성균관대학교 | SAL

Week 3

Please enter a sub-title here.

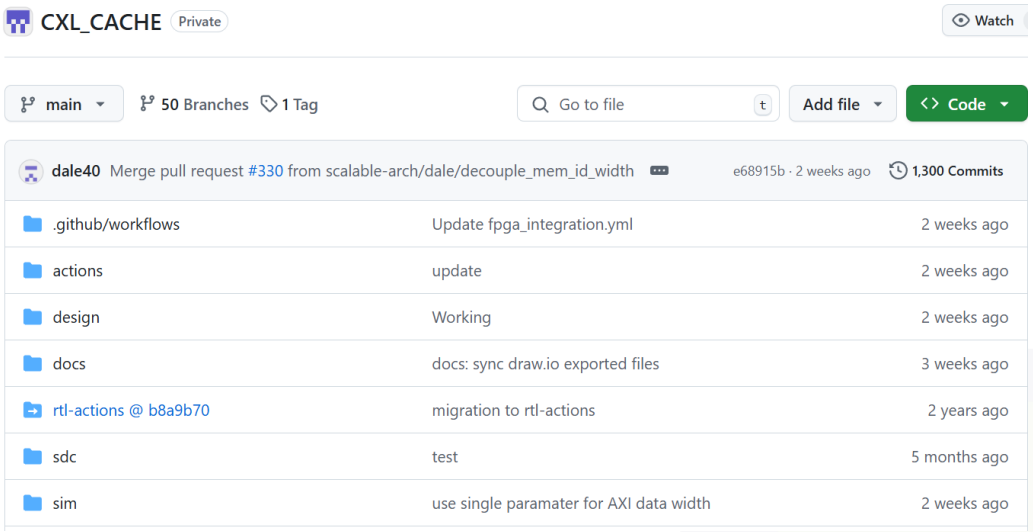
| **주관기관** | 성균관대학교

| **총괄책임자** | 박 상 현

2025.03.14

☑ Directory Hierarchy

- **/actions**
  - /README.md
- **/design**
  - **/sverilog**
    - → /PCIE_CONTROLLER_TOP.sv
    - → /PCIE_PKG.svh
    - → /AXI_IF.sv
    - → ...
  - /filelist.f
- **/docs**
  - /README.md
- **/sim**
  - /README.md
- /env.source



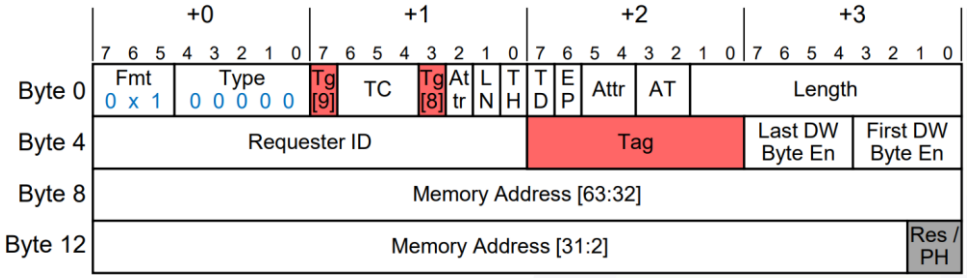
☑ Utils

- MemRd-Type TLP Header Format

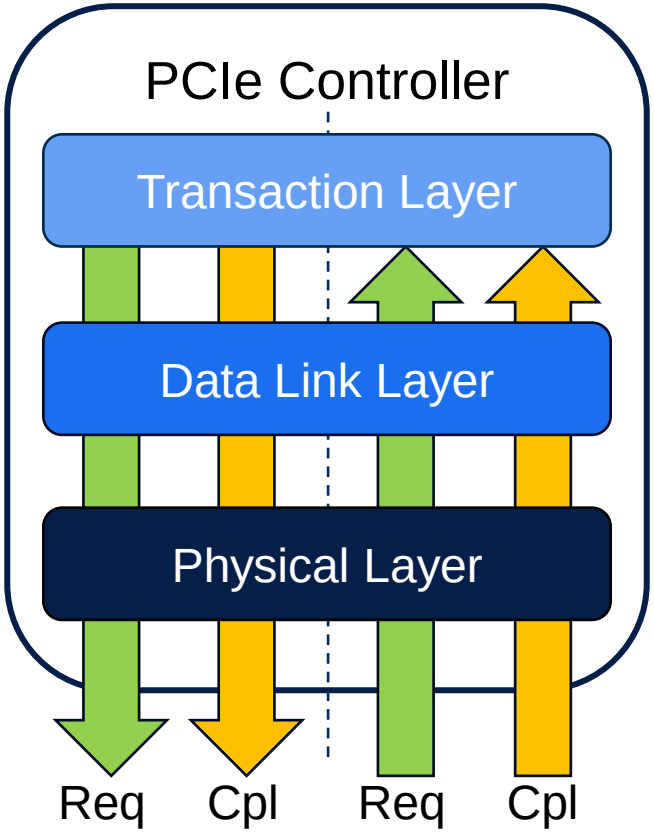
```
typedef struct packed {
        // Header 16B
        logic   [5:0]           addr_l;
        logic   [1:0]           reserved;
        logic   [23:0]          addr_m;
        logic   [31:0]          addr_h;
        logic   [7:0]           byte_enable;
        logic   [7:0]           tag;
        logic   [15:0]          requester_id;

        logic   [7:0]           length_l;
        logic                   td;
        logic                   ep;
        logic   [1:0]           attr_l;
        logic   [1:0]           at;
        logic   [1:0]           length_h;
        logic                   tg_h;
        logic   [2:0]           tc;
        logic                   tg_m;
        logic                   attr_h;
        logic                   ln;
        logic                   th;
        logic   [2:0]           fmt;
        logic   [4:0]           tlp_type;
    } tlp_memory_req_hdr_t;
```

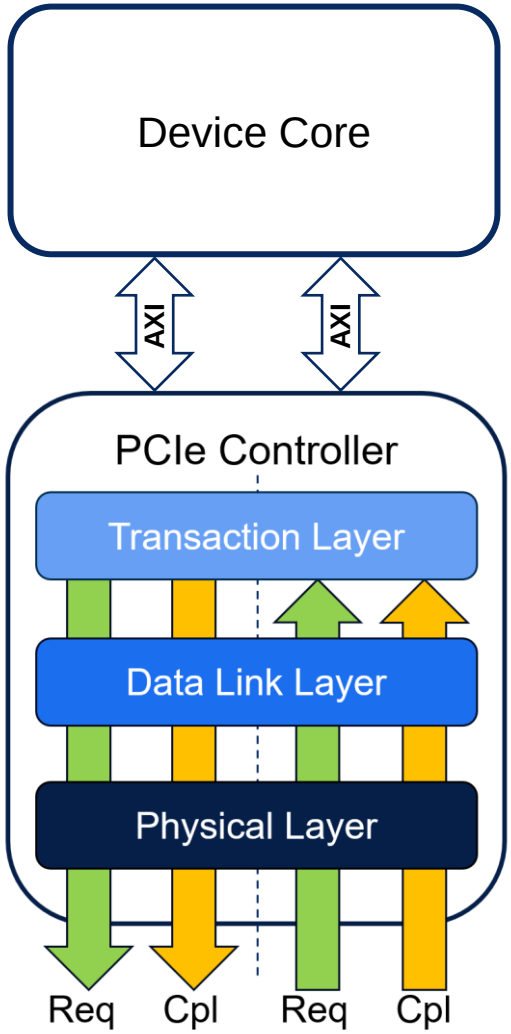
```
function automatic tlp_memory_req_hdr_t gen_tlp_memwr_hdr(
    input   logic   [63:0]      address
);
    tlp_memory_req_hdr_t        tlp_memwr_hdr;
    tlp_memwr_hdr.addr_h        = {address[39:32], address[47:40], address[55:48], address[63:56]};
    /*
    * TODO:
    */
endfunction
```



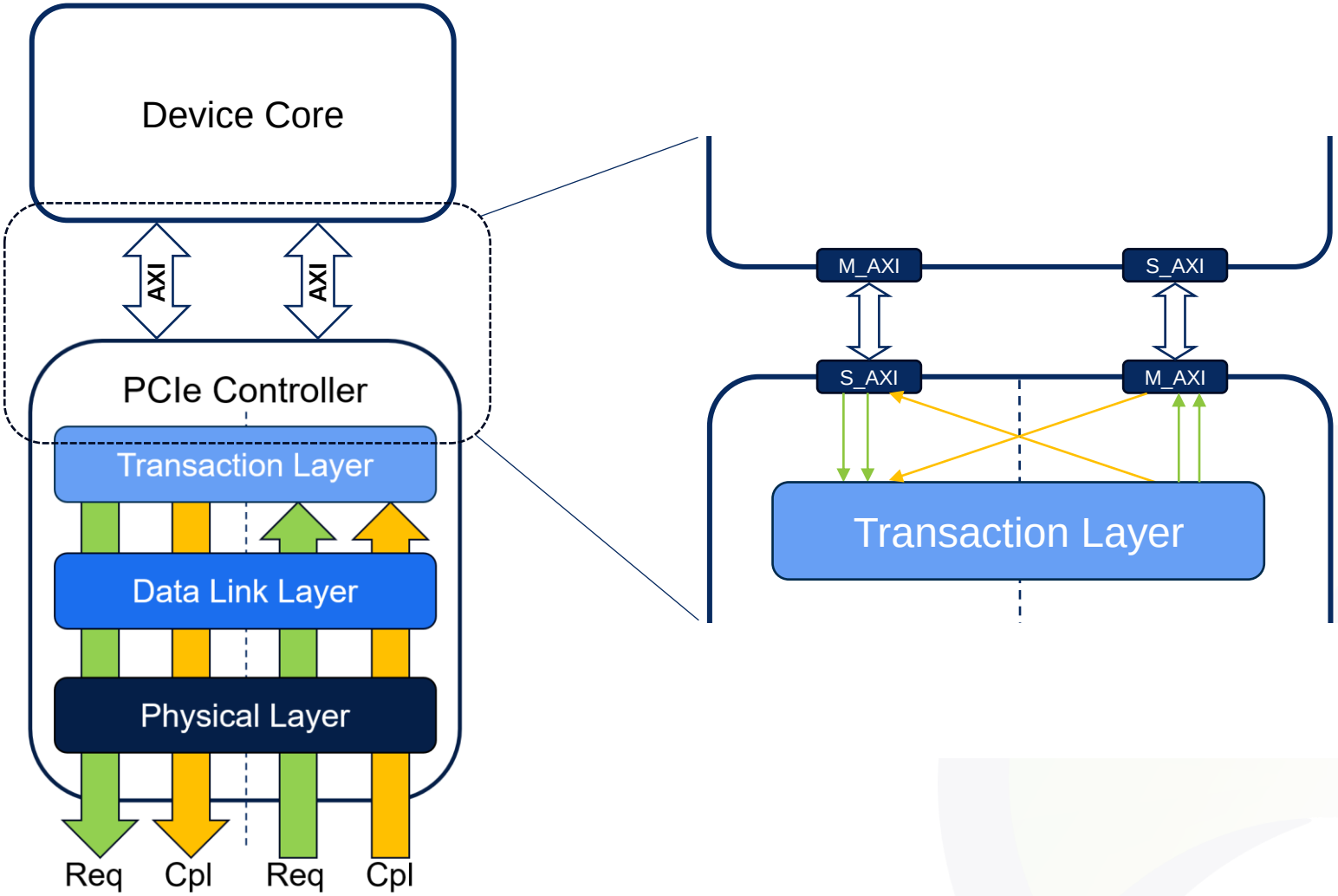
☑ MicroArchitecture



☑ MicroArchitecture

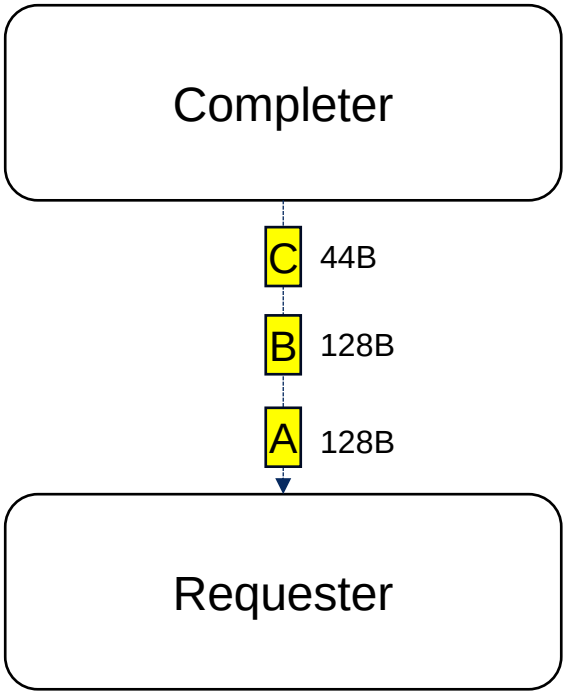


MicroArchitecture



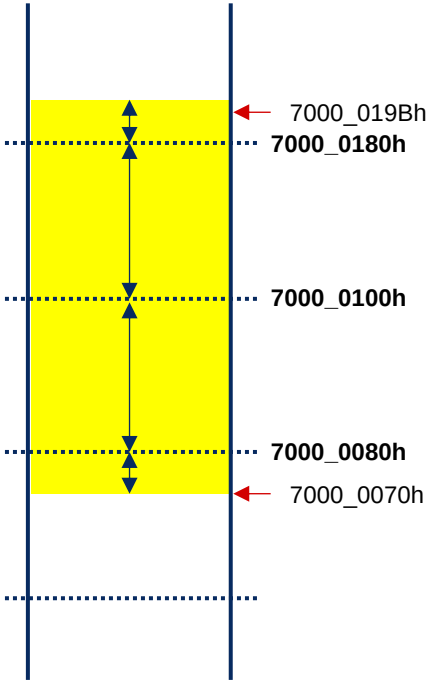
☑ Max_Read_Request_Size & Read Completion Boundary

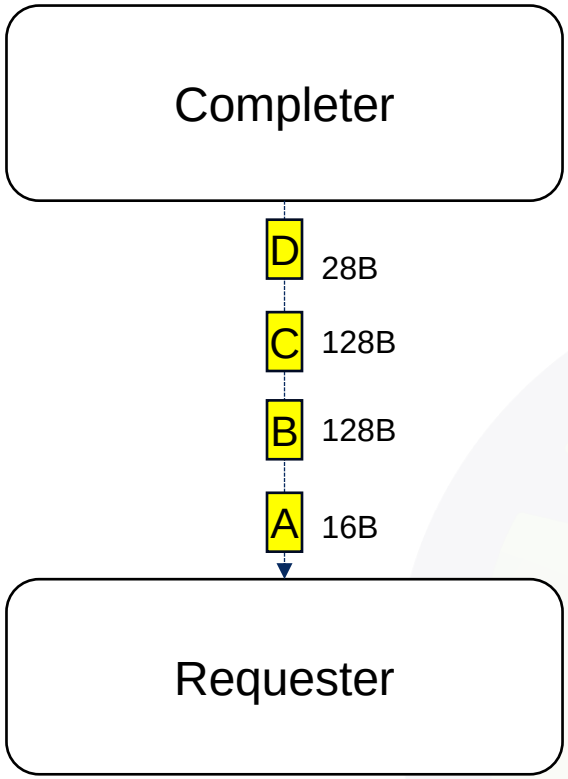
- MemRd Header의 Length정보에는, Max_Payload_Size보다 큰 값이 담겨있을 수 있다.
  - Ex) Max_Read_Request_Size = 512B, Max_Payload_Size = 128B
    - → Requester generates MRd
    - → Addr : 7000_0070h
    - → Length : 75DW (300bytes)



☑ Max_Read_Request_Size & Read Completion Boundary

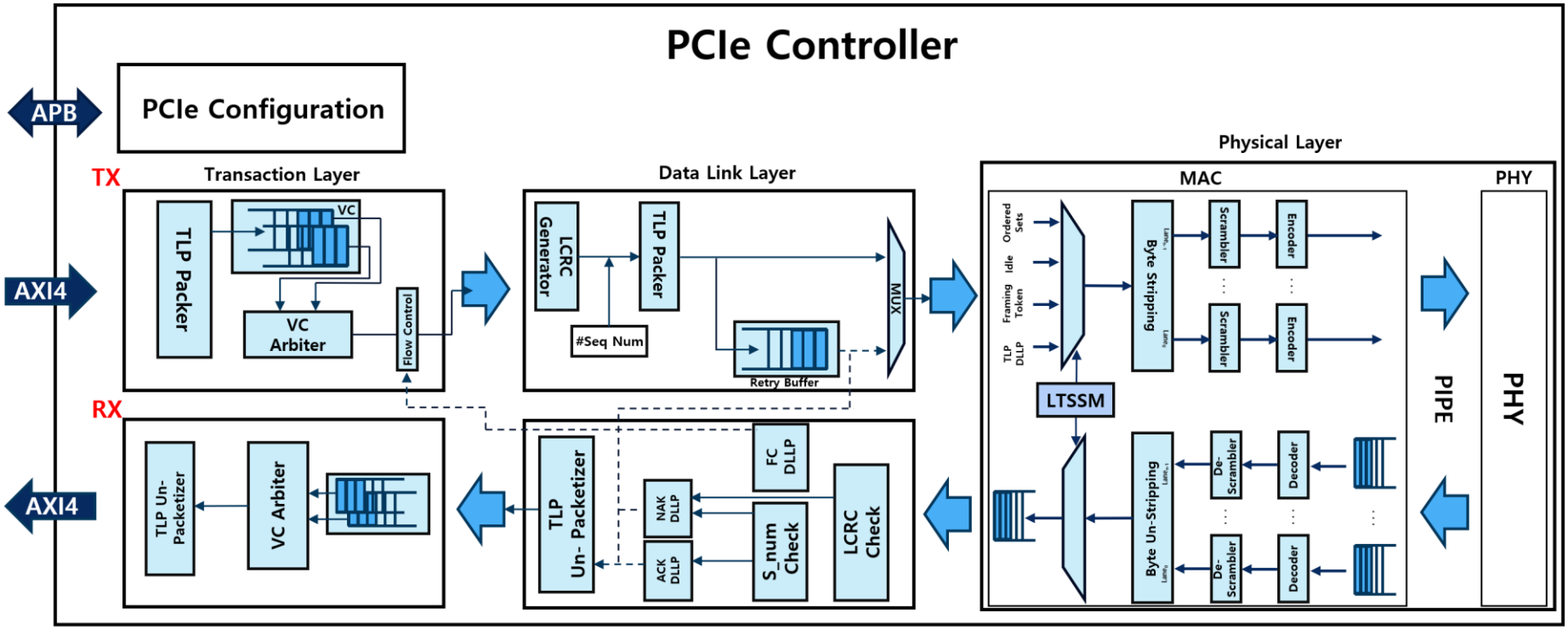
- MemRd Header의 Length정보에는, Max_Payload_Size보다 큰 값이 담겨있을 수 있다.
  - Ex) Max_Read_Request_Size = 512B, Max_Payload_Size = 128B, Read Completion Boundary = 128B
    - → Requester generates MRd
    - → Addr : 7000_0070h
    - → Length : 75DW (300bytes)





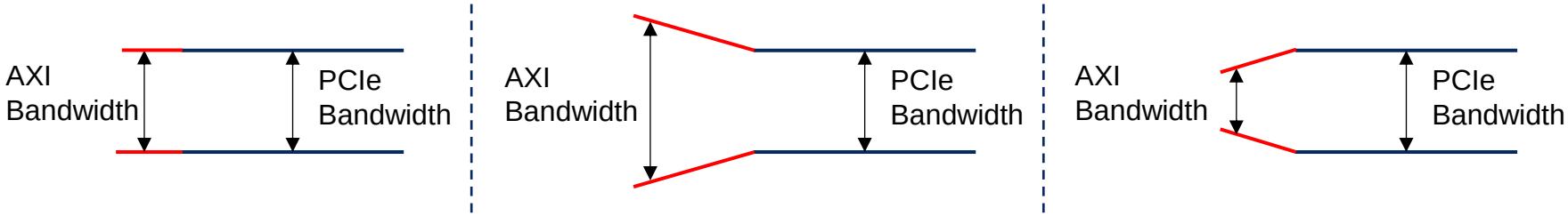
☑ PIPE & AXI Config

- PCIe Link Config = 32GT/s, x4 Lane
- PIPE Config = 500MHz, 32B



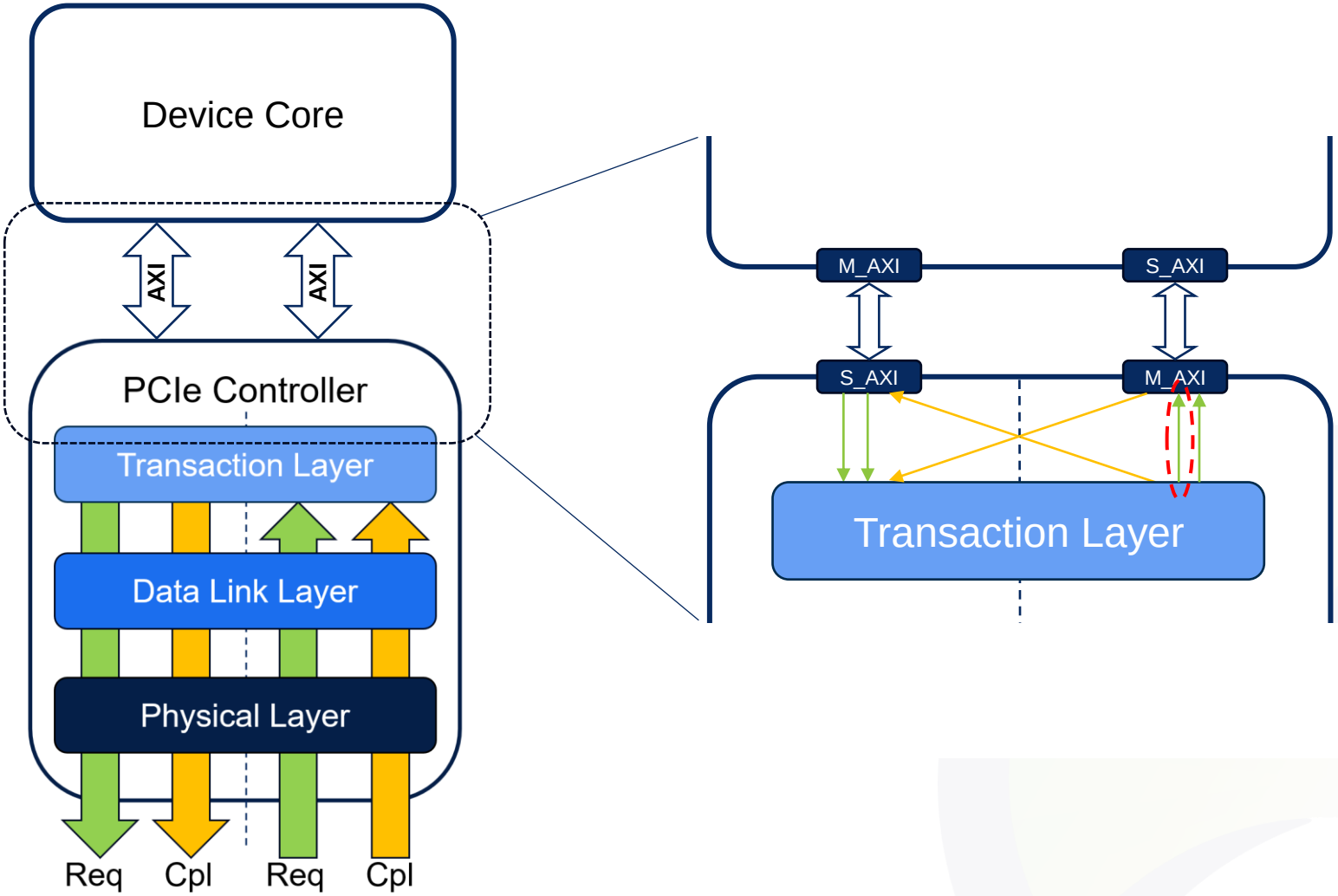
☑ PIPE & AXI Config

- PCIe Link Config = 32GT/s, x4 Lane
- PIPE Config = 500MHz, 32B



- AXI DATA WIDTH = 32B, ACLK = 500MHz(300MHz)

MicroArchitecture



☑ 서버 할당

USER ID	PASSWORD	IP/PORT	주의사항
urp01	1234	IP : 115.145.211.102 PORT : 7777	- 다른 사람 작업공간 접속x - Root 건드리지 마세요 - Signal-Dump등 메모리 공간 많이 잡아먹는 Job은 지양 - 비밀번호 변경 시 담장자에게 메일 하나 보내주세요. 990520kog2@gmail.com - 사용기한 : 6/23(학기 종강일)
urp02			
…			
urp12			

Team Num.	Num.	이름
1	1	김민수
	2	윤성빈
	3	김병훈
	4	김경빈
2	5	이승로
	6	임용성
	7	최원기
	8	김주성
3	9	정찬호
	10	조재우
	11	고보성
	12	김원규

☑ Issues

- 질문은 Github “Issues” Repo의 Issues란에 올려주세요.
  - https://github.com/2025-Spring-URP/Issues

☑ Week_4

- **Seminar**
  - 담당 : Team 03
  - 주제

	내용	핵심	기타
1. Flow Control	Data Link Layer의 역할 중 Flow Control	• Flow Control 동작 • Flow Control에 대한 DLLP Format	참고 : PCI Express® Base Specification Revision 5.0 Version 1.0

감사합니다.

Q&A