

***Praesum
SwitchKit™***

SwitchKit Overview

- SwitchKit is an IP Tool Kit for creating application specific switches in ASICs or FPGAs.
- SwitchKit core components are generic and can be used to support any packet or cell based protocol.
- Application specific personality modules are added for specific protocols.
- Delivered as:
 - RTL Source
 - Netlists for FPGAs

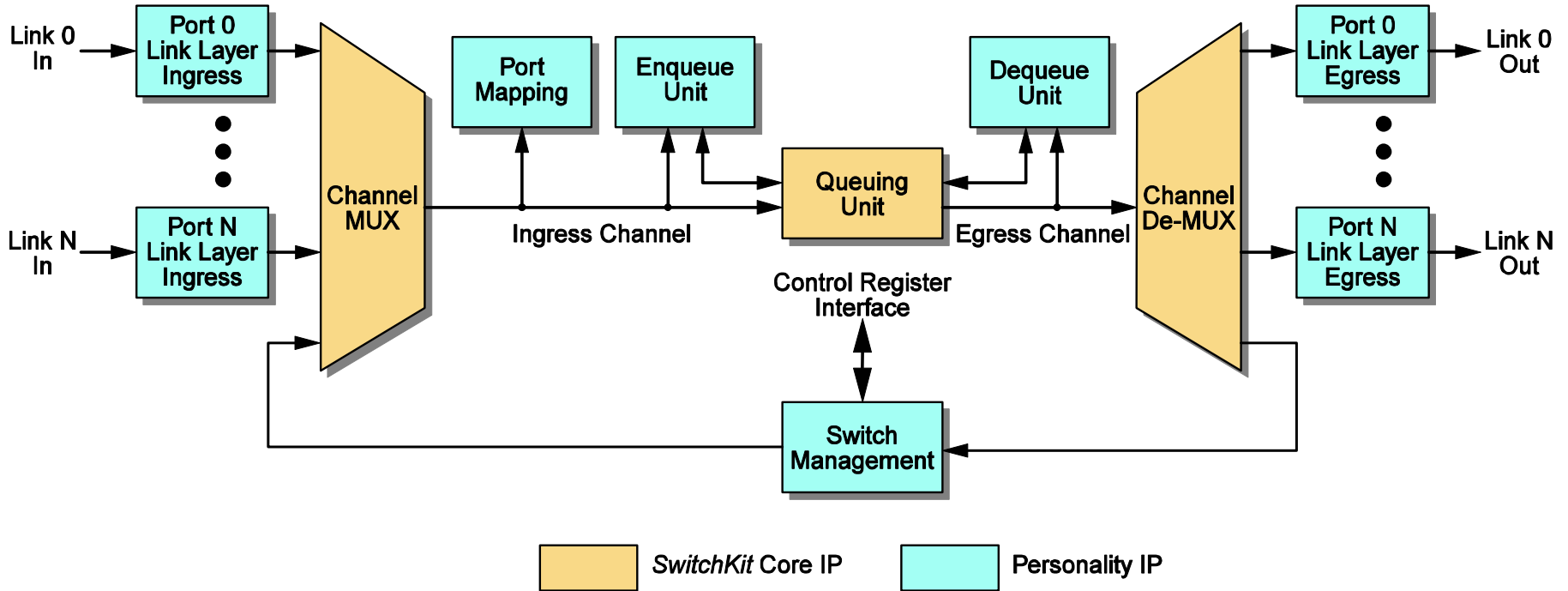
Why SwitchKit?

- Ability to quickly create a switch optimized for the target application with customized:
 - Port count
 - Port types
 - Embedded peripherals
 - End-point addressable memory
 - Management interfaces
 - Protocol bridges
 - Traffic handling for:
 - Multicast
 - Traffic patterns that are important to the application

SwitchKit Components

- Channel Mux & Demux
 - Aggregates traffic from ports to and from queuing unit
- Queuing Unit
 - Manages traffic flow queues under control of application specific Enqueue and Dequeue units
 - Use models
 - Storage for central memory switch
 - Ingress and egress queues for crossbar switch
- Crossbar & Arbiter (Available 2H 06)
 - Provides space switching function for larger switches

Shared Memory Switch Architecture

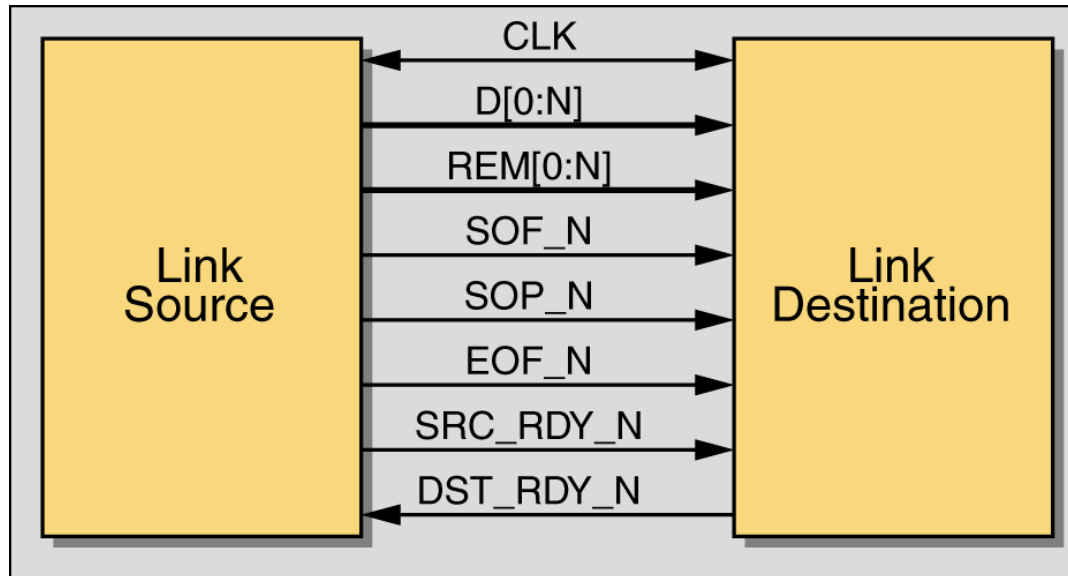


- Protocol specific blocks
 - Port Mapping Unit - Maps incoming PDUs to traffic flows based on such factors as:
 - Destination address
 - Explicit priority indication
 - Enqueue Unit – Links packets to queues
 - Dequeue Unit – Unlinks packets, and implements forwarding policy
 - Link and Physical Layer – Ingress and egress port functions

SwitchKit Personality Rollout

- Currently four standard personalities are planned
 - RapidIO *SwitchKit*
 - Available now
 - Being deployed by customer in ASIC
 - Aurora *SwitchKit*
 - Available now in V-4
 - Being ported to V-5
 - Ethernet *SwitchKit*
 - Q3/06
 - PCI Express *SwitchKit*
 - Q4/06
- Others will be rolled out based on customer demand

LocaLink™ Interface



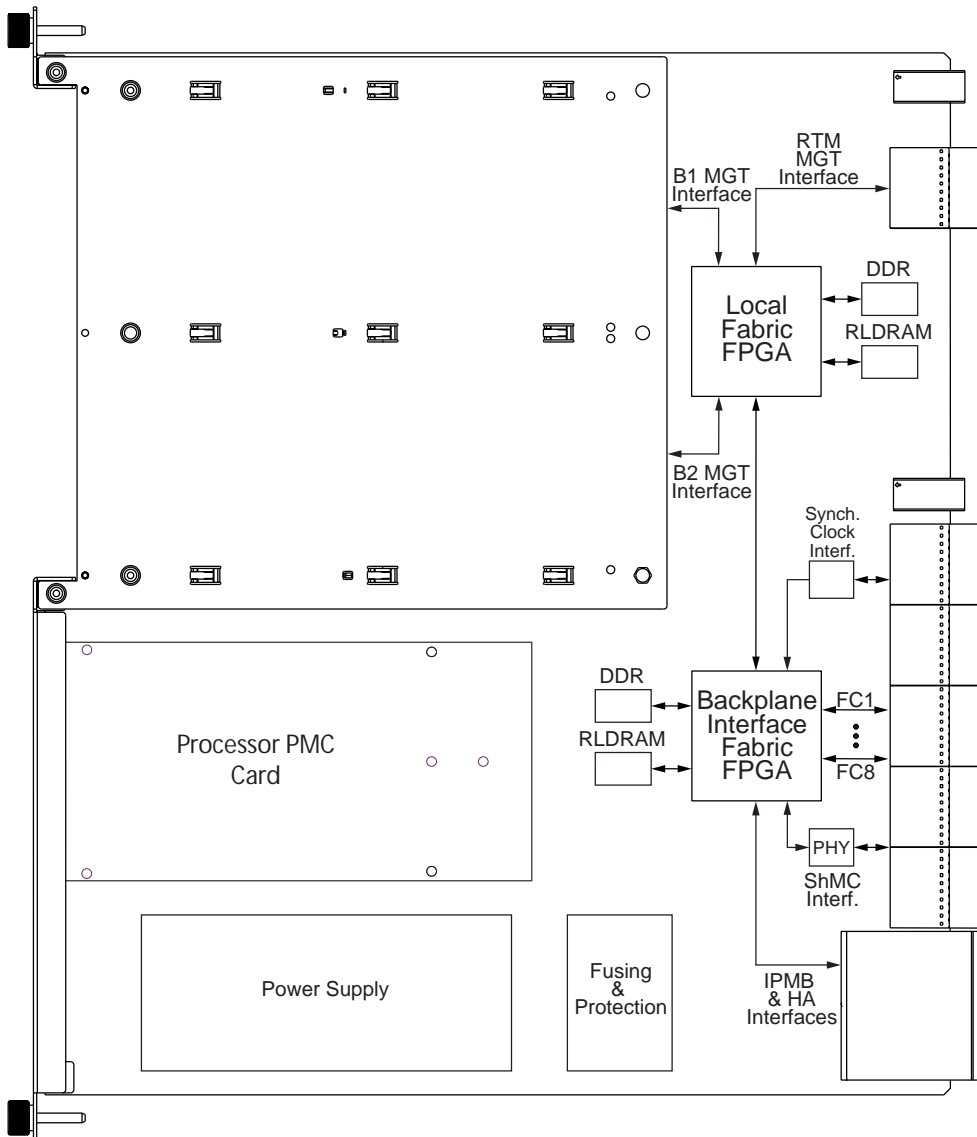
- Used to transfer data between blocks
- Point to point, half duplex interface
- Interface extensions via:
 - Sideband signals
 - PDU tags

- Three pronged approach
 - Extensive Simulation
 - Using “golden” traffic generators
 - Extensive use of randomization
 - Moving towards hardware acceleration
 - Hardware Verification in FPGAs on ATCA platform
 - Uses the same traffic generation as simulation environment
 - Accelerates verification
 - Hardware Validation with Golden Hardware
 - Freescale 8540 for Parallel RapidIO
 - Freescale 8548 for Serial RapidIO

Regression Testing

- All switches are run through a fully automated regression suite before release.
- Suit runs for approx. 3 days for Parallel RapidIO
 - Runtimes are approx. 1 week for serial protocols due to SERDES model overhead.
- Suite tests include:
 - Data plane forwarding including:
 - Transient congestion
 - Over-subscribed port congestion
 - Control plane traffic handling
 - Exhaustive testing of control registers
 - Multicast handling including multicast rate limiting
 - Error handling and reporting

ATCA Validation Platform



- Backplane Interface Fabric FPGA
 - Implements Full-Mesh backplane interface.
- Local Fabric FPGA for switching between
 - Advanced Mezzanine Card (AMC) bays
 - Rear Transition Module (RTM)
 - Backplane Interface
- Processor PMC for system management

Summary: SwitchKit Value Proposition

- Shorter Time to Market
 - Solid base of switching IP for you build your value added IP on.
- Lower Cost.
 - Development and maintenance costs spread over entire customer base.
- A Better starting point.
 - More Flexible
 - More Mature
 - Better Debug support
 - Growth path