

SoundWire Locking

This document explains locking mechanism of the SoundWire Bus. Bus uses following locks in order to avoid race conditions in Bus operations on shared resources.

- Bus lock
- Message lock

Bus lock

SoundWire Bus lock is a mutex and is part of Bus data structure (sdw_bus) which is used for every Bus instance. This lock is used to serialize each of the following operations(s) within SoundWire Bus instance.

- Addition and removal of Slave(s), changing Slave status.
- Prepare, Enable, Disable and De-prepare stream operations.
- Access of Stream data structure.

Message lock

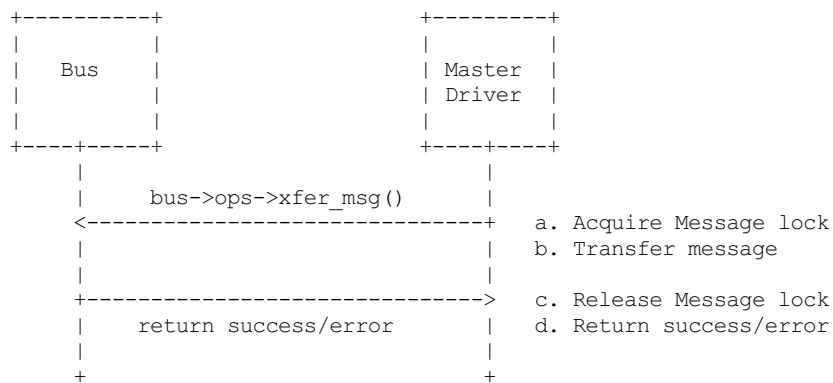
SoundWire message transfer lock. This mutex is part of Bus data structure (sdw_bus). This lock is used to serialize the message transfers (read/write) within a SoundWire Bus instance.

Below examples show how locks are acquired.

Example 1

Message transfer.

1. For every message transfer
 - a. Acquire Message lock.
 - b. Transfer message (Read/Write) to Slave1 or broadcast message on Bus in case of bank switch.
 - c. Release Message lock



Example 2

Prepare operation.

1. Acquire lock for Bus instance associated with Master 1.
2. For every message transfer in Prepare operation
 - a. Acquire Message lock.
 - b. Transfer message (Read/Write) to Slave1 or broadcast message on Bus in case of bank switch.
 - c. Release Message lock.
3. Release lock for Bus instance associated with Master 1

