

2012-03-15 : Two New Diagnostic Features in the OpenCPI OCDP

There is the persistent need to benchmark both latency and throughput. We have made the following additions to provide more visibility and easier measurement of certain data movements with the OCDPs.

Active-Mode Doorbells with Time Info

Active-Mode Doorbells now contain a non-zero 32b value that is FPGA WTI time with the integer seconds radix point between bits 26 and 27. In other words:

bits [31:27] : Integer Seconds (5b) wraps at 32 seconds

bits [26:1] : Fractional Seconds (26b)

bit[0] : Always '1'

Active-Mode doorbells are sent at the end of Active-Message Pull or Push, or as part of Active Flow Control. The time inserted on the doorbell is the FPGA WTI time at the clock cycle the doorbell TLP is generated in mkOCTLPServBC. It is not a buffered version of some other datum.

Data Plane Active-Message Extreme Datum

For a DP that is Active-Message Fabric-Consumer the cycle it starts work (remStart) is representative of where the DMA "Pull" process begins. For a DP that is Active-Message Fabric-Producer the cycle it completes work (remDone) is representative of where the DMA "Push" process finishes. Taken together, these two times show the interval from "when the DP0 pull started" to "when the DP1 push finished".

The 64b Time is available with each OCDPs configuration property space at offsets

0xA0 : Integer Seconds 32b

0xA4: Fractional Seconds 32b

Note that this is the full precision FPGA WTI time; coherent with all WTI time on the platform. The time stored in the register represents the last remStart or remDone (for fabric consumer and producer respectively). These registers will only update if the DP is in an Active-Message mode. These values will not be present if hasDebugLogic==False.

For reference, WTI System Time may always be read from the admin space at admin base offset:

rpITime MS, LS 0x38, 0x3C