Use of the TTC System

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Overview

- Common programming model for TTCrx
- TTCrx configuration
- TTC broadcast commands

Guidelines

- Allow for possibility of TTC broadcast commands on all modules
- Connect TTCrx command/subaddress/clock to VME PLD?
- Any TTC broadcast command also possible via VME (to one module)
- TTC command takes precedence over simultaneous VME cycle?

TTCrx Configuration

Ways to configure the TTCrx

- Via TTC system (after TTCrx ID is set)
- From PROM (the TTCdec card has one)
- Via I2C bus (new TTCrx only)

Programming model

- Aim for same programming model on all our modules (follow CPM?)
- Common software module to access/control TTCrx
- Access all TTCrx registers via I2C bus via suitable interface from VME PLD
- If using the PROM, require two registers:
  - TTCrxPROMReset: control register: reset PROM before reloading it; reload TTCrx from PROM
  - TTCrxPROMData: FIFO to write PROM data (read back new TTCrx configuration via I2C bus)
- TTCrx has ten read/writeable registers including various delays, control register and some detailed configuration registers
- TTCrx has ten read only registers including status, various error counters and (rapidly varying) bunch and event counters

TTC Broadcast Commands

Overview

- Two broadcast command styles: long and short format
- Short format allows six user command bits
- Long format has an additional eight bit subaddress
- Two command bits optionally clocked out with ClkDes2

Possible Commands

The following is an excessive list of what we might possibly think of doing... have we missed anything?

Many commands come in pairs: start and stop some activity, ie two bit patterns each.

Might want some commands specific to one type of module and/or global to all modules?

- start/stop playback [global, PPM, CPM, JEM, CMM]
- start/stop backplane timing calibration [global, CPM, JEM]
- start/stop/zero rate histograms [PPM]?
- start/stop pipelines?? (ie freeze a module to debug read out controller)
- restart LVDS links??
- restart Glinks to RODs??
- start/stop/reset pipeline bus [PPM]??
- start/stop other diagnostic activity (eg with alternate FPGA programs loaded?)
- anything else?