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Gen-Z envisages next-generation of memory management

Parmeshwr Prasad
DellEMC

An influx of data is driving the change

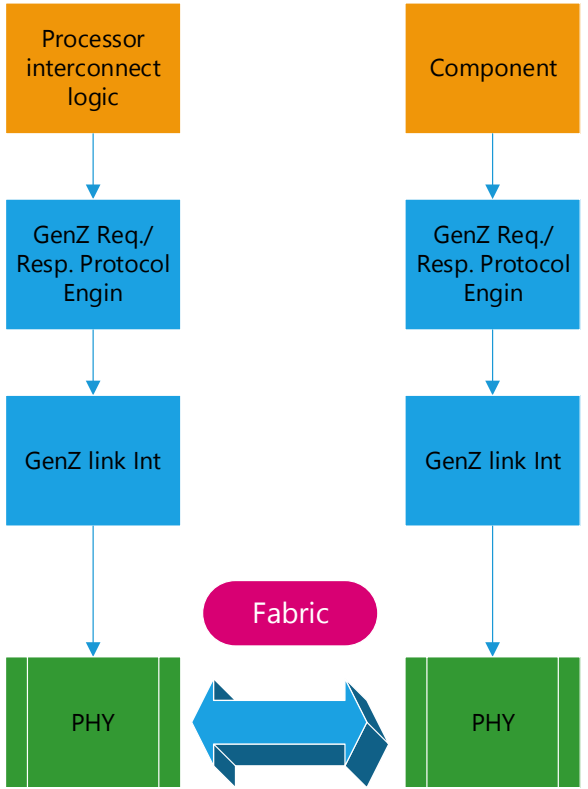
Gen-Z solving memory related issues

- System memory is getting flat
- Real-time analysis is growing
- Needed for open architecture
- Eliminates single point of failure
- Reduce data movement, improve latency, envisages new solutions

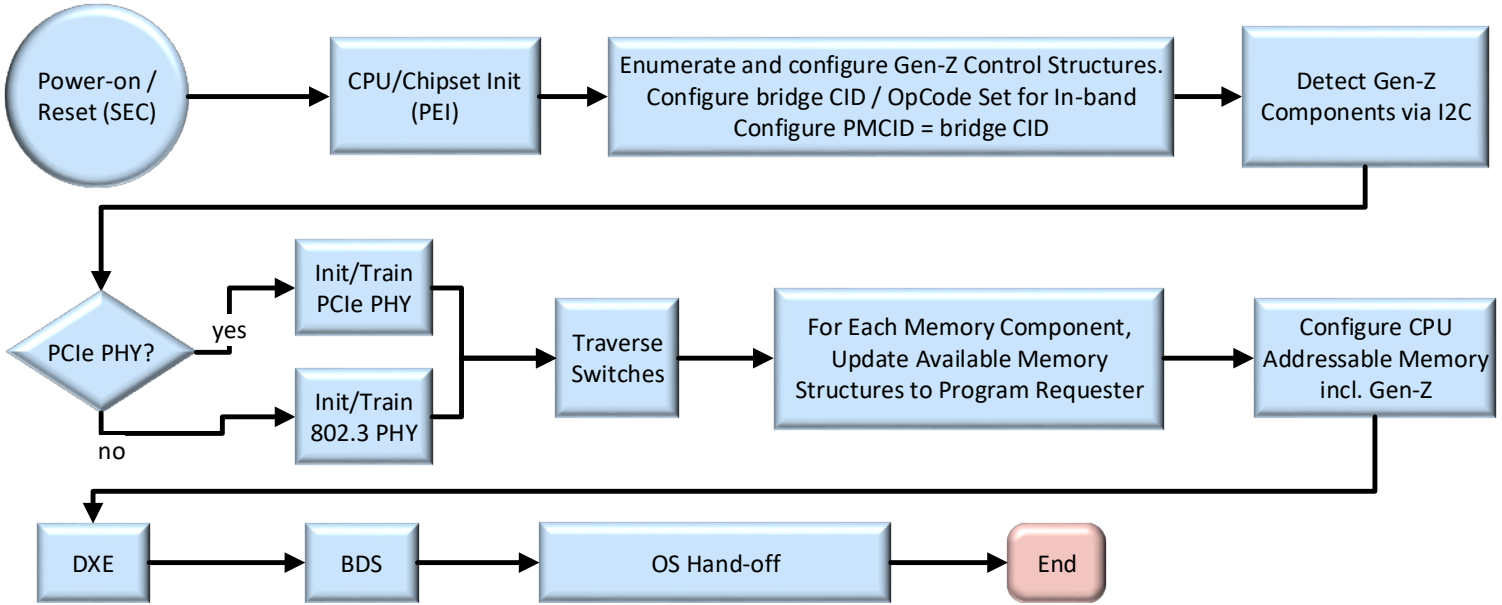
Gen-Z connector

- Processor to component

  Gen-Z bus
- Req./Resp. protocol Engine
- Link initiator
- Physical
- Fabric



Gen-Z Memory initialization



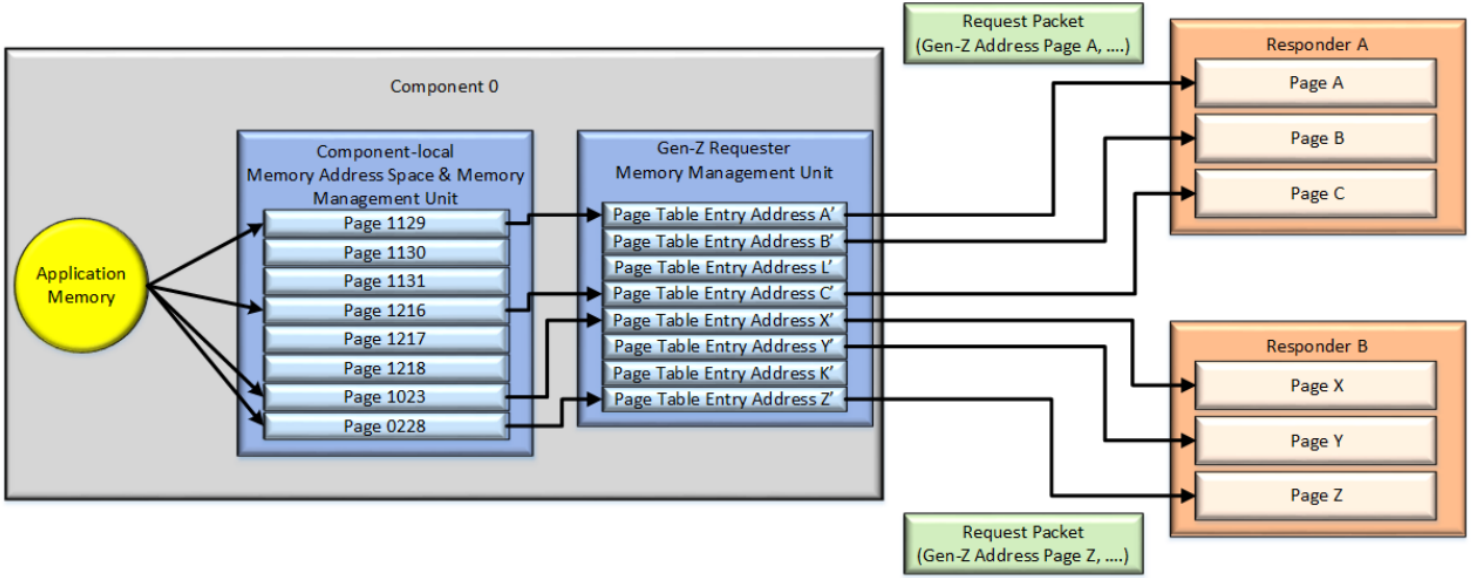
Gen-Z data transfer

- All the operation in packet format
- Data originator-Responder
- Data consumer-Requester
- Data management unit (ZMMU)

Requestor ZMMU

- Maps responder address space
- Enables application transparent access
- ZMMU applicable only for explicit OpClass Operations

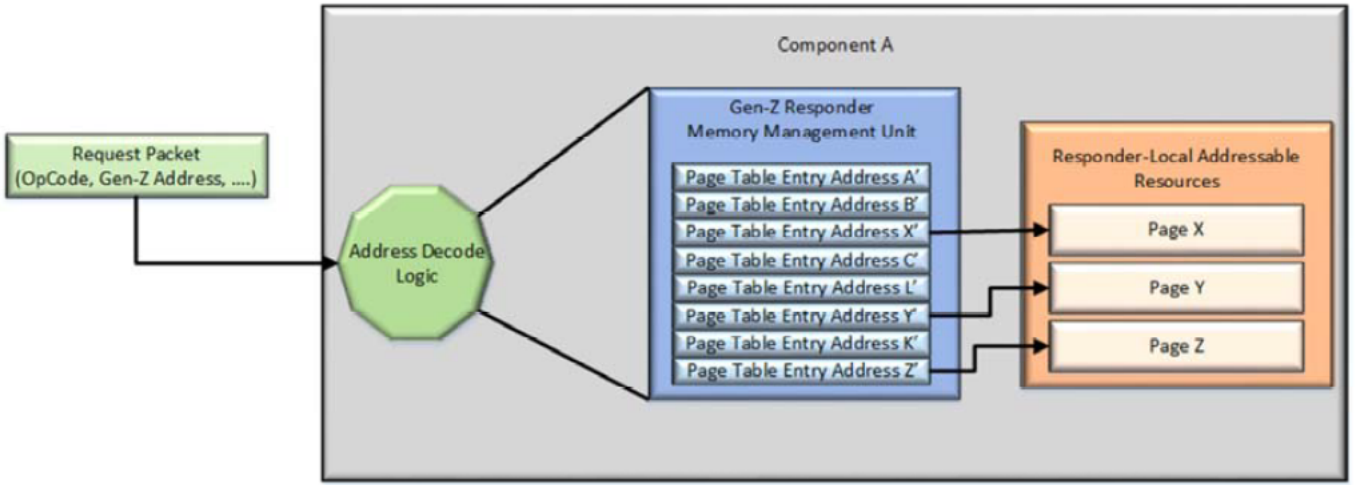
Requestor ZMMU Cont…



Responder ZMMU

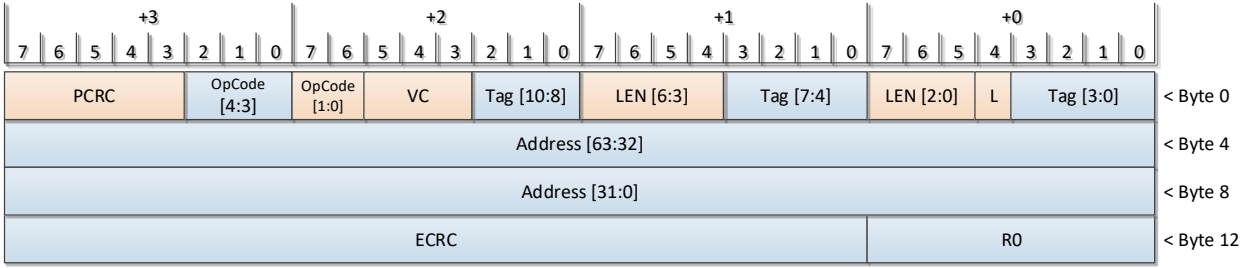
- Translate packet's address to media address
- Enforce access permission
- P2P-Core, P2P-Coherent

Responder ZMMU Cont…



P2P Core OpClass

- Acknowledgment, Unreliable Write, Persistent Flush Read/Write,
  - Read (16, 32, 64, 128 and 256)
  - Read Offset (32, 64, 128 and 256)

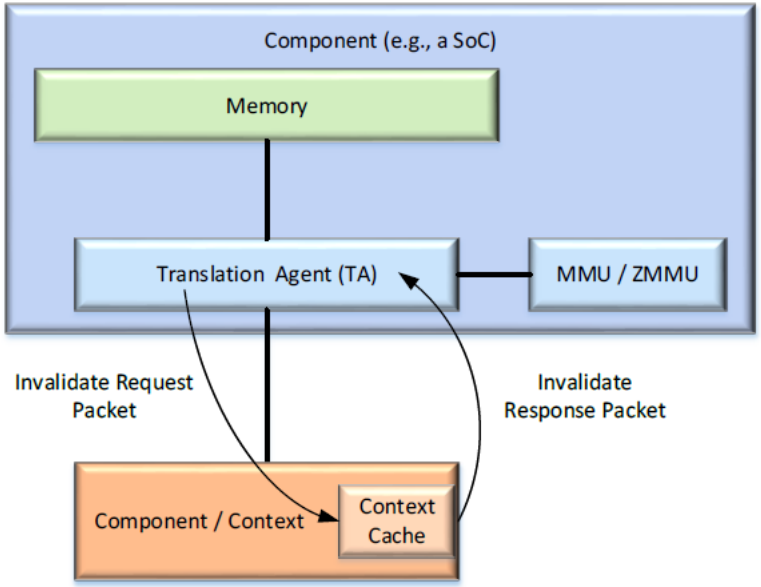


Coherent Read/Write

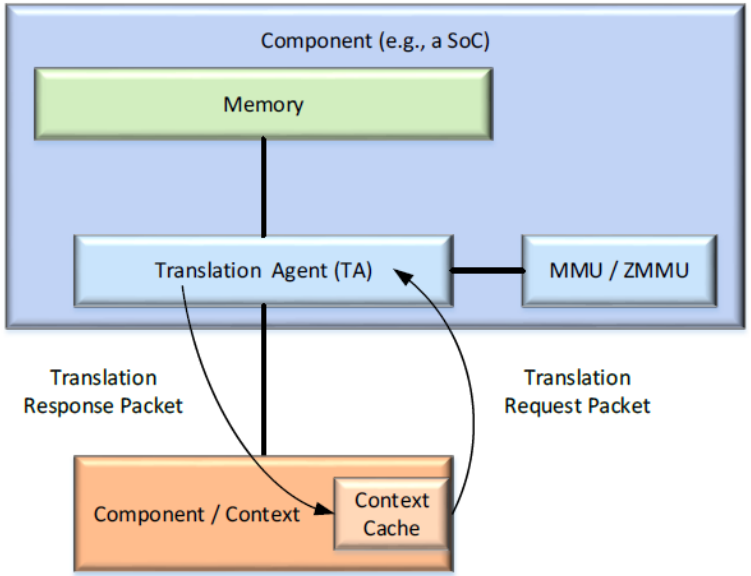
- Should support all Coherent OpClass
- Shell use cache line size address.
- Coherent should support Link-Level-Reliability (LLR)
- Has standard acknowledgment package

Address translation

Invalidate Package



Translation Package

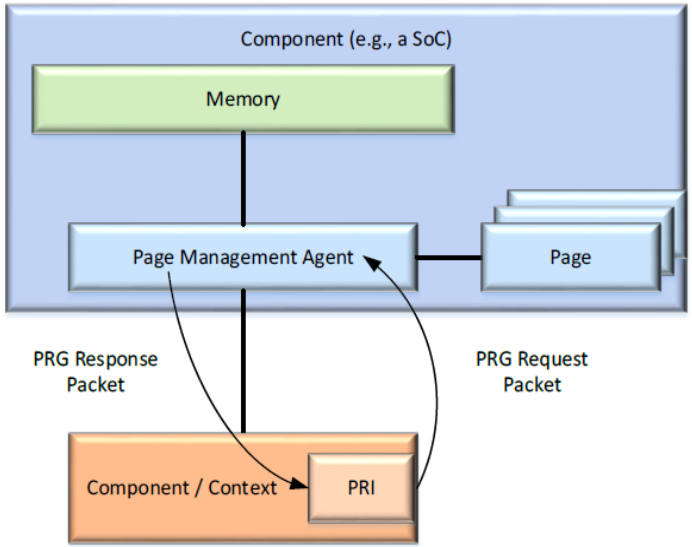


Address translation Cont…

- Translation service
- TA invalidates the translated address
- Translation request
- Translation response

Page service

- On-demand page residency service
- PRI
- PRG



Thank you !