



IOPMP Task Group Meeting

March 14, 2024

[Video link](#)

Minutes

- Error record/report for the draft 6:
 - Interrupt control:
 - per-entry and per-RRID: **need more explanation and discussion on per-RRID.**
 - Correlation between interrupt controls and record controls: **Tentative policy: no record only when no bus error and no interrupt**
 - Bus error: per-entry or per-RRID
 - **Per-RRID can not solve the issue of different types of I/O agents sharing the same RRID.**
 - Multi-fault record: feedback? **no feedback so far.**
- Resolve the overlap of the WorldGuard checker and IOPMP:
 - Are entries/MDs locked by an individual lock bit or by a global incremental counter?
 - The programming model of the association between RRIDs and entries: **Lock entries/MDs by a global incremental counter. (decided)**
 - Sifive's reference flow was presented, but in what case/scenario: **need pseudo code to analysis.**

Interrupt Control

- Global:
 - In ERRRACT: `ixe(optional)`/ire/iwe and ie
- Per-entry (optional):
 - In ENTRY_CFG,
 - A bit, `dire` to **d**epress the **i**nterrupt due to a **r**ead violation for the **e**ntry
 - A bit, `diwe`, to depress the interrupt due to a write violation for the entry
 - A bit, `dixe`, to depress the interrupt due to an execution violation for the entry
- Per-RRID (optional):
 - In SRCMD_CFG, a 32-bit new per-RRID register:
 - A bit, `dirs`, to **d**epress the **i**nterrupt due to a **r**ead violation from the **s**ource RRID
 - A bit, `diws`, to depress the interrupt due to a write violation from the source RRID
 - A bit, `dixs`, to depress the interrupt due to an execution violation from the source RRID
- Interrupt only if both ie and ire/iwe/`ixe` SET and NO depress `di?e` and `di?s` SET.

new regs/fields in blue

The correlation between INT and record

- Except ie, we consider ire/iwe/ixe, dire/diwe/dixe, and dirs/diws/dixs.
- Denote requirements to trigger interrupt and to record on a read violation:

- `to-trigger-read-violation // = ire & (! dire) & (! dirs).`

- `to-record-read-violation`



	To-trigger = 0	To-trigger = 1
To-record = 0	Needed for prefetchers	Without a record, the secure monitor has little to do. Maybe just reset the (virtual) machine. (needed?)
To-record = 1	No one knows when to read an error record away, so this way stops further updates of subsequent violations. (needed?)	Needed for most cases

Bus error

- Global:

new regs/fields in blue

- In ERRRACT, a 2-bit ire/rwe/rx(optional)/rpe(optional):
 - 00: rsv
 - 01: respond a bus/decode error (IMP)
 - 10: return a pretend success with predefined value (for read/execution)
 - 10: return a pretend success (for write)
 - 11: user-defined

- Per-RRID (optional):

- In SRCMD_CFG, a 32-bit new per-RRID register, a 2-bit field br, standing for bus response:
 - 00: use global settings (default for the unimplemented)
 - 01: respond a bus/decode error (IMP)
 - 10: return a pretend success with predefined value (for read/execution)
 - 10: return a pretend success (for write)
 - 11: user-defined