Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – EV Charge Programming v1

APIM Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.1
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FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
Octobre 10, 2017	**1.0**	**Initial Release**	
December 6, 2017	**1.1**	**Updated Release**	
	EVCS-ACT-REQ-250560/B-Creating a new Charge Profile through Offboard		Updated Diagram to Include Transport Protocol Message.
	EVCS-SD-REQ-250650/D-Creating a new Charge Profile through Client		fmunaser: Diagrams updated to include TCU as Pass-Through ECU to SDN and ECG.
	EVCS-SD-REQ-250649/D-Updating Charge Profile through Client		fmunaser: Diagrams updated to include TCU as Pass-Through ECU to SDN and ECG.
	EVCS-SD-REQ-250651/D-Delete Charge Profile through Client		fmunaser: Diagrams updated to include TCU as Pass-Through ECU to SDN and ECG.
	EVCS-SD-REQ-289533/B-Create Modify from Offboard		fmunaser: Diagrams updated to include TCU as Pass-Through ECU to SDN and ECG.
	EVCS-SD-REQ-289534/B-Delete Profile from Offboard		fmunaser: Diagrams updated to include TCU as Pass-Through ECU to SDN and ECG.

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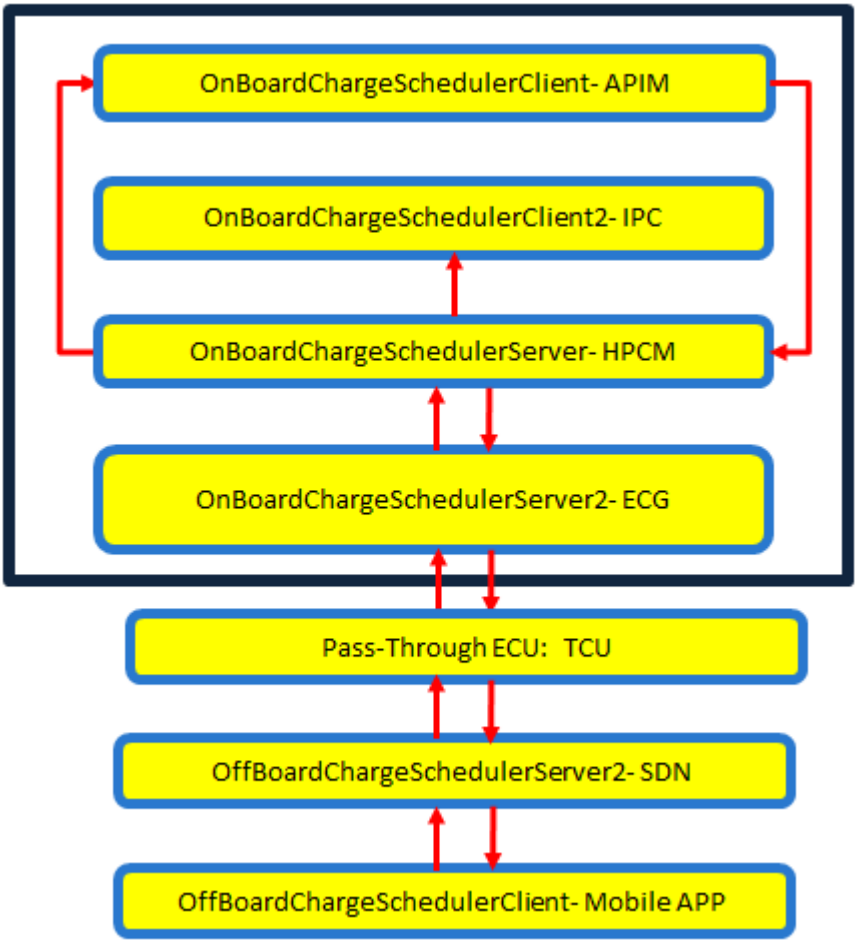
1 Architectural Design

1.1 Charge Programming System

1.1.1 CLD-REQ-284679/A-Internal Block Diagram



1.1.2 xEV Charge Programming Interface

1.1.2.1 EVCS-IIR-REQ-284709/A-Unsaved Charge Location

General Signal ID	NetCom Suggested Name	Description	States	Bits	Transmitter	Receiver	Data
Unsaved Charge Location ID	ChrgLocId_D_Uns	Unsaved Charge Location ID. This is a cycling (1-10) ID that will be used to coordinate GPS coordinates and saved information for an unsaved charge location.	0x0 = Null 0x1 = 1 0x2 = 2 0x3 = 3 0x4 = 4 0x5 = 5 0x6 = 6 0x7 = 7 0x8 = 8 0x9 = 9 0xA =10 0xB…0xF = N/A **Default:** 0x0 **Range Hex**:0x0-0xF **Valid Range Hex**: 0X0-0xA **Range Dec:** `0 – 15` **`Valid Range DEC:`** `0-10`	4	HPCM	APIM & ECG	ID
Unsaved Charge Location Latitude Degrees	ChrgLocLattDeg_An_Uns	GPS Degrees Latitude for an Unsaved Charge Location: Signal is coordinated with the Unsaved Charge Location ID signal to communicate GPS coordinates of an Unsaved Charge Location.	DEC 0-89 HEX 0x00 - 0x59 **Default:** 0xFF **Range Hex**:0x0-0x7F **Valid Range Hex**: 0x0-0x59 **Range Dec:** `0 – 127` **`Valid Range DEC:`** `0-89`	7	HPCM	APIM & ECG	GPS Coordinates Degrees
Unsaved Charge Location Latitude Degrees Sign	ChrgLocLattPostv_B_Uns	GPS Latitude Degree Sign for an Unsaved Charge Location: Signal is coordinated with the Unsaved Charge Location ID signal to communicate GPS coordinates of an Unsaved Charge Location.	0x0 = NO 0x1 = YES **Default:** 0x0 **Range Hex**:0x0-0x1 **Valid Range Hex**: 0x0-0x1 **Range Dec:** `0 – 1` **`Valid Range DEC:`** `0-1`	1	HPCM	APIM & ECG	Boolean
Unsaved Charge Location Latitude Degrees Fractional	ChrgLocLattFrct_An_Uns	GPS Degrees Decimal Latitude for an Unsaved Charge Location: Signal is coordinated with the Unsaved Charge Location ID signal to	**Default:** 0xFFFFF **Range Hex**:0x0-0xFFFFF **Valid Range Hex**: 0X0-0x0xF423F **Range Dec:** `0 –`	20	HPCM	APIM & ECG	GPS Coordinates Degrees

		communicate GPS coordinates of an Unsaved Charge Location.	1.048575 **Valid Range DEC:** 0 – 0.999999				
Unsaved Charge Location Longitude Degrees	ChrgLocLongDeg_An_Uns	GPS Degrees Longitude for an Unsaved Charge Location: Signal is coordinated with the Unsaved Charge Location ID signal to communicate GPS coordinates of an Unsaved Charge Location.	**Default:** 0xFF **Range Hex**:0x0-0xFF **Valid Range Hex**: 0x0-0xB3 **Range Dec:** 0-255 **Valid Range DEC:** 0-179	8	HPCM	APIM & ECG	GPS Coordinates Degrees
Unsaved Charge Location Latitude Degrees Sign	ChrgLocLongPostv_B_Uns	GPS Longitude Degree Sign for an Unsaved Charge Location: Signal is coordinated with the Unsaved Charge Location ID signal to communicate GPS coordinates of an Unsaved Charge Location.	0x0 = NO 0x1 = YES **Default:** 0x0 **Range Hex**:0x0-0x1 **Valid Range Hex**: 0x0-0x1 **Range Dec:** 0–1 **Valid Range DEC:** 0-1	1	HPCM	APIM & ECG	Boolean
Unsaved Charge Location Longitude Degrees Fractional Longitude Degrees Fractional	ChrgLocLongFrct_An_Uns	GPS Degrees Decimal Longitude for an Unsaved Charge Location: Signal is coordinated with the Unsaved Charge Location ID signal to communicate GPS coordinates of an Unsaved Charge Location.	**Default:** 0xFFFFF **Range Hex**:0x0-0xFFFFF **Valid Range Hex**: 0x0-0xF423F **Range Dec:** 0–1.048575 **Valid Range DEC:** 0-0.999999	20	HPCM	APIM & ECG	GPS Coordinates Degrees

1.1.2.2 EVCS-IIR-REQ-284718/A-Saved Charge Locations

Function	NetCom Suggested Name	Description	States	Bits	Transmitter	Receiver	Data
1.2 Saved Charge Location ID	ChrgLocId_D_Sav	Saved Charge Location ID. This is a cycling (1-10) ID that will be used to coordinate GPS coordinates, and user settings for saved charge locations.	0x0 = Null 0x1 = 1 0x2 = 2 0x3 = 3 0x4 = 4 0x5 = 5 0x6 = 6 0x7 = 7 0x8 = 8 0x9 = 9 0xA =10 0xB…0xF = N/A **Default:** 0x0 **Range Hex**:0x0-0xF **Valid Range Hex**: 0X0-0xA **Range Dec:** 0 – 15 **Valid Range DEC:** 0-10	4	HPCM	APIM & ECG	ID
Saved Charge Location Latitude Degrees	ChrgLocLattDeg_An_Sav	GPS Degrees Latitude for an Saved Charge Location: Signal is coordinated with the Saved Charge Location ID signal to communicate GPS coordinates of an Saved Charge Location.	**Default:** 0x59 **Range Hex**: 0x0-0x7F **Valid Range Hex**: 0X0-0x59 **Range Dec:** 0–127 **Valid Range DEC:** 0-89	7	HPCM	APIM & ECG	GPS Coordinates Degrees
Saved Charge Location Latitude Degrees Sign	ChrgLocLattPostv_B_Sav	GPS Latitude Degree Sign for an Saved Charge Location: Signal is coordinated with the Saved Charge Location ID signal to communicate GPS coordinates of an Saved Charge Location.	0x0 = NO 0x1 = YES **Default:** 0x0 **Range Hex**: 0x0-0x1 **Valid Range Hex**: 0x0-0x1 **Range Dec:** 0–1 **Valid Range DEC:** 0-1	1	HPCM	APIM & ECG	Boolean
Saved Charge Location Latitude Degrees Fractional	ChrgLocLattFrct_An_Sav	GPS Degrees Decimal Latitude for an Saved Charge Location: Signal is coordinated with the Saved Charge Location ID signal to communicate GPS coordinates of an Saved	**Default:** 0xFFFFF **Range Hex**: 0x0-0xFFFFF **Valid Range Hex**: 0x0-0xF423F **Range Dec:** 0–1.048575	20	HPCM	APIM & ECG	GPS Coordinates Degrees

		Charge Location.	**Valid Range DEC:** 0-0.999999 **Resolution:** 0.000001				
Saved Charge Location Longitude Degrees	ChrgLocLongDeg_An_Sav	GPS Degrees Longitude for an Saved Charge Location: Signal is coordinated with the Saved Charge Location ID signal to communicate GPS coordinates of an Saved Charge Location.	**Default:** 0xFF **Range Hex**: 0x0-0xFF **Valid Range Hex**: 0x0-0xB3 **Range Dec:** 0–255 **Valid Range DEC:** 0-179	8	HPCM	APIM & ECG	GPS Coordinates Degrees
Saved Charge Location Longitude Degrees Sign	ChrgLocLongPostv_B_Sav	GPS Longitude Degree Sign for an Saved Charge Location: Signal is coordinated with the Saved Charge Location ID signal to communicate GPS coordinates of an Saved Charge Location.	0x0 = NO 0x1 = YES **Default:** 0x0 **Range Hex**: 0x0-0x1 **Valid Range Hex**: 0x0-0x1 **Range Dec:** 0–1 **Valid Range DEC:** 0-1	1	HPCM	APIM & ECG	Boolean
Saved Charge Location Longitude Degrees Fractional	ChrgLocLongFrct_An_Sav	GPS Degrees Decimal Longitude for an Saved Charge Location: Signal is coordinated with the Saved Charge Location ID signal to communicate GPS coordinates of an Saved Charge Location.	**Default:** 0xFFFFF **Range Hex**: 0x0-0xFFFFF **Valid Range Hex**: 0x0-0xF423F **Range Dec:** 0–1.048575 **Valid Range DEC:** 0-0.999999 **Resolution:** 0.000001	20	HPCM	APIM & ECG	GPS Coordinates Degrees

1.2.1.1 EVCS-IIR-REQ-284732/A-Saved Charge Locations Setting

Function	NetCom Suggested Name	Description	States	Bits	Transmitter	Receiver	Data
Saved Charge Location Settings	ChrgToPcWkndSav_D_Stat	Customer selected Charge to Percent Weekend value stored for the saved charge location coordinated by the Saved Charge Location Programmed Settings ID signal.	0x0 = 100 0x1 = 95 0x2 = 90 0x3 = 85 0x4 = 80 0x5 = 70 0x6 = 60 0x7 = 50	3	HPCM	APIM & ECG	Percent
Saved Charge Location Settings	ChrgToPcWkdySav_D_Stat	Customer selected Charge to Percent Weekday value stored for the saved charge location coordinated by the Saved Charge Location Programmed Settings ID signal.	0x0 = 100 0x1 = 95 0x2 = 90 0x3 = 85 0x4 = 80 0x5 = 70 0x6 = 60 0x7 = 50	3	HPCM	APIM & ECG	Percent
Saved Charge Location Settings	ChrgProgIdSaved_D_Stat	Saved Charge Location Programmed Settings ID	0x0 = Null 0x1 = 1 0x2 = 2 0x3 = 3 0x4 = 4 0x5 = 5 0x6 = 6 0x7 = 7 0x8 = 8 0x9 = 9 0xA =10 0xB…0xF = N/A	4	HPCM	APIM & ECG	ID
Saved Charge Location Settings	ChrgPrflWkdy_No_Stat	The master Value Charge profile for weekdays at a Saved Charge Location. Signal is coordinated with the Saved Charge Location ID signal to communicate charge profiles for multiple locations.	0 = Charge 1 = Value Charge Bit 1 == 00:00 Bit 2 == 01:00 . . . Bit 24 == 23:00	24	HPCM	APIM & ECG	Charge/Value Charge Bits (24 hours)

Saved Charge Location Settings	ChrgPrflWknd_No_Stat	The master Value Charge profile for weekends at a Saved Charge Location. Signal is coordinated with the Saved Charge Location ID signal to communicate charge profiles for multiple locations	0 = Charge 1 = Value Charge Bit 1 == 00:00 Bit 2 == 01:00 . . . Bit 24 == 23:00	24	HPCM	APIM & ECG	Charge/Value Charge Bits (24 hours)
Saved Charge Locations Settings	ChrgNowEnbl_B_Saved	Charge Now status stored for the saved charge location coordinated by the Saved Charge Location Programmed Settings ID signal.	0x0 = Charge Now OFF 0x1 = Charge Now ON	1	HPCM	APIM & ECG	Boolean
Saved Charge Locations Settings	ChrgLocIdUnsAck_B_Stat	Acknowledge flag for a unsaved charge location being set to move to a saved charge location	0x0 = No 0x1 = Yes	1	HPCM	APIM & ECG	Boolean

1.2.1.2 EVCS-IIR-REQ-284741/A-Current Charge Location

Function	NetCom Suggested Name	Description	States	Bits	Transmitter	Receiver	Data
Current Charge Location	ChrgLocIdCurnt_D_Sav	Current Saved Charge Location ID	0x0=Null 0x1 = 1 0x2 = 2 0x3 = 3 0x4 = 4 0x5 = 5 0x6 = 6 0x7 = 7 0x8 = 8 0x9 = 9 0xA = 10 0xB…0xF = N/A	4	HPCM	APIM & ECG	ID

1.2.1.3 EVCS-IIR-REQ-284743/A-APIM Saving of Charge Locations

Function	NetCom Suggested Name	Description	States	Bits	Trans mitter	Receiver	Data
APIM Saving of Charge Locations	OnbChrgPrflUpdate_B_Rq	Update Flag used to signal the changing of a Saved Charge Location	0x0 = No Request 0x1 = Request	1	APIM	HPCM, ECG	Boolean
APIM Saving of Charge Locations	OnbChrgLocIdUns_B_Rq	Signal to indicate that a Unsaved Charge Location (Unsaved Charge Location ID) will be used to create a new Saved Charge Location. Signal will syncronize with Unsaved Charge Location Acknowledge signal.	0x0 = No Request 0x1 = Request	1	APIM	HPCM	Boolean
APIM Saving of Charge Locations	OnbChrgLocIdTrgt_No_Rq	Signal to indicate which Charge Location will be modified. Unsaved or Saved will be indicated by the Unsaved Charge Location Request Signal	0x0=Null 0x1 = 1 0x2 = 2 0x3 = 3 0x4 = 4 0x5 = 5 0x6 = 6 0x7 = 7 0x8 = 8 0x9 = 9 0xA = 10 0xB…0xF = N/A	4	APIM	HPCM	ID
APIM Saving of Charge Locations	OnbChrgPrflWkdy_No_Rq	Weekday Value Charge profile programing values for creation or modification of a Saved Charge location from vehicle-based user interface.	0 = Charge 1 = Value Charge Bit 1 == 00:00 Bit 2 == 01:00 . . . Bit 24 == 23:00	24	APIM	HPCM	Charge/Value Charge Bits (24 hours)

APIM Saving of Charge Locations	OnbChrgPrflWknd_No_Rq	Weekend Value Charge profile programing values for creation or modification of a Saved Charge location from vehicle-based user interface.	0 = Charge 1 = Value Charge Bit 1 == 00:00 Bit 2 == 01:00 . . . Bit 24 == 23:00	24	APIM	HPCM	Charge/Value Charge Bits (24 hours)
APIM Saving of Charge Locations	OnbChrgSetDelete_B_Rq	Signal used to delete a Saved Charge Profile or Departure Time. Signal will coordinate with the Onboard Saved Update signal to identify whether a Saved Charge Location is to be deleted or a Departure Time. Signal will flag the deletion of the Saved Charge Location that is communicated by the Onboard Target Saved Charge Location ID signal and will flag the deletion of the Departure Time communicated by the Onboard Departure Time Element signal	0x0 = No Request 0x1 = Request	1	APIM	HPCM	Delimited
APIM Saving of Charge Locations	OnbChrgSetNow_D_Rq	Signal used to request a change in the Charge Now / Value Charge setting for the current saved Charge Location.	0x0 = Null 0x1 = Charge Now Off 0x2 = Charge Now On 0x3 = N/A	2	APIM	HPCM	Delimited

APIM Saving of Charge Locations	OnbChrgToPcWkdy_D_Actl	Charge to Percent Weekday value to be stored in the Saved Charge Location ID designated by the Target Save Charge Location ID signal.	0x0 = 100 0x1 = 95 0x2 = 90 0x3 = 85 0x4 = 80 0x5 = 70 0x6 = 60 0x7 = 50	3	APIM	HPCM	Delimited
APIM Saving of Charge Locations	OnbChrgToPcWknd_D_Actl	Customer selected Charge to Percent Weekend value to be stored in the Saved Charge Location ID designated by the Target Save Charge Location ID signal.	0x0 = 100 0x1 = 95 0x2 = 90 0x3 = 85 0x4 = 80 0x5 = 70 0x6 = 60 0x7 = 50	3	APIM	HPCM	Delimited

1.2.1.4 EVCS-IIR-REQ-284831/A-Departure Times

Function	NetCom Suggested Name	Description	States	Bits	Transmitter	Receiver	Data
Departure Times	ChrgGoTElement_D_Stat	Departure Time Element. This is a cycling (1-14) ID that will be used to coordinate Departure Times and associated cabin conditioning.	0x0 = Null 0x1 = 1 0x2 = 2 0x3 = 3 0x4 = 4 0x5 = 5 0x6 = 6 0x7 = 7 0x8 = 8 0x9 = 9 0xA =10 0xB = 11 0xC = 12 0xD = 13 0xE = 14 0xF = N/A	4	HPCM	APIM & ECG	ID
Departure Times	ChrgGoTHr_T_Stat	Departure Time Hour signal (24h format) used to designate the hour at which the Departure Time associated to the Departure Time Element ID signal is to be achieved.	0-23hour	5	HPCM	APIM & ECG	Hour (0-23)

Departure Times	ChrgGoTMnte_D_Stat	Departure Time Minute signal (5 Minute increments) used to designate the minute at which the Departure Time associated to the Departure Time Element ID signal is to be achieved.	0x0=0 0x1=5 0x2=10 0x3=15 0x4=20 0x5=25 0x6=30 0x7=35 0x8=40 0x9=45 0xA=50 0xB=55 0xC=NA … 0xF=NA	4	HPCM	APIM & ECG	Minutes (x15)
Departure Times	ChrgGoTPrcond_D_Stat	Preconditioning selected for the Departure Time coordinated by the Departure Time Element ID signal.	0x0 = Off 0x1 = Low 0x2 = Med 0x3 = High	2	HPCM	APIM & ECG	Delimited
Departure Times	ChrgGoTAllOn_B_Stat	All Departure Times ON or OFF	0x0 = Departure Times Off 0x1 = Departure Times On	1	HPCM	APIM & ECG	Boolean
Departure Times	ChrgGoTNext_D_Stat	ID of the next upcoming Departure Time which is coordinated by the Departure Time Element ID signal.	0x0 = Null 0x1 = 1 0x2 = 2 0x3 = 3 0x4 = 4 0x5 = 5 0x6 = 6 0x7 = 7 0x8 = 8 0x9 = 9 0xA =10 0xB = 11 0xC = 12 0xD = 13 0xE = 14 0xF = N/A	4	HPCM	APIM & ECG	ID

1.2.1.5 EVCS-IIR-REQ-284806/A-APIM Saving of Departure Times

Function	NetCom Suggested Name	Description	States	Bits	Transmitter	Receiver	Data
APIM Saving of Departure Times	OnbChrgGoTElement_D_Rq	Onboard Departure Time Element. This is a cycling (1-14) ID that will be used to update the information stored in a Departure Time Element (coordinated by the Departure Time Element ID signal) when the Departure Time Update Flag is set.	0x0 = Null 0x1 = 1 0x2 = 2 0x3 = 3 0x4 = 4 0x5 = 5 0x6 = 6 0x7 = 7 0x8 = 8 0x9 = 9 0xA =10 0xB = 11 0xC = 12 0xD = 13 0xE = 14 0xF = N/A	4	APIM	HPCM	ID
APIM Saving of Departure Times	OnbChrgGoTUpdate_B_Rq	Update flag used to signal that the APIM is requesting a change to a Departure Time	0x0 = No Request 0x1 = Request	1	APIM	HPCM, ECU	Boolean
APIM Saving of Departure Times	OnbChrgGoTHr_T_Rq	Onboard Departure Time Hour signal (24h format) used to designate the hour at which the Departure Time referenced by the Onboard Departure Time Element signal is to be achieved.	0-23hour	5	APIM	HPCM	Hour (0-23)
APIM Saving of Departure Times	OnbChrgGoTMnte_D_Rq	Onboard Departure Time Minute signal (5 Minute increments) used to designate the minute at which the Departure Time referenced by the Onboard Departure Time Element signal is to be achieved.	0x0=0 0x1=5 0x2=10 0x3=15 0x4=20 0x5=25 0x6=30 0x7=35 0x8=40 0x9=45 0xA=50 0xB=55 0xC=NA … 0xF=NA	4	APIM	HPCM	Minutes (x5)

APIM Saving of Departure Times	OnbChrgGoTOn_D_Rq	Signal used to request Global Departure Times ON or OFF	0x0 = Null 0x1 = Departure Times Off 0x2 = Got Times On 0x3 = N/A	2	APIM	HPCM	Delimited
APIM Saving of Departure Times	OnbChrgGoTPrcond_D_Rq	Preconditioning selected for the Departure Time referenced by the Onboard Departure Time Element.	0x0 = Off 0x1 = Low 0x2 = Med 0x3 = High	2	APIM	HPCM	Delimited
APIM Saving of Departure Times	OnbChrgGoTDelete_B_Rq	Flag used to request the deletion of a Departure Time	0x0 = No Request 0x1 = Request	1	APIM	HPCM	Boolean
APIM Saving of Departure Times	OnbChrgClearAll_B_Rq	Flag used to clear all charge settings (this is used in conjustion with a factory reset)	0x0 = No Request 0x1 = Request	1	APIM	HPCM	Boolean

1.2.1.6 EVCS-IIR-REQ-284744/A-Factory Reset

Function	NetCom Suggested Name	Description	States	Bits	Transmitter	Receiver	Data
Factory Reset Request	FactoryReset_Rq	Represents a request to reset the factory default settings. If the user selects factory reset, this signal is used to communicate with OnBoardChargeSchedulerServer.	0x0= Inactive 0x1= ResetFactoryDefaults	1	APIM	ECG	Boolean
Factory Reset Status	FactoryReset_St	Status to acknowledge reset of factory default settings.	0x0 = Null 0x1 = FactoryDefaultsRestored	0x10 0x1	ECG	APIM & GWM	Boolean

1.2.1.7 EVCS-IIR-REQ-284749/A-ChargeNowDuration

Function	NetCom Suggested Name	Description	States	Bits	Transmitter	Receiver	Data
Charge Now Duration	ChargeNowDuration_St	Represents the status of the estimated time (hours) to full charge when the Charge Profile Preference is set to "Charge Now". This signal is used by OnBoardChargeSchedulerServer to communicate charge duration with OnBoardChargeSchedulerServer2 and OnBoardChargeSchedulerClient. Values are in hours with a resolution to 0.1 hours.	0x0= 0 0x1= 0.1 0x2= 0.2 … 0xEF= 23.9 0xF0= 24 0xF1= Reserved … 0xFE= Reserved 0xFF= Invalid	8	HPCM	APIM & ECG	hours

1.2.1.8 EVCS-IIR-REQ-284760/A-ChrgStat_D_Dsply

Message Type: Status
APIM, ECG and IPC
This signal will indicate whether there is an issue with charging or the status of the charge.

Name	Literals	Value	Description
Type	-	-	Signal tells the status of the charging and if there are any faults.
	NotReady	0x0	
	FaultUnknownLocation	0x1	
	FaultInsideCar	0x2	
	FaultOutsideCar	0x3	
	InProgress	0x4	
	Scheduled	0x5	
	Complete	0x6	
	Fast Charging	0x7	

1.2.1.9 EVCS-IIR-REQ-284768/A-BattTracSoc_Pc_Dsply

Message Type: Status
Receivers: APIM, ECG

Represents the Plug Status.
Indicates if vehicle is plugged in or not.

Name	Literals	Value	Description
Type	-	-	Indicates if vehicle is plugged in or not.
	OffPlug	0x0	
	OnPlug	0x1	

1.2.1.10 EVCS-IIR-REQ-284772/A-(PlgActvArb_B_Actl) & (PlgActvArb_B_Dsply)

Message Type: Request
Receivers: APIM, ECG

Represents a request to notify the user that a Charge Conflict exists.
This signal is used to communicate with OnBoardChargeSchedulerServer2

Name	Literals	Value	Description
Type	-	-	Charge conflict notification request
	Invalid	0x0	
	No_Conflict	0x1	
	Conflict_Exists	0x2	

1.2.1.11 EVCS-IIR-REQ-284833/A-ConflictNotification_Rq(NtfctnConflict1_D_Rq)

1.2.1.12 EVCS-IIR-REQ-284834/A-Offboard Information

Function	NetCom Suggested Name	Description	States	Bits	Trans mitter	Receiver	Data
	TelematicsSrvc_D_Stat	Signal that tells the HPCM that there is a connected mobile account to the vehicle			ECG	HPCM & APIM	

1.2.1.13 EVCS-IIR-REQ-284835/A-ECG Saving of Charge Locations

1.2.1.14 EVCS-IIR-REQ-284836/A-ECG Saving of Departure Times

Function	NetCom Suggested Name	Description	States	Bits	Trans mitter	Receiver	Data
ECG Saving of Departure Times	OfbChrgGoTElement_D_Rq	Onboard DepartureTime Element. This is a cycling (1-14) ID that will be used to update the information stored in a DepartureTime Element (coordinated by the DepartureTime Element ID signal) when the DepartureTime Update Flag is set.	0x0= 0 0x1= 1 0x2= 2 0x3= 3 0x4= 4 0x5= 5 0x6= 6 0x7= 7 0x8= 8 0x9= 9 0xA= 10 0xB= 11 0xC= 12 0xD= 13 0xE= 14 0xF= NA	4	ECG	HPCM	ID

ECG Saving of Departure Times	OfbChrgGoTUpdate_B_Rq	Update flag used to signal that the APIM is requesting a change to a DepartureTime	0x0 = No Request 0x1 = Request	1	ECG	HPCM	Boolean
ECG Saving of Departure Times	OfbChrgGoTHr_T_Rq	Onboard DepartureTime Hour signal (24h format) used to designate the hour at which the DepartureTime referenced by the Onboard DepartureTime Element signal is to be achieved	0x0= 0 0x1= 5 0x2= 10 0x3= 15 0x4= 20 0x5= 25 0x6= 30 0x7= 35 0x8= 40 0x9= 45 0xA= 50 0xB= 55 0xC= NA 0xD= NA	5	ECG	HPCM	Hour
ECG Saving of Departure Times	OfbChrgGoTMnte_D_Rq	Onboard DepartureTime Minute signal (5 Minute increments) used to designate the minute at which the DepartureTime referenced by the Onboard DepartureTime Element signal is to be achieved.	0x0= 0 0x1= 5 0x2= 10 0x3= 15 0x4= 20 0x5= 25 0x6= 30 0x7= 35 0x8= 40 0x9= 45 0xA= 50 0xB= 55 0xC= NA 0xD= NA 0xE= NA 0xF= NA	4	ECG	HPCM	minutes
ECG Saving of Departure Times	OfbChrgGoTOn_D_Rq	Signal used to request Global DepartureTimes ON or OFF	0x0= Null 0x1= DepartureTimes OFF 0x2= DepartureTimes ON 0x3= NA	2	ECG	HPCM	Delimited
ECG Saving of Departure Times	OfbChrgGoTPrcond_D_Rq	Preconditioning selected for the DepartureTime referenced by the Onboard DepartureTime Element.	0x0= OFF 0x1= LOW 0x2= MED 0x3= HIGH	2	ECG	HPCM	ID

ECG Saving of Departure Times	OfbChrgGoTExtHtr_D_Rq	Customer selection to use Remote Start settings for External heating elements (Windshield, Defroster, Mirror …) for the DepartureTime coordinated by the DepartureTime Element ID signal.	0x0= Null 0x1= OFF 0x2= ON 0x3= NA	2	ECG	HPCM	Delimited
ECG Saving of Departure Times	OfbChrgGoTTouch_D_Rq	Customer selection to use Remote Start settings for Internal Touch Points (Heated/Cooled Seats, Heated Steering Wheel, …) for the DepartureTime coordinated by the DepartureTime Element ID signal.	0x0= Null 0x1= OFF 0x2= ON 0x3= NA	2	ECG	HPCM	Delimited
ECG Saving of Departure Times	OfbChrgGoTDelete_B_Rq	Flag used to request the deletion of a DepartureTime	0x0= No Request 0x1= Request	1	ECG	HPCM	Boolean
ECG Saving of Departure Times	OfbChrgClearAll_B_Rq	Flag used to clear all charge settings (this is used in conjunction with a factory reset)	0x0= No Request 0x1= Request	1	ECG	HPCM	Boolean

1.2.1.15 TP Protocol

1.2.1.15.1 EVCS-IIR-REQ-284970/A-TP Protocol Message ECG->APIM

The ECG – APIM channel is representing the channel connecting "ECG" features and "APIM" features.

Channel

CAN ID	Msg Name	TP Index
0x4A0	APIM_TCU_Word _Rx	20

Transmitter: ECG
Receiver: APIM

Logical Signals

Signal ID	Signal Name	Utilization
0x81	CabinComfortPreferenceList_Rsp	Charge Programming
0x83	ChargeProfileList_Rsp	Charge Programming
0x85	ChargeSchedule_Rsp	Charge Programming
0x87	TelServESN_St	Charge Programming
0x88	TelServUserID_St	Charge Programming
0x90	EmergencyCallText_St	Embedded Modem
0x95	WifiInfo_Rsp	Embedded Modem
0x96	CarrierInfo_Rsp	Embedded Modem
0x97	DataUsage_Rsp	Embedded Modem
0x98	DeviceList_Rsp	Embedded Modem
0x9B	WifiHotspotMAC_Rsp	Embedded Modem
0xB6	ChargeProfileLocation_Rq	Charge Programming

0xBE	LHI_SpeedProfileTableUpdate_Rsp	MobileCom_Service3

Max Data size: up to 134/69 (Coding Table I / Coding Table II) bytes

Byte 0: Signal identifier

0XB6: ChargeProfileLocation_Rq

Byte 1: Utilization

0x81: Charge_Programming_Sevice1 – Charge Programming

Byte 2: Command Execution Status

0x00: INVALID/INACTIVE

Byte 3: Character Coding

Bit 0-5: Reserved

Bit 6-7: Coding

0x0: Coding Table I
0x0000-0xFFFF UNICODE UTF-16 (2 byte per char)
0x1: Coding Table II
0x00-0xFF Latin-9 (1 byte per char)

Byte 4: OpCode

0x00: Reserved
0x01: Read
0x02: Modify
0x03: SyncPass
0x04: SyncFail
0x05: Update
0x06: Reserved
…...
0xFE: Reserved
0xFF: No Entry

Byte 5: NumberOfItems

0x00: Reserved
0x01: 1
0x02: 2
....
0xFE: 254
0xFF: No Entry

Note: The Maximum number of charge locations that can be returned is limited to 10

Byte 6 up to 457/247 (Coding Table I/Coding Table II): List Info

Array(1..NumberOfItems) of record (ItemIndex, ChargeLocationIDNumber, ChargeLocationName)

Record definition (up to 450/240 (Coding Table I/Coding Table II) bytes):

Byte 0: ItemIndex

0x00: Reserved
0x01: Index1
...
0xFF: Index255

Byte 1: ChargeProfileIDNumber:

0x00: Unknown/Any Location
0x01: Location 1
0x02: Location 2

…
0x09: Location 9
0x0A: Reserved
...
0xFF: Reserved

Byte 3 up to Byte 44/23 (Coding Table I/Coding Table II)

ChargeLocationName
Max. 20 characters plus 1 End Of String

1.2.1.15.2 EVCS-IIR-REQ-284973/A-TP Protocol Message APIM->ECG

The APIM – ECG channel is representing the channel connecting "ECG" features and "APIM" features.

Channel		
CAN ID	**Msg Name**	**TP Index**
0x4A8	APIM_TCU_Word_Tx	20

Transmitter: APIM
Receiver: ECG

Logical Signals

Signal ID	Signal Name	Utilization
0x82	ChargeProfileList_Rq	Charge Programming
0x84	ChargeSchedule_Rq	Charge Programming
0x86	SyncSoftwareVersion_Rsp	Charge Programming
0x94	WifiInfo_Rq	Embedded Modem
0xA3	MapVersionNumber_St	Nav_Service2 - Navigation
0Xb8	ChargeProfileLocation_Rsp	ChargeProgramming
0xBD	LHI_SpeedProfileTableUpdate_Rq	MobileCom_Service3

2 General Requirements

Legend Key: Please review key below which lists the ECUs and their associated technical names in this SPSS.

ECU Name in SPSS	ECU Name
Pass-Through ECU	TCU
OnBoardChargeSchedulerServer2	ECG
OnBoardChargeSchedulerServer	SOBDMC (HPCM, ISC)
OnBoardChargeSchedulerClient	SYNC (APIM)
OnBoardChargeSchedulerClient2	IPC (Cluster)
OffBoardChargeSchedulerServer2	SDN
OffBoardChargeSchedulerClient	Mobile App

2.1 EVCS-FUR-REQ-250419/B-Unsaved Charge Location Information

OnBoardChargeSchedulerServer (HPCM) shall store the GPS coordinates for 10 Unsaved Charge Locations.
OnBoardChargeSchedulerServer (HPCM) shall store an Unsaved Charge Location ID number for each set of Unsaved Charge Location GPS coordinates.

2.2 EVCS-FUR-REQ-252089/B-Saved Charge Location Information

OnBoardChargeSchedulerServer (HPCM) shall store the GPS coordinates for 10 Saved Charge Locations.
OnBoardChargeSchedulerServer (HPCM) shall store a Saved Charge Location ID number for each set of Saved Charge Location GPS coordinates

2.3 EVCS-FUR-REQ-259094/B-Saved Charge Location Settings Information

OnBoardChargeSchedulerServer (HPCM) shall store Charge Settings for each Saved Charge Location. Stored Charge Settings shall consist of the following information:

- Saved Charge Location Settings ID
- Value Charge / Charge Now
- Weekday Value Charge Profile
- Weekend Value Charge Profile
- Weekday Charge to Percent
- Weekend Charge to Percent

2.4 EVCS-FUR-REQ-259095/B-Saved Charge Location Settings ID

OnBoardChargeSchedulerServer (HPCM) shall store 10 Saved Charge Location Settings IDs to coordinate the Saved Charge Location Settings. Each Saved Charge Location shall be assigned a unique Saved Charge Location Settings ID

2.5 EVCS-FUR-REQ-259096/B-Value Charge / Charge Now Setting Information

OnBoardChargeSchedulerServer (HPCM) shall store a Charge Now setting for each Saved Charge Location. The Charge Now setting communicates whether or not the vehicle will charge immediately when plugged in at the Saved Charge Location or if the vehicle will schedule charging based on the Saved Charge Profile.

2.6 EVCS-FUR-REQ-259097/B-Value Charge Profiles

OnBoardChargeSchedulerServer (HPCM) shall store a Value Charge Profile for Weekdays and Weekends for each Saved Charge Location. The Value Charge Profile is a set of times that the user would prefer to have the vehicle charge.

Note:
The Value Charge Profile has a specific decoding when communicating the Value Charge Profile. The signal is 24-bits with the state each bit representing a High-Cost (1) Charge Time or a Low-Cost (0) Charge Time.

The bits themselves represent the hour of the day (based on a 24-hour clock). Therefore:

- *Bit 00 – 00h – 12:00 am*
- *Bit 01 – 01h – 01:00 am*
- *…*
- *Bit 12 – 12h – 12:00 pm*
- *…*
- *Bit 23 – 23h – 11:00 pm*

Example:

Profile	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1*	*1*	*0*	*0*	*0*	*0*
Bits	*00*	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*	*09*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*

Charge Window 1 – Low Cost - 08:00 pm – 08:00 am
Charge Window 2 – High Cost - 08:00 am – 11:00 am
Charge Window 3 – Low Cost - 11:00 am – 05:00 pm
Charge Window 4 – High Cost - 05:00 pm – 08:00 pm

2.7 EVCS-FUR-REQ-259098/B-Charge to Percent

OnBoardChargeSchedulerServer (HPCM) shall store a Charge to Percent value for Weekdays and Weekends for each Saved Charge Location. The Charge to Percent value is an SoC (State of Charge) that the user would like the vehicle to charge to and then stop charging when at the corresponding Saved Charge Location.

2.8 EVCS-FUR-REQ-278930/B-Unsaved Charge Location Acknowledgement

OnBoardChargeSchedulerServer (HPCM) shall provide an Unsaved Charge Location Acknowledgement signal to the **OnBoardChargeSchedulerClient (APIM) and OnBoardChargeSchedulerServer2 (ECG)** for use in creating new Saved Charge Locations.

2.9 EVCS-FUR-REQ-259100/B-Current Saved Charge Location Information

OnBoardChargeSchedulerServer (HPCM) shall store Current Saved Charge Location. Current Saved Charge Location shall be the Saved Charge Location that is closest to the vehicle within a range of 100 meters.

2.10 EVCS-FUR-REQ-259101/B-Current Unsaved Charge Location Information

OnBoardChargeSchedulerServer (HPCM) shall store Current Unsaved Charge Location. Current Unsaved Charge Location shall be the Unsaved Charge Location ID for the Unsaved Charge Location at which the vehicle is currently located.

2.11 EVCS-FUR-REQ-259102/B-FUR-REQ-250420/A-Charge Schedule Information

OnBoardChargeSchedulerServer (HPCM) shall maintain a Charge Schedule with the following information:

- 14 Go Times
- Charge Schedule ON/OFF
- Next Go Time

2.12 EVCS-FUR-REQ-259103/B-Go Time Information

OnBoardChargeSchedulerServer (HPCM) shall store 14 Go Times with the following information each for each Go Time:

- Go Time Hour
- Go Time Minute
- Preconditioning Setting

Each Go Time shall be assigned an Element ID number for coordination of the communication of the Go Times.

Referenced Requirements
FUR-REQ-25LLLL – Element ID Information

2.13 EVCS-FUR-REQ-259104/B-Element ID Information

OnBoardChargeSchedulerServer (HPCM) shall store 14 Element IDs to coordinate the Go Time settings. Each Go Time shall be assigned a unique Element ID.

Note:
The Element ID has a specific decoding when communicating Go Times. There are 2 Go Times for each day of the week. The decoding is as follows:

- *1 – Monday 1*
- *2 – Monday 2*
- *3 – Tuesday 1*
- *4 – Tuesday 2*
- *…*
- *14 – Sunday 2*

Referenced Requirements
FUR-REQ-25KKKK – Go Time Information
FUR-REQ-25LLLL – Element ID Information

2.14 EVCS-FUR-REQ-259105/B-Go Time Hour Information

OnBoardChargeSchedulerServer (HPCM) shall store a Go Time Hour for each of the 14 Go Times.

Note:
The Go Time Hour is the hour of the day (using a 24 hour clock) of a Go Time.

2.15 EVCS-FUR-REQ-259106/B-Go Time Minute Information

OnBoardChargeSchedulerServer (HPCM) shall store a Go Time Minute for each of the 14 Go Times.

Note:
The Go Time Minute is the minute of the day of a Go Time.

2.16 EVCS-FUR-REQ-259107/B-Preconditioning Setting Information

OnBoardChargeSchedulerServer (HPCM) shall store Preconditioning Setting each of the 14 Go Times.

Note:
The preconditioning setting is used to heat or cool the cabin to a user-selected temperature zone in order to save mileage by using energy from the grid for climate rather than the battery pack.

2.17 EVCS-FUR-REQ-259108/B-Charge Schedule Activation Information

OnBoardChargeSchedulerServer (HPCM) shall store the current activation state of the Charge Schedule. The activation states shall be:

- ON
- OFF

2.18 EVCS-FUR-REQ-259109/B-Next Go Time Information

OnBoardChargeSchedulerServer (HPCM) shall store a Next Go Time. Next Go Time is the Element ID for the upcoming Go Time in the Charge Schedule.

2.19 EVCS-FUR-REQ-263191/C-Information - Onboard Update Flag - Charge Schedulers

OnBoardChargeSchedulerClient (APIM) shall provide an Update Flag signal to the **OnBoardChargeSchedulerServer (HPCM)** and **OnBoardChargeSchedulerServer2** for requesting a change to the Charge Scheduler Settings.

2.20 EVCS-FUR-REQ-263193/C-Information - Onboard Update Flag - Charge Settings

OnBoardChargeSchedulerClient (APIM) shall provide an Update Flag signal to the **OnBoardChargeSchedulerServer (HPCM)** and the **OnBoardChargeSchedulerServer2** for requesting a change to the Saved Charge Location settings.

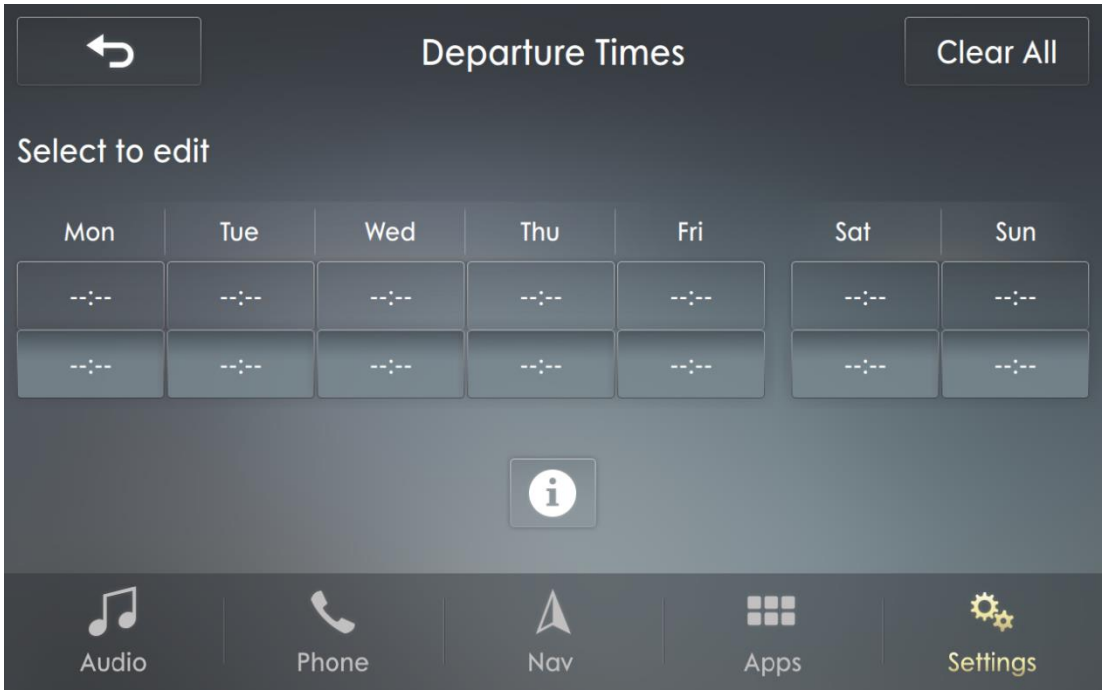
2.21 EVCS-FUR-REQ-263194/C-Information - Offboard Update Flag - Charge Schedulers

OnBoardChargeSchedulerServer2 shall provide an Update Flag signal to the **OnBoardChargeSchedulerClient (APIM)** for requesting a change to the Charge Scheduler Settings.

2.22 EVCS-FUR-REQ-263195/C-Information - Offboard Update Flag - Charge Settings

OnBoardChargeSchedulerServer2 shall provide an Update Flag signal to the **OnBoardChargeSchedulerClient (APIM)** for requesting a change to the Saved Charge Location Settings.

2.23 EVCS-F-REQ-267694/C-Selecting a Go Time to Edit

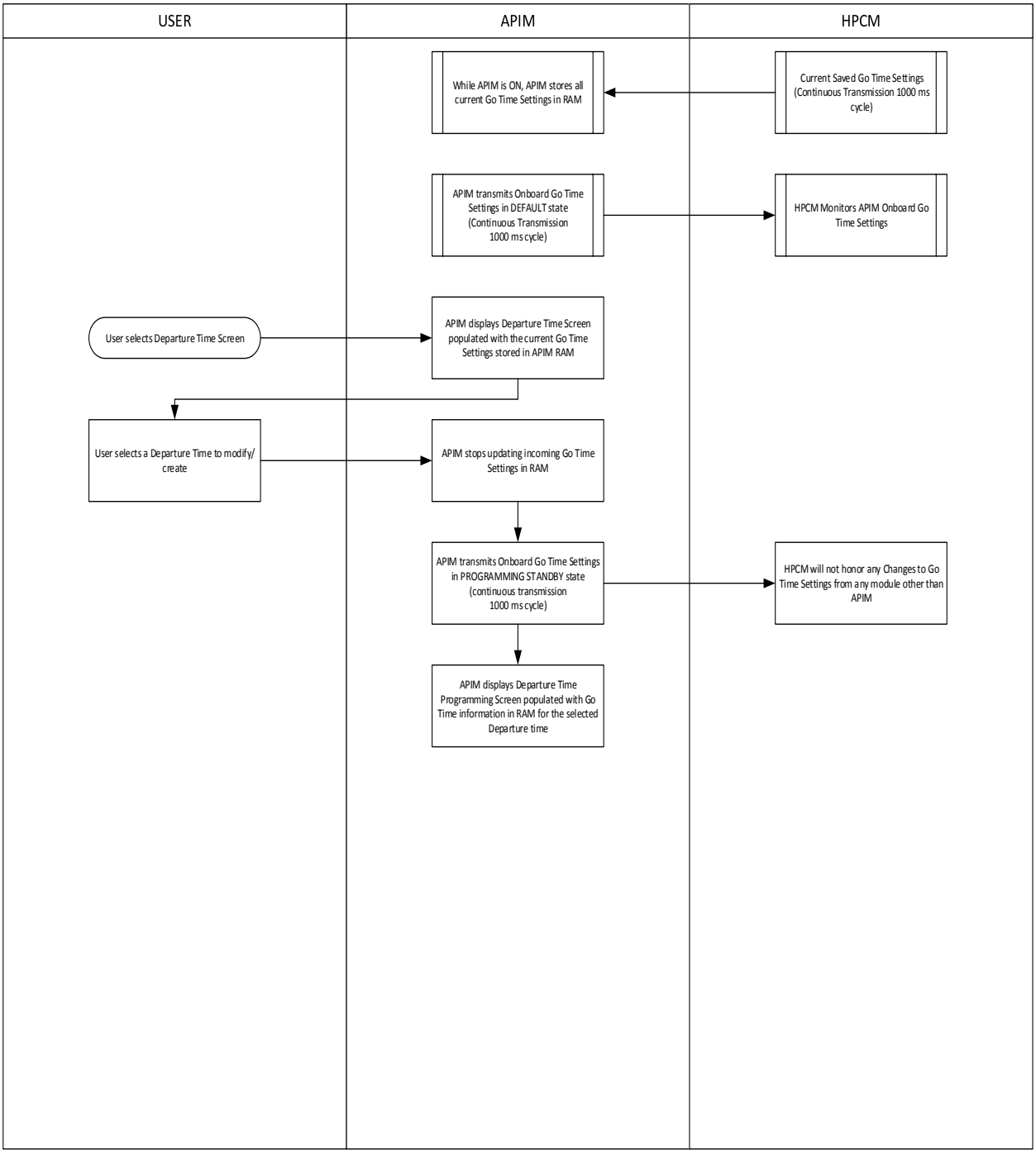


Initial conditions:

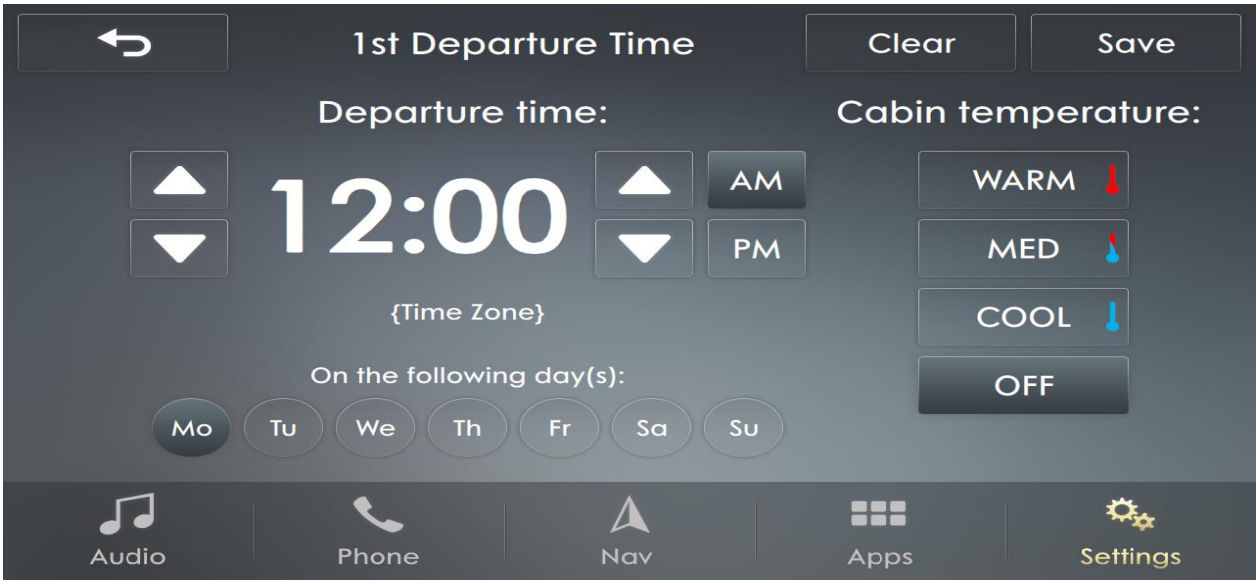
- User enters the Departure Times Screen

- APIM Go Time Signals in `Default` State (1000 ms transmission rate)
    - `Update Flag =` `No Request (0x0)`
    - `Element ID =` `0 (0x0)`
    - `Hour =` `Out of Range (25)`
    - `Minute =` `Out of Range (0xC)`
    - `ON/OFF =` `Null (0x0)`
    - `Preconditioning =` `OFF (0x0)`
    - `External Touchpoints =` `NULL (0x0)`
    - `Internal Touchpoints =` `NULL (0x0)`
    - `Delete =` `No Request (0x0)`
    - `Clear All =` `No Request (0x0)`

1. APIM displays Go Time information stored in RAM as transmitted by the HPCM
2. User selects any day on the screen
3. APIM Freezes current Go Times information
4. APIM Tx Go Time Signals change to `Programming Standby` state (1000 ms transmission rate)
    a. Update Flag = Request (0x1)
    b. All other signals maintain `Default` state
5. APIM transition to Go Time Programming page with appropriate information populated for selected Go Time


USER
APIM
HPCM
While APIM is ON, APIM stores all current Go Time Settings in RAM
Current Saved Go Time Settings (Continuous Transmission 1000 ms cycle)
APIM transmits Onboard Go Time Settings in DEFAULT state (Continuous Transmission 1000 ms cycle)
HPCM Monitors APIM Onboard Go Time Settings
User selects Departure Time Screen
APIM displays Departure Time Screen populated with the current Go Time Settings stored in APIM RAM
User selects a Departure Time to modify/ create
APIM stops updating incoming Go Time Settings in RAM
APIM transmits Onboard Go Time Settings in PROGRAMMING STANDBY state (continuous transmission 1000 ms cycle)
HPCM will not honor any Changes to Go Time Settings from any module other than APIM
APIM displays Departure Time Programming Screen populated with Go Time information in RAM for the selected Departure time

2.24 EVCS-FUR-REQ-267695/C-Programming Departure Times



Initial Conditions

- User has entered a Departure Time Programming screen
- Screen is populated with frozen Go Time information for the selected item
- APIM is transmitting Onboard Go Time signals in PROGRAMMING STANDBY state

1. User modifies the Departure time via on-screen interface
2. User selects Save
3. APIM starts transmitting new Go Times to the HPCM
    a. APIM increases signal transmission rate to 100 ms
    b. APIM transmits Go Time information to the HPCM for all modified days
        i. Example: If the customer has made a Departure Time modification for Monday and Tuesday, the APIM will transmit the settings for both Monday Departure Times and both Tuesday Departure Times
    c. APIM will continue to transmit the Go Time information for the modified days until the APIM confirms that the HPCM Go Time settings for the days modified match the APIM request or timeout has been achieved
        i. The order does not matter as long as both the requested settings for the modified days match (it is the HPCMs job to order them)
        ii. Example: If APIM transmits Monday1 settings as xxx and Monday2 settings as yyy, the HPCM can send back Monday1 as yyy and Monday2 as xxx.
4. Once the APIM has completed transmission of the new Departure Times (either by confirming HPCM signals match request or timeout has been achieved) the APIM will resume updating Go Time settings in RAM
5. APIM will transition the Onboard Go Times signals back to the DEFAULT state and transmission rate (1000 ms)
6. APIM will display the Departure Times screen populated with the current Go Time information stored in RAM as transmitted by the HPCM
7. If a timeout has occurred without confirmation that the Go Time information has been properly stored, the APIM will show the customer a popup explaining the transmission failure

3 Functional Definition

3.1 EVCS-FUN-REQ-288212/A-Charge Programming Signal Communication

3.1.1 Requirements

3.1.1.1 EVCS-REQ-263399/B-Communication - Constant CAN

Unless otherwise required, all signals transmitted via CAN shall be transmitted continuously.

3.1.1.2 EVCS-REQ-263400/B-Static Saved Charge Locations

OnBoardChargeSchedulerServer (HPCM) shall maintain Saved Charge Location IDs for each Saved Charge Location in a static position with respect to the other Saved Charge Location IDs.

Example:
If Saved Charge Location ID 1 is deleted, Saved Charge Location ID 2 and its associated GPS coordinates and settings do not take the place of Saved Charge Location ID 1 in the list order. The GPS coordinates and settings for Saved Charge Location ID 1 will be set to the same values as if Saved Charge Location 1 was not stored.

3.1.1.3 EVCS-SR-REQ-288223/A-Communication-Onboard Update Flag-No Update

3.1.1.4 EVCS-SR-REQ-288226/A-Communication-Offboard Update Flag-No Update

3.1.1.5 EVCS-SR-REQ-288227/A-Communication-Offboard Update Flag-Charge Settings Update

3.1.1.6 EVCS-SR-REQ-289152/A-Communication-Onboard Update Flag-Charge Settings Update

OnBoardChargeSchedulerClient (APIM) shall transmit the Onboard Charge Settings Update Flag to the **OnBoardChargeSchedulerServer (HPCM)** and the **OnBoardChargeSchedulerServer2 (ECG)** in the `UPDATE` state while requesting a change to Saved Charge Location Settings

3.1.1.7 EVCS-SR-REQ-289153/A-Communication-Onboard Update Flag-Charge Scheduler Update

OnBoardChargeSchedulerClient (APIM) shall transmit the Onboard Charge Scheduler Update Flag to the **OnBoardChargeSchedulerServer (HPCM)** and the **OnBoardChargeSchedulerServer2 (ECG)** in the `UPDATE` state while requesting a change to the Charge Schedule Settings.

3.1.1.8 EVCS-SR-REQ-289154/A-Communication-Offboard Update In Progress

OnBoardChargeSchedulerClient (APIM) shall transmit the Onboard Charge Scheduler Update Flag to the **OnBoardChargeSchedulerServer (HPCM)** and the **OnBoardChargeSchedulerServer2 (ECG)** in the `UPDATE` state while requesting a change to the Charge Schedule Settings.

3.1.1.9 EVCS-REQ-263408/B-Communication - Release Update Flag

Upon requesting an update to Saved Charge Location Settings or Charge Schedule Settings, **OnBoardChargeSchedulerClient (APIM)** shall not transition the corresponding Update Flag from `UPDATE` state to `DEFAULT` state until one of the following conditions is true:

- **OnBoardChargeSchedulerClient (APIM)** has compared requested settings to received settings from the **OnBoardChargeSchedulerServer (HPCM)** and confirmed that the settings have been applied
- **OnBoardChargeSchedulerClient (APIM)** has compared requested settings to received settings from the **OnBoardChargeSchedulerServer (HPCM)** and confirmed that the settings have not been applied within a calibratable Update Timeout

3.1.1.10 EVCS-REQ-263409/B-Communication - Update Timeout

After transmitting all requested update settings to the **OnBoardChargeSchedulerServer (HPCM)**, the **OnBoardChargeSchedulerClient (APIM)** shall continue to transmit the requested update settings until a calibratable Update Timeout has expired.

Note:
*The Charge Schedule has the most information to communicate back to the **OnBoardChargeSchedulerClient (APIM)**. Maximum transmission time of all Charge Schedule information from **OnBoardChargeSchedulerServer (HPCM)** is anticipated to be approximately 1.4 seconds (14 Go Times at a transmission rate of 100 ms per Go Time). It is suggested that the initial value for the Update Timeout be 3 seconds to accommodate a second transmission cycle in case the first cycle is not received in time.*

3.1.2 Use Cases

3.1.2.1 EVCS-UC-REQ-250448/B-Provide GPS Information for Charge Location IDs Periodically

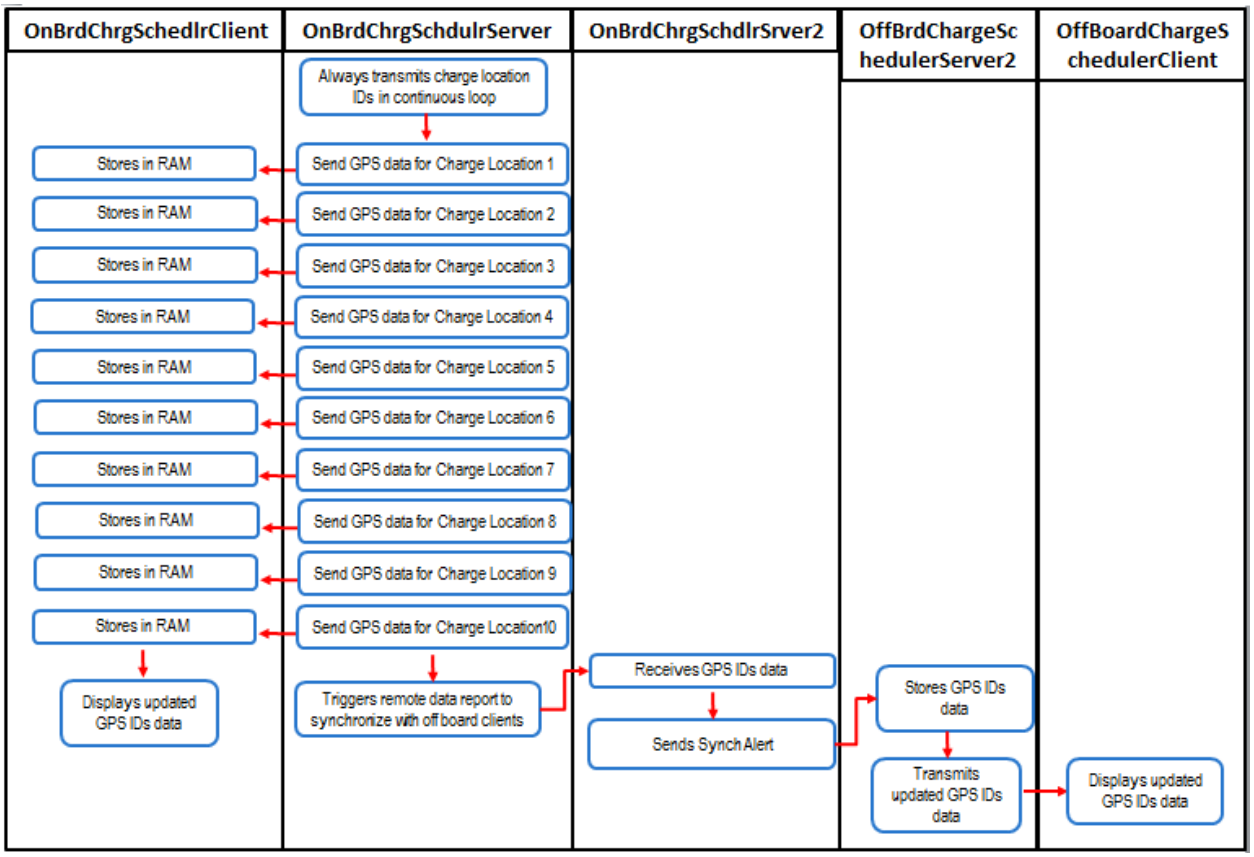
Actors	Vehicle System
Pre-conditions	Vehicle is in a RUN state APIM is operational
Scenario Description	HPCM transmits Saved Charge Locations cyclically HPCM transmits Unsaved Charge Locations cyclically
Post-conditions	APIM stores Saved Charge Location information in RAM for all locations APIM stores Unsaved Charge Location information in RAM for all locations
List of Exception Use Cases	NA
Interfaces	Vehicle System Interface

The information contained in this document is Proprietary to Ford Motor Company.

3.1.3 White Box Views

3.1.3.1 Activity Diagram

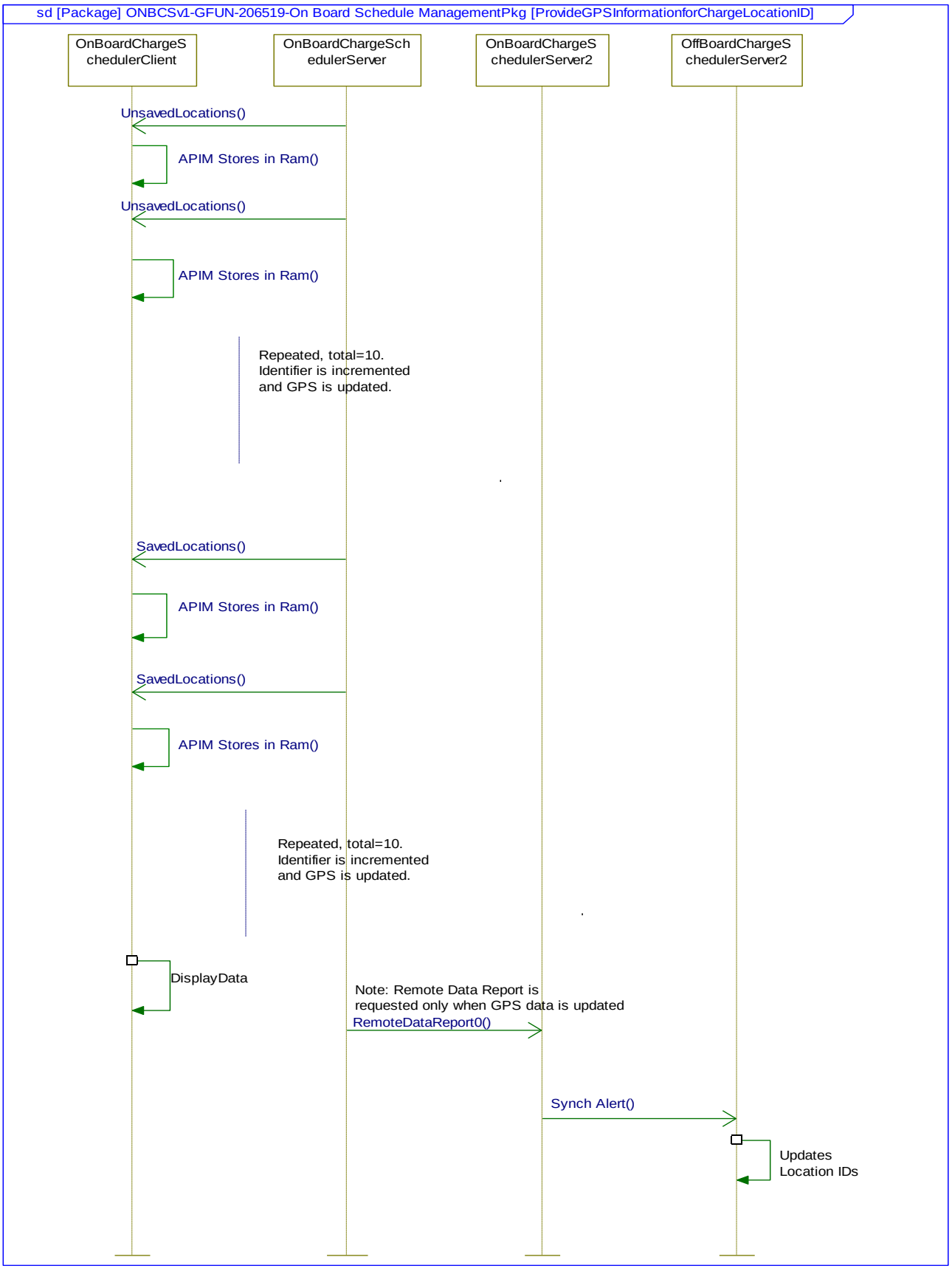
3.1.3.1.1 EVCS-ACT-REQ-250543/B-Update GPS information for Charge Location IDs



Note: Remote Data Report is requested only when GPS data is updated

3.1.3.2 Sequence Diagram

3.1.3.2.1 EVCS-SD-REQ-250644/B-Provide GPS information for Charge Location IDs


sd [Package] ONBCSv1-GFUN-206519-On Board Schedule ManagementPkg [ProvideGPSInformationforChargeLocationID]
OnBoardChargeSchedulerClient
OnBoardChargeSchedulerServer
OnBoardChargeSchedulerServer2
OffBoardChargeSchedulerServer2
UnsavedLocations()
APIM Stores in Ram()
UnsavedLocations()
APIM Stores in Ram()
Repeated, total=10.
Identifier is incremented
and GPS is updated.
SavedLocations()
APIM Stores in Ram()
SavedLocations()
APIM Stores in Ram()
Repeated, total=10.
Identifier is incremented
and GPS is updated.
DisplayData
Note: Remote Data Report is
requested only when GPS data is updated
RemoteDataReport0()
Synch Alert()
Updates
Location IDs

3.2 FUN-REQ-288213/A-Unsaved Charge Locations

3.2.1 Requirements

3.2.1.1 EVCS-REQ-263411/B-Unsaved Charge Location Coordination

OnBoardChargeSchedulerServer (HPCM) shall transmit GPS Coordinates for an Unsaved Charge Location by incrementing the Unsaved Charge Location ID number on each message transmission. The value of the Unsaved Charge Location ID number defines a unique Unsaved Charge Location. The GPS Coordinates transmitted in the same message cycle shall be the coordinates for the specific Unsaved Charge Location.

Note:
The message that contains the Unsaved Charge Location ID will also contain GPS coordinates that are only used for Unsaved Charge Locations.

3.2.1.2 EVCS-REQ-263412/B-Unsaved Charge Location Partial List

When the **OnBoardChargeSchedulerServer (HPCM)** has an incomplete list (greater than 0 and less than 10) of stored Unsaved Charge Locations, the **OnBoardChargeSchedulerServer (HPCM)** shall transmit `OUT OF RANGE` values for GPS Coordinates associated with Unsaved Charge Location IDs without stored information.

3.2.1.3 EVCS-REQ-263414/B-No Stored Unsaved Charge Locations

OnBoardChargeSchedulerServer (HPCM) shall transmit Unsaved Charge Location ID in the `DEFAULT` state If there are no stored Unsaved Charge Locations.

Note:
Associated GPS coordinates should be ignored when Unsaved Charge Location ID is in the `DEFAULT` state.

3.2.1.4 EVCS-REQ-263415/B-Unsaved Charge Locations - Common Container

The CAN Message that contains the Unsaved Charge Location ID will also contain the GPS signals for Unsaved Charge Locations.

3.3 FUN-REQ-288214/A-Saved Charge Locations

3.3.1 Requirements

3.3.1.1 EVCS-REQ-263416/B-Saved Charge Location Coordination

OnBoardChargeSchedulerServer (HPCM) shall transmit GPS Coordinates for a Saved Charge Location by incrementing the Saved Charge Location ID number on each message transmission. The value of the Saved Charge Location ID number defines a unique Saved Charge Location. The GPS Coordinates transmitted in the same message cycle shall be the coordinates for the specific Saved Charge Location.

Note:
The message that contains the Saved Charge Location ID will also contain GPS coordinates that are only used for Saved Charge Locations.

3.3.1.2 EVCS-REQ-263417/B-Saved Charge Location Partial List

When the **OnBoardChargeSchedulerServer (HPCM)** has an incomplete list (greater than 0 and less than 10) of stored Saved Charge Locations, the **OnBoardChargeSchedulerServer (HPCM)** shall transmit `OUT OF RANGE` values for GPS Coordinates associated with Saved Charge Location IDs without stored information.

3.3.1.3 EVCS-REQ-263418/B-No Stored Saved Charge Locations

OnBoardChargeSchedulerServer (HPCM) shall transmit Saved Charge Location ID and Saved Charge Location Programmed Settings ID in the DEFAULT state if there are no stored Saved Charge Locations.

Note:
Associated GPS coordinates should be ignored when Saved Charge Location ID is in the DEFAULT state.

3.3.1.4 EVCS-REQ-263419/B-Partial Saved Charge Location Settings List

When the **OnBoardChargeSchedulerServer (HPCM)** has an incomplete list (greater than 0 and less than 10) of stored Saved Charge Locations, the **OnBoardChargeSchedulerServer (HPCM)** shall transmit DEFAULT values for the Charge Settings for Saved Charge Location Programmed Settings IDs without stored information.

Note:
Charge Settings for undefined Saved Charge Locations should be ignored.

3.3.1.5 EVCS-REQ-263420/C-Saved Charge Location Creation - Check Before Assignment

OnBoardChargeSchedulerClient (APIM) shall check that the GPS coordinates of an Unsaved Charge Location have not changed from the time that a user selects an Unsaved Charge Location to create a Saved Charge Location and the time that the user saves the newly-created Saved Charge Location.

3.3.1.6 EVCS-REQ-263421/B-Saved Charge Location Creation - Non-Nav Unit

If **OnBoardChargeSchedulerClient (APIM)** does not have an integrated Navigation Package to decode GPS data for display to the user, the **OnBoardChargeSchedulerClient (APIM)** shall use the Current Unsaved Charge Location signal provided by the **OnBoardChargeSchedulerServer (HPCM)** to create Saved Charge Locations. HMI shall be unique.

3.3.1.7 EVCS-REQ-263422/B-Saved Charge Locations - Common Container

The CAN Message that contains the Saved Charge Location ID will also contain the GPS signals for Saved Charge Locations.

3.3.1.8 EVCS-SR-REQ-289155/A-Saved Charge Location Creation-Check Before Assignment

OnBoardChargeSchedulerClient (APIM) shall check that the GPS coordinates of an Unsaved Charge Location have not changed from the time that a user selects an Unsaved Charge Location to create a Saved Charge Location and the time that the user saves the newly-created Saved Charge Location.

3.3.2 Use Cases

3.3.2.1 EVCS-UC-REQ-250471/B-Display Charge Programming Status Information

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on.
Scenario Description	The user views Charge Programming Information screen via HMI interface.
Post-conditions	The vehicle display shows charge programming data such as: • Charge to 100% Time – Hi Power • Charge to 100% Time – Low Power • Anticipated Charge Start Time • Anticipated Charge End Time

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	• Current Charge Profile Name • Ready To Go Time • Ready to Go Time Climate settings *Note: The full details of what is displayed to the user are defined in the HMI specifications.* The OnBoardChargeSchedulerClient receives the Charge Profile list from OnBoardChargeSchedulerServer via CAN interface.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.3.2.2 EVCS-UC-REQ-250472/B-Select Value Charging for Current Charge Profile

Actors	Vehicle Occupant
Pre-conditions	Infotainment System powered on. The current Charge Profile is set to "Charge Now".
Scenario Description	The user selects Value Charging for the current Charge Profile via HMI interface.
Post-conditions	The current Charge Profile is set to "Value Charging" and indicated as such via the vehicle system interface. The OnBoardChargeSchedulerClient send charge profile update request to OnBoardChargeSchedulerServer with the charge now setting for the selected profile. The OnBoardChargeSchedulerServer updates the charge profile information on CAN Bus and triggers a remote data report the synchronize with the offboard clients.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.3.2.3 EVCS-UC-REQ-250923/B-Select Charge Now for Current Charge Profile

Actors	Vehicle Occupant
Pre-conditions	Infotainment System powered on. The current Charge Profile is set to "Value Charging".
Scenario Description	The user selects Charge Now for the current Charge Profile via HMI interface.
Post-conditions	The current Charge Profile is set to "Charge Now" and indicated as such via the vehicle system interface. The OnBoardChargeSchedulerClient send charge profile update request to OnBoardChargeSchedulerServer with the charge now setting for the selected profile. The OnBoardChargeSchedulerServer updates the charge profile information on CAN Bus and triggers a remote data report to synchronize with the offboard clients.

List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.3.2.4 EVCS-UC-REQ-250483/B-Display Charge Programming Status Information Lite

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on.
Scenario Description	The user views Charge Programming Information screen viaOnBoardChargeSchedulerClient2.
Post-conditions	OnBoardChargeSchedulerClient2 displays the following information: • Anticipated Charge Start Time • Anticipated Charge End Time • **Charge Preference (Charge Now / Value Charge)** review to include OnBoardChargeSchedulerClient2 as a receiver of the new signal. *Note: The full details of what is displayed to the user are defined in the HMI specifications.*
List of Exception Use Cases	NA
Interfaces	Instrument Cluster Interface Vehicle System Interface

3.3.2.5 EVCS-UC-REQ-289156/A-Updating Charge Profile through OnBoardChargeSchedulerClient

Actors	Vehicle Occupant
Pre-conditions	The vehicle is in ACC or Run.
Scenario Description	The customer updates and saves a charge profile through the HMI interface.
Post-conditions	The OnBoardChargeSchedulerClient(APIM) signals a charge profile update to the OnBoardChargeSchedulerServer(HPCM). OnBoardChargeSchedulerClient(APIM) identifies the target saved charge profile ID. OnBoardChargeSchedulerClient(APIM) transmits the updated charge profile information. The OnBoardChargeSchedulerServer(HPCM) updates the charge profile information on the CAN bus. Upon confirmation of update by the OnBoardChargeSchedulerServer(HPCM) the OnBoardChargeSchedulerClient(APIM) will stop signaling for profile update. OnBoardChargeSchedulerServer(HPCM) triggers a remote data report to synchronize with offboard clients. OnBoardChargeSchedulerClient(APIM) sends LABEL information to OffBoardChargeSchedulerServer (ECG)

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	via TP messages OffBoardChargeSchedulerServer (ECG) sends ChargeProfilesSyncAlert
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.3.2.6 EVCS-UC-REQ-289157/A-Creating a new Charge Profile through OnBoardChargeSchedulerClient

Actors	
Pre-conditions	
Scenario Description	
Post-conditions	
List of Exception Use Cases	
Interfaces	

3.3.2.7 EVCS-UC-REQ-289158/A-Deleting Charge Profile through OnBoardChargeSchedulerClient

Actors	
Pre-conditions	
Scenario Description	
Post-conditions	
List of Exception Use Cases	
Interfaces	

3.3.3 White Box Views

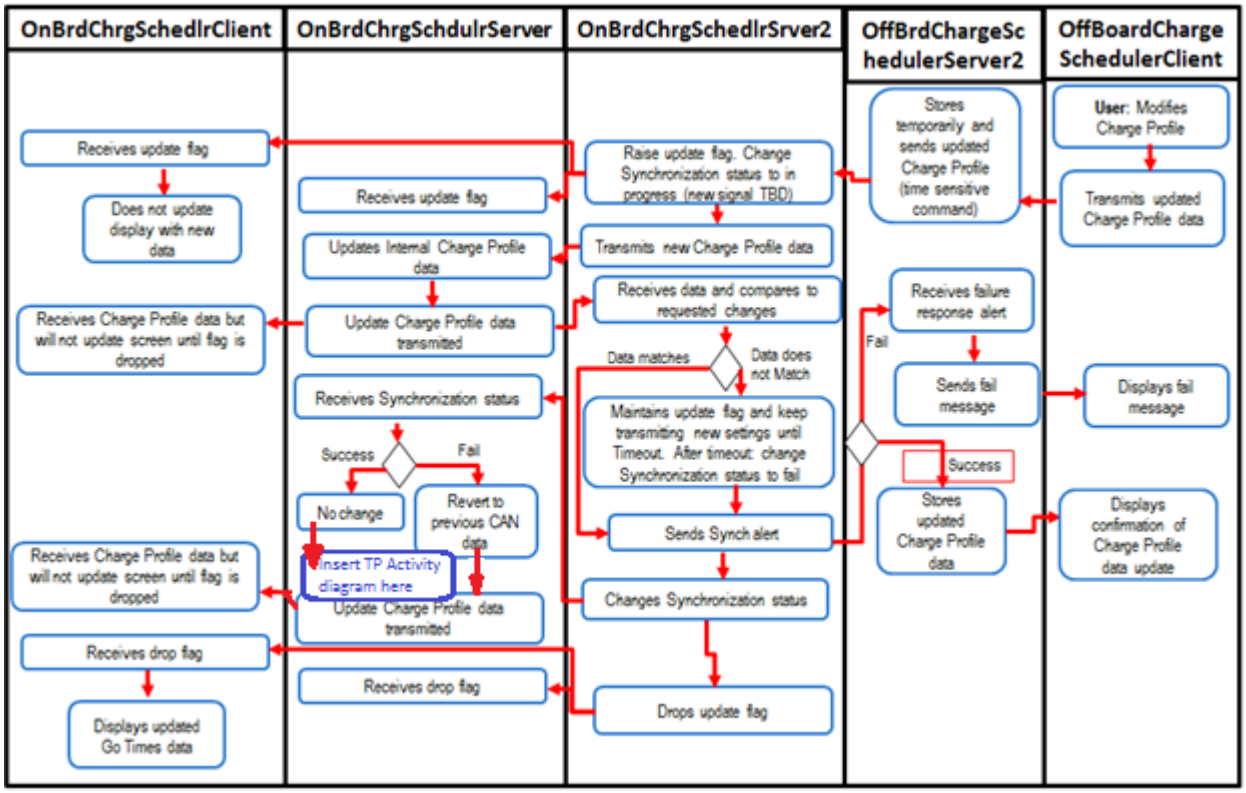
3.3.3.1 Activity Diagram

3.3.3.1.1 EVCS-ACT-REQ-289159/A-Creating a new Charge Profile through APIM

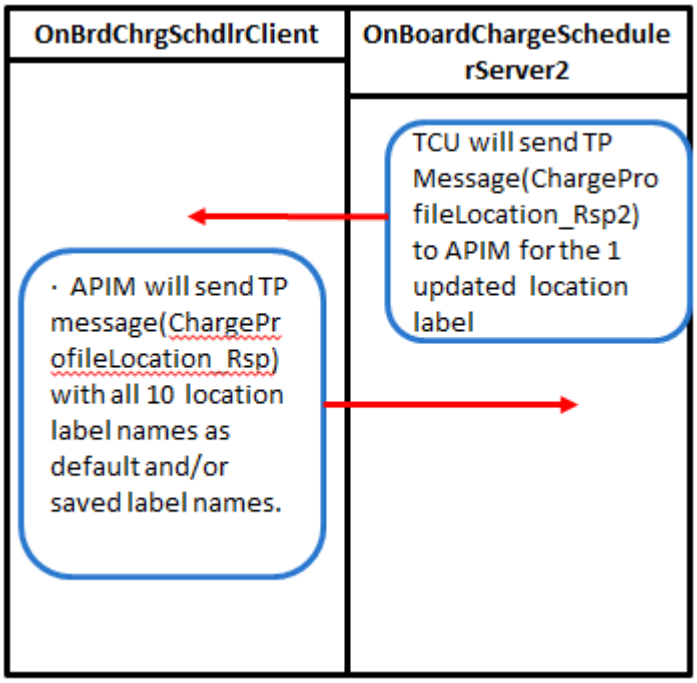
3.3.3.1.2 EVCS-ACT-REQ-289160/A-Modify a new Charge Profile through APIM

3.3.3.1.3 EVCS-ACT-REQ-289161/A-Delete Charge Profile through APIM

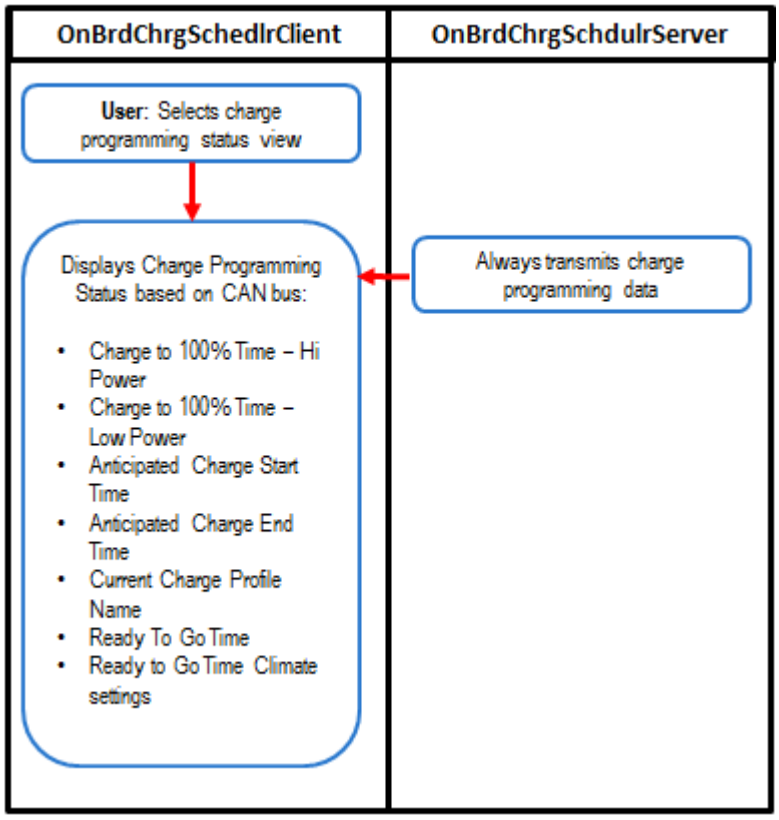
3.3.3.1.4 EVCS-ACT-REQ-289634/A-Updating Charge Profile through Offboard



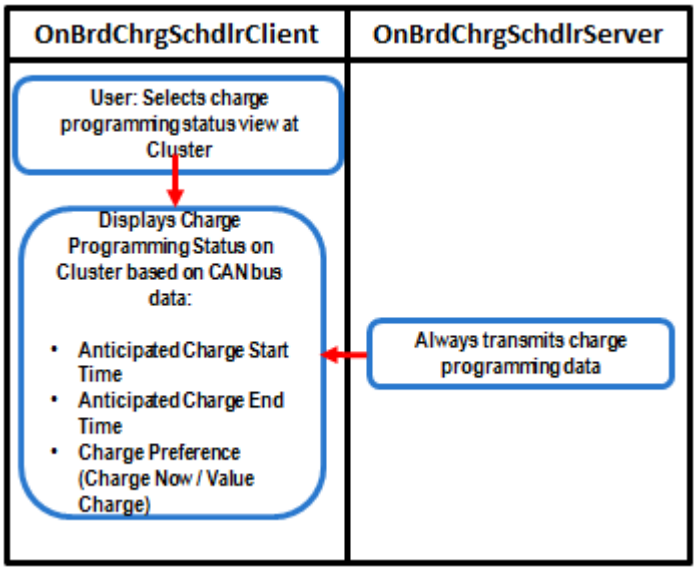
TP Activity diagram



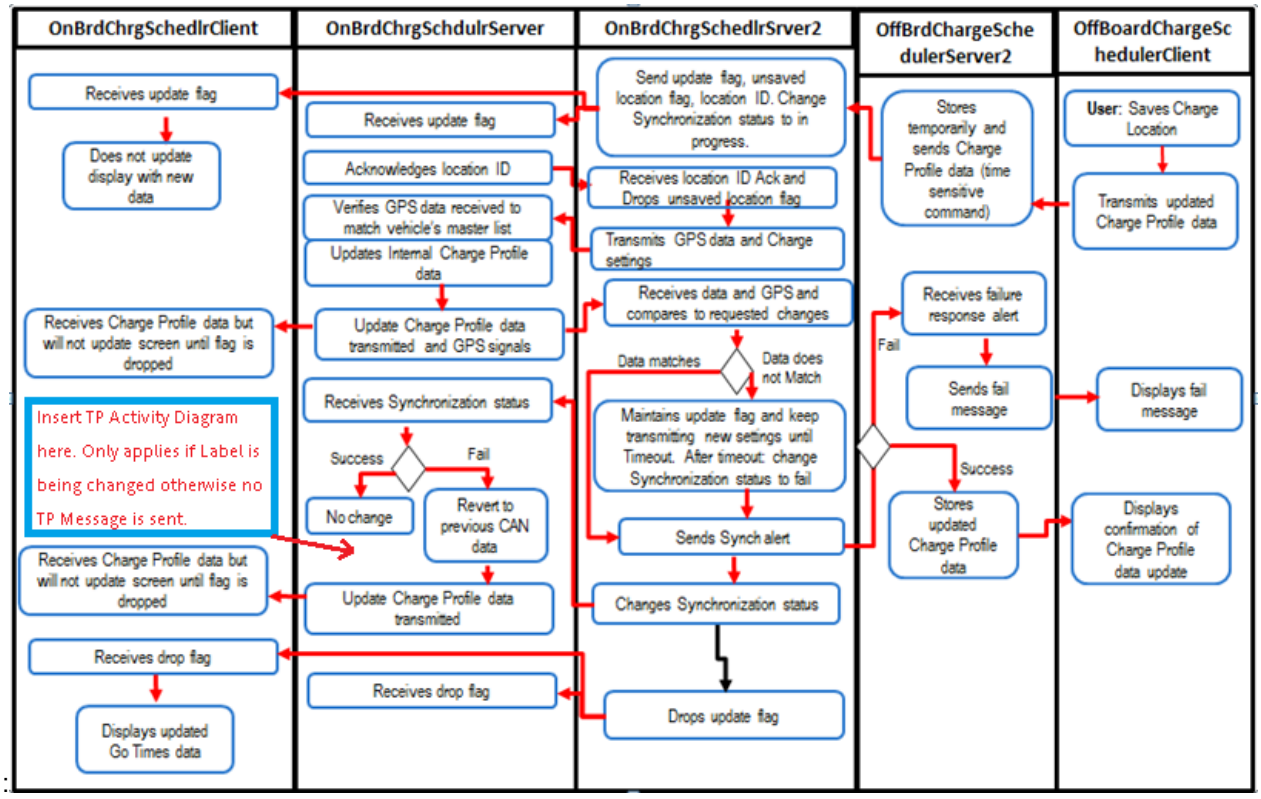
3.3.3.1.5 EVCS-ACT-REQ-250562/B-Display Charge Programming Status information



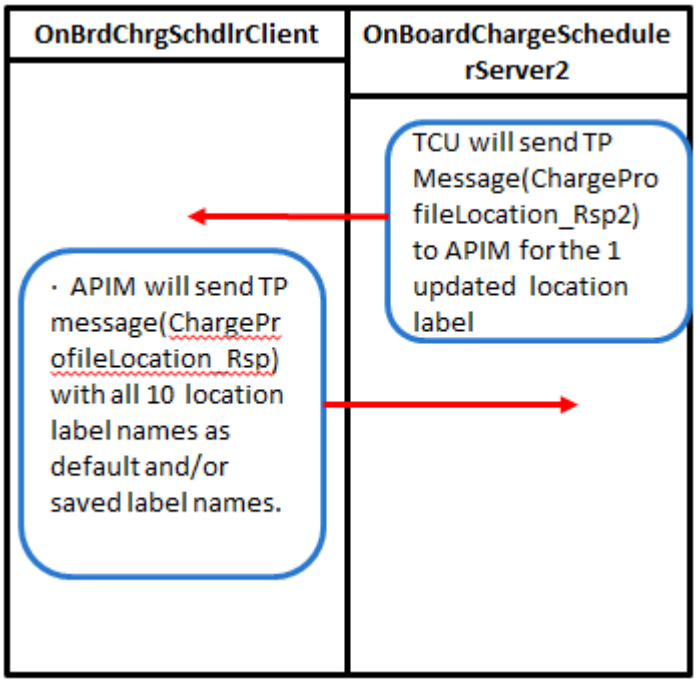
3.3.3.1.6 EVCS-ACT-REQ-250577/B-Display Charge Programming Status Information Lite



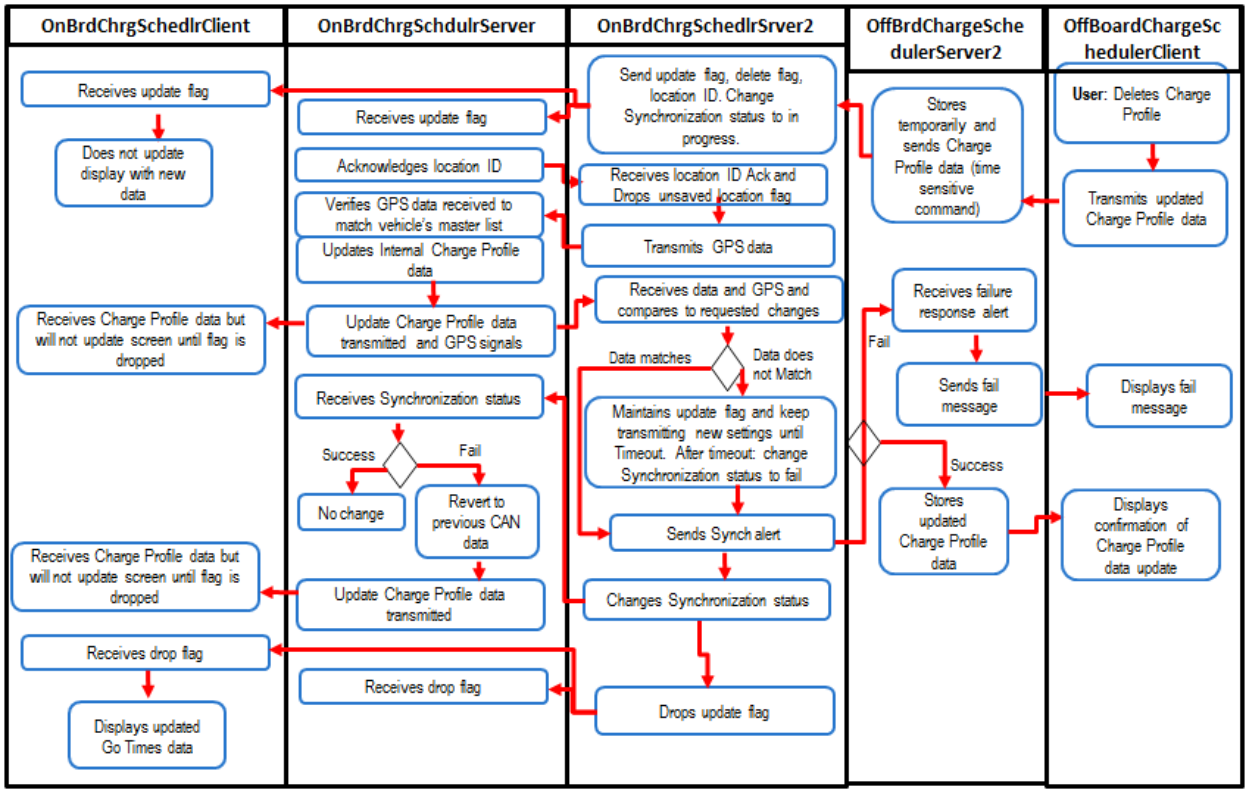
3.3.3.1.7 EVCS-ACT-REQ-250560/B-Creating a new Charge Profile through Offboard



TP Activity Diagram:



3.3.3.1.8 EVCS-ACT-REQ-250561/B-Delete a Charge Profile through Offboard

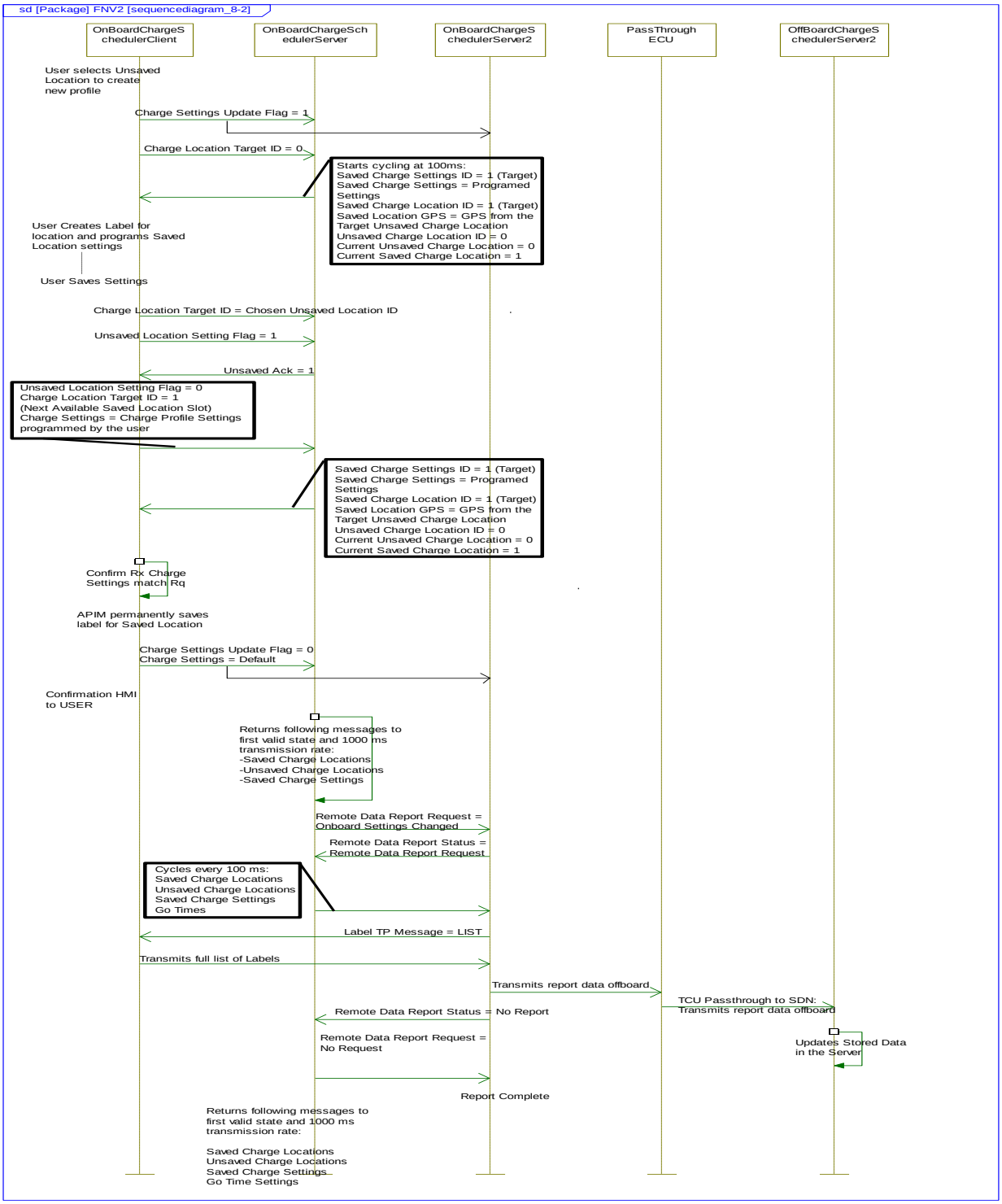


3.3.3.2 Sequence Diagram

3.3.3.2.1 EVCS-SD-REQ-250650/D-Creating a new Charge Profile through Client

Note: For 'No Telematics' case it will be the same sequence diagram without the communication to the ECG(OnboardChargeSchedulerServer2).

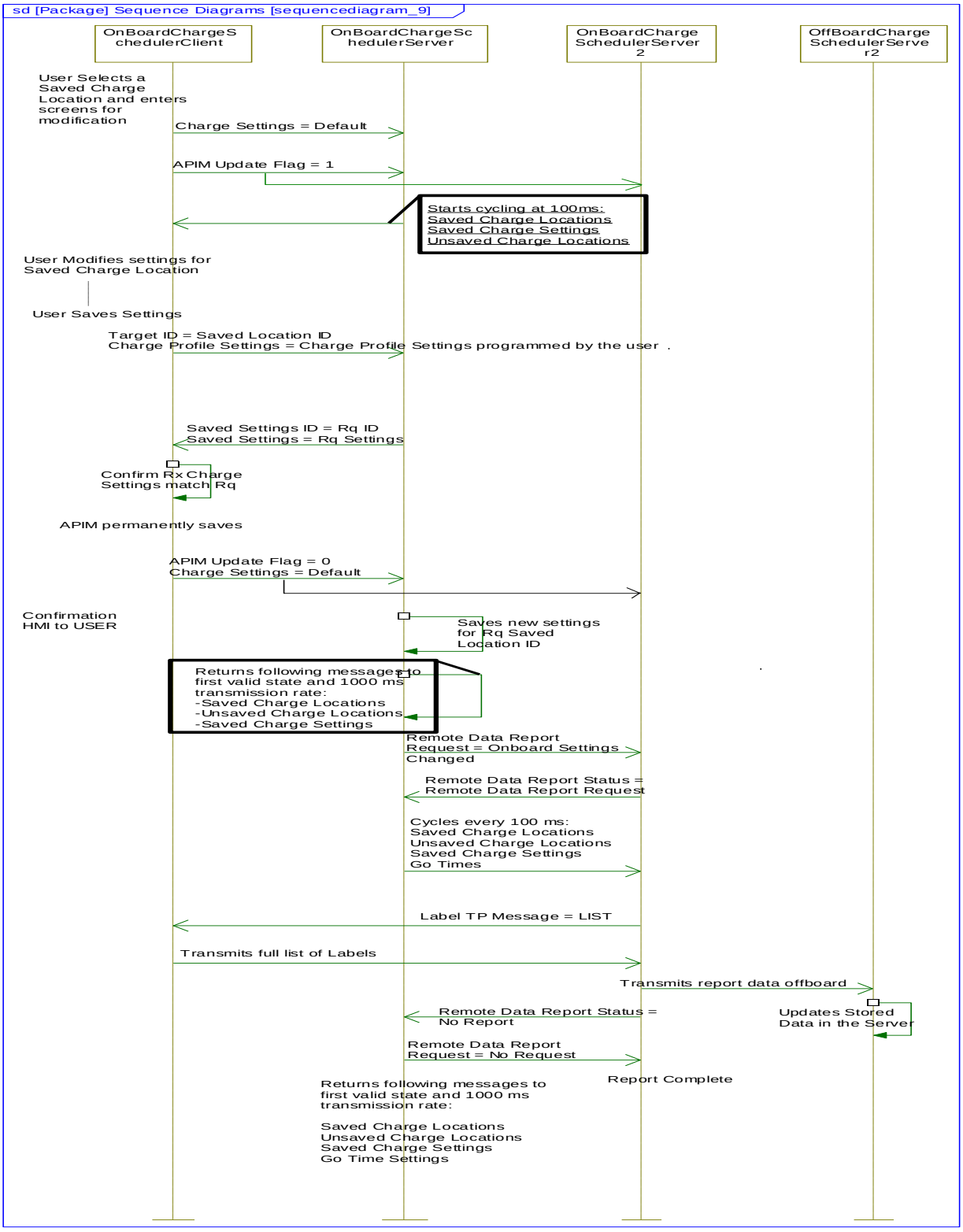
Zoom In for diagram details.



3.3.3.2.2 EVCS-SD-REQ-250649/D-Updating Charge Profile through Client

Note: For 'No Telematics' case it will be the same sequence diagram without the communication to the ECG(OnboardChargeSchedulerServer2).

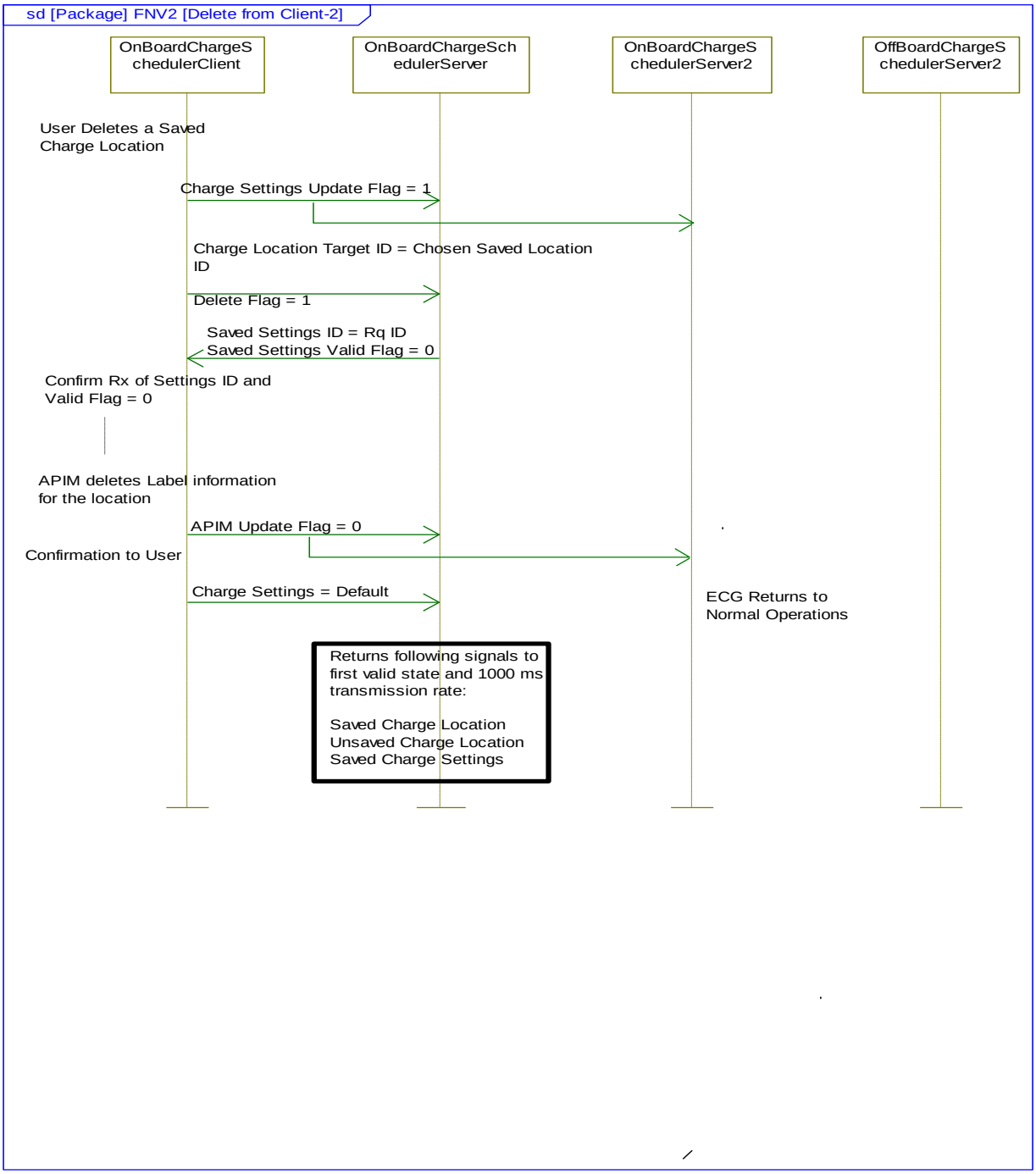
Zoom In for diagram details.



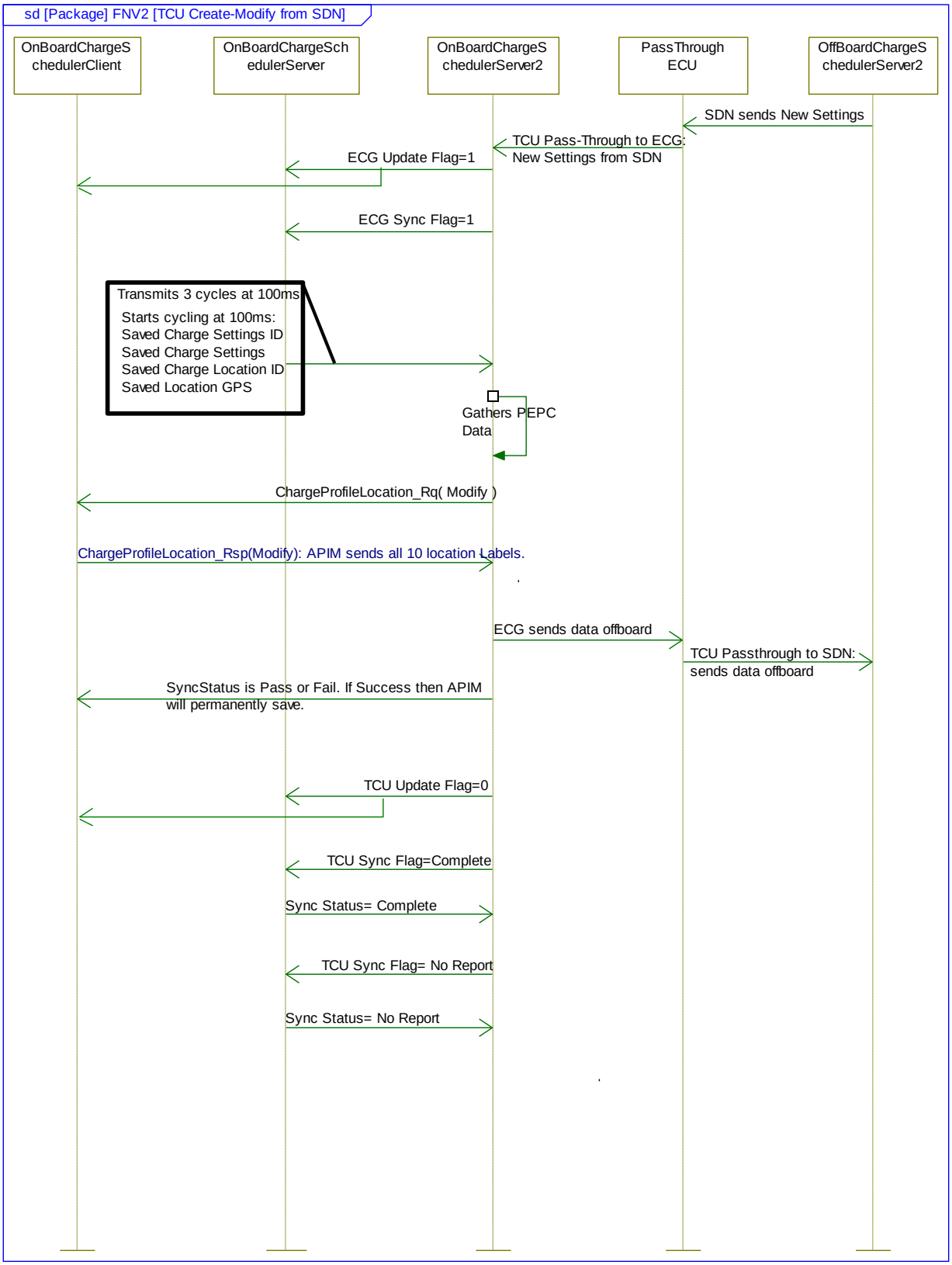
3.3.3.2.3 EVCS-SD-REQ-250651/D-Delete Charge Profile through Client

Note: For 'No Telematics' case it will be the same sequence diagram without the communication to the ECG(OnboardChargeSchedulerServer2).

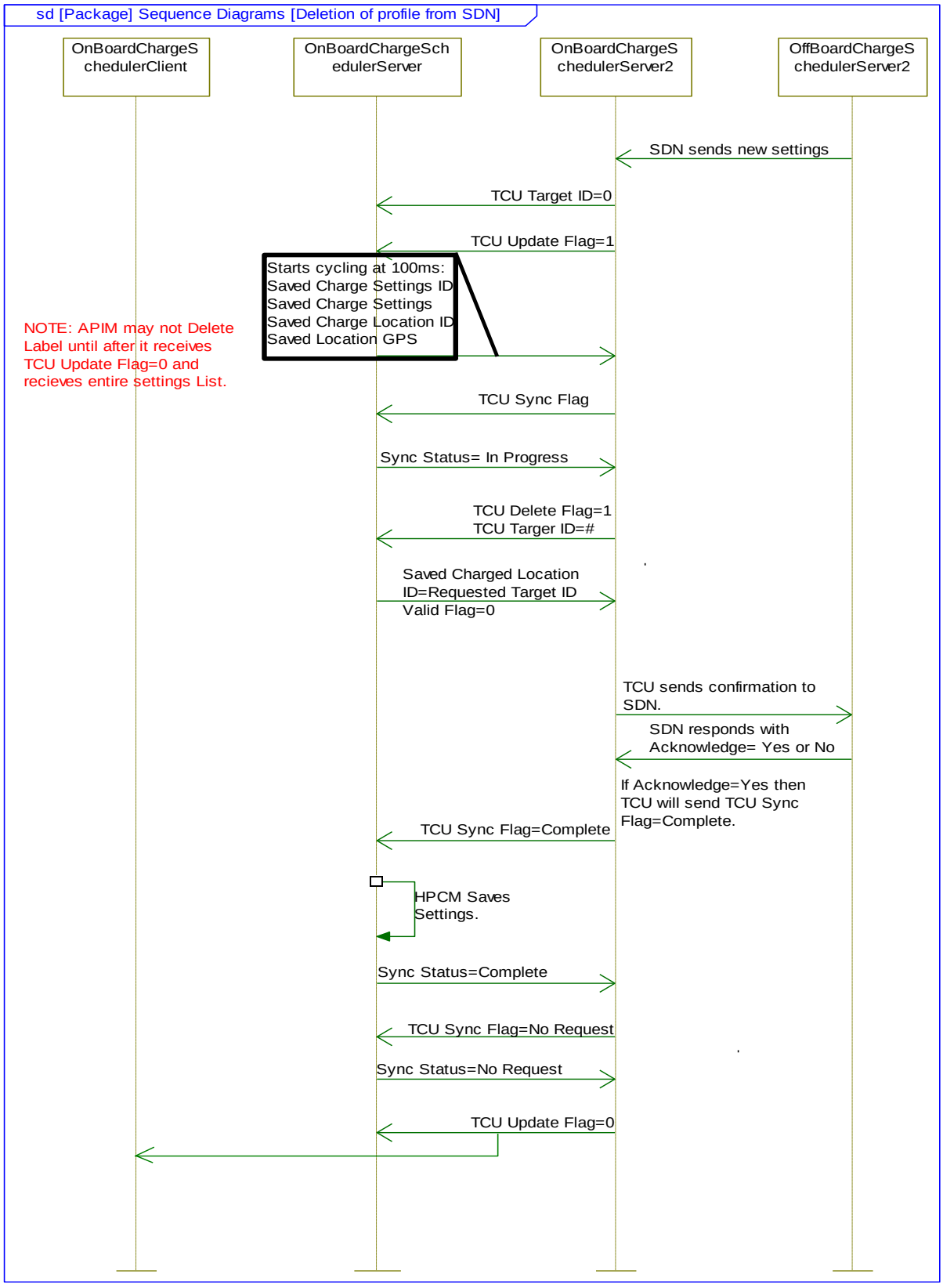
Zoom In for details of diagram


sd [Package] FNV2 [Delete from Client-2]
OnBoardChargeSchedulerClient
OnBoardChargeSchedulerServer
OnBoardChargeSchedulerServer2
OffBoardChargeSchedulerServer2
User Deletes a Saved Charge Location
Charge Settings Update Flag = 1
Charge Location Target ID = Chosen Saved Location ID
Delete Flag = 1
Saved Settings ID = Rq ID
Saved Settings Valid Flag = 0
Confirm Rx of Settings ID and Valid Flag = 0
APIM deletes Label information for the location
APIM Update Flag = 0
Confirmation to User
Charge Settings = Default
ECG Returns to Normal Operations
Returns following signals to first valid state and 1000 ms transmission rate:
Saved Charge Location
Unsaved Charge Location
Saved Charge Settings

3.3.3.2.4 EVCS-SD-REQ-289533/B-Create Modify from Offboard



3.3.3.2.5 EVCS-SD-REQ-289534/B-Delete Profile from Offboard



3.4 FUN-REQ-288216/A-Saved Charge Location Settings

3.4.1 Requirements

3.4.1.1 EVCS-REQ-263423/B-Saved Charge Location Settings Coordination

OnBoardChargeSchedulerServer (HPCM) shall transmit Charge Settings for a Saved Charge Location by incrementing the Saved Charge Location Programmed Settings ID on each message transmission. The value of the Saved Charge Location Programmed Settings ID will define a unique Saved Charge Location and the Saved Charge Location Settings transmitted at the same time shall be the settings for the specific Saved Charge Location.

3.4.1.2 EVCS-REQ-263424/B-Saved Charge Location Message Communication

All Saved Charge Location Settings shall be transmitted in the same CAN Message as the Saved Charge Location Programmed Settings ID.

3.5 FUN-REQ-288217/A-Charge Schedule

3.5.1 Requirements

3.5.1.1 EVCS-REQ-263425/B-Go Time Coordination

OnBoardChargeSchedulerServer (HPCM) shall transmit Go Time Settings for a Go Time incrementing the Go Time Element ID number on each message transmission. The value of the Go Time Element ID number defines a unique Go Time. The Go Time Settings transmitted in the same message cycle shall be the settings for the specific Go Time.

Note:
The message that contains the Element ID will also contain the Go Time Settings.

3.5.1.2 EVCS-REQ-263426/B-No Stored Go Times

OnBoardChargeSchedulerServer (HPCM) shall transmit Element ID in the `DEFAULT` state if there are no stored Go Times.

Note:
Associated Go Time Settings should be ignored when Element ID is in the `DEFAULT` state.

3.5.1.3 EVCS-REQ-263427/B-Partial Go Times List

When the **OnBoardChargeSchedulerServer (HPCM)** has an incomplete list (greater than 0 and less than 14) of stored Go Times, the **OnBoardChargeSchedulerServer (HPCM)** shall transmit `OUT OF RANGE` values for the Go Time Hour and Go Time Minute settings associated with the unsaved Element IDs

3.5.1.4 EVCS-REQ-263428/B-Go Time Update - Send All Go Times

If a modification is made to an existing Go Time or if a new Go Time is being created, **OnBoardChargeSchedulerClient (APIM)** shall transmit the entire Charge Schedule when performing the Onboard Update to the Charge Schedule.

3.5.1.5 EVCS-REQ-263429/B-Go Time Update - Delete Go Times - No Offboard Update

If a Go Time is being deleted from the Charge Schedule, the **OnBoardChargeSchedulerClient (APIM)** shall signal an update to the **OnBoardChargeSchedulerServer (HPCM)** with the Element ID and the Delete Flag.

3.5.1.6 EVCS-SR-REQ-289183/A-Go Time Update-Delete Go Times-Offboard Update

If a Go Time is being deleted from the Charge Schedule and the **OnBoardChargeSchedulerServer2 (ECG)** has performed an Offboard Update of the Charge Schedule between the user selection of a Go Time and the user selection of Delete for the

Go Time, the **OnBoardChargeSchedulerClient (APIM)** shall perform a Charge Schedule Update as described in [`Go Time Update – Send All Go Times`].

3.5.1.7 EVCS-REQ-263431/B-Order of Go Times

OnBoardChargeSchedulerClient (APIM) shall transmit all Go Times in chronological order of their occurrence for each Element ID related to a specific day.

3.5.1.8 EVCS-REQ-263432/B-Go Time Update - Checking Go Times

When **OnBoardChargeSchedulerClient (APIM)** is checking to confirm that requested changes to Go Times have been successfully completed, the **OnBoardChargeSchedulerClient (APIM)** shall check both Element IDs that apply to the same day to confirm if settings have successfully been saved.

3.5.1.9 EVCS-REQ-263433/B-Go Time Update - Prohibit Double Entry

OnBoardChargeSchedulerClient (APIM) shall prohibit the creation of two Go Times with matching Go Time Hour and Go Time Minute values for the same day.

3.5.1.10 EVCS-REQ-263435/B-Charge Schedule Message Communication

All Charge Schedule Settings shall be transmitted in the same CAN Message as the Go Time Element ID.

3.5.2 Use Cases

3.5.2.1 EVCS-UC-REQ-250443/B-Onboard Go Time Modification

Actors	User
Pre-conditions	Vehicle is in RUN state APIM is operational Departure Time Schedule Page is Active
Scenario Description	User selects a Departure Time Schedule Element APIM switches to Departure Time programming screen APIM populates screen with information for selected Go Time Element APIM highlights any days that share the same settings User updates Departure Time settings User selects Save
Post-conditions	APIM transitions to UPDATING screen APIM sorts new schedule chronologically APIM transmits changed Go Time Element pairs cyclically HPCM receives new Go Time settings and updates information on CAN APIM compares updated settings from HPCM to requested changes APIM detects match in the settings APIM updates Departure Time schedule with new data
List of Exception Use Cases	User selects Back without selecting Save. User selects Back without changing any settings. Compare Time Out
Interfaces	G-HMI Vehicle System Interface

3.5.2.2 EVCS-UC-REQ-250445/B-Display Weekly Charge Schedule

Actors	User
Pre-conditions	Vehicle is in RUN state APIM is operational
Scenario Description	User selects Departure Times screen via HMI interface
Post-conditions	APIM transitions to Departure Time Schedule screen APIM populates Departure Time fields with Go Time information
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.5.2.3 EVCS-UC-REQ-250449/B-Global GO Time schedule On/Off

Actors	User
Pre-conditions	Vehicle is in RUN Infotainment System is powered on (or APIM operational, whatever you prefer) Active screen is main Charge Settings screen
Scenario Description	User toggles Departure Time HMI switch
Post-conditions	APIM transmits toggle request for Departure Times ON/OFF HPCM receives toggle request and updates information on CAN APIM compares updated settings from HPCM to requested change APIM detects match in the settings APIM updates Charge Settings screen to reflect current Departure Time Schedule state
List of Exception Use Cases	Timeout
Interfaces	G-HMI Vehicle System Interface

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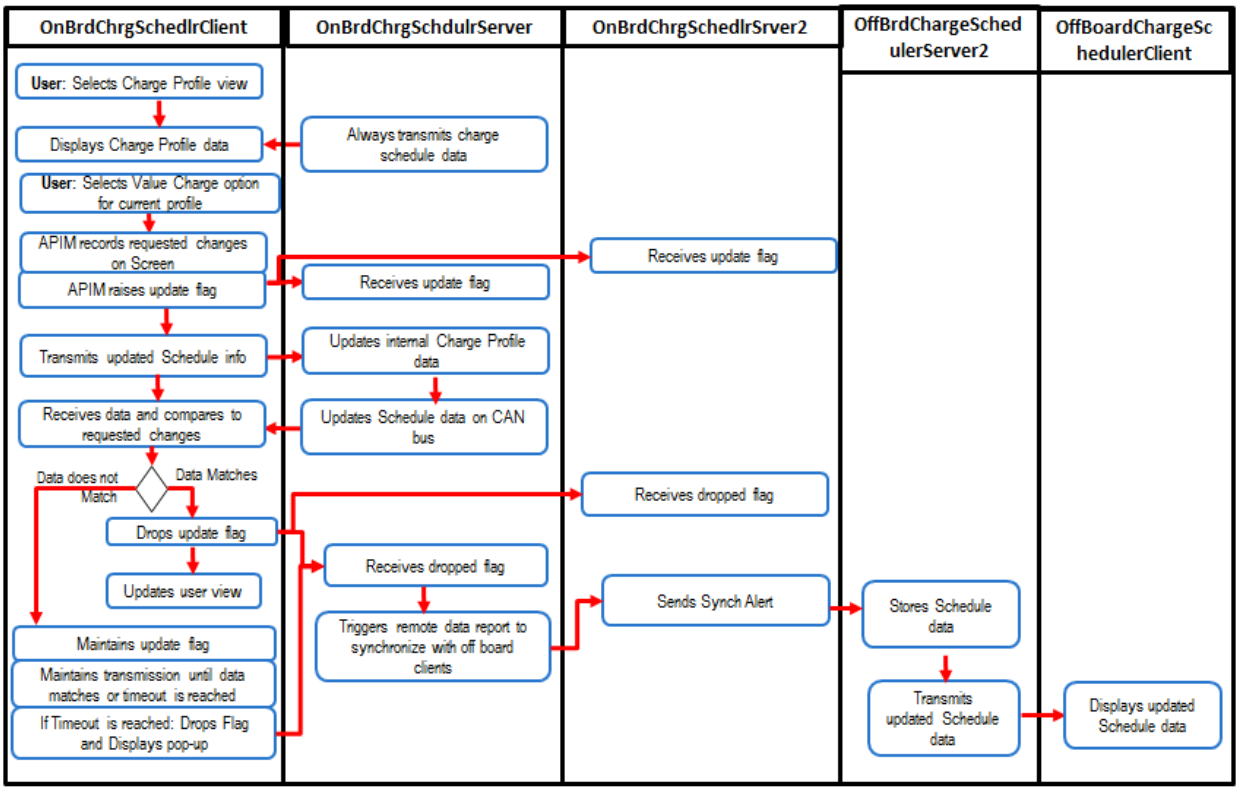
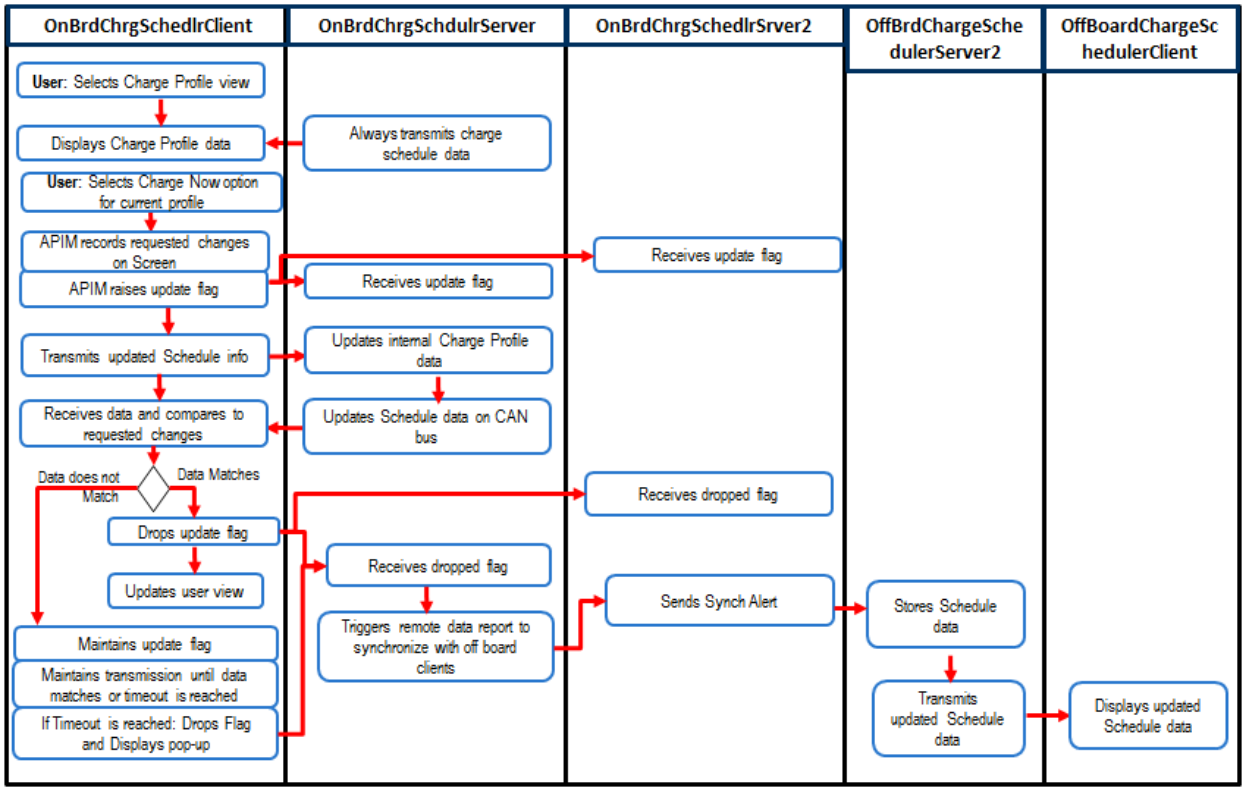
3.5.3 White Box Views

3.5.3.1 Activity Diagram

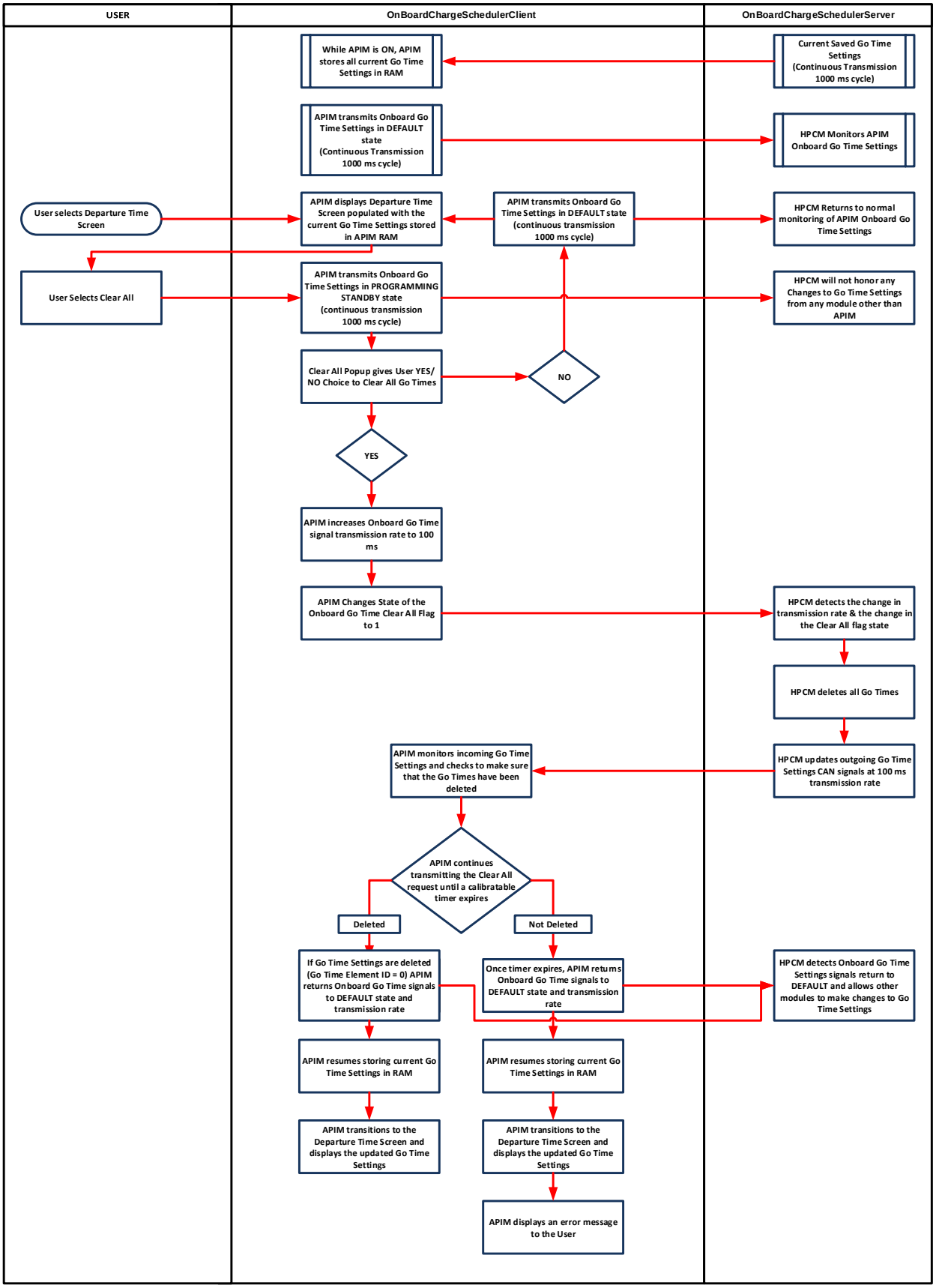
3.5.3.1.1 EVCS-ACT-REQ-250571/B-Select Value Charging for Current Charge Profile



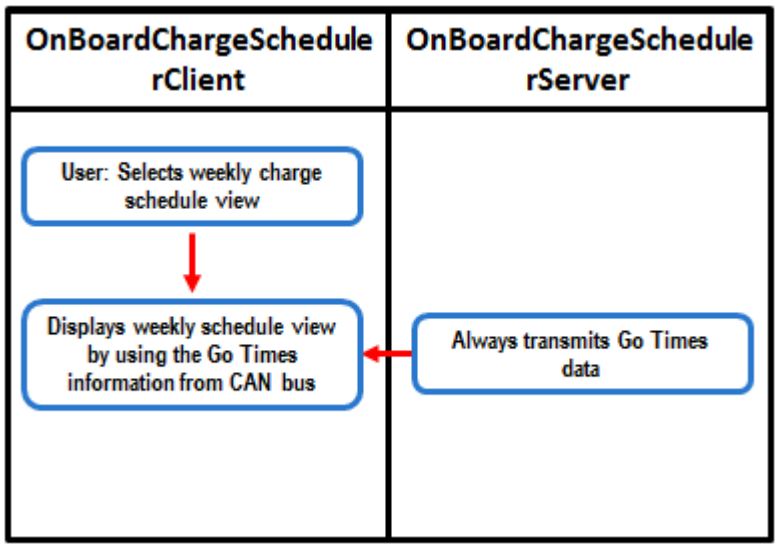
3.5.3.1.2 EVCS-ACT-REQ-250572/B-Select Charge Now for Current Charge Profile



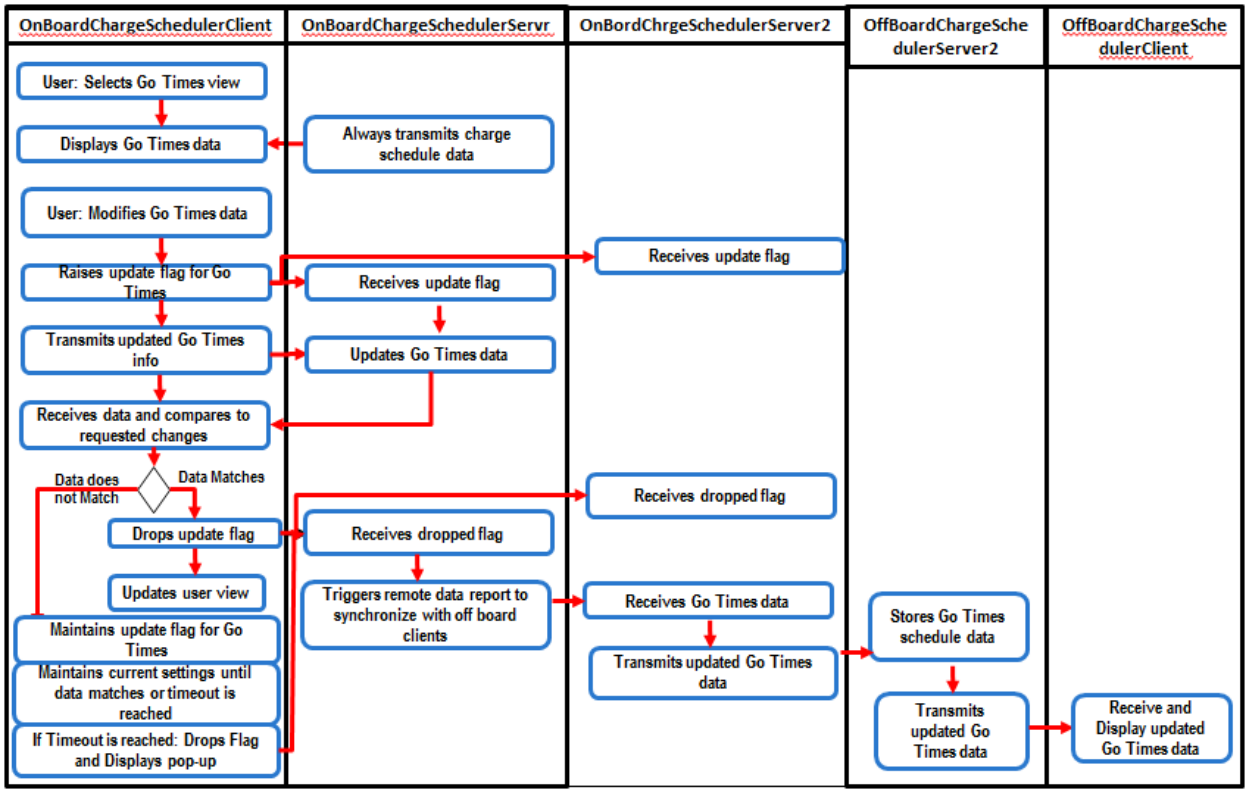
3.5.3.1.3 EVCS-ACT-REQ-266064/B-Clear All Go Times



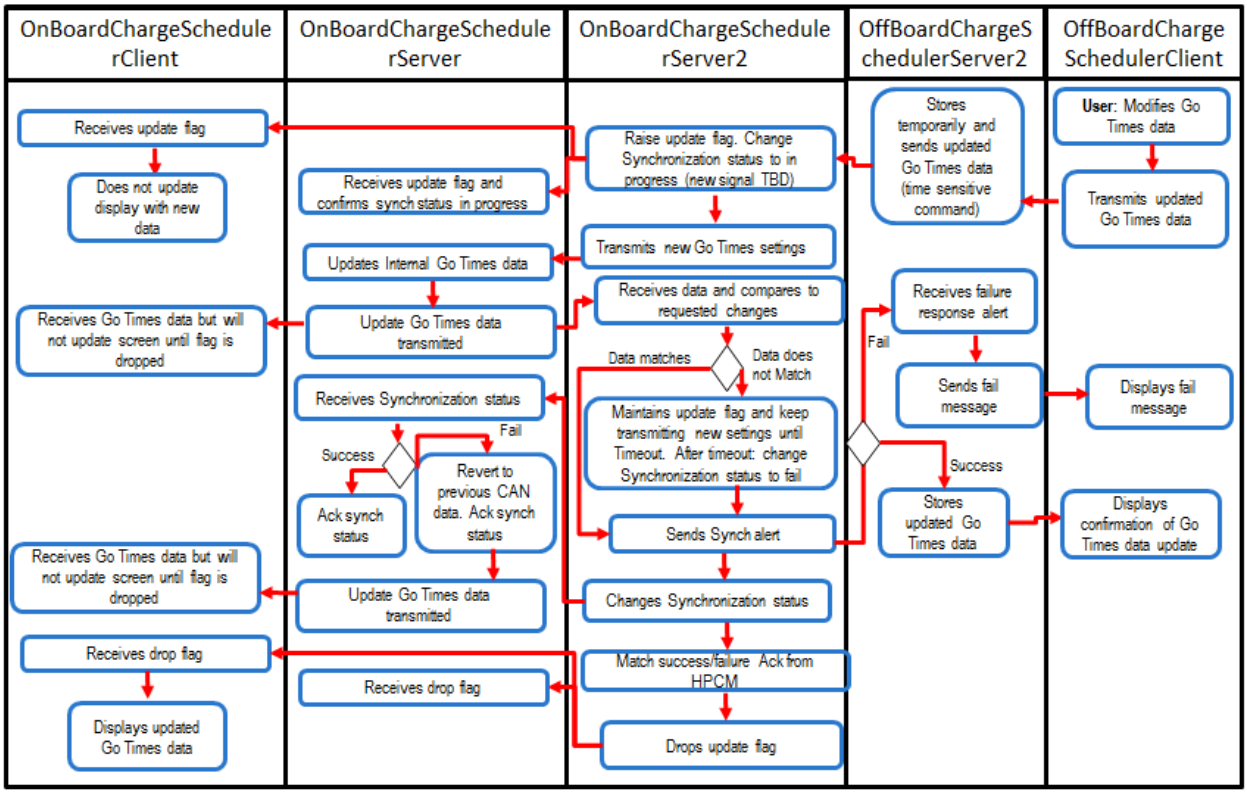
3.5.3.1.4 EVCS-ACT-REQ-250540/B-Display Weekly Charge Schedule



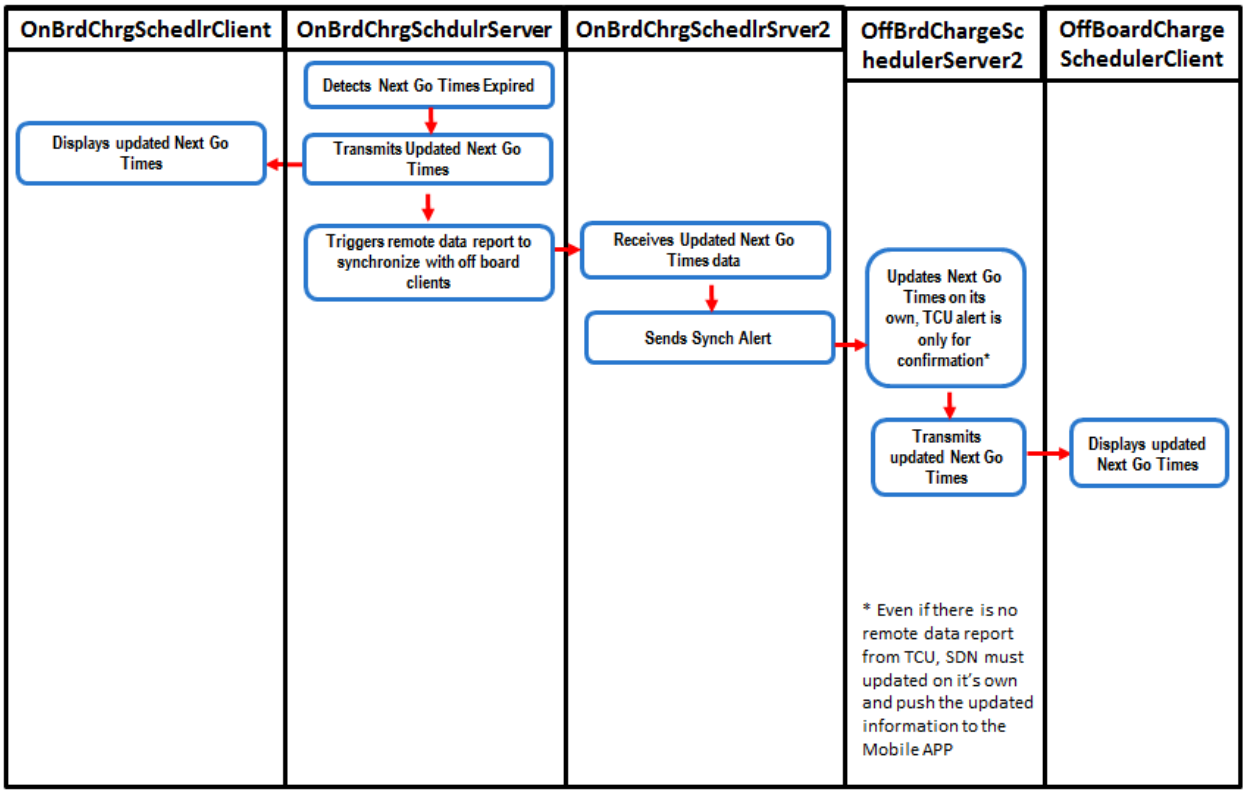
3.5.3.1.5 EVCS-ACT-REQ-250538/B-Onboard Go Time Modification



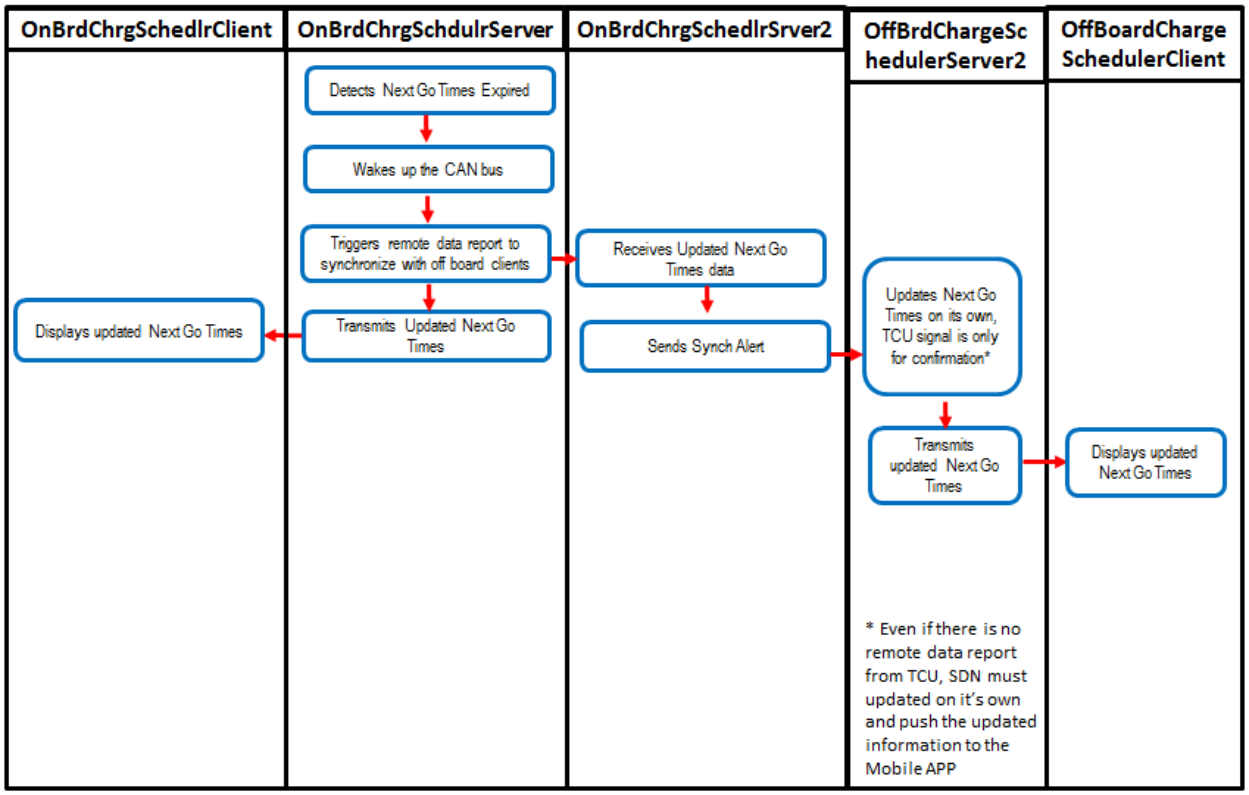
3.5.3.1.6 EVCS-ACT-REQ-250539/B-Off Board Go Times Modification



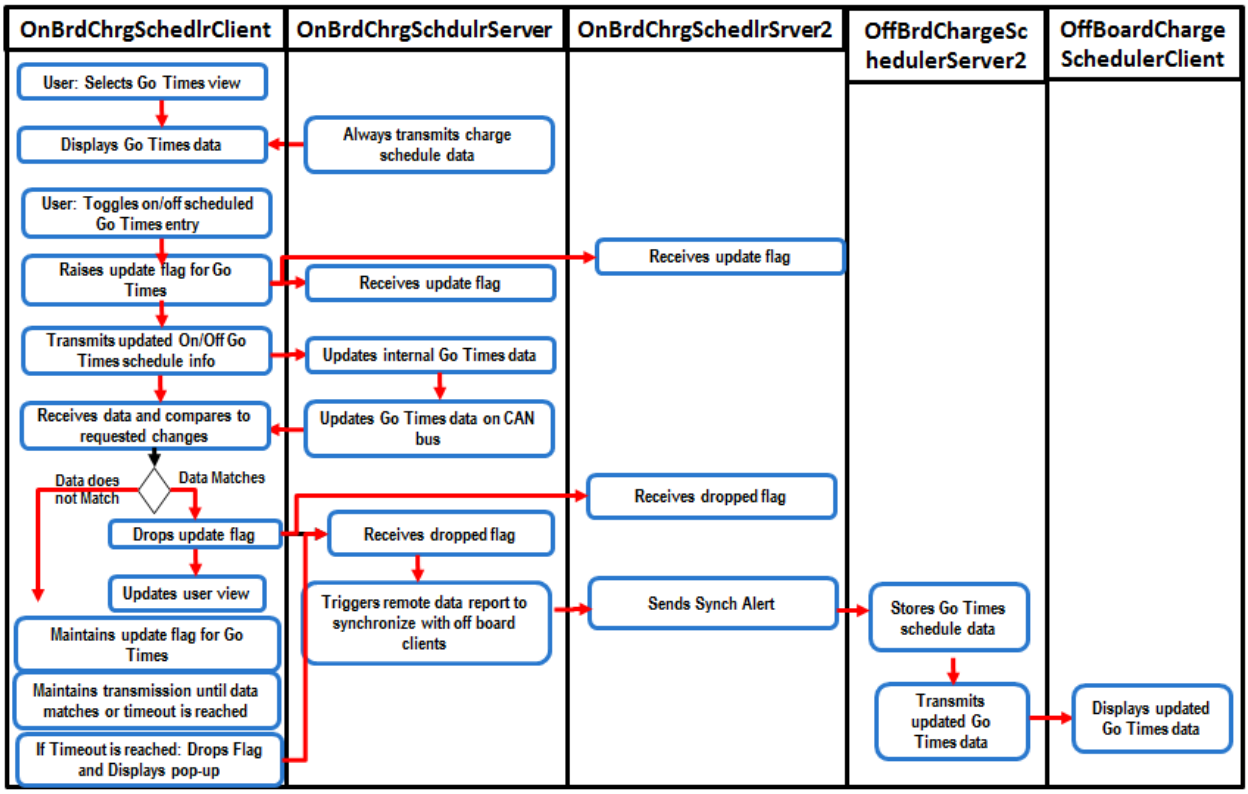
3.5.3.1.7 EVCS-ACT-REQ-250541/B-Next Go Time Expires when vehicle is awake



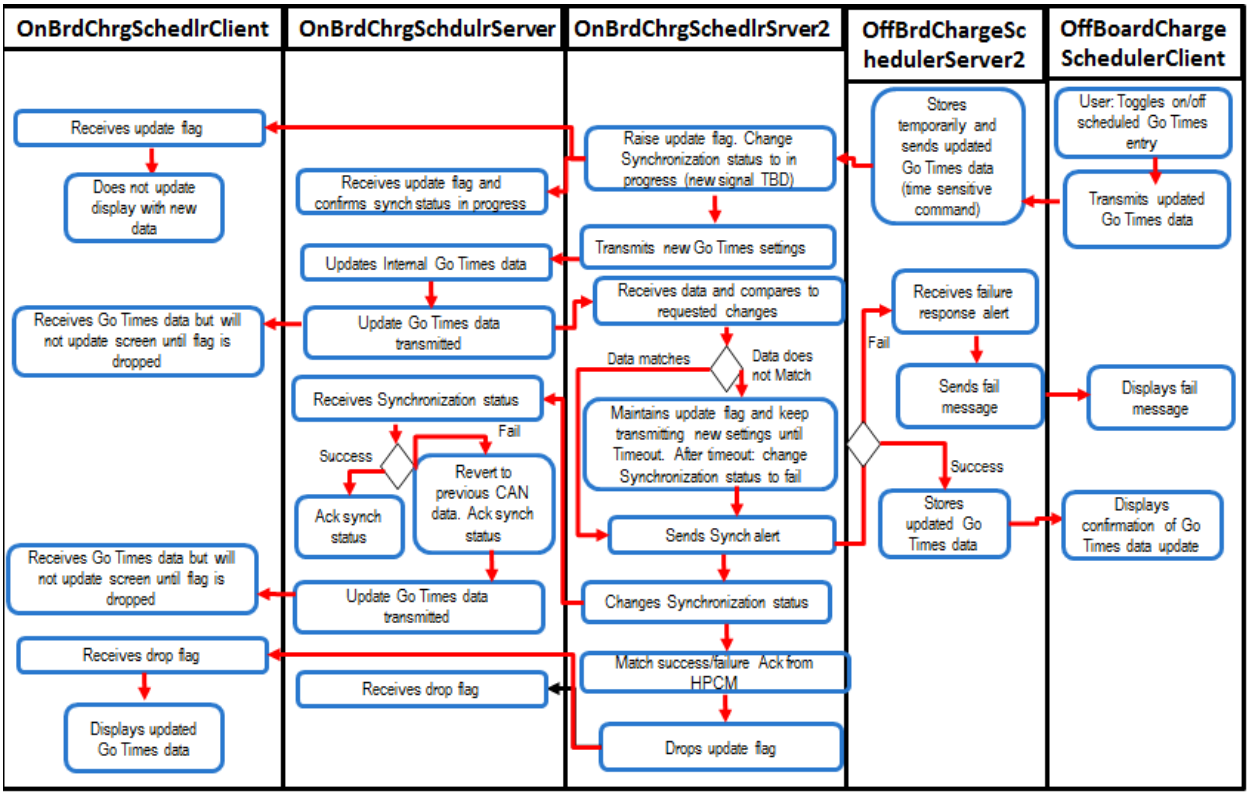
3.5.3.1.8 EVCS-ACT-REQ-250542/B-Next Go Time Expires when vehicle is asleep



3.5.3.1.9 EVCS-ACT-REQ-250544/B-Global Go Time Schedule On/Off

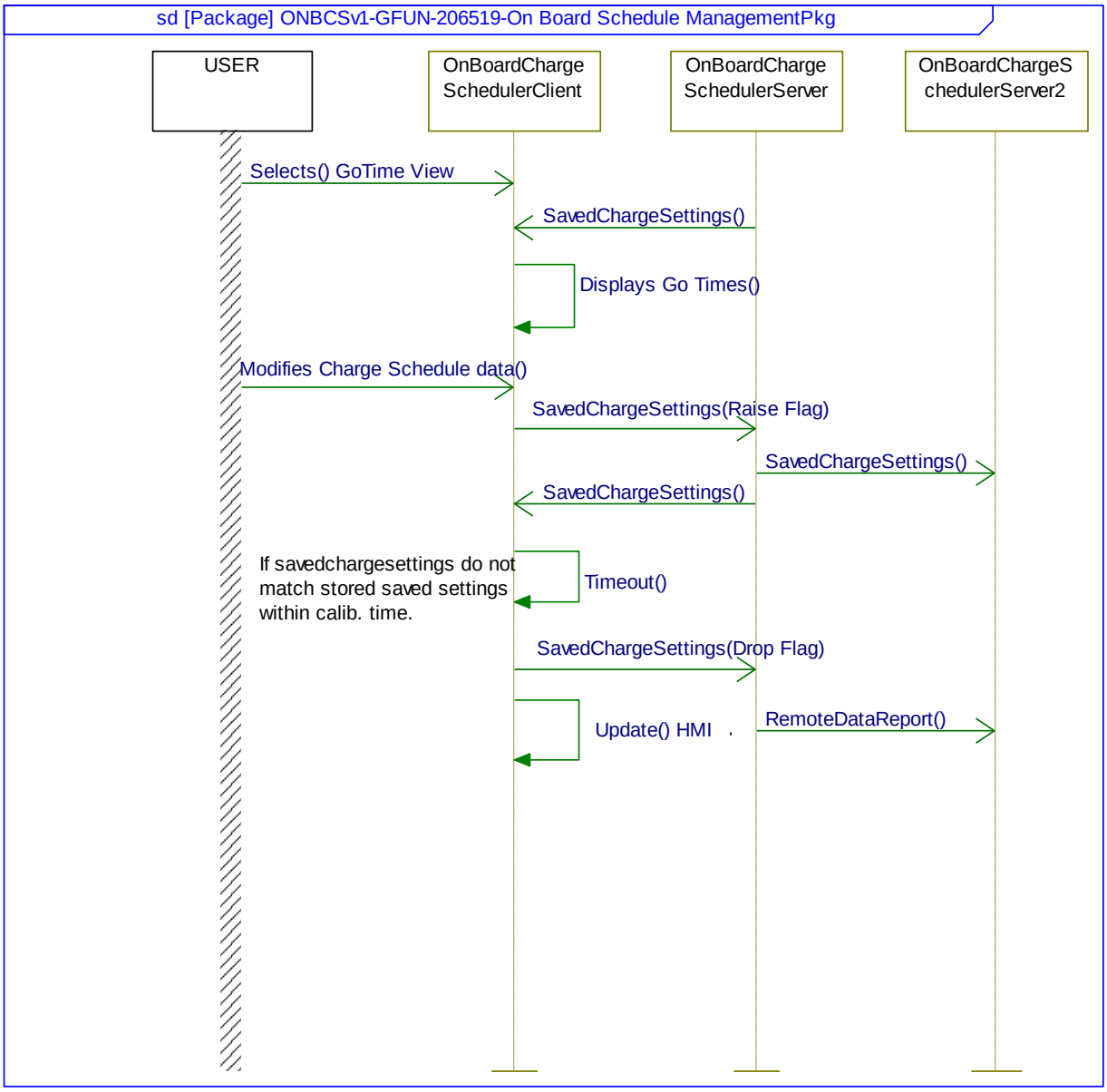


3.5.3.1.10 EVCS-ACT-REQ-250545/B-Off board Global Go Time Schedule On/Off

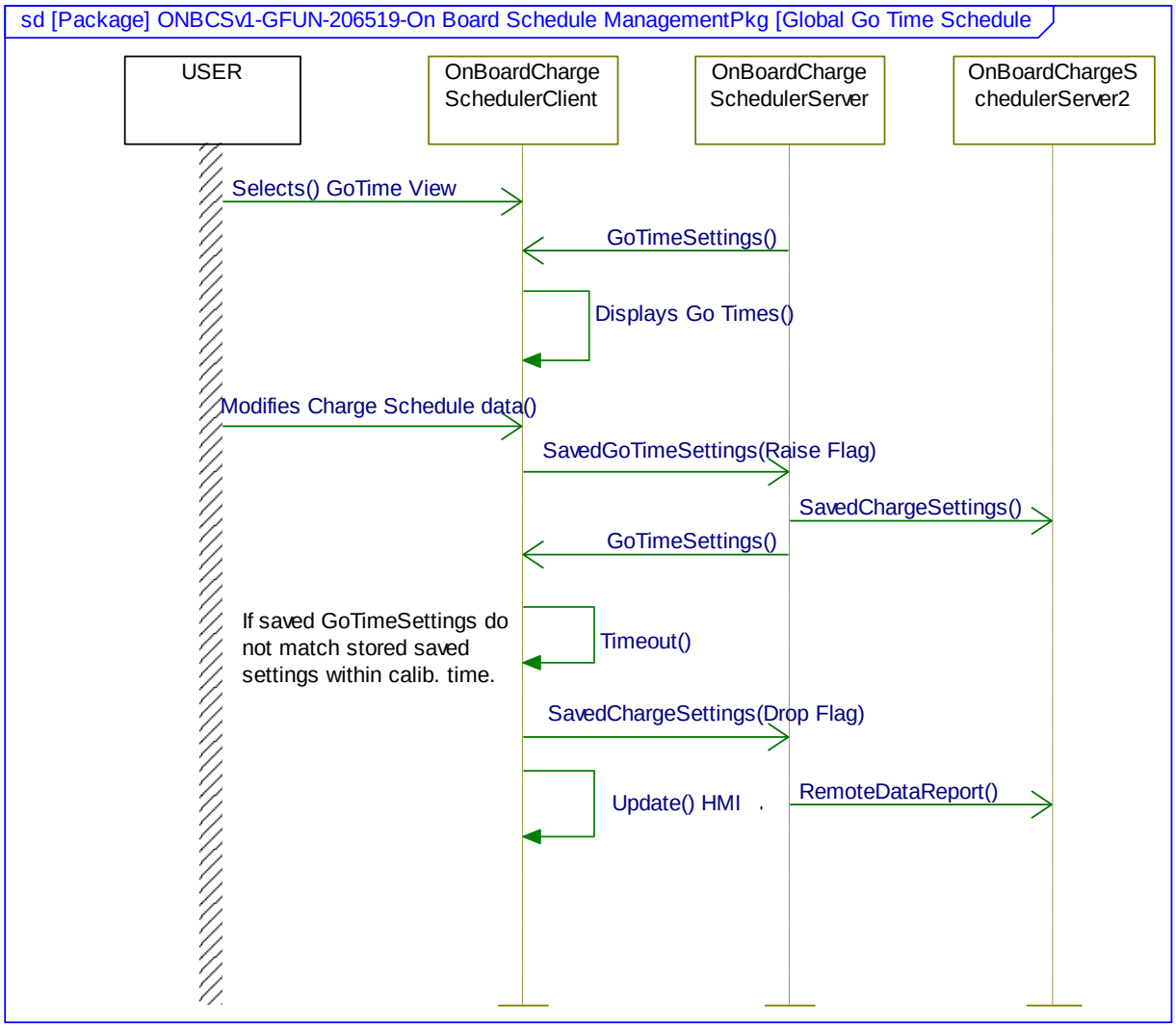


3.5.3.2 Sequence Diagrams

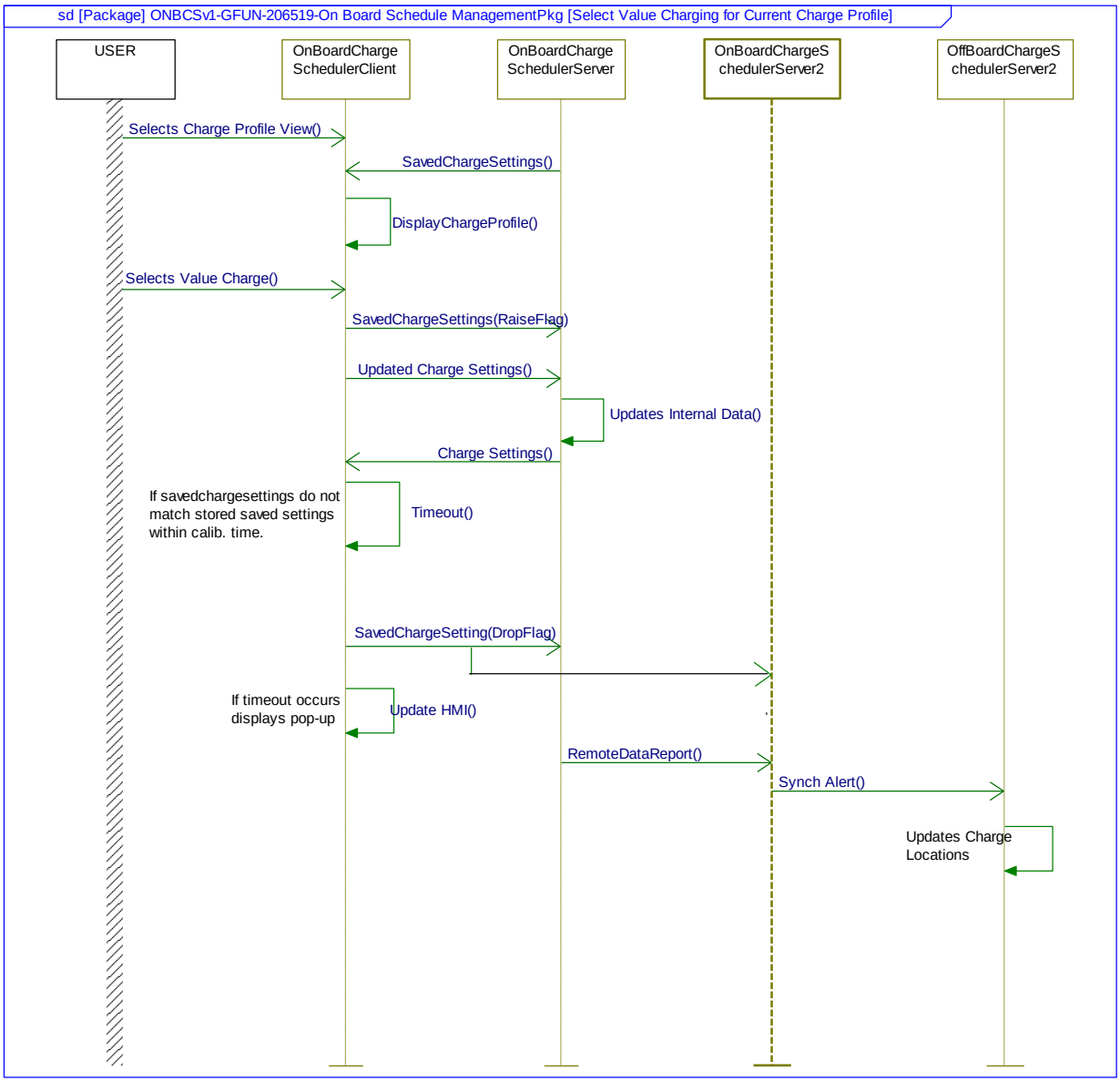
3.5.3.2.1 EVCS-SD-REQ-250647/B-Display and Modify Charge Schedule



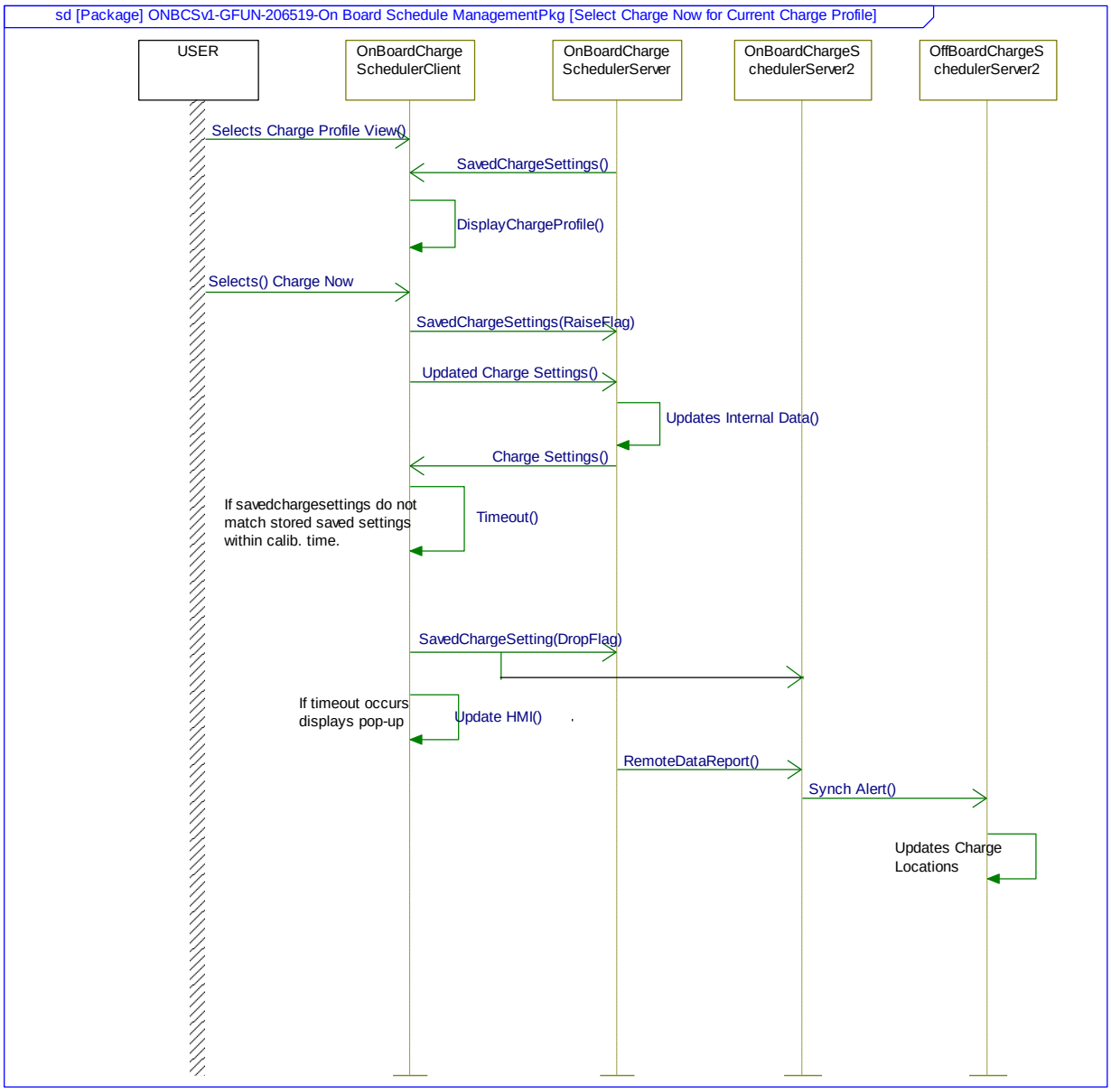
3.5.3.2.2 EVCS-SD-REQ-250645/B-Global Go Time Schedule On/Off



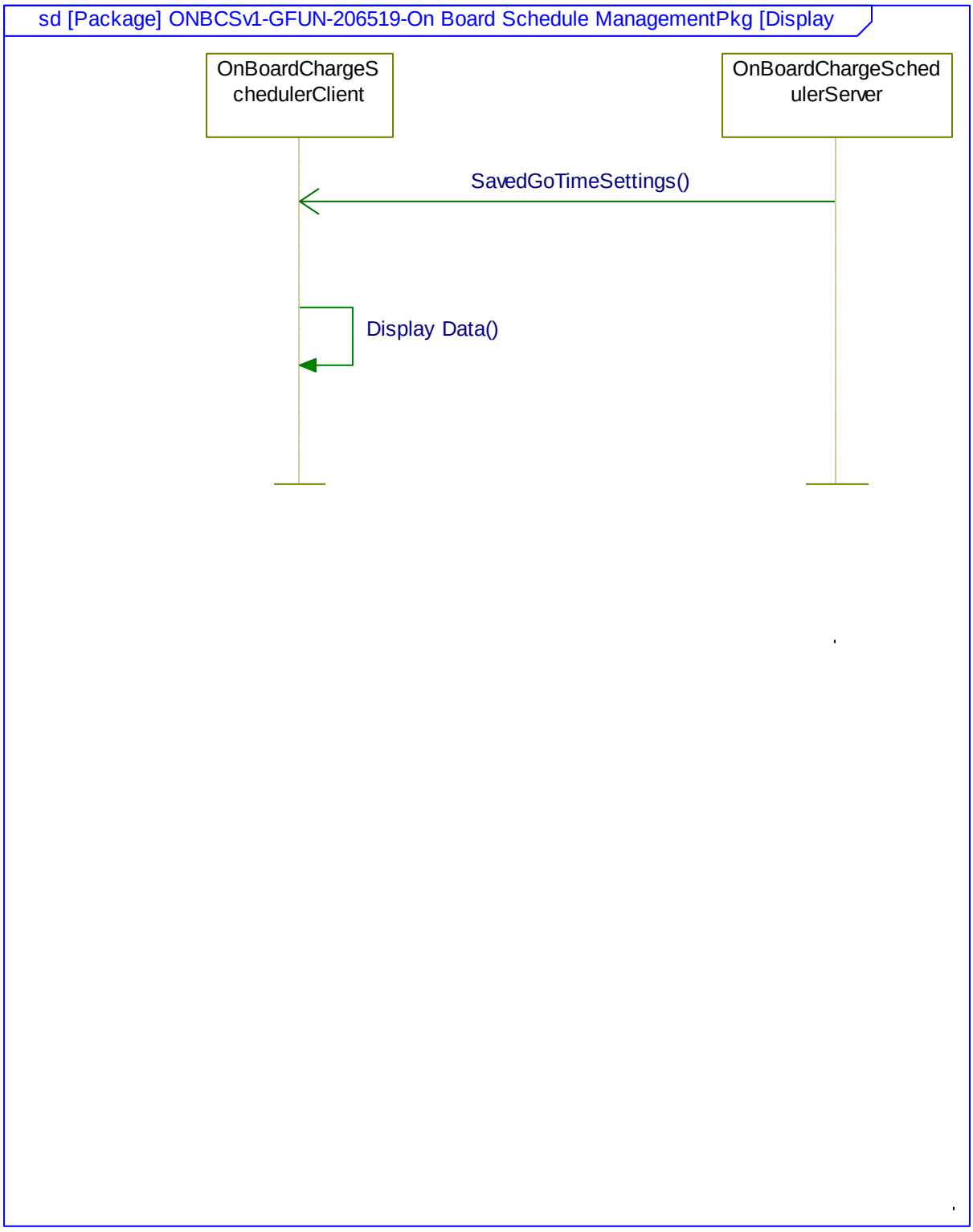
3.5.3.2.3 EVCS-SD-REQ-250656/B-Select Value Charging for Current Charge Profile



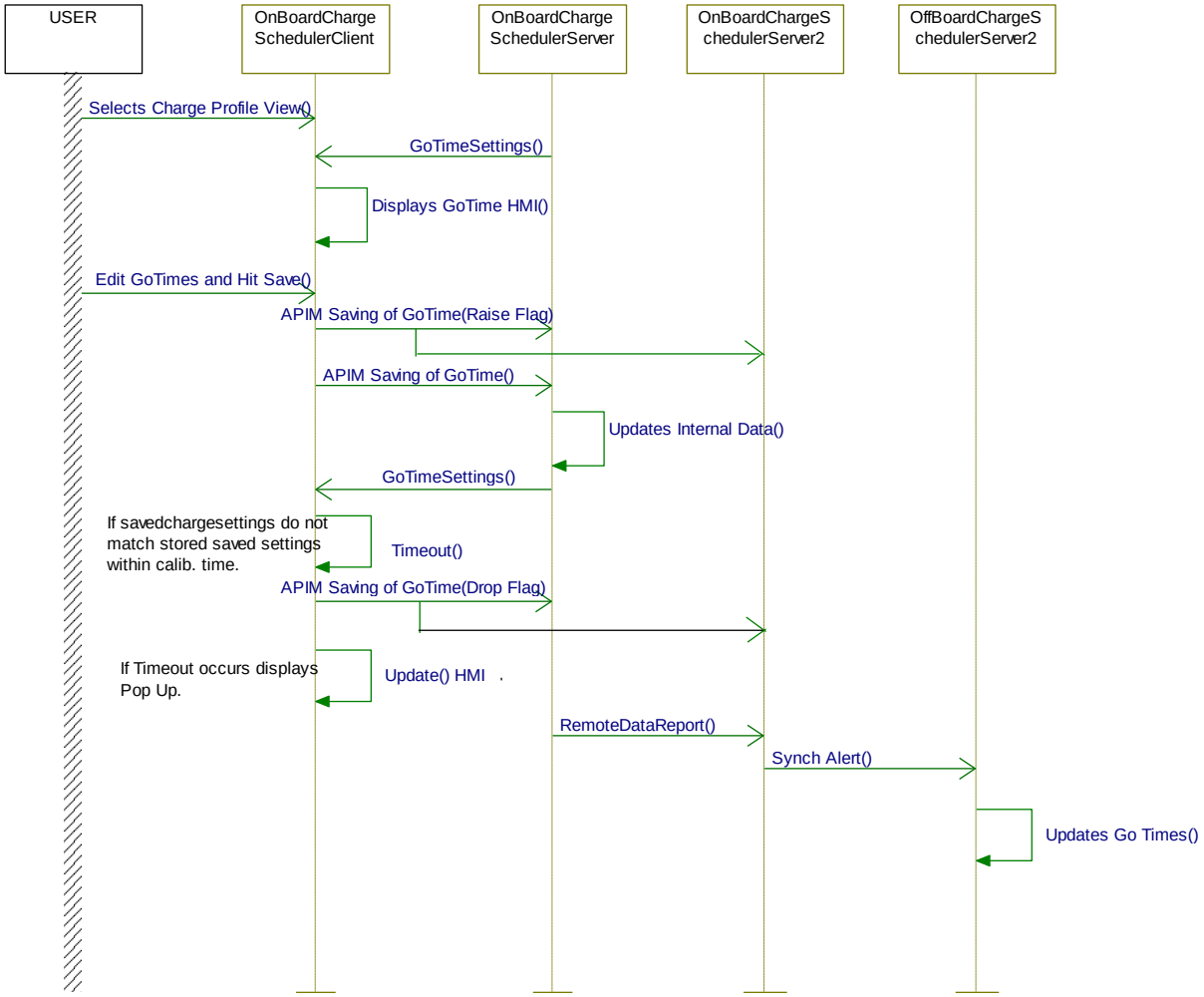
3.5.3.2.4 EVCS-SD-REQ-250657/B-Select Charge Now for Current Charge Profile



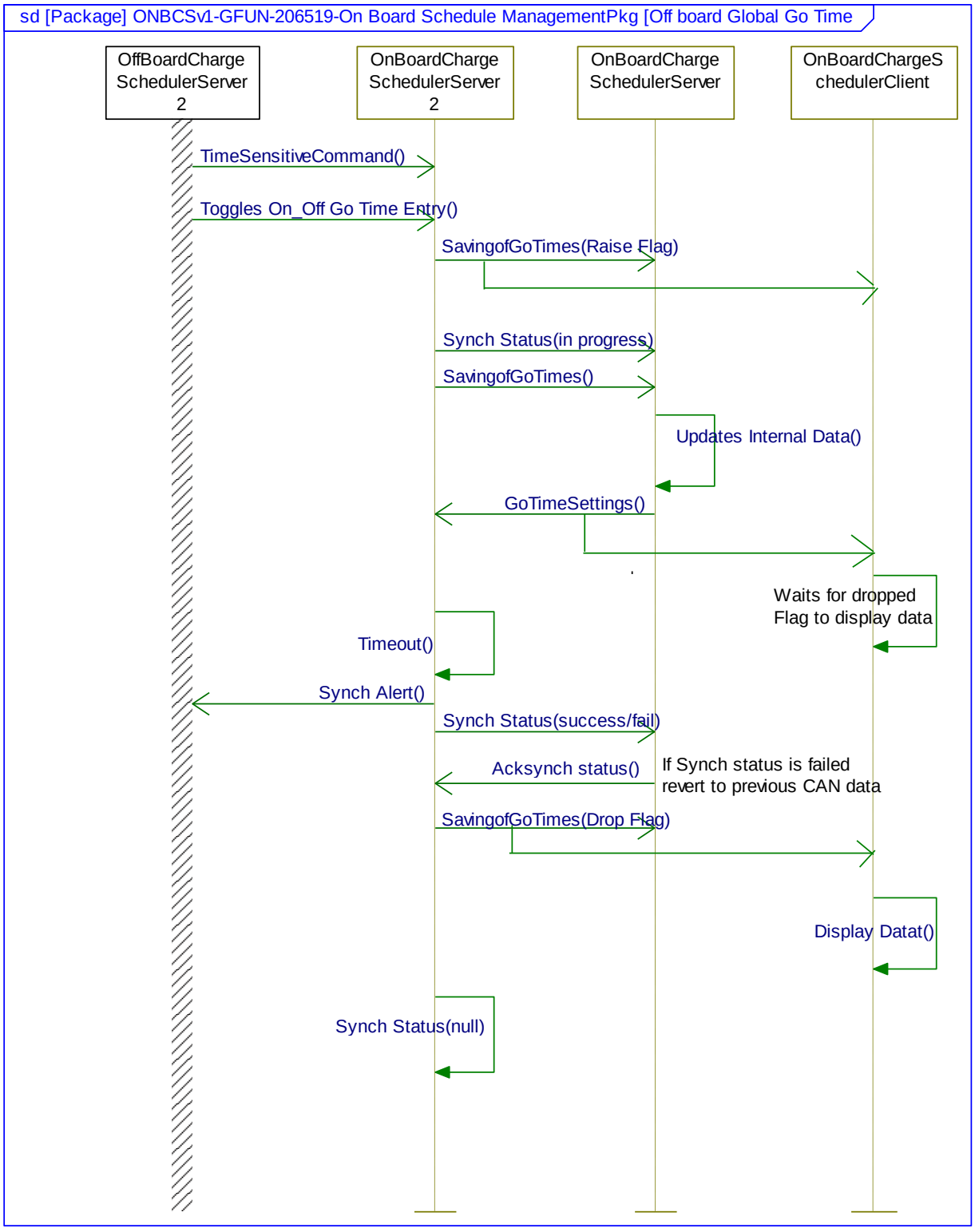
3.5.3.2.5 EVCS-SD-REQ-250641/B-Display Weekly Charge Schedule



3.5.3.2.6 EVCS-SD-REQ-250639/B-On Board Departure Times Modification



3.5.3.2.7 EVCS-SD-REQ-250646/B-Off Board Global Departure Times Schedule On/Off



3.6 FUN-REQ-288218/A-Charge Location Labels

3.6.1 Requirements

3.6.1.1 EVCS-REQ-263448/B-Saved Charge Location Labels

OnBoardChargeSchedulerClient (APIM) shall store user-customizable labels for Saved Charge Locations.

Example:
Saved Charge Location ID 01 == Home
Saved Charge Location ID 02 == Work
Saved Charge Location ID 03 == Gym

3.6.1.2 EVCS-SR-REQ-289184/A-Saved Charge Location Label Synchronization-Onboard

OnBoardChargeSchedulerClient (APIM) shall synchronize Charge Location Labels with the **OnBoardChargeSchedulerServer2 (ECG)** via Transport Protocol when there is a mobile account authenticated with the vehicle. Synchronization shall occur when the following changes are made to Saved Charge Location Settings:

- Creation of a Saved Charge Location
- Deletion of a Saved Charge Location
- Modification of the name of a label for a Saved Charge Location

3.6.1.3 EVCS-SR-REQ-289186/A-Saved Charge Location Label Synchronization-Offboard

OnBoardChargeSchedulerServer2 (ECG) shall synchronize Charge Location Labels with the **OnBoardChargeSchedulerClient (APIM)** via Transport Protocol when there is a mobile account authenticated with the vehicle. Synchronization shall occur when the following changes are made to Saved Charge Location Settings:

- Creation of a Saved Charge Location
- Deletion of a Saved Charge Location
- Modification of the name of a label for a Saved Charge Location

3.6.2 Use Cases

3.6.2.1 EVCS-UC-REQ-289191/A-Onboard label created/modified Charge Location Name ith App Set Up

Actors	User
Pre-conditions	Vehicle is in RUN state
Scenario Description	User creates a profile Charge Location name from HMI.
Post-conditions	1. APIM will send TP message(ChargeProfileLocation_Rsp) with all 10 locations as default and/or saved label names to the ECG. 2. TCU will send the 10 Charge Location Names to the SDN.
List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

3.6.2.2 EVCS-UC-REQ-289192/A-Offboard Server created/modified Charge Location Name with App Set Up

Actors	User
Pre-conditions	Vehicle is in RUN state

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Scenario Description	User creates a profile Charge Location name from App.
Post-conditions	1. SDN will send only the 1 New/Edited Charge Location 2. ECG will send TP Message(ChargeProfileLocation_Rq) to APIM for the 1 location. 3. APIM will send TP Message(ChargeProfileLocation_Rsp) with all 10 locations as default and/or saved label names. 4. ECG will send all 10 Charge location Names to SDN
List of Exception Use Cases	User selects Back without selecting Save. User selects Back without changing any settings. Compare Time Out
Interfaces	G-HMI Vehicle System Interface

3.6.2.3 EVCS-UC-REQ-271611/B-Delete Charge Location Name from onboard

Actors	User
Pre-conditions	Vehicle is in RUN state
Scenario Description	User Deletes a profile Charge Location name from APIM.
Post-conditions	1. APIM completes the deleting of the profile with the HPCM. 2. APIM will delete its internal label name for the deleted profile.
List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

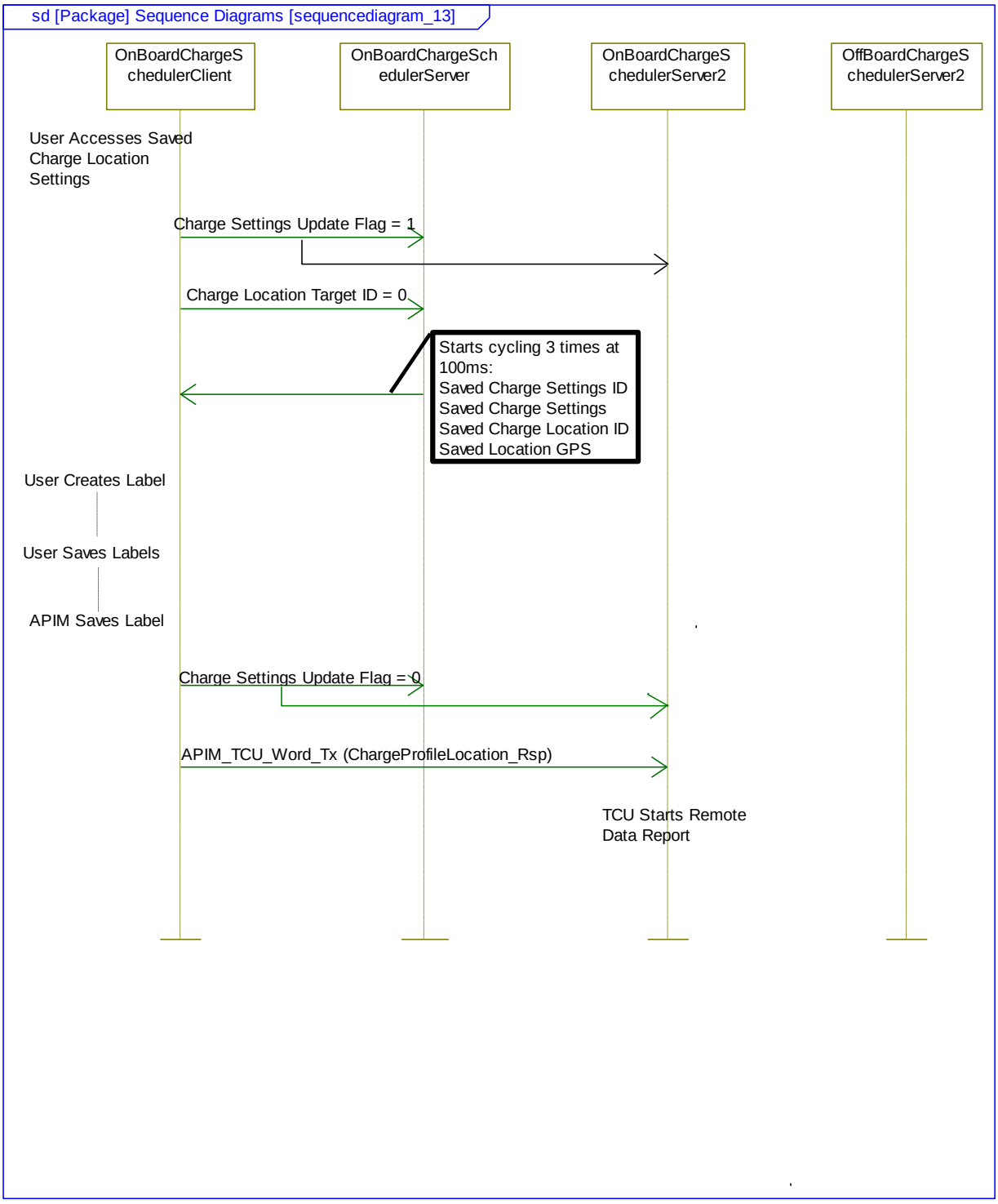
3.6.2.4 EVCS-UC-REQ-289200/A-Delete Charge Location Name from App

Actors	User
Pre-conditions	Vehicle is in RUN state
Scenario Description	User Deletes a profile Charge Location name from APP.
Post-conditions	1. ECG will complete delete Charge Location Profile with HPCM 2. HPCM will send invalid gps coordinates to both ECG and APIM 3. APIM delete its internal label name for the deleted profile.
List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

3.6.3 White Box Views

3.6.3.1 Sequence Diagrams

3.6.3.1.1 EVCS-SD-REQ-277214/B-Client Changes Label Only



3.7 FUN-REQ-288220/A-Additional Function Use Cases

3.7.1 Use Cases

3.7.1.1 EVCS-UC-REQ-250481/B-Master Reset

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on.
Scenario Description	Master Reset request initiated from OnBoardChargeSchedulerClient.
Post-conditions	OnBoardChargeSchedulerServer shall reset all charge programming information to default and all related status information is updated on CAN Bus.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.7.1.2 EVCS-UC-REQ-250924/B-Clear User Settings Command

Actors	Vehicle Occupant
Pre-conditions	The vehicle is authorized and account is activated
Scenario Description	A Clear User Settings Command is initiated from Offboard OffBoardChargeSchedulerServer2.
Post-conditions	OnBoardChargeSchedulerServer2 shall request OnBoardChargeSchedulerServer to reset all charge programming information to default OnBoardChargeSchedulerServer shall reset all charge programming information to default and all related status information is updated on CAN Bus.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.7.1.3 EVCS-UC-REQ-289202/A-Brand new vehicle/App is Set Up

Actors	User
Pre-conditions	Vehicle is in RUN state APIM is operational
Scenario Description	New Vehicle and App is Setup. ECG sends TelematicsService_St = 1,2 state to APIM
Post-conditions	Upon Key On --> APIM will send TP message (ChargeProfileLocation_Rsp) with all 10 Charge location Names as default and/or saved label names to the ECG. ECG will send the updated Location Names to SDN.

List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

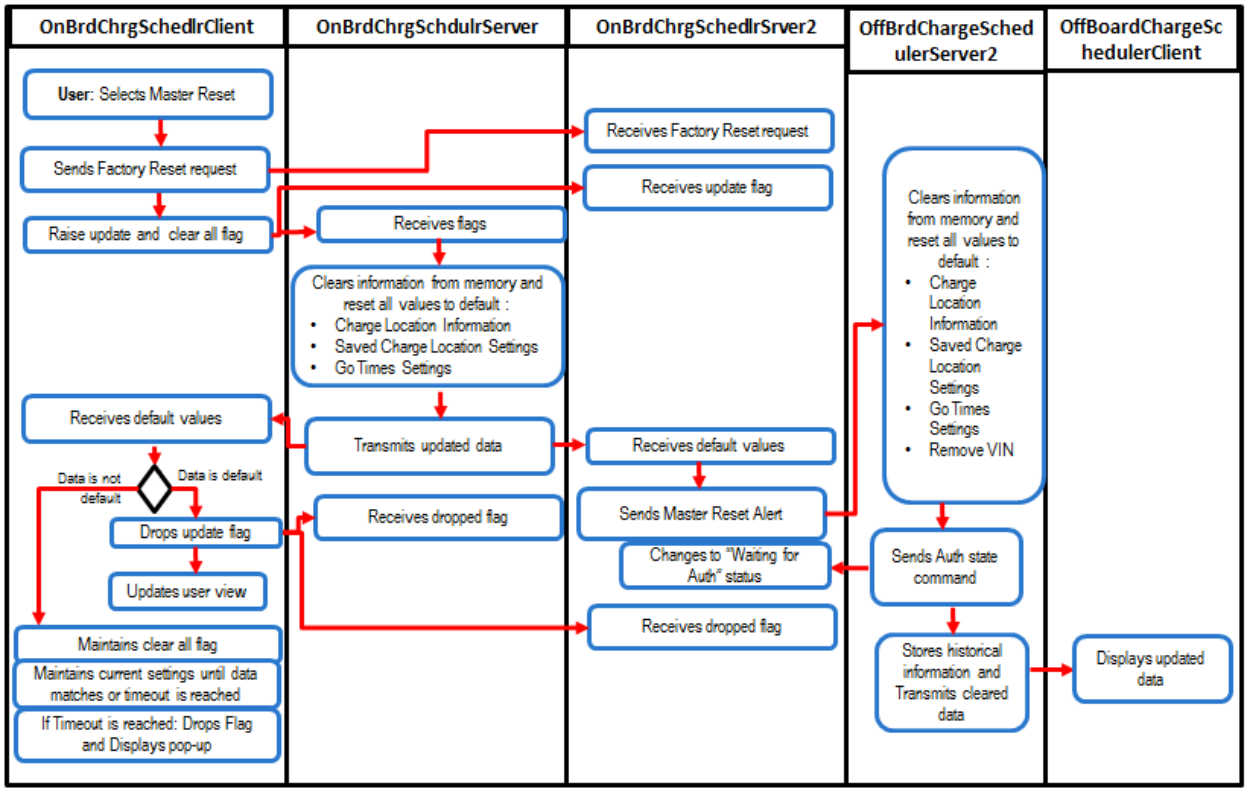
3.7.1.4 EVCS-UC-REQ-289203/A-Brand new Vehicle/No App Set Up

Actors	User
Pre-conditions	Vehicle is in RUN state APIM is operational
Scenario Description	New Vehicle and App NOT Setup. ECG sends TelematicsService_St = 3,4,5 state to APIM
Post-conditions	1. Key On --> APIM will be internally storing default label names locations. 2. If a location name is saved, then the APIM will internally store default and/or saved label name.
List of Exception Use Cases	
Interfaces	G-HMI Vehicle System Interface

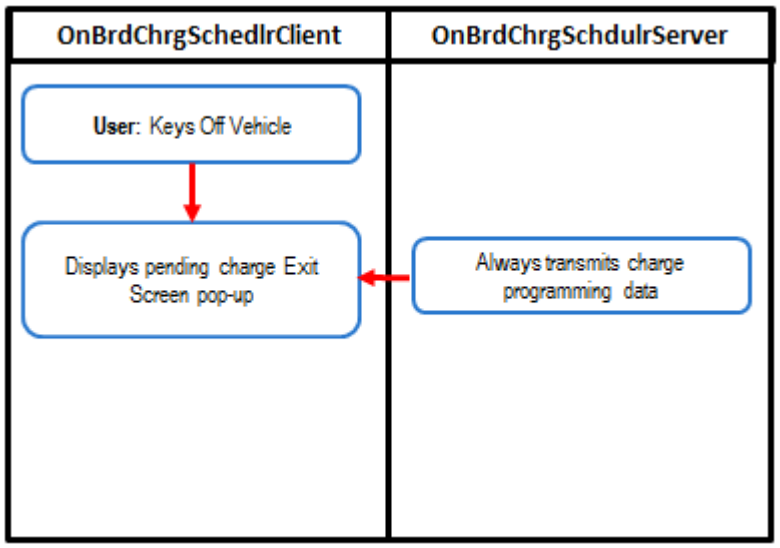
3.7.2 White Box Views

3.7.2.1 Activity Diagrams

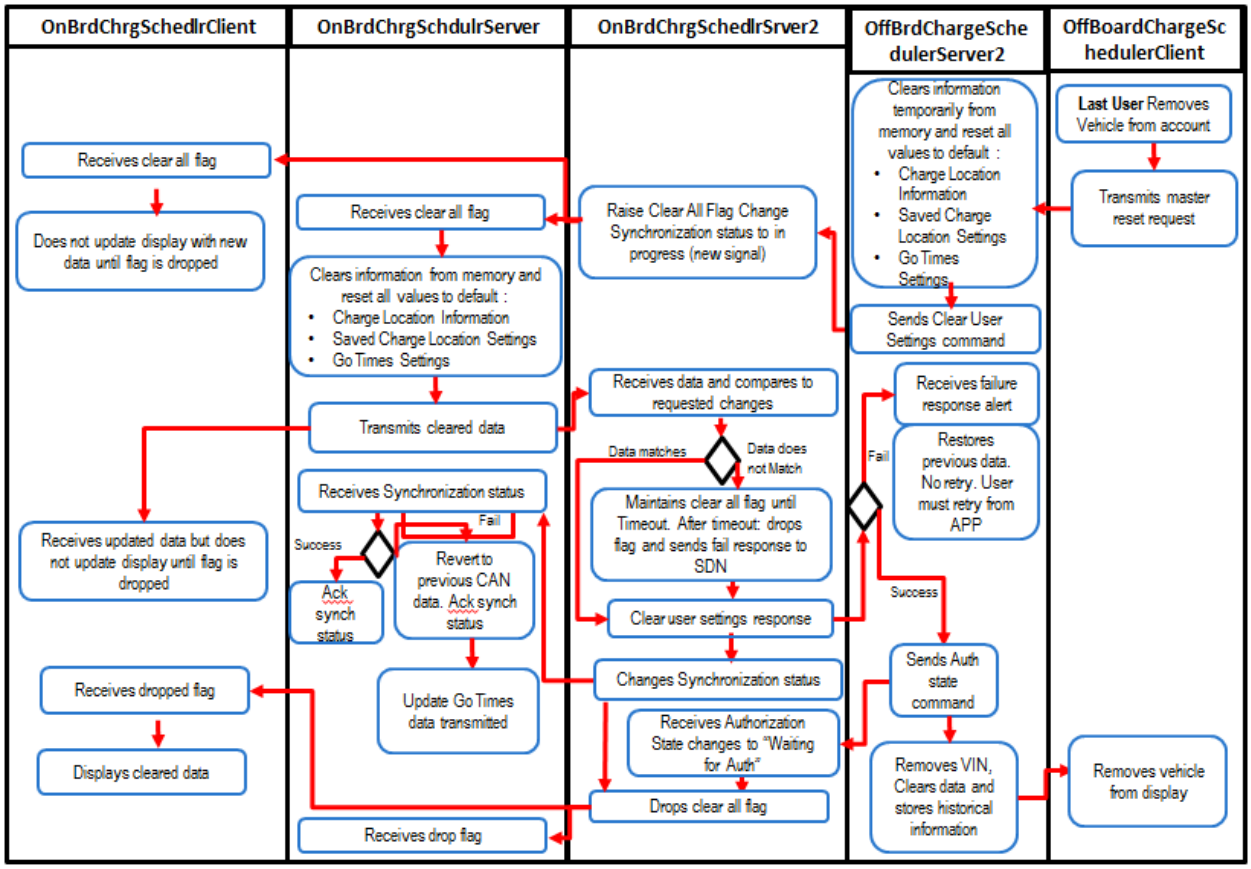
3.7.2.1.1 EVCS-ACT-REQ-250574/B-Master Reset through APIM



3.7.2.1.2 EVCS-ACT-REQ-250573/B-Display Pending Charge Exit Screen

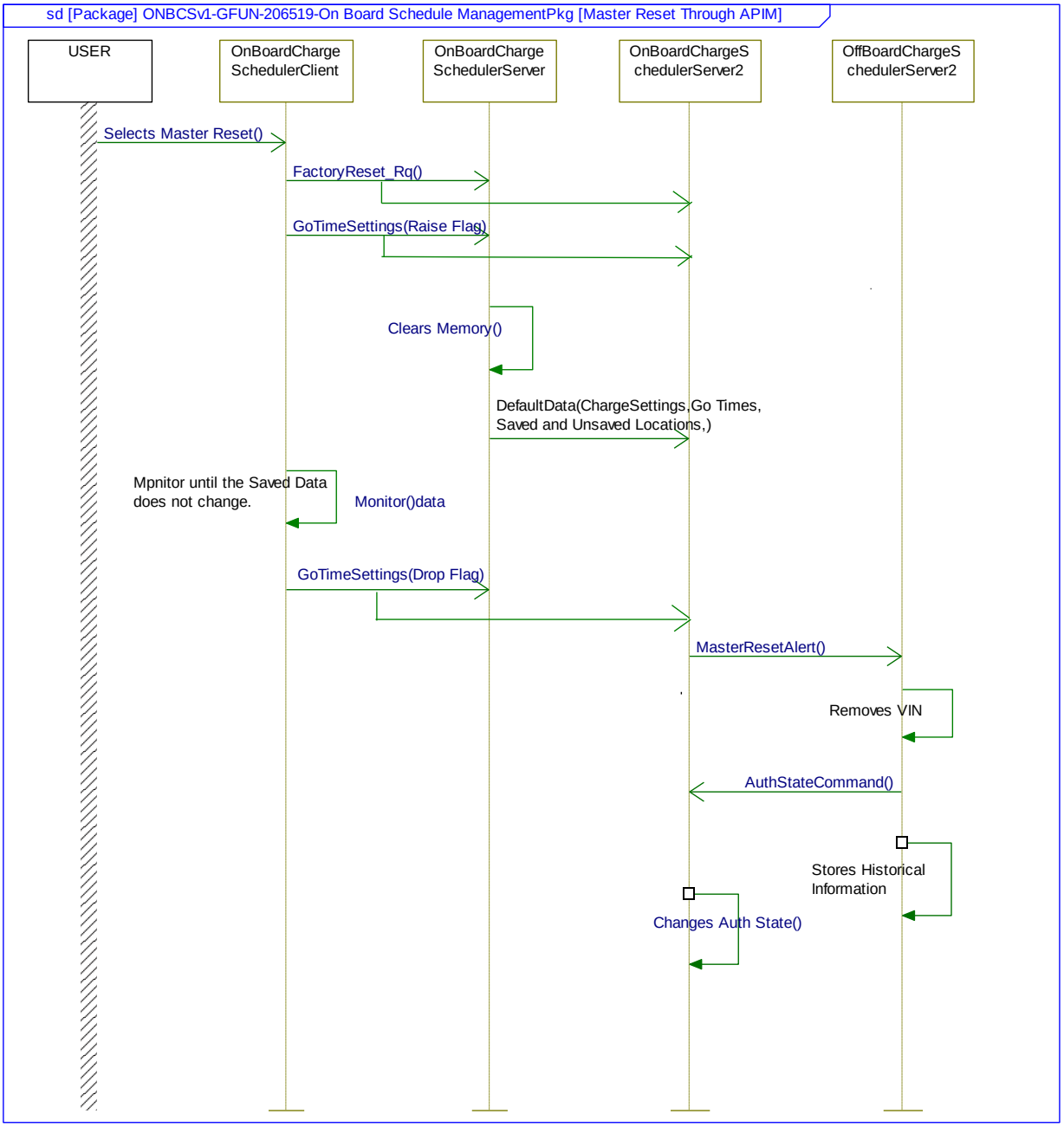


3.7.2.1.3 EVCS-ACT-REQ-250576/B-Clear User Settings Command from off board

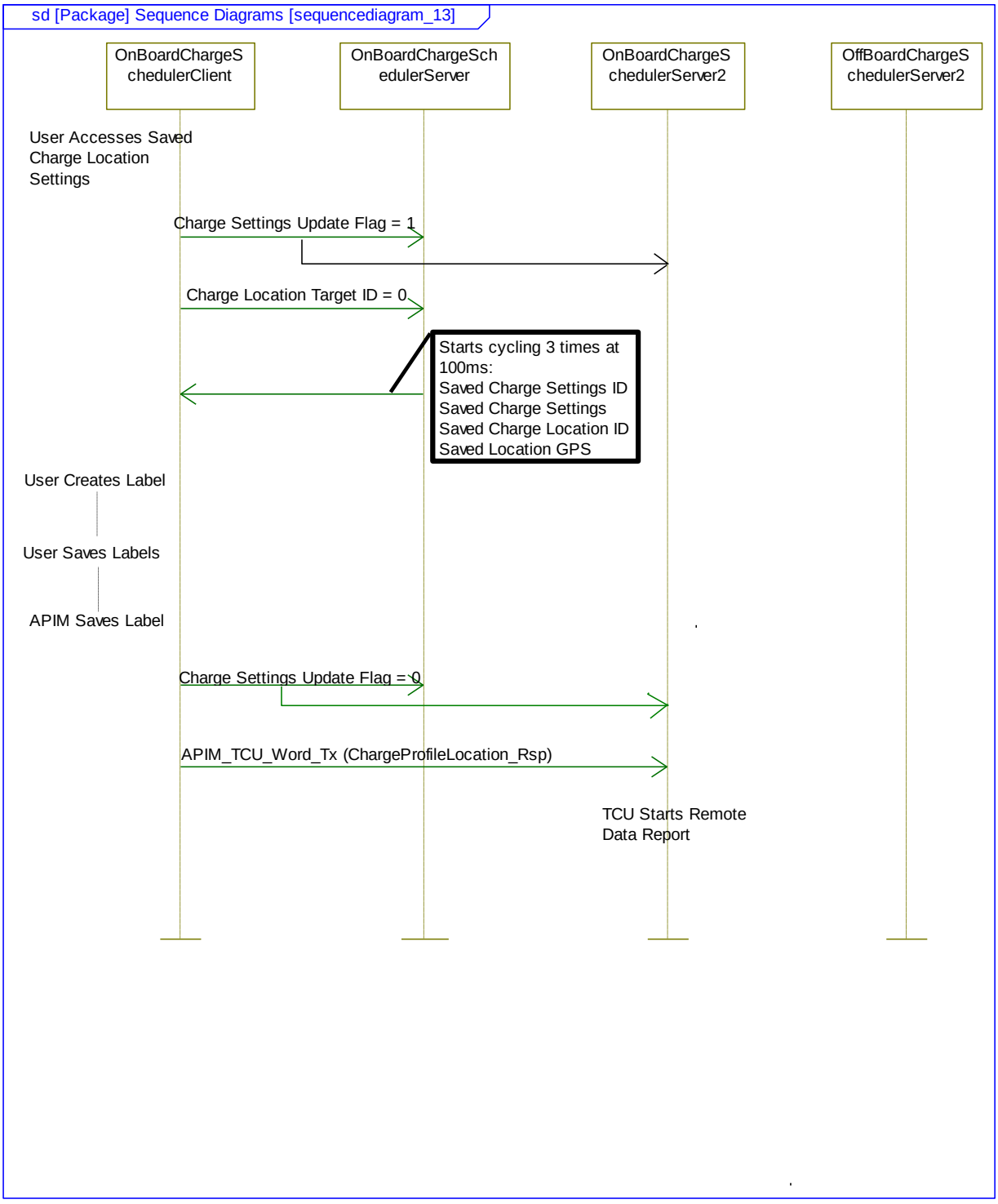


3.7.2.2 Sequence Diagrams

3.7.2.2.1 EVCS-SD-REQ-250659/B-Master Reset through APIM



3.7.2.2.2 EVCS-SD-REQ-277214/B-Client Changes Label Only



4 Appendix A. Definitions, Acronyms, and Abbreviations

Acronym	Description/Definition
FB2	Feature Bundle 2: A previous release of telematics features by Ford Motor Company
FB4	Feature Bundle 4: The release of telematics features by Ford Motor Company that will include the updated functionality described in this document.
FMC	Ford Motor Company
TDC	Telematics Data Collection
3PP	3rd Party Provider
TCU	Telematics Control Unit
UBI	Usage-based Insurance
OBDII	On-Board Diagnostics port version II
T&C	Terms and Conditions
FB3	Feature Bundle 3: A previous release of telematics features by Ford Motor Company
VIN	Vehicle Identification Number
SDN	Service Delivery Network
API	Application Program Interface
PHEV	Plug-in Hybrid Electric Vehicle
EVCS	Electric Vehicle Connected Services
PaaK	Phone as a Key
GPSM	Global Positioning Satellite Module
DTE	Distance to Empty
PEPC	Programmable Electric Pre-Conditioning & Charging
OTA	Over-the-Air
BCM	Body Control Module