



TLM 2.0 Approximately Time (AT) System Example – 4 Timing Points

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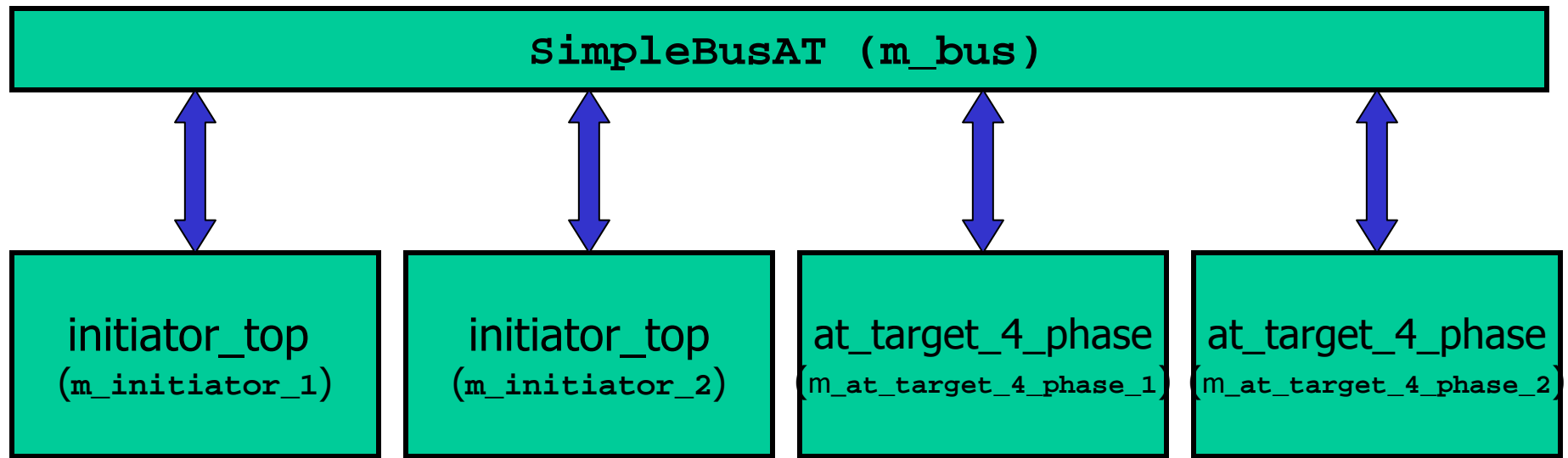
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AT System Example - Annotated Timing

- **The Goal is to Illustrate:**
 - Application of TLM 2.0 in a real system
 - option of the non-blocking style
 - ◆ This style has been previously referred to as "4 phase"
 - ◆ Most complex version of non-blocking/AT style
- **Possible Applications:**
 - Architectural Verification
 - Software Verification
 - Early Performance Validation



Example Block Diagram



 TLM 2 GP

How to run this example (Linux)

- Set `SYSTEMC_HOME`
- `cd examples/tlm/at_4_phase/build-unix`
- `make clean`
- `make`
- `make run`

How to run this example (MSVC)

- Open a explorer window on `examples/tlm/at_4_phase/build-windows`
- Launch `at_4_phase.sln`
- Select '**Property Manager**' from the '**View**' menu
- Under '`at_4_phase > Debug | Win32`' select '**systemc**'
- Select '**Properties**' from the '**View**' menu
- Select '**User Macros**' under '**Common Properties**'
- Update the '`SYSTEMC`' entry and apply
- Build and run

Expected Output (expected.log) 1 of 2

```
Info: traffic_generator.cpp: 0 s - traffic_generator_thread
    Initiator: 101 Starting Traffic
Info: select_initiator.cpp: 0 s - initiator_thread
    Initiator: 101 starting new transaction for Addr:0x00000100
    Initiator: 101 nb_transport_fw (GP, BEGIN_REQ, 0 s)
Info: select_initiator.cpp: 0 s - initiator_thread
    Initiator: 101 ACCEPTED (GP, BEGIN_REQ, 0 s)
    Initiator: 101 transaction waiting end-request on backward-path
...
Info: at_target_4_phase.cpp: 0 s - nb_transport_fw
    Target: 201 nb_transport_fw (GP, BEGIN_REQ, 0 s)
    Target: 201 ACCEPTED (GP, BEGIN_REQ, 0 s)
Info: at_target_4_phase.cpp: 10 ns - end_request_method
    Target: 201 starting end-request method
    Target: 201 transaction moved to send-response PEQ
    Target: 201 nb_transport_bw (GP, END_REQ, 0 s)
Info: at_target_4_phase.cpp: 10 ns - end_request_method
    Target: 201 ACCEPTED (GP, END_REQ, 0 s)
...
Info: select_initiator.cpp: 10 ns - nb_transport_bw
    Initiator: 101 nb_transport_bw (GP, END_REQ, 0 s)from Addr:0x00000100
    Initiator: 101 transaction waiting begin-response on backward path
    Initiator: 101 ACCEPTED (GP, END_REQ, 0 s)
Info: at_target_4_phase.cpp: 10 ns - nb_transport_fw
    Target: 201 nb_transport_fw (GP, BEGIN_REQ, 0 s)
    Target: 201 ACCEPTED (GP, BEGIN_REQ, 0 s)
```



Expected Output (expected.log) 2 of 2

Info: at_target_4_phase.cpp: 20 ns - end_request_method

Target: 201 starting end-request method

Target: 201 transaction moved to send-response PEQ

Target: 201 nb_transport_bw (GP, END_REQ, 0 s)

Info: at_target_4_phase.cpp: 20 ns - end_request_method

Target: 201 ACCEPTED (GP, END_REQ, 0 s)

...

Info: select_initiator.cpp: 40 ns - nb_transport_bw

Initiator: 101 nb_transport_bw (GP, BEGIN_RESP, 0 s)from Addr:0x00000100

Initiator: 101 transaction moved to send-end-response PEQ

Initiator: 101 ACCEPTED (GP, BEGIN_RESP, 0 s)

Info: select_initiator.cpp: 47 ns - send_end_rsp_method

Initiator: 101 starting send-end-response method

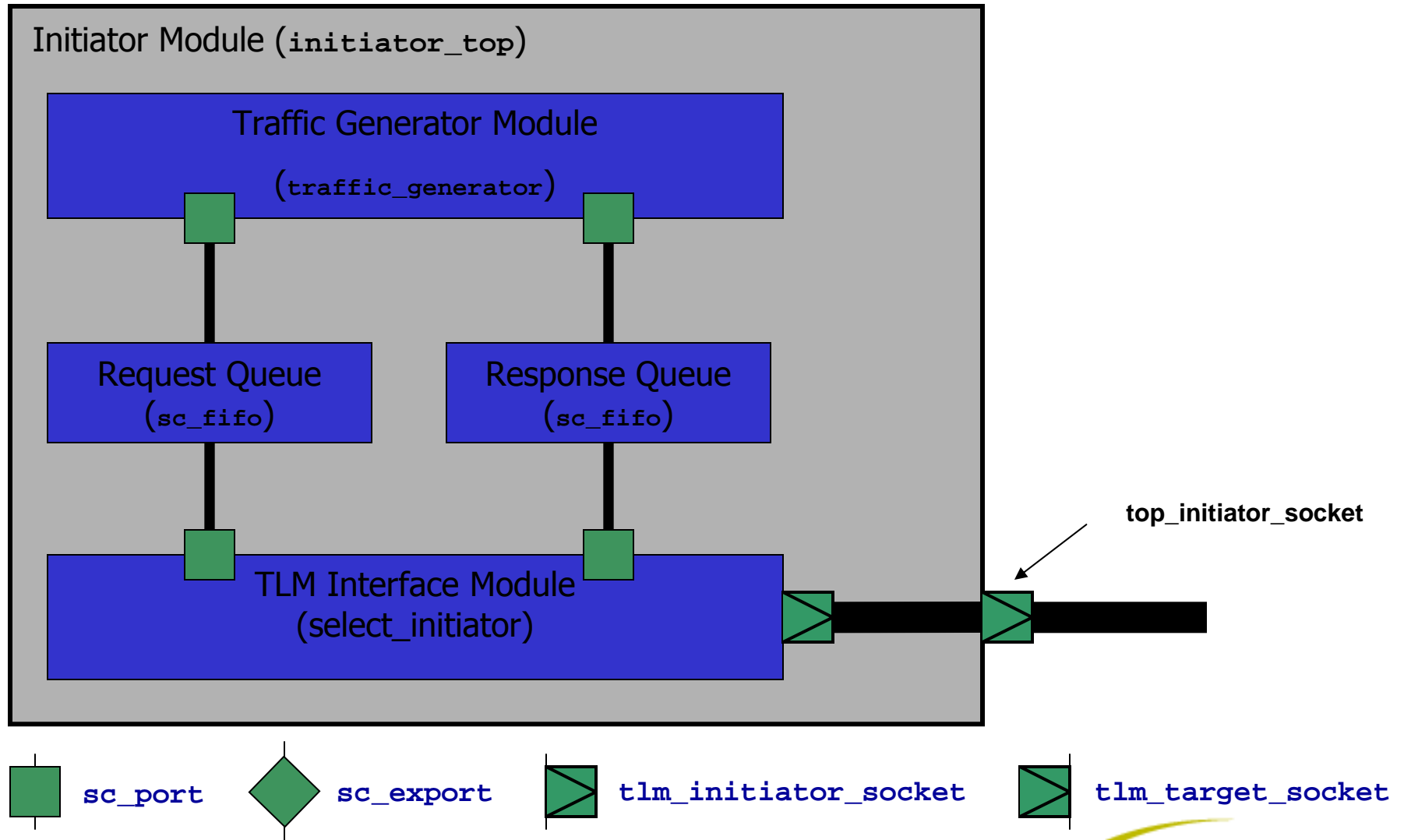
Initiator: 101 nb_transport_fw (GP, END_RESP, 0 s)

Info: select_initiator.cpp: 47 ns - send_end_rsp_method

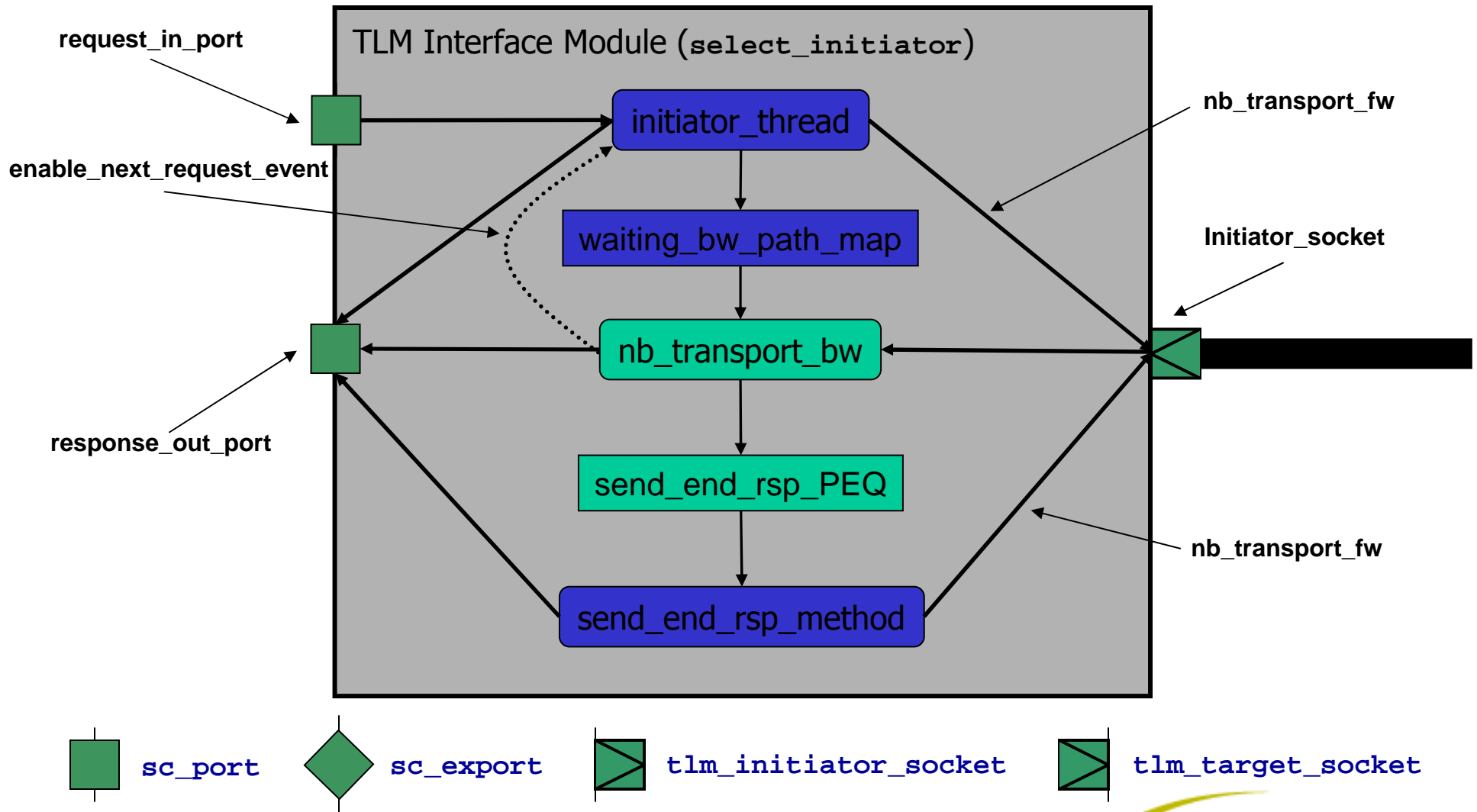
Initiator: 101 COMPLETED (GP, END_RESP, 0 s)



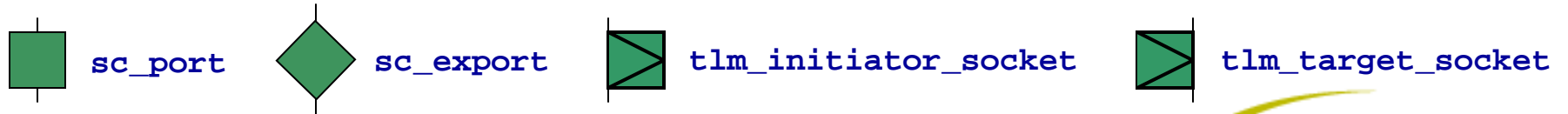
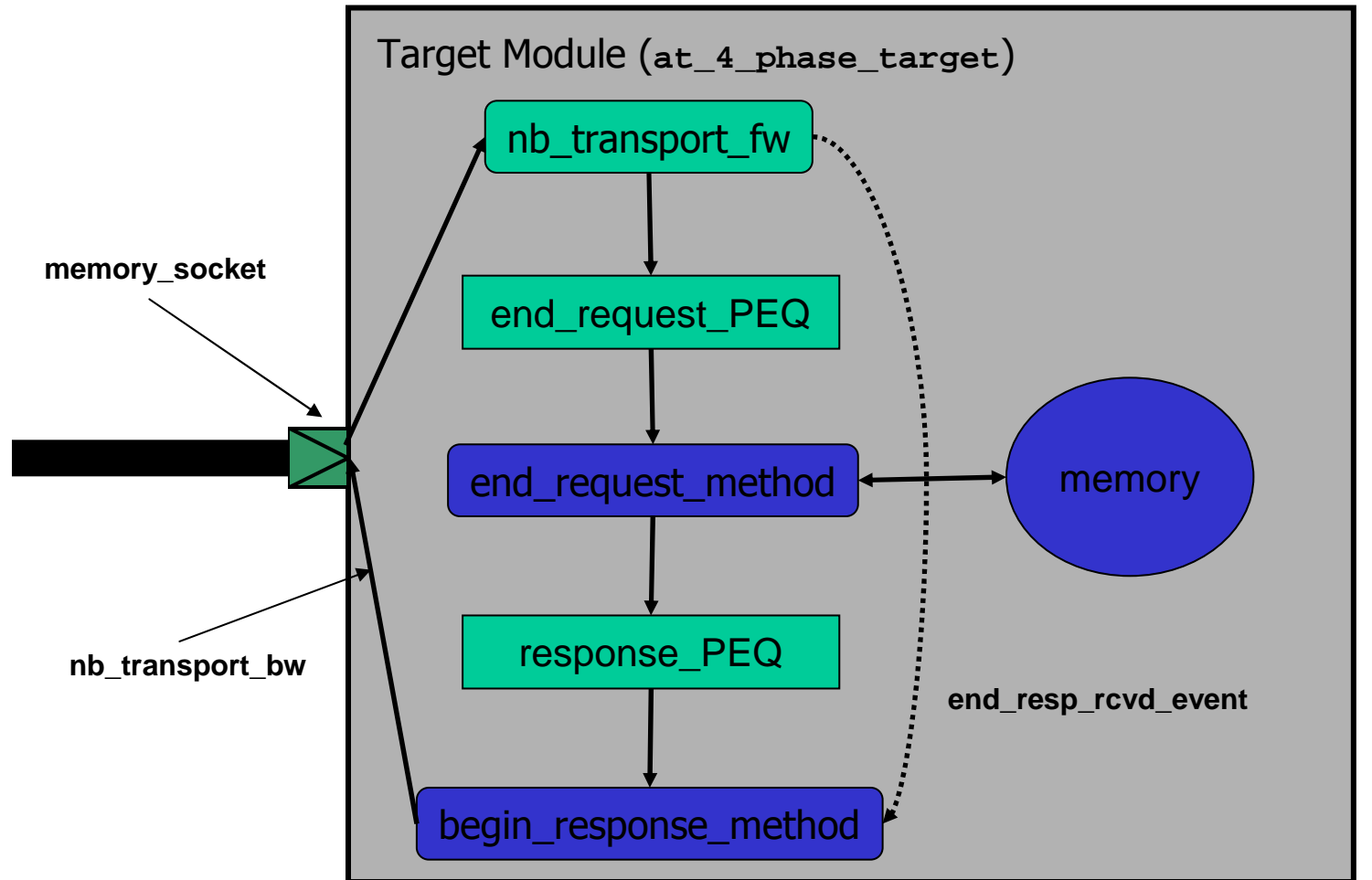
Initiator Module



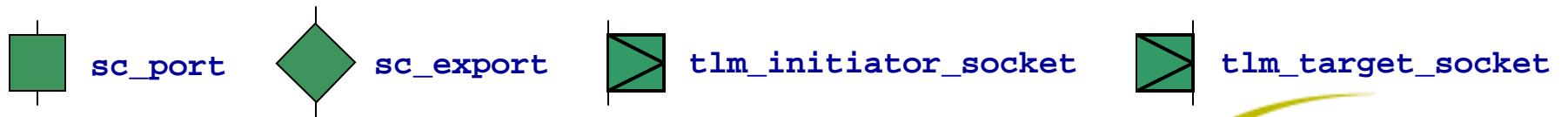
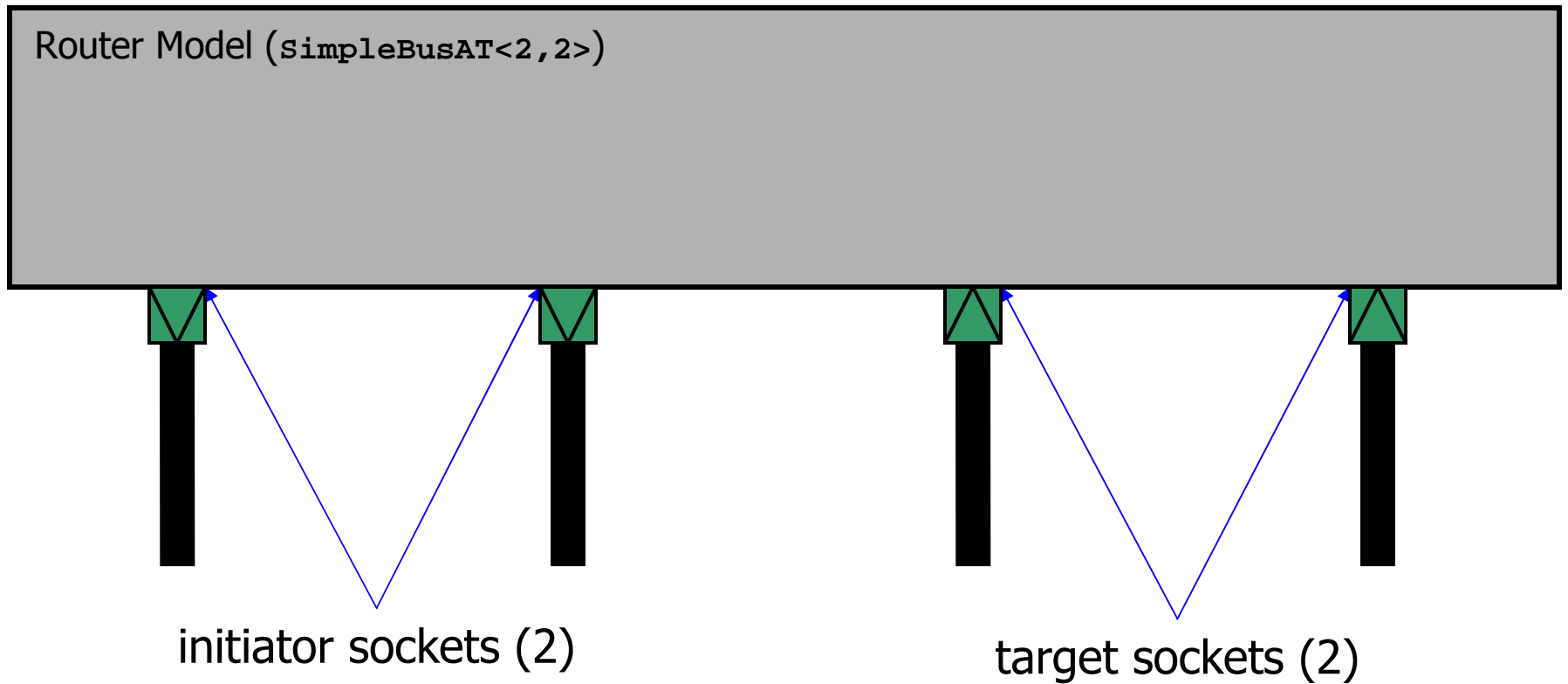
TLM Interface Module



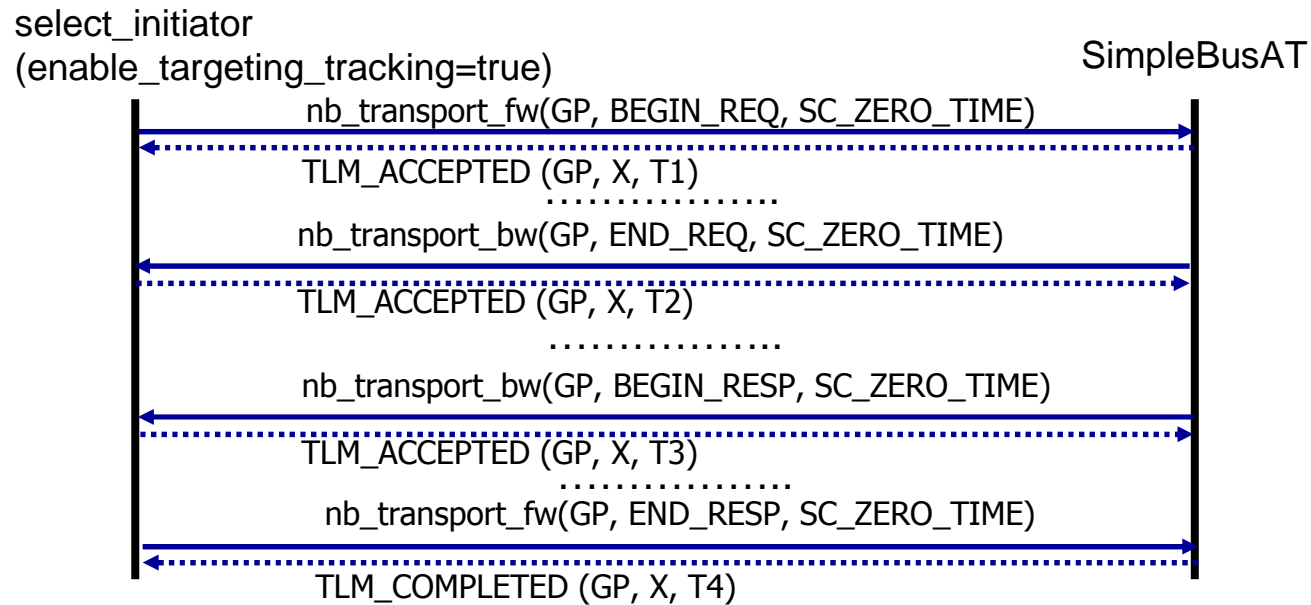
Target Module



Router Component



Expected Timing (1 of 2)



Expected Timing (2 of 2)

