Using LBRs to identify user causes of kernel cycles

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Agenda

- Kernel cycles due to API calls
- Kernel cycles due to exceptions (page faults)

Processing Call Filtered LBRs

Last LBR	
Branch_0	Target_0
Branch_1	Target_1
Branch_2	Target_2
Branch_3	Target_3

- Last LBR identifies last entry
- Work backward through circular buffer to first address in module of interest
  - If source/branch then API was called
    - Identified by target
  - If target then exception occurred
    - Redo analysis in same way but without filtering on calls

APIs

- Trigger on ring 0 cycles and capture LBRs filtered on usr calls
  - Will require an event be added to the event file
  - Copy cpu_clk_unhalted.thread_p
  - Rename cpu_clk_unhalted.thread_r0
  - Set other = 0x52 (51 is r3)
    - Make both and see where the samples show up
- Restart PTU and collect the single event with LBRs

Faults/Page Initialization

- Use same event but do not filter LBRs
  - Collect all branches
  - Filter on usr branches

Analysis

- Sfdump5 ebsXXXXYYY.tb5 /dumpsamples > samplesYYY.txt
- Analyze call filtered data first for APIs
- Print out list of IP of critical branch, TSC and whether critical branch is a source or target as csv
- Sort data on source/target
- Analyze IPs and TSCs in excel for sources
- Step 2: Exceptions
- Run same analysis on usr filtered all branch tb5 if there are significant numbers of targets
- Correlate addresses (they should be targets) with functions identified in first analysis

Summary

- LBRs are very useful