



Research & Vehicle Technology
“Infotainment Systems Product Development”

Feature – Stolen Vehicle Services
InterfaceClient

Infotainment Subsystem Part Specific
Specification (SPSS)

Version 1.8

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Version Date: August 9, 2019

FORD CONFIDENTIAL



Revision History

| Date | Ver | Notes | |
|--------------------|---|---|--|
| February. 22, 2018 | 1.0 | Initial Release | |
| | | | |
| March 29, 2018 | 1.1 | | |
| | STR-491623/B-Terminology and Abbreviations | MBORREL4: Added VHA to Abbreviation list | |
| | STR-491629/B-Physical Mapping of Classes | MBORREL4: Updated table | |
| | STR-491612/B-General Requirements | MBORREL4: Removed REQ-298020. Added REQ-303938, 304063 | |
| | SVS-REQ-298018/B-SVS Capability DID | MBORREL4: Updated content | |
| | SVS-REQ-298019/B-SVS Theft Mode DID | MBORREL4: Updated req name and content | |
| | SVS-REQ-304063/A-SVS Secondary Antenna DID | MBORREL4: New req. | |
| | SVS-REQ-303938/A-SVS-Capability Dependency | MBORREL4: New req. | |
| | STR-491613/B-Functional Definition | MBORREL4: Removed FUN-REQ-291042, FUN-REQ-291047 | |
| | STR-491835/B-Requirements | MBORREL4: Removed REQ-291070, 291071. Added REQ-304064 | |
| | SVS-REQ-291066/B-SVSServer SVS DID Change | MBORREL4: Updated req name and content | |
| | SVS-REQ-291068/B-SVSServer Secondary GNSS Antenna Switch Ignition ON | MBORREL4: Updated req name and content | |
| | SVS-REQ-304064/A-SVSServer Secondary GNSS Antenna Use Ignition OFF | MBORREL4: New req. | |
| | SVS-REQ-291072/B-SVSServer Receives Updated SVSInterfaceClient Location Data | MBORREL4: Updated content | |
| | SVS-REQ-291073/B-SVSInterfaceClient Location To SVSServer Ignition ON | MBORREL4: Updated req name and content | |
| | STR-491837/B-White Box View | MBORREL4: Added REQ-304065 | |
| | STR-523481/A-Activity Diagrams | MBORREL4: New header | |
| | SVS-ACT-REQ-304065/A-Theft Mode Location Source | MBORREL4: New req. | |
| | SVS-FUN-REQ-291044/B-CCS Updates | MBORREL4: Updated req name | |
| | STR-491838/B-Requirements | MBORREL4: Removed REQ-291076, 291078, 291079, 291080. Added REQ-303128-303131 | |
| | SVS-REQ-291066/B-SVSServer SVS DID Change | MBORREL4: Updated req name and content | |
| | SVS-REQ-291075/B-SVSServer Theft Activation To SVSInterfaceClient while Ignition "ON" | MBORREL4: Updated req name and content | |
| | SVS-REQ-303128/A-SVSServer Theft Activation To SVSInterfaceClient while in Ignition "OFF" | MBORREL4: New req. | |
| | SVS-REQ-303129/A-SVSInterfaceClient changes upon "Theft Mode" Activation | MBORREL4: New req. | |
| | SVS-REQ-291077/B-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "ON" | MBORREL4: Updated req name and content | |



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| SVS-REQ-303130/A-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "OFF" | MBORREL4: New req. |
| SVS-REQ-303131/A-SVSServer response update of successful execution of "Theft Mode" De-activation | MBORREL4: New req. |
| STR-491841/B-Requirements | MBORREL4: Removed REQ-291066. Added REQ-304029. 304066 |
| SVS-REQ-304066/A-SVS Primary and Secondary LTE Antenna Communication Management | MBORREL4: New req. |
| SVS-REQ-291081/B-SVSServer FTCP Messages | MBORREL4: Updated req name and content |
| SVS-REQ-304029/A-SVSServer SMS Messages | MBORREL4: New req. |
| SVS-REQ-291083/B-SVSServer HTTPS Response | MBORREL4: Updated req name and content |
| STR-492120/B-FTCP Data Communication | MBORREL4: Updated name. Added REQ-REQ-303287-294. Removed REQ-291235-236, REQ-297605 |
| SVS-REQ-291218/B-Ignition ON, Theft Mode Activation And Data Collection Command From SVSOffBoardClient To SVSServer | MBORREL4: Updated content |
| SVS-REQ-291219/B-Ignition ON, Activate Tracking with Tracking Frequency Change Command From SVSOffBoardClient To SVSServer | MBORREL4: Updated req name and content |
| SVS-REQ-303287/A-Tracking Command Request From Call Center To SVS App in SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-303288/A-FTCP Tracking Command Create At SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-303289/A-FTCP Tracking Command to SVSServer | MBORREL4: New req. |
| SVS-REQ-297604/B-FTCP Message Payload SVSOffBoardClient to Vehicle | MBORREL4: Updated table |
| STR-523316/A-FTCP Retry Strategies | MBORREL4: New header |
| SVS-REQ-303290/A-Call Center Tracking Command Request Failed To Reach SVS App In SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-303291/A-Protocol Gateway Down To Forward FTCP Tracking Request To SVSServer | MBORREL4: New req. |
| SVS-REQ-303292/A-No Network Service (Packet Data) At SVSServer To Receive FTCP Request From Protocol Gateway | MBORREL4: New req. |
| SVS-REQ-303293/A-SVSServer/Antenna Damaged/Disconnect To Receive FTCP Request From IOT | MBORREL4: New req. |
| SVS-REQ-303294/A-SVS Application Retry At SVSOffBoardClient | MBORREL4: New req. |



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| STR-492121/B-HTTPS Data Communication | MBORREL4: Updated name. Removed REQ-291226, 297607. Added REQ-303339-355, 303923 |
| SVS-REQ-291222/B-HTTPS Source And Usage | MBORREL4: Updated req name and content. |
| SVS-REQ-291223/B-Theft Mode Activation Acknowledgement Response From SVSServer To SVSOffBoardClient | MBORREL4: Updated content |
| SVS-REQ-291224/B-Theft Mode Activation With Tracking Frequency Change Acknowledgement Response From SVSServer To SVSOffBoardClient | MBORREL4: Updated req name and content. |
| SVS-REQ-291225/B-Tracking Data Transmission From SVSServer To SVSOffBoardClient | MBORREL4: Updated req name and content. |
| SVS-REQ-291227/B-Response To By Request Tracking Data From SVSServer To SVSOffBoardClient | MBORREL4: Updated content |
| SVS-REQ-291228/B-Theft Mode Deactivation Response From SVSServer To SVSOffBoardClient | MBORREL4: Updated content |
| SVS-REQ-297606/B-HTTPS Message Payload Vehicle to SVSOffBoardClient | MBORREL4: Updated req name and content. |
| STR-523004/A-HTTPS Retry Strategies | MBORREL4: New header |
| SVS-REQ-303339/A-Transient retry at SVSServer for HTTPS connection to SVS app error code 500 | MBORREL4: New req. |
| SVS-REQ-303340/A-SVSServer SVS application retry for HTTPS connection SVS app error code 500 | MBORREL4: New req. |
| SVS-REQ-303341/A-Transient retry at SVSServer for HTTPS network service busy/unavailable error code 503 | MBORREL4: New req. |
| SVS-REQ-303342/A-SVSServer SVS application retry for HTTPS network service busy/unavailable error code 503 | MBORREL4: New req. |
| SVS-REQ-303343/A-Transient retry at SVSServer for HTTPS SVSServer SVS app low memory error code 100 | MBORREL4: New req. |
| SVS-REQ-303344/A-SVSServer SVS application retry for HTTPS SVSServer SVS app low memory error code 100 | MBORREL4: New req. |
| SVS-REQ-303345/A-Transient retry at SVSServer for HTTPS message Content Integrity error (Checksum failure) code 200 | MBORREL4: New req. |
| SVS-REQ-303346/A-SVSServer SVS application retry for HTTPS message Content Integrity error (Checksum failure) code 200 | MBORREL4: New req. |



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| SVS-REQ-303923/A-Transient retry at SVSServer for HTTPS Security (syncP, Signing, message ID) error code 300 | MBORREL4: New req. |
| SVS-REQ-303347/A-SVSServer SVS application retry for HTTPS Security (syncP, Signing, message ID) error code 300 | MBORREL4: New req. |
| SVS-REQ-303348/A-Transient retry at SVSServer for HTTPS SVSServer app Internal (Memory failure, overflow) error code 400 | MBORREL4: New req. |
| SVS-REQ-303349/A-SVSServer SVS application retry for HTTPS SVSServer app Internal (Memory failure, overflow) error code 400 | MBORREL4: New req. |
| SVS-REQ-303350/A-Transient retry at SVSServer for HTTPS message configuration error code 600 | MBORREL4: New req. |
| SVS-REQ-303351/A-SVSServer SVS application retry for HTTPS message configuration error code 600 | MBORREL4: New req. |
| SVS-REQ-303352/A-Transient retry at SVSServer for other identified HTTPS error code | MBORREL4: New req. |
| SVS-REQ-303353/A-SVSServer SVS application retry for other identified HTTPS error code | MBORREL4: New req. |
| SVS-REQ-303354/A-Message level retry at SVSServer for any DTC error code | MBORREL4: New req. |
| SVS-REQ-303355/A-SVSServer SVS application retry for any DTC error code | MBORREL4: New req. |
| STR-492122/B-SMS Data Communication | MBORREL4: Updated name. Removed REQ-291232, 297609. Added REQ-303836-843 |
| SVS-REQ-291229/B-Ignition Off, Theft Mode Activation And Data Collection Command From SVSOffBoardClient To SVSServer | MBORREL4: Updated content |
| SVS-REQ-291230/B-Theft Mode Activation with Tracking Frequency Change Command From SVSOffBoardClient To SVSServer | MBORREL4: Updated req name and content |
| SVS-REQ-291231/B-Ignition Off, On Request Theft Mode Activation And Data Collection From SVSOffBoardClient To SVSServer | MBORREL4: Updated content |
| SVS-REQ-291233/B-Ignition Off, Theft Mode Deactivation Command From SVSOffBoardClient To SVSServer | MBORREL4: Updated content |
| SVS-REQ-303836/A-Tracking command request from call center to SVS App in SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-303837/A-SMS tracking command create at SVSOffBoardClient | MBORREL4: New req. |



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| SVS-REQ-303838/A-SMS tracking command to SVSServer | MBORREL4: New req. |
| SVS-REQ-297608/B-SMS Message Payload SVSOffBoardClient to Vehicle | MBORREL4: Updated content |
| STR-523325/A-SMS Retry Strategies | MBORREL4: New header |
| SVS-REQ-303839/A-Call center tracking command request failed to reach SVS App in SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-303840/A-Carrier Systems down to forward SMS tracking request to SVSServer | MBORREL4: New req. |
| SVS-REQ-303841/A-No network service at SVSServer to receive SMS request from carrier systems | MBORREL4: New req. |
| SVS-REQ-303842/A-SVSServer/Antenna damaged/disconnect to receive SMS request from SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-303843/A-SVS Application retry at SVSOffBoardClient | MBORREL4: New req. |
| STR-491843/B-White Box View | MBORREL4: Added REQ-303285, 303327, 303698, 303710, 304068 |
| STR-523478/A-Activity Diagrams | MBORREL4: New header |
| SVS-ACT-REQ-304068/A-Theft Mode Primary/Secondary Antenna Use | MBORREL4: New req. |
| STR-523479/A-Sequence Diagrams | MBORREL4: New header |
| SVS-SD-REQ-303285/A-FTCP Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: New req. |
| SVS-SD-REQ-303327/A-FTCP Retry Strategies | MBORREL4: New req. |
| SVS-SD-REQ-303698/A-SMS Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: New req. |
| SVS-SD-REQ-303710/A-SMS Retry Strategies | MBORREL4: New req. |
| STR-491844/B-Requirements | MBORREL4: Removed REQ-291088-291091, REQ-291095-291099, REQ-291101-291106. Added REQ-303133-REQ-303151 |
| SVS-REQ-291084/B-Assumptions | MBORREL4: Updated content |
| SVS-REQ-291085/B-Power Modes | MBORREL4: Updated content |
| SVS-REQ-291086/B-Customer NOT Subscribed To SVS | MBORREL4: Updated content |
| SVS-REQ-303133/A-Main battery power while ignition "ON" | MBORREL4: New req. |
| SVS-REQ-303134/A-Main battery power while SVS Subscription NOT active | MBORREL4: New req. |
| SVS-REQ-303135/A-Main battery power while SVS Subscription active | MBORREL4: New req. |
| SVS-REQ-303136/A-Main battery SVS RTC Time DID | MBORREL4: New req. |



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| Enabled while SVS subscription active | |
| SVS-REQ-303137/A-Main battery SVS RTC Time DID Disabled while SVS Subscription active | MBORREL4: New req. |
| SVS-REQ-303138/A-Main battery SVS RTC Time Termination while SVS Subscription active | MBORREL4: New req. |
| SVS-REQ-303139/A-Main battery SVS RTC Time Termination while SVS Subscription active Alert | MBORREL4: New req. |
| SVS-REQ-303140/A-Main battery power while SVS "Theft Mode" Active | MBORREL4: New req. |
| SVS-REQ-303141/A-Periodicity Reduction Main battery power while "Theft Mode" active | MBORREL4: New req. |
| SVS-REQ-303142/A-Main battery Depletion while "Theft Mode" active | MBORREL4: New req. |
| SVS-REQ-303143/A-Main battery Depletion while "Theft Mode" active and NO BUB | MBORREL4: New req. |
| SVS-REQ-303144/A-Main battery Depletion while "Theft Mode" active and BUB | MBORREL4: New req. |
| SVS-REQ-291100/B-SVSServer BUB Power while in "Theft Mode" | MBORREL4: Updated req name and content |
| SVS-REQ-303145/A-Periodicity Reduction SVSServer BUB power while "Theft Mode" active | MBORREL4: New req. |
| SVS-REQ-303146/A-SVSServer BUB SVS Allowed Depletion while in "Theft Mode" | MBORREL4: New req. |
| SVS-REQ-303147/A-SVSServer BUB power while NOT in "Theft Mode" and Main Battery Disconnected | MBORREL4: New req. |
| SVS-REQ-303148/A-SVSServer BUB SVS RTC Time DID Enabled | MBORREL4: New req. |
| SVS-REQ-303149/A-SVSServer BUB SVS RTC Time DID Disabled | MBORREL4: New req. |
| SVS-REQ-303150/A-SVSServer BUB SVS RTC Time Termination | MBORREL4: New req. |
| SVS-REQ-303151/A-SVSServer BUB SVS RTC Time Termination Alert | MBORREL4: New req. |
| STR-491846/B-White Box View | MBORREL4: Removed REQ-291113-114. Added REQ-303152 |
| STR-523480/A-Activity Diagrams | MBORREL4: New header |
| SVS-ACT-REQ-303152/A-Battery Power Management | MBORREL4: New req. |

April 27, 2018

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| STR-491622/B-Overview | MBORREL4: Updated content |
| STR-491623/C-Terminology and Abbreviations | MBORREL4: Updated table |



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| SVS-CLD-REQ-291017/B-Stolen Vehicle Services Server | MBORREL4: Updated roles and resp. |
| SVS-CLD-REQ-291018/B-Stolen Vehicle Services Interface Client | MBORREL4: Updated roles and resp. |
| SVS-CLD-REQ-291115/B-Stolen Vehicle Services OnBoard Client | MBORREL4: Updated roles and resp. |
| SVS-CLD-REQ-291116/B-Stolen Vehicle Services OffBoard Client | MBORREL4: Updated roles and resp. |
| SVS-IIR-REQ-291024/B-SVSInterfaceClient_Tx | MBORREL4: Added REQ-304069. Removed translation table detail. |
| MD-REQ-304069/A-getTcuDidData | MBORREL4: New req. |
| SVS-IIR-REQ-291025/B-SVSInterfaceClient_Rx | MBORREL4: Added REQ-304069-070. Removed translation table detail. |
| MD-REQ-304069/A-getTcuDidData | MBORREL4: New req. |
| MD-REQ-304070/A-getTcuDidUpdateData | MBORREL4: New req. |
| STR-491612/C-General Requirements | MBORREL4: Removed REQ-303938, Moved REQ-298018, 298019, 304063 to new function (REQ-306285). Added REQ-306291-292 |
| SVS-REQ-306291/A-Factory Mode SVS Disablement | MBORREL4: New req. |
| SVS-REQ-306292/A-Transport Mode SVS Disablement | MBORREL4: New req. |
| STR-491613/C-Functional Definition | MBORREL4: Added REQ-306285, REQ-307227 |
| SVS-REQ-298018/C-SVS Capability DID | MBORREL4: Updated content |
| SVS-REQ-298019/C-SVS Theft Mode DID | MBORREL4: Updated content |
| SVS-REQ-304063/B-SVS Backup Antenna DID | MBORREL4: Updated content and req title |
| SVS-REQ-306296/A-SVS Main Battery RTC DID | MBORREL4: New req. |
| SVS-REQ-306297/A-SVS Backup Battery RTC DID | MBORREL4: New req. |
| SVS-REQ-306301/A-SVS HTTP Retry Number DID | MBORREL4: New req. |
| SVS-REQ-306302/A-SVS HTTP Retry Frequency DID | MBORREL4: New req. |
| SVS-REQ-306303/A-SVS Configuration Table | MBORREL4: New req. |
| SVS-UC-REQ-304493/A-Theft Mode Activation | MBORREL4: New usecase |
| SVS-UC-REQ-304494/A-Theft Mode Check Upon Wake-Up | MBORREL4: New usecase |
| SVS-UC-REQ-304495/A-Theft Mode De-Activation | MBORREL4: New usecase |
| STR-531636/A-Activity Diagrams | MBORREL4: New header |
| SVS-ACT-REQ-306767/A-Theft Mode Activation | MBORREL4: New req. |
| SVS-ACT-REQ-306768/A-Theft Mode De-Activation | MBORREL4: New req. |
| SVS-ACT-REQ-306769/A-Theft Mode Check Upon Wake-Up | MBORREL4: New req. |
| STR-531637/A-Sequence Diagrams | MBORREL4: New header |
| SVS-SD-REQ-306770/A-Theft Mode Activation | MBORREL4: New req. |
| SVS-SD-REQ-306771/A-Theft Mode De-Activation | MBORREL4: New req. |
| SVS-SD-REQ-306772/A-Theft Mode Check Upon Wake-Up | MBORREL4: New req. |



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| SVS-REQ-308660/A-Use of Pre-existing SVSServer DTCs | MBORREL4: New req. |
| SVS-REQ-307228/A-SVSServer DTC List | MBORREL4: New req. |
| STR-491835/C-Requirements | MBORREL4: Removed REQ-291066-67 and REQ-291072-73. Added new REQ-306310-312 and added back the previously removed REQ-291070-071. Added REQ-308661 |
| SVS-REQ-291068/C-SVSServer Backup GNSS Antenna Use Ignition ON | MBORREL4: Updated content and req title |
| SVS-REQ-304064/B-SVSServer Backup GNSS Antenna Use Ignition OFF | MBORREL4: Updated content and req title |
| SVS-REQ-291069/B-SVSServer Unable To Obtain Location From Backup GNSS Antenna While Ignition OFF | MBORREL4: Updated content and req title |
| SVS-REQ-306310/A-SVSServer Unable To Obtain Location from Either Primary or SVS Backup Antenna | MBORREL4: New req. |
| SVS-REQ-306311/A-SVSServer Unable To Obtain Location from Either Primary or SVS Backup Antenna and Last Known Location Unknown | MBORREL4: New req. |
| SVS-REQ-306312/A-SVSServer HTTP Message with Location Unavailable Fields Location Becomes Available Ignition ON | MBORREL4: New req. |
| SVS-REQ-308661/A-SVSServer HTTP Message with Location Unavailable Fields Location Becomes Available Ignition OFF | MBORREL4: New req. |
| SVS-REQ-291070/B-SVSServer AGPS XTRA File Update | MBORREL4: Updated req title |
| SVS-REQ-291071/B-SVSServer SVS Backup Antenna AGPS XTRA File Use | MBORREL4: Updated content and req title |
| STR-491836/B-Use Cases | MBORREL4: Added UC-REQ-306361-367 |
| SVS-UC-REQ-306361/A-SVInterfaceClient location source | MBORREL4: New usecase |
| SVS-UC-REQ-306362/A-SVSServer ignition OFF location SVInterfaceClient primary location source | MBORREL4: New usecase |
| SVS-UC-REQ-306363/A-SVInterfaceClient unable to provide location use backup antenna | MBORREL4: New usecase |
| SVS-UC-REQ-306364/A-SVSServer location source | MBORREL4: New usecase |
| SVS-UC-REQ-306365/A-SVSServer primary antenna unable to provide location use backup antenna | MBORREL4: New usecase |
| SVS-UC-REQ-306366/A-Primary antennas unavailable use backup antennas | MBORREL4: New usecase |
| SVS-UC-REQ-306367/A-SVS Backup antenna unable to provide location retry strategy ignition OFF | MBORREL4: New usecase |
| STR-491838/C-Requirements | MBORREL4: Removed REQ-291066. Added REQ-308665-666 |



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| SVS-REQ-308665/A-SVSServer SVSInterfaceClient CCS settings priority | MBORREL4: New req. |
| SVS-REQ-308666/A-SVSServer Theft Activation Ignition "OFF" Main Battery Removed | MBORREL4: New req. |
| SVS-REQ-291075/C-SVSServer Theft Activation To SVSInterfaceClient while Ignition "ON" | MBORREL4: Updated content |
| SVS-REQ-303128/B-SVSServer Theft Activation To SVSInterfaceClient while in Ignition "OFF" | MBORREL4: Updated content |
| SVS-REQ-303129/B-SVSServer changes upon "Theft Mode" Activation | MBORREL4: Updated content |
| SVS-REQ-303130/B-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "OFF" | MBORREL4: Updated content |
| SVS-REQ-303131/B-SVSServer response update of successful execution of "Theft Mode" De-activation | MBORREL4: Updated content |
| STR-491841/C-Requirements | MBORREL4: Added REQ-306494-501. Removed FTCP Retry Strategies & SMS Retry Strategies sections and all reqs beneath them |
| SVS-REQ-304066/B-SVS Primary and Secondary LTE Antenna Communication Management | MBORREL4: Updated content |
| SVS-REQ-291081/C-SVSServer FTCP Messages | MBORREL4: Updated content |
| SVS-REQ-304029/B-SVSServer SMS Messages | MBORREL4: Updated content |
| SVS-REQ-291083/C-SVSServer HTTPS Response | MBORREL4: Updated content |
| SVS-REQ-306494/A-SVSServer processing first tracking activation request | MBORREL4: New req. |
| SVS-REQ-306495/A-SVSServer processing tracking request with specified frequency | MBORREL4: New req. |
| SVS-REQ-306496/A-SVSServer processing on demand tracking request | MBORREL4: New req. |
| SVS-REQ-306497/A-SVSServer processing failed tracking response data | MBORREL4: New req. |
| SVS-REQ-306498/A-SVSServer processing insufficient payload data for HTTPS block message | MBORREL4: New req. |
| SVS-REQ-306499/A-SVS and WIR / IPPT | MBORREL4: New req. |
| SVS-REQ-306500/A-SVS and WIR intent | MBORREL4: New req. |
| SVS-REQ-306501/A-SVS and IPPT | MBORREL4: New req. |
| STR-492120/C-FTCP Data Communication | MBORREL4: Removed REQ-291219, REQ-303287-289. Added REQ-306502 |
| SVS-REQ-291218/C-Ignition ON, Tracking Activation Command from SVSOffBoardClient to SVSServer | MBORREL4: Updated content and req title |



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| SVS-REQ-291220/B-Ignition ON, on demand Tracking Request from SVSOffBoardClient to SVSServer | MBORREL4: Updated content and req title |
| SVS-REQ-291221/B-Ignition ON, Theft Mode Deactivation Command from SVSOffBoardClient to SVSServer | MBORREL4: Updated content and req title |
| SVS-REQ-306502/A-FTCP tracking activation /deactivation command security | MBORREL4: New req. |
| SVS-REQ-297604/C-FTCP Message Payload SVSOffBoardClient to Vehicle | MBORREL4: Updated table |
| STR-492121/C-HTTPS Data Communication | MBORREL4: Removed REQ-291223-224, REQ-291227. Added REQ-306573-574, REQ-308672 |
| SVS-REQ-291225/C-Tracking Data Response from SVSServer to SVSOffBoardClient | MBORREL4: Updated content and req title |
| SVS-REQ-306573/A-IGN off with main battery tracking response data from SVSServer to SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-308672/A-IGN off with BUB tracking response data from SVSServer to SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-291228/C-Theft Mode Deactivation Response from SVSServer to SVSOffBoardClient | MBORREL4: Updated content and req title |
| SVS-REQ-306574/A-HTTPS Response message security | MBORREL4: New req. |
| SVS-REQ-297606/C-HTTPS Message Payload Vehicle to SVSOffBoardClient | MBORREL4: Updated table |
| STR-523004/B-HTTPS Retry Strategies | MBORREL4: Removed REQ-303339-351, REQ-303923. REQ-303354-355 |
| SVS-REQ-303352/B-Transient retry at SVSServer for all identified HTTPS error code | MBORREL4: Updated content and req title |
| SVS-REQ-303353/B-SVSServer SVS application retry for all identified HTTPS error code | MBORREL4: Updated content and req title |
| STR-492122/C-SMS Data Communication | MBORREL4: Removed REQ-291230, REQ-303836-838. Added REQ-306575-576 |
| SVS-REQ-291229/C-IGN On, Tracking Activation from SVSOffBoardClient to SVSServer | MBORREL4: Updated content and req title |
| SVS-REQ-306575/A-Ignition Off, Tracking Activation from SVSOffBoardClient to SVSServer | MBORREL4: New req. |
| SVS-REQ-291231/C-Ignition Off, on demand Tracking Activation from SVSOffBoardClient to SVSServer | MBORREL4: Updated content and req title |
| SVS-REQ-291233/C-Ignition Off, Theft Mode Deactivation Command From SVSOffBoardClient To SVSServer | MBORREL4: Updated content |



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| SVS-REQ-306576/A-SMS tracking activation /deactivation / on demand command security | MBORREL4: New req. |
| SVS-REQ-297608/C-SMS Message Payload SVSOffBoardClient to Vehicle | MBORREL4: Updated table |
| STR-491842/B-Use Cases | MBORREL4: Added HTTP, SMS, FTCP sections and REQ-306595-306606 |
| STR-530455/A-FTCP | MBORREL4: New header |
| SVS-UC-REQ-306595/A-IGN ON Tracking Activation request through FTCP | MBORREL4: New usecase |
| SVS-UC-REQ-306596/A-IGN OFF Tracking Activation request through FTCP | MBORREL4: New usecase |
| SVS-UC-REQ-306597/A-Tracking Deactivation request through FTCP | MBORREL4: New usecase |
| STR-530456/A-HTTPS | MBORREL4: New header |
| SVS-UC-REQ-306598/A-Main battery supported tracking response through HTTPS | MBORREL4: New usecase |
| SVS-UC-REQ-306599/A-BUB supported tracking response through HTTPS | MBORREL4: New usecase |
| SVS-UC-REQ-306600/A-Tracking disabled response through HTTPS | MBORREL4: New usecase |
| SVS-UC-REQ-306601/A-SVSServer Data Logging Ignition OFF | MBORREL4: New usecase |
| SVS-UC-REQ-306602/A-SVSServer send Failure and Retries | MBORREL4: New usecase |
| SVS-UC-REQ-306603/A-SVSServer insufficient data for HTTPS block message | MBORREL4: New usecase |
| STR-530457/A-SMS | MBORREL4: New header |
| SVS-UC-REQ-306604/A-Main battery supported tracking activation request through SMS | MBORREL4: New usecase |
| SVS-UC-REQ-306605/A-IGN OFF, BUB supported tracking activation request through SMS | MBORREL4: New usecase |
| SVS-UC-REQ-306606/A-Tracking deactivation request through SMS | MBORREL4: New usecase |
| SVS-SD-REQ-303285/B-FTCP Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Removed HTTP Ack |
| SVS-SD-REQ-303327/B-FTCP Retry Strategies | MBORREL4: Removed HTTP Ack |
| SVS-SD-REQ-303698/B-SMS Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Removed HTTP Ack |
| SVS-SD-REQ-303710/B-SMS Retry Strategies | MBORREL4: Removed HTTP Ack |
| STR-491844/C-Requirements | MBORREL4: Removed REQ-291084, REQ-291086, REQ-291094, REQ-303133, REQ-303143, REQ-303137. Added REQ-306354 |
| SVS-REQ-291085/C-Power Modes | MBORREL4: Updated table |
| SVS-REQ-303134/B-Main battery power while SVS Subscription NOT active | MBORREL4: Updated content |



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| SVS-REQ-303135/B-Main battery power while SVS Subscription active and Theftmode deactivated | MBORREL4: Updated content and req title |
| SVS-REQ-303136/B-Main battery SVS RTC Time DID Enabled while SVS subscription active and Theftmode deactivated | MBORREL4: Updated content and req title |
| SVS-REQ-303138/B-Main battery SVS RTC Time Termination while SVS Subscription active and Theftmode deactivated | MBORREL4: Updated content and req title |
| SVS-REQ-303139/B-Main battery SVS RTC Time Termination while SVS Subscription active Alert while Theftmode deactivated | MBORREL4: Updated content and req title |
| SVS-REQ-303140/B-Main battery power while SVS "Theft Mode" Active Low voltage threshold reached | MBORREL4: Updated content and req title |
| SVS-REQ-306354/A-Main battery power while SVS "Theft Mode" Active Warning threshold reached | MBORREL4: New req. |
| SVS-REQ-303141/B-Periodicity Reduction Main battery power while "Theft Mode" active | MBORREL4: Updated content |
| SVS-REQ-303142/B-Main battery Depletion while "Theft Mode" active and NO BUB available | MBORREL4: Updated content and req title |
| SVS-REQ-303144/B-Main battery Depletion while "Theft Mode" active and BUB available | MBORREL4: Updated content and req title |
| SVS-REQ-291100/C-SVSServer BUB available while in "Theft Mode" and Main Battery Physically Removed | MBORREL4: Updated content and req title |
| SVS-REQ-303145/B-Periodicity Reduction SVSServer BUB power while "Theft Mode" active | MBORREL4: Updated content |
| SVS-REQ-303146/B-SVSServer BUB SVS Depletion while in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-REQ-308662/A-SVSServer BUB SVS Depletion while in "Theft Mode" | MBORREL4: New req. |
| SVS-REQ-303148/B-SVSServer BUB SVS RTC Time DID Specified and Theftmode deactivated | MBORREL4: Updated content and req title |
| SVS-REQ-303149/B-SVSServer BUB SVS RTC Time DID NOT Specified and Theftmode deactivated | MBORREL4: Updated req title |
| SVS-REQ-303150/B-SVSServer BUB SVS RTC Time Termination and Theftmode deactivated | MBORREL4: Updated content and req title |
| SVS-REQ-308663/A-SVSServer BUB SVS RTC | MBORREL4: New req. |



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| Time Termination and Theftmode deactivated | |
| SVS-REQ-303151/B-SVSServer BUB SVS RTC Time Termination Alert and Theftmode deactivated | MBORREL4: Updated content and req title |
| STR-491845/B-Use Cases | MBORREL4: Added UC-REQ-306368-382 |
| SVS-UC-REQ-306368/A-No SVS Subscription power moding | MBORREL4: New usecase |
| SVS-UC-REQ-306369/A-Main Battery Low Voltage Threshold no RTC | MBORREL4: New usecase |
| SVS-UC-REQ-306370/A-Main Battery Low Voltage Threshold with RTC | MBORREL4: New usecase |
| SVS-UC-REQ-306371/A-Main Battery Warning Threshold Goodbye Msg | MBORREL4: New usecase |
| SVS-UC-REQ-306372/A-Main Battery Threshold in Theft Mode | MBORREL4: New usecase |
| SVS-UC-REQ-306373/A-Main Battery Warning Threshold in Theft Mode | MBORREL4: New usecase |
| SVS-UC-REQ-306374/A-Main Battery Discharged Threshold Goodbye Msg no BUB | MBORREL4: New usecase |
| SVS-UC-REQ-306375/A-Main Battery Discharged Threshold switch to BUB | MBORREL4: New usecase |
| SVS-UC-REQ-306376/A-SVS Backup Battery Warning Threshold in Theft Mode | MBORREL4: New usecase |
| SVS-UC-REQ-306377/A-SVS Backup Battery SVS Unsupported Threshold in Theft Mode | MBORREL4: New usecase |
| SVS-UC-REQ-306378/A-Main Battery Disconnected SVS Backup Battery Disengaged | MBORREL4: New usecase |
| SVS-UC-REQ-306379/A-Main Battery Disconnected SVS Backup Battery with RTC | MBORREL4: New usecase |
| SVS-UC-REQ-306380/A-SVS Backup Battery Warning Threshold with RTC Goodbye Msg | MBORREL4: New usecase |
| SVS-UC-REQ-306381/A-ECall Event during Theft Mode | MBORREL4: New usecase |
| SVS-UC-REQ-306382/A-China Data Monitor during Theft Mode | MBORREL4: New usecase |

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| STR-491623/D-Terminology and Abbreviations | MBORREL4: Added WIR, IPPT |
| SVS-CLD-REQ-291017/C-Stolen Vehicle Services Server | MBORREL4: Updated content |
| SVS-CLD-REQ-291115/C-Stolen Vehicle Services OnBoard Client | MBORREL4: Updated content |
| SVS-CLD-REQ-291116/C-Stolen Vehicle Services OffBoard Client | MBORREL4: Updated content |
| SVS-REQ-306301/B-SVS HTTP Retry Number DID | MBORREL4: Updated content |



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| SVS-REQ-306302/B-SVS HTTP Retry Frequency DID | MBORREL4: Updated content |
| SVS-REQ-306303/B-SVS Configuration Table | MBORREL4: Updated content |
| SVS-UC-REQ-304494/B-Theft Mode Check Upon Wake-Up | MBORREL4: Updated post conditions |
| STR-531636/B-Activity Diagrams | MBORREL4: Added REQ-310868 |
| SVS-ACT-REQ-306769/B-Theft Mode Check Upon SVSInterfaceClient Wake-Up | MBORREL4: Updated req title |
| SVS-ACT-REQ-310868/A-Theft Mode Check Upon SVSONBoardClient Wake-Up | MBORREL4: New req. |
| STR-531637/B-Sequence Diagrams | MBORREL4: Added REQ-310869 |
| SVS-SD-REQ-306770/B-Theft Mode Activation | MBORREL4: Updated diagram |
| SVS-SD-REQ-306771/B-Theft Mode De-Activation | MBORREL4: Updated diagram |
| SVS-SD-REQ-306772/B-Theft Mode Check Upon SVSInterfaceClient Wake-Up | MBORREL4: Updated req title |
| SVS-SD-REQ-310869/A-Theft Mode Check Upon SVSONBoardClient Wake-Up | MBORREL4: New req. |
| STR-523481/B-Activity Diagrams | MBORREL4: Added REQ-304065 |
| SVS-ACT-REQ-304065/B-Theft Mode Location Source | MBORREL4: Updated Diagram |
| SVS-ACT-REQ-310864/A-GNSS/Cellular Time Sharing | MBORREL4: New req. |
| STR-491838/D-Requirements | MBORREL4: Removed REQ-308666, REQ-291075 |
| SVS-REQ-303128/C-SVSServer Theft Activation To SVSInterfaceClient while in Ignition "OFF" | MBORREL4: Updated content |
| SVS-REQ-303131/C-SVSServer response update of successful execution of "Theft Mode" De-activation | MBORREL4: Corrected typo in title |
| STR-491841/D-Requirements | MBORREL4: Removed REQ-306498, REQ-291083. Added header "FTCP/SMS Data Payload" |
| SVS-REQ-306494/B-SVSServer processing first activate tracking request | MBORREL4: Updated content and req title |
| SVS-REQ-306495/B-SVSServer processing tracking request with specified reporting frequency | MBORREL4: Updated content and req title |
| SVS-REQ-306496/B-SVSServer processing on demand tracking request | MBORREL4: Updated content |
| SVS-REQ-306499/B-SVS and WIR / IPPT | MBORREL4: Updated content |
| SVS-REQ-306500/B-SVS and WIR intent | MBORREL4: Updated content |
| STR-492120/D-FTCP Data Communication | MBORREL4: Moved REQ-297604 to "FTCP/SMS Data Payload" |
| SVS-REQ-291218/D-Ignition ON, Activate Tracking Command from SVSOffBoardClient to SVSServer | MBORREL4: Updated content and req title |
| SVS-REQ-291220/C-Ignition ON, on demand Tracking Request from SVSOffBoardClient to SVSServer | MBORREL4: Updated content |



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| SVS-REQ-291221/C-Ignition ON, Deactivate Tracking Command from SVSOffBoardClient to SVSServer | MBORREL4: Updated content and req title |
| SVS-REQ-306502/B-FTCP activate /deactivate tracking command security | MBORREL4: Updated content and req title |
| STR-546269/A-FTCP/SMS Data Payload | MBORREL4: New header |
| SVS-REQ-297604/D-FTCP/SMS Message Payload SVSOffBoardClient to Vehicle | MBORREL4: Updated content and req title |
| STR-492121/D-HTTPS Data Communication | MBORREL4: Removed REQ-306573 & REQ-291228 |
| SVS-REQ-291222/C-HTTPS Source and Usage | MBORREL4: Updated content and req title |
| SVS-REQ-291225/D-Tracking Response from SVSServer to SVSOffBoardClient | MBORREL4: Updated content and req title |
| SVS-REQ-308672/B-BUB engaged tracking response data from SVSServer to SVSOffBoardClient | MBORREL4: Updated content and req title |
| SVS-REQ-306574/B-HTTPS tracking response message security | MBORREL4: Updated content and req title |
| SVS-REQ-297606/D-HTTPS Message Payload Vehicle to SVSOffBoardClient | MBORREL4: Updated content |
| SVS-REQ-303352/C-Transient retry at SVSServer for all identified HTTPS error code | MBORREL4: Updated content |
| SVS-REQ-303353/C-SVSServer SVS application retry for all identified HTTPS error code | MBORREL4: Updated content |
| STR-492122/D-SMS Data Communication | MBORREL4: Removed REQ-306575, REQ-291231, REQ-297608 |
| SVS-REQ-291229/D-SMS Activate tracking request from SVSOffBoardClient to SVSServer | MBORREL4: Updated content and req title |
| SVS-REQ-291233/D-SMS Deactivate Tracking Command From SVSOffBoardClient To SVSServer | MBORREL4: Updated content and req title |
| SVS-REQ-306576/B-SMS Activate/Deactivate/On Demand tracking command security | MBORREL4: Updated content and req title |
| SVS-UC-REQ-306595/B-IGN ON Activate Tracking request through FTCP | MBORREL4: Updated content and req title |
| SVS-UC-REQ-306596/B-IGN OFF Activate Tracking request through FTCP | MBORREL4: Updated content and req title |
| SVS-UC-REQ-306597/B-Deactivate Tracking request through FTCP | MBORREL4: Updated content and req title |
| STR-530456/B-HTTPS | MBORREL4: Removed REQ-306603 |
| SVS-UC-REQ-306598/B-Main battery supported tracking response through HTTPS | MBORREL4: Updated content |
| SVS-UC-REQ-306599/B-BUB supported tracking response through HTTPS | MBORREL4: Updated content |



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| SVS-UC-REQ-306601/B-SVSServer Data Logging Ignition OFF | MBORREL4: Updated content |
| SVS-UC-REQ-306602/B-SVSServer send Failure and Retries | MBORREL4: Updated content |
| SVS-UC-REQ-306604/B-Main battery supported activate tracking request through SMS | MBORREL4: Updated content |
| SVS-UC-REQ-306605/B-IGN OFF, BUB supported activate tracking request through SMS | MBORREL4: Updated content |
| SVS-UC-REQ-306606/B-Deactivate tracking request through SMS | MBORREL4: Updated content |
| STR-523478/B-Activity Diagrams | MBORREL4: Removed REQ-304068. Added REQ-310862-64 |
| SVS-ACT-REQ-310862/A-Antenna Source - Cellular Connectivity (3 Cell Ant.) | MBORREL4: New req. |
| SVS-ACT-REQ-310863/A-Antenna Source - Cellular Connectivity (2 Cell Ant.) | MBORREL4: New req. |
| SVS-ACT-REQ-310864/A-GNSS/Cellular Time Sharing | MBORREL4: New req. |
| SVS-SD-REQ-303285/C-FTCP Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram and text |
| SVS-SD-REQ-303327/C-FTCP Retry Strategies | MBORREL4: Updated diagram and text |
| SVS-SD-REQ-303698/C-SMS Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram and text |
| SVS-SD-REQ-303710/C-SMS Retry Strategies | MBORREL4: Updated diagram and text |
| STR-491844/D-Requirements | MBORREL4: Removed REQ-303139 & REQ-303148 |
| SVS-REQ-291085/D-Power Modes | MBORREL4: Updated content |
| SVS-REQ-303135/C-Main battery power while SVS Subscription active while NOT in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-REQ-303136/C-Main battery SVS RTC Time DID Enabled while SVS subscription active while NOT in "Theft Mode" | MBORREL4: Updated req title |
| SVS-REQ-303138/C-Main battery SVS RTC Time Termination Alert while SVS Subscription active while NOT in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-REQ-303140/C-Main battery power while SVS "Theft Mode" Active Low voltage threshold reached | MBORREL4: Updated content |
| SVS-REQ-306354/B-Main battery power while SVS "Theft Mode" Active Warning threshold reached | MBORREL4: Updated content |
| SVS-REQ-303141/C-Periodicity Reduction Main battery power while "Theft Mode" active | MBORREL4: Updated content |
| SVS-REQ-303142/C-Main battery Depletion while "Theft Mode" active and NO BUB available | MBORREL4: Updated content |



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| SVS-REQ-303144/C-Main battery Depletion while "Theft Mode" active and BUB available | MBORREL4: Updated content |
| SVS-REQ-291100/D-SVSServer BUB available while in "Theft Mode" and Main Battery Physically Removed | MBORREL4: Updated content |
| SVS-REQ-303145/C-Periodicity Reduction SVSServer BUB power while "Theft Mode" active | MBORREL4: Updated content |
| SVS-REQ-303146/C-SVSServer BUB SVS Depletion while in "Theft Mode" | MBORREL4: Updated content |
| SVS-REQ-308662/B-SVSServer BUB China Data Monitor while in "Theft Mode" | MBORREL4: Updated req title |
| SVS-REQ-303147/B-SVSServer BUB power while NOT in "Theft Mode" and Main Battery Disconnected | MBORREL4: Updated content |
| SVS-REQ-303149/C-SVSServer BUB SVS RTC Time DID NOT Specified NOT in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-REQ-303150/C-SVSServer BUB SVS RTC Time Termination NOT in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-REQ-308663/B-SVSServer BUB SVS RTC Time Termination and China Data Monitor while NOT in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-REQ-303151/C-SVSServer BUB SVS RTC Time Termination Alert while NOT in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-UC-REQ-306381/B-ECall Event during Theft Mode | MBORREL4: Updated Post-Conditions |
| SVS-ACT-REQ-303152/B-Battery Power Management | MBORREL4: Updated diagram |

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| STR-491623/E-Terminology and Abbreviations | MBORREL4: Added GRPC |
| SVS-CLD-REQ-291017/D-Stolen Vehicle Services Server | MBORREL4: Updated "GRPC", added last bullet, updated content |
| SVS-CLD-REQ-291018/C-Stolen Vehicle Services Interface Client | MBORREL4: Added SVS Subs. DID management, updated CCS bullet point, updated content |
| SVS-CLD-REQ-291115/D-Stolen Vehicle Services OnBoard Client | MBORREL4: Added last bullet point (CCS), updated content |
| SVS-CLD-REQ-291116/D-Stolen Vehicle Services OffBoard Client | MBORREL4: Updated "GRPC" and content |
| MD-REQ-304069/B-getTcuDidData | MBORREL4: fixed typo |
| MD-REQ-304069/B-getTcuDidData | MBORREL4: fixed typo |
| STR-491613/D-Functional Definition | MBORREL4: Added new functions REQ-318009, REQ-321954 |
| STR-529942/B-Requirements | MBORREL4: Added REQ-321935, REQ-325614, REQ-325617 |



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| SVS-REQ-298018/D-SVS Capability DID | MBORREL4: fixed typo |
| SVS-REQ-321935/A-SVS Subscription State DID | MBORREL4: New req. |
| SVS-REQ-306297/B-SVS Backup Battery RTC DID | MBORREL4: Removed "when in theft mode" condition |
| SVS-REQ-306301/C-SVS GRPC Retry Number DID | MBORREL4: Updated "GRPC" |
| SVS-REQ-306302/C-SVS GRPC Retry Frequency DID | MBORREL4: Updated DID names |
| SVS-REQ-325614/A-SVS Location Delta Comparison DID | MBORREL4: New req. |
| SVS-REQ-325617/A-SVS Vehicle Location Data sharing after alert trigger DID | MBORREL4: New req. |
| SVS-REQ-306303/C-SVS Configuration Table | MBORREL4: Updated table |
| SVS-SD-REQ-306771/C-Theft Mode De-Activation | MBORREL4: Updated Post-Condition |
| SVS-REQ-308660/B-Use of Pre-existing SVSServer DTCs | MBORREL4: Updated "GRPC" |
| SVS-REQ-307228/B-SVSServer DTC List | MBORREL4: Updated table |
| SVS-REQ-291069/C-SVSServer Unable To Obtain Location From Backup GNSS Antenna While Ignition OFF | MBORREL4: Updated content |
| SVS-REQ-306312/B-SVSServer GRPC Message with Location Unavailable Fields Location Becomes Available Ignition ON | MBORREL4: Updated "GRPC" |
| SVS-REQ-308661/B-SVSServer GRPC Message with Location Unavailable Fields Location Becomes Available Ignition OFF | MBORREL4: Updated "GRPC" |
| SVS-ACT-REQ-310864/B-GNSS/Cellular Time Sharing | MBORREL4: Updated diagram |
| STR-491838/E-Requirements | MBORREL4: Added REQ-325649-650. Removed REQ-303131 |
| SVS-REQ-303128/D-SVSServer Theft Activation To SVSInterfaceClient while in Ignition "OFF" | MBORREL4: fixed typo |
| SVS-REQ-303130/C-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "OFF" | MBORREL4: Updated content |
| SVS-REQ-325649/A-SVS active subscription update to SVSONBoardClient and SVSServer | MBORREL4: New req. |
| SVS-REQ-325650/A-Location Disable pop up for SVS subscribed customers | MBORREL4: New req. |
| SVS-FUN-REQ-321954/A-Feature Blocking & Unblocking | MBORREL4: New function |
| STR-564456/A-Requirements | MBORREL4: New paragraphs/STRs |
| SVS-REQ-321959/A-WiFi Enablement Blocking | MBORREL4: New req. |
| SVS-REQ-321960/A-WiFi Enablement Unblocking | MBORREL4: New req. |
| SVS-REQ-321961/A-Command & Control Blocking | MBORREL4: New req. |
| SVS-REQ-321962/A-Command & Control Unblocking | MBORREL4: New req. |



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| SVS-REQ-321963/A-Over the Air Update Pop-up Restriction | MBORREL4: New req. |
| SVS-REQ-321964/A-Over the Air Update Scheduled Time Postponement | MBORREL4: New req. |
| SVS-REQ-321965/A-Over the Air Update In-Progress | MBORREL4: New req. |
| SVS-REQ-326479/A-Master Reset/Feature Reset Blocking | MBORREL4: New req. |
| SVS-REQ-326480/A-Master Reset/Feature Reset Unblocking | MBORREL4: New req. |
| STR-564457/A-Use Cases | MBORREL4: New paragraphs/STRs |
| SVS-UC-REQ-326481/A-Master Reset/Feature Reset blocking upon Theft Mode Activation | MBORREL4: New req |
| SVS-UC-REQ-326827/A-Master Reset/Feature Reset unblock upon Theft Mode Deactivation | MBORREL4: New req |
| STR-564458/A-White Box View | MBORREL4: New paragraphs/STRs |
| STR-491841/E-Requirements | MBORREL4: Moved REQ-306494-497 to "HTTPS Data Communication" |
| SVS-REQ-304066/C-SVS Primary and Secondary LTE Antenna Communication Management | MBORREL4: Replaced SVSOffBoardServer with SVSOffBoardClient |
| SVS-REQ-291081/D-SVSOffBoardClient FTCP Messages | MBORREL4: Updated title name, added content |
| SVS-REQ-304029/C-SVSOffBoardClient SMS Messages | MBORREL4: Updated title name |
| SVS-REQ-306499/C-SVS and WIR / IPPT | MBORREL4: Updatd "GRPC" |
| SVS-REQ-306500/C-SVS and WIR intent | MBORREL4: Updatd "GRPC" |
| STR-492120/E-FTCP Data Communication | MBORREL4: Removed REQ-291220 |
| SVS-REQ-291218/E-Ignition ON, Activate Theft Mode Command from SVSOffBoardClient to SVSServer | MBORREL4: Added detail on reporting freq of 0, updated title |
| SVS-REQ-291221/D-Ignition ON, Deactivate Theft Mode Command from SVSOffBoardClient to SVSServer | MBORREL4: Updated title |
| SVS-REQ-306502/C-FTCP activate /deactivate Theft Mode command security | MBORREL4: Updated title, content |
| SVS-REQ-297604/E-FTCP/SMS Message Payload SVSOffBoardClient to Vehicle | MBORREL4: Updated table |
| STR-492121/E-GRPC Data Communication | MBORREL4: Relocated REQ-306494-497, Added REQ-318892. Removed REQ-308672. Updated "GRPC" |
| SVS-REQ-291222/D-GRPC Source and Usage | MBORREL4: Updated "GRPC" |
| SVS-REQ-291225/E-Theft Mode Response from SVSServer to SVSOffBoardClient | MBORREL4: Updated "GRPC" and "theft mode" |
| SVS-REQ-306494/C-SVSServer main battery supported theft mode response | MBORREL4: Updated req title, "theft mode," and content |
| SVS-REQ-306495/C-SVSServer main battery | MBORREL4: Updated req title, "theft mode" and content |



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| supported on-demand (reporting frequency 0) response | |
| SVS-REQ-318892/A-SVSServer theft mode response support between power mode C2 and C3 | MBORREL4: New req. |
| SVS-REQ-306496/C-SVSServer processing theft mode request with reporting frequency change | MBORREL4: Updated req title, "theft mode" and content |
| SVS-REQ-306497/B-SVSServer processing failed theft mode response data | MBORREL4: Updated req title, "GRPC" and "theft mode" |
| SVS-REQ-306574/C-GRPC theft mode response message security | MBORREL4: Updated "GRPC" and "theft mode" |
| SVS-REQ-297606/E-GRPC Message Payload Vehicle to SVSOffBoardClient | MBORREL4: Updated table and "GRPC" |
| STR-523004/C-GRPC Retry Strategies | MBORREL4: Updated "GRPC" |
| SVS-REQ-303352/D-Transient retry at SVSServer for all identified GRPC error code | MBORREL4: Moved variables, no content change. Updated "GRPC" |
| SVS-REQ-303353/D-SVSServer SVS application retry for all identified GRPC error code | MBORREL4: Updated "GRPC" |
| SVS-REQ-291229/E-SMS Activate Theft Mode request from SVSOffBoardClient to SVSServer | MBORREL4: Removed On Demand request. Updated "theft mode" |
| SVS-REQ-291233/E-SMS Deactivate Theft Mode Command from SVSOffBoardClient To SVSServer | MBORREL4: Updated "theft mode" |
| SVS-REQ-306576/C-SMS Activate/Deactivate Theft Mode command security | MBORREL4: Removed On Demand, updated title and "theft mode" |
| SVS-UC-REQ-306595/C-IGN ON Activate Theft Mode request through FTCP | MBORREL4: Updated Post-Conditions. "GRPC" and "theft mode" added SVSONBoardClient |
| SVS-UC-REQ-306596/C-IGN OFF Activate Theft Mode request through FTCP | MBORREL4: Updated Post-Conditions. "GRPC" and "theft mode" added SVSONBoardClient |
| SVS-UC-REQ-306597/C-Deactivate Theft Mode request through FTCP | MBORREL4: Updated Post-Conditions, "GRPC" and "theft mode" added SVSONBoardClient |
| STR-530456/C-GRPC | MBORREL4: Added REQ-318904, updated "GRPC" |
| SVS-UC-REQ-306598/C-Main battery supported theft mode response through GRPC | MBORREL4: Updated Post-Conditions, "GRPC" and "theft mode" |
| SVS-UC-REQ-306599/C-BUB supported theft mode response through GRPC | MBORREL4: Updated Post-Conditions, "GRPC" and "theft mode" |
| SVS-UC-REQ-318904/A-Periodic request while BUB supported theft mode response through GRPC | MBORREL4: New usecase |
| SVS-UC-REQ-306600/B-Theft Mode disabled response through GRPC | MBORREL4: Updated Post-Conditions, "GRPC" and "theft mode" |
| SVS-UC-REQ-306601/C-SVSServer Data Logging Ignition OFF | MBORREL4: Updated Post-Conditions, "GRPC" and "theft mode" |



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| SVS-UC-REQ-306602/C-SVSServer send Failure and Retries | MBORREL4: Updated Post-Conditions, "GRPC" and "theft mode" |
| SVS-UC-REQ-306604/C-Main battery supported activate theft mode request through SMS | MBORREL4: Updated Post-Conditions, "GRPC" and "theft mode" |
| SVS-UC-REQ-306605/C-BUB supported activate theft mode request through SMS | MBORREL4: Updated Post-Conditions, "GRPC," req title and "theft mode" |
| SVS-UC-REQ-306606/C-Deactivate theft mode request through SMS | MBORREL4: Updated Post-Conditions, "GRPC" and "theft mode" |
| SVS-ACT-REQ-310862/B-Antenna Source - Cellular Connectivity (3 Cell Ant.) | MBORREL4: Updated diagram |
| SVS-ACT-REQ-310863/B-Antenna Source - Cellular Connectivity (2 Cell Ant.) | MBORREL4: Updated diagram |
| SVS-ACT-REQ-310864/B-GNSS/Cellular Time Sharing | MBORREL4: Updated diagram |
| SVS-SD-REQ-303285/D-FTCP Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram |
| SVS-SD-REQ-303327/D-FTCP Retry Strategies | MBORREL4: Updated diagram |
| SVS-SD-REQ-303698/D-SMS Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram |
| SVS-SD-REQ-303710/D-SMS Retry Strategies | MBORREL4: Updated diagram |
| SVS-REQ-303140/D-Main battery power while SVS "Theft Mode" Active Low voltage threshold reached | MBORREL4: Updated content |
| SVS-REQ-306354/C-Main battery power while SVS "Theft Mode" Active Warning threshold reached | MBORREL4: Updated content |
| SVS-REQ-303141/D-Periodicity Reduction Main battery power while "Theft Mode" active | MBORREL4: Updated "GRPC" |
| SVS-REQ-303142/D-Main battery Depletion while "Theft Mode" active and NO BUB available | MBORREL4: Updated content |
| SVS-REQ-303144/D-Main battery Depletion while "Theft Mode" active and BUB available | MBORREL4: Updated "GRPC" and changed last line status field to Available & Supported |
| SVS-REQ-291100/E-SVSServer BUB available while in "Theft Mode" and Main Battery Physically Removed | MBORREL4: Updated "GRPC" |
| SVS-REQ-303145/D-Periodicity Reduction SVSServer BUB power while "Theft Mode" active | MBORREL4: Updated content and "GRPC" |
| SVS-REQ-303146/D-SVSServer BUB SVS Depletion while in "Theft Mode" | MBORREL4: Updated content |
| SVS-REQ-303149/D-SVSServer BUB SVS RTC Time DID NOT Specified NOT in "Theft Mode" | MBORREL4: Updated content |



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| SVS-REQ-303150/D-SVSServer BUB SVS RTC Time Termination NOT in "Theft Mode" | MBORREL4: Updated content |
| SVS-REQ-303151/D-SVSServer BUB SVS RTC Time Termination Alert while NOT in "Theft Mode" | MBORREL4: Updated content |
| SVS-UC-REQ-306371/B-Main Battery Warning Threshold Goodbye Msg | MBORREL4: Updated "GRPC" |
| SVS-UC-REQ-306372/B-Main Battery Threshold in Theft Mode | MBORREL4: Updated "GRPC" |
| SVS-UC-REQ-306373/B-Main Battery Warning Threshold in Theft Mode | MBORREL4: Updated "GRPC" |
| SVS-UC-REQ-306374/B-Main Battery Discharged Threshold Goodbye Msg no BUB | MBORREL4: Updated "GRPC" and content |
| SVS-UC-REQ-306375/B-Main Battery Discharged Threshold switch to BUB | MBORREL4: Updated "GRPC" |
| SVS-UC-REQ-306376/B-SVS Backup Battery Warning Threshold in Theft Mode | MBORREL4: Updated "GRPC" |
| SVS-UC-REQ-306377/B-SVS Backup Battery SVS Unsupported Threshold in Theft Mode | MBORREL4: Updated "GRPC" and content |
| SVS-UC-REQ-306379/B-Main Battery Disconnected SVS Backup Battery with RTC | MBORREL4: Updated description and post-conditions |
| SVS-UC-REQ-306380/B-SVS Backup Battery Termination Threshold with RTC Goodbye Msg | MBORREL4: Updated req title, "GRPC", and content |
| SVS-ACT-REQ-303152/C-Battery Power Management | MBORREL4: Updated diagram |
| SVS-FUN-REQ-318009/A-SVS Enhanced Early Theft Notifications | MBORREL4: New function |
| STR-555424/A-Requirements | MBORREL4: New paragraphs/STRs |
| SVS-REQ-325679/A-SVSONBoardClient/SVSServer monitoring and triggering of alerts | MBORREL4: New req. |
| SVS-REQ-326482/A-SVSONBoardClient/SVSServer stop monitoring and triggering of alerts | MBORREL4: New req. |
| SVS-REQ-325681/A-SVSONBoardClient/SVSServer Not monitoring and triggering of alerts in "Theft Mode" Active state | MBORREL4: New req. |
| SVS-REQ-318029/A-SVSONBoardClient last known location storing upon ignition "OFF" | MBORREL4: New req. |
| SVS-REQ-325683/A-SVSONBoardClient Wakeup by CAN signal in ignition status "OFF" | MBORREL4: New req. |
| SVS-REQ-325684/A-SVSServer Wakeup by accelerometer in ignition status "OFF" | MBORREL4: New req. |
| SVS-REQ-325685/A-FTCP early theft notification alert | MBORREL4: New req. |



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| SVS-REQ-326498/A-GRPC early theft notification alert | MBORREL4: New req. |
| SVS-REQ-325686/A-Early theft notification alert message priority | MBORREL4: New req. |
| SVS-REQ-325687/A-IGN ON Vehicle location data for early theft notification alert | MBORREL4: New req. |
| SVS-REQ-320189/A-Message Payload for Alerts | MBORREL4: New req. |
| STR-555427/A-Accelerometer Alert | MBORREL4: New paragraphs/STRs |
| SVS-REQ-318015/A-SVSServer internal accelerometer | MBORREL4: New req. |
| SVS-REQ-318016/A-SVSServer internal accelerometer configuration DID | MBORREL4: New req. |
| SVS-REQ-318018/A-SVSServer internal accelerometer monitoring deactivation | MBORREL4: New req. |
| SVS-REQ-318019/A-SVSServer internal accelerometer pre-conditions for alert trigger | MBORREL4: New req. |
| SVS-REQ-318020/A-SVSServer internal accelerometer alert triggers | MBORREL4: New req. |
| SVS-REQ-326500/A-SVSServer GRPC accelerometer alert trigger message | MBORREL4: New req. |
| SVS-REQ-318023/A-SVSServer internal accelerometer use cases that shall not trigger an alert | MBORREL4: New req. |
| SVS-REQ-325761/A-Vehicle location data for accelerometer alert trigger | MBORREL4: New req. |
| SVS-REQ-325762/A-Periodic vehicle location data sharing for Accelerometer alert trigger | MBORREL4: New req. |
| SVS-REQ-325763/A-Vehicle location sharing supported by Main battery | MBORREL4: New req. |
| SVS-REQ-325764/A-Vehicle location sharing supported by BUB | MBORREL4: New req. |
| SVS-REQ-326499/A-Vehicle location sharing during switchover from Main battery to BUB | MBORREL4: New req. |
| SVS-REQ-325765/A-SVSServer to stop vehicle location sharing | MBORREL4: New req. |
| SVS-REQ-326613/A-SVSServer vehicle location data sharing conditions for accelerometer alert trigger | MBORREL4: New req. |
| STR-555428/A-Unauthorized Door Open Alert | MBORREL4: New paragraphs/STRs |
| SVS-REQ-318024/A-SVSONBoardClient door ajar triggered | MBORREL4: New req. |
| SVS-REQ-318025/A-SVSONBoardClient door status check triggered | MBORREL4: New req. |
| SVS-REQ-318026/A-SVSONBoardClient | MBORREL4: New req. |



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| unauthorized door open trigger | |
| SVS-REQ-318027/A-SVSONBoardClient unauthorized door open alert | MBORREL4: New req. |
| SVS-REQ-318028/A-SVSONBoardClient unauthorized door open alert shall NOT be triggered use cases | MBORREL4: New req. |
| SVS-REQ-326764/A-SVSONBoardClient storing last known door lock status | MBORREL4: New req. |
| STR-555429/A-Inconsistent Location Alert | MBORREL4: New paragraphs/STRs |
| SVS-REQ-318032/A-SVSONBoardClient last know location comparison to first fix location upon ignition "ON" | MBORREL4: New req. |
| SVS-REQ-320193/A-SVSONBoardClient SVS_LOC_DELTA | MBORREL4: New req. |
| SVS-REQ-318034/A-SVSONBoardClient inconsistent location alert triggered | MBORREL4: New req. |
| SVS-REQ-318035/A-SVSONBoardClient inconsistent location alert NOT triggered | MBORREL4: New req. |
| STR-555478/A-Back-up Battery Engaged Alert | MBORREL4: New paragraphs/STRs |
| SVS-REQ-318038/A-SVSServer BUB engaged alert pre-condition | MBORREL4: New req. |
| SVS-REQ-318039/A-SVSServer BUB engaged alert triggered | MBORREL4: New req. |
| SVS-REQ-318040/A-SVSServer BUB engaged alert shall NOT be triggered use case | MBORREL4: New req. |
| STR-555479/A-SVS Related DTCs | MBORREL4: New paragraphs/STRs |
| SVS-REQ-318042/A-SVSServer detecting listed DTC | MBORREL4: New req. |
| SVS-REQ-318043/A-SVSServer triggering DTC alert to SVSOffBoardClient via SVSONBoardClient | MBORREL4: New req. |
| SVS-REQ-325788/A-SVSServer DTC cleared alert | MBORREL4: New req. |
| STR-579807/A-Ignition Status Change Alert | MBORREL4: New paragraphs/STRs |
| SVS-REQ-325789/A-SVSONBoardClient triggering Ignition Status Change alert | MBORREL4: New req. |
| STR-579808/A-Alarms Trigger Alert | MBORREL4: New paragraphs/STRs |
| SVS-REQ-325790/A-SVSONBoardClient triggering alarm alert | MBORREL4: New req. |
| STR-579809/A-Speed Change Alert | MBORREL4: New paragraphs/STRs |
| SVS-REQ-325791/A-SVSONBoardClient triggering speed change alert | MBORREL4: New req. |
| STR-555425/A-Use Cases | MBORREL4: New paragraphs/STRs |



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| SVS-UC-REQ-320173/A-Inconsistent Location Last Known Location | MBORREL4: New req. |
| SVS-UC-REQ-320174/A-Inconsistent Location First Fix Location | MBORREL4: New req. |
| SVS-UC-REQ-320175/A-Inconsistent Location Delta Parameter DID | MBORREL4: New req. |
| SVS-UC-REQ-325793/A-Early theft notification vehicle location data sharing Trigger condition | MBORREL4: New req. |
| SVS-UC-REQ-320176/A-Inconsistent Location Calculation Trigger | MBORREL4: New req. |
| SVS-UC-REQ-320177/A-Inconsistent Location Alert "Theft Mode" NOT active | MBORREL4: New req. |
| SVS-UC-REQ-320178/A-Inconsistent Location Alert "Theft Mode" ACTIVE | MBORREL4: New req. |
| SVS-UC-REQ-320179/A-Unauthorized Door Open Door Lock Status storing | MBORREL4: New req. |
| SVS-UC-REQ-320180/A-Unauthorized Door Open Alert | MBORREL4: New req. |
| SVS-UC-REQ-320181/A-BUB Alert Trigger | MBORREL4: New req. |
| SVS-UC-REQ-320182/A-BUB Alert Notification | MBORREL4: New req. |
| SVS-UC-REQ-320183/A-Accelerometer Monitoring Setting | MBORREL4: New req. |
| SVS-UC-REQ-320184/A-Accelerometer Monitoring Unsetting | MBORREL4: New req. |
| SVS-UC-REQ-320185/A-Accelerometer Trigger | MBORREL4: New req. |
| SVS-UC-REQ-320186/A-Accelerometer Notification | MBORREL4: New req. |
| SVS-UC-REQ-326618/A-Periodic Vehicle location data sharing for accelerometer alert trigger | MBORREL4: New req. |
| SVS-UC-REQ-326619/A-Stopping accelerometer alert vehicle location data sharing when "Theft Mode" DID activated | MBORREL4: New req. |
| SVS-UC-REQ-320188/A-SVS DTC Notifications | MBORREL4: New req. |
| STR-555426/A-White Box View | MBORREL4: New paragraphs/STRs |
| STR-491614/B-Appendix: Reference Documents | MBORREL4: Updated table |

September 20, 2018

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| STR-491623/F-Terminology and Abbreviations | MBORREL4: Added CDM and TMC |
| SVS-IIR-REQ-291024/C-SVSInterfaceClient_Tx | MBORREL4: Added REQ-328795 |
| MD-REQ-304069/C-getTcuDidData | MBORREL4: Made TcuResponseStatus a Required parameter, updated int32 bytes |
| MD-REQ-328795/A-sendSYNCTheftModeConfirmation | MBORREL4: New req. |
| MD-REQ-304069/C-getTcuDidData | MBORREL4: Made TcuResponseStatus a Required parameter, updated int32 bytes |



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| MD-REQ-304070/B-getTcuDidUpdateData | MBORREL4: Updated int32 bytes |
| STR-529942/C-Requirements | MBORREL4: Added REQ-329241 |
| SVS-REQ-329241/A-SVSONBoardClient Theft Mode Status DID | MBORREL4: New req. |
| SVS-REQ-321935/B-SVS Subscription State DID | MBORREL4: Updated last line |
| SVS-REQ-325614/B-SVS Location Delta Comparison DID | MBORREL4: Updated content |
| SVS-REQ-325617/B-SVS Vehicle Location Data reporting after FTCP/GRPC early theft alert trigger | MBORREL4: Updated content |
| SVS-REQ-306303/D-SVS Configuration Table | MBORREL4: Added SVSONBoardClient SVS_THEFT_MODE_STATUS |
| SVS-UC-REQ-304493/B-Theft Mode Activation | MBORREL4: Updated post conditions to include completion response |
| SVS-UC-REQ-304495/B-Theft Mode De-Activation | MBORREL4: Updated post conditions to include completion response |
| SVS-ACT-REQ-306767/B-Theft Mode Activation | MBORREL4: Updated Diagram |
| SVS-ACT-REQ-306768/B-Theft Mode De-Activation | MBORREL4: Updated Diagram |
| SVS-SD-REQ-306770/C-Theft Mode Activation | MBORREL4: Updated post conditions to include completion response, updated diagram |
| SVS-SD-REQ-306771/D-Theft Mode De-Activation | MBORREL4: Updated post conditions to include completion response, updated diagram |
| SVS-REQ-291069/D-SVSServer Unable To Obtain Location From Backup GNSS Antenna While Ignition OFF | MBORREL4: Updated content |
| SVS-REQ-291071/C-SVSServer SVS Backup Antenna AGPS XTRA File Use | MBORREL4: Added the note |
| SVS-UC-REQ-306364/B-SVSServer location source | MBORREL4: Updated precondition, Ignition On or Off |
| SVS-UC-REQ-306365/B-SVSServer primary antenna unable to provide location use backup antenna | MBORREL4: Updated precondition, Ignition On or Off |
| SVS-UC-REQ-306366/B-Primary antennas unavailable use backup antennas | MBORREL4: Updated precondition, Ignition On or Off |
| STR-523481/C-Activity Diagrams | MBORREL4: Removed REQ-310864, its already located in FUN-REQ-291045 |
| SVS-ACT-REQ-304065/C-Theft Mode Location Source | MBORREL4: Updated diagram |
| SVS-REQ-308665/B-SVSServer SVSInterfaceClient CCS settings priority | MBORREL4: Updated content |
| STR-564456/B-Requirements | MBORREL4: Removed REQ-321963. Added REQ- |
| SVS-REQ-328783/A-OTA Manager listen to SVS_THEFT_MODE_STATU S DID change | MBORREL4: New req. |
| SVS-REQ-328784/A-Restriction of Dynamic Over the Air Update | MBORREL4: New req. |
| SVS-REQ-321964/B-Over the Air Update Scheduled Time Postponed | MBORREL4: Updated req title and content |
| SVS-REQ-321965/B-Non-Interruptible OTA activity In-Progress | MBORREL4: Updated req title and content |
| SVS-UC-REQ-326481/B-Master Reset/Feature Reset | MBORREL4: Updated precondition "inactive" |



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| blocking upon Theft Mode Activation | |
| SVS-UC-REQ-326827/B-Master Reset/Feature Reset unblock upon Theft Mode Deactivation | MBORREL4: Corrected spelling error |
| SVS-REQ-306499/D-SVS and WIR / IPPT | MBORREL4: Updated SVSServer |
| SVS-REQ-306500/D-SVS and WIR intent | MBORREL4: Updated SVSServer |
| SVS-REQ-306501/B-GRPC token storage received from IPPT | MBORREL4: Changed name and req content |
| STR-530455/B-FTCP | MBORREL4: Removed REQ-306596 |
| SVS-UC-REQ-306595/D-Activate Theft Mode request through FTCP | MBORREL4: Changed req title |
| SVS-UC-REQ-306597/D-Deactivate Theft Mode request through FTCP | MBORREL4: Removed 30min precondition, changed to IGN On or Off |
| SVS-UC-REQ-306598/D-Main battery supported theft mode response through GRPC | MBORREL4: Updated precondition, Ignition On or Off |
| SVS-UC-REQ-306600/C-Theft Mode disabled response through GRPC | MBORREL4: Updated precondition, Ignition On or Off |
| SVS-UC-REQ-306601/D-SVSServer Data Logging Ignition OFF | MBORREL4: Updated precondition, Ignition On or Off |
| SVS-UC-REQ-306602/D-SVSServer send Failure and Retries | MBORREL4: Updated precondition, Ignition On or Off |
| SVS-ACT-REQ-310864/C-GNSS/Cellular Time Sharing | MBORREL4: Updated diagram |
| STR-555424/B-Requirements | MBORREL4: Removed REQ-325687. Added REQ-325761-765 & REQ-326499 from acc. alert section. Added 328785-788, 328990-999, REQ-329001, REQ-329008, REQ-329374, REQ-329640 |
| SVS-REQ-325683/B-SVSONBoardClient Wakeup by CAN signal in ignition "OFF" | MBORREL4: Updated title |
| SVS-REQ-325684/B-SVSServer Wakeup by accelerometer in ignition "OFF" | MBORREL4: Updated title |
| SVS-REQ-325761/B-Vehicle location data payload for early theft notification alert trigger | MBORREL4: Updated req. title and content |
| SVS-REQ-325762/B-Periodic vehicle location data for FTCP alerts | MBORREL4: Updated req. title and content |
| SVS-REQ-328990/A-Periodic vehicle location data for GRPC alerts | MBORREL4: New req. |
| SVS-REQ-329640/A-Stopping Periodic vehicle location data message on SVS_ALERT_LOC_DATA Deactivate | MBORREL4: New req. |
| SVS-REQ-328991/A-Controlling vehicle location data for concurrent multiple GRPC alerts | MBORREL4: New req. |
| SVS-REQ-328992/A-Controlling vehicle location data for concurrent multiple FTCP alerts | MBORREL4: New req. |
| SVS-REQ-328993/A-FTCP concurrent multiple early theft notification alert reporting | MBORREL4: New req. |



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| SVS-REQ-328994/A-GRPC concurrent multiple early theft notification alert reporting | MBORREL4: New req. |
| SVS-REQ-328995/A- Independent vehicle location data handling | MBORREL4: New req. |
| SVS-REQ-325763/B-GRPC Vehicle location data supported by Main battery | MBORREL4: Updated req. name and content |
| SVS-REQ-325764/B-GRPC Vehicle location data supported by BUB | MBORREL4: Updated req. name and content |
| SVS-REQ-326499/B-GRPC Vehicle location data during switchover from Main battery to BUB | MBORREL4: Updated req. name and content |
| SVS-REQ-325765/B- SVSServer to stop vehicle location data reporting during SVS_THEFT_MODE | MBORREL4: Updated req. name and content |
| SVS-REQ-328996/A- SVSONBoardClient to stop vehicle location data reporting during SVS_THEFT_MODE | MBORREL4: New req. |
| SVS-REQ-328785/A- FTCP/Type4 SMS Vehicle location data stop request command payload for early theft notification alert trigger | MBORREL4: New req. |
| SVS-REQ-328786/A-FTCP Vehicle location data stop command response and alert payload for early theft notification alert trigger | MBORREL4: New req. |
| SVS-REQ-328787/A-Type4 SMS early theft alert vehicle location data stop command request | MBORREL4: New req. |
| SVS-REQ-328997/A- SVSServer to SVSONBoardClient SMS early theft alert vehicle location data stop command request | MBORREL4: New req. |
| SVS-REQ-328998/A-FTCP early theft alert vehicle location data stop command request | MBORREL4: New req. |
| SVS-REQ-328999/A- SVSONBoardClient to SVSServer early theft alert vehicle location data stop command request | MBORREL4: New req. |
| SVS-REQ-328788/A- Subsequent early theft notification alert trigger from SVSServer to SVSOFFBoardClient | MBORREL4: New req. |
| SVS-REQ-329001/A- Subsequent early theft notification alert trigger from SVSONBoardClient to SVSOFFBoardClient | MBORREL4: New req. |
| SVS-REQ-329008/A-FTCP early theft alert vehicle location data stop command response and alert | MBORREL4: New req. |
| SVS-REQ-329374/A-FTCP early theft alert vehicle location data stop alert | MBORREL4: New req. |
| STR-555427/B-Accelerometer Alert | MBORREL4: Moved REQ-325761-765 & REQ-326499 up one level (out of acc. alert section) |



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| SVS-REQ-318016/B-SVSServer internal accelerometer configuration DID | MBORREL4: Updated table |
| SVS-REQ-326613/B-SVSServer vehicle location data reporting conditions for accelerometer alert trigger | MBORREL4: Updated title, removed last 2 bullet points |
| SVS-REQ-318032/B-SVSONBoardClient last known location comparison to first fix location upon ignition "ON" | MBORREL4: Fixed typo in title |
| SVS-REQ-320193/B-SVSONBoardClient SVS_LOC_DELTA | MBORREL4: Updated table |
| SVS-REQ-325789/B-SVSONBoardClient triggering Ignition Status Change alert | MBORREL4: Fixed typo |
| SVS-REQ-325791/B-SVSONBoardClient triggering speed change alert | MBORREL4: Fixed typo |
| STR-555425/B-Use Cases | MBORREL4: Added REQ-328789-791, REQ-329009-014 |
| SVS-UC-REQ-325793/B-Early theft alert vehicle location data reporting Trigger condition | MBORREL4: Updated title and precondition, Ignition On or Off |
| SVS-UC-REQ-326618/B-Periodic GRPC Vehicle location data for GRPC early theft notification alerts | MBORREL4: Updated req title and precondition and postconditions |
| SVS-UC-REQ-329009/A-Periodic FTCP Vehicle location data for FTCP early theft notification alerts | MBORREL4: New req. |
| SVS-UC-REQ-329010/A-Controlling GRPC Vehicle location data for concurrent multiple GRPC early theft notification alerts | MBORREL4: New req. |
| SVS-UC-REQ-329011/A-Controlling FTCP Vehicle location data for concurrent multiple FTCP early theft notification alerts | MBORREL4: New req. |
| SVS-UC-REQ-329012/A-Period and Count for concurrent multiple GRPC early theft notification alert reporting | MBORREL4: New req. |
| SVS-UC-REQ-329013/A-Period and Count for concurrent multiple FTCP early theft notification alert reporting | MBORREL4: New req. |
| SVS-UC-REQ-329014/A-SVSONBoardClient and SVSServer to handle Independent vehicle location data | MBORREL4: New req. |
| SVS-UC-REQ-326619/B-Stopping FTCP/GRPC early theft alert vehicle location data reporting when "Theft Mode" DID activated | MBORREL4: Updated title and precondition, Ignition On or Off |
| SVS-UC-REQ-328789/A-FTCP early theft alert vehicle location data stop command request to SVSONBoardClient and SVSServer | MBORREL4: New req. |
| SVS-UC-REQ-328790/A-SMS early theft alert vehicle location data stop command | MBORREL4: New req. |



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| request to SVSServer and SVSONBoardClient | |
| SVS-UC-REQ-328791/A-FTCP early theft alert vehicle location data stop command response and/or alert to SVSOffBoardClient | MBORREL4: New req. |
| SVS-UC-REQ-320188/B-SVS DTC Notifications | MBORREL4: Removed VHA from Actors |
| STR-555426/B-White Box View | MBORREL4: Added Sequence Diagram section |
| STR-586617/A-Sequence Diagrams | MBORREL4: New section |
| SD-REQ-329376/A-FTCP Data Comm. from SVSOffBoardClient to SVSONBoardClient | MBORREL4: New diagram/req. |
| SD-REQ-329377/A-SMS Data Comm. from SVSOffBoardClient to SVSONBoardClient | MBORREL4: New diagram/req. |

November 2, 2018

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| SVS-CLD-REQ-291017/E-Stolen Vehicle Services Server | MBORREL4: Updated content |
| SVS-CLD-REQ-291018/D-Stolen Vehicle Services Interface Client | MBORREL4: Updated content |
| SVS-CLD-REQ-291115/E-Stolen Vehicle Services OnBoard Client | MBORREL4: Updated content |
| SVS-REQ-298018/E-SVS Capability DID | MBORREL4: Removed last line |
| SVS-REQ-321935/C-SVS Subscription State | MBORREL4: Updated title and content for CCS |
| SVS-REQ-304063/C-SVS Backup Antenna DID | MBORREL4: Updated DID name |
| SVS-REQ-325617/C-SVS Vehicle Location Data reporting after FTCP/GRPC early theft alert trigger | MBORREL4: Updated first IF statement |
| SVS-REQ-306303/E-SVS Configuration Table | MBORREL4: Updated table |
| SVS-UC-REQ-306362/B-SVSServer ignition OFF location SVSInterfaceClient primary location source | MBORREL4: Removed SVSInterfaceClient and SVSONBoardClient from Actors |
| SVS-UC-REQ-306363/B-SVSInterfaceClient unable to provide location use backup antenna | MBORREL4: Updated scenario for clarity |
| SVS-UC-REQ-306364/C-SVSServer location source | MBORREL4: Removed SVSInterfaceClient and SVSONBoardClient from Actors |
| SVS-UC-REQ-306365/C-SVSServer primary antenna unable to provide location use backup antenna | MBORREL4: Removed SVSInterfaceClient and SVSONBoardClient from Actors |
| SVS-UC-REQ-306366/C-Primary antennas unavailable use backup antennas | MBORREL4: Removed SVSInterfaceClient and SVSONBoardClient from Actors |
| STR-491838/F-Requirements | MBORREL4: Added REQ-330480 |
| SVS-REQ-330480/A-SVS subscribed Vehicle connectivity settings | MBORREL4: New req |
| SVS-REQ-308665/C-CCS settings priority when Theft Mode is active | MBORREL4: Updated req title only |



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| SVS-REQ-303128/E-SVSServer Theft Activation To SVSInterfaceClient while in Ignition "OFF" | MBORREL4: Updated content for CCS |
| SVS-REQ-291077/C-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "ON" | MBORREL4: Updated content for CCS |
| SVS-REQ-303130/D-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "OFF" | MBORREL4: Updated content for CCS |
| SVS-REQ-328784/B-Restriction of Dynamic Over the Air Update | MBORREL4: Spelling correction |
| SVS-REQ-326479/B-Master Reset/Feature Reset Blocking | MBORREL4: Updated for clarity |
| SVS-REQ-326480/B-Master Reset/Feature Reset Unblocking | MBORREL4: Updated for clarity |
| STR-492121/F-GRPC Data Communication | MBORREL4: Added REQ-330513 |
| SVS-REQ-330513/A-FTCP Theft Mode Acknowledgement Response from SVSServer to SVSOffBoardClient | MBORREL4: New req. |
| SVS-REQ-297606/F-FTCP/GRPC Message Payload Vehicle to SVSOffBoardClient | MBORREL4: Added FTCP Theft Mode Ack Resp, updated req. title |
| SVS-UC-REQ-306595/E-Activate Theft Mode request through FTCP | MBORREL4: Updated postcondition for FTCP ack response |
| SVS-UC-REQ-306597/E-Deactivate Theft Mode request through FTCP | MBORREL4: Updated postcondition for FTCP ack response |
| SVS-UC-REQ-306601/E-SVSServer Data Logging Ignition OFF | MBORREL4: Spelling error |
| SVS-SD-REQ-303285/E-FTCP Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram |
| STR-555424/C-Requirements | MBORREL4: Removed REQ-328998, Alarm Trigger Alert section and REQ-325790. Added REQ-333101, REQ-331819 |
| SVS-REQ-325679/B-SVSONBoardClient/SVSServer monitoring and triggering of alerts | MBORREL4: Updated content for CCS |
| SVS-REQ-333101/A-Transient retry at SVSServer for all identified GRPC error code | MBORREL4: New req. |
| SVS-REQ-320189/B-Message Payload for Alerts | MBORREL4: Added Component Failure Type to SVS DTC Alert, changed door open alert to access alert |
| SVS-REQ-328785/B-FTCP/Type4 SMS Vehicle location data stop request command payload for early theft notification alert trigger | MBORREL4: Added SVSONBoardClient |
| SVS-REQ-328786/B-FTCP Vehicle location data stop command response and alert payload for early theft notification alert trigger | MBORREL4: Added missing req text to explain table |
| SVS-REQ-328787/B-FTCP/Type4 SMS early theft alert vehicle location data stop command request | MBORREL4: Updated req title to include FTCP, which combines this req with REQ-328998 |



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| SVS-REQ-329374/B-FTCP early theft alert vehicle location data stop alert | MBORREL4: Added "only" |
| SVS-REQ-331819/A- SVSONBoardClient/SVSServe r internal variable resetting | MBORREL4: New req. |
| STR-555428/B-Unauthorized Access Alert | MBORREL4: Updated title name and content for change in alert triggering, added REQ-333011. Removed REQ-318026, REQ-318028 |
| SVS-REQ-333011/A- SVSONBoardClient Perimeter Alarm capability check | MBORREL4: New req. |
| SVS-REQ-318024/B- SVSONBoardClient door ajar triggered | MBORREL4: Replaced CAN with logical signal names, added Hood and Liftgate |
| SVS-REQ-318025/B- SVSONBoardClient triggering unauthorized access alert | MBORREL4: removed latch CAN signals, added new methods for triggering |
| SVS-REQ-318027/B- SVSONBoardClient unauthorized access alert | MBORREL4: Updated title name and content for change in alert triggering |
| SVS-REQ-326764/B- SVSONBoardClient storing last known door lock status | MBORREL4: Updated title name and content for change in alert triggering |
| SVS-REQ-318032/C- SVSONBoardClient last known location comparison to first fix location upon ignition "ON" | MBORREL4: Removed SVSServer and added last line for CCS |
| SVS-REQ-318035/B- SVSONBoardClient inconsistent location alert NOT triggered | MBORREL4: Updated content |
| SVS-REQ-318043/B- SVSServer triggering DTC alert to SVSOffBoardClient | MBORREL4: Updated content and req title |
| SVS-REQ-325788/B- SVSServer DTC cleared alert | MBORREL4: Updated content |
| SVS-UC-REQ-320179/B- Unauthorized Access Vehicle Lock Status storing | MBORREL4: Updated title and content for alert change |
| SVS-UC-REQ-320180/B- Unauthorized Access Alert | MBORREL4: Updated title and content for alert change |
| SVS-UC-REQ-329009/B- Periodic FTCP Vehicle location data for FTCP early theft notification alerts | MBORREL4: Removed SVSServer as actor |
| SVS-UC-REQ-329011/B- Controlling FTCP Vehicle location data for concurrent multiple FTCP early theft notification alerts | MBORREL4: Removed SVSServer as actor |
| SVS-UC-REQ-329013/B- Period and Count for concurrent multiple FTCP early theft notification alert reporting | MBORREL4: Removed SVSServer as actor |
| SVS-UC-REQ-320188/C-SVS DTC Notifications | MBORREL4: Updated FTCP to GRPC |

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| SVS-CLD-REQ-291115/F- Stolen Vehicle Services OnBoard Client | MBORREL4: Removed last bullet |
| STR-529942/D-Requirements | MBORREL4: Removed REQ-306296 & REQ-306297 |
| SVS-REQ-325614/C-SVS Location Delta Comparison DID | MBORREL4: Changed to SVSServer |
| SVS-REQ-325617/D-SVS Vehicle Location Data | MBORREL4: Removed SVSONBoardClient and FTCP, updated title |



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| reporting after GRPC early theft alert trigger | |
| SVS-REQ-306303/F-SVS Configuration Table | MBORREL4: Updated table |
| SVS-REQ-307228/C-SVSServer DTC List | MBORREL4: Updated TBD |
| STR-491838/G-Requirements | MBORREL4: Removed REQ-325650. Added REQ-352682 |
| SVS-REQ-325649/B-SVS active subscription update to SVSONBoardClient and SVSServer | MBORREL4: Updated per CCS change |
| SVS-REQ-352682/A-SVSServer Location support when location in connectivity setting is disabled | MBORREL4: New req. |
| SVS-REQ-328784/C-Restriction of Dynamic Over the Air Update | MBORREL4: Updated req |
| SVS-REQ-321964/C-Over the Air Update Scheduled Time Postponed | MBORREL4: Updated req |
| SVS-REQ-321965/C-Non-Interruptible OTA activity In-Progress | MBORREL4: Updated req |
| STR-491841/F-Requirements | MBORREL4: Removed REQ-306499-501 |
| STR-492121/G-GRPC Data Communication | MBORREL4: Removed REQ-306494 & REQ-318892. Added REQ-352683, REQ-353200 |
| SVS-REQ-291225/F-Theft Mode Response from SVSServer to SVSOffBoardClient | MBORREL4: Updated content |
| SVS-REQ-306495/D-SVSServer supported on-demand (reporting frequency 0) response | MBORREL4: Updated req title and content |
| SVS-REQ-352683/A-SVSServer not reporting unchanged locations during active theft mode | MBORREL4: New req. |
| SVS-REQ-297606/G-FTCP/GRPC Message Payload Vehicle to SVSOffBoardClient | MBORREL4: Updated table (Main Battery) |
| SVS-REQ-353200/A-GRPC theft mode response field/parameter status or source changes updates to SVSOffBoardClient | MBORREL4: New req. |
| STR-523004/D-GRPC Retry Strategies | MBORREL4: Added REQ-352684, REQ-353202 |
| SVS-REQ-303353/E-SVSServer SVS application retry for all identified GRPC error code | MBORREL4: Updated grammar, no req change |
| SVS-REQ-352684/A-SVSServer SVS application storing theft mode locations during out of cellular coverage | MBORREL4: New req. |
| SVS-REQ-353202/A-SVSServer not deleting stored theft mode response messages | MBORREL4: New req. |
| STR-530456/D-GRPC | MBORREL4: Added REQ-352685 |
| SVS-UC-REQ-352685/A-SVSServer not reporting unchanged locations during active theft mode | MBORREL4: New usecase |
| STR-530457/B-SMS | MBORREL4: Added REQ-352686 |



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| SVS-UC-REQ-352686/A-SVS Server SVS application active theft mode locations storage | MBORREL4: New usecase |
| STR-491844/E-Requirements | MBORREL4: Removed REQ-303149. Added REQ-352687 |
| SVS-REQ-291085/E-Power Modes | MBORREL4: Updated table |
| SVS-REQ-303135/D-Main battery power while SVS Subscription active while NOT in "Theft Mode" | MBORREL4: Updated content |
| SVS-REQ-303136/D-Main battery SVS waiting for SMS support while SVS subscription active while NOT in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-REQ-303147/C-SVSServer BUB power while NOT in "Theft Mode" and Main Battery Disconnected | MBORREL4: Updated content |
| SVS-REQ-308663/C-SVSServer BUB SVS Support and China Data Monitor while NOT in "Theft Mode" | MBORREL4: Updated content and req title |
| SVS-REQ-303151/E-SVSServer BUB SVS Support Termination Alert while NOT in "Theft Mode" | MBORREL4: Updated req title |
| SVS-REQ-303138/D-Main battery SVS Sleep Support Time Termination Alert while SVS Subscription active while NOT in "Theft Mode" | MBORREL4: Updated req title and content |
| SVS-REQ-303150/E-SVSServer BUB SVS Support Time Termination NOT in "Theft Mode" | MBORREL4: Updated req title and content |
| SVS-REQ-352687/A-SVS Support Termination Goodbye Message NOT in "Theft Mode" | MBORREL4: New req. |
| STR-491845/C-Use Cases | MBORREL4: Remvoed REQ-306369 |
| SVS-UC-REQ-306370/B-Main Battery Low Voltage Threshold with Sleep | MBORREL4: Updated req title and preconditions |
| SVS-UC-REQ-306371/C-Main Battery Warning Threshold Goodbye Msg | MBORREL4: Updated preconditions and scenario |
| SVS-UC-REQ-306376/C-SVS Backup Battery Warning Threshold in Theft Mode | MBORREL4: Updated postconditions |
| SVS-UC-REQ-306378/B-Main Battery Disconnected SVS Backup Battery Disengaged | MBORREL4: Updated preconditions |
| SVS-UC-REQ-306379/C-Main Battery Disconnected SVS Backup Battery Support | MBORREL4: Updated req title and pre & postconditions |
| SVS-UC-REQ-306380/C-SVS Backup Battery Termination Threshold with Goodbye Msg | MBORREL4: Updated req title and preconditions |
| SVS-ACT-REQ-303152/D-Battery Power Management | MBORREL4: Updated diagram |
| STR-555424/D-Requirements | MBORREL4: Removed REQ-325685, REQ-325686, REQ-325762, REQ-328992, REQ-328993, REQ-328995, REQ-325763, REQ-325764, REQ-326499, REQ-328996, REQ-328997, REQ-329001. Removed "Speed Change Alert" section and REQ-325791. Added REQ-352689-695, REQ-352774, REQ-352776, REQ-352777, REQ-353206, REQ-353207, REQ-353208 |
| SVS-REQ-325679/C-SVSServer monitoring and triggering of alerts | MBORREL4: Update req title, updated content |



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| SVS-REQ-326482/B-SVSServer stop monitoring and triggering of alerts | MBORREL4: Update req title, updated content |
| SVS-REQ-325681/B-SVSServer Not monitoring and triggering of alerts in "Theft Mode" Active state | MBORREL4: Update req title, updated content |
| SVS-REQ-318029/B-SVSServer last known location storing upon ignition "OFF" | MBORREL4: Update req title, updated content |
| SVS-REQ-325683/C-SVSServer Wakeup in ignition "OFF" to process alerts | MBORREL4: Update req title, updated content |
| SVS-REQ-326498/B-GRPC early theft notification alert | MBORREL4: Updated content |
| SVS-REQ-333101/B-Transient retry at SVSServer for all identified GRPC error code | MBORREL4: Updated content |
| SVS-REQ-352689/A-SVSServer SVS application storing alerts during out of cellular coverage | MBORREL4: New req. |
| SVS-REQ-352690/A-SVSServer SVS application storing alerts for gRPC retry timeout | MBORREL4: New req. |
| SVS-REQ-352691/A-Alert and alert periodic location reports not supported during active eCall | MBORREL4: New req. |
| SVS-REQ-353206/A-Stored alerts and alert periodic location reports after eCall complete | MBORREL4: New req. |
| SVS-REQ-352692/A-Store alert till GRPC communication required to be established | MBORREL4: New req. |
| SVS-REQ-352693/A-SVSServer SVS application stored alerts when Theft Mode is Active | MBORREL4: New req. |
| SVS-REQ-352694/A-Stored Alerts Message Content | MBORREL4: New req. |
| SVS-REQ-352695/A-SVSServer SVS Application storing Alert Periodic Vehicle Location Data Message | MBORREL4: New req. |
| SVS-REQ-353207/A-SVSServer not deleting stored alerts and alert periodic location reports | MBORREL4: New req. |
| SVS-REQ-320189/C-Message Payload for Alerts | MBORREL4: Updated table |
| SVS-REQ-325761/C-Vehicle location data payload for early theft notification alert trigger | MBORREL4: Updated content |
| SVS-REQ-328990/B-Periodic vehicle location data for GRPC alerts | MBORREL4: Updated content |
| SVS-REQ-329640/B-Stopping Periodic vehicle location data message on SVS_ALERT_LOC_DATA Deactivate | MBORREL4: Updated content |
| SVS-REQ-353208/A-SVSOffBoardClient updating the SVS_ALERT_LOC_DATA with new Period and Count values | MBORREL4: New req. |



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| SVS-REQ-328994/B-GRPC concurrent multiple early theft notification alert reporting | MBORREL4: Updated content |
| SVS-REQ-352774/A-Updating SVS_ALERT_LOC DATA DID for new alerts | MBORREL4: New req. |
| SVS-REQ-352776/A-SVS Location Collection upon Alert Trigger while Main Battery connected and NOT in "Theft Mode" | MBORREL4: New req. |
| SVS-REQ-352777/A-SVS Location Collection upon Alert Trigger while BUB engaged and NOT in "Theft Mode" | MBORREL4: New req. |
| SVS-REQ-328785/C-FTCP/Type4 SMS Vehicle location data stop request command payload for early theft notification alert trigger | MBORREL4: Updated content |
| SVS-REQ-328786/C-FTCP Vehicle location data stop command ack response & GRPC payload for early theft notification alert trigger | MBORREL4: Updated req title and content |
| SVS-REQ-328787/C-FTCP/Type4 SMS early theft alert vehicle location data stop command request | MBORREL4: Updated content |
| SVS-REQ-329008/B-FTCP early theft alert vehicle location data stop command response and alert | MBORREL4: Updated content |
| SVS-REQ-329374/C-GRPC early theft alert vehicle location data stop response | MBORREL4: Updated req title and content |
| SVS-REQ-331819/B-SVSServer internal variable resetting | MBORREL4: Updated req title and content |
| STR-555427/C-Accelerometer Alert | MBORREL4: Added REQ-352778-780 |
| SVS-REQ-352778/A-SVSServer monitoring Door presence | MBORREL4: New req. |
| SVS-REQ-318018/B-SVSServer internal accelerometer monitoring deactivation for vehicle with doors | MBORREL4: Updated req title and content |
| SVS-REQ-352779/A-SVSServer internal accelerometer monitoring deactivation for vehicle without doors | MBORREL4: New req. |
| SVS-REQ-318019/B-SVSServer internal accelerometer pre-conditions for alert trigger for vehicle with doors | MBORREL4: Updated req title and content |
| SVS-REQ-352780/A-SVSServer internal accelerometer pre-conditions for alert trigger for vehicle without doors | MBORREL4: New req. |
| SVS-REQ-333011/B-SVSServer Perimeter Alarm capability check | MBORREL4: Updated req title and content |
| SVS-REQ-318024/C-SVSServer door ajar triggered | MBORREL4: Updated req title and content |



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| SVS-REQ-318025/C-SVSServer triggering unauthorized access alert | MBORREL4: Updated req title and content |
| SVS-REQ-318027/C-SVSServer unauthorized access alert | MBORREL4: Updated req title and content |
| SVS-REQ-326764/C-SVSServer storing last known door lock status | MBORREL4: Updated req title and content |
| SVS-REQ-318032/D-SVSServer last known location comparison to first fix location upon ignition "ON" | MBORREL4: Updated req title and content |
| SVS-REQ-320193/C-SVSServer SVS_LOC_DELTA | MBORREL4: Updated req title |
| SVS-REQ-318034/B-SVSServer inconsistent location alert triggered | MBORREL4: Updated req title and content |
| SVS-REQ-318035/C-SVSServer inconsistent location alert NOT triggered | MBORREL4: Updated req title and content |
| SVS-REQ-318042/B-SVSServer detecting listed DTC | MBORREL4: Updated table |
| STR-555425/C-Use Cases | MBORREL4: Removed REQ-329009, REQ-329011, REQ-329013, REQ-329014 |
| SVS-UC-REQ-320173/B-Inconsistent Location Last Known Location | MBORREL4: Updated usecase |
| SVS-UC-REQ-320174/B-Inconsistent Location First Fix Location | MBORREL4: Updated usecase |
| SVS-UC-REQ-320175/B-Inconsistent Location Delta Parameter DID | MBORREL4: Updated usecase |
| SVS-UC-REQ-325793/C-Early theft alert vehicle location data reporting Trigger condition | MBORREL4: Updated usecase |
| SVS-UC-REQ-320176/B-Inconsistent Location Calculation Trigger | MBORREL4: Updated usecase |
| SVS-UC-REQ-320177/B-Inconsistent Location Alert "Theft Mode" NOT active | MBORREL4: Updated usecase |
| SVS-UC-REQ-320178/B-Inconsistent Location Alert "Theft Mode" ACTIVE | MBORREL4: Updated usecase |
| SVS-UC-REQ-320179/C-Unauthorized Access Vehicle Lock Status storing | MBORREL4: Updated usecase |
| SVS-UC-REQ-320180/C-Unauthorized Access Alert | MBORREL4: Updated usecase |
| SVS-UC-REQ-320181/B-BUB Alert Trigger | MBORREL4: Updated usecase |
| SVS-UC-REQ-352787/A-SVSServer Door presence check for accelerometer monitoring setting and unsetting | MBORREL4: New usecase |
| SVS-UC-REQ-320183/B-Accelerometer Monitoring Setting for vehicles with doors | MBORREL4: Updated req title and content |
| SVS-UC-REQ-352788/A-Accelerometer Monitoring Setting for vehicles without doors | MBORREL4: New usecase |
| SVS-UC-REQ-320184/B-Accelerometer Monitoring Unsetting for vehicles with doors | MBORREL4: Updated req title and content |



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| SVS-UC-REQ-352789/A-Accelerometer Monitoring Unsetting for vehicles without doors | MBORREL4: New usecase |
| SVS-UC-REQ-326618/C-Periodic GRPC Vehicle location data for GRPC early theft notification alerts | MBORREL4: Updated Usecase |
| SVS-UC-REQ-329010/B-Controlling GRPC Vehicle location data for concurrent multiple GRPC early theft notification alerts | MBORREL4: Updated Usecase |
| SVS-UC-REQ-329012/B-Period and Count for concurrent multiple GRPC early theft notification alert reporting | MBORREL4: Updated Usecase |
| SVS-UC-REQ-326619/C-Stopping GRPC early theft alert vehicle location data reporting when "Theft Mode" DID activated | MBORREL4: Updated req title and content |
| SVS-UC-REQ-328789/B-FTCP early theft alert vehicle location data stop command request to SVSServer | MBORREL4: Updated req title and content |
| SVS-UC-REQ-328790/B-SMS early theft alert vehicle location data stop command request to SVSServer | MBORREL4: Updated req title and content |
| SVS-UC-REQ-328791/B-FTCP early theft alert vehicle location data stop command ack response to SVSOffBoardClient | MBORREL4: Updated req title and content |
| SVS-UC-REQ-352790/A-GRPC early theft alert vehicle location data stop response to SVSOffBoardClient | MBORREL4: New usecase |
| SVS-UC-REQ-352791/A-Alert Triggered Location Collection Termination Message while Main Battery Connected NOT in Theft Mode | MBORREL4: New usecase |
| SVS-UC-REQ-352792/A-Alert Triggered Location Collection Termination on BUB NOT in Theft Mode | MBORREL4: New usecase |
| SVS-UC-REQ-352793/A-SVSServer SVS application alerts storage | MBORREL4: New usecase |
| SD-REQ-329376/B-FTCP Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated req title, content and diagram |
| SD-REQ-329377/B-SMS Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated req title, content and diagram |
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| SVS-CLD-REQ-291017/F-Stolen Vehicle Services Server | MBORREL4: Updated req. |
| SVS-CLD-REQ-291018/E-Stolen Vehicle Services Interface Client | MBORREL4: Updated req. |



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| SVS-CLD-REQ-291116/E-Stolen Vehicle Services OffBoard Client | MBORREL4: Updated req. |
| STR-491612/D-General Requirements | MBORREL4: Added REQ-358744 |
| SVS-REQ-358744/A-States Ignored by SVSServer During Active Theft Mode | MBORREL4: New req. |
| SVS-REQ-321935/D-SVS Subscription State | MBORREL4: Updated req. |
| SVS-REQ-306303/G-SVS Configuration Table | MBORREL4: Updated table |
| SVS-UC-REQ-304493/C-Theft Mode Activation | MBORREL4: Added SMS Type |
| SVS-UC-REQ-304495/C-Theft Mode De-Activation | MBORREL4: Added SMS Type |
| SVS-SD-REQ-306770/D-Theft Mode Activation | MBORREL4: Added SMS Type |
| SVS-SD-REQ-306771/E-Theft Mode De-Activation | MBORREL4: Added SMS Type |
| SVS-REQ-307228/D-SVSServer DTC List | MBORREL4: Updated table |
| STR-491838/H-Requirements | MBORREL4: Removed REQ-303129 |
| SVS-REQ-303128/F-SVSServer Theft Activation To SVSInterfaceClient while in Ignition "OFF" | MBORREL4: Updated req. |
| SVS-REQ-291077/D-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "ON" | MBORREL4: Updated req. |
| SVS-REQ-303130/E-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "OFF" | MBORREL4: Updated req. |
| SVS-REQ-325649/C-SVS active subscription update to SVSONBoardClient, SVSInterfaceClient and SVSServer | MBORREL4: Updated req. and title |
| STR-564456/C-Requirements | MBORREL4: Removed REQ-321961, REQ-321962 |
| SVS-REQ-326479/C-Master Reset/Feature Reset Blocking | MBORREL4: Updated HMI reference |
| SVS-REQ-326480/C-Master Reset/Feature Reset Unblocking | MBORREL4: Updated HMI reference |
| SVS-UC-REQ-326481/C-Master Reset/Feature Reset blocking upon Theft Mode Activation | MBORREL4: Added SMS Type |
| SVS-UC-REQ-326827/C-Master Reset/Feature Reset unblock upon Theft Mode Deactivation | MBORREL4: Added SMS Type |
| SVS-REQ-304029/D-SVSOFFBoardClient Type4 SMS Messages | MBORREL4: Added SMS Type |
| STR-546269/B-FTCP/Type4 SMS Data Payload | MBORREL4: Added SMS Type |
| SVS-REQ-297604/F-FTCP/Type4 SMS Message Payload SVSOFFBoardClient to Vehicle | MBORREL4: Added SMS Type |
| SVS-REQ-297606/H-FTCP/GRPC Message Payload Vehicle to SVSOFFBoardClient | MBORREL4: Updated table |



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| STR-492122/E-Type4 SMS Data Communication | MBORREL4: Added SMS Type |
| SVS-REQ-291229/F-Type4 SMS Activate Theft Mode request from SVSOffBoardClient to SVSServer | MBORREL4: Added SMS Type to title only |
| SVS-REQ-291233/F-Type4 SMS Deactivate Theft Mode Command from SVSOffBoardClient To SVSServer | MBORREL4: Added SMS Type to title only |
| SVS-REQ-306576/D-Type4 SMS Activate/Deactivate Theft Mode command security | MBORREL4: Added SMS Type to title only |
| STR-530457/C-Type4 SMS | MBORREL4: Added SMS Type |
| SVS-UC-REQ-306604/D-Main battery supported activate theft mode request through Type4 SMS | MBORREL4: Added SMS Type to title only |
| SVS-UC-REQ-306605/D-BUB supported activate theft mode request through Type4 SMS | MBORREL4: Added SMS Type to title only |
| SVS-UC-REQ-306606/D-Deactivate theft mode request through Type4 SMS | MBORREL4: Added SMS Type to title only |
| SVS-SD-REQ-303285/F-FTCP Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram |
| SVS-SD-REQ-303698/E-Type4 SMS Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram and added SMS Type |
| SVS-SD-REQ-303710/E-Type4 SMS Retry Strategies | MBORREL4: Added SMS Type to title only |
| STR-491844/F-Requirements | MBORREL4: Removed REQ-303136, Added REQ-360728, REQ-360729 |
| SVS-REQ-291085/F-Power Modes | MBORREL4: Updated table |
| SVS-REQ-360728/A-Ignition ON and Main Battery Thresholds | MBORREL4: New req. |
| SVS-REQ-360730/A-Ignition ON to OFF Transitions and Main Battery Thresholds | MBORREL4: New req. |
| SVS-REQ-303142/E-Main battery Depletion while "Theft Mode" active and NO BUB available | MBORREL4: Updated content |
| SVS-REQ-303146/E-SVSServer BUB SVS Depletion while in "Theft Mode" | MBORREL4: Updated content |
| SVS-REQ-303138/E-Main battery SVS Sleep Support Time Termination Alert while SVS Subscription active while NOT in "Theft Mode" | MBORREL4: Updated content |
| SVS-REQ-303150/F-SVSServer BUB SVS Support Time Termination NOT in "Theft Mode" | MBORREL4: Updated content |
| SVS-REQ-352687/B-SVS Support Termination Data NOT in "Theft Mode" | MBORREL4: Updated title and table |
| SVS-UC-REQ-306371/D-Main Battery Warning Threshold Goodbye Msg | MBORREL4: Updated Post-conditions |



| | |
|---|---|
| SVS-UC-REQ-306374/C-Main Battery Discharged Threshold Goodbye Msg no BUB | MBORREL4: Updated Post-conditions |
| SVS-UC-REQ-306377/C-SVS Backup Battery SVS Unsupported Threshold in Theft Mode | MBORREL4: Updated Post-conditions |
| SVS-UC-REQ-306378/C-Main Battery Discharged SVS Backup Battery Disengaged | MBORREL4: Updated Pre & Post-conditions and title |
| SVS-UC-REQ-306379/D-Main Battery Disconnected SVS Backup Battery Support | MBORREL4: Updated Pre & Post-conditions |
| SVS-UC-REQ-306380/D-SVS Backup Battery Termination Threshold with Goodbye Msg | MBORREL4: Updated Post-conditions |
| SVS-ACT-REQ-303152/E-Battery Power Management | MBORREL4: Updated diagram |
| STR-555424/E-Requirements | MBORREL4: Added REQ-358745, REQ-358746 |
| SVS-REQ-358745/A-States applied by SVSServer during active alert periodic location reports | MBORREL4: New req. |
| SVS-REQ-326498/C-GRPC early theft notification alert and periodic location messages | MBORREL4: Updated title and content |
| SVS-REQ-352691/B-Alert and alert periodic location reports not supported during active eCall | MBORREL4: Updated content |
| SVS-REQ-358746/A-Alert Location Reports Paused during active eCall | MBORREL4: New req. |
| SVS-REQ-352693/B-SVSServer SVS application stored alerts and periodic location reports when Theft Mode is Active | MBORREL4: Updated title and content |
| SVS-REQ-328785/D-FTCP/Type4 SMS Vehicle location data stop request command payload for early theft notification alert trigger | MBORREL4: Added SMS Type |
| SVS-REQ-328786/D-FTCP Vehicle location data stop command ack response & GRPC payload for early theft notification alert trigger | MBORREL4: Updated table |
| SVS-REQ-318042/C-SVSServer detecting listed DTC | MBORREL4: Updated table |
| SD-REQ-329376/C-FTCP Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram |
| SD-REQ-329377/C-Type4 SMS Data Comm. from SVSOffBoardClient to SVSServer | MBORREL4: Updated diagram and title |



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1 Overview

Stolen Vehicle Services (SVS) will allow the customers to receive vehicle alarm activation alerts for capable vehicles through the FordPass application. SVS will also feature an easy call button to the Call Center of the FordPass interface. SVS provides capability to the Call Center to track the customer's vehicle and communicate relevant information to responding Law Enforcement agencies.

SVS provides the customer with a robust system that will assist in the safe retrieval of a vehicle in the case that it is stolen. This is achieved by utilizing the vehicles SVSServer which utilizes:

1. Vehicle's Cellular and GPS antennas for tracking and establishing a communication link to send vehicle data and location to the Ford backend system which is then communicated to the Call Center
2. Internal back-up Cellular and GPS antenna in the case the primary antennas are damaged, removed, or unable to detect signal for equipped vehicles
3. Internal to the TCU back-up battery in the case that the main battery source is removed for equipped vehicles

As this will be a service provided by subscription ONLY, the customer will be expected to subscribe and accept the terms and conditions associated with the feature using the Ford Subscription Management platform and the FordPass/LincolnWay Application. The terms and conditions may include permission of setting changes in order to allow vehicle location collection.

1.1 Terminology and Abbreviations

The following table lists terminologies that are used in this document along with a brief description.

| Term | Description |
|------|---------------------------------------|
| API | API Application Programming Interface |
| BUB | Back Up Battery |
| CAN | Controller Area Network |
| CCS | Customer Connectivity Settings |
| CDM | China Data Monitor |
| DTC | Diagnostic Trouble Codes |
| ECG | Enhanced Central Gateway |
| ECU | Electronic Control Unit |
| FNV | Fully Networked Vehicle |
| FTCP | Ford Telematics Control Protocol |
| GPS | Global Positioning System |
| GRE | Generic Routing and Encapsulation |
| GRPC | gRPC Remote Procedure Calls |
| HMI | Human Machine Interface |
| IPC | Inter Process Communication |
| IPPT | IP Pass-through |
| LPR | Low-Power Register (Mode) |
| SDN | Software Delivery Network |
| SoA | Service Oriented Architecture |
| SVS | Stolen Vehicle Services |
| TCU | Telematics Control Unit |
| TMC | Transportation Mobility Cloud |
| VHA | Vehicle Health and Alerts |
| WIR | Wireless Interface Router |
| WLAN | Wireless Local Area Network |



2 Architectural Design

2.1 SVS-CLD-REQ-291017/F-Stolen Vehicle Services Server

The Stolen Vehicle Services Server (SVSServer) is responsible for the tasks listed below:

- Receive forwarded FTCP requests from SVSONBoardClient for SVS Theft Mode activation/de-activation
- Receive a Type 4 SMS which includes SVS Theft Mode request to activate, deactivate, tracking
- SVSServer shall manage "Theft Mode" DID and once change is made SVSONBoardClient and SVSInterfaceClient shall be made aware of the change
- SVSServer shall send FTCP acknowledgement response message for FTCP Theft Mode activate/de-activate command.
- Gather location data, vehicle state, power source, any system failures and send in GRPC message to SVSOffBoardClient
- Support an GRPC message and GPS positioning failure retry strategy
- Storing of location information including (GPS Data Format, Latitude, Longitude, Altitude, GPS time, Direction of Travel, Fix (2D, 3D), Location Accuracy, Location Status) when connectivity is not available and retry strategy has failed
- Manage SVS_CAPABILITY DID to specify if vehicle is capable of SVS or not, while taking target countries into consideration and based on the selected country determine if vehicle is SVS capable.
- SVSServer to rely on CCS API to obtain information about current subscription status to start/stop monitoring the early theft alerts and trigger to SVSOffBoardClient during the event (Refer to IIR-REQ-313614-Customer Connectivity Settings API).

Please review the implementation guide/ block diagram to locate the SVSServer class.

2.2 SVS-CLD-REQ-291018/E-Stolen Vehicle Services Interface Client

The Stolen Vehicle Services Interface Client (SVSInterfaceClient) is responsible for the tasks listed below:

- SVSServer to broadcast DID change for "Theft Mode", DID shall be communicated to SVSInterfaceClient
- Make appropriate changes to HMI based on SVS subscription and "Theft Mode" state
- CCS to manage SVS Subscription Information
- CCS Manager synchronizes the subscription state across all involved components (SVSServer, SVSONBoardClient, SVSInterfaceClient)
- If stolen vehicle service is overall disabled (bAllow) by CCS then SVS will be disabled.

Please review the implementation guide/ block diagram to locate the SVSInterfaceClient class.

2.3 SVS-CLD-REQ-291115/F-Stolen Vehicle Services OnBoard Client

The Stolen Vehicle Services OnBoard Client (SVSONBoardClient) is responsible for the tasks listed below:

- Receive/Get communicated change for "Theft Mode" DID
- Forward FTCP SVS requests for SVS Theft Activation/De-activation to SVSServer
- Restrict other applications such as Software Update OTA, C&C when vehicle in Theft Mode

Please review the implementation guide/ block diagram to locate the SVSONBoardClient class.

2.4 SVS-CLD-REQ-291116/E-Stolen Vehicle Services OffBoard Client

The Stolen Vehicle Services OffBoard Client (SVSOffBoardClient) is responsible for the tasks listed below:

- SVSOffBoardClient to send "Theft Mode" activation/de-activation request to SVSServer via Type 4 SMS or FTCP message via the SVSONBoardClient.
- SVSOffBoardClient to receive GRPC "Theft Mode Response" message from SVSServer.
- SVSOffBoardClient to send update for SVS DID value changes if needed.
- SVSOffBoardClient to handle retry strategy for Type4 SMS and FTCP messages.

Please review the implementation guide/ block diagram to locate the SVSOffBoardClient class.



2.5 Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the SVS feature may be mapped into physical modules. This mapping example is specific to the FNV2 architecture and does not necessarily carryover to other carlines or vehicle architectures.

| Logical Class | Physical Module (ECU) |
|--------------------|-----------------------|
| SVSServer | TCU |
| SVSInterfaceClient | SYNC |
| SVSONBoardClient | ECG |
| SVSOFFBoardClient | SDN |



2.6 SVSInterfaceClient Interface

2.6.1 SVS-IIR-REQ-291024/C-SVSInterfaceClient_Tx

2.6.1.1 MD-REQ-304069/C-getTcuDidData

This API is used to request DID information from the TCU. The TCU also uses this API for its response.

| Method Type | | One-Shot (Synch) | | | |
|-----------------|-----------------------|------------------|----------------------------------|-------------------------|-----------------------------|
| QoS Level | | Default | | | |
| Retained | | No | | | |
| R/O | Name | Type | Literals | Value | Description |
| Request (_Rq) | | | | | |
| R | RequestTcuDid Address | Int32 | - | 0x00000000 - 0xFFFFFFFF | Requested DID address |
| Response (_Rsp) | | | | | |
| R | TcuResponseStatus | Enum | - | - | Response to initial request |
| | | | Success | 0x00 | |
| | | | Wait | 0x01 | |
| | | | Fail-Param Does Not Exist | 0x02 | |
| | | | Fail-Param Read Only | 0x03 | |
| | | | Fail-Param Out Of Range | 0x04 | |
| | | | Fail-Param Size Incorrect | 0x05 | |
| | | | Fail-Unknown Command Type | 0x06 | |
| | | | Fail-TCU Internal Error | 0x07 | |
| | | | Fail-Command Already In Progress | 0x08 | |
| | | | Fail-Command Not Permitted | 0x09 | |
| | | | Fail-Internal Memory Error | 0x0A | |
| | | | Fail-Invalid Config Data | 0x0B | |
| | | | Fail-Part2No Mismatch | 0x0C | |
| | | | Fail-Invalid Apply Type Combo | 0x0D | |
| | | | Fail-Access Denied | 0x0E | |
| | | | Fail-Config Item Mismatch | 0x0F | |
| | | | Fail-Already In Same State | 0x10 | |
| R | tcuDidAddress | Int32 | - | 0x00000000 - 0xFFFFFFFF | DID address |
| R | tcuDidConfigData | Bytes | - | - | DID Data |

2.6.1.2 MD-REQ-328795/A-sendSYNCTheftModeConfirmation

This API is used to receive the Theft Mode confirmation response from SYNC after either successfully activating or deactivating Theft Mode. SYNC publishes its Theft Mode confirmation (OnChange) via this API.

| Method Type | | OnChange | | | |
|---------------|------|----------|----------|-------|-------------|
| QoS Level | | Default | | | |
| Retained | | Yes | | | |
| R/O | Name | Type | Literals | Value | Description |
| Request (_Rq) | | | | | |



| | | | | | |
|------------------------|---------------------------|------|---------|------|----------------------------------|
| - | - | - | - | - | N/A |
| Response (_Rsp) | | | | | |
| R | SYNCResponseStatus | Enum | - | - | Theft Mode confirmation response |
| | | | Success | 0x00 | |
| | | | Failure | 0x01 | |
| O | SYNCResponseFailureReason | Enum | TBD | TBD | |

2.6.2 SVS-IIR-REQ-291025/B-SVSInterfaceClient_Rx

2.6.2.1 MD-REQ-304069/C-getTcuDidData

This API is used to request DID information from the TCU. The TCU also uses this API for its response.

| Method Type | | One-Shot (Synch) | | | |
|------------------------|-----------------------|------------------|----------------------------------|-------------------------|-----------------------------|
| QoS Level | | Default | | | |
| Retained | | No | | | |
| R/O | Name | Type | Literals | Value | Description |
| Request (_Rq) | | | | | |
| R | RequestTcuDid Address | Int32 | - | 0x00000000 - 0xFFFFFFFF | Requested DID address |
| Response (_Rsp) | | | | | |
| R | TcuResponseStatus | Enum | - | - | Response to initial request |
| | | | Success | 0x00 | |
| | | | Wait | 0x01 | |
| | | | Fail-Param Does Not Exist | 0x02 | |
| | | | Fail-Param Read Only | 0x03 | |
| | | | Fail-Param Out Of Range | 0x04 | |
| | | | Fail-Param Size Incorrect | 0x05 | |
| | | | Fail-Unknown Command Type | 0x06 | |
| | | | Fail-TCU Internal Error | 0x07 | |
| | | | Fail-Command Already In Progress | 0x08 | |
| | | | Fail-Command Not Permitted | 0x09 | |
| | | | Fail-Internal Memory Error | 0x0A | |
| | | | Fail-Invalid Config Data | 0x0B | |
| | | | Fail-Part2No Mismatch | 0x0C | |
| | | | Fail-Invalid Apply Type Combo | 0x0D | |
| | | | Fail-Access Denied | 0x0E | |
| | | | Fail-Config Item Mismatch | 0x0F | |
| | | | Fail-Already In Same State | 0x10 | |
| R | tcuDidAddress | Int32 | - | 0x00000000 - 0xFFFFFFFF | DID address |
| R | tcuDidConfigData | Bytes | - | - | DID Data |

2.6.2.2 MD-REQ-304070/B-getTcuDidUpdateData

This API is used to receive updated DID information from the TCU. The TCU publishes all updated DID information (OnChange) via this API.



| | | | | | |
|------------------------|------------------|-------------|-----------------|-------------------------|--------------------------------|
| Method Type | | OnChange | | | |
| QoS Level | | Default | | | |
| Retained | | Yes | | | |
| R/O | Name | Type | Literals | Value | Description |
| Request (_Rq) | | | | | |
| - | - | - | - | - | N/A |
| Response (_Rsp) | | | | | |
| R | tcuDidAddress | Int32 | - | 0x00000000 - 0xFFFFFFFF | DID address that was updated |
| R | tcuDidConfigData | Bytes | - | - | Corresponding updated DID Data |



3 General Requirements

3.1 SVS-REQ-306291/A-Factory Mode SVS Disablement

If vehicle placed in Factory Mode, SVS shall remain disabled and vehicle shall operate as if DID SVS_CAPABILITY is set to DISABLED.

3.2 SVS-REQ-306292/A-Transport Mode SVS Disablement

If vehicle placed in Transport Mode, SVS shall remain disabled and vehicle shall operate the same as if DID SVS_CAPABILITY is set to DISABLED.

3.3 SVS-REQ-358744/A-States Ignored by SVSServer During Active Theft Mode

SVSServer shall ignore changes to the below states during active theft mode. Once theft mode status is de-active, changes to the below states shall be applied.

- CCS Subscription from Subscribed to Unsubscribed
- SVS Capability from Enabled to Disabled
- Vehicle status (Car Mode) from Normal to Factory or Transport



4 Functional Definition

4.1 FUN-REQ-306285/A-Configuration

4.1.1 Requirements

4.1.1.1 SVS-REQ-298018/E-SVS Capability DID

SVS_CAPABILITY DID shall be used to specify if the vehicle is SVS capable while also taking region into consideration. Country table is required as all FNV2 vehicles have the capability of supporting SVS. However, SVS shall only be offered in EU and China initially. The SVS_CAPABILITY DID shall reside on the SVSServer.

4.1.1.2 SVS-REQ-298019/C-SVS Theft Mode DID

SVS_THEFT_MODE DID shall reside on SVSServer, however SVSInterfaceClient and SVSONBoardClient shall be updated of any changes. The SVS_THEFT_MODE DID shall specify if Theft Mode is currently "Activated" OR "Deactivated" and shall be set according to the messages received from the SVSOffBoardClient (Ref REQ-297604 and REQ-297608). Default DID state shall be set to "Deactivated."

4.1.1.3 SVS-REQ-329241/A-SVSONBoardClient Theft Mode Status DID

SVSServer SVS_THEFT_MODE DID changes shall be updated to SVSONBoardClient SVS_THEFT_MODE_STATUS DID.

4.1.1.4 SVS-REQ-321935/D-SVS Subscription State

SVS_SUBSCRIPTION_STATE via bSAllow_FEATURE14_StolenVehicleServices defines the subscription state. SVS shall get its current subscription state from the CCS API (IIR-REQ-313614-Customer Connectivity Settings API) which shall specify if the customer is currently subscribed to the SVS service or not. Default state shall be as per feature manifest policy table extension. CCS Manager synchronizes the subscription state across all involved components (SVSONBoardClient, SVSInterfaceClient and SVSServer).

4.1.1.5 SVS-REQ-304063/C-SVS Backup Antenna DID

SVS_BACKUP_ANTENNA_SETUP DID shall reside on SVSServer. The SVS Backup Antenna DID shall specify if a Backup SVS antenna is available on a specific vehicle or not, and shall be updated at the EOL process.

4.1.1.6 SVS-REQ-306301/C-SVS GRPC Retry Number DID

SVS_GRPc_RETRY_NUMBER specifies the value of the number of retries that shall be attempted by the SVSServer to send a GRPC SVS "theft" message in the case communication unavailable.

4.1.1.7 SVS-REQ-306302/C-SVS GRPC Retry Frequency DID

SVS_RETRY_FREQUENCY specifies the time interval at which the retries specifies in DID SVS_RETRY_NUMBER are executed. This DID only applies if and only if SVS_RETRY_NUMBER is applied.

4.1.1.8 SVS-REQ-325614/C-SVS Location Delta Comparison DID

SVS_LOC_DELTA DID resides on SVSServer which shall specify the delta value for the inconsistent location calculation and alert generation.

4.1.1.9 SVS-REQ-325617/D-SVS Vehicle Location Data reporting after GRPC early theft alert trigger

SVS_ALERT_LOC_DATA DID shall reside on SVSServer. The SVS_ALERT_LOC_DATA DID shall specify if Vehicle Location Data reporting is "Activated" OR "Deactivated" when GRPC early theft alert triggered.

If SVS_THEFT_MODE DID is active, then SVS_ALERT_LOC_DATA DID shall be ignored and GRPC early theft alert shall not be sent.

SVS_ALERT_LOC_DATA DID shall behave as per its settings after SVS_THEFT_MODE DID is deactivated.

Parameters DIDs SVS_ALERT_LOC_DATA_PERIOD and SVS_ALERT_LOC_DATA_COUNT shall define the attributes of location period and count.

4.1.1.10 SVS-REQ-306303/G-SVS Configuration Table



| Parameter | Description | Tuned Default Value | Metric | Res. | Tuning Range |
|--|---|--|-------------------------------------|---------|--|
| SVS_CAPABILITY | EOL Configuration to be used to set SVS_CAPABILITY DID. Look up of country code DID DE09 required and based on country code SVS shall be set to Enabled or Disabled. DID shall reside on SVSServer. | 0 | ENABLED / DISABLED (Boolean) | | 0 – Disabled 1 – Enabled |
| SVS_THEFT_MODE | Shall reside on SVSServer and be communicated to SVSONBoardClient and SVSInterfaceClient. | 0 | ACTIVATED / DEACTIVATED (Boolean) | | 0 – Deactivated 1 – Activated |
| SVS_THEFT_MODE_STATUS | Shall be synchronized with SVS_THEFT_MODE and reside on SVSONBoardClient | 0 | ACTIVATED / DEACTIVATED (Boolean) | | 0 – Deactivated 1 – Activated |
| SVS_SUBSCRIPTION_STATE via bSAllow_FEATURE14_StolenVehicleServices | Managed by CCS Manager, In-Vehicle Subscription status can be obtained through CCS API (Reference IIR-REQ-313614-Customer Connectivity Settings bSAllow_FEATURE14_StolenVehicleServices) | as per feature manifest policy table extension | SUBSCRIBED / UNSUBSCRIBED (Boolean) | | As per feature manifest policy table extension |
| SVS_RETRY_NUMBER | Number of retries for GRPC message | 5 | Integer | Index | 0-100 |
| SVS_RETRY_FREQUENCY | Frequency of retries for GRPC message | 30 | Integer | Seconds | 1 to 259200 – Seconds after previous retry |
| SVS_BACKUP_ANTENNA_SETUP | EOL Configuration for vehicle built with/without SVS backup antenna. | 1 | AVAILABLE/ NOT AVAILABLE | | 0 – NotAvailable 1 – Available |
| SVS_LOC_DELTA | SVSServer to compare ignition off last know location with ignition on first fix location comparison threshold | 3 | Integer | Mile(s) | 1-100 |
| SVS_ALERT_LOC_DATA | Vehicle location data reporting for GRPC alerts triggered | Activated | ACTIVATED / DEACTIVATED (Boolean) | | 0 – Deactivated 1 – Activated |
| SVS_ALERT_LOC_DATA_PERIOD | | 3600 | Integer | Seconds | 1 to 256200 Seconds after early theft notification alert trigger |
| SVS_ALERT_LOC_DATA_COUNT | | 24 | Integer | Index | 1 to 100 |



4.1.2 Use Cases

4.1.2.1 SVS-UC-REQ-304493/C-Theft Mode Activation

| | |
|------------------------------------|--|
| Actors | SVS Cloud App, SVSServer, SVSInterfaceClient, SVSONBoardClient |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode currently NOT active |
| Scenario Description | SVSServer receives FTCP or Type4 SMS request for theft mode activation. |
| Post-conditions | SVSServer shall switch DID state for SVS_THEFT_MODE from Deactivated to Activated. Update shall be communicated back to SVSONBoardClient and SVSInterfaceClient. Once change is successfully executed, SVSONBoardClient and SVSInterfaceClient shall both send a completion response to SVSServer. |
| List of Exception Use Cases | |
| Interfaces | FTCP, SMS, API (for DID update) |

4.1.2.2 SVS-UC-REQ-304494/B-Theft Mode Check Upon Wake-Up

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSInterfaceClient, SVSONBoardClient |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Ignition is Off SVSServer, SVSInterfaceClient, SVSONBoardClient are powered down |
| Scenario Description | Ignition is turned ON SVSServer, SVSInterfaceClient, SVSONBoardClient power up |
| Post-conditions | SVSInterfaceClient & SVSONBoardClient check Theft Mode status upon wakeup |
| List of Exception Use Cases | |
| Interfaces | FTCP, SMS, API (for DID update) |

4.1.2.3 SVS-UC-REQ-304495/C-Theft Mode De-Activation

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSInterfaceClient, SVSONBoardClient |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS |
| Scenario Description | SVSServer receives FTCP or Type4 SMS request for theft mode deactivation. |
| Post-conditions | SVSServer shall switch DID state for SVS_THEFT_MODE from Activated to Deactivated. Update shall be communicated to SVSONBoardClient and SVSInterfaceClient. Once change is successfully executed, SVSONBoardClient and SVSInterfaceClient shall both send a completion response to SVSServer. |
| List of Exception Use Cases | |



Interfaces

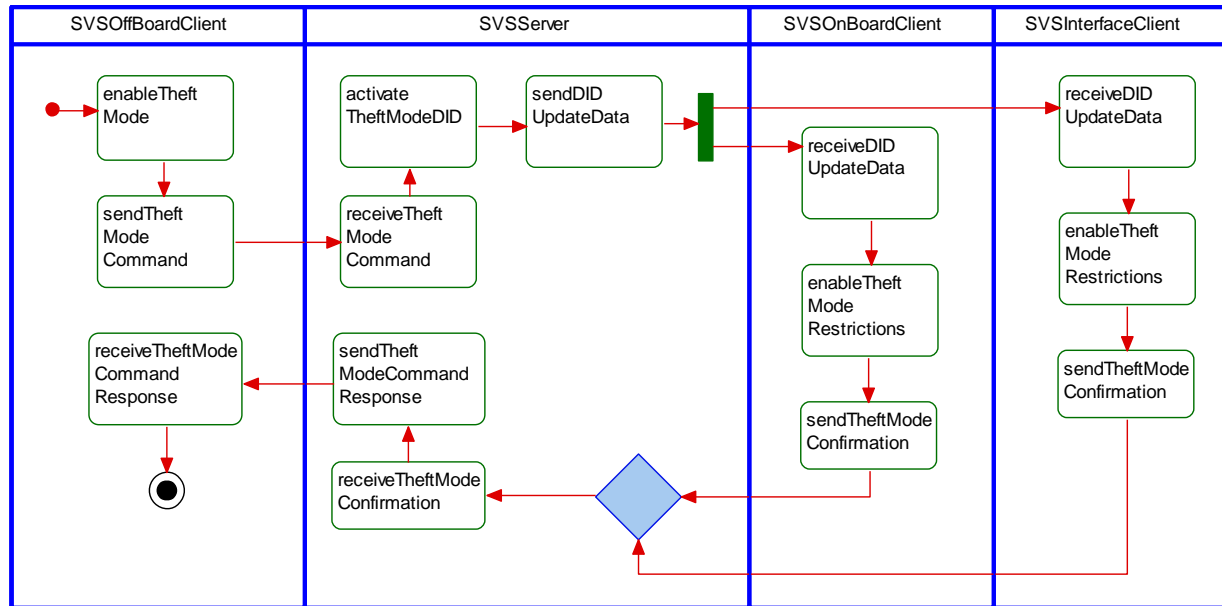
FTCP, SMS, API (for DID update)

4.1.3 White Box View

4.1.3.1 Activity Diagrams

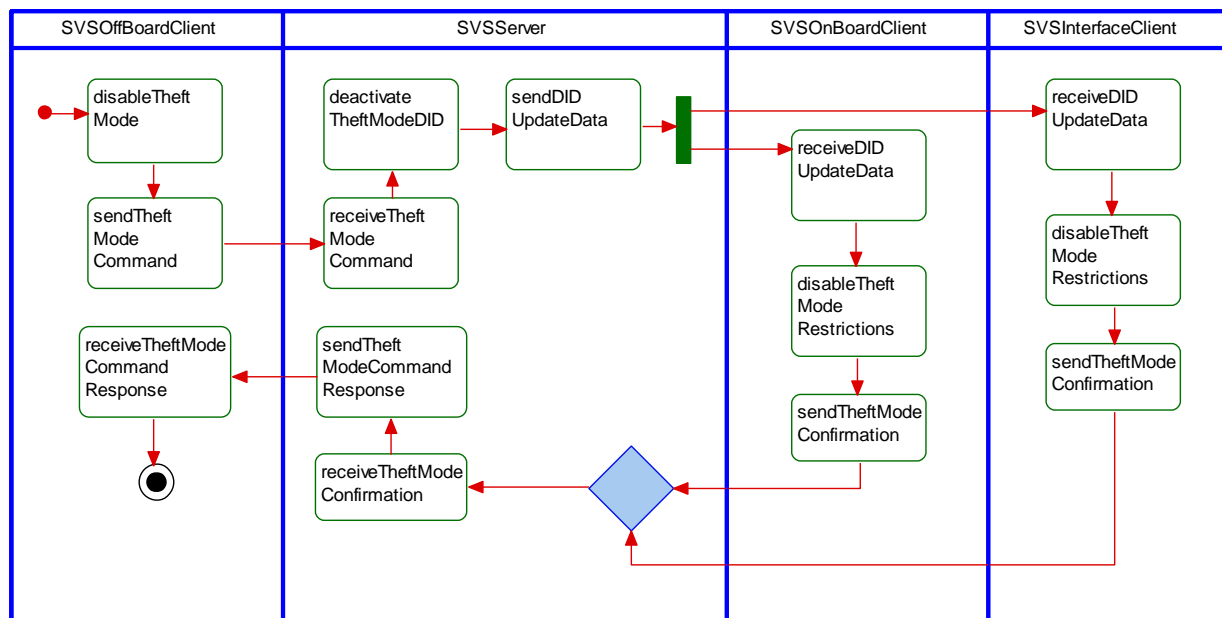
4.1.3.1.1 SVS-ACT-REQ-306767/B-Theft Mode Activation

Activity Diagram



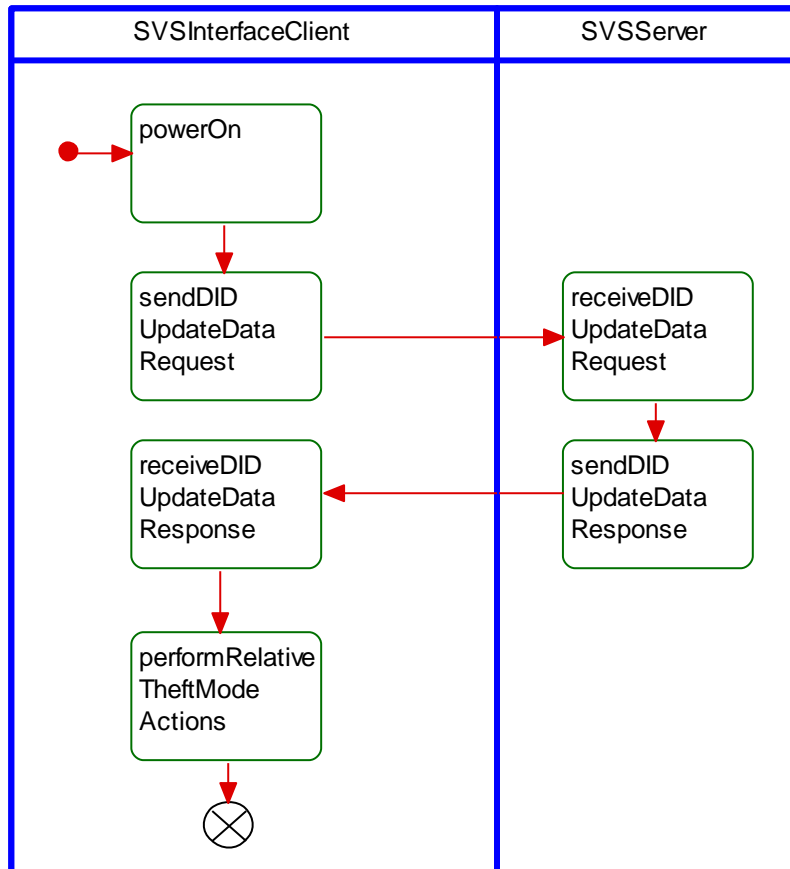
4.1.3.1.2 SVS-ACT-REQ-306768/B-Theft Mode De-Activation

Activity Diagram



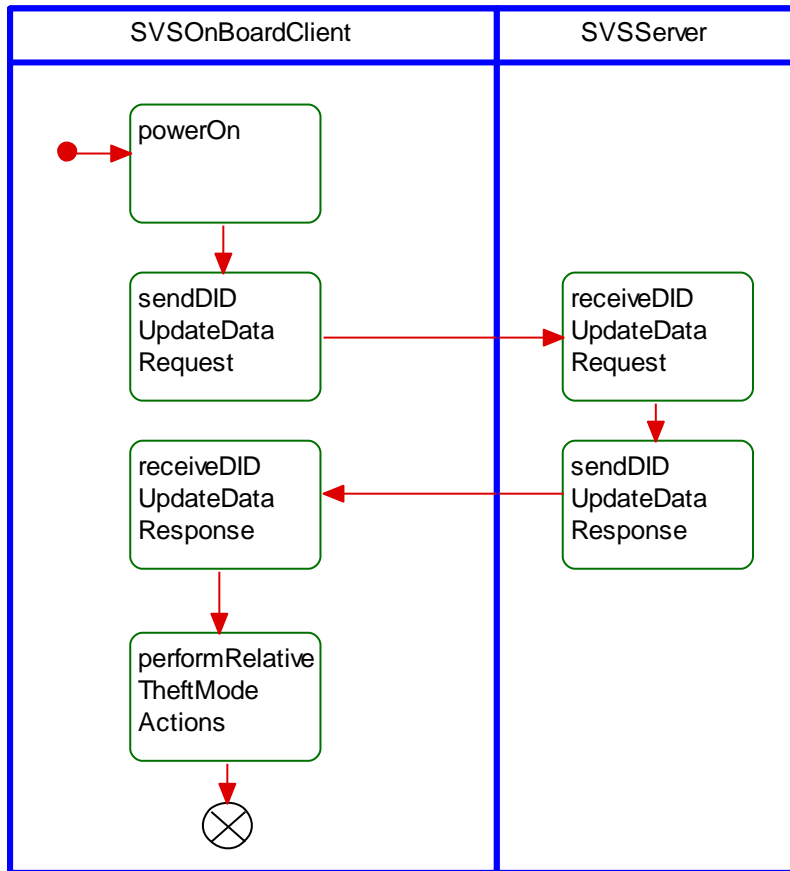


4.1.3.1.3 SVS-ACT-REQ-306769/B-Theft Mode Check Upon SVSInterfaceClient Wake-Up Activity Diagram





4.1.3.1.4 SVS-ACT-REQ-310868/A-Theft Mode Check Upon SVSONBoardClient Wake-Up Activity Diagram



4.1.3.2 Sequence Diagrams

4.1.3.2.1 SVS-SD-REQ-306770/D-Theft Mode Activation

Constraints

Pre-Condition

Vehicle capable of SVS (based on region)
Customer Subscribed to SVS
Theft Mode currently NOT active

Scenarios

Normal Usage

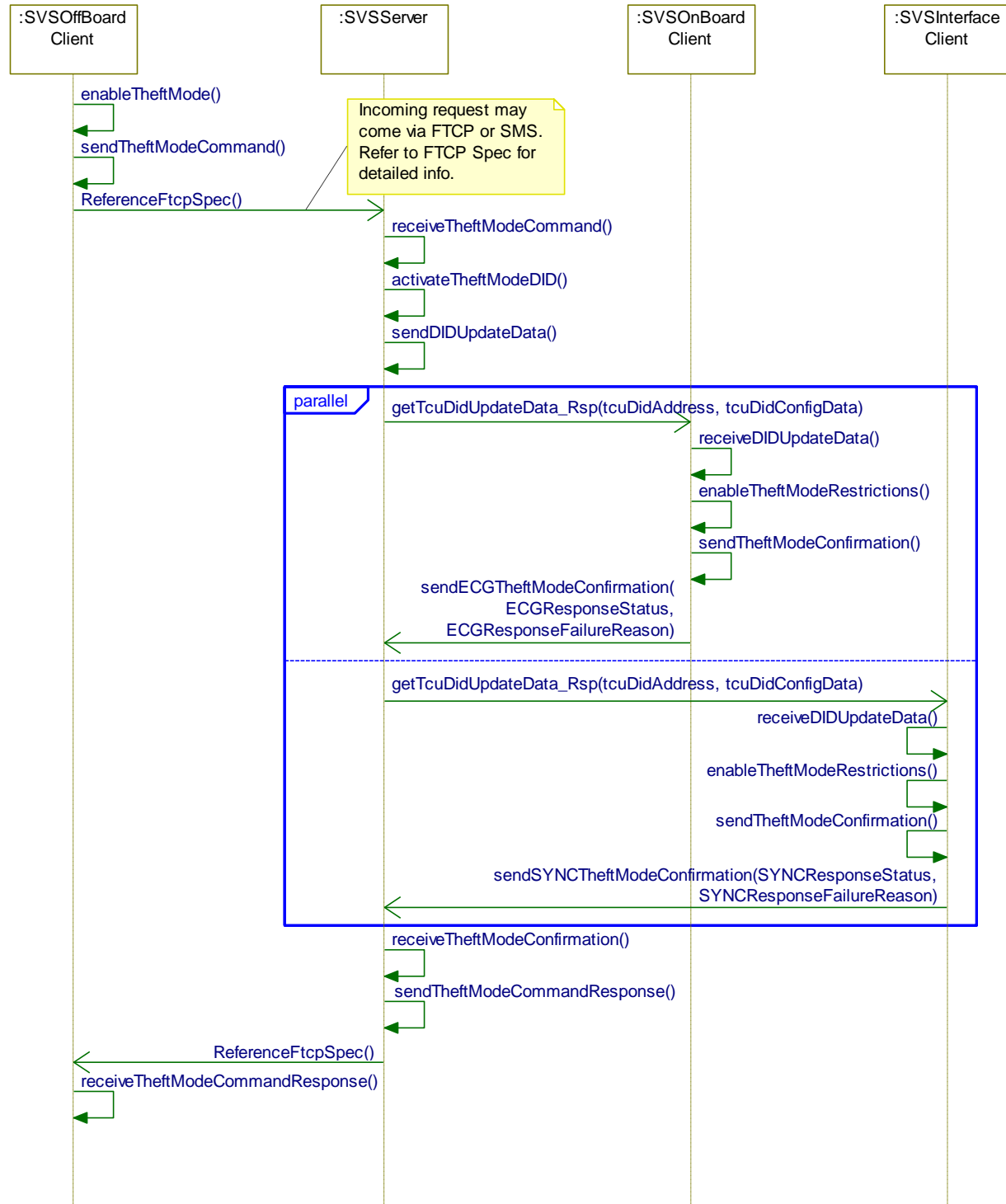
SVSServer receives FTCP or Type4 SMS request for theft mode activation.

Post-Condition

SVSServer shall switch DID state for SVS_THEFT_MODE from Deactivated to Activated. Update shall be communicated back to SVSONBoardClient and SVSInterfaceClient. Once change is successfully executed, SVSONBoardClient and SVSInterfaceClient shall both send a completion response to SVSServer.



Sequence Diagram



4.1.3.2.2 SVS-SD-REQ-306771/E-Theft Mode De-Activation

Constraints

Pre-Condition

Vehicle capable of SVS (based on region)
Customer Subscribed to SVS
Theft Mode currently active

**Scenarios****Normal Usage**

SVSServer receives FTCP or Type4 SMS request for theft mode deactivation.

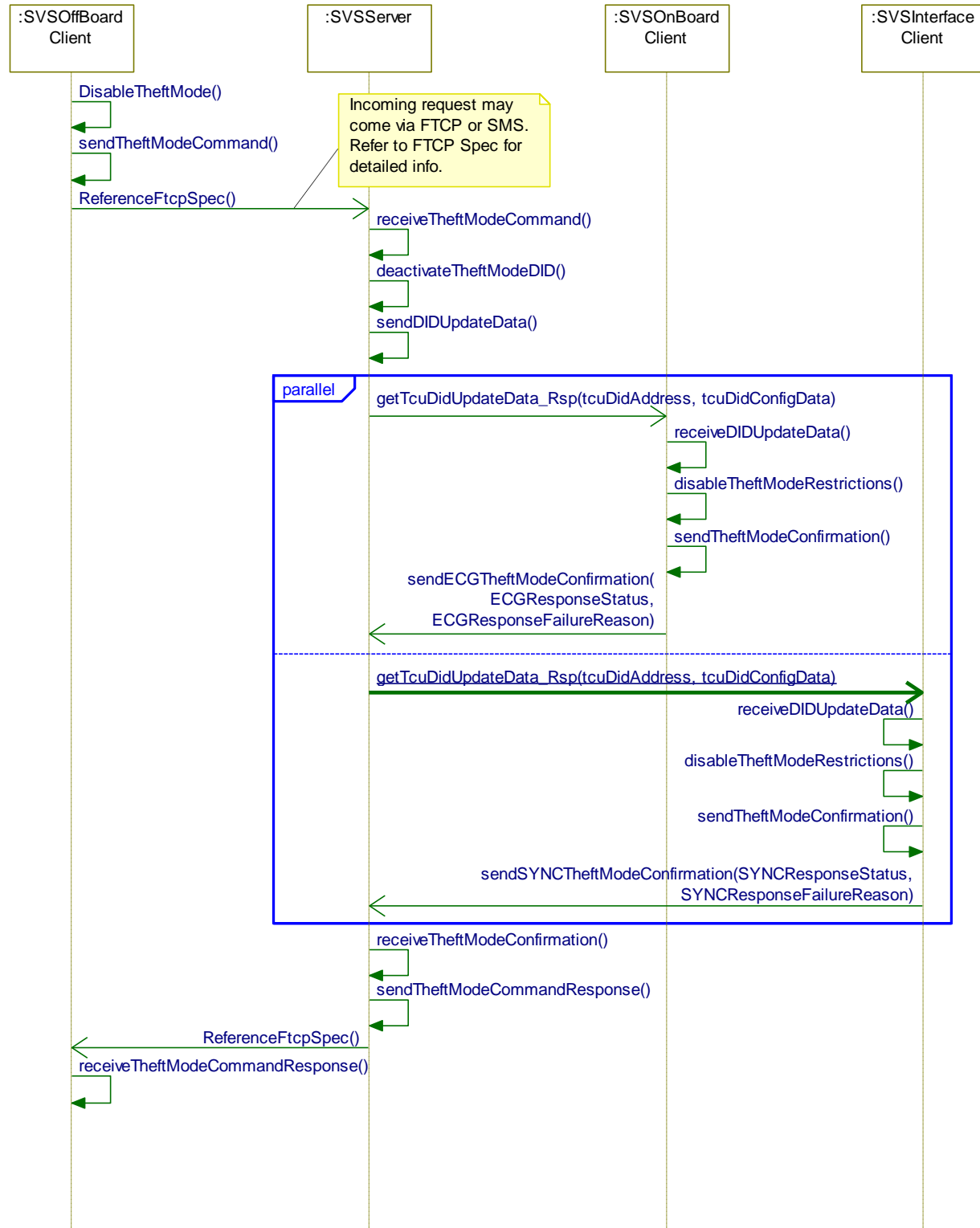
Post-Condition

SVSServer shall switch DID state for SVS_THEFT_MODE from Activated to Deactivated. Update shall be communicated back to SVSONBoardClient and APIM/SVSInterfaceClient.

- In the case that vehicle is currently in a state where SVSONBoardClient and SVSInterfaceClient are not awake, SVSServer shall trigger an ECU wake-up for both and changes shall be captured immediately.
- In the case that both SVSONBoardClient and SVSInterfaceClient are both awake and functional, both modules shall make changes immediately upon DID SVS_THEFT_MODE state change. Once change is successfully executed, SVSONBoardClient and SVSInterfaceClient shall both send a completion response to SVSServer.



Sequence Diagram



4.1.3.2.3 SVS-SD-REQ-306772/B-Theft Mode Check Upon SVSInterfaceClient Wake-Up

Constraints

Pre-Condition

Vehicle capable of SVS (based on region)

Customer Subscribed to SVS



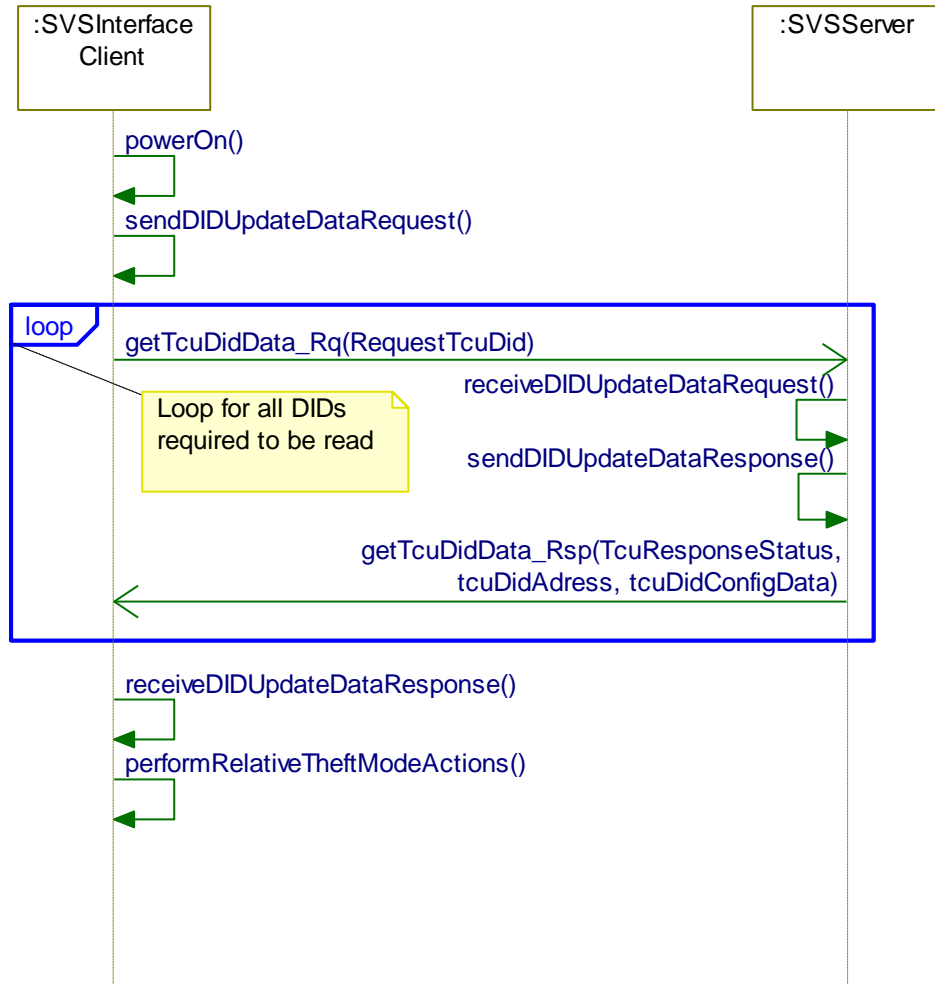
Ignition is Off
SVSServer, SVSInterfaceClient, SVSONBoardClient are powered down

Scenarios**Normal Usage**

Ignition is turned ON
SVSServer, SVSInterfaceClient, SVSONBoardClient power up

Post-Condition

SVSInterfaceClient checks Theft Mode status upon wakeup

Sequence Diagram**4.1.3.2.4 SVS-SD-REQ-310869/A-Theft Mode Check Upon SVSONBoardClient Wake-Up****Constraints****Pre-Condition**

Vehicle capable of SVS (based on region)
Customer Subscribed to SVS
Ignition is Off
SVSServer, SVSInterfaceClient, SVSONBoardClient are powered down

Scenarios**Normal Usage**

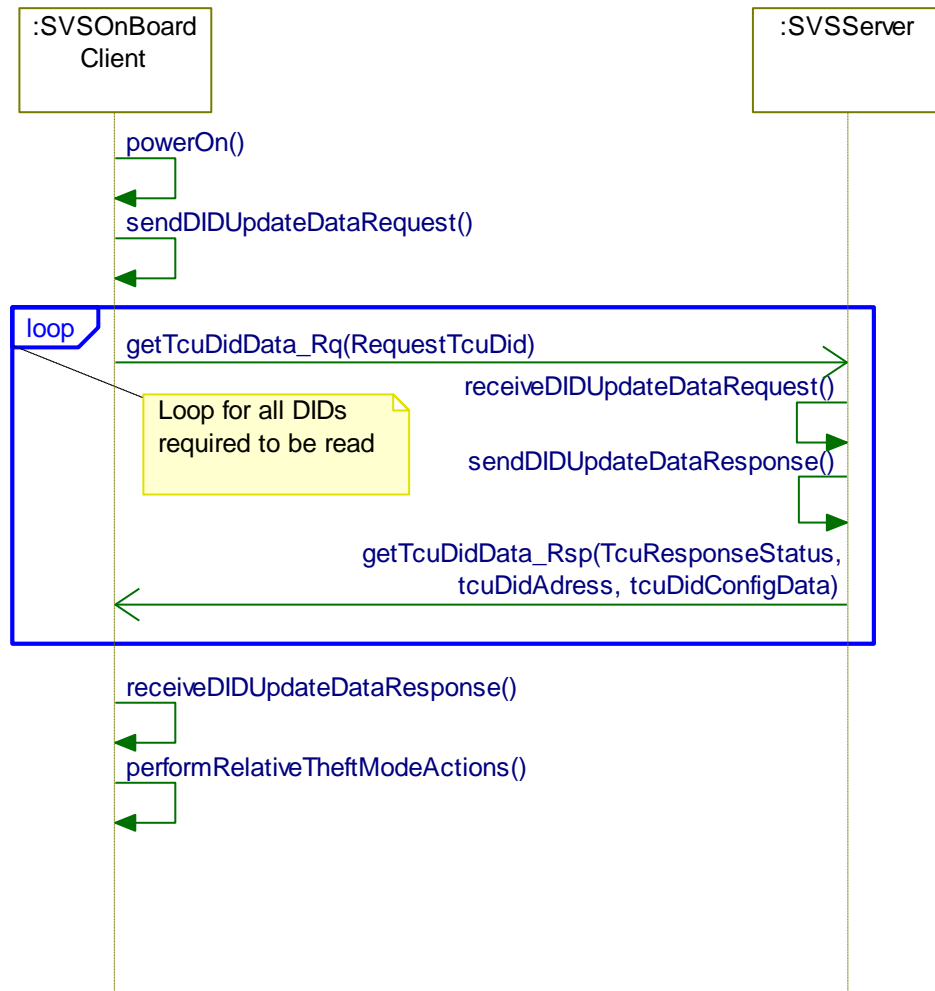
Ignition is turned ON



SVSServer, SVSInterfaceClient, SVSONBoardClient power up

Post-Condition

SVSONBoardClient checks Theft Mode status upon wakeup

Sequence Diagram



4.2 SVS-FUN-REQ-307227/A-Diagnostics

4.2.1 Requirements

4.2.1.1 SVS-REQ-308660/B-Use of Pre-existing SVSServer DTCs

The SVSServer shall monitor DTCs in table in REQ-307228 that are marked "Yes" in the third column, and shall include information in Theft Mode GRPC response message when DTCs are triggered.

4.2.1.2 SVS-REQ-307228/D-SVSServer DTC List

| DTC | Failure | Available on SVSServer |
|--------------|---|------------------------|
| DTC 0xC55400 | Invalid Data Received from Accessory Protocol Interface Module (GPS Internal Failure) | Yes |
| DTC 0xC25300 | Lost Comm. with Accessory Protocol Interface Module (APIM) | Yes |
| DTC 0x947716 | BUB Under-voltage | Yes |
| DTC 0x947709 | BUB- Component Failure | Yes |
| DTC 0x947713 | BUB- Circuit Open | Yes |
| DTC 0x9A5611 | Cellular/GNSS SVS Backup Antenna- short to ground | Yes |
| DTC 0x9A5613 | Cellular/GNSS SVS Backup Antenna- Circuit Open | Yes |
| DTC 0x919F11 | GPS short to ground | Yes |
| DTC 0x919F13 | GPS circuit open | Yes |
| DTC 0x924611 | GSM Circuit Short To Ground | Yes |
| DTC 0x924613 | GSM Circuit Open | Yes |
| DTC 0x9D5511 | GSM Antenna #2 Circuit Short To Ground | Yes |
| DTC 0x9D5513 | GSM Antenna #2 Circuit Open | Yes |
| DTC 0x406A00 | TCU accelerometer fault | Yes |

4.2.2 Use Cases

4.2.3 White Box View



4.3 SVS-FUN-REQ-291043/A-GNSS Location

4.3.1 Requirements

4.3.1.1 SVS-REQ-291068/C-SVSServer Backup GNSS Antenna Use Ignition ON

If SVSInterfaceClient updated location data is unavailable while vehicle is in active "theft" mode, SVSServer shall leverage Backup antenna for location information. Backup antenna shall be used for location data source regardless of ignition status, only dependent on SVSInterfaceClient antenna's inability to provide updates or SVSServer primary GNSS antenna's inability to provide updated location. For more information refer to REQ-304065.

4.3.1.2 SVS-REQ-304064/B-SVSServer Backup GNSS Antenna Use Ignition OFF

If ignition OFF, while vehicle is in active "theft" mode and Backup antenna available, to preserve power Backup antenna shall be leveraged by SVSServer without waking up SVSONBoardClient and SVSInterfaceClient when rooftop GNSS antenna is routed to SVSInterfaceClient. For more information refer to REQ-304065. If the primary/rooftop antenna is routed to the SVSServer, SVSServer shall leverage both antennas primary and back-up in order to ensure location information is updated.

4.3.1.3 SVS-REQ-291069/D-SVSServer Unable To Obtain Location From Backup GNSS Antenna While Ignition OFF

In the case that Backup antenna is not able to provide location fix and location coordinates while vehicle is in active "theft" mode, SVSInterfaceClient shall be woken up in display off mode and shall be engaged to try to get a location fix and location coordinates from primary antenna.

4.3.1.4 SVS-REQ-306310/A-SVSServer Unable To Obtain Location from Either Primary or SVS Backup Antenna

If the SVSServer is unable to obtain location from any source, SVSServer shall send last known location and shall flag the location as last known.

4.3.1.5 SVS-REQ-306311/A-SVSServer Unable To Obtain Location from Either Primary or SVS Backup Antenna and Last Known Location Unknown

If SVSServer is unable to obtain location from any source and last known location is unavailable, fields shall be left blank, and flagged as currently unavailable.

4.3.1.6 SVS-REQ-306312/B-SVSServer GRPC Message with Location Unavailable Fields Location Becomes Available Ignition ON

If SVSServer is unable to obtain location from any source, and GRPC message sent contained no location information, when location becomes available from SVSInterfaceClient a new GRPC message shall be sent immediately with new location data.

4.3.1.7 SVS-REQ-308661/B-SVSServer GRPC Message with Location Unavailable Fields Location Becomes Available Ignition OFF

If SVSServer is unable to obtain location from primary or SVS backup antenna source, and GRPC message sent contained no location information, SVSServer shall try to get updated location upon next message periodicity.

4.3.1.8 SVS-REQ-291070/B-SVSServer AGPS XTRA File Update

SVSServer shall download AGPS file from SVSOffBoardClient when prompted by SVSOffBoardClient.

4.3.1.9 SVS-REQ-291071/C-SVSServer SVS Backup Antenna AGPS XTRA File Use

SVSServer shall use the saved XTRA file when Backup antenna is being used.

Note: AGPS XTRA data availability for SVSOffBoardClient is still under investigation. These requirements will be deleted if there is no successful outcome from the investigation.

4.3.2 Use Cases

4.3.2.1 SVS-UC-REQ-306361/A-SVSInterfaceClient location source



| | |
|------------------------------------|---|
| Actors | SVSServer, Primary Antenna, SVSONBoardClient, SVSInterfaceClient |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode ACTIVE Primary Antenna Source: SVSInterfaceClient SVS SVSServer Back-up Antenna NOT Available Ignition OFF/ON |
| Scenario Description | SVSInterfaceClient shall publish location fix for SVSServer to use |
| Post-conditions | SVSServer updates "Theft" response message location fields with updated location data at the periodicity that it sends the message to the SVSOffBoardClient |
| List of Exception Use Cases | |
| Interfaces | |

4.3.2.2 SVS-UC-REQ-306362/B-SVSServer ignition OFF location SVSInterfaceClient primary location source

| | |
|------------------------------------|--|
| Actors | SVSServer, Primary Antenna |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode ACTIVE Primary Antenna Source: SVSInterfaceClient SVS SVSServer Back-up Antenna Available Ignition OFF |
| Scenario Description | SVSServer shall use SVS Backup GNSS Antenna to provide location fix, in order to preserve power by not waking up SVSONBoardClient and SVSInterfaceClient for a primary antenna fix. |
| Post-conditions | SVSServer updates "Theft" response message location fields with updated location data |
| List of Exception Use Cases | Unable to get fix from SVS Backup GNSS Antenna |
| Interfaces | |

4.3.2.3 SVS-UC-REQ-306363/B-SVSInterfaceClient unable to provide location use backup antenna

| | |
|-----------------------|---|
| Actors | SVSServer, Primary Antenna, SVSONBoardClient, SVSInterfaceClient |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode ACTIVE Primary Antenna Source: SVSInterfaceClient SVS SVSServer Back-up Antenna Available Ignition ON |



| | |
|------------------------------------|--|
| Scenario Description | SVSInterfaceClient is unable to publish location fix |
| Post-conditions | SVS back-up GNSS antenna shall be used to try to provide fix |
| List of Exception Use Cases | |
| Interfaces | |

4.3.2.4 SVS-UC-REQ-306364/C-SVSServer location source

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode ACTIVE Primary Antenna Source: SVSServer SVS SVSServer Back-up Antenna NOT Available Ignition ON or OFF |
| Scenario Description | SVSServer shall utilize primary GNSS antenna to provide location fix. |
| Post-conditions | SVSServer updates "Theft" response message location fields with updated location |
| List of Exception Use Cases | Primary antennas damaged/removed |
| Interfaces | |

4.3.2.5 SVS-UC-REQ-306365/C-SVSServer primary antenna unable to provide location use backup antenna

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode ACTIVE Primary Antenna Source: SVSServer SVS SVSServer Back-up Antenna Available Ignition ON or OFF |
| Scenario Description | SVSServer shall utilize primary GNSS antenna to provide location fix, if unavailable switches to SVS backup GNSS antenna to get fix. |
| Post-conditions | SVSServer updates "Theft" response message location fields with updated location |
| List of Exception Use Cases | Both antennas unable to provide fix |
| Interfaces | |

4.3.2.6 SVS-UC-REQ-306366/C-Primary antennas unavailable use backup antennas

| | |
|---------------|--------------------------|
| Actors | SVS Cloud App, SVSServer |
|---------------|--------------------------|



| | |
|------------------------------------|--|
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode ACTIVE Primary Antenna Source: UNAVAILABLE (damaged/removed) SVS SVSServer Back-up Antenna Available Ignition ON or OFF |
| Scenario Description | SVSServer shall use SVS Backup GNSS Antenna to provide location fix |
| Post-conditions | SVSServer updates "Theft" response message location fields with updated location |
| List of Exception Use Cases | Unable to get fix from SVS Backup GNSS Antenna |
| Interfaces | |

4.3.2.7 SVS-UC-REQ-306367/A-SVS Backup antenna unable to provide location retry strategy ignition OFF

| | |
|------------------------------------|--|
| Actors | SVSServer, Primary Antenna, SVSONBoardClient, SVSInterfaceClient |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode ACTIVE Primary Antenna Source: SVSInterfaceClient SVS SVSServer Back-up Antenna Available Ignition OFF |
| Scenario Description | Unable to get fix from SVS Backup GNSS Antenna SVSServer shall continue to try to get a fix until fix timeout is reached |
| Post-conditions | SVSServer shall request for SVSInterfaceClient to wake-up and try to get a rooftop antenna fix. If a fix is again unavailable, process shall be repeated at time of next message request or frequency periodicity. |
| List of Exception Use Cases | |
| Interfaces | |

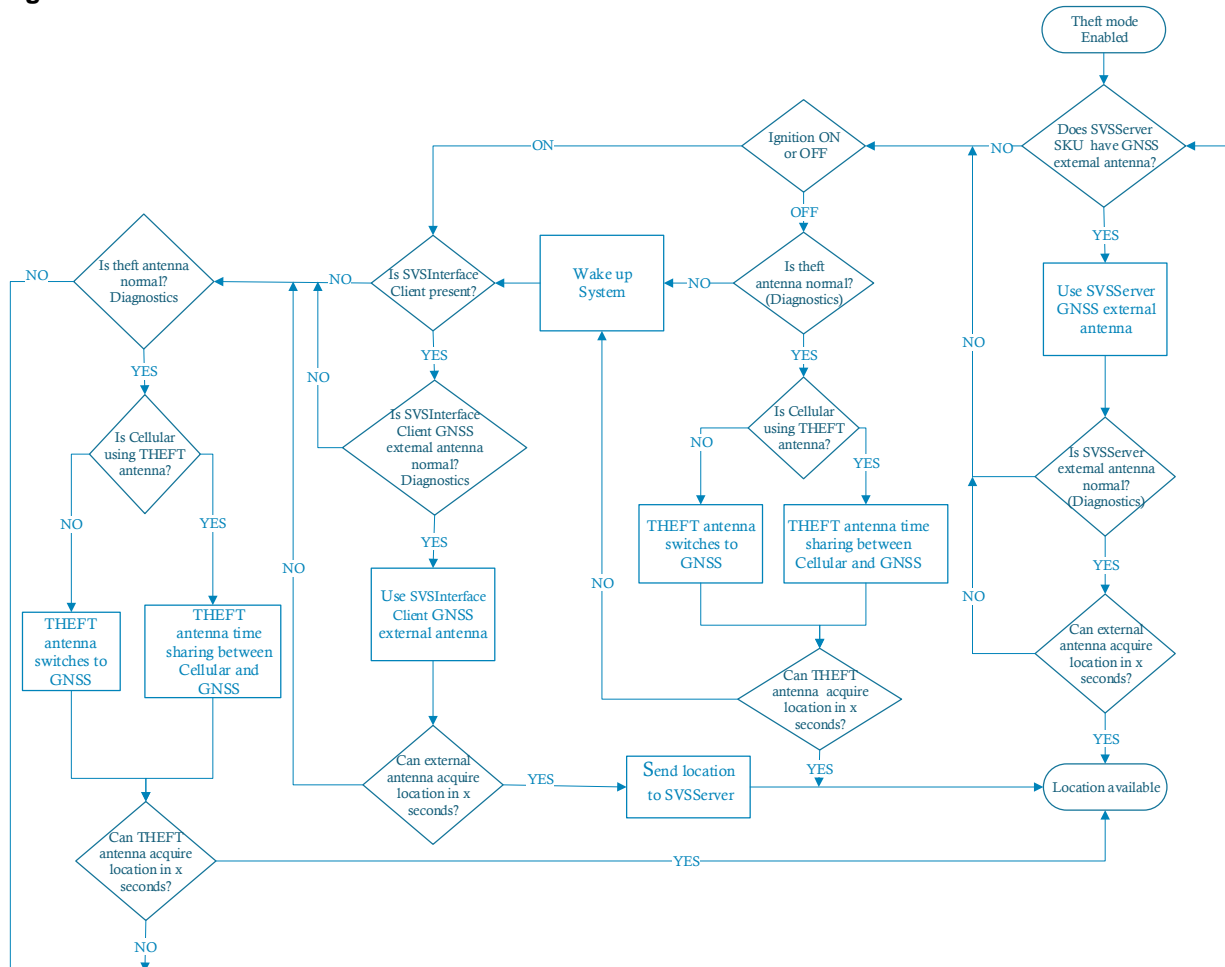


4.3.3 White Box View

4.3.3.1 Activity Diagrams

4.3.3.1.1 SVS-ACT-REQ-304065/C-Theft Mode Location Source

Activity Diagram





4.4 SVS-FUN-REQ-291044/B-CCS Updates

4.4.1 Requirements

4.4.1.1 SVS-REQ-330480/A-SVS subscribed Vehicle connectivity settings

When SVS subscription is enabled, user updates to connectivity setting shall be limited as per customer connectivity settings (E.g. Vehicle connectivity setting will be enabled but greyed out when SVS subscription is on) (For visual feedback see CCOlv2-REQ-296876-Visual Feedback based on Settings and Policy Table Extension; for the customer connectivity settings and dependencies see CCOlv2-REQ-329007-dependencies)

4.4.1.2 SVS-REQ-308665/C-CCS settings priority when Theft Mode is active

When Theft mode is active Stolen Vehicle functionality shall take priority over current CCS Settings for Location and Data reporting and enable Location and Data reporting.

4.4.1.3 SVS-REQ-303128/F-SVSServer Theft Activation To SVSInterfaceClient while in Ignition "OFF"

SVSInterfaceClient shall not be woken-up by the SVSServer at ignition "OFF" state, except as stated in REQ-291069.

4.4.1.4 SVS-REQ-291077/D-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "ON"

SVSServer notification to SVSInterfaceClient of Theft Mode deactivation shall be sent immediately.

4.4.1.5 SVS-REQ-303130/E-SVSServer Theft De-Activation To SVSInterfaceClient while Ignition "OFF"

SVSServer notification to SVSInterfaceClient of Theft Mode deactivation shall be sent immediately which would require SVSInterfaceClient to be woken-up in "display OFF" mode. Display shall be updated either immediately if SVSInterfaceClient currently awake, or it shall be updated upon "display ON" (Refer to COlv2-REQ-312150-Theft Mode De-Activation).

4.4.1.6 SVS-REQ-325649/C-SVS active subscription update to SVSONBoardClient, SVSInterfaceClient and SVSServer

CCS shall broadcast entity change update to SVSONBoardClient, SVSInterfaceClient and SVSServer to store the record of active SVS Subscription.

4.4.1.7 SVS-REQ-352682/A-SVSServer Location support when location in connectivity setting is disabled

If location is disabled in connectivity settings, location will still be shared for stolen vehicle services by SVSServer

4.4.2 Use Cases

4.4.3 White Box View



4.5 SVS-FUN-REQ-321954/A-Feature Blocking & Unblocking

4.5.1 Requirements

4.5.1.1 SVS-REQ-321959/A-WiFi Enablement Blocking

When Theft mode request is received by the SVSServer, and SVS_THEFT_MODE DID is set to "Activated", the Wi-Fi Hotspot Feature shall be blocked from functioning until SVS_THEFT_MODE DID is set back to "Deactivated".

4.5.1.2 SVS-REQ-321960/A-WiFi Enablement Unblocking

When Theft mode request is received by the SVSServer, and SVS_THEFT_MODE DID is set to "Deactivated", the Wi-Fi Hotspot Feature shall be functional and set to the state prior to theft mode activated state.

4.5.1.3 SVS-REQ-328783/A-OTA Manager listen to SVS_THEFT_MODE_STATUS DID change

OTA Manager shall listen to SVS_THEFT_MODE_STATUS DID for SVS Theft Mode activate/de-activate state change.

4.5.1.4 SVS-REQ-328784/C-Restriction of Dynamic Over the Air Update

If SVS Theft Mode is active, any Dynamic OTA update shall be postponed by OTA Manager on SVSONBoardClient.

4.5.1.5 SVS-REQ-321964/C-Over the Air Update Scheduled Time Postponed

During OTA update, if any scheduled non-interruptible activity happens while "Theft Mode" is in active state, the scheduled non-interruptible OTA activity shall be cancelled until vehicle "Theft Mode" has been deactivated and notification shall be sent to the owner. Capability for re-scheduling shall be available once vehicle exits "Theft Mode."

4.5.1.6 SVS-REQ-321965/C-Non-Interruptible OTA activity In-Progress

If SVS activate "Theft Mode" request is received during a non-interruptible OTA activity, "Theft Mode" shall be entered once OTA activity is complete.

4.5.1.7 SVS-REQ-326479/C-Master Reset/Feature Reset Blocking

When Theft mode is active/enabled, the SVSInterfaceClient shall disable (hide, grey-out, etc.) the Master Reset button and Reset submenu (Refer to H31L).

4.5.1.8 SVS-REQ-326480/C-Master Reset/Feature Reset Unblocking

When Theft mode is inactive/disabled, the SVSInterfaceClient shall enable (show, make active, etc.) the Master Reset button and Reset submenu (Refer to H31L).

4.5.2 Use Cases

4.5.2.1 **SVS-UC-REQ-326481/C-Master Reset/Feature Reset blocking upon Theft Mode Activation**

| | |
|------------------------------------|--|
| Actors | SVS Cloud App, SVSServer, SVSInterfaceClient, SVSONBoardClient |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode currently inactive/disabled |
| Scenario Description | SVSServer receives FTCP or Type4 SMS request for theft mode activation and SVS_THEFT_MODE DID set to activated. |
| Post-conditions | Master Reset and Feature Reset buttons/submenu on the SVSInterfaceClient is blocked/unavailable. |
| List of Exception Use Cases | |
| Interfaces | FTCP, SMS, API (for DID update) |

**4.5.2.2 SVS-UC-REQ-326827/C-Master Reset/Feature Reset unblock upon Theft Mode Deactivation**

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSInterfaceClient, SVSONBoardClient |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Theft Mode currently active/enabled |
| Scenario Description | SVSServer receives FTCP or Type4 SMS request for theft mode deactivation and SVS_THEFT_MODE DID set to deactivated. |
| Post-conditions | Master Reset and Feature Reset buttons/submenu on the SVSInterfaceClient is unblocked/available. |
| List of Exception Use Cases | |
| Interfaces | FTCP, SMS, API (for DID update) |

4.5.3 White Box View



4.6 SVS-FUN-REQ-291045/A-SVSOffBoardClient Communication

4.6.1 Requirements

4.6.1.1 SVS-REQ-304066/C-SVS Primary and Secondary LTE Antenna Communication Management

SVSServer shall use the primary and diversity LTE external antennas as a primary source for communication to SVSOffBoardClient. The SVS backup antenna is used as secondary source for communication to SVSOffBoardClient, in the case that primary and diversity LTE antennas are disconnected/damaged.

4.6.1.2 SVS-REQ-291081/D-SVSOffBoardClient FTCP Messages

SVSServer shall have the capability of receiving theft mode message requests from SVSOffBoardClient whenever MQTT connection is available. SVSONBoardClient shall forward FTCP message to SVSServer, and SVSServer shall have the capability of unpacking and processing the message.

4.6.1.3 SVS-REQ-304029/D-SVSOffBoardClient Type4 SMS Messages

If SVSONBoardClient is currently not connected to MQTT, SVSServer shall have the capability of receiving Type4 SMS messages from SVSOffBoardClient.

4.6.1.4 **FTCP Data Communication**

4.6.1.4.1 SVS-REQ-291218/E-Ignition ON, Activate Theft Mode Command from SVSOffBoardClient to SVSServer

If the SVSOffBoardClient and SVSONBoardClient are MQTTconnected, then the SVSOffBoardClient shall use FTCP to send activate theft mode command to SVSONBoardClient. SVSONBoardClient forwards the request to SVSServer to activate theft mode. Reporting frequency value shall be defined in the call center theft mode request. If reporting frequency is 0, the request shall be considered as on demand.

4.6.1.4.2 SVS-REQ-291221/D-Ignition ON, Deactivate Theft Mode Command from SVSOffBoardClient to SVSServer

If the SVSOffBoardClient and SVSONBoardClient are MQTTconnected, then the SVSOffBoardClient shall use FTCP to send deactivate command to SVSONBoardClient. SVSONBoardClient forwards the request to SVSServer to deactivate theft mode.

4.6.1.4.3 SVS-REQ-306502/C-FTCP activate /deactivate Theft Mode command security

FTCP activate/deactivate theft mode command shall be SyncP signed, encrypted with ESN enabled.

4.6.1.5 **FTCP/Type4 SMS Data Payload**

4.6.1.5.1 SVS-REQ-297604/F-FTCP/Type4 SMS Message Payload SVSOffBoardClient to Vehicle

FTCP message payload from SVSOffBoardClient to SVSONBoardClient and Type4 SMS message from SVSOffBoardClient to SVSServer

| Command Name | Command Size | Parameters | Parameter Size | Description |
|-----------------------|--------------|---|----------------|---|
| Activate Theft Mode | 1 byte | Message ID Reporting Frequency (seconds) | 3 bytes | Activate theft mode with specified reporting frequency. If Reporting Frequency = 0 (On-demand request only). |
| Deactivate Theft Mode | 1 byte | Message ID | None | Disable theft mode, stop theft mode data collection, change vehicle state to normal |

4.6.1.6 **GRPC Data Communication**

4.6.1.6.1 SVS-REQ-291222/D-GRPC Source and Usage

SVSServer is the source for GRPC message.



GRPC Client resides in SVSServer with GRPC libraries and related TLS transport library.
SVSONBoardClient is not involved when SVSServer sending GRPC message to SVSOffBoardClient.

4.6.1.6.2 SVS-REQ-330513/A-FTCP Theft Mode Acknowledgement Response from SVSServer to SVSOffBoardClient

SVSServer shall send FTCP Theft Mode Acknowledgement Response to SVSOffBoardClient when FTCP Theft Mode Activate/De-activate received by SVSServer

4.6.1.6.3 SVS-REQ-291225/F-Theft Mode Response from SVSServer to SVSOffBoardClient

SVSServer shall send theft mode response data through GRPC message as soon as the first fix location data is obtained and at specified reporting frequency interval as defined in the activate theft mode request message.

4.6.1.6.4 SVS-REQ-306495/D-SVSServer supported on-demand (reporting frequency 0) response

When SVSServer receives on-demand theft mode request, SVSServer shall send theft mode response as soon as the first fix location data is obtained, and shall continue to report theft mode response at specified reporting frequency for previous theft mode request if existed.

4.6.1.6.5 SVS-REQ-306496/C-SVSServer processing theft mode request with reporting frequency change

When SVSServer receives activate theft mode command with a reporting frequency change, SVSServer shall stop the previous interval and start reporting location with new frequency interval. First report shall be sent as soon as the change interval request is received.

4.6.1.6.6 SVS-REQ-352683/A-SVSServer not reporting unchanged locations during active theft mode

If ignition is off or on BUB then if location has not changed the SVSServer shall not send the message to the SVSOffBoardClient. If the SVSOffBoardClient needs to check-in with the SVServer it shall send an Activate Theft Mode command and the SVSServer will respond back with the Theft Mode Response message.

4.6.1.6.7 SVS-REQ-306497/B-SVSServer processing failed theft mode response data

SVS application on SVSServer shall store the failed response data, when GRPC connection re-established SVSServer shall send all the stored theft mode response data to SVSOffBoardClient via GRPC.

4.6.1.6.8 SVS-REQ-306574/C-GRPC theft mode response message security

GRPC theft mode response message shall be SyncP signed, encrypted with ESN enabled.

4.6.1.6.9 SVS-REQ-297606/H-FTCP/GRPC Message Payload Vehicle to SVSOffBoardClient

| Command Type | Command Name | Size | Parameters | Description |
|--------------|-------------------------------------|------|---|--|
| FTCP | Theft Mode Acknowledgement Response | | Message ID Status (Success or Fail), Failure Reason | Acknowledgement to FTCP Activate/De-activate Theft Mode command request. Failure reason may be GRPC connection establishment failure. Subscription state is unsubscribed SVS capability set to disabled. Factory mode and Transport mode. |
| GRPC | Theft Mode Response | | Message ID | Response data shall contain message ID of the last activate/deactivate theft mode command. |
| | | | Theft mode status (Enable on SVSServer- (Success/Fail), Enable update on SVSONBoardClient - | When tracking activated, theft mode shall be enabled. When tracking deactivated, theft mode shall be disabled. |



| | | | | |
|--|--|--|---|---|
| | | | (Pending/Success/Fail), Enable update on SVSInterfaceClient- (Pending/Success/Fail), Disabled on SVSServer (Success/Fail), Disable update on SVSONBoardClient - (Pending/Success/Fail), Disable update on SVSInterfaceClient- (Pending/Success/Fail)) | SVSONBoardClient and SVSInterfaceClient shall send acknowledgement to SVS app on SVSServer after successful enable and disable update. |
| | | | Time of sending | Theft mode response data timestamp |
| | | | GPS Data Format | Shifted or Un-shifted (for the China use case, GPS data shall be flagged as either shifted OR un-shifted) |
| | | | Latitude | |
| | | | Longitude | |
| | | | Altitude | |
| | | | GPS Time | |
| | | | Direction of travel | |
| | | | Fix (2D, 3D) | |
| | | | Location Accuracy | |
| | | | Location Status (last known, updated, unavailable) | First theft mode response shall include location data status. Subsequent locations shall update location status accordingly. |
| | | | Ignition Status (off, on, accessory, unavailable) | |
| | | | Failures | List of all active DTCs. Refer to REQ-307228 |
| | | | Cellular Antenna Source (primary diversity, SVS backup antenna) | Theft mode data shall specify active LTE antenna source |
| | | | GNSS Antenna Source (primary, SVS backup GNSS antenna) | Theft mode data shall specify active GNSS antenna source (primary antenna source denotes that the primary antenna feed to either the SVSServer or the SVSInterfaceClient is used). |
| | | | Power Source (main battery, back-up battery) | In the case that BUB and main battery discharged (OR when BUB unavailable and main battery discharged), SVS function will be paused until an ignition cycle is performed. Status will be changed to Discharged (for both above cases). If Main battery is available, status will remain supported. If main battery is discharged but BUB is available status will remain supported. |
| | | | Main Power status (sufficient, low-voltage, | Sufficient – battery power available |



| | | | | |
|--|--|--|---|---|
| | | | warning, discharged, unavailable) | Low-voltage – battery low voltage threshold reached Warning – battery threshold for termination reached Discharged – battery discharged to limit for supporting SVS Unavailable – battery disconnected |
| | | | BUB status (Unavailable, sufficient power, low-voltage warning, Discharged) | Unavailable – vehicle not equipped with BUB Sufficient – BUB available for use Low-voltage warning – BUB reached warning threshold Discharged – BUB unable to support SVS functionality any longer. Trigger to notify E-Call threshold nearing. |
| | | | Reporting Frequency | Theft mode reporting frequency shall be based on the value in request command. If reporting frequency is 0 then considered as on demand request |
| | | | Previously Reported Locations | Recorded locations shall include GRPC message field from GPS Data Format, Latitude, Longitude, Altitude, GPS time, Direction of Travel, Fix (2D, 3D), Location Accuracy, Location Status. |

4.6.1.6.10 SVS-REQ-353200/A-GRPC theft mode response field/parameter status or source changes updates to SVSOffBoardClient

SVSServer shall immediately send theft mode response message when field/parameter status or source information changed. Following are the field/parameter from theft mode response message: Theft mode status, SVS Support Status, Ignition Status, Power Source, Main Power status, BUB status, Failures.

4.6.1.7 **GRPC Retry Strategies**

4.6.1.7.1 SVS-REQ-303352/D-Transient retry at SVSServer for all identified GRPC error code

For all identified GRPC error codes that can result in a message retry, SVSServer shall perform X (X = DID SVS_RETRY_NUMBER) number of GRPC protocol level retries at Y (Y = DID SVS_RETRY_FREQUENCY) interval for specified reporting frequency and shall time out. After timeout, location data shall be stored in SVS application on SVSServer. Refer to REQ-306303.

4.6.1.7.2 SVS-REQ-303353/E-SVSServer SVS application retry for all identified GRPC error code

For all GRPC error codes, if the message from the SVSServer to the SVSOffBoardClient failed after the retries, the SVSServer shall append all the previous locations in the Previously Reported Locations field shall be transmitted in the next theft mode response message at the next frequency interval. SVSServer shall store location data up to W count and apply FIFO logic to store any location exceeding W (W value shall be defined during design).

4.6.1.7.3 SVS-REQ-352684/A-SVSServer SVS application storing theft mode locations during out of cellular coverage

Active theft mode locations shall be stored while vehicle has no cellular coverage. Once cellular service has been restored, all the previous locations in the Previously Reported Locations field shall be transmitted in the next theft mode response



message at the next frequency interval. SVSServer shall store location data up to W count and apply FIFO logic to store any location exceeding W (W value shall be defined during design).

4.6.1.7.4 SVS-REQ-353202/A-SVSServer not deleting stored theft mode response messages

Under all conditions, such as low battery levels, no communication channels or cellular out of coverage, all stored theft mode response data shall not be deleted until successfully sent to SVSOffBoardClient.

4.6.1.8 **Type4 SMS Data Communication**

4.6.1.8.1 SVS-REQ-291229/F-Type4 SMS Activate Theft Mode request from SVSOffBoardClient to SVSServer

When MQTT connection is not available, SVSOffBoardClient sends Type4 SMS command to start the theft mode process as specified in the Activate Theft Mode command.

4.6.1.8.2 SVS-REQ-291233/F-Type4 SMS Deactivate Theft Mode Command from SVSOffBoardClient To SVSServer

When MQTT connection is not available, SVSOffBoardClient sends Type4 SMS command to start the theft mode deactivation as specified in the Deactivate Theft Mode command.

4.6.1.8.3 SVS-REQ-306576/D-Type4 SMS Activate/Deactivate Theft Mode command security

Type4 SMS Activate/Deactivate Theft Mode command shall be SyncP signed, encrypted with ESN enabled.

4.6.2 **Use Cases**

4.6.2.1 **FTCP**

4.6.2.1.1 **SVS-UC-REQ-306595/E-Activate Theft Mode request through FTCP**

| | |
|--|---|
| Actors | Call Center, SVSOffBoardClient, SVSServer, SVSONBoardClient |
| Pre-Conditions | Customer feature subscription Ignition ON or OFF SVSServer registered to Network SVSONBoardClient is MQTT connected Main Battery Engaged Police Case Report Number |
| Scenario Description | SVSOffBoardClient shall check MQTT connection availability with SVSONBoardClient, If MQTT connection available Activate Theft Mode request is sent through FTCP |
| Post-conditions | SVSOffBoardClient shall send FTCP activate theft mode request to SVSServer and request for data collection and transmission of location at specified reporting frequency or just single response to on demand request. SVSServer shall send FTCP acknowledgement response and begin sending location updates to SVSOffBoardClient via GRPC where then SVS app in SVSOffBoardClient shall forward to Call Center through API. |
| List of Exception Use Case Titles | SVSServer Data Logging Ignition OFF SVSServer send Failure and Retries |
| Interfaces | API, FTCP, GRPC |

4.6.2.1.2 **SVS-UC-REQ-306597/E-Deactivate Theft Mode request through FTCP**

| | |
|-----------------------|---|
| Actors | Call Center, SVSOffBoardClient, SVSServer, SVSONBoardClient |
| Pre-Conditions | Customer feature subscription Ignition ON or OFF |



| | |
|--|---|
| | SVSServer registered to Network SVS Theft Mode activated SVSONBoardClient is MQTT connected Main Battery Engaged Police Case Report Number Stolen vehicle recovered |
| Scenario Description | SVSOffBoardClient shall check MQTT connection availability with SVSONBoardClient, If MQTT connection available Deactivate Theft Mode request is sent through FTCP |
| Post-conditions | SVSServer shall send FTCP acknowledgement response and shall send theft mode response with successful theft mode disabled confirmation with disablement time stamp via GRPC where then SVS app in SVSOffBoardClient shall forward to Call Center through API. |
| List of Exception Use Case Titles | SVSServer send Failure and Retries |
| Interfaces | API, FTCP, GRPC |

4.6.2.2 GRPC

4.6.2.2.1 SVS-UC-REQ-306598/D-Main battery supported theft mode response through GRPC

| | |
|--|--|
| Actors | Call center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription Ignition ON or OFF SVS Theft Mode Enabled SVSServer registered to Network Main Battery Police Case Report Number |
| Scenario Description | Theft Mode response data through GRPC |
| Post-conditions | SVSServer shall send theft mode response data through GRPC to SVSOffBoardClient, SVSOffBoardClient forwards the response to SVS App in SVSOffBoardClient. SVSServer shall send first report as soon as request is received and subsequent responses shall be sent at specified reporting frequency. SVS App in SVSOffBoardClient shall forward response data to Call Center through API. |
| List of Exception Use Case Titles | SVSServer Data Logging Ignition OFF SVSServer send Failure and Retries |
| Interfaces | API, GRPC |

4.6.2.2.2 SVS-UC-REQ-306599/C-BUB supported theft mode response through GRPC

| | |
|-----------------------|---|
| Actors | Call center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription SVS Theft Mode Enabled Ignition OFF SVSServer registered to Network BUB engaged |



| | |
|--|---|
| | Police Case Report Number |
| Scenario Description | SVSServer shall receive activate theft mode request for location data while being supported by BUB, SVSServer shall respond theft mode response data through GRPC |
| Post-conditions | When BUB engaged mainly by request/on-demand activate theft mode request supported but frequency change shall still be allowed, if received by SVSServer |
| List of Exception Use Case Titles | SVSServer Data Logging Ignition OFF SVSServer send Failure and Retries |
| Interfaces | API, GRPC |

4.6.2.2.3 SVS-UC-REQ-318904/A-Periodic request while BUB supported theft mode response through GRPC

| | |
|------------------------------------|--|
| Actors | Call center, SVSOffBoardClient, SVSServer |
| Pre-conditions | Customer feature subscription SVS Theft Mode Enabled Ignition OFF SVSServer registered to Network Main battery/BUB engaged Police Case Report Number |
| Scenario Description | SVSServer had received request for periodic location data while being supported by BUB |
| Post-conditions | During transition from main battery to BUB periodicity shall be reduced to "by request/on-demand ONLY" and when BUB completely engaged request for frequency change shall still be allowed, if received by SVSServer. SVS app in SVSOffBoardClient shall forward response data to Call Center through API. |
| List of Exception Use Cases | SVSServer Data Logging Ignition OFF SVSServer send Failure and Retries |
| Interfaces | API, GRPC |

4.6.2.2.4 SVS-UC-REQ-352685/A-SVSServer not reporting unchanged locations during active theft mode

| | |
|------------------------------------|---|
| Actors | Call center, SVSOffBoardClient, SVSServer |
| Pre-conditions | Customer feature subscription SVS Theft Mode Enabled Ignition OFF Main battery/BUB engaged Police Case Report Number |
| Scenario Description | SVSServer had received request for periodic location data while being supported by Main battery or BUB |
| Post-conditions | If location has not changed the SVSServer shall not send the message to the SVSOffBoardClient. If the SVSOffBoardClient needs to check-in with the SVSServer it shall send an Activate Theft Mode command and the SVSServer will respond back with the Theft Mode Response message. |
| List of Exception Use Cases | |
| Interfaces | API, GRPC |

**4.6.2.2.5 SVS-UC-REQ-306600/C-Theft Mode disabled response through GRPC**

| | |
|--|---|
| Actors | Call center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription Ignition ON or OFF SVSServer registered to Network SVS Theft Mode activated Main Battery/BUB Engaged Police Case Report Number Stolen vehicle recovered |
| Scenario Description | Theft Mode disabled response data through GRPC |
| Post-conditions | SVSServer shall send successful theft mode deactivation response via GRPC to SVSOffBoardClient, which shall forward to SVS App. SVS App in SVSOffBoardClient shall forward to Call Center through API. |
| List of Exception Use Case Titles | SVSServer send Failure and Retries |
| Interfaces | API, GRPC |

4.6.2.2.6 SVS-UC-REQ-306601/E-SVSServer Data Logging Ignition OFF

| | |
|--|--|
| Actors | Call center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription SVS Theft Mode Enabled Ignition ON or OFF GRPC error Main Battery/BUB Engaged |
| Scenario Description | SVSServer had received activate theft mode request for location data transmission at specified reporting frequency or single response to on demand request and tries sending data to SVSOffBoardClient via GRPC, however unable to send theft mode data, SVSServer shall log the data. |
| Post-conditions | SVSServer shall log location data for up to W data entries and apply FIFO logic to store any location exceeding W, once connection available SVSServer shall send all stored data to SVSOffBoardClient, and SVSOffBoardClient shall forward to Call Center through API |
| List of Exception Use Case Titles | |
| Interfaces | API, GRPC |

4.6.2.2.7 SVS-UC-REQ-306602/D-SVSServer send Failure and Retries

| | |
|-----------------------|---|
| Actors | Call Center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription SVS Theft Mode Enabled Ignition ON or OFF GRPC error Main Battery/BUB Engaged |



| | |
|--|--|
| Scenario Description | SVSServer shall receive activate theft mode request for location data transmission however it is unable to send theft mode response data for successful activation of theft mode, SVSServer shall retry. |
| Post-conditions | SVSServer shall perform defined number of GRPC protocol level retries for specified reporting frequency as in the theft mode request message and then begin storing location records. Once connection available theft mode location data shall be sent via GRPC to SVSOffBoardClient, and SVS App in SVSOffBoardClient shall forward to Call Center through API. |
| List of Exception Use Case Titles | |
| Interfaces | API, GRPC |

4.6.2.3 Type4 SMS

4.6.2.3.1 SVS-UC-REQ-306604/D-Main battery supported activate theft mode request through Type4 SMS

| | |
|--|--|
| Actors | Call Center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription Ignition OFF SVSONBoardClient not MQTT connected Main Battery Engaged Police Case Report Number |
| Scenario Description | SVSOffBoardClient checks MQTT connection availability with SVSONBoardClient, If MQTT connection not available activate theft mode request is sent through Type4 SMS |
| Post-conditions | SVSOffBoardClient shall send single Type4 SMS command to SVSServer to wake-up and execute activate theft mode command and request for location data collection and transmission of theft mode response at specified reporting frequency or just single theft mode response to on demand request. SVSServer begins sending location updates to SVSOffBoardClient via GRPC where then data is forwarded to Call Center through API. |
| List of Exception Use Case Titles | SVSServer Data Logging Ignition OFF SVSServer send Failure and Retries BUB Battery Support |
| Interfaces | API, SMS, GRPC |

4.6.2.3.2 SVS-UC-REQ-306605/D-BUB supported activate theft mode request through Type4 SMS

| | |
|-----------------------------|--|
| Actors | Call Center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription Ignition OFF SVSONBoardClient not MQTT connected BUB Engaged Police Case Report Number |
| Scenario Description | Activate theft mode with reporting frequency 0 (On demand) request is sent through Type4 SMS |
| Post-conditions | SVSOffBoardClient shall send single Type4 SMS command to SVSServer to wake-up and execute on demand request for single theft mode response. SVSServer |



| | |
|--|--|
| | shall transmit current location via GRPC, enter LPR and wait for subsequent location request. |
| List of Exception Use Case Titles | SVSServer Data Logging Ignition OFF SVSServer send Failure and Retries BUB Battery Support |
| Interfaces | API, SMS, GRPC |

4.6.2.3.3 SVS-UC-REQ-306606/D-Deactivate theft mode request through Type4 SMS

| | |
|--|--|
| Actors | Call Center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription Ignition OFF SVSONBoardClient not MQTT connected SVS Theft Mode activated Main Battery/BUB Engaged Police Case Report Number Stolen vehicle recovered |
| Scenario Description | Deactivate theft mode request is sent through Type4 SMS |
| Post-conditions | SVSServer shall send theft mode response with successful theft mode disabled confirmation with disablement time stamp via GRPC where then SVS app in SVSOffBoardClient shall forward to Call Center through API. |
| List of Exception Use Case Titles | SVSServer send Failure and Retries |
| Interfaces | API, FTCP, GRPC |

4.6.2.3.4 SVS-UC-REQ-352686/A-SVS Server SVS application active theft mode locations storage

| | |
|--|--|
| Actors | Call Center, SVSOffBoardClient, SVSServer |
| Pre-Conditions | Customer feature subscription Ignition ON/OFF SVS Theft Mode activated Main Battery/BUB Engaged |
| Scenario Description | For GRPC communication failure or during no cellular coverage, Active theft mode locations shall be stored. SVSServer shall store location data up to W count and apply FIFO logic to store any location exceeding W (W value shall be defined during design) |
| Post-conditions | Once GRPC communication is re-established or cellular service has been restored, all the previous locations in the Previously Reported Locations field shall be transmitted to SVSOffBoardClient in the next theft mode response message at the next frequency interval. |
| List of Exception Use Case Titles | SVSServer send Failure and Retries |
| Interfaces | API, GRPC |



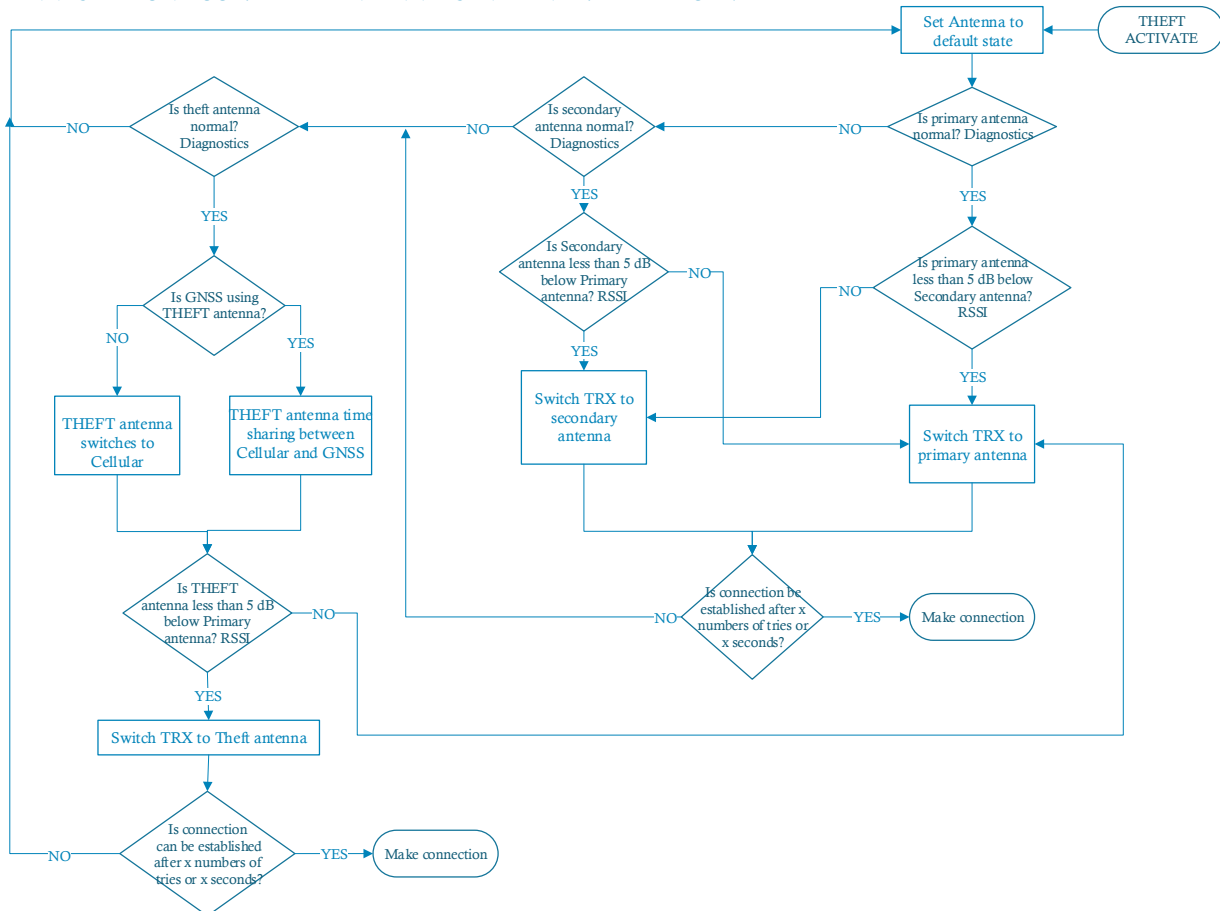
4.6.3 White Box View

4.6.3.1 Activity Diagrams

4.6.3.1.1 SVS-ACT-REQ-310862/B-Antenna Source - Cellular Connectivity (3 Cell Ant.)

Activity Diagram

FNV2 CELLULAR DIAGRAM. 3 ANTENNA SYSTEM, PRIMARY AND SECONDARY ANTENNAS ARE ON ROOF. THEFT ANTENNA IS INTERNAL. THEFT ACTIVATE

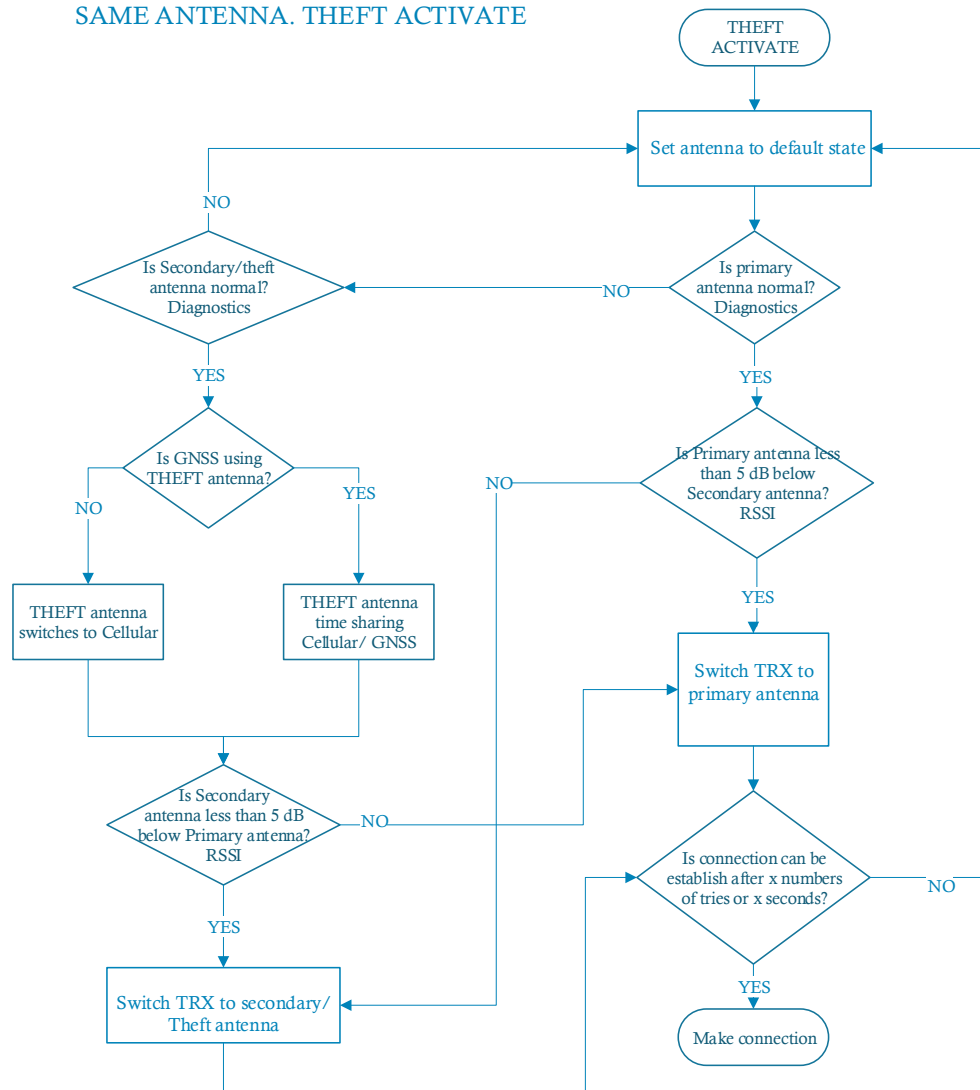




4.6.3.1.2 SVS-ACT-REQ-310863/B-Antenna Source - Cellular Connectivity (2 Cell Ant.)

Activity Diagram

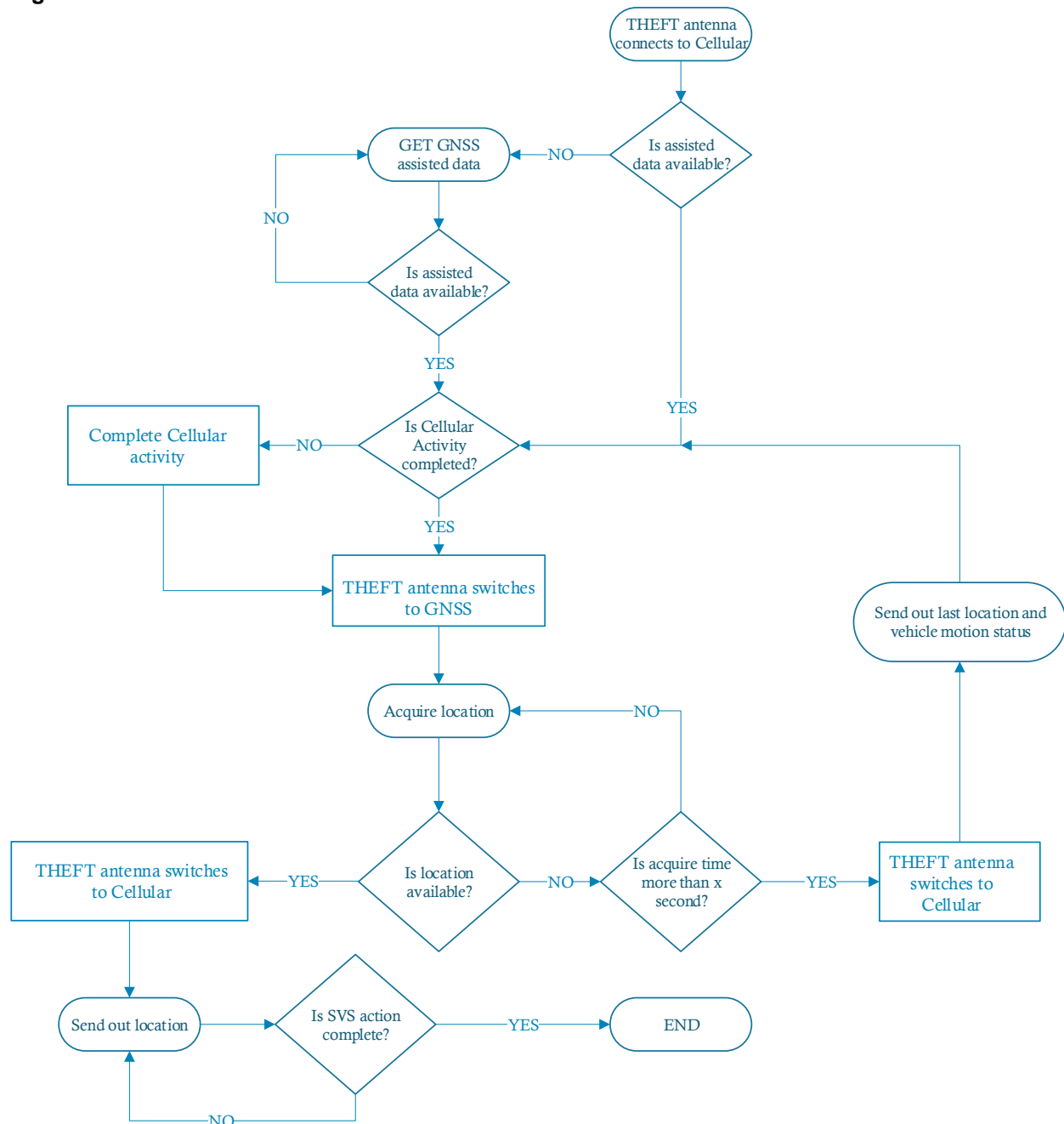
FNV2 S650/U725 CELLULAR DIAGRAM. 2
ANTENNA SYSTEM. SECONDARY/THEFT USE
SAME ANTENNA. THEFT ACTIVATE





4.6.3.1.3 SVS-ACT-REQ-310864/C-GNSS/Cellular Time Sharing

Activity Diagram



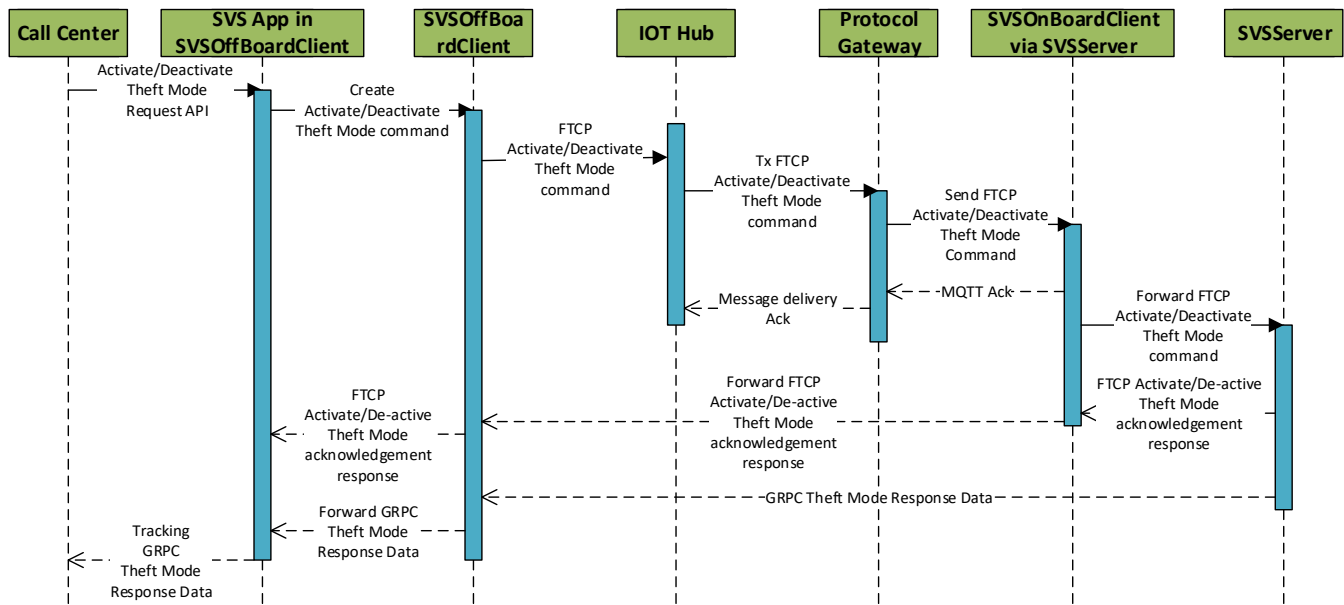
Note: 'x' from above diagram shall be defined in the implementation

4.6.3.2 Sequence Diagrams

4.6.3.2.1 SVS-SD-REQ-303285/F-FTCP Data Comm. from SVSOffBoardClient to SVSServer

Sequence Diagram

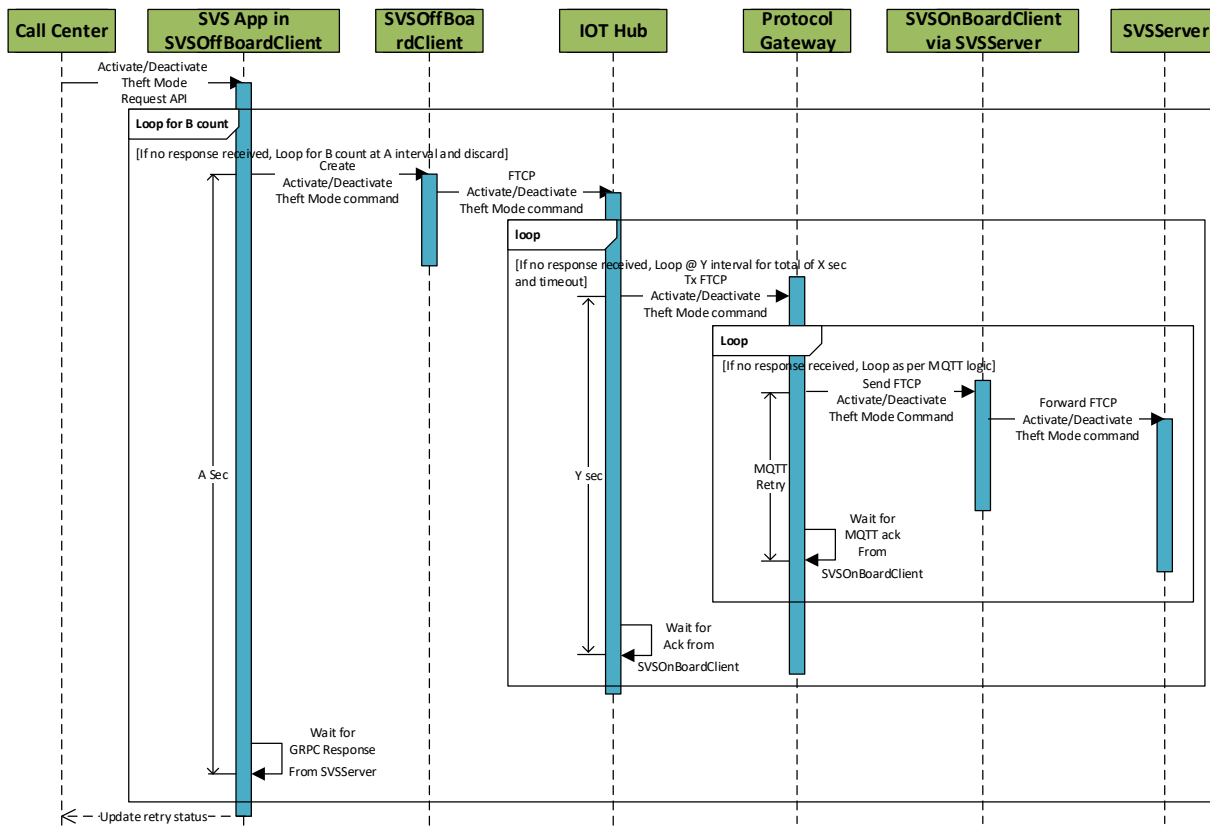
FTCP activate/deactivate theft mode command is sent to SVSServer when vehicle is MQTT connected between SVSOffBoardClient and SVSONBoardClient.



4.6.3.2.2 SVS-SD-REQ-303327/D-FTCP Retry Strategies

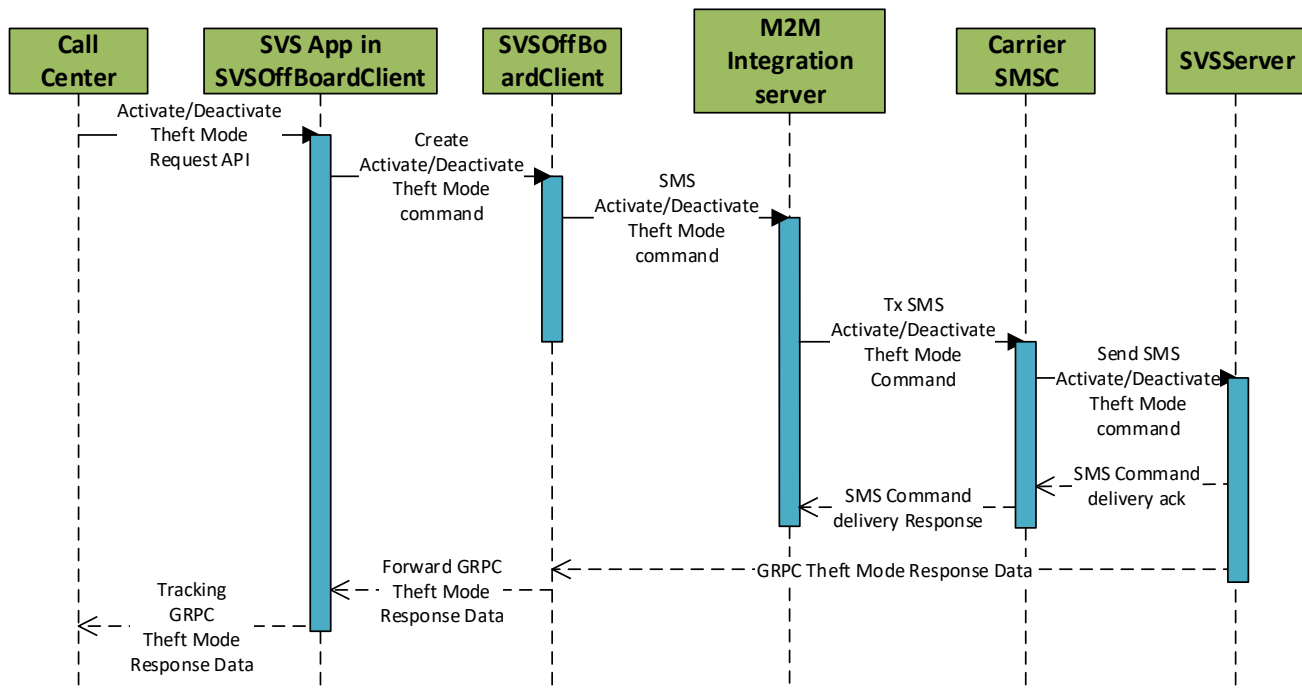
Sequence Diagram

Retry strategy applied when FTCP activate/deactivate theft mode command failed to deliver to SVSONBoardClient.

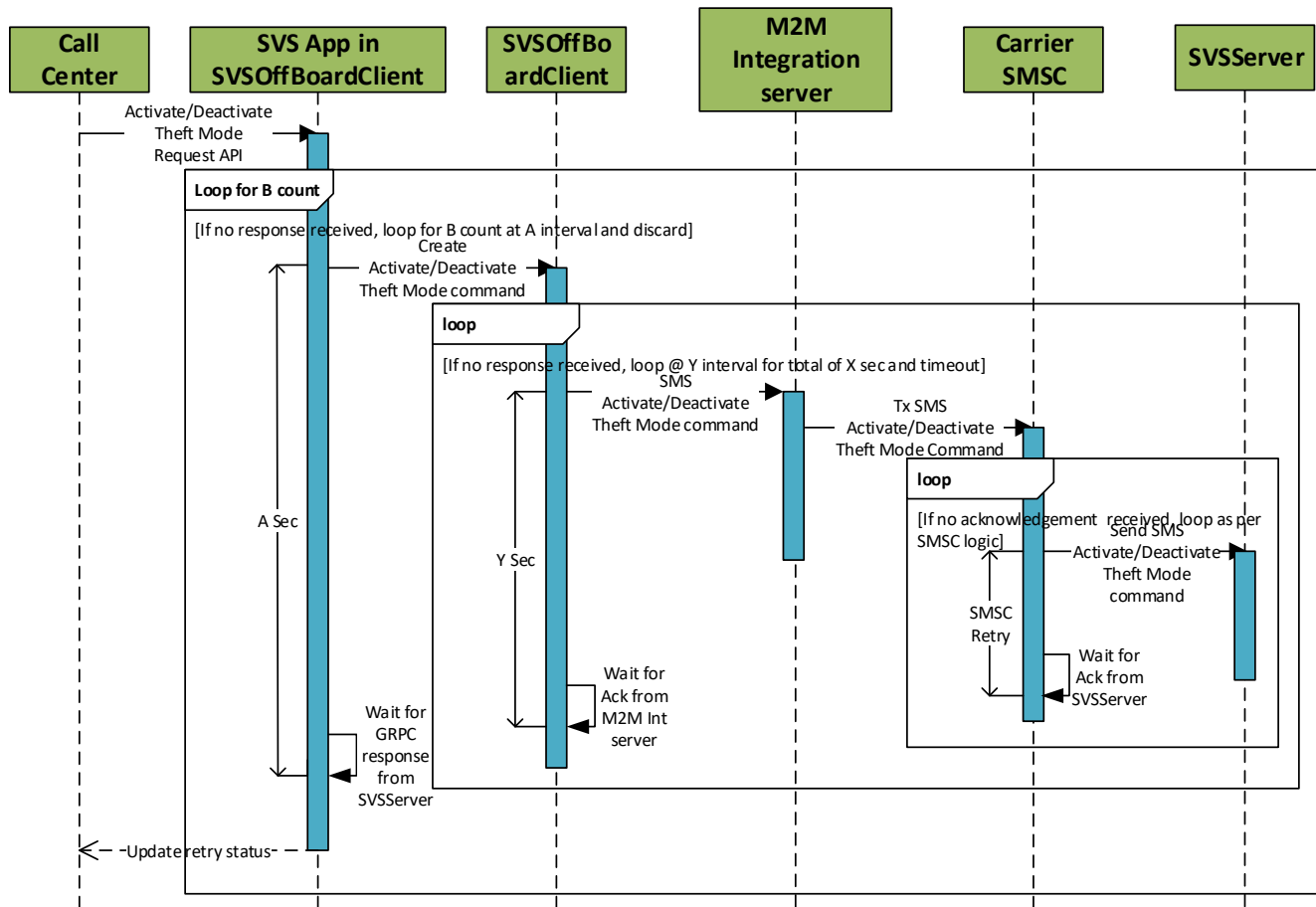


**4.6.3.2.3 SVS-SD-REQ-303698/E-Type4 SMS Data Comm. from SVSOffBoardClient to SVSServer****Sequence Diagram**

Type 4 SMS activate/deactivate theft mode command is sent to SVSServer when MQTT connection not available between SVSOffBoardClient and SVSOnBoardClient.

**4.6.3.2.4 SVS-SD-REQ-303710/E-Type4 SMS Retry Strategies****Sequence Diagram**

Retry strategy applied when Type 4 SMS activate/deactivate theft mode command failed to deliver to SVSServer.





4.7 SVS-FUN-REQ-291046/A-Power Moding

4.7.1 Requirements

4.7.1.1 SVS-REQ-291085/F-Power Modes

| Parameter | Description |
|---|---|
| C1 mAh (Low-voltage) (In diagram - Main Battery – Green) | Vehicle power state changes to LPR mode (LOR to DRX so SLP) (14 day cutoff, main battery depletion of no more than 25% over 40 days) |
| C2 mAh (Warning) (In diagram - Main Battery – Yellow) | Threshold at which vehicle will exit extended deep sleep mode and enter deep sleep (when NOT in “Theft Mode”) or periodic location reporting transitions to on-demand location reporting (when IN “Theft Mode”) |
| C3 mAh (Discharged) (In diagram - Main Battery – Red) | Main Battery charge below the lowest allowed value in theft active mode (full main battery discharge, vehicle will not start/critical battery level) at approximately 8.5V left on main battery |
| C4 mAh (Low-voltage) (In diagram – BUB – Yellow) | BUB threshold triggering an alert that voltage levels are low and support will be cutoff soon if in theft mode. Also, it is the threshold at which vehicle enters into extended deep sleep mode while operating on the BUB. |
| C5 mAh (Discharged) (In diagram - BUB – Red) | BUB threshold to allow for eCall functionality cutoff SVS will no longer be supported while in theft mode. |

NOTE: Please note that parameter C1 shall be defined by the SVSServer team (currently set at 14 days)

4.7.1.2 SVS-REQ-303134/B-Main battery power while SVS Subscription NOT active

The ignition in OFF state, while customer is not subscribed to SVS, shall have no impact to SVSServer power moding transitions.

4.7.1.3 SVS-REQ-360728/A-Ignition ON and Main Battery Thresholds

When ignition state is ON, SVSServer shall not act upon any main battery threshold transitions. If the “Theft Mode” periodicity has been set to by request only (either by the SVSOffBoardClient or by the SVSServer on a previous ignition off battery threshold transition), it shall be kept at this state.

4.7.1.4 SVS-REQ-360730/A-Ignition ON to OFF Transitions and Main Battery Thresholds

When ignition state transitions from ON to OFF, SVSServer shall determine the main battery threshold currently in effect and act according to that threshold.

4.7.1.5 SVS-REQ-303135/D-Main battery power while SVS Subscription active while NOT in “Theft Mode”

When in the ignition OFF state, main battery shall provide power to SVSServer until low-voltage threshold C1 reached. After C1 reached, SVSServer shall continue monitoring for any requests until warning threshold C2 is reached.

4.7.1.6 SVS-REQ-303140/D-Main battery power while SVS “Theft Mode” Active Low voltage threshold reached

Main battery shall provide power to SVSServer. Once low-voltage threshold is reached, SVSServer shall update Main Battery State field in GRPC response message to “Low –voltage” and change shall be captured in “Theft Mode” response message (refer to “GRPC Data Communication”). SVS shall continue depleting main battery until SVSServer detects warning threshold C2 (refer to SVS-REQ-306354).

4.7.1.7 SVS-REQ-306354/C-Main battery power while SVS “Theft Mode” Active Warning threshold reached

Main battery shall provide power to SVSServer. Once warning threshold C2 reached, Main Power status field in GRPC response message shall be changed to “Warning”. SVSServer shall continue depleting main battery until SVSServer detects



Discharged C3 threshold. Change shall be captured in "Theft Mode" response message (refer to "GRPC Data Communication"). Main Power status field in GRPC response message shall be changed to "Warning".

4.7.1.8 SVS-REQ-303141/D-Periodicity Reduction Main battery power while "Theft Mode" active

Once Warning threshold C2 reached, SVSServer shall change "Theft Mode" periodicity to by request ONLY. Change shall be captured in "Theft Mode" response message (refer to "GRPC Data Communication"). Reporting Frequency field shall be changed to 0. Request for frequency change shall still be allowed, if received by SVSServer and requested by the Call Center.

4.7.1.9 SVS-REQ-303142/E-Main battery Depletion while "Theft Mode" active and NO BUB available

SVSServer shall continue depleting main battery until SVSServer detects SVS discharged threshold C3 where the main battery is no longer sufficient to provide SVS functionality. SVSServer shall update message of main battery depletion and functionality termination as part of the "Theft Mode" response message (refer to "GRPC Data Communication"). Main Power status field in GRPC response message shall be changed to "Discharged" and SVS Support Status field to "Unsupported".

4.7.1.10 SVS-REQ-303144/D-Main battery Depletion while "Theft Mode" active and BUB available

SVSServer detects discharged threshold C3 where the main battery is no longer sufficient to provide SVS functionality. BUB available and functionality seamlessly transferred to be supported by BUB. SVSServer shall update message field of main battery depletion and power source as BUB as part of the "Theft Mode" response message (refer to "GRPC Data Communication"). Main Power status field in GRPC response message shall be changed to "Discharged", BUB status field shall be updated to "Available" and SVS Support Status field to "Supported".

4.7.1.11 SVS-REQ-291100/E-SVSServer BUB available while in "Theft Mode" and Main Battery Physically Removed

As soon as main battery is disconnected, BUB shall be seamlessly engaged. SVSServer shall update message field of main battery unavailability and power source as BUB as part of the "Theft Mode" response message (refer to "GRPC Data Communication"). Main Power status field in GRPC response message shall be changed to "Discharged", BUB status field shall be updated to "Sufficient charge" and SVS Support Status field to "SVS Supported".

4.7.1.12 SVS-REQ-303145/D-Periodicity Reduction SVSServer BUB power while "Theft Mode" active

Once BUB is engaged, GRPC message shall be updated with BUB state change as well as periodically shall be reduced to "by request/on-demand ONLY". Change shall be captured in "Theft Mode" GRPC response message (refer to "GRPC Data Communication"). Request for frequency change shall still be allowed, if received by SVSServer.

4.7.1.13 SVS-REQ-303146/E-SVSServer BUB SVS Depletion while in "Theft Mode"

Once threshold protecting for E-Call function is reached, GRPC "Theft Mode" response message shall include termination warning message shall be sent to notify of no SVS support (refer to "GRPC Data Communication"). Main Power status field in GRPC response message shall be changed to "Discharged", BUB status field shall be updated to "Discharged" and SVS Support Status field to "Unsupported".

4.7.1.14 SVS-REQ-308662/B-SVSServer BUB China Data Monitor while in "Theft Mode"

In the event of China Data Monitor function triggered as soon as BUB is engaged, China Data Monitor shall take priority over SVS and shall try to complete task.

4.7.1.15 SVS-REQ-303147/C-SVSServer BUB power while NOT in "Theft Mode" and Main Battery Disconnected

If customer subscribed to SVS, but vehicle currently NOT in "Theft Mode" and vehicle battery was disconnected, SVSServer shall engage BUB and support request receiving until C5.

4.7.1.16 SVS-REQ-308663/C-SVSServer BUB SVS Support and China Data Monitor while NOT in "Theft Mode"

In the event of China Data Monitor function triggered as soon as BUB is engaged, China Data Monitor shall take priority and complete task afterwards SVS shall resume priority and engage BUB and support request receiving until C5.

4.7.1.17 SVS-REQ-303151/E-SVSServer BUB SVS Support Termination Alert while NOT in "Theft Mode"

Once the warning threshold C5 is reached, the SVSServer shall send a functionality unavailable update, to the SVSOffBoardClient that SVS will not be supported until an ignition cycle is performed, SVSServer shall go to deep sleep.

**4.7.1.18 SVS-REQ-303138/E-Main battery SVS Sleep Support Time Termination Alert while SVS Subscription active while NOT in "Theft Mode"**

Once the main battery warning threshold C2 is reached, the SVSServer shall go to deep sleep with no reachability until an ignition cycle is performed. Once the warning threshold C2 is reached, the SVSServer shall send a battery discharged update, to the SVSOffBoardClient that SVS will not be supported until an ignition cycle is performed.

4.7.1.19 SVS-REQ-303150/F-SVSServer BUB SVS Support Time Termination NOT in "Theft Mode"

BUB shall check for pending Type 4 SMS requests until SVS discharged threshold C5 is reached, Message shall be sent to SVSOffBoardClient with notification of support termination.

4.7.1.20 SVS-REQ-352687/B-SVS Support Termination Data NOT in "Theft Mode"

| Message Type | Message Name | Command Size | Parameters | Description |
|--------------|-----------------|--------------|---|--|
| GRPC | SVS Power Alert | | Power Source (Main Battery, BUB) Main Battery Status (C1, C2) OR BUB Status (C4, C5) | When Theft Mode status is not active, upon reaching main battery thresholds C1 and C2 OR BUB thresholds C4 and C5, data shall be sent to TMC via gRPC specifying the status and power source details. These data items defines the reason why SVS support has been terminated. |

4.7.2 Use Cases**4.7.2.1 SVS-UC-REQ-306368/A-No SVS Subscription power moding**

| | |
|------------------------------------|--|
| Actors | SVSServer, Main Battery |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer NOT Subscribed to SVS |
| Scenario Description | SVS subscription is not active |
| Post-conditions | Regular power transitions will occur |
| List of Exception Use Cases | |
| Interfaces | |

4.7.2.2 SVS-UC-REQ-306370/B-Main Battery Low Voltage Threshold with Sleep

| | |
|-----------------------------|---|
| Actors | SVSServer, Main Battery |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Available Theft Mode NOT Active |
| Scenario Description | Main battery reaches low-voltage threshold (C1) |



| | |
|------------------------------------|---|
| Post-conditions | SVSServer shall wake-up at the period specified by the DID and check for Type 4 SMS pending requests ONLY |
| List of Exception Use Cases | |
| Interfaces | SMS |

4.7.2.3 SVS-UC-REQ-306371/D-Main Battery Warning Threshold Goodbye Msg

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, Main Battery |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Available Theft Mode NOT Active |
| Scenario Description | Main battery reaches warning threshold (C2) |
| Post-conditions | Send GRPC message containing SVS support termination with SVS unsupported indication to SVSOffBoardClient/SVS Cloud App. SVS will not be supported until ignition cycle performed |
| List of Exception Use Cases | |
| Interfaces | GRPC |

4.7.2.4 SVS-UC-REQ-306372/B-Main Battery Threshold in Theft Mode

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, Main Battery |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Available Theft Mode Active |
| Scenario Description | Main battery reaches low-voltage threshold (C1) |
| Post-conditions | Updates to "Theft" response message fields shall be made for the following: main battery status to low-voltage threshold. |
| List of Exception Use Cases | |
| Interfaces | GRPC |

4.7.2.5 SVS-UC-REQ-306373/B-Main Battery Warning Threshold in Theft Mode

| | |
|-----------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, Main Battery |
| Pre-conditions | Vehicle capable of SVS (based on region) |



| | |
|------------------------------------|--|
| | Customer Subscribed to SVS Main Power Available Theft Mode Active |
| Scenario Description | Main battery reaches warning threshold (C2) |
| Post-conditions | SVSServer changes GRPC "Theft" response message periodicity to ON-DEMAND, unless additional update received by Call Center. Updates to "Theft" response message fields shall be made for the following: main battery status to warning threshold and frequency of transmission to 0. |
| List of Exception Use Cases | |
| Interfaces | GRPC |

4.7.2.6 SVS-UC-REQ-306374/C-Main Battery Discharged Threshold Goodbye Msg no BUB

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, Main Battery |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Discharged BUB Unavailable Theft Mode ACTIVE |
| Scenario Description | Main battery reaches discharged threshold (C3) |
| Post-conditions | Updates to "Theft" response message fields shall be made for the following: main battery status to discharged threshold, SVS Support Status field shall be updated to "Unsupported" |
| List of Exception Use Cases | |
| Interfaces | GRPC |

4.7.2.7 SVS-UC-REQ-306375/B-Main Battery Discharged Threshold switch to BUB

| | |
|-----------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Discharged BUB AVAILABLE Theft Mode ACTIVE |
| Scenario Description | Main battery reaches discharged threshold (C3) |
| Post-conditions | Updates to "Theft" response message fields shall be made for the following: main battery status to discharged threshold, BUB status updated |



| | |
|-----------------------------|--|
| | accordingly, power source switched from main battery to BUB. |
| List of Exception Use Cases | |
| Interfaces | GRPC |

4.7.2.8 SVS-UC-REQ-306376/C-SVS Backup Battery Warning Threshold in Theft Mode

| | |
|-----------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Unavailable (discharged OR disconnected) BUB AVAILABLE Theft Mode ACTIVE |
| Scenario Description | Back-up battery reaches warning threshold (C4) |
| Post-conditions | SVSServer changes GRPC "Theft" response message periodicity to ON-DEMAND, unless additional update received by Call Center. Updates to "Theft" response message fields shall be made for the following: BUB status to warning threshold and frequency of transmission to 0. |
| List of Exception Use Cases | |
| Interfaces | GRPC |

4.7.2.9 SVS-UC-REQ-306377/C-SVS Backup Battery SVS Unsupported Threshold in Theft Mode

| | |
|-----------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Unavailable (discharged OR disconnected) BUB AVAILABLE Theft Mode ACTIVE |
| Scenario Description | Back-up battery reaches SVS unsupported threshold (C5) |
| Post-conditions | Updates to "Theft" response message fields shall be made for the following: BUB status to SVS unsupported threshold, SVS Support Status update to "Unsupported". |
| List of Exception Use Cases | |
| Interfaces | GRPC |

**4.7.2.10 SVS-UC-REQ-306378/C-Main Battery Discharged SVS Backup Battery Disengaged**

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Discharged BUB AVAILABLE Theft Mode NOT Active |
| Scenario Description | Main Battery connected and discharged while customer subscribed to SVS |
| Post-conditions | BUB shall be disengaged. |
| List of Exception Use Cases | |
| Interfaces | |

4.7.2.11 SVS-UC-REQ-306379/D-Main Battery Disconnected SVS Backup Battery Support

| | |
|------------------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Disconnected BUB AVAILABLE Theft Mode NOT Active |
| Scenario Description | Main Battery disconnected physically while customer subscribed to SVS, transition to from main battery to BUB shall happen before C2 power level. |
| Post-conditions | SVSServer shall check for Type 4 SMS requests ONLY on BUB till C5 power level |
| List of Exception Use Cases | |
| Interfaces | SMS |

4.7.2.12 SVS-UC-REQ-306380/D-SVS Backup Battery Termination Threshold with Goodbye Msg

| | |
|-----------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Unavailable (discharged OR disconnected) BUB AVAILABLE Theft Mode NOT Active |
| Scenario Description | Back-up battery reaches SVS Unsupported threshold (C5) |
| Post-conditions | Send GRPC message containing SVS support termination with SVS unsupported to |



| | |
|-----------------------------|---|
| | SVSOffBoardClient/SVS Cloud App. SVS will not be supported until ignition cycle performed |
| List of Exception Use Cases | |
| Interfaces | GRPC |

4.7.2.13 SVS-UC-REQ-306381/B-ECall Event during Theft Mode

| | |
|-----------------------------|--|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Unavailable (damaged, discharged OR disconnected) BUB AVAILABLE Theft Mode Active |
| Scenario Description | E-Call Event triggered while vehicle using BUB for SVS |
| Post-conditions | E-Call event takes over BUB, SVS is paused and E-Call event completed as expected. SVS is resumed once E-Call completes functionality if capability still available. |
| List of Exception Use Cases | |
| Interfaces | |

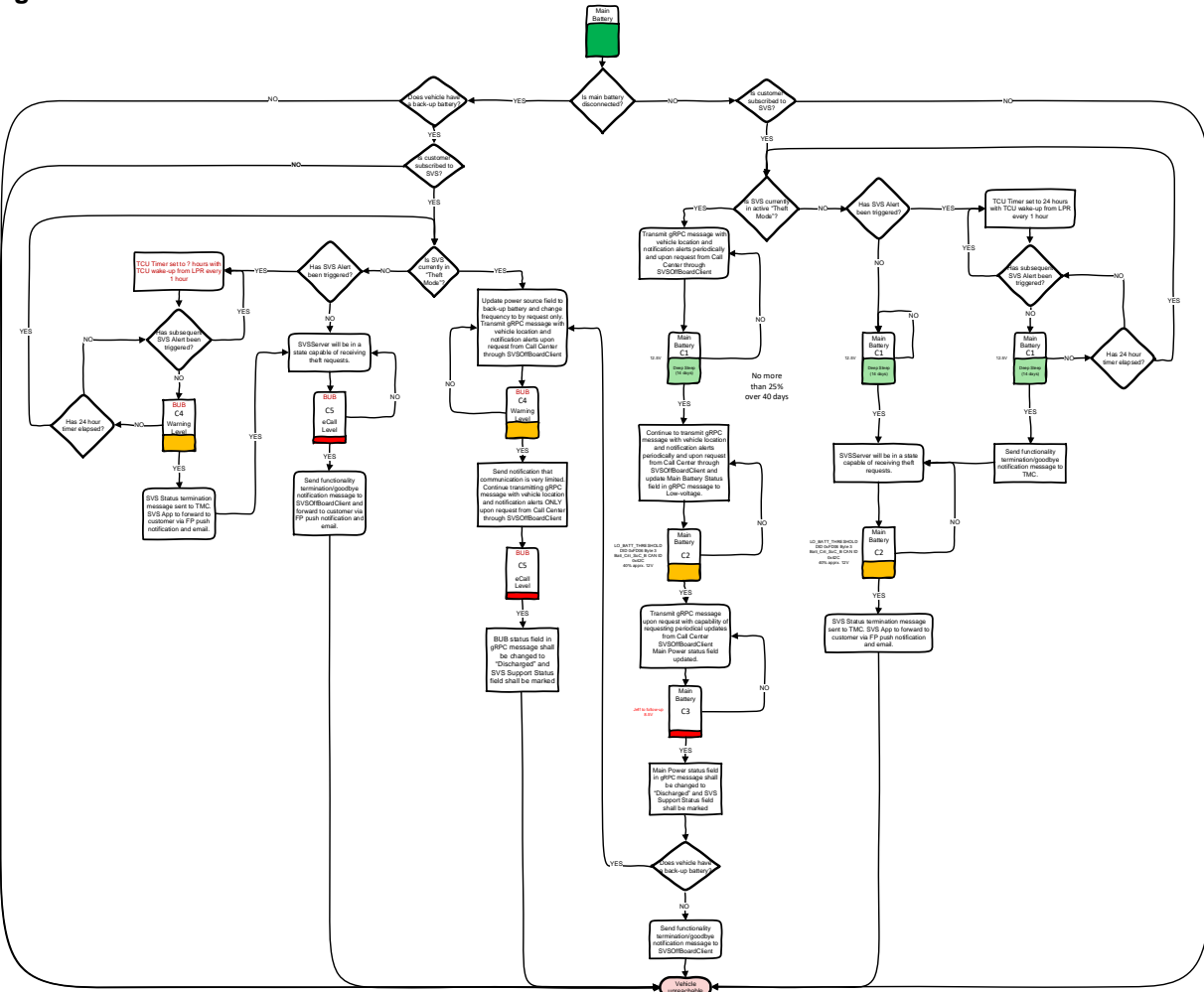
4.7.2.14 SVS-UC-REQ-306382/A-China Data Monitor during Theft Mode

| | |
|-----------------------------|---|
| Actors | SVS Cloud App, SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Unavailable (disconnected) BUB AVAILABLE Theft Mode Active |
| Scenario Description | Main battery disconnected and BUB engaged while in theft mode. China Data Monitor with higher priority, therefore CDM functionality expected to complete as expected. |
| Post-conditions | In the case that CDM completes successfully, SVS will regain functionality on BUB, and continue until BUB has been discharged. |
| List of Exception Use Cases | |
| Interfaces | |

4.7.3 White Box View

4.7.3.1 Activity Diagrams

4.7.3.1.1 SVS-ACT-REQ-303152/E-Battery Power Management Activity Diagram





4.8 SVS-FUN-REQ-318009/A-SVS Enhanced Early Theft Notifications

4.8.1 Requirements

4.8.1.1 SVS-REQ-325679/C-SVSServer monitoring and triggering of alerts

SVSServer to rely on CCS Manager to obtain information about current SVS subscription status to start/stop monitoring the early theft notification alert and trigger to SVSOffBoardClient during the event (Refer CCOlv2-FUN-REQ-291418-Synchronize OnBoard and OffBoard System, IIR-REQ-313614-Customer Connectivity Settings API).

4.8.1.2 SVS-REQ-326482/B-SVSServer stop monitoring and triggering of alerts

If SVS is not subscribed, the SVSServer shall not monitor and trigger alerts to the SVSOffBoardClient OR if SVS subscription transitions to the unsubscribed state in the middle of pre-theft alert location messages, stop the location reports and delete any buffered messages not sent.

4.8.1.3 SVS-REQ-325681/B-SVSServer Not monitoring and triggering of alerts in "Theft Mode" Active state

SVSServer shall not monitor and trigger alerts when SVS Theft mode is enabled/active state. Any alert processing is terminated when SVS theft mode is enabled/active.

4.8.1.4 SVS-REQ-358745/A-States applied by SVSServer during active alert periodic location reports

While Pre-Theft Alerts are active (periodic location messages being transmitted), any changes to the following are applied immediately, the Pre-Theft Alert periodic location reports are stopped, and any buffered messages not already transmitted are deleted.

- CCS Subscription from Subscribed to Unsubscribed
- SVS Capability DID updated from Enabled to Disabled
- Vehicle status (Car Mode) from Normal to Factory or Transport

4.8.1.5 SVS-REQ-318029/B-SVSServer last known location storing upon ignition "OFF"

SVSServer shall have the capability of storing last known location of the vehicle as soon as the vehicle is entering into an ignition "OFF" state.

4.8.1.6 SVS-REQ-325683/C-SVSServer Wakeup in ignition "OFF" to process alerts

SVSServer shall have capability to wake up during ignition OFF to receive and process the alert signals.

4.8.1.7 SVS-REQ-325684/B-SVSServer Wakeup by accelerometer in ignition "OFF"

Accelerometer trigger shall have capability to wake up SVSServer during ignition OFF.

4.8.1.8 SVS-REQ-326498/C-GRPC early theft notification alert and periodic location messages

GRPC early theft notification alert and periodic location reporting message payload to SVSOffBoardClient shall contain vehicle location data even if "location in customer connectivity setting is disabled." SVSServer shall not check CCS location settings while including location data in early theft alerts or periodic location reports.

4.8.1.9 SVS-REQ-333101/B-Transient retry at SVSServer for all identified GRPC error code

For all identified GRPC error codes that can result in a GRPC alert message retry, SVSServer shall perform X (X = DID SVS_RETRY_NUMBER) number of GRPC protocol level retries at Y (Y = DID SVS_RETRY_FREQUENCY) intervals.

4.8.1.10 SVS-REQ-352689/A-SVSServer SVS application storing alerts during out of cellular coverage

All alerts will be stored while vehicle has no cellular coverage. Once cellular service has been restored, alerts shall be transmitted to the SVSOffBoardClient.

4.8.1.11 SVS-REQ-352690/A-SVSServer SVS application storing alerts for gRPC retry timeout

For all identified GRPC error codes that can result in a GRPC alert message retry, after gRPC retry timeout SVSServer shall store alerts. When the gRPC communication is re-established or subsequent alerts triggered or periodic location reports are to be sent then all stored alerts shall be sent to SVSOffBoardClient.

**4.8.1.12 SVS-REQ-352691/B-Alert and alert periodic location reports not supported during active eCall**

New alerts are buffered during an active eCall. Once the eCall is complete, the alert shall be transmitted to the SVSOffBoardClient and alert periodic location reporting started.

4.8.1.13 SVS-REQ-358746/A-Alert Location Reports Paused during active eCall

If alert periodic location reports had already started prior to an eCall event, the reports shall be paused while eCall is active, and resumed after eCall is completed.

4.8.1.14 SVS-REQ-353206/A-Stored alerts and alert periodic location reports after eCall complete

All the stored alerts and alert periodic location reports shall be sent to SVSOffBoardClient after active eCall complete.

4.8.1.15 SVS-REQ-352692/A-Store alert till GRPC communication required to be established

If alerts cannot be successfully transmitted before the periodic location reports expire, then alerts are stored until the next GRPC communication is established by which alerts can be sent out to SVSOffBoardClient.

4.8.1.16 SVS-REQ-352693/B-SVSServer SVS application stored alerts and periodic location reports when Theft Mode is Active

When Theft Mode becomes active, any stored alerts and periodic location reports shall be transmitted upon transition to Theft Mode. There is no requirement to have a specific order of transmission between the stored alert/periodic location report messages and Theft Mode messages. Stored messages shall be transmitted in the time order originally buffered.

4.8.1.17 SVS-REQ-352694/A-Stored Alerts Message Content

The content of the Alert message elements when stored will remain as determined when the original message was generated. In particular, the time and location data are unchanged from when the message was first constructed for initial transmission.

4.8.1.18 SVS-REQ-352695/A-SVSServer SVS Application storing Alert Periodic Vehicle Location Data Message

For out of cellular coverage and to all identified GRPC error codes that can result in a GRPC Vehicle Location Data message retry, after gRPC retry timeout SVSServer shall store periodic vehicle location data message. Once cellular service has been restored, OR GRPC communication is re-established all the stored periodic vehicle location data message shall be transmitted to SVSOffBoardClient.

4.8.1.19 SVS-REQ-353207/A-SVSServer not deleting stored alerts and alert periodic location reports

Under all conditions, such as low battery levels, no communication channels or cellular out of coverage, all stored alerts and alert periodic location reports shall not be deleted until successfully sent to SVSOffBoardClient

4.8.1.20 SVS-REQ-320189/C-Message Payload for Alerts

Message payload for GRPC Alerts shall follow the below format:

| Alert Method | Command Size | Alert Command | Parameters | Description |
|--------------|--------------|---------------------------|---|---|
| GRPC | | Unauthorized access alert | Latitude Longitude Altitude GPS Time Direction of travel Fix (2D, 3D) Location Accuracy GPS Data Format Individual Event Type | Alert sent indicating Unauthorized Access based on conditions defined in this SPSS. GPS Data Format as Shifted or Un-shifted for the China use case Individual Event source – Please refer SVS-REQ-318025 for event source |



| | | | | |
|--|--|-----------------------------|--|--|
| | | Inconsistent location alert | Latitude Longitude Altitude GPS Time Direction of travel Fix (2D, 3D) Location Accuracy GPS Data Format | IGN OFF last known location and IGN on first fix location compared with SVS_LOC_DELTA Value to trigger alert. GPS Data Format as Shifted or Un-shifted for the China use case |
| | | SVS DTC alert | Latitude Longitude Altitude GPS Time Direction of travel Fix (2D, 3D) Location Accuracy GPS Data Format Component Failure Type | Refer all SVS DTCs list- REQ-307228 . GPS Data Format as Shifted or Un-shifted for the China use case |
| | | Accelerometer alert | Latitude Longitude Altitude GPS Time Direction of travel Fix (2D, 3D) Location Accuracy GPS Data Format Individual Event Types | SVS Server shall send GRPC accelerometer alert trigger message directly to SVSOffBoardClient. GPS Data Format as Shifted or Un-shifted for the China use case Event source – Vertical inclination, horizontal displacement |
| | | BUB engaged alert | Latitude Longitude Altitude GPS Time Direction of travel Fix (2D, 3D) Location Accuracy GPS Data Format | BUB Alert Notification when main battery disconnected. GPS Data Format as Shifted or Un-shifted for the China use case |

4.8.1.21 SVS-REQ-325761/C-Vehicle location data payload for early theft notification alert trigger

When early theft notification alert is triggered GRPC vehicle location data message shall be sent to SVSOffBoardClient periodically as defined in SVS_ALERT_LOC_DATA DID and parameter DIDs SVS_ALERT_LOC_DATA_PERIOD and SVS_ALERT_LOC_DATA_COUNT.

| Message Type | Command Name | Size | Parameters | Description |
|--------------|--------------|------|------------|-------------|
|--------------|--------------|------|------------|-------------|



| | | | | |
|------|--|--|---|---|
| GRPC | Periodic Location Reporting Alert | | Latitude Longitude Altitude GPS Time Direction of travel Fix (2D, 3D) Location Accuracy GPS Data Format Power Source Support State | Location data shall be shared periodically as defined in DID SVS_ALERT_LOC_DATA. Support State = Active GPS Data Format as Shifted or Un-shifted for the China use case Power Source = Main Battery or Backup Battery Support State = Activated unless power limits reached as below SVSServer shall terminate location collection as soon as C1 or C4 power levels, on Main Battery and BUB respectfully, have been reached. Message shall be sent to SVSOffBoardClient with Support State = Deactivated |
|------|--|--|---|---|

4.8.1.22 SVS-REQ-328990/B-Periodic vehicle location data for GRPC alerts

When GRPC alert is triggered, SVSServer shall send GRPC vehicle location data to SVSOffBoardClient periodically as defined in "SVS_ALERT_LOC_DATA" DID with parameter DIDs SVS_ALERT_LOC_DATA_PERIOD and SVS_ALERT_LOC_DATA_COUNT.

4.8.1.23 SVS-REQ-329640/B-Stopping Periodic vehicle location data message on SVS_ALERT_LOC_DATA Deactivate

If SVSOffBoardClient updates the SVS_ALERT_LOC_DATA to "Deactivated" on SVSServer while vehicle location data messages are being sent, they will be stopped.

4.8.1.24 SVS-REQ-353208/A-SVSOffBoardClient updating the SVS_ALERT_LOC_DATA with new Period and Count values

If SVSOffBoardClient updates the SVS_ALERT_LOC_DATA with new Period and Count values on SVSServer while vehicle location data messages are being sent, the new Period and Count Values will take affect at the next alert trigger.

4.8.1.25 SVS-REQ-328994/B-GRPC concurrent multiple early theft notification alert reporting

If GRPC alert is active and subsequent new GRPC alert becomes active, the time and period of the location reports shall be restarted based on the latest GRPC alert.

4.8.1.26 SVS-REQ-328991/A-Controlling vehicle location data for concurrent multiple GRPC alerts

SVSServer to send one location report regardless of how many concurrent GRPC alerts triggered

4.8.1.27 SVS-REQ-352774/A-Updating SVS_ALERT_LOC DATA DID for new alerts

When GRPC alert is active and periodic location reports are being sent then apply new values of SVS_ALERT_LOC DATA DID only to the next new GRPC alert.

4.8.1.28 SVS-REQ-352776/A-SVS Location Collection upon Alert Trigger while Main Battery connected and NOT in "Theft Mode"

Once alert is triggered for the duration specified in DID SVS_ALERT_LOC_DATA collection is started, if C1 level of main battery is reached while location collection for specified duration in SVS_ALERT_LOC_DATA is still being collected, location collection will be terminated and message will be sent to SVSOffBoardClient by SVSServer.

**4.8.1.29 SVS-REQ-352777/A-SVS Location Collection upon Alert Trigger while BUB engaged and NOT in "Theft Mode"**

Once alert is triggered SVS_ALERT_LOC_DATA is started, if C4 level of back-up battery is reached while location collection for duration specified in DID SVS_ALERT_LOC_DATA is still being collected, location collection will be terminated and message will be sent to SVSOffBoardClient by SVSServer.

4.8.1.30 SVS-REQ-325765/B-SVSServer to stop vehicle location data reporting during SVS THEFT MODE

After GRPC alert is triggered, if "SVS_THEFT_MODE" DID is activated, GRPC vehicle location data messages shall be stopped.

4.8.1.31 SVS-REQ-328785/D-FTCP/Type4 SMS Vehicle location data stop request command payload for early theft notification alert trigger

FTCP/ Type4 SMS message payload from SVSOffBoardClient to SVSServer to stop collecting vehicle location data when customer confirm vehicle is in their possession via mobile app.

| Message Type | Command Name | Command Size | Parameters | Description |
|--------------|--|--------------|------------|--|
| FTCP | Early theft alert vehicle location data stop command request | | Message ID | For Early theft notification alert trigger when customer agrees vehicle is in their possession via mobile app, SVSOffBoardClient shall send early theft alert vehicle location data stop command request to SVSServer via SVSONBoardClient |
| Type4 SMS | Early theft alert vehicle location data stop command request | | Message ID | For Early theft notification alert trigger when customer agrees vehicle is in their possession via mobile app, SVSOffBoardClient shall send early theft alert vehicle location data stop command request to SVSServer. |

4.8.1.32 SVS-REQ-328786/D-FTCP Vehicle location data stop command ack response & GRPC payload for early theft notification alert trigger

FTCP message payload from SVSONBoardClient to SVSOffBoardClient to send successful vehicle location data stop command response and alert.

| Message Type | Command Name | Command Size | Parameters | Description |
|--------------|--|--------------|---|--|
| FTCP | Early theft alert vehicle location data stop acknowledgment response | | Message ID Status (Success or Fail), Failure Reason | SVSServer via SVSONBoardClient shall send response as soon as early theft alert vehicle location data command request received. Failure reason may be GRPC connection establishment failure. Subscription state is unsubscribed SVS capability set to disabled. Factory mode and Transport mode. |
| GRPC | Early theft alert vehicle location data stop response | | Message ID Status (Success or Fail), Failure Reason | After SVSServer successfully acted upon command For FTCP/SMS early theft alert vehicle location data stop request a GRPC early |



| | | | | |
|--|--|--|--|---|
| | | | | theft alert vehicle location data stop alert shall be sent from SVSServer. Failure reason may be GRPC connection establishment failure. Subscription state is unsubscribed SVS capability set to disabled. Factory mode and Transport mode. |
|--|--|--|--|---|

4.8.1.33 SVS-REQ-328787/C-FTCP/Type4 SMS early theft alert vehicle location data stop command request

Early theft alert vehicle location data stop command request shall apply to all active early theft notification alerts on the SVSServer.

4.8.1.34 SVS-REQ-328999/A-SVSONBoardClient to SVSServer early theft alert vehicle location data stop command request

If FTCP early theft alert vehicle location data stop command request received by SVSONBoardClient it shall immediately inform the SVSServer and SVSServer shall act upon the command.

4.8.1.35 SVS-REQ-328788/A-Subsequent early theft notification alert trigger from SVSServer to SVSOffBoardClient

Any GRPC alerts that trigger, after an early theft alert vehicle location data stop command request has stopped the GRPC vehicle location data messages for all previous alerts, shall have the GRPC vehicle location data sent as per SVS_ALERT_LOC_DATA DID setting.

4.8.1.36 SVS-REQ-329008/B-FTCP early theft alert vehicle location data stop command response and alert

For FTCP early theft alert vehicle location data stop request an FTCP early theft alert vehicle location data stop acknowledgment response shall be sent from SVSServer via SVSONBoardClient.

4.8.1.37 SVS-REQ-329374/C-GRPC early theft alert vehicle location data stop response

For FTCP/SMS early theft alert vehicle location data stop request, a GRPC early theft alert vehicle location data stop response shall be sent from SVSServer to SVSOffBoardClient.

4.8.1.38 SVS-REQ-331819/B-SVSServer internal variable resetting

Internal variables for SVS_ALERT_LOC_DATA, SVS_ALERT_LOC_DATA_PERIOD and SVS_ALERT_LOC_DATA_COUNT shall be reset to default values when FTCP/SMS early theft alert vehicle location data stop command or Activate Theft mode command request is sent to SVSServer via SVSONBoardClient.

4.8.1.39 Accelerometer Alert

4.8.1.39.1 SVS-REQ-318015/A-SVSServer internal accelerometer

SVSServer shall have a calibrated accelerometer that is able to detect illegal vehicle movement. Since accelerometer resides in the SVSServer, no CAN message will be needed.

Note: For more information on the accelerometer specification, detection algorithms and sensitivity please refer to the LIS2DW12 Specification under W12 Accelerometer. (Document provided by Eric Eaton)

4.8.1.39.2 SVS-REQ-318016/B-SVSServer internal accelerometer configuration DID

A configuration DID shall be defined if an accelerometer is installed into the SVSServer or not.

| Parameter | Description | Tuned Default Value | Metric | Resolution | Tuning Range |
|-----------------------|---|---------------------|-----------------------------------|------------|----------------------------------|
| SVS_ACCELEROMETER_DID | Accelerometer Capability within SVSServer | 1 | Available / Unavailable (Boolean) | | 0 – Unavailable 1 – Available |



4.8.1.39.3 SVS-REQ-352778/A-SVSServer monitoring Door presence

SVSServer shall monitor the below door presence signals to perform capability check of vehicle with doors and no doors:

- DriverDoorPresent_St
- DriverDoorRearPresent_St
- PassengerDoorPresent_St
- PassengerDoorRearPresent_St

4.8.1.39.4 SVS-REQ-318018/B-SVSServer internal accelerometer monitoring deactivation for vehicle with doors

Accelerometer shall be deactivated and SVSServer shall not be monitoring movement during following conditions:

- Authorized Door unlock command from mobile app
- Authorized key-fob unlock
- Authorized door key unlock
- Any ignition ON
- Remote start command (on-demand and scheduled) received from mobile app

4.8.1.39.5 SVS-REQ-352779/A-SVSServer internal accelerometer monitoring deactivation for vehicle without doors

Accelerometer shall be deactivated and SVSServer shall not be monitoring movement during following conditions:

- Ignition ON

4.8.1.39.6 SVS-REQ-318019/B-SVSServer internal accelerometer pre-conditions for alert trigger for vehicle with doors

Accelerometer shall detect movement and check if all of the following pre-conditions have been met:

- Ignition off, with delayed accessory mode elapsed (OFF)
- Vehicle authorized lock

4.8.1.39.7 SVS-REQ-352780/A-SVSServer internal accelerometer pre-conditions for alert trigger for vehicle without doors

Accelerometer shall detect movement and check if the following pre-conditions have been met:

- Ignition off, with delayed accessory mode elapsed (OFF).

4.8.1.39.8 SVS-REQ-318020/A-SVSServer internal accelerometer alert triggers

Vehicle accelerometer alert shall be triggered for the following use cases:

- Vehicle experiences a vertical/horizontal displacement (bump/hit/minor accident)
- Vehicle inclination change (towed)

4.8.1.39.9 SVS-REQ-326500/A-SVSServer GRPC accelerometer alert trigger message

Accelerometer shall detect movement and wake-up SVSServer to send GRPC message directly to SVSOffBoardClient.

4.8.1.39.10 SVS-REQ-318023/A-SVSServer internal accelerometer use cases that shall not trigger an alert

Vehicle accelerometer alert shall NOT be triggered for the following use cases:

- If pre-conditions are not met
- Vibration effect caused by opening or closing vehicle door
- Person bumping into vehicle

4.8.1.39.11 SVS-REQ-326613/B-SVSServer vehicle location data reporting conditions for accelerometer alert trigger

GRPC vehicle location data shall be sent for accelerometer alert trigger during the following conditions:

- During ignition off
- During ignition on
- SVS_THEFT_MODE is not activated.

4.8.1.40 **Unauthorized Access Alert**

4.8.1.40.1 SVS-REQ-333011/B-SVSServer Perimeter Alarm capability check

At ignition ON, SVSServer shall make a diagnostic request to identify the Perimeter Alarm capability using the PerimeterAlarm_Cfg parameter value.



4.8.1.40.2 SVS-REQ-318024/C-SVSServer door ajar triggered

SVSServer shall have the capability of receiving a door ajar triggered signal (CAN) while in the ignition "OFF" vehicle state.

| Door | Signal |
|------------------|---------------------|
| Front Driver | DriverDoorStatus |
| Front Passenger | PassengerDoorStatus |
| Rear Left | RearLeftDoorStatus |
| Rear Right | RearRightDoorStatus |
| Trunk / Tailgate | TrunkTailgateStatus |
| Hood | HoodStatus |
| Liftgate | LiftgateStatus |

4.8.1.40.3 SVS-REQ-318025/C-SVSServer triggering unauthorized access alert

SVSServer shall follow the below two methods to identify and trigger an unauthorized access alert to SVSOffBoardClient.

If capability check shows the vehicle is equipped with perimeter alarm feature then use Method 1, otherwise use Method 2 to identify and trigger unauthorized access alert.

Method 1:

An Unauthorized Access Alert shall be triggered by the SVSServer when:

- Ignition_Status = Off, and
- PerimeterAlarm_St = Activated, and
- PerimeterAlarmEvent_St equals one of the following values:
 - DF_DOOR
 - DR_DOOR
 - PF_DOOR
 - PR_DOOR
 - HOOD
 - DECKLID
 - LG_DOOR
 - IGN_TAMPER
 - INCLINATION
 - INTRUSION
 - TRAILER
 - DIAG_TAMPER

Method 2:

An Unauthorized Access Alert shall be triggered by the SVSServer when:

- Any status signal from REQ-318024 is set to Ajar, and
- Ignition_Status = Off, and
- Last saved Vehicle_Lock_Status = LOCK_ALL or LOCK_DBL, with
- Veh_Lock_Requestor equals one of the following values:
 - Interior
 - Key_Cylinder
 - Keypad
 - Remote
 - Passive
 - Sliding_Door
 - RemoteStart
 - Autorelock
 - Passport
 - Passive_Driver
 - Passive_Pasenger
 - Double_Lock
 - Diagnostics



- Transit_Ajar_Lock
- Transit_Cargo_Relock
- Transit_Vehicle_Relock
- Rgtm_Shutlock_Switch

NOTE: The “Interior” requestor type above currently cannot distinguish between a Slam Lock and an Interior Lock while triggering unauthorized access alert.

4.8.1.40.4 SVS-REQ-318027/C-SVSServer unauthorized access alert

SVSServer shall have the capability of sending a GRPC message to SVSOffBoardClient to notify that an unauthorized access alert has been triggered immediately (during ignition “OFF”).

4.8.1.40.5 SVS-REQ-326764/C-SVSServer storing last known door lock status

At Ignition “OFF” the SVSServer shall store latest vehicle lock status. Any other subsequent vehicle lock status changes shall be stored. This is applied to method 2 as per REQ-318025.

4.8.1.41 **Inconsistent Location Alert**

4.8.1.41.1 SVS-REQ-318032/D-SVSServer last known location comparison to first fix location upon ignition “ON”

SVSServer shall have the capability and accessing the last known location of the vehicle when vehicle ignition changes from “OFF” to “ON” state and comparing the currently received first fix location after ignition “ON” and comparing the delta to a threshold value in SVS_LOC_DELTA DID. Inconsistent location alert is generated even if location in CCS is disabled.

4.8.1.41.2 SVS-REQ-320193/C-SVSServer SVS_LOC_DELTA

A DID shall be added to capture the allowed delta between the last known location and the first fix location upon ignition “ON”.

| Parameter | Description | Tuned Default Value | Metric | Resolution | Tuning Range |
|---------------|---|---------------------|--------|------------|--------------|
| SVS_LOC_DELTA | DID specifying the delta parameter for the inconsistent location calculation and alert generation | 3 | Float | Miles | 0-100 |

4.8.1.41.3 SVS-REQ-318034/B-SVSServer inconsistent location alert triggered

SVSServer shall trigger an inconsistent location alert when the location delta target has been exceeded. SVSServer shall send a GRPC message to the SVSOffBoardClient.

4.8.1.41.4 SVS-REQ-318035/C-SVSServer inconsistent location alert NOT triggered

SVSServer shall NOT trigger an inconsistent location alert when the vehicle location delta target has NOT been exceeded.

4.8.1.42 **Back-up Battery Engaged Alert**

4.8.1.42.1 SVS-REQ-318038/A-SVSServer BUB engaged alert pre-condition

SVSServer shall have the capability of recognizing when the main battery was physically disconnected or damaged but NOT drained.

4.8.1.42.2 SVS-REQ-318039/A-SVSServer BUB engaged alert triggered

As soon as BUB is engaged, SVSServer shall check if vehicle is currently in “SVS Theft Mode” OR E-Call was triggered. If vehicle is NOT in “SVS Theft Mode” OR NOT in E-Call triggered mode an alert shall be triggered.

**4.8.1.42.3 SVS-REQ-318040/A-SVSServer BUB engaged alert shall NOT be triggered use case**

As soon as BUB is engaged, SVSServer shall check if vehicle is currently in "SVS Theft Mode" OR E-Call was triggered. If vehicle is in "SVS Theft Mode" OR E-Call was triggered an alert shall NOT be triggered.

4.8.1.43 SVS Related DTCs**4.8.1.43.1 SVS-REQ-318042/C-SVSServer detecting listed DTC**

The following DTCs shall be detectable by the SVSServer.

| DTC | Failure | Available on SVSServer |
|--------------|---|------------------------|
| DTC0xC55400 | Invalid Data Received from Accessory Protocol Interface Module (GPS Internal Failure) | Yes |
| DTC0xC25300 | Lost Comm. with Accessory Protocol Interface Module (APIM) | Yes |
| DTC 0x947716 | BUB Under-voltage | Yes |
| DTC 0x947709 | BUB- Component Failure | Yes |
| DTC 0x947713 | BUB- Circuit Open | Yes |
| DTC 0x9A5611 | Cellular/GNSS SVS Backup Antenna- short to ground | Yes |
| DTC 0x9A5613 | Cellular/GNSS SVS Backup Antenna- Circuit Open | Yes |
| DTC 0x919F11 | GPS short to ground | Yes |
| DTC 0x919F13 | GPS circuit open | Yes |
| DTC 0x924611 | GSM Circuit Short To Ground | Yes |
| DTC 0x924613 | GSM Circuit Open | Yes |
| DTC 0x9D5511 | GSM Antenna #2 Circuit Short To Ground | Yes |
| DTC 0x9D5513 | GSM Antenna #2 Circuit Open | Yes |
| DTC 0x406A00 | TCU accelerometer fault | Yes |

4.8.1.43.2 SVS-REQ-318043/B-SVSServer triggering DTC alert to SVSOffBoardClient

If any of the DTCs are triggered, SVSServer shall trigger GRPC to SVSOffBoardClient. Alert shall be triggered on first occurrence ONLY while subscribed to SVS and not in active "Theft Mode". If any of the DTCs are triggered, but are historic DTCs, SVSServer shall NOT trigger an alert.

4.8.1.43.3 SVS-REQ-325788/B-SVSServer DTC cleared alert

If any of the DTCs are cleared/fixed, SVSServer shall trigger a GRPC alert to SVSOffBoardClient.

4.8.1.44 Ignition Status Change Alert**4.8.1.44.1 SVS-REQ-325789/B-SVSONBoardClient triggering Ignition Status Change alert**

IgnitionOnAlert and IgnitionOffAlert are defined in the Telematics Data collection SPSS, are also consumed by SVS feature on SVSOffBoardClient. Therefore, upon alerts trigger Telematics Data collection app on SVSONBoardClient shall send to SVSOffBoardClient from all the vehicles subscribed to SVS feature.

If SVS subscription is enabled this alert shall be enabled regardless of telematics settings for this alert.

4.8.2 Use Cases**4.8.2.1 SVS-UC-REQ-320173/B-Inconsistent Location Last Known Location**

| | |
|-----------------------------|--|
| Actors | SVSInterfaceClient/SVSServer |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition change from "ON" to "OFF" |
| Scenario Description | Upon ignition "OFF" SVSServer shall store last known vehicle location. |
| Post-conditions | Last known location available when ignition changes from "OFF" to "ON" |



| | |
|-----------------------------------|-----|
| List of Exception Use Case Titles | |
| Interfaces | CAN |

4.8.2.2 SVS-UC-REQ-320174/B-Inconsistent Location First Fix Location

| | |
|-----------------------------------|---|
| Actors | SVSInterfaceClient/SVSServer |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition changes from "OFF" to "ON" |
| Scenario Description | Upon ignition "ON" first fix vehicle location shall be collected |
| Post-conditions | SVSServer shall receive first fix location from SVSInterfaceClient or SVS Backup antenna or from external antenna connected to SVSServer if there is no SVSInterfaceClient on vehicle |
| List of Exception Use Case Titles | |
| Interfaces | CAN |

4.8.2.3 SVS-UC-REQ-320175/B-Inconsistent Location Delta Parameter DID

| | |
|-----------------------------------|---|
| Actors | SVSServer |
| Pre-Conditions | SVS Subscription Customer notification is enabled SVS_LOC_DELTA shall be configured |
| Scenario Description | SVS_LOC_DELTA shall be set to desired configuration for the delta parameter |
| Post-conditions | This parameter will be used for comparison when calculating distance between last known location and first fix location for Inconsistent Location Alert |
| List of Exception Use Case Titles | |
| Interfaces | |

4.8.2.4 SVS-UC-REQ-325793/C-Early theft alert vehicle location data reporting Trigger condition

| | |
|-----------------------------------|---|
| Actors | SVSServer |
| Pre-Conditions | SVS Subscription Ignition ON or OFF Customer notification is enabled Location in Connectivity settings is enabled/disabled |
| Scenario Description | Vehicle location data shall be sent along with early theft notification alert payload to SVSOffBoardClient even if location in connectivity settings is enabled/disabled |
| Post-conditions | GRPC/FTCP early theft notification alert message shall contain vehicle location data in the payload message. Vehicle location data shall reside in SVSOffBoardClient for 15 days and only alert trigger status will be sent to customer mobile app. |
| List of Exception Use Case Titles | |
| Interfaces | GRPC, FTCP |

**4.8.2.5 SVS-UC-REQ-320176/B-Inconsistent Location Calculation Trigger**

| | |
|--|--|
| Actors | SVSServer |
| Pre-Conditions | SVS Subscription Customer notification is enabled SVS_LOC_DELTA shall be configured Last known location available in SVSServer |
| Scenario Description | As soon as SVSServer receives first fix location, a calculation comparison shall be triggered within SVSServer to calculate the difference between last known location and first fix location. |
| Post-conditions | Calculation shall be compared to SVS_LOC_DELTA |
| List of Exception Use Case Titles | |
| Interfaces | CAN/SOA |

4.8.2.6 SVS-UC-REQ-320177/B-Inconsistent Location Alert "Theft Mode" NOT active

| | |
|--|---|
| Actors | SVSServer, SVSOffBoardClient, SVS App, Mobile App |
| Pre-Conditions | SVS Subscription Customer notification is enabled SVS_LOC_DELTA shall be configured SVSServer performed calculation of difference between last known and first fix locations Ignition "ON" Theft mode NOT active |
| Scenario Description | Location calculation compared to SVS_LOC_DELTA, and location delta exceeded |
| Post-conditions | GRPC Alert sent to SVSOffBoardClient and forwarded to SVS Application and shared with customer via Mobile App |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.7 SVS-UC-REQ-320178/B-Inconsistent Location Alert "Theft Mode" ACTIVE

| | |
|--|---|
| Actors | SVSServer, SVSOffBoardClient, SVS App, Mobile App |
| Pre-Conditions | SVS Subscription Customer notification is enabled SVS_LOC_DELTA shall be configured SVSServer performed calculation of difference between last known and first fix locations Ignition "ON" Theft mode ACTIVE |
| Scenario Description | Location calculation compared to SVS_LOC_DELTA, and location delta exceeded |
| Post-conditions | Notification shall not be triggered when in active theft mode |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.8 SVS-UC-REQ-320179/C-Unauthorized Access Vehicle Lock Status storing

| | |
|---------------|----------------|
| Actors | BCM, SVSServer |
|---------------|----------------|



| | |
|--|--|
| Pre-Conditions | SVS Subscription Customer notification is enabled |
| Scenario Description | Upon ignition "OFF" SVSServer shall store vehicle lock status, which shall be updated with any changes |
| Post-conditions | SVSServer shall have the capability of referring to the vehicle lock status |
| List of Exception Use Case Titles | |
| Interfaces | CAN |

4.8.2.9 SVS-UC-REQ-320180/C-Unauthorized Access Alert

| | |
|--|---|
| Actors | BCM, SVSServer, SVSOffBoardClient, SVS App, Mobile App |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition "OFF" |
| Scenario Description | Upon SVSServer receiving door ajar signal and if last updated vehicle lock status meets correct conditions, an Unauthorized Access alert shall be triggered |
| Post-conditions | An GRPC message shall be sent to SVSOffBoardClient and forwarded to SVS App, so that customer can then be notified via Mobile App |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.10 SVS-UC-REQ-320181/B-BUB Alert Trigger

| | |
|--|--|
| Actors | SVSServer, BUB |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition "OFF" |
| Scenario Description | Main battery PHYSICALLY disconnected (NOT drained) |
| Post-conditions | SVSServer BUB engaged, and alert triggered |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.11 SVS-UC-REQ-320182/A-BUB Alert Notification

| | |
|--|---|
| Actors | SVSServer, BUB, SVSOffBoardClient, SVS App, FordPass |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition "OFF" Main Battery Physically Disconnected |
| Scenario Description | BUB engaged alert triggered |
| Post-conditions | SVSServer shall send GRPC message to SVSOffBoardClient specifying BUB was engaged due to main battery disconnect. SVSOffBoardClient shall forward alert to SVS App, SVS App shall notify Mobile App and Mobile App shall display push notification and send email to customer |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

**4.8.2.12 SVS-UC-REQ-352787/A-SVSServer Door presence check for accelerometer monitoring setting and unsetting**

| | |
|------------------------------------|--|
| Actors | SVSServer |
| Pre-conditions | SVS Subscription Customer notification is enabled |
| Scenario Description | SVSServer shall monitor door presence signals to perform capability check of vehicle with doors or no doors. |
| Post-conditions | SVSServer shall use door presence data to determine whether door LOCK and UNLOCK pre-conditions to be used for accelerometer monitor setting and unsetting |
| List of Exception Use Cases | |
| Interfaces | CAN |

4.8.2.13 SVS-UC-REQ-320183/B-Accelerometer Monitoring Setting for vehicles with doors

| | |
|--|--|
| Actors | BCM, SVSServer |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition "OFF" Doors "Locked" |
| Scenario Description | The accelerometer shall be set when vehicle Ignition is set to OFF DELAYED ACCESSORY has expired or is OFF and door lock status change to "LOCKED" |
| Post-conditions | Accelerometer shall monitor to detect movement |
| List of Exception Use Case Titles | |
| Interfaces | CAN |

4.8.2.14 SVS-UC-REQ-352788/A-Accelerometer Monitoring Setting for vehicles without doors

| | |
|------------------------------------|--|
| Actors | SVSServer |
| Pre-conditions | SVS Subscription Customer notification is enabled Ignition "OFF" |
| Scenario Description | The accelerometer shall be set when vehicle Ignition is set to OFF DELAYED ACCESSORY has expired or is OFF |
| Post-conditions | Accelerometer shall monitor to detect movement |
| List of Exception Use Cases | |
| Interfaces | CAN |

4.8.2.15 SVS-UC-REQ-320184/B-Accelerometer Monitoring Unsetting for vehicles with doors

| | |
|-----------------------|---|
| Actors | BCM, SVSServer |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition "ON" |



| | |
|--|---|
| | Any Authorized Doors "Unlocked" |
| Scenario Description | The accelerometer shall be unset either by a door lock status change to "UNLOCKED", by door opened, OR by ignition "ON" |
| Post-conditions | Accelerometer shall no longer be monitoring for movement until pre conditions are met again for setting |
| List of Exception Use Case Titles | |
| Interfaces | CAN |

4.8.2.16 SVS-UC-REQ-352789/A-Accelerometer Monitoring Unsetting for vehicles without doors

| | |
|------------------------------------|---|
| Actors | SVSServer |
| Pre-conditions | SVS Subscription Customer notification is enabled Ignition "ON" |
| Scenario Description | The accelerometer shall be unset by ignition "ON" |
| Post-conditions | Accelerometer shall no longer be monitoring for movement until pre conditions are met again for setting |
| List of Exception Use Cases | |
| Interfaces | CAN |

4.8.2.17 SVS-UC-REQ-320185/A-Accelerometer Trigger

| | |
|--|--|
| Actors | SVSServer |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition "OFF" Accessory "OFF"/expired |
| Scenario Description | Accelerometer detects movement |
| Post-conditions | SVSServer shall send GRPC message directly to SVSOffBoardClient to notify them of an accelerometer trigger |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.18 SVS-UC-REQ-320186/A-Accelerometer Notification

| | |
|-----------------------------|--|
| Actors | SVSServer, SVSOffBoardClient, SVS App, Mobile App |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition "OFF" Accessory "OFF"/expired Accelerometer triggered |
| Scenario Description | SVSServer shall send GRPC message to SVSOffBoardClient to notify of accelerometer activation |



| | |
|--|---|
| Post-conditions | A GRPC message shall be sent to SVSOffBoardClient and forward to SVS App after which Mobile App shall be notified and customer shall get a push notification and/or email |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.19 SVS-UC-REQ-326618/C-Periodic GRPC Vehicle location data for GRPC early theft notification alerts

| | |
|--|---|
| Actors | SVSServer |
| Pre-Conditions | SVS Subscription Ignition ON or OFF Customer notification is enabled Location in Connectivity settings is enabled/disabled SVS_ALERT_LOC_DATA DID activated Parameter DID SVS_ALERT_LOC_DATA_PERIOD configured Parameter DID SVS_ALERT_LOC_DATA_COUNT configured |
| Scenario Description | GRPC Vehicle location message shall be sent periodically to SVSOffBoardClient as defined in SVS_ALERT_LOC_DATA parameter DIDs SVS_ALERT_LOC_DATA_PERIOD and SVS_ALERT_LOC_DATA_COUNT |
| Post-conditions | GRPC Vehicle location data shall be sent to SVSOffBoardClient and vehicle location data shall reside for 15 days. GRPC vehicle location data shall be sent during ignition On or Off until SVS_THEFT_MODE is activated or SVS_ALERT_LOC_DATA updated by SVSOffBoardClient to deactivated state or when default configured values reached the end. |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.20 SVS-UC-REQ-329010/B-Controlling GRPC Vehicle location data for concurrent multiple GRPC early theft notification alerts

| | |
|--|--|
| Actors | SVSServer |
| Pre-Conditions | SVS Subscription Ignition ON or OFF Customer notification is enabled Location in Connectivity settings is enabled/disabled SVS_ALERT_LOC_DATA DID activated Parameter DID SVS_ALERT_LOC_DATA_PERIOD configured Parameter DID SVS_ALERT_LOC_DATA_COUNT configured |
| Scenario Description | SVSServer to send one location report regardless of how many concurrent GRPC early theft notification alerts triggered |
| Post-conditions | If multiple GRPC early theft notification alerts triggered at the same time SVSServer to send one location report regardless. |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.21 SVS-UC-REQ-329012/B-Period and Count for concurrent multiple GRPC early theft notification alert reporting

| | |
|---------------|-----------|
| Actors | SVSServer |
|---------------|-----------|



| | |
|--|--|
| Pre-Conditions | SVS Subscription Ignition ON or OFF Customer notification is enabled Location in Connectivity settings is enabled/disabled SVS_ALERT_LOC_DATA DID activated Parameter DID SVS_ALERT_LOC_DATA_PERIOD configured Parameter DID SVS_ALERT_LOC_DATA_COUNT configured |
| Scenario Description | Period and count of the GRPC vehicle location data reports shall be restarted based on the latest new GRPC early theft notification alert |
| Post-conditions | If GRPC alert is active and subsequent new GRPC alert becomes active, the period and count of the vehicle location data reports shall be restarted based on the latest alert. When GRPC early theft notification alert triggered SVSServer to keep track of the Period value and count value until value reached to the end of configured value. |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.2.22 SVS-UC-REQ-326619/C-Stopping GRPC early theft alert vehicle location data reporting when "Theft Mode" DID activated

| | |
|--|---|
| Actors | SVSServer |
| Pre-Conditions | SVS Subscription Ignition ON or OFF Customer notification is enabled SVS_THEFT_MODE activated SVS_ALERT_LOC_DATA DID activated Parameter DID SVS_ALERT_LOC_DATA_PERIOD configured Parameter DID SVS_ALERT_LOC_DATA_COUNT configured |
| Scenario Description | Stopping of GRPC vehicle location data triggered by GRPC early theft notification alerts |
| Post-conditions | When SVS_THEFT_MODE DID is activated, GRPC vehicle location data message triggered by GRPC early theft notification alerts shall be stopped. |
| List of Exception Use Case Titles | |
| Interfaces | GRPC, SOA |

4.8.2.23 SVS-UC-REQ-328789/B-FTCP early theft alert vehicle location data stop command request to SVSServer

| | |
|-----------------------------|---|
| Actors | SVSOffBoardClient, SVSServer, SVSONBoardClient, Mobile App |
| Pre-Conditions | SVS Subscription Ignition ON or OFF SVSServer registered to Network SVSONBoardClient is MQTT connected Main Battery Engaged SVS_ALERT_LOC_DATA DID activated GRPC alert triggered to customer |
| Scenario Description | FTCP early theft alert vehicle location data stop command request to SVSServer via SVSONBoardClient to stop vehicle location data for GRPC early theft notification alerts triggered. |
| Post-conditions | For GRPC early theft notification alerts triggered, when customer confirms vehicle is currently under their possession via mobile app, SVSOffBoardClient shall send FTCP early theft alert vehicle location data stop command request to SVSServer via SVSONBoardClient to stop vehicle location data. SVSServer shall act upon |



| | |
|--|--|
| | the command to stop GRPC vehicle location data reporting to SVSOffBoardClient. |
| List of Exception Use Case Titles | |
| Interfaces | FTCP, GRPC |

4.8.2.24 SVS-UC-REQ-328790/B-SMS early theft alert vehicle location data stop command request to SVSServer

| | |
|--|--|
| Actors | SVSOffBoardClient, SVSServer, Mobile App |
| Pre-Conditions | SVS Subscription Ignition OFF SVSServer registered to Network SVSONBoardClient not MQTT connected Main Battery/BUB Engaged SVS_ALERT_LOC_DATA DID activated GRPC alert triggered to customer |
| Scenario Description | Type4 SMS early theft alert vehicle location data stop command request to SVSServer to stop vehicle location data for GRPC early theft notification alerts triggered |
| Post-conditions | For GRPC early theft notification alerts triggered, when customer confirms vehicle is currently under their possession via mobile app, SVSOffBoardClient shall send Type4 SMS early theft alert vehicle location data stop command request to SVSServer to stop vehicle location data. SVSServer shall act upon the command to stop GRPC vehicle location data reporting to SVSOffBoardClient. |
| List of Exception Use Case Titles | |
| Interfaces | SMS |

4.8.2.25 SVS-UC-REQ-328791/B-FTCP early theft alert vehicle location data stop command ack response to SVSOffBoardClient

| | |
|--|--|
| Actors | SVSOffBoardClient, SVSServer, SVSONBoardClient |
| Pre-Conditions | SVS Subscription Ignition ON or OFF SVSServer registered to Network SVSONBoardClient is MQTT connected Main Battery Engaged SVS_ALERT_LOC_DATA DID activated GRPC alert triggered to customer |
| Scenario Description | SVSServer via SVSONBoardClient shall send FTCP early theft alert vehicle location data stop command acknowledgement response to SVSOffBoardClient with successful confirmation of vehicle location data reporting stopped. |
| Post-conditions | FTCP early theft alert vehicle location data stop command response shall be sent to SVSOffBoardClient, followed by alert. For SMS request to SVSServer, SVSServer shall send GRPC alert response to SVSOffBoardClient. |
| List of Exception Use Case Titles | |
| Interfaces | FTCP |

4.8.2.26 SVS-UC-REQ-352790/A-GRPC early theft alert vehicle location data stop response to SVSOffBoardClient



| | |
|------------------------------------|---|
| Actors | SVSOffBoardClient, SVSServer |
| Pre-conditions | SVS Subscription Ignition Run or OFF SVSServer registered to Network Main Battery Engaged SVS_ALERT_LOC_DATA DID activated GRPC alert triggered to customer |
| Scenario Description | SVSServer shall send GRPC early theft alert vehicle location data stop response to SVSOffBoardClient with successful confirmation of vehicle location data reporting stopped. |
| Post-conditions | GRPC early theft alert vehicle location data stop response shall be sent to SVSOffBoardClient. For SMS early theft alert vehicle location data stop command request SVSServer shall send GRPC response to SVSOffBoardClient. |
| List of Exception Use Cases | |
| Interfaces | GRPC |

4.8.2.27 SVS-UC-REQ-352791/A-Alert Triggered Location Collection Termination Message while Main Battery Connected NOT in Theft Mode

| | |
|------------------------------------|--|
| addaActors | SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Available Theft Mode NOT Active |
| Scenario Description | Early Theft Alert triggered and location collection for the duration specified in SVS_ALERT_LOC_DATA active. C1 power level reached. |
| Post-conditions | Location Collection Termination Message send from SVSServer to SVSOffBoardClient via GRPC |
| List of Exception Use Cases | |
| Interfaces | |

4.8.2.28 SVS-UC-REQ-352792/A-Alert Triggered Location Collection Termination on BUB NOT in Theft Mode

| | |
|-----------------------------|---|
| Actors | SVSServer, SVSOffBoardClient, BUB |
| Pre-conditions | Vehicle capable of SVS (based on region) Customer Subscribed to SVS Main Power Unavailable (disconnected) BUB AVAILABLE Theft Mode NOT Active |
| Scenario Description | Early Theft Alert triggered and location collection for the duration specified in SVS_ALERT_LOC_DATA active. C4 power level reached. |
| Post-conditions | Location Collection Termination Message send from SVSServer to SVSOffBoardClient via GRPC |



| | |
|-----------------------------|--|
| List of Exception Use Cases | |
| Interfaces | |

4.8.2.29 SVS-UC-REQ-352793/A-SVSServer SVS application alerts storage

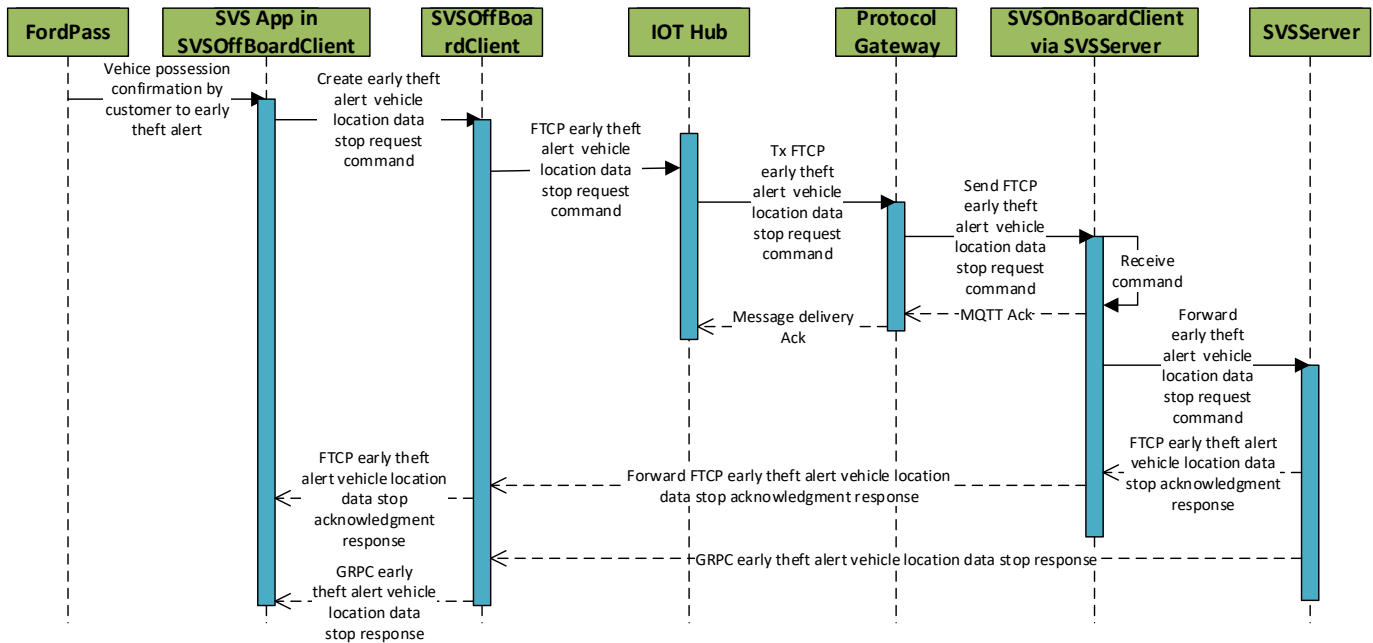
| | |
|-----------------------------|--|
| Actors | Call Center, SVSOffBoardClient, SVSServer |
| Pre-conditions | Customer feature subscription Ignition ON/OFF SVS Theft Mode activated Main Battery/BUB Engaged |
| Scenario Description | For GRPC communication failure or during no cellular coverage, All alerts shall be stored. |
| Post-conditions | Once GRPC communication re-established or cellular service has been restored all the stored alerts shall be transmitted to SVSOffBoardClient |
| List of Exception Use Cases | |
| Interfaces | API, GRPC |

4.8.2.30 SVS-UC-REQ-320188/C-SVS DTC Notifications

| | |
|-----------------------------------|--|
| Actors | SVSServer, SVSOffBoardClient, SVS App, Mobile App |
| Pre-Conditions | SVS Subscription Customer notification is enabled Ignition "OFF" to "ON" transition |
| Scenario Description | If any SVS DTCs are triggered, SVSServer shall send alert to SVSOffBoardClient |
| Post-conditions | A GRPC message shall be sent to SVSOffBoardClient and forwarded to SVS App and SVS App shall notify Mobile App so that alert is shared with customer that SVS system may not be functioning as designed. |
| List of Exception Use Case Titles | |
| Interfaces | GRPC |

4.8.3 White Box View**4.8.3.1 Sequence Diagrams****4.8.3.1.1 SD-REQ-329376/C-FTCP Data Comm. from SVSOffBoardClient to SVSServer****Sequence Diagram**

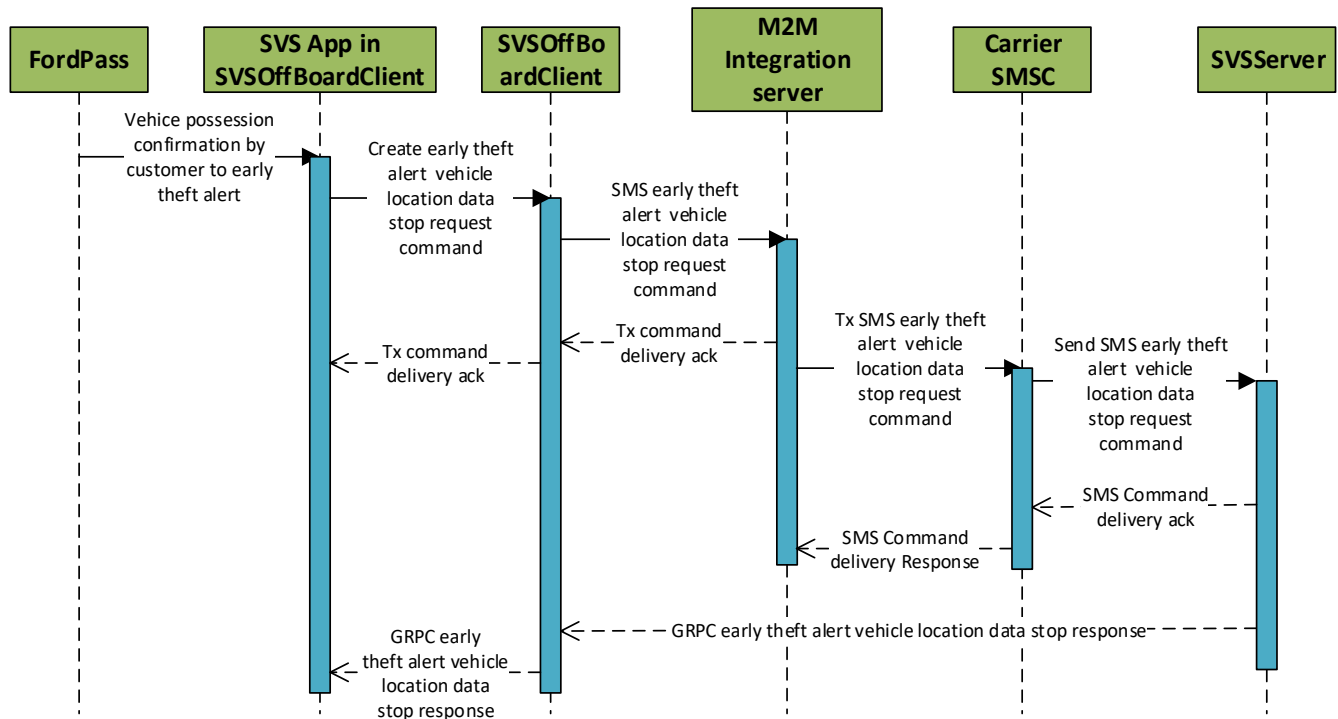
FTCP early theft alert vehicle location data stop request and acknowledgment from SVSServer via SVSONBoardClient and GRPC early theft alert vehicle location data stop response from SVSServer to SVSOffBoardClient.



4.8.3.1.2 SD-REQ-329377/C-Type4 SMS Data Comm. from SVSOffBoardClient to SVSServer

Sequence Diagram

SMS/GRPC early theft alert vehicle location data stop request/response alert between SVSOffBoardClient and SVSServer.





5 Appendix: Reference Documents

| Reference # | Document Title |
|-------------|--|
| 1 | Customer Connectivity Settings SPSS |
| 2 | Ford Telematics Communication Protocol Specification FNV2 6.x.x |
| 3 | Telematics Data Collection SPSS |
| 4 | FNV2 HLD Documents |
| 5 | GTDS Project Specification |
| 6 | CR62 (Alarm notifications for FP) |
| 7 | Detection algorithms and sensitivity refer to the LIS2DW12 Specification under W12 Accelerometer |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |