CSCE 616 – Hardware Design Verification

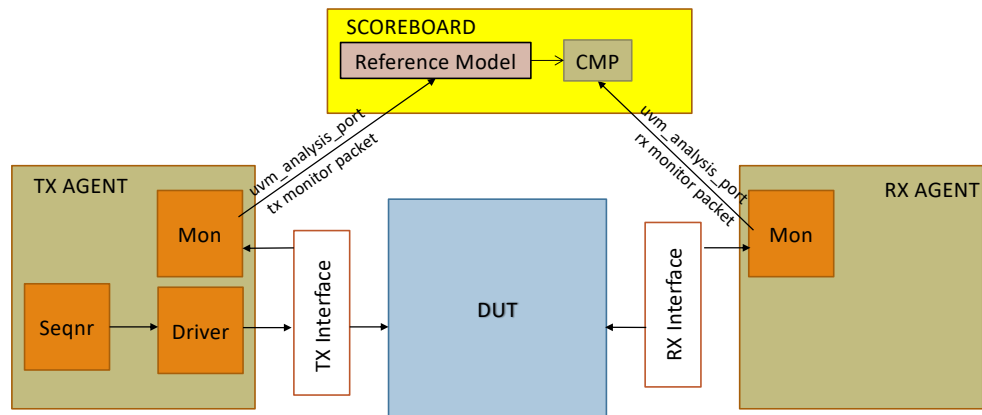## Lab – 8 HTAX RX Monitor and Scoreboard

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Objective – Write RX Monitor and HTAX Scoreboard

- UVM Scoreboard
- Monitor Scoreboard connection
- Inside HTAX Scoreboard/Ref. Model
- SV Queue

Big Picture (cont.)

UVM Scoreboard

Scoreboard/Reference model is means of external checking.

Scoreboard will receive transactions from the Monitor implemented inside agents.

Scoreboard will check the correctness of the DUT by comparing the DUT output with the expected values.

Monitor and scoreboard will communicate via TLM ports and exports.

Monitor <---> Scoreboard

TX Monitor

```
uvm_analysis_port #(htax_tx_mon_packet_c) tx_collect_port;

task run_phase(uvm_phase phase);
    ......
    tx_collect_port.write(tx_mon_packet);
endtask : run_phase
```
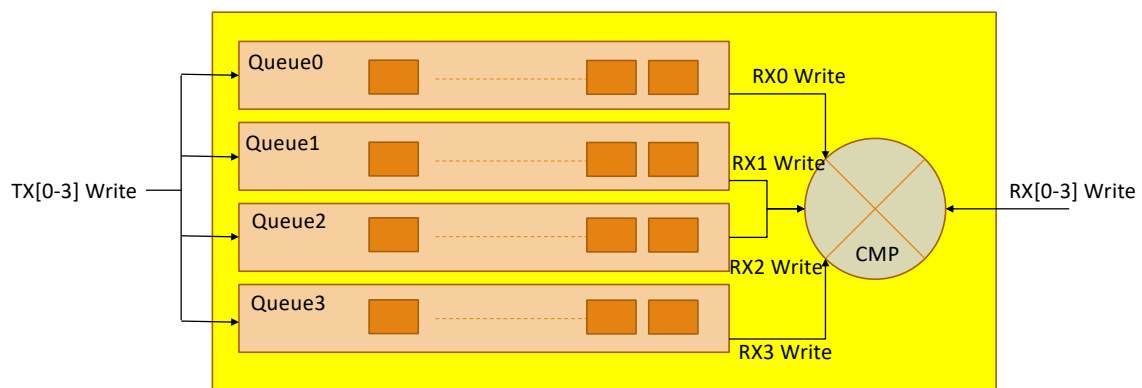
HTAX Scoreboard

```
uvm_analysis_imp_tx0_export #(<seq item>) tx0_export;

function void write_tx0_export(< seq item>);
    .......
endfunction : write_tx0_export
```

HTAX Environment

```
tx_port[0].tx_monitor.tx_collect_port.connect(htax_sb.tx0_export);
```

Inside the Reference Model

SV QUEUE

string queue[$];

queue = {'a', 'b', 'c', 'd'}

queue.size()

>>4

queue.push_back('e')

>>{'a', 'b', 'c', 'd', 'e'}

Method	Description
insert()	The insert() method inserts the given item at the specified index position.
delete()	The delete() method deletes the item at the specified index position.
pop_front()	The pop_front() method removes and returns the first element of the queue.
pop_back()	The pop_back() method removes and returns the last element of the queue.
push_front()	The push_front() method inserts the given element at the front of the queue.
push_back()	The push_back() method inserts the given element at the end of the queue.
size()	The size() method returns the number of items in the queue. If the queue is empty, it returns 0.

Thank you