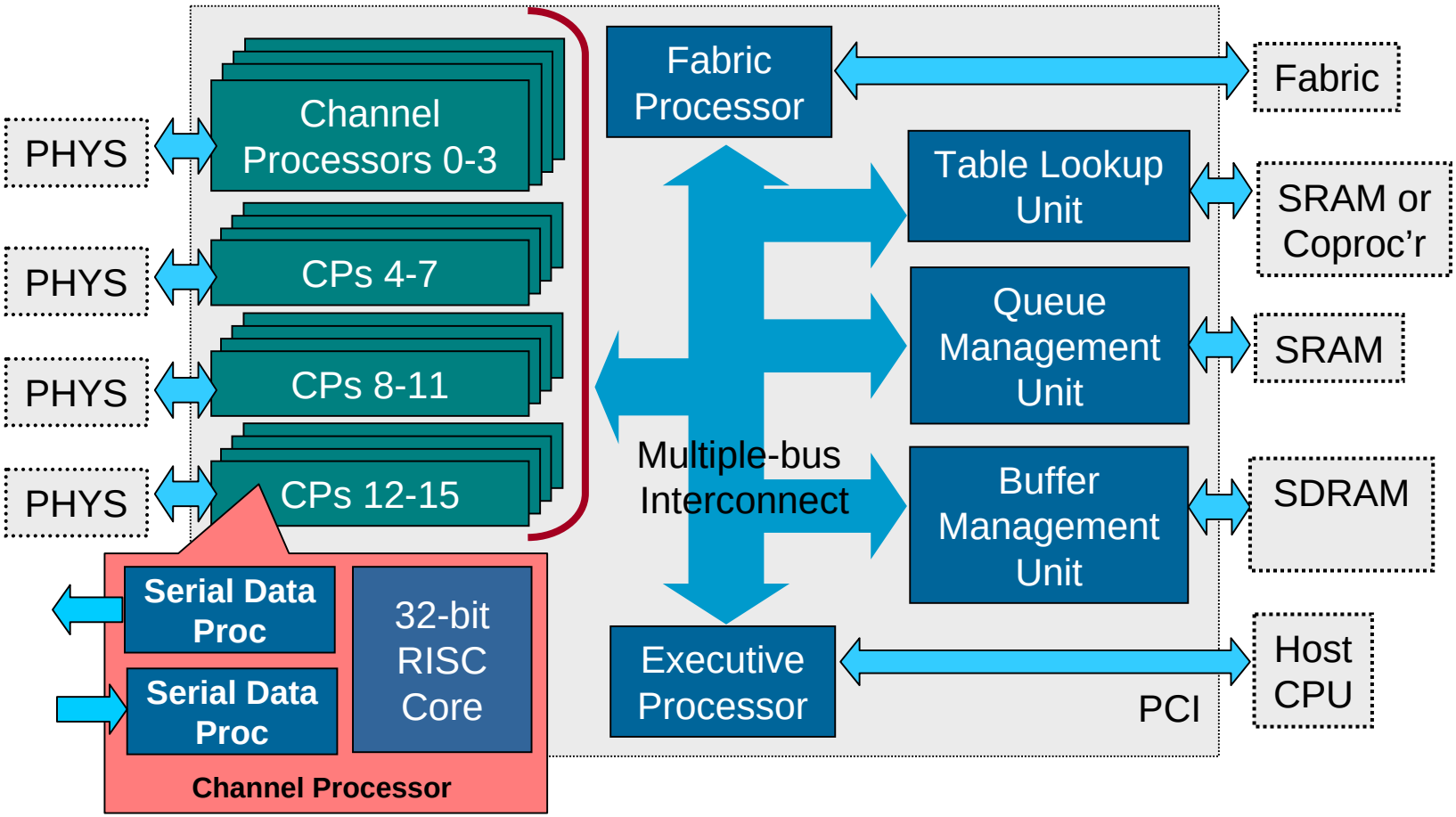
Delivering Program Bandwidth & Data Bandwidth

Program Bandwidth is Measure of:

- What can be programmed?
- What functions consume programming cycles?
- How can functional flow be ordered?
- How is it programmed?
- How many functions must be “outsourced” to external coprocessors?



An Example: C-Port C-5 Network Processor

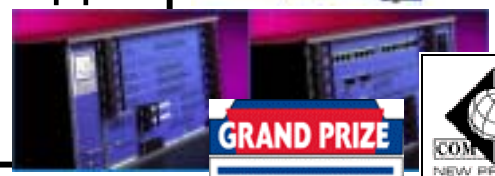


Integrated Architecture Delivers Highest Program Bandwidth

Delivering on the Promise *NOW*……..

OC-3/12 PoS with Wire-Speed ‘Net-Flow’ Services

10/100, GbE, PoS with Per User / Per App SLAs, Metering



First & Only 10/100 & GbE Wire-Speed Internet Emulation

And many more additional designs underway...