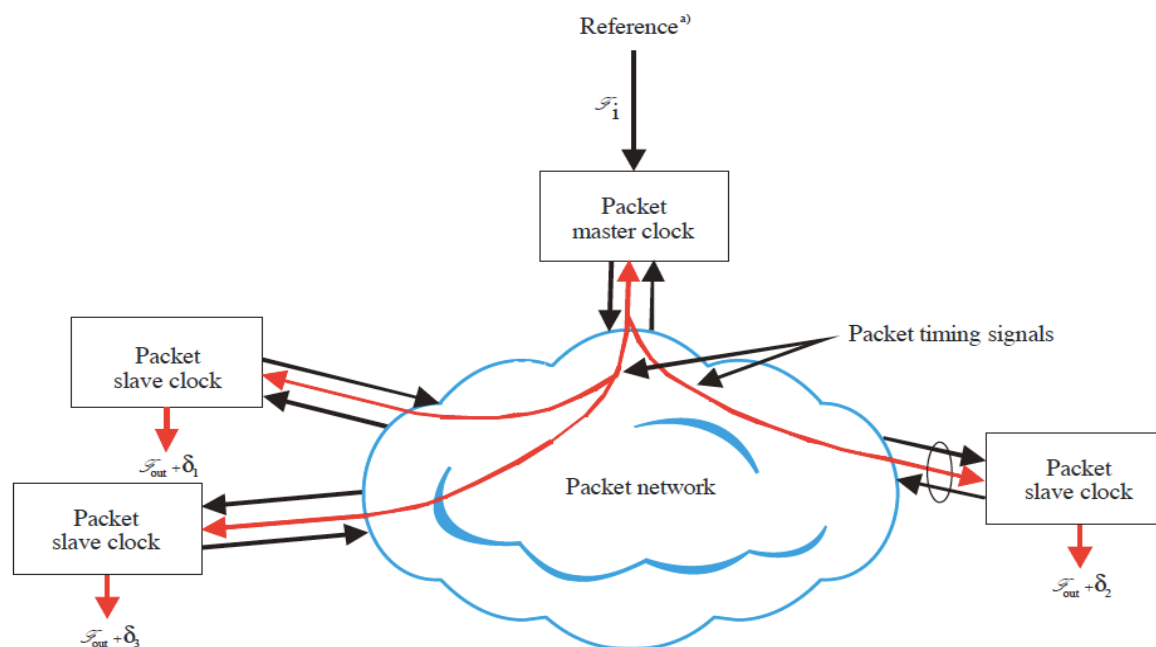


DESCRIBING ITU-T G.8265.1 AND PTP UNICAST NEGOTIATION USING LADDER DIAGRAMS

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April 18th 2013

Outline

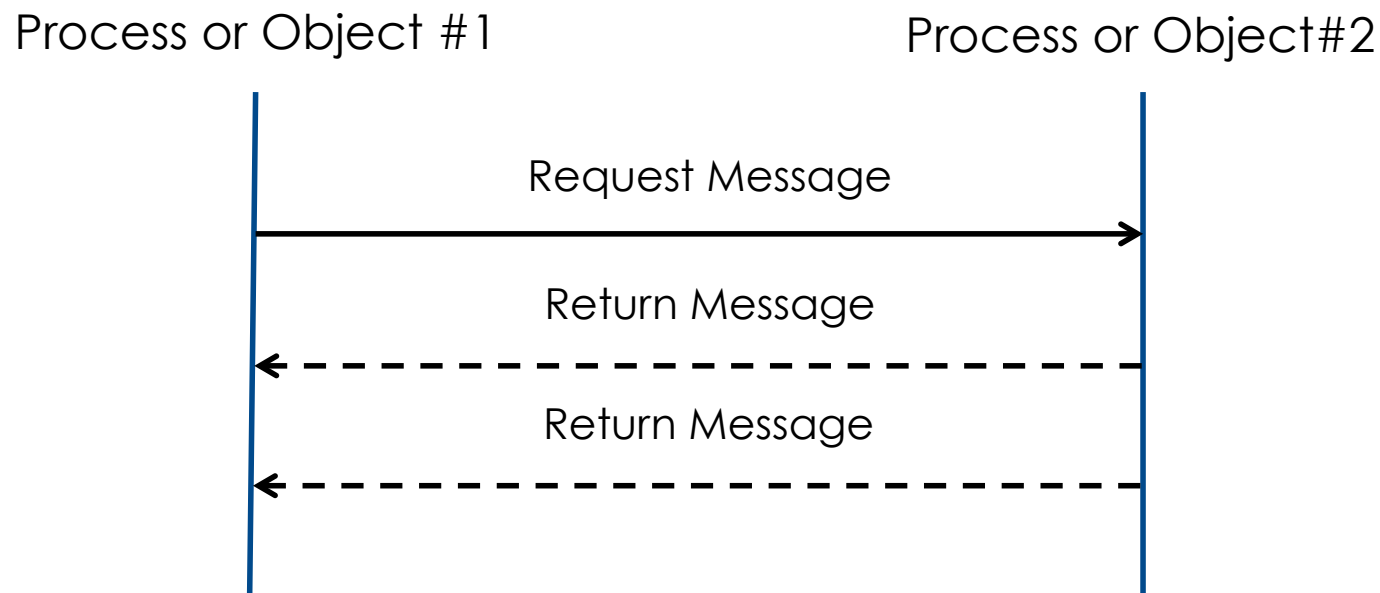
- PTP Unicast message negotiation (IEEE1588-2008 Clause 16.1)
- Applicable to ITU-T G.8265 & G.8265.1 (frequency profile)
- Possibly applicable & reusable to G.8275.2 (partial time profile)



^{a)} The reference may be from a PRC directly, from a GNSS or via a synchronization network

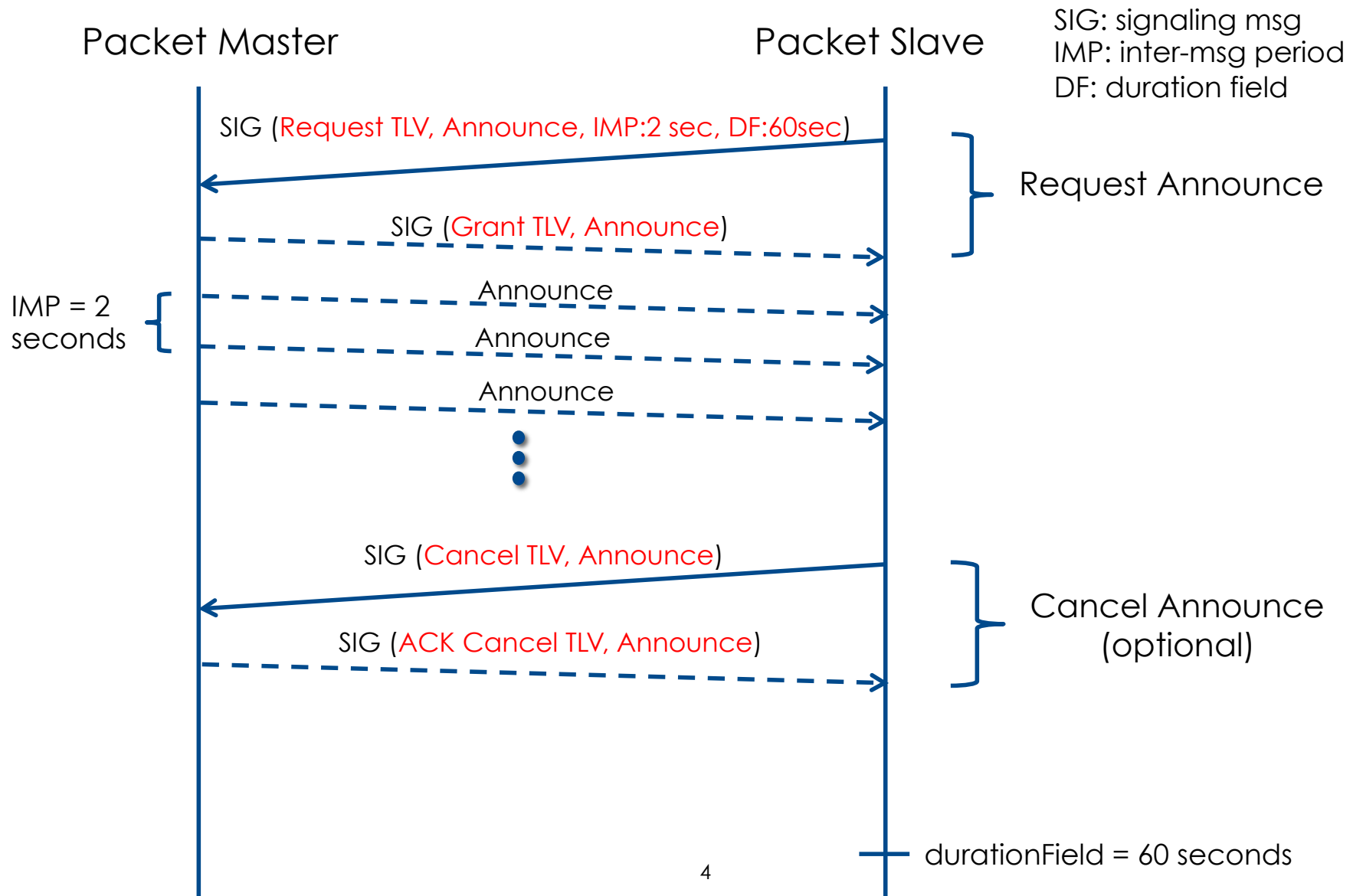
Ladder Diagrams

- Vertical lines describe different processes/objects
- Horizontal lines describe interactions between the processes/objects
 - Solid line represents a request message
 - Dashed line represents a return message

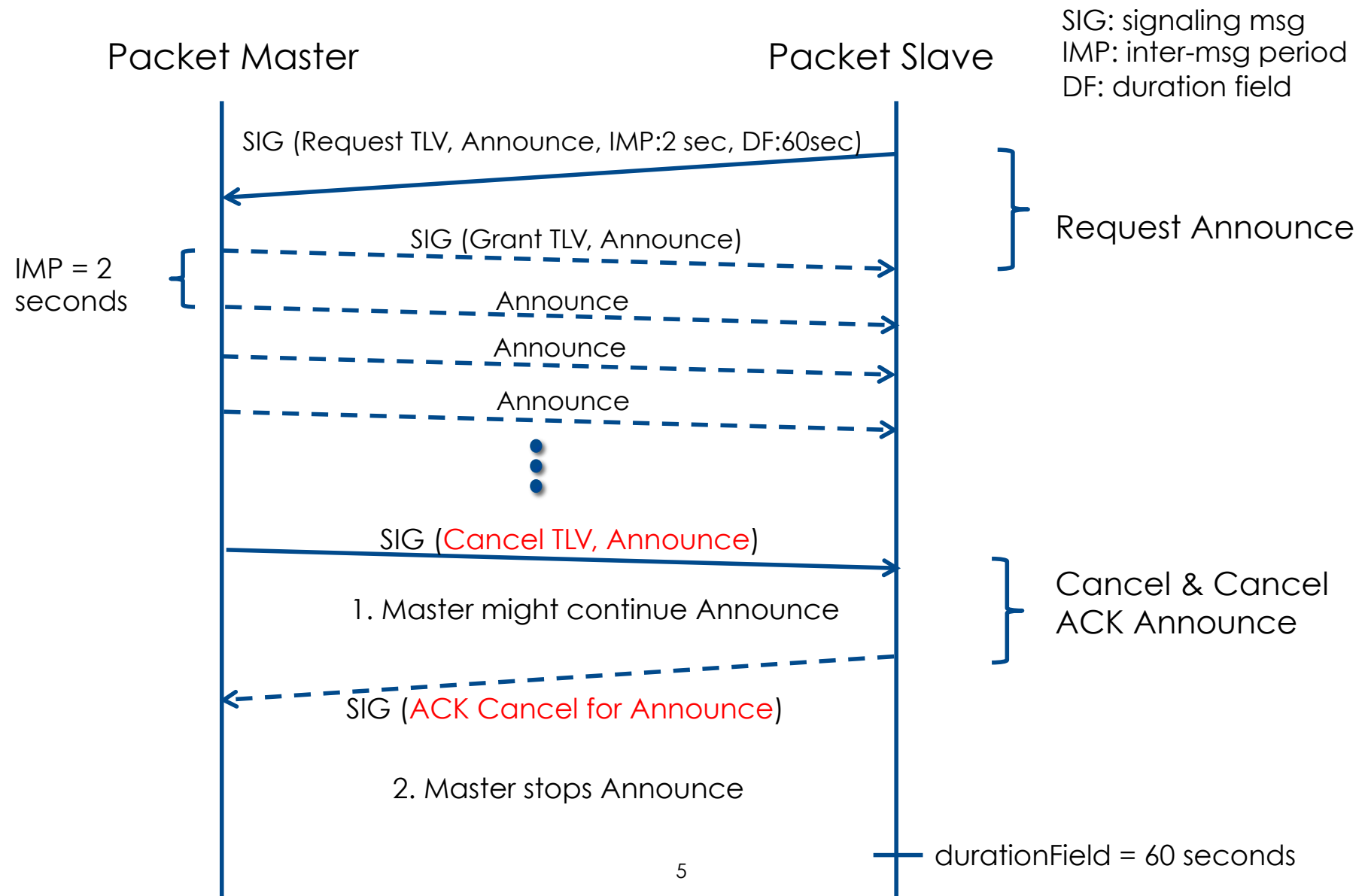


also known as timing diagrams, sequence diagram, event diagrams

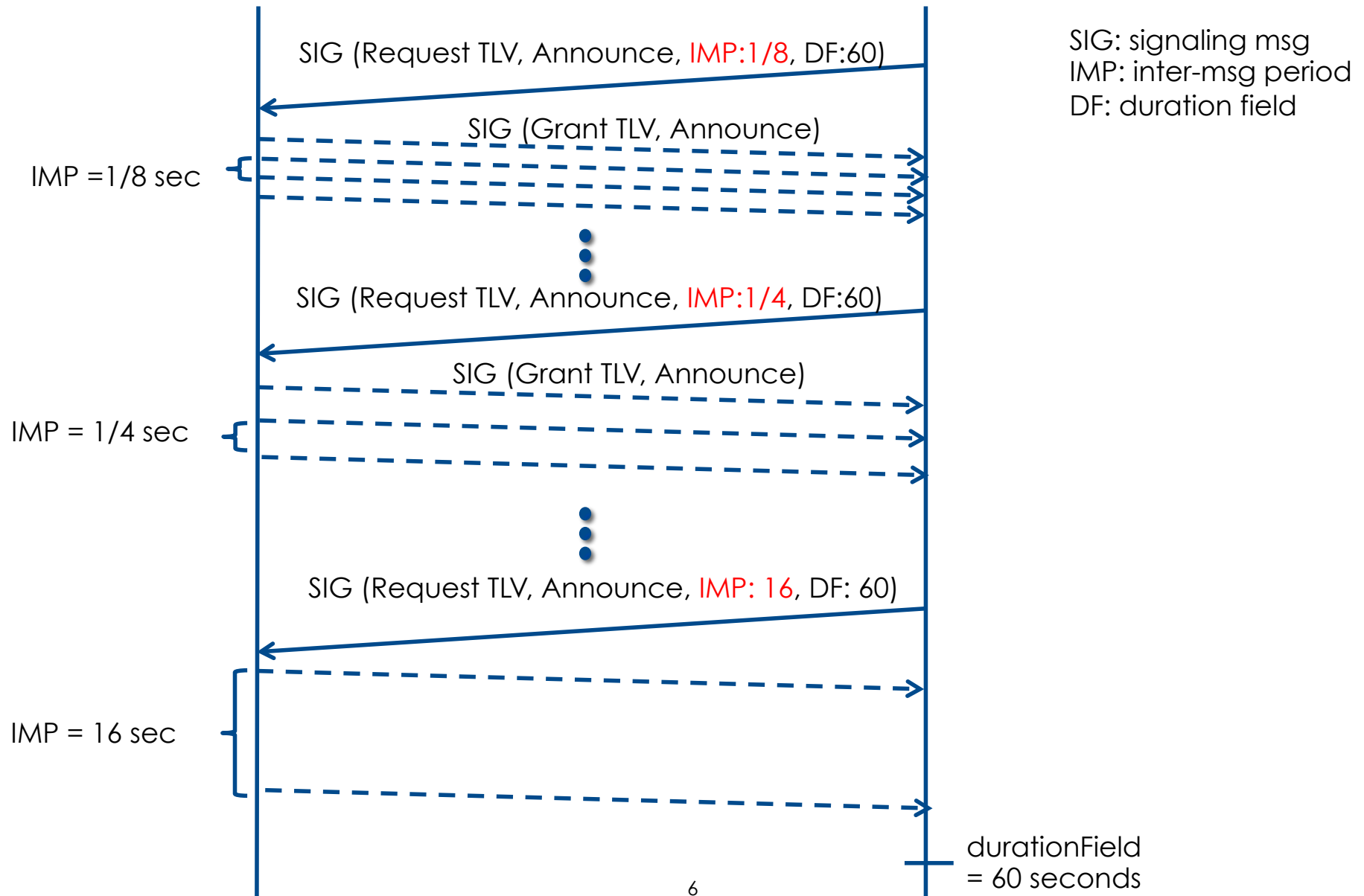
Request & Cancel Announce (Packet Slave)



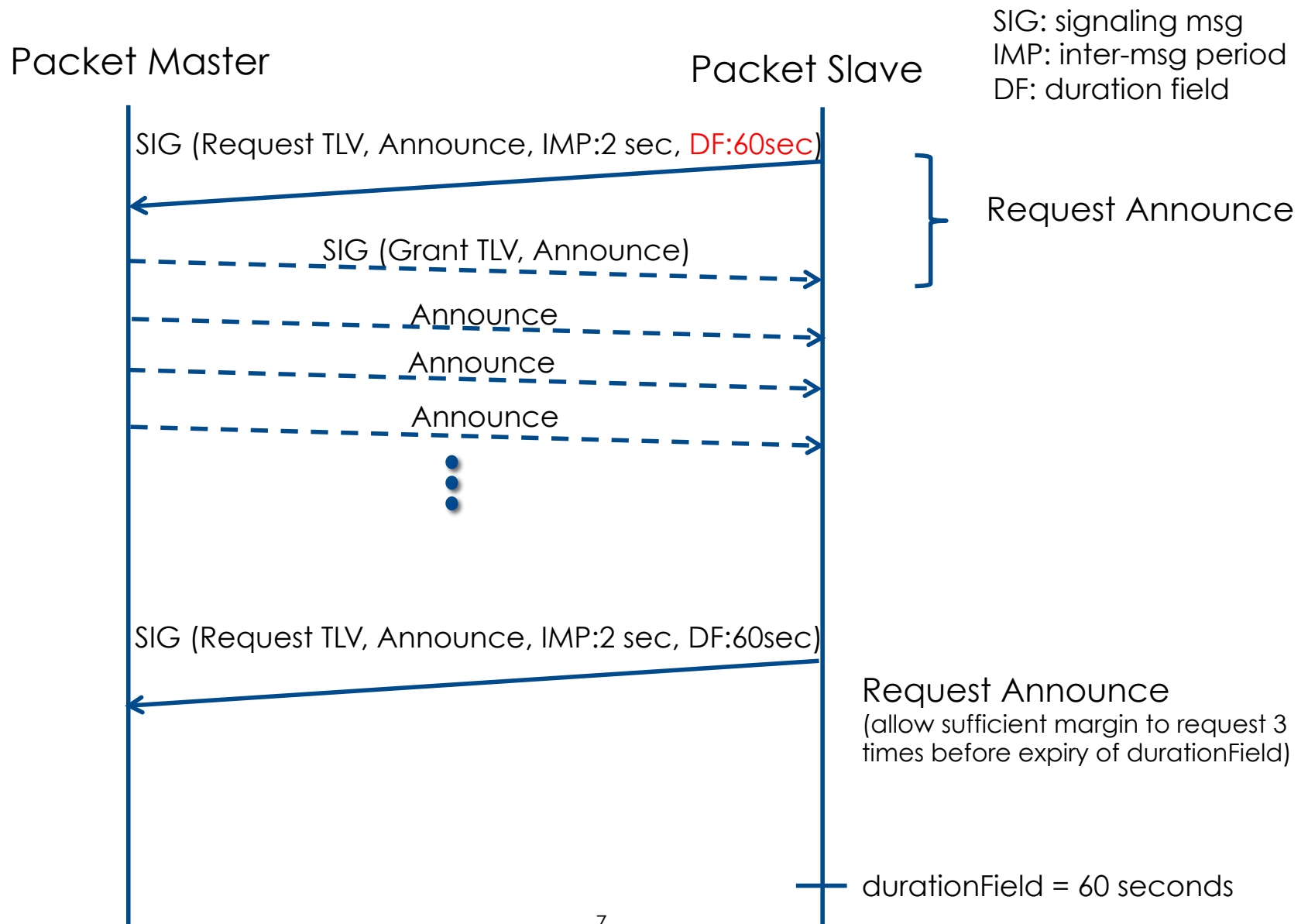
Cancel Announce (Packet Master)



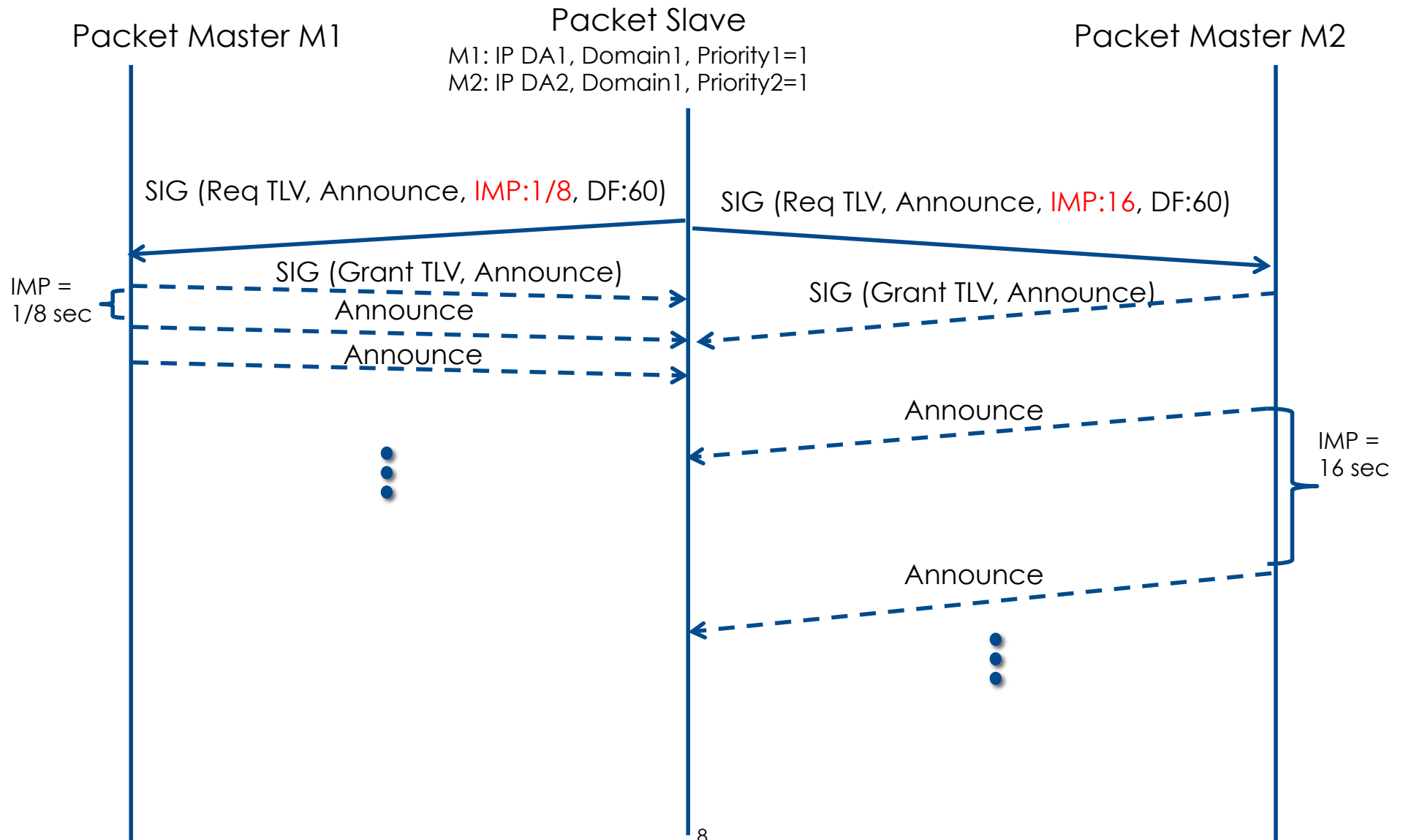
InterMessage Period



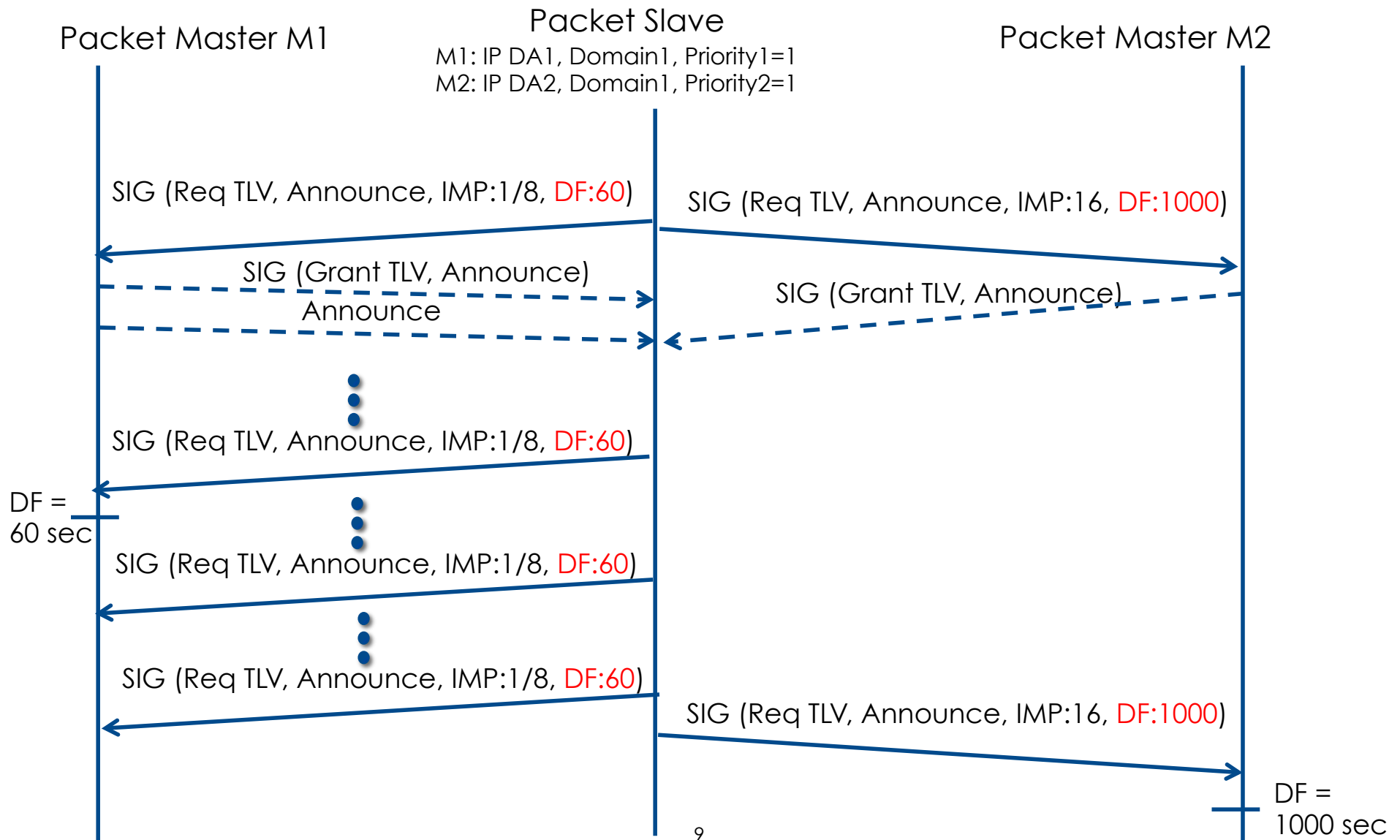
Duration Field



Concurrent InterMessage Period



Concurrent Duration Field

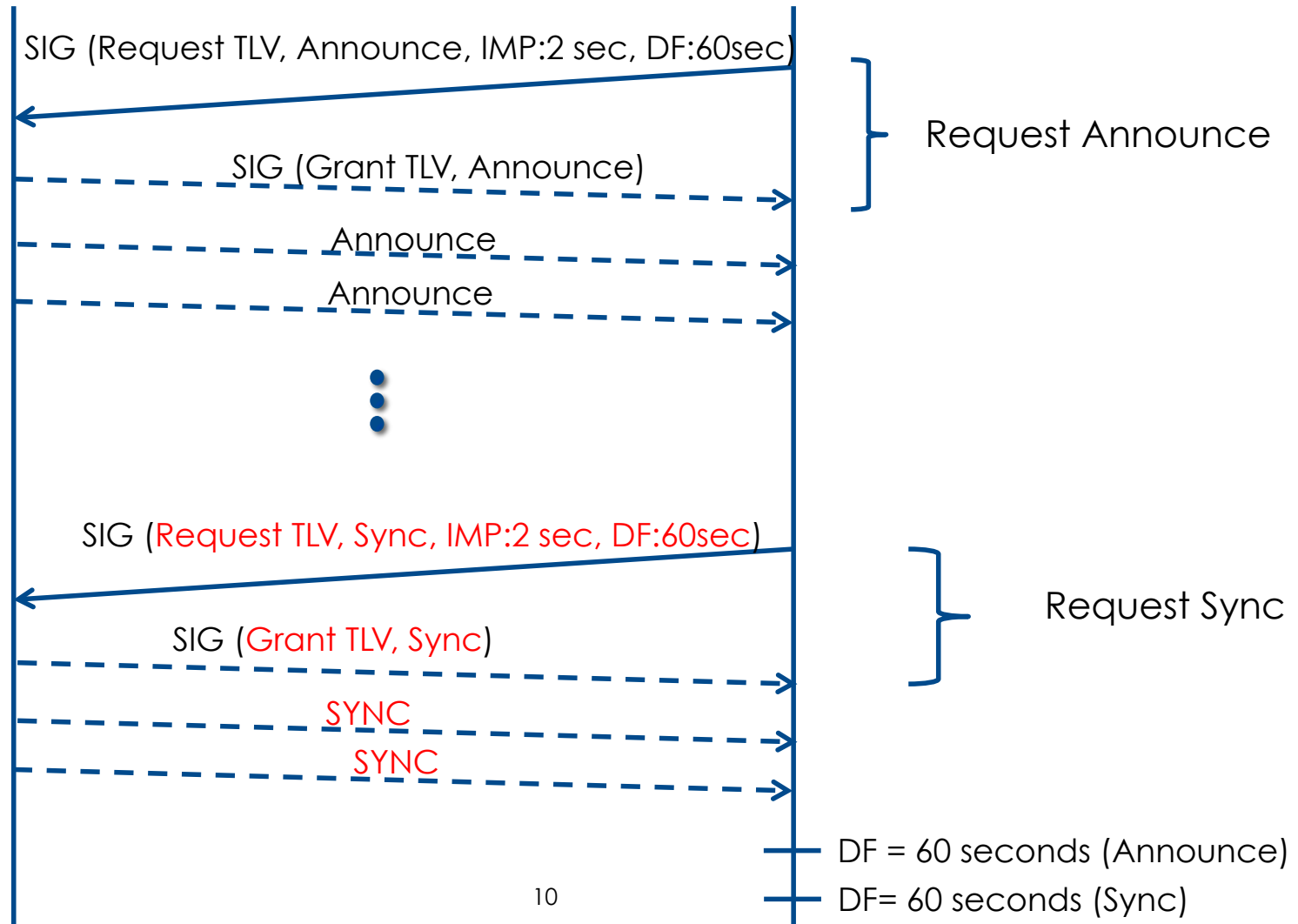


Request Sync (1way Slave)

Packet Master

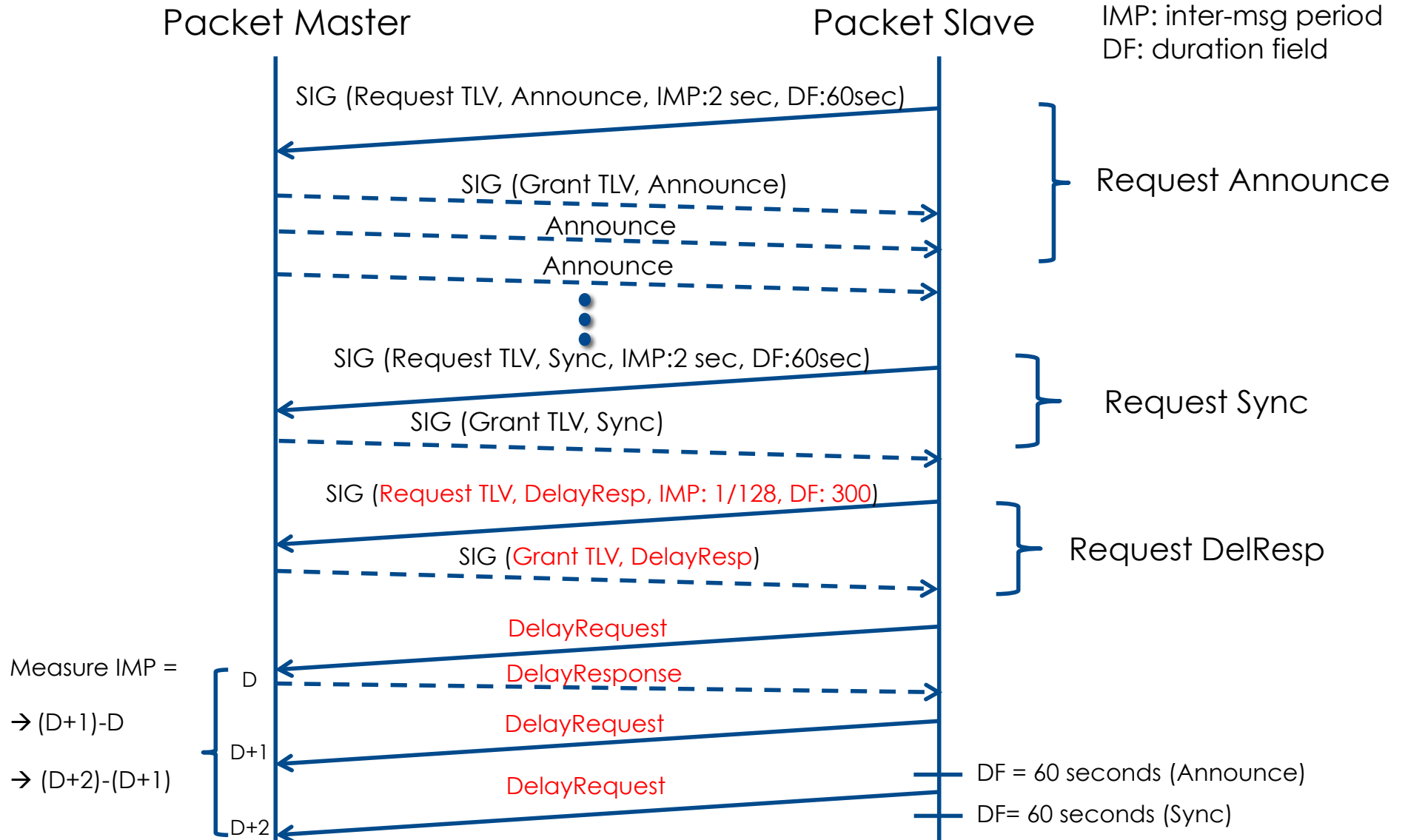
Packet Slave

SIG: signaling msg
IMP: inter-msg period
DF: duration field

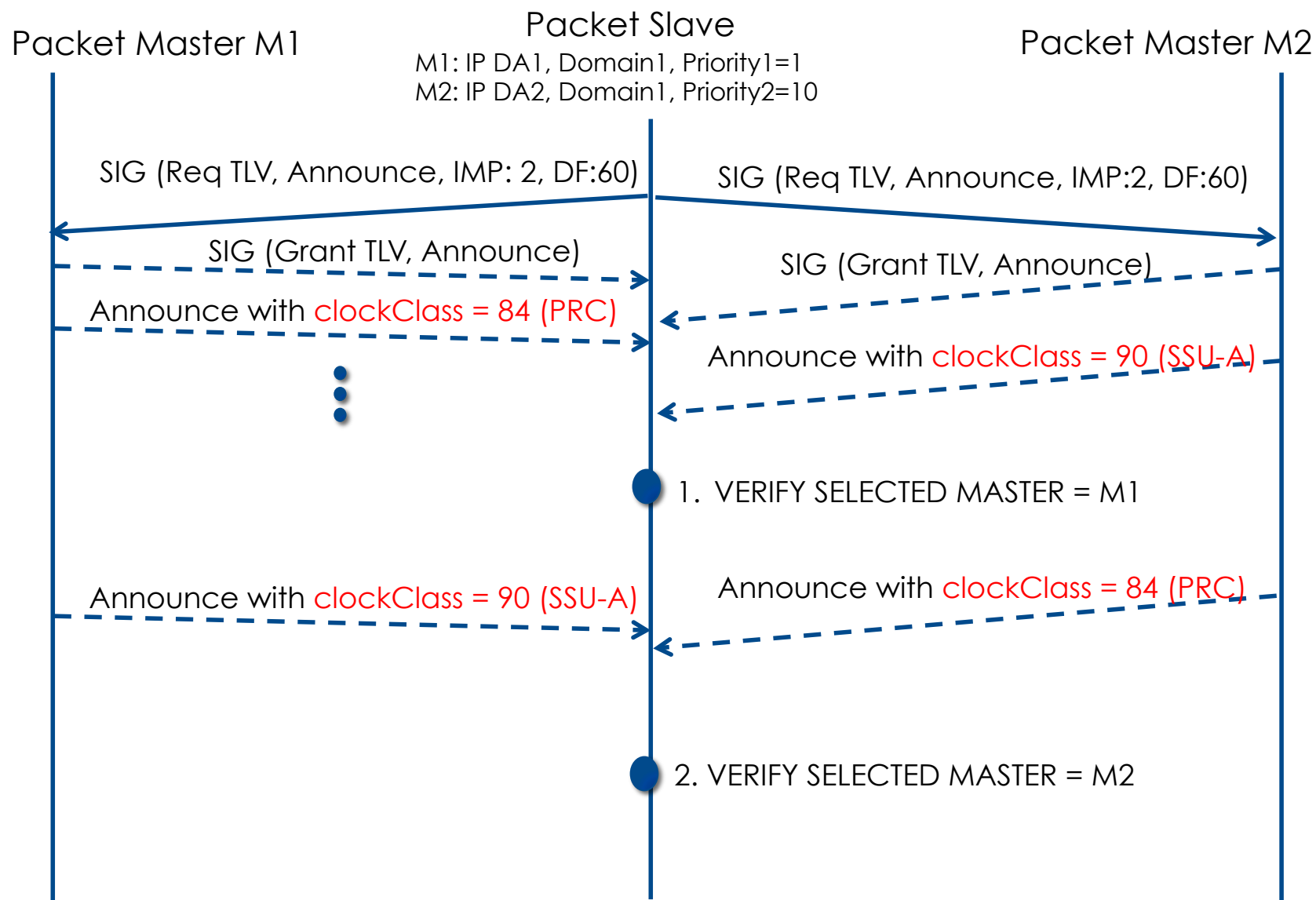


Request Delay Response (2way Slave)

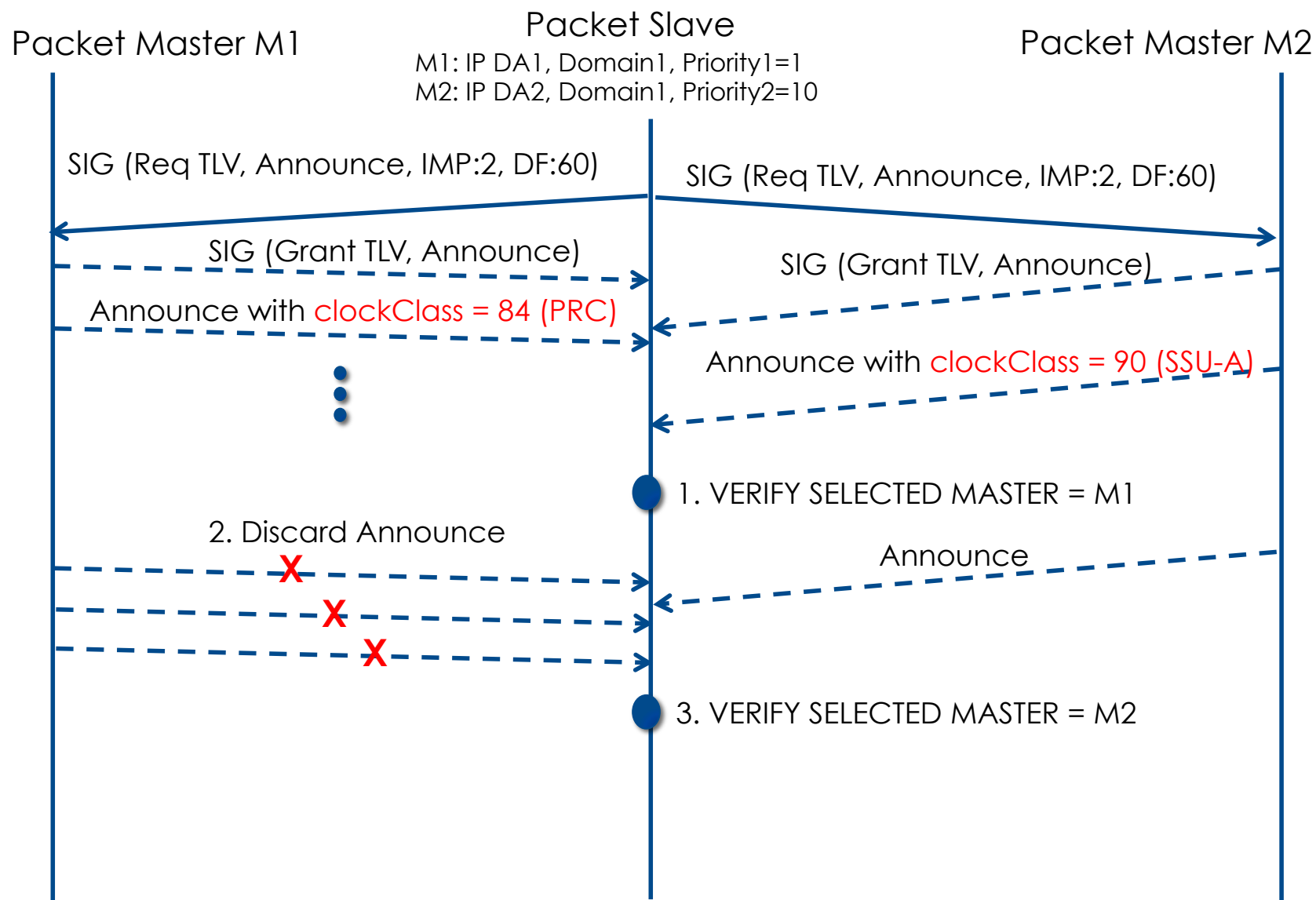
SIG: signaling msg
IMP: inter-msg period
DF: duration field



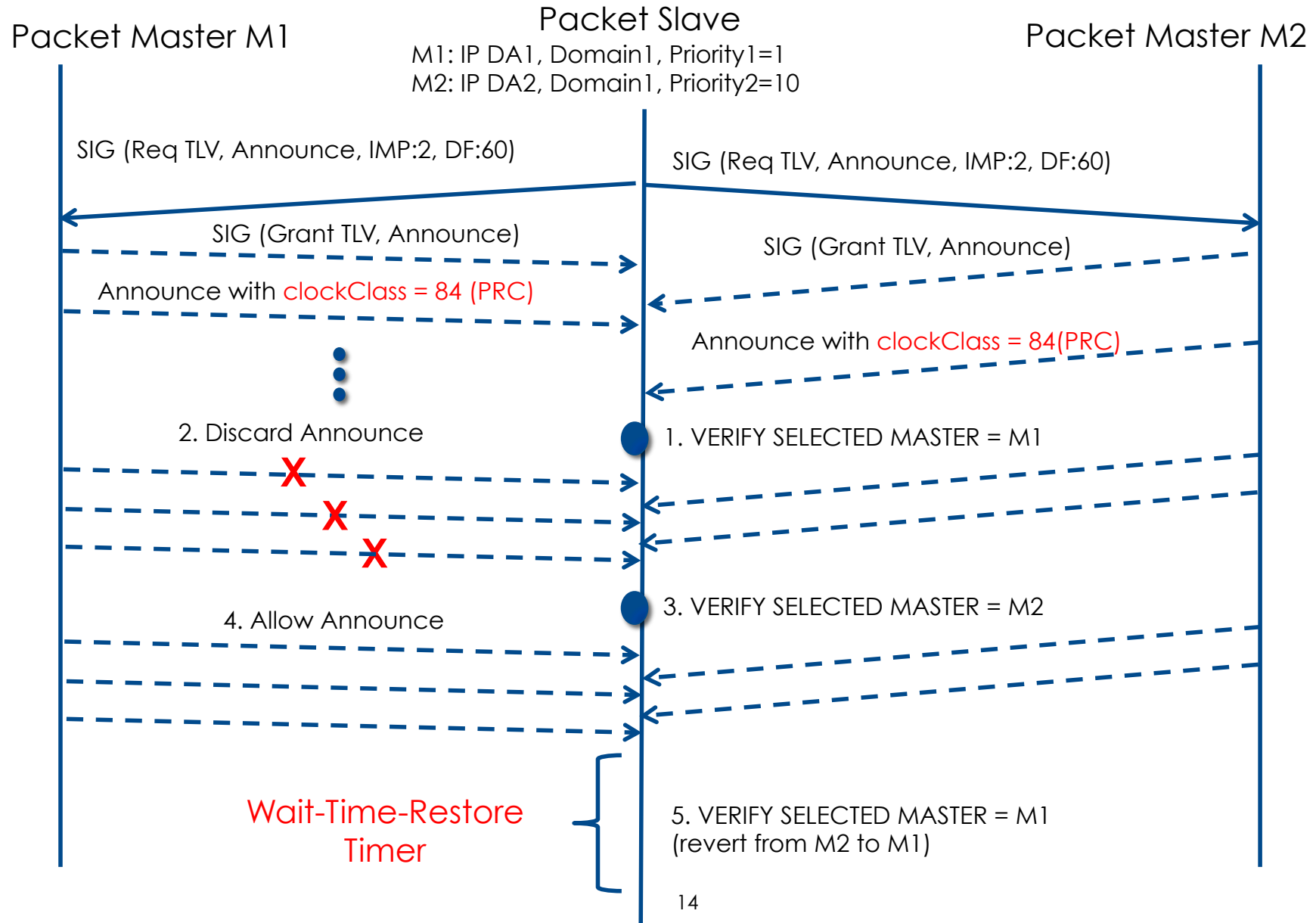
Alternate-BMCA (different QL)



PTSF-lossAnnounce (packet timing signal fail)



PTSF-lossAnnounce & Wait Time Restore



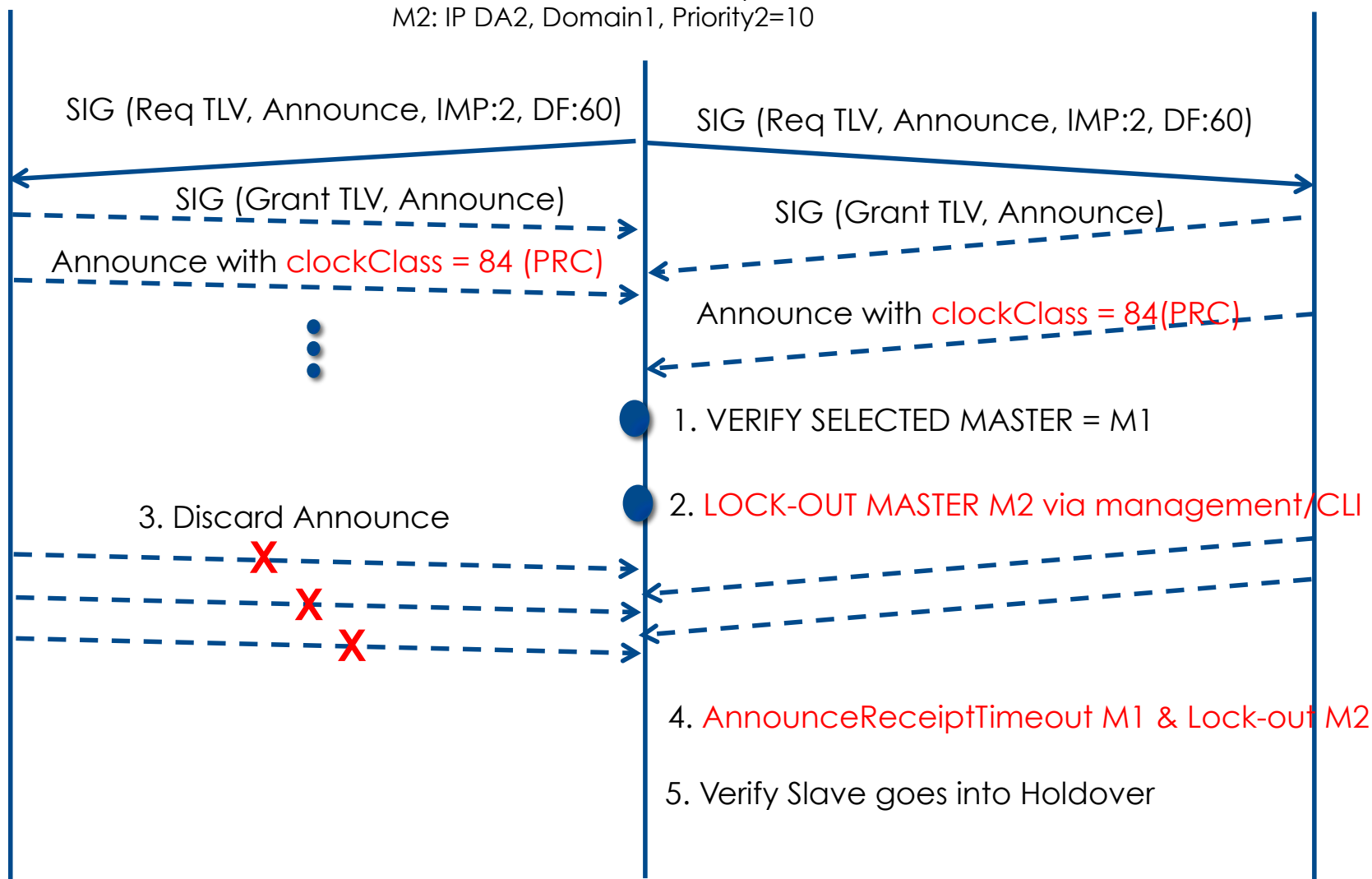
Lock-Out

Packet Master M1

Packet Slave

M1: IP DA1, Domain1, Priority1=1
M2: IP DA2, Domain1, Priority2=10

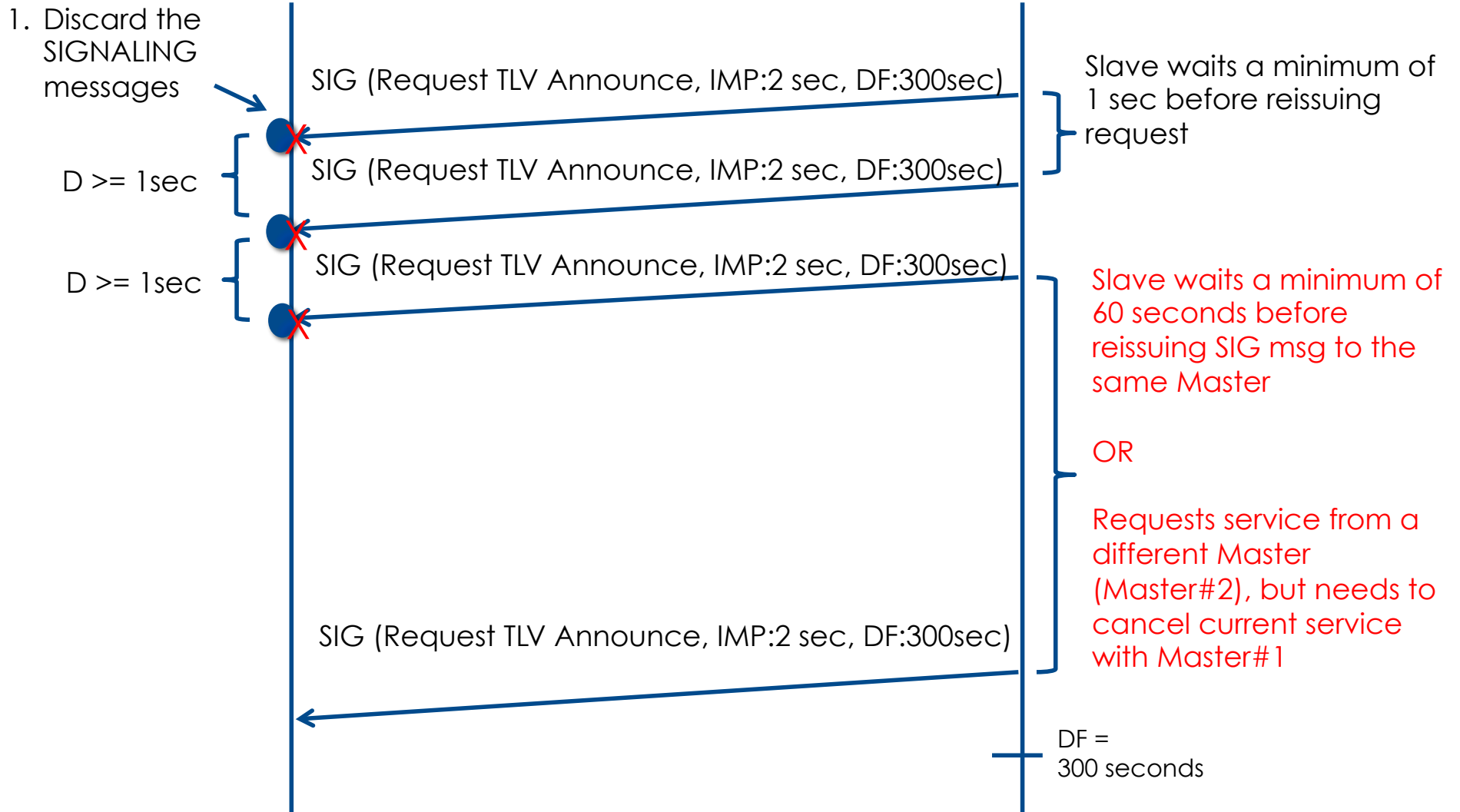
Packet Master M2



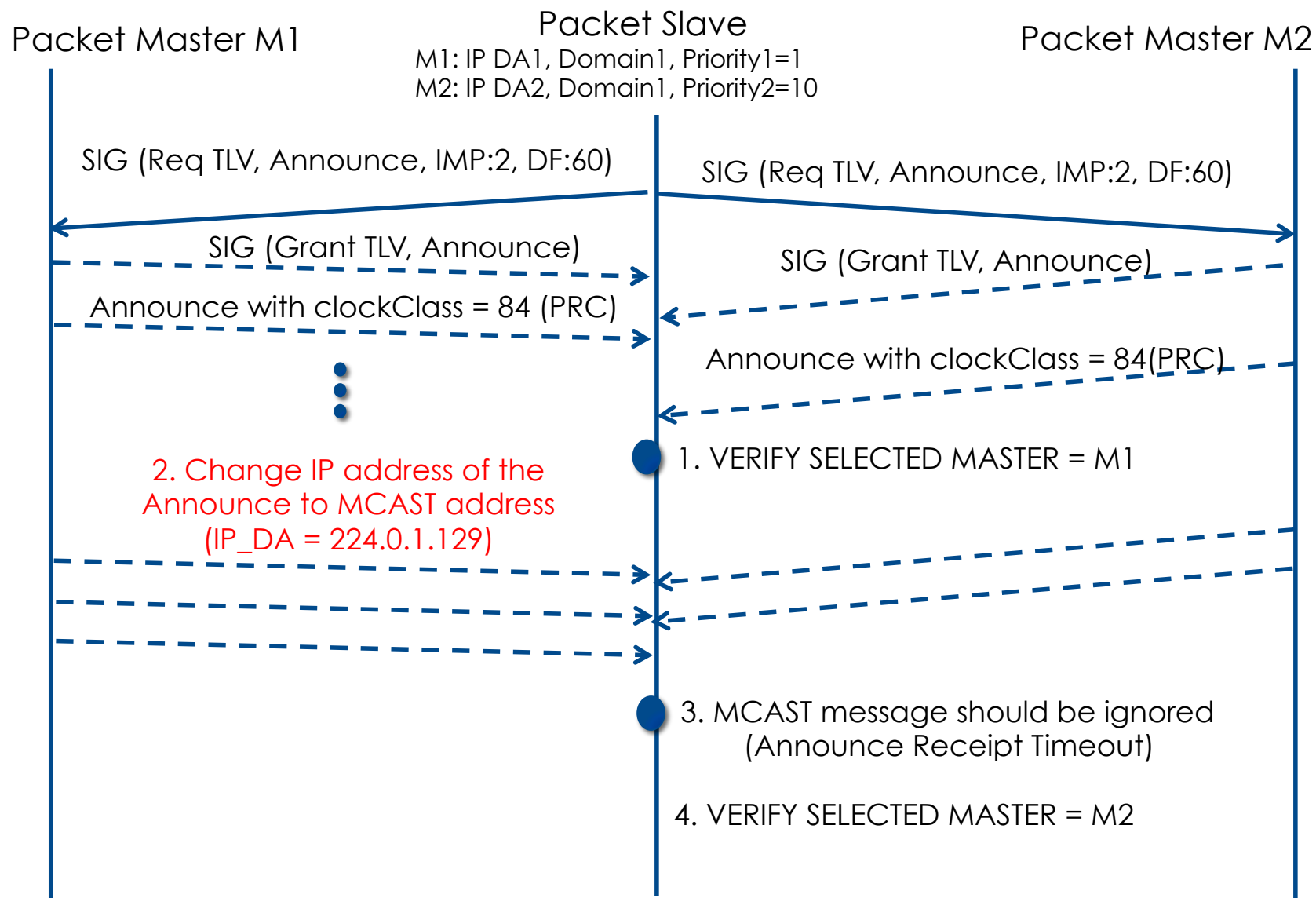
Denied Request for Announce

Packet Master

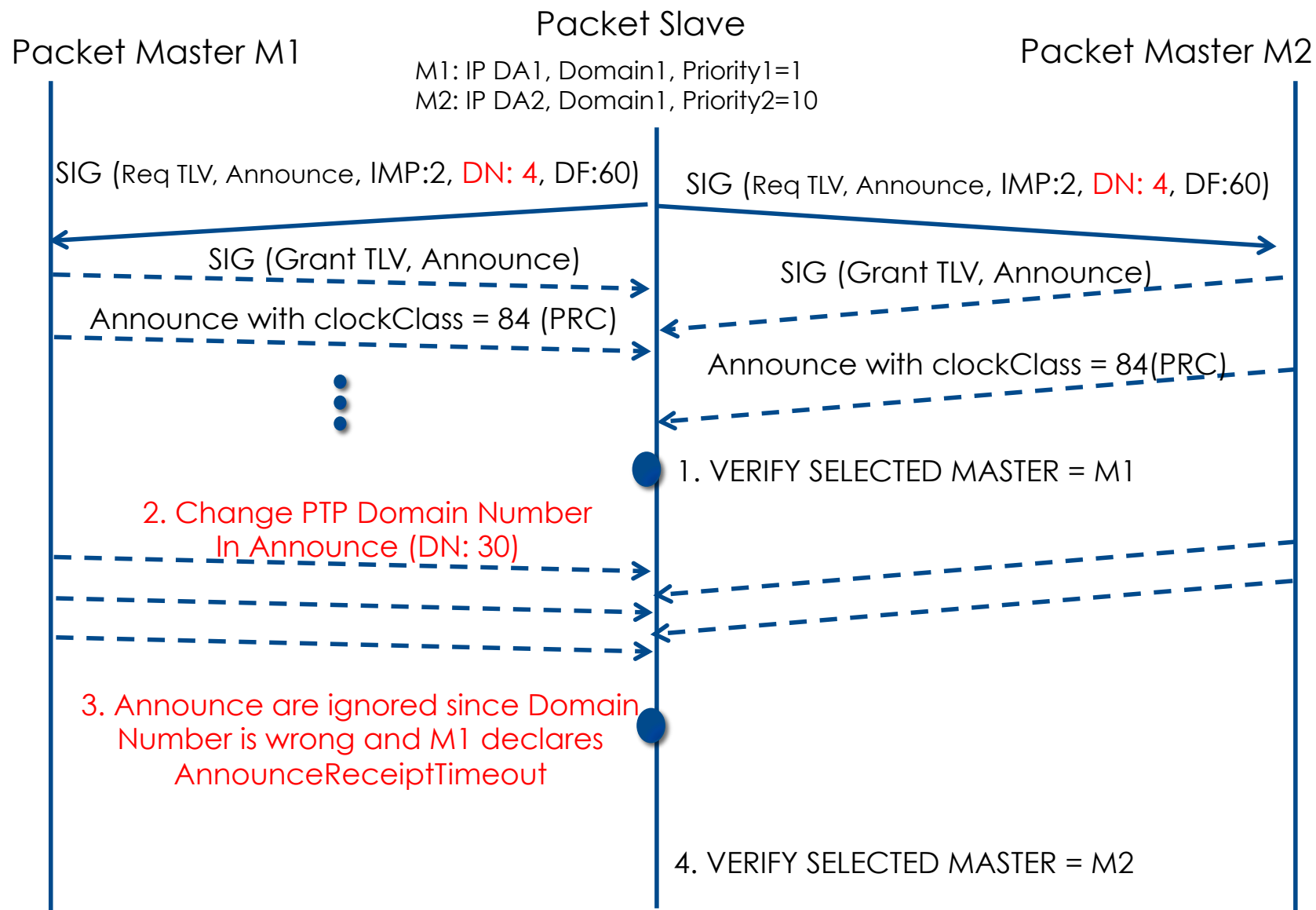
Packet Slave



Multicast Announce



Domain Number

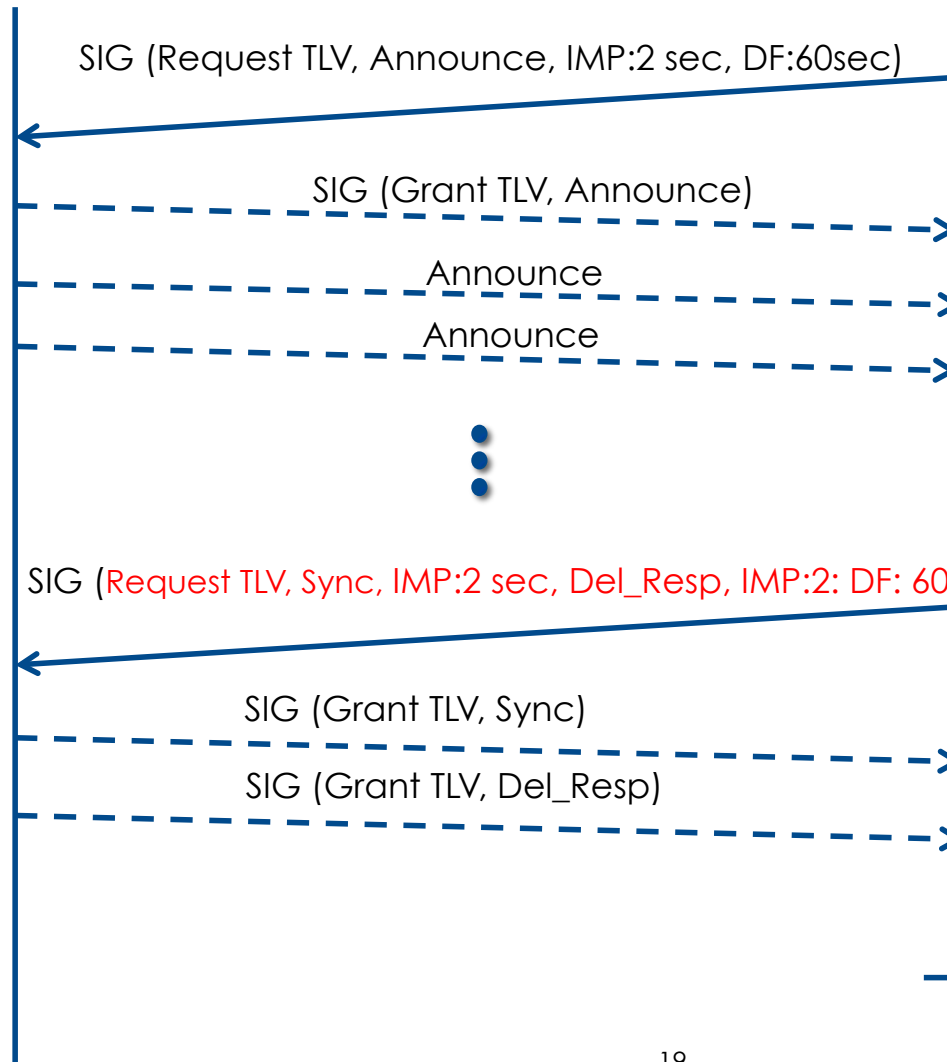


Multiple TLVs

Packet Master

Packet Slave

SIG: signaling msg
IMP: inter-msg period
DF: duration field

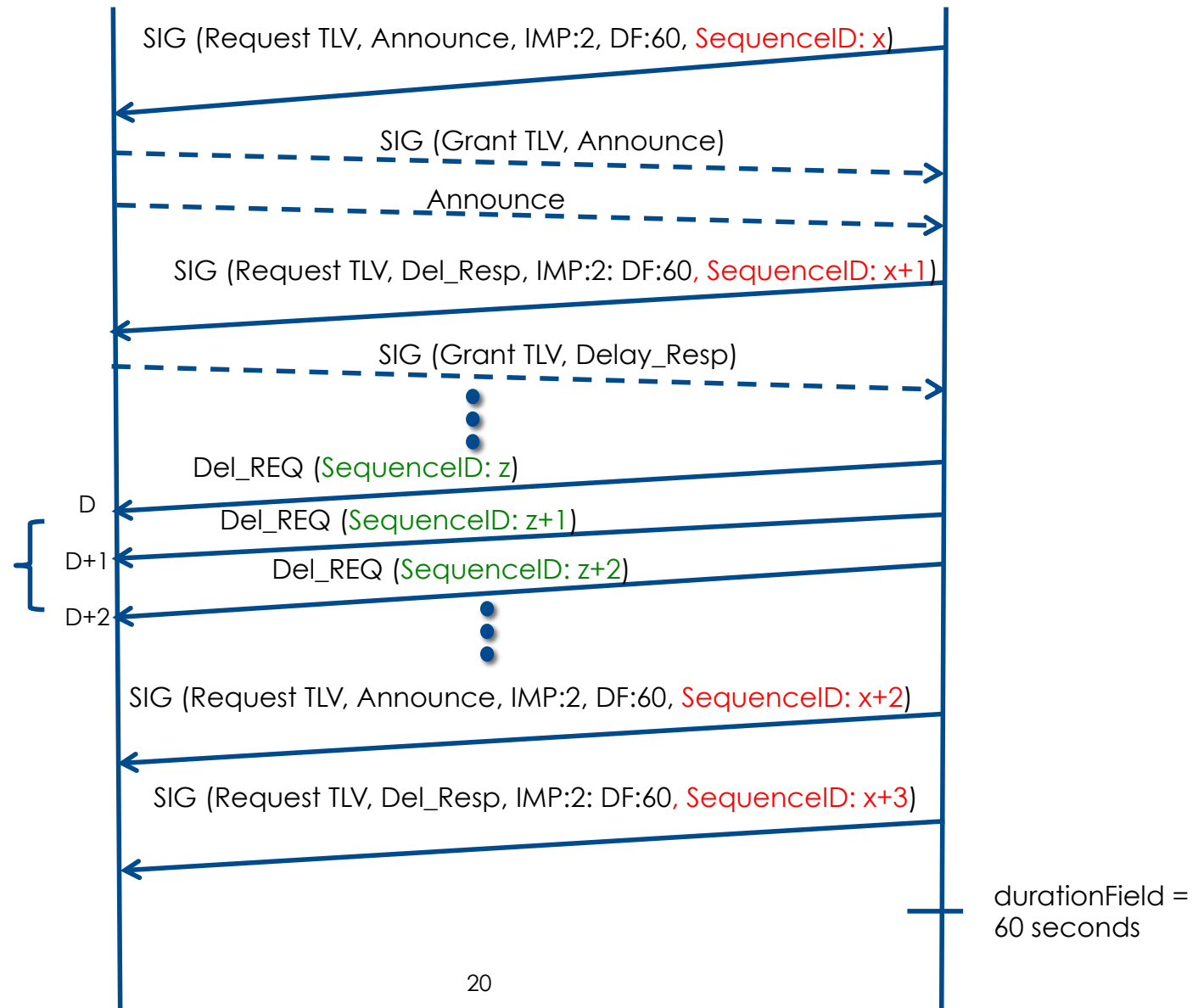


The 1st SIG msg after receiving the 1st Announce should contain all service types
1way: (Ann + Sync)
2way: (Ann + Sync + Del_Resp)

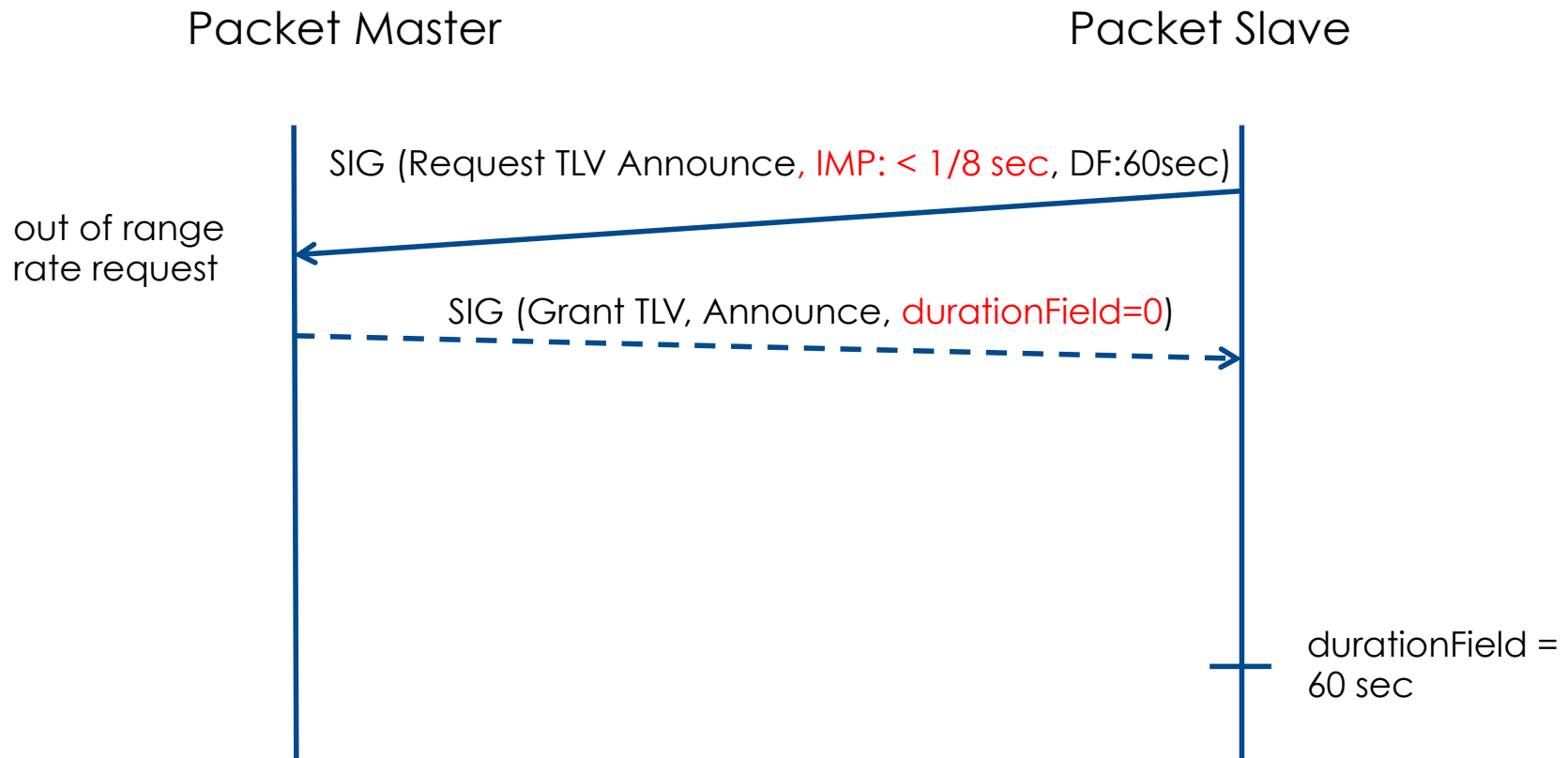
} Request Sync & Del_Resp

DF = 60 seconds (Announce)

Sequence ID



Invalid InterMessagePeriod



Conclusions

- Ladder diagrams are useful to represent the message exchange of a protocol eg., PTP
- Useful when specifying state machines, developing test cases, executing tests and decoding wireshark-type traces
- Applicable to PTP Unicast message negotiation (IEEE1588-2008 Clause 16.1)
- Applicable to the development of PTP profiles
 - eg., ITU-T G.8265.1 (frequency profile)
 - eg., ITU-T G.8275.2 (partial-time profile)