TDD – DS/US Dynamic Allocation

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Dynamically US/DS Time Allocation

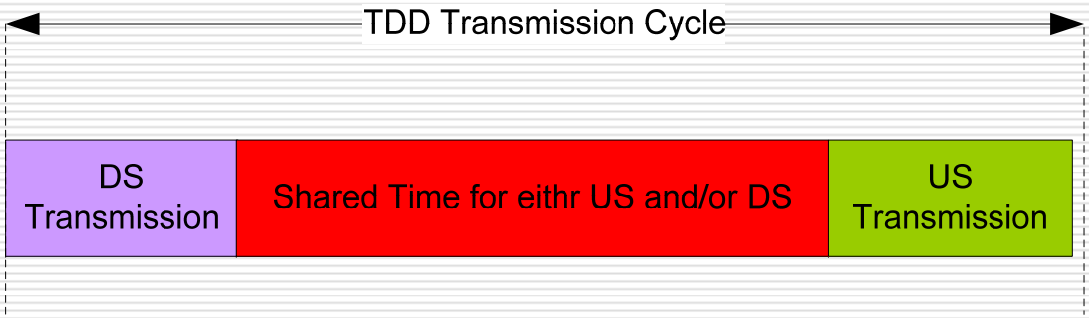
- Dynamically reconfigure the allocated upstream and downstream
- Statistical Multiplexing Gain
  - Delivers better service experience to end users
  - Lower cost to operators
- Better BW utilization

US/DS Time Division - Possibilities

- Fixed Allocation
  - Determined by PHY link in setup
  - Rarely changed – Can be adapted from time to time to give a good average performance
  - No statistical multiplexing gain
- Dynamic Allocation
  - CLT may change BW allocation (using Gate messages) to both DS and US
  - New to EPON
  - Statistical multiplexing gain

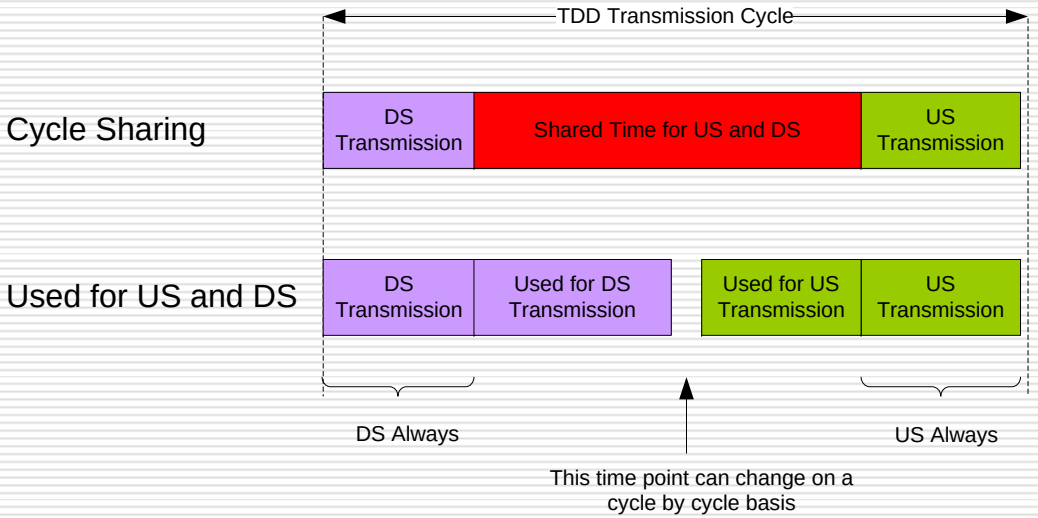
Variable Allocation Strategy (1)

- The TDD cycle is divided into 3 parts:
  - Fixed DS time
  - Fixed US time
  - Shared time – for either DS and/or US
- TDD allocation to DS and US is performed by an augmented DBA function



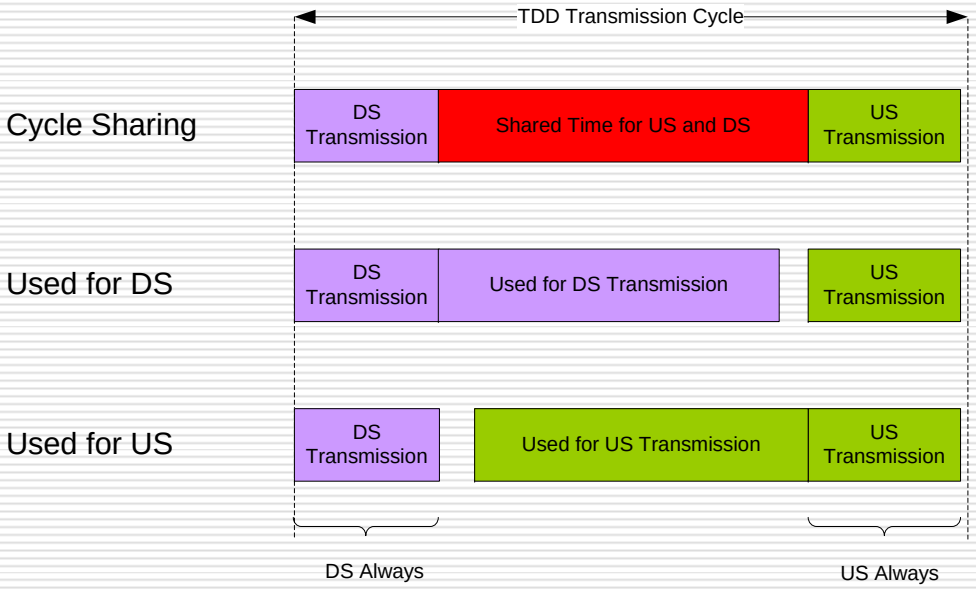
Variable Allocation Strategy (2)

- Option 1 - Part of the cycle may be used for US and the other part for DS
  - The time point between US and DS is determined by the CLT
  - Guard time is kept only between US and DS



Variable Allocation Strategy (3)

- Option 2 – The shared time is used for either US or DS
  - The shared time is not used for both US and DS
  - Guard time is kept only between US and DS



Remarks

- Option 2 can be seen as a special case of option 1 (2 different allocations)
- By setting the length of the Shared Time to 0, we're back with the conventional TDD
- PHY Link – need to decide when it is active
- Need to decide about minimum values for US and DS time

Decisions

- EPoC should support dynamic TDD
- TDD cycle will consist of
  - Fixed US Time
  - Fixed DS Time
  - Shared Time, which can be used to either US or DS transmission