

# TORN SES Model Structure

- ◆ Data Structure Based
  - Information carried by FC Word
  - Variable length FC frames constructed of FC Words
  - Frames consist of FAP, Data, EOF
- ◆ Messages based on SCSI Protocol
  - Each SCSI exchange consist of Cmd, Data, & Response phases
  - Target is full FCL port
- ◆ Embedded Primitives
  - Supports both “Skip” and “Non-Skip” modes with run-time input parameter

# TORN Model Parameters

- ◆ Messaging
  - Bytes per CMD message - 64
  - Bytes per RSP message - 32
- ◆ PCI
  - 33 MHz / 64 bit
  - Latency to 1st data phase - 10 PCI clks
- ◆ FC2
  - Context management overhead - 10 $\mu$ s
- ◆ FC0/1
  - 1Gbit
  - 2Kbyte frames

# TORN L Port State Machine

## ◆ Insertion rules

- Bypass buf, Skip Bypass buf and Primitive buf drained first
- Insert state
  - ✧ Enter - FC2 Req Xmit asserted, all other bufs empty, Brdy count for target >1 and 6 idles received
  - ✧ Exit - all frames sent or Brdy count for target depleted
- State machine can transition from Insert directly to Drain or Inactive
- Brdy primitive
  - ✧ Non-Skip - queue up behind other Bypass FC words
  - ✧ Skip - EnQ to skip buffer which is drained prior to Bypass buf

# Preliminary Performance Analysis

- ◆ 12 node “System” - 4 Initiators, 8 Targets
- ◆ Target overhead is zero
- ◆ 64K data, 100% reads
- ◆ 4 Spatial Reuse Domains
- ◆ Targeting ~80% channel utilization
- ◆ Data should be considered very preliminary as model has not been closely reviewed or “stressed”

# Preliminary Data

- ◆ Simulation Status
  - Initial initiator workload did not adequately utilize FC resources (<40%)
  - No significant difference with and without Brdy bypass skip
- ◆ Initial Performance Data
  - IOPs
  - Mbytes/s
  - Response Time
  - Bypass queue depth
  - Skip Bypass queue depth
  - Receiver buffer depth