# A frame structure for mobile multi-hop relay with different carrier frequencies

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None

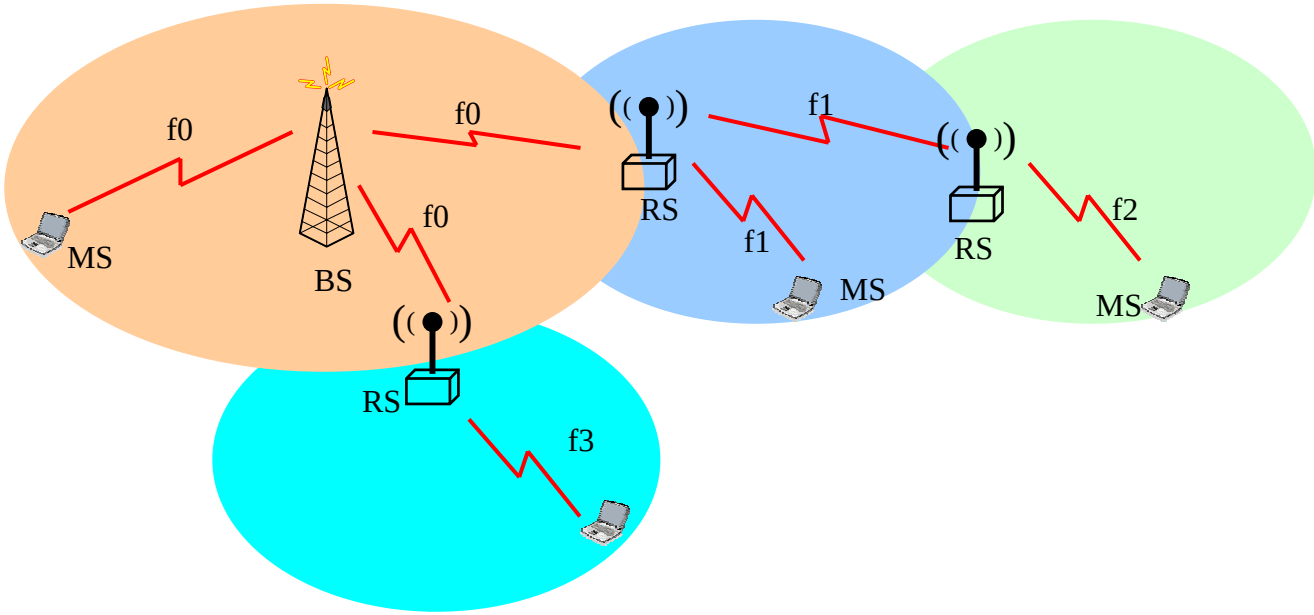
Purpose:

To present a backward compatible frame structure for mobile multi-hop relay

# Contents

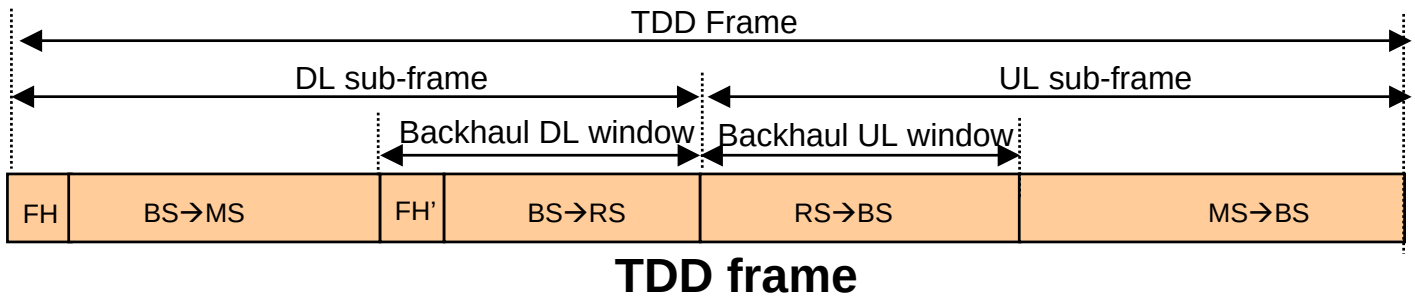
- General ideas
- Frame structure
- Application examples
- Summary

# General ideas




- Extending 802.16 coverage by multi-hop relay
- Backward compatible with PMP mode
- RSs and BS have different carrier frequencies
- RS acts as BS to its subordinate node(MS/RS); and RS acts as MS to its superordinate nodes (BS/RS)

# Frame structure



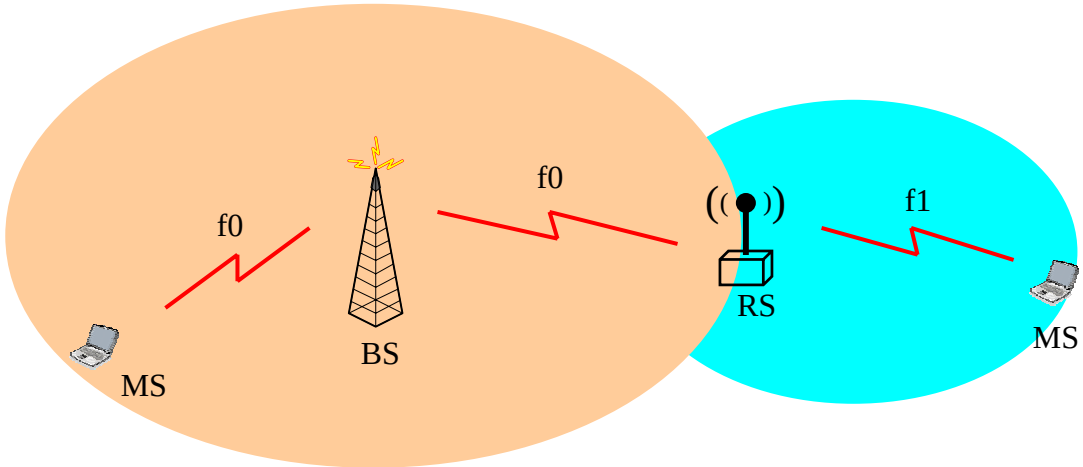

**TDD frame**

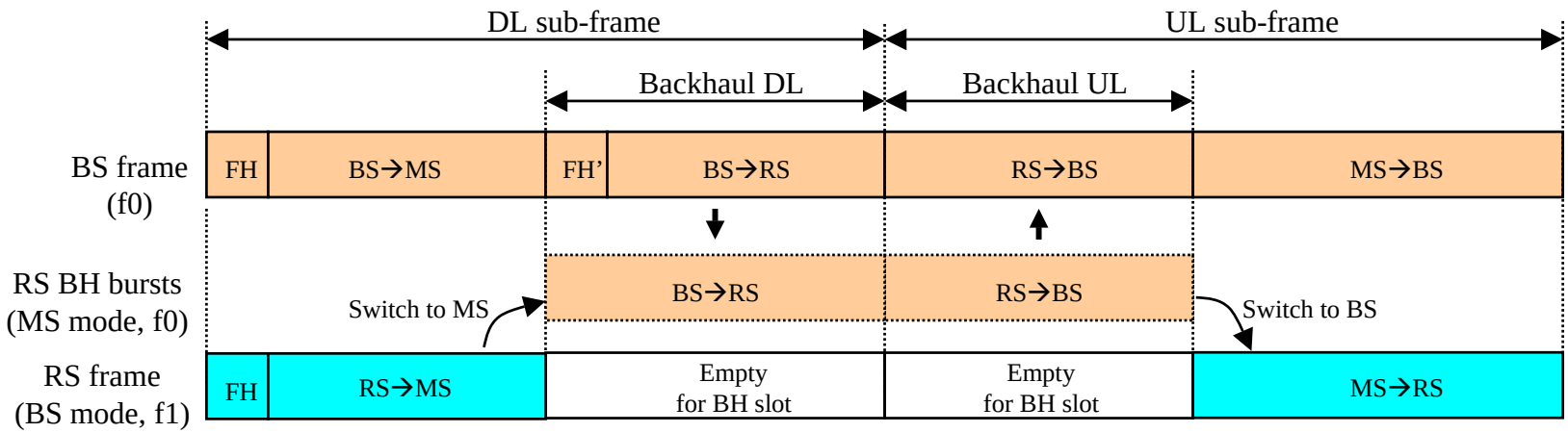
FH Frame Header, e.g. preamble, FCH,DL_MAP, UL_MAP, DCD, UCD

FH' FH copy with different preamble and simplified FCH,DL_MAP,UL_MAP,DCD,UCD

- FH is for MS; FH' is for RS and transparent for MS
- BS can flexibly allocate RS backhaul window (location and length) based on bandwidth requirement

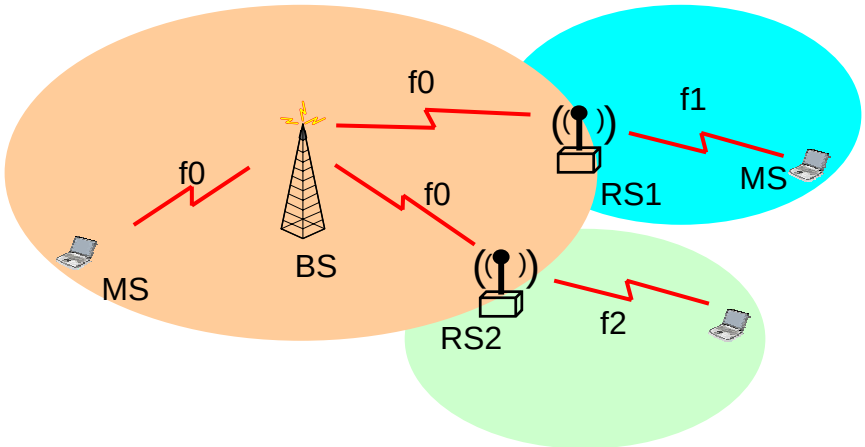
# Application example 1 (one relay)

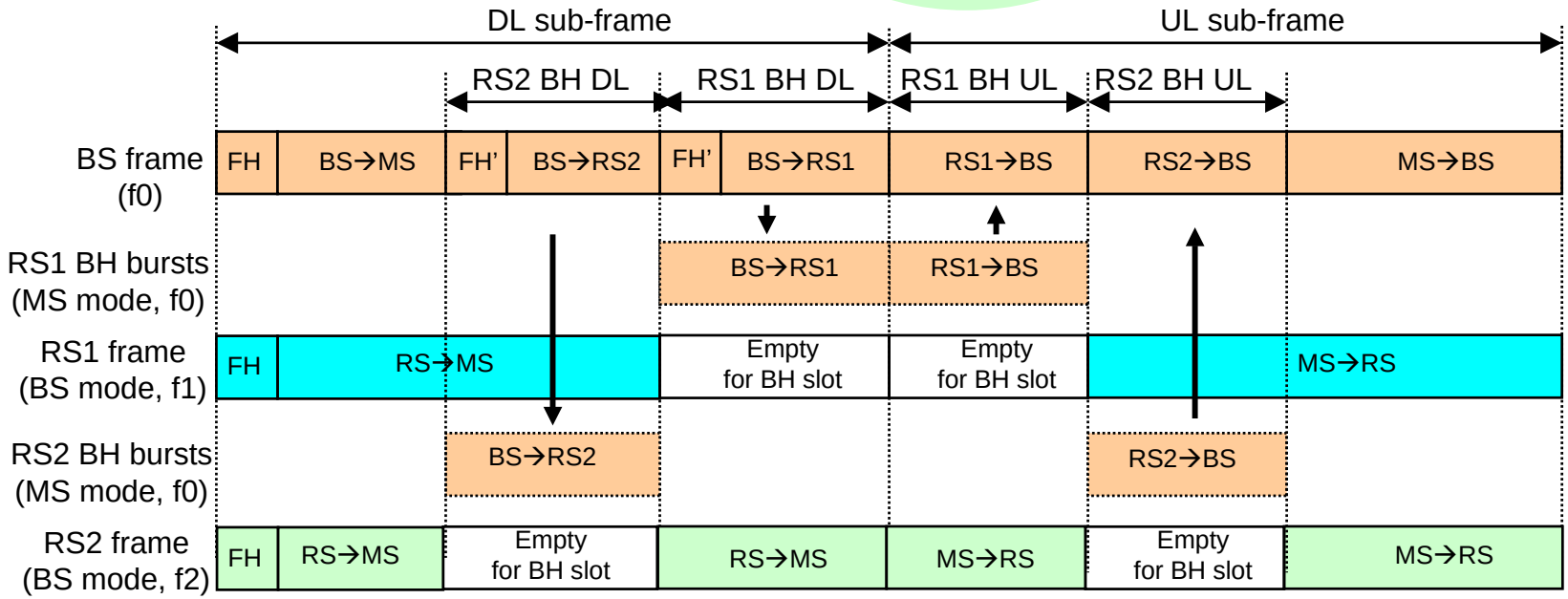



BH: backhaul

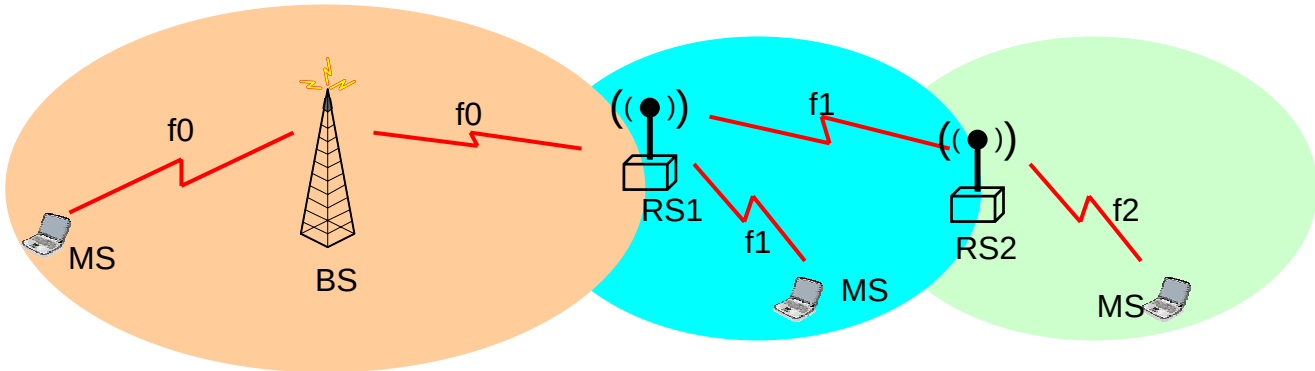
# Application example 2 (multiple relays)

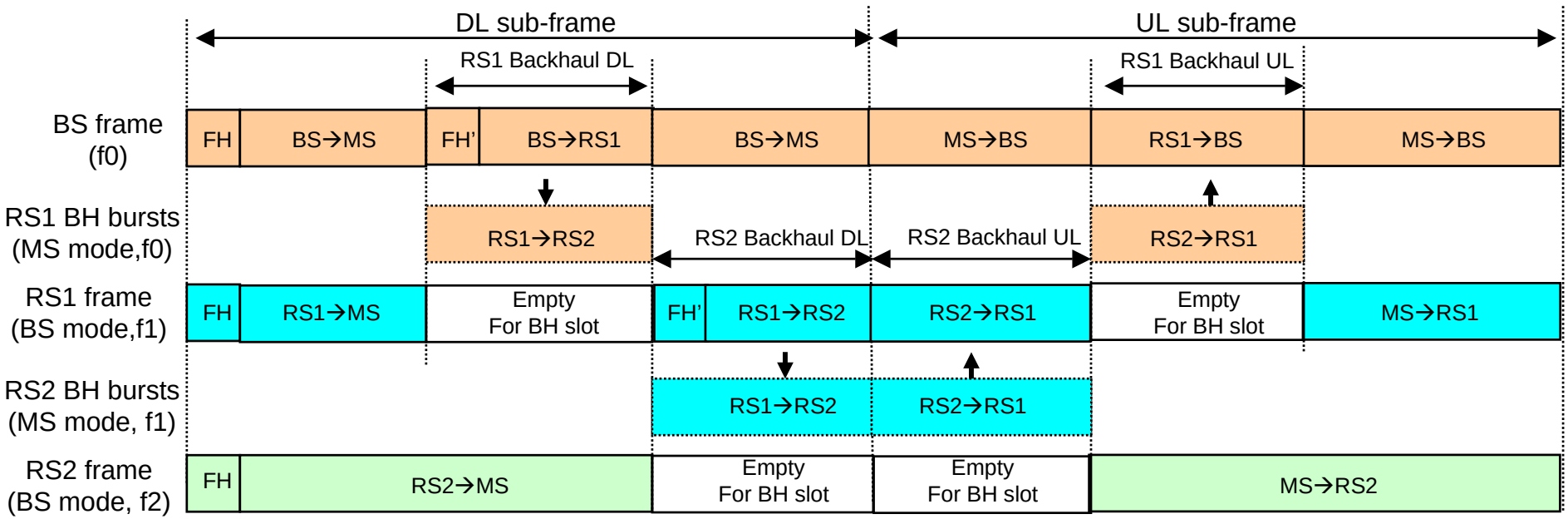



- **FH's for different RSs are the same.**

# Application example 3 (multi-hop)



# Summary

- RS works in BS mode and MS mode by turns
- RS backhaul occupies part of radio resource of its superordinate node (BS/RS)
- Low multi-hop latency as traffic can be scheduled in one frame
- All RSs are controlled under its attaching BS and new RS messages should be defined
- All BS and RS work in synchronization with the frame duration and starting time