Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Tow Haul Auto Control

Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.0
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Version Date: March 16, 2020

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
March 16, 2020	1.0	Initial Release	

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1 Overview

Tow Haul is a drive mode. It is optimized for towing to increase the comfort of the user while towing.

Some background knowledge in understanding the differences between LTowSt and LTowMnu.
The Tow Haul menu is optional (End of Line configuration tied to the menu) where the user can enable /disable the Tow Haul feature via the menu. However, the icon is not optional and is not tied to End of Line configuration. Some programs want Tow Haul to be automatically entered when the drive mode is Normal. This feature originated from IPC but got transferred to new modules. Some display elements that were in IPC may change or may not longer be applicable, such as Icon mentioned above. Refer to HMI specifications for the “looks” and user interface details.

2 Architectural Design

2.1 ATH-CLD-REQ-382853/A-Tow Haul Control Client

Tow Haul Control Client provides the user with an input gate to request feature change.

2.2 ATH-CLD-REQ-382854/A-Tow Haul Control Server

Tow Haul Control Server controls the feature state. It receives user's input through the Client and decides on what to do with the requests.

2.3 Logical Signal Mapping

The CAN signals mentioned throughout this document shall refer to the CAN signal's logical name. The logical names shall be mapped to their actual CAN signal names. Please use the table below to perform the mapping. The InfoCAN database file is the master file for the actual CAN signal names. Note: some CAN signals referenced throughout this document may use the logical name while some may use the actual CAN signal name.

Logical Name	CAN Signal Name
LTowMnu	AutoTowAllw_D_StatMnu
LTowRq	AutoTowAllw_D_RqMnu
IgnSt	Ignition_Status

2.4 ATH-IIR-REQ-382855/A-Tow Haul Control Client Rx

2.4.1 ATH-REQ-382858/A-LTowMnu

LTowMnu : This signal is sent by the server to the client to indicate the menu states of Tow Haul .

Parameter	Parameter Value
0x0	NoSelection
0x1	AutoTowHaulDisabled
0x2	AutoTowHaulEnabled
0x3	TowHaulCommandedOn – Error State

2.4.2 ATH-REQ-382860/A-IgnSt

IgnSt: This signal is received by the client. It provides vehicle power state.

Signal Parameter	Parameter Description
0x0	Unknown
0x1	Off
0x2	Accessory
0x4	Run
0x8	Start
0xF	Invalid

2.5 ATH-IIR-REQ-382856/A-Tow Haul Control Client Tx

2.5.1 ATH-REQ-382859/A-LTowRq

LTowRq : This signal is sent by the client to the server to request state change in Tow Haul feature.

Parameter	Parameter Value
0x0	NoSelection
0x1	AutoTowHaulDisabled
0x2	AutoTowHaulEnabled
0x3	TowHaulCommandedOn

3 General Requirements

3.1 ATH-REQ-382861/A-Value Queries

Due to Client booting time and the signal transit time and type (only on data change), there could be cases where the received values could be missed. The client should request data from the transmitting server whenever the client wakes up due to ignition cycle.

3.2 ATH-REQ-382862/A-System Accuracy

Within a 100msec of receiving data that results in a change of state the client will update the display to the proper status.

3.3 ATH-REQ-382863/A-Status Update

The client shall update the data given to the user provided from the signals LTowSt and LTowMnu whenever the signals change in values.

3.4 ATH-REQ-382978/A-Missing Signals

Server signals are to be considered missing when Server doesn't reply to Client request within 5 seconds.

Server signals that are periodic are to be considered missing if they aren't received by the client within 5 sec, independent of any request sent by the client.

4 Functional Requirements

4.1 ATH-FUN-REQ-382864/A-Tow Haul Control

4.1.1 ATH-REQ-382865/A-Power Mode Operation

The feature should be accessible for interaction to the user while signal IgnSt is 0x4 (Run) and 0x8 (Start) .

4.1.2 ATH-REQ-382977/A-Menu Request Options

Depending on how the GUI for the signal LTowRq has been designed, the client should send a request (upon the user touching the button) opposite to the current state of the feature Menu.
If LTowMnu comes with a value of 0x0 and 0x3 or missing, the client shall send the last known user request.

4.1.3 Use Cases

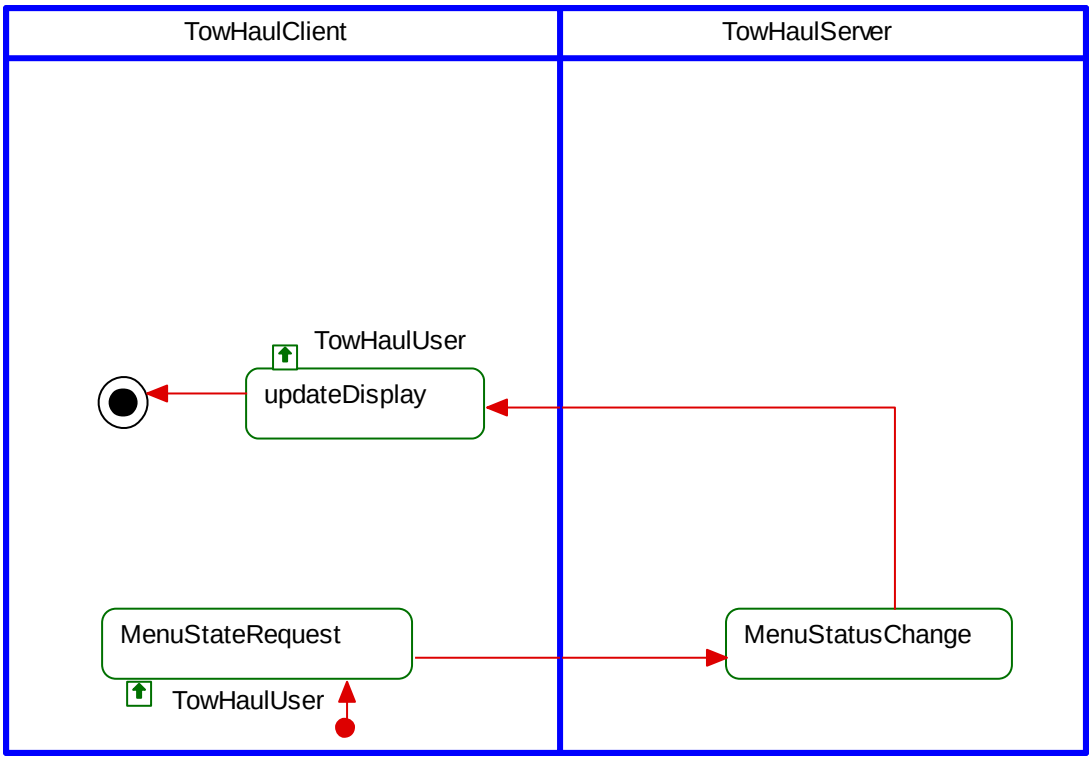
4.1.3.1 ATH-UC-REQ-382894/A-Tow Haul Operation

Actors	User
Pre-conditions	Tow Haul is disabled
Scenario Description	User enabled the Tow Haul feature.
Post-conditions	Tow Haul feature server sends the updated state to the client with Tow Haul feature enabled. Client displays the Tow Haul feature as Enabled.
List of Exception Use Cases	
Interfaces	Client HMI

4.1.4 Activity Views

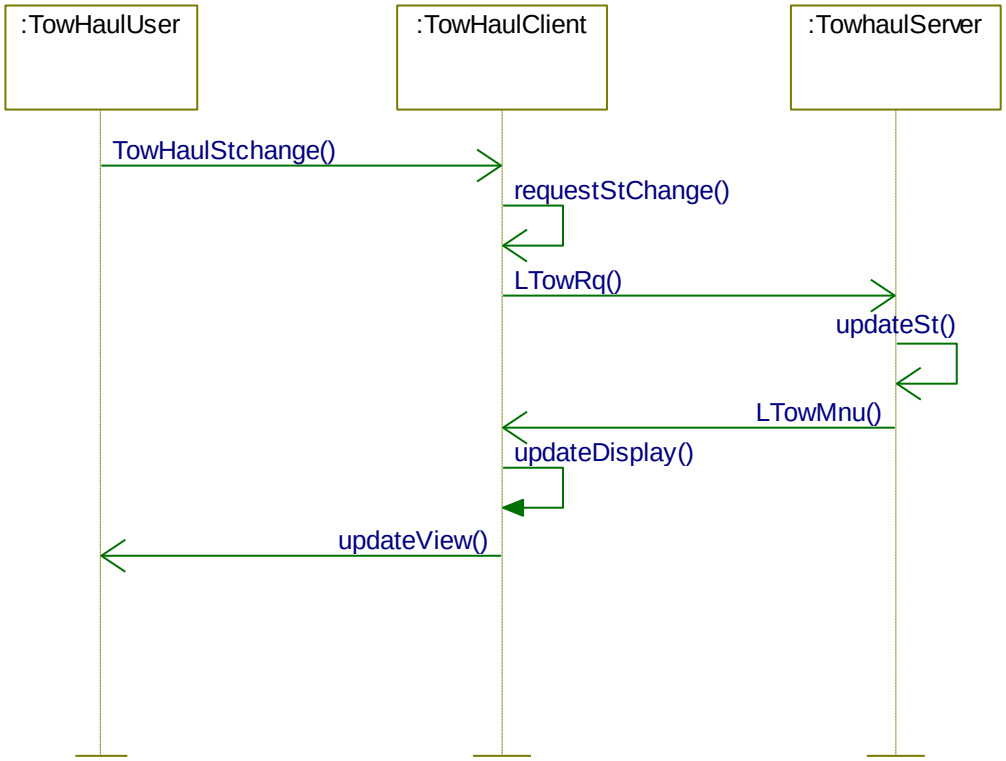
4.1.4.1 Activity Diagram

4.1.4.1.1 ATH-ACT-REQ-382895/A-Tow Haul Operation



4.1.4.2 Sequence Diagram

4.1.4.2.1 ATH-SD-REQ-382896/A-Tow Haul Operation



5 Appendix: Reference Documents

1	Tow Haul Automatic Control Function with Fixed_Dedicated RTT – CGEA1.3