

**Draft
Specification
CAN Framing Protocol
Changes**

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1 Overview

Concerning the data transfer itself the framing protocol is left untouched. Only some mode specific handshaking is added and a new mode is introduced. Now there are three different modes for the framing protocol.

- streaming
- upload
- download

Streaming is clear and stays the same as before. But upload is modified and download is introduced. Upload mode is used for a point-to-multipoint communication from the producer's point of view. Download mode is used for a point-to-multipoint communication from a consumer's point of view. For point-to-point communication either mode can be used. In both modes it is the consumer who initiates a transmission by sending a request message to the producer.

2 Channels

There is one networkwide channel carrying communication requests and acknowledgements. For each point-to-multipoint scenario the system designer specifies one download or upload channel, depending on his needs. In each case the channel's semantic is bound to the node of the communication's single point, e.g. the producer for the upload mode. Finally there are the channels for the streaming scenarios as before.

3 Upload

There are one producer and multiple consumers. One node may not be the consumer of two upload communications at the same time. It is up to him to ensure this. But this is not a restriction as for the case that simultaneous reception of framing data is needed, one can specify a new download channel for this node.

3.1 Messages

This is the legend for the specification of the messages:

req etag of the request channel
dat etag of the data channel
cons consumer's short ID
prod producer's short ID

3.1.1 Request

Request Channel:

priority	node ID	etag	data				
0xFF	cons	req	1	dat	size	rate	select

flag the singel bit constant 1 indicates the message type
 dat addressing the server
 size the maximum frame size
 rate the maximum transfer rate
 select a selector for the case that the producer hosts multiple data sources

3.1.2 Acknowledge

Request Channel:

priority	node ID	etag	data		
0xFF	cons	req	0	dat	crc

flag the singel bit constant 0 indicates the message type
 dat addressing the server
 crc CRC check sum over the last frame's payload

3.1.3 Data

Data Channel:

priority	node ID	etag	data		
0xFF	cons	dat	framing data		

node ID notice that the semantic of this field is different for this message.
 It is not the sender's but the receiver's node ID.
 data data according to the fragmentation protocol.

3.2 Timeline

Producer ↔ Consumer	Description
← Request	the consumer initates the transission
Data →	the producer answers by immediatly starting to send the data
	the consumer resends the request if data times out
	from here on everything goes as described for the fragmentation protocol

4 Download

There are one consumer and multiple servers. This mode needs a handshake. Immage a consumer A already receiving data from a producer B over this channel. A third node C now requests for data transmission on the same channel. Without handshaking B cannot deny this request. B will continue to send data to A. C will receive this data ans assume this is the start of the requested transmission.

4.1 Messages

This is the legend for the specification of the messages:

req etag of the request channel
 dat etag of the data channel
 cons consumer's short ID
 prod producer's short ID

4.1.1 Request

Request Channel:

priority	node ID	etag	data					
0xFF	cons	req	1	dat	size	rate	select	prod

flag the singel bit constant 1 indicates the message type
dat channel information for the producer
size the maximum frame size
rate the maximum transfer rate
select a selector for the case that the producer hosts multiple data sources
prod addressing the producer

4.1.2 Acknowledge

Request Channel:

priority	node ID	etag	data				
0xFF	cons	req	0	dat	crc	prod	

flag the singel bit constant 0 indicates the message type
dat addressing the server
crc CRC check sum over the last frame's payload
prod addressing the producer

4.1.3 Response

Data Channel:

priority	node ID	etag	data	
0xFF	prod	dat	cons	resp

cons addressing the consumer
resp response is OK or DENY.

4.1.4 Data

Data Channel:

priority	node ID	etag	data	
0xFF	prod	dat	framing data	

data data according to the fragmentation protocol.

4.2 Timeline

Consumer ↔ Producer	Description
Request →	the consumer initiates the transmission
← Response	OK means, server is ready to send data DENY means, server is busy at the moment. Try again later If this message times out the consumer resends the request
Acknowledge →	Finish the three-way-handshaking
← Data	If this message times out, the producer resends his response The producer starts to send the data from here on everything goes as described for the fragmentation protocol