

**Research & Vehicle Technology**

**“Infotainment Systems Product Development”**

**Feature: FNV2 – FCI Protocol**

**Subsystem Part Specific Specification (SPSS)**

Version 1.1

**UNCONTROLLED COPY IF PRINTED**

**Version Date: August 17, 2018**

**FORD CONFIDENTIALF**

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Version** | **Notes** | |
| **September 29, 2017** | **1.0** | **Initial Release** |  |
|  |  |  |  |
| **August 17, 2018** | **1.1** | **Updated Release** |  |
|  | FCI-DOC-457323/B-Physical Mapping of Classes | | MBORREL4: Updated table |
|  | STR-356633/B-Functional Definition | | MBORREL4: Added REQ-275294, REQ-323053, REQ-323054 |
|  | STR-568432/A-FTCP Message Interface | | MBORREL4: New section/STR |
|  | FCI-FUN-REQ-275164/B-FTCP Command | | MBORREL4: Updated req. title and content (editorial change only) |
|  | FCI-FUR-REQ-275165/B-Command Dest. Topic | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275713/B-Transaction ID | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275714/B-Command ID | | MBORREL4: Updated content, added AlertResponse |
|  | FCI-FUR-REQ-275715/B-Payload | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275821/B-SoA Message - FTCP Command | | MBORREL4: Updated req. title and content (editorial change only) |
|  | FCI-FUN-REQ-275166/B-FTCP CommandResponse | | MBORREL4: Updated req. title (editorial change only) |
|  | FCI-FUR-REQ-275167/B-CommandResponse Dest. Topic | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275816/B-Transaction ID | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275805/B-Payload | | MBORREL4: Updated content, new payload |
|  | FCI-FUR-REQ-275716/B-Correlation ID | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275822/B-SoA Message - FTCP CommandResponse | | MBORREL4: Updated req. title and content, new payload |
|  | FCI-FUN-REQ-275294/B-FTCP Alert | | MBORREL4: Updated req. title (editorial change only) |
|  | FCI-FUR-REQ-275295/B-Alert Dest. Topic | | MBORREL4: Updated content (editorial changes only) |
|  | FCI-FUR-REQ-275817/B-Transaction ID | | MBORREL4: Updated content (editorial changes only) |
|  | FCI-FUR-REQ-275806/B-Payload | | MBORREL4: Updated table, new content |
|  | FCI-FUR-REQ-275820/B-Correlation ID | | MBORREL4: Updated content (editorial changes only) |
|  | FCI-FUR-REQ-275823/B-SoA Message - FTCP Alert | | MBORREL4: Updated req. title and table, new content |
|  | FCI-FUN-REQ-323048/A-FTCP AlertResponse | | MBORREL4: New function |
|  | STR-568426/A-Requirements | | MBORREL4: New section/STR |
|  | FCI-FUR-REQ-323049/A-AlertResponse Dest. Topic | | MBORREL4: New req. |
|  | STR-568427/A-SoA Message Header | | MBORREL4: New req. |
|  | FCI-FUR-REQ-323050/A-Transaction ID | | MBORREL4: New req. |
|  | FCI-FUR-REQ-275714/B-Command ID | | MBORREL4: Updated content, added AlertResponse |
|  | STR-568428/A-SoA Message Payload | | MBORREL4: New section/STR |
|  | FCI-FUR-REQ-323051/A-Payload | | MBORREL4: New req. |
|  | STR-568429/A-SoA Message Construct | | MBORREL4: New section/STR |
|  | FCI-FUR-REQ-323052/A-SoA Message - FTCP AlertResponse | | MBORREL4: New req. |
|  | FCI-FUN-REQ-275296/B-FTCP Query | | MBORREL4: Updated req. title (editorial change only) |
|  | FCI-FUR-REQ-275297/B-Query Dest. Topic | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275818/B-Transaction ID | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275809/B-Payload | | MBORREL4: Updated content, new content |
|  | FCI-FUR-REQ-275824/B-SoA Message - FTCP Query | | MBORREL4: Updated req. title and content, new content |
|  | FCI-FUN-REQ-275298/B-FTCP QueryResponse | | MBORREL4: Updated req. title (editorial change only) |
|  | FCI-FUR-REQ-275299/B-QueryResponse Dest. Topic | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275819/B-Transaction ID | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275714/B-Command ID | | MBORREL4: Updated content, added AlertResponse |
|  | FCI-FUR-REQ-275813/B-Payload | | MBORREL4: Updated content (editorial change only) |
|  | FCI-FUR-REQ-275825/B-SoA Message - FTCP QueryResponse | | MBORREL4: Updated req. title and content (editorial change only) |
|  | FCI-FUN-REQ-323053/A-Broadcasting Interface | | MBORREL4: New function |
|  | 568441/A-Requirements | | MBORREL4: New section/STR |
|  | FCI-FUR-REQ-323055/A-Broadcast Dest. Topic | | MBORREL4: New req. |
|  | FCI-FUR-REQ-323057/A-Broadcasted Data | | MBORREL4: New req. |
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|  | FCI-FUN-REQ-323054/A-FCI Service Interface | | MBORREL4: New function |
|  | 568442/A-Requirements | | MBORREL4: New section/STR |
|  | FCI-FUR-REQ-323056/A-GenService Dest. Topic | | MBORREL4: New req. |
|  | FCI-FUR-REQ-323147/A-Generic Services | | MBORREL4: New req. |
|  | FCI-FUR-REQ-323238/A-Generic Service Message | | MBORREL4: New req. |
|  | STR-356694/B-Appendix: Reference Documents | | MBORREL4: Updated references |

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# Overview

In the FNV2 architecture, the responsibility of sending and receiving FTCP communication has moved from the TCU to the ECG. The ECG will contain an application, the Ford-Cloud Interface (FCI), that will manage all incoming and outgoing FTCP commands, queries, responses, and alerts. In doing so, all Ethernet capable modules (and other applications on the ECG itself) wishing to request some form of FTCP communication must do so utilizing the SoA messaging defined in this FCI-Protocol SPSS.

The below sections will detail the required fields/headers that must be included when requesting each type of FTCP communication, as well as the payload. The FCI will use this information when communicating between the vehicle and cloud, although this SPSS focuses on the vehicle to FCI interface only.

# Architectural Design

## FCI-CLD-REQ-275218/A-FCI Server

The FCI Server is responsible for the tasks listed below:

* Receive and Transmit SoA message requests to/from the FCI OnBoardClient.
* Pack, Encrypt, and Transmit FTCP command responses, queries, and alerts to the FCI OffBoardClient.
* Receive, Decrypt, and Unpack FTCP commands and responses from FCI OffBoardClient

Please review the implementation guide/block diagram to locate the FCI Server class

## FCI-CLD-REQ-275219/A-FCI OnBoardClient

The FCI OnBoardClient is responsible for the tasks listed below:

* Transmit and Receive SoA message requests to/from the FCI Server as required (by any Feature for which they must provide some functionality).

Please review the implementation guide/block diagram to locate the FCI OnBoardClient class

## FCI-CLD-REQ-275220/A-FCI OffBoardClient

The FCI OffBoardClient is responsible for the tasks listed below:

* Transmit and Receive FTCP messages to/from the FCI Server as required (by any Feature for which they must provide some functionality).

Please review the implementation guide/block diagram to locate the FCI OffBoardClient class

## Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the FNV2-FCI Protocol can be mapped into physical modules/entities. This mapping is an example only and does not necessarily carryover to other carlines or vehicle architectures.

|  |  |
| --- | --- |
| **Logical Class** | **Physical Allocation** |
| FCIServer | ECG FCI |
| FCIOnBoardClient | TCU, ECG App, SYNC App |
| FCIOffBoardClient | SDN |

# Functional Definition

## FTCP Message Interface

### FCI-FUN-REQ-275164/B-FTCP Command

#### Requirements

##### FCI-FUR-REQ-275165/B-Command Dest. Topic

Any FCIOnBoardClient that needs to receive an FTCP Command must first subscribe to the Command Destination Topic. This topic shall be used in the Service ID defined in REQ-275712.

|  |  |
| --- | --- |
| **Command Dest. Topic** | SERVICES/REQUEST/FNV/FTCP/COMMAND/<svc-id> |

##### SoA Message Header

###### FCI-FUR-REQ-275712/A-Service ID

The Service ID is predefined for each type of FTCP communication. This is the destination Topic for the SoA message being sent/received. The sender of the SoA Message (FCIServer or FCIOnBoardClient) shall set the Service ID to the applicable FTCP Topic, as defined in this SPSS.

###### FCI-FUR-REQ-275713/B-Transaction ID

The Transaction ID is a string value that the FCIServer or FCIOnBoardClient uses/sets to track their FTCP communication requests and responses.

For an FTCP Command:

* The FCIServer shall set the Transaction ID to a unique string. This string shall consist of “FCI\_#” where # denotes a rolling counter (ex. FCI\_1)

###### FCI-FUR-REQ-275714/B-Command ID

The Command ID is an FTCP message name defined in the FTCP protofiles that indicates the FTCP Command, FTCP QueryResponse, or FTCP AlertResponse type. The string must first be registered to the Service Manager (ex. “LockCommand”, “UnlockCommand”, “onlinetraffic”).

##### SoA Message Payload

###### FCI-FUR-REQ-275715/B-Payload

The SoA Message Payload is the actual FTCP protofile content itself. This is the original/raw FTCP information sent between the FCIOffBoardClient and FCIOnBoardClient, via the FCIServer.

In the case of an FTCP Command, the FCIServer shall set the Payload to the FTCP Command Message.

##### SoA Message Construct

###### FCI-FUR-REQ-275821/B-SoA Message - FTCP Command

|  |  |  |
| --- | --- | --- |
| FTCP Command – SoA Message | | |
| Value Type | Parameter | Description |
| Header | | |
| string | Service ID | SERVICES/REQUEST/FNV/FTCP/COMMAND/<svc-id> |
| string | Transaction ID | “FCI\_#” (ex. FCI\_1) |
| string | Command ID | FTCP Command name (ex. “LockCommand”) |
| Payload | | |
| string | Payload | FTCP protofile’s {FTCP Command Message} |

### FCI-FUN-REQ-275166/B-FTCP CommandResponse

#### Requirements

##### FCI-FUR-REQ-275167/B-CommandResponse Dest. Topic

Any FCIOnBoardClient that needs to transmit an FTCP CommandResponse must publish a SoA message to the CommandResponse Destination Topic. This topic shall be used in the Service ID defined in REQ-275712.

|  |  |
| --- | --- |
| **CommandResponse Dest. Topic** | SERVICES/REQUEST/FNV/FCI/FTCP/RESPONSE |

##### SoA Message Header

###### FCI-FUR-REQ-275712/A-Service ID

The Service ID is predefined for each type of FTCP communication. This is the destination Topic for the SoA message being sent/received. The sender of the SoA Message (FCIServer or FCIOnBoardClient) shall set the Service ID to the applicable FTCP Topic, as defined in this SPSS.

###### FCI-FUR-REQ-275816/B-Transaction ID

The Transaction ID is a string value that the FCIServer or FCIOnBoardClient uses/sets to track their FTCP communication requests and responses.

For an FTCP CommandResponse:

* The FCIOnBoardClient shall set the Transaction ID to the string value of the Transaction ID received in the originating FTCP Command.

##### SoA Message Payload

###### FCI-FUR-REQ-275805/B-Payload

The SoA Message Payload is the actual FTCP protofile content itself. This is the original/raw FTCP information sent between the FCIOffBoardClient and FCIOnBoardClient, via the FCIServer.

In the case of an FTCP CommandResponse, the FCIOnBoardClient shall structure the Payload into an FciCommandResponse message with the following parameters:

|  |  |  |
| --- | --- | --- |
| message FciCommandResponse | | |
| Value Type | Parameter | Description |
| optional bytes | ftcpCommandResponse | This is the Payload set to the FTCP Command Message |
| optional Delivery  Confirmation | deliveryConfirmation | This is the Delivery Confirmation message |
| |  |  |  | | --- | --- | --- | | message deliveryConfirmation | | | | Value Type | Parameter | Description | | optional bool | sentConfirmation | This is a request for the FCIServer to send a delivery confirmation message after the FTCP CommandResponse is delivered to the FCIOffBoardClient | | optional string | deliveryConfirmation  Endpoint | This is the Destination Topic the FCIOnBoardClient is subscribed to and requesting the delivery confirmation message be published to from the FCIServer | | |

###### FCI-FUR-REQ-275716/B-Correlation ID

The Correlation ID is a uint32 value that the FCIOnBoardClient uses/sets to pass the cloudMessageID (from FTCP protofile) to the FCIOffBoardClient.

For an FTCP CommandResponse:

* The FCIOnBoardClient shall set the Correlation ID to the uint32 value of the cloudMessageID received in the originating FTCP Command.

##### SoA Message Construct

###### FCI-FUR-REQ-275822/B-SoA Message - FTCP CommandResponse

|  |  |  |
| --- | --- | --- |
| FTCP CommandResponse – SoA Message | | |
| Value Type | Parameter | Description |
| Header | | |
| string | Service ID | SERVICES/REQUEST/FNV/FCI/FTCP/RESPONSE |
| string | Transaction ID | Trans. ID from original FTCP Command (ex. FCI\_1) |
| Payload | | |
| bytes | ftcpCommandResponse | FTCP protofile’s {FTCP CommandResponse Message} (contains Correlation ID) |
| Delivery  Confirmation | deliveryConfirmation | This is the Delivery Confirmation message |
| |  |  |  | | --- | --- | --- | | message deliveryConfirmation | | | | Value Type | Parameter | Description | | bool | sentConfirmation | True/False | | string | deliveryConfirmation  Endpoint | Destination Topic for delivery confirmation message | | |

### FCI-FUN-REQ-275294/B-FTCP Alert

#### Requirements

##### FCI-FUR-REQ-275295/B-Alert Dest. Topic

Any FCIOnBoardClient that needs to transmit an FTCP Alert must publish a SoA message to the Alert Destination Topic. This topic shall be used in the Service ID defined in REQ-275712.

|  |  |
| --- | --- |
| **Alert Dest. Topic** | SERVICES/REQUEST/FNV/FCI/FTCP/ALERT |

##### SoA Message Header

###### FCI-FUR-REQ-275712/A-Service ID

The Service ID is predefined for each type of FTCP communication. This is the destination Topic for the SoA message being sent/received. The sender of the SoA Message (FCIServer or FCIOnBoardClient) shall set the Service ID to the applicable FTCP Topic, as defined in this SPSS.

###### FCI-FUR-REQ-275817/B-Transaction ID

The Transaction ID is a string value that the FCIServer or FCIOnBoardClient uses/sets to track their FTCP communication requests and responses.

For an FTCP Alert:

* *Correlated Alert* - The FCIOnBoardClient shall set the Transaction ID to the string value of the Transaction ID received in the originating FTCP Command.
* *Non-Correlated Alert* - The FCIOnBoardClient shall set the Transaction ID to a unique string. This string shall consist of “*featureName*\_ALERT\_#” where # denotes a rolling counter (ex. CONTROL-MY-CAR\_ALERT\_1)

##### SoA Message Payload

###### FCI-FUR-REQ-275806/B-Payload

The SoA Message Payload is the actual FTCP protofile content itself. This is the original/raw FTCP information sent between the FCIOffBoardClient and FCIOnBoardClient, via the FCIServer.

In the case of an FTCP Alert, the FCIOnBoardClient shall structure the Payload into an FciAlert message with the following parameters:

|  |  |  |
| --- | --- | --- |
| message FciAlert | | |
| Value Type | Parameter | Description |
| optional bytes | ftcpAlert | This is the Payload set to the FTCP Alert Message |
| optional string | alertResponseEndpoint | This parameter can be set with the topic string the component subscribes to, to receive a SOA message containing the corresponding ALERT\_RESPONSE. FCIServer will store this endpoint, topic, to publish ALERT\_RESPONSE. |
| optional int32 | drxConfig | This is a configurable value for DRX Mode |
| optional uint32 | qos | This is the Quality of Service (Qos) value for sending an alert message |
| optional Delivery  Confirmation | deliveryConfirmation | This is the Delivery Confirmation message |
| |  |  |  | | --- | --- | --- | | message deliveryConfirmation | | | | Value Type | Parameter | Description | | optional bool | sentConfirmation | This is a request for the FCIServer to send a delivery confirmation message after the FTCP Alert is delivered to the FCIOffBoardClient | | optional string | deliveryConfirmation  Endpoint | This is the Destination Topic the FCIOnBoardClient is subscribed to and requesting the delivery confirmation message be published to from the FCIServer | | |

###### FCI-FUR-REQ-275820/B-Correlation ID

The Correlation ID is a uint32 value that the FCIOnBoardClient uses/sets to pass the cloudMessageID (from FTCP protofile) to the FCIOffBoardClient.

For an FTCP Alert:

* *Correlated Alert* - The FCIOnBoardClient shall set the Correlation ID to the uint32 value of the cloudMessageID received in the originating FTCP Command.
* *Non-Correlated Alert* - The FCIOnBoardClient shall not set a Correlation ID (not needed).

##### SoA Message Construct

###### FCI-FUR-REQ-275823/B-SoA Message - FTCP Alert

|  |  |  |
| --- | --- | --- |
| FTCP Alert – SoA Message | | |
| Value Type | Parameter | Description |
| Header | | |
| string | Service ID | SERVICES/REQUEST/FNV/FCI/FTCP/ALERT |
| string | Transaction ID | ***If correlated*** – Trans. ID from original FTCP Command. (ex. FCI\_1)  ***If not correlated*** – “featureName\_ALERT\_#” (ex. CONTROL-MY-CAR\_ALERT\_1) |
| Payload (message FciAlert) | | |
| bytes | ftcpAlert | FTCP protofile’s {FTCP Alert Message}  (contains Correlation ID) |
| string | alertResponseEndpoint | Alert Topic for alert response message |
| int32 | drxConfig | 0x00 - 0x07 |
| uint32 | qos | 0x0 - 0x2 |
| Delivery  Confirmation | deliveryConfirmation | Delivery Confirmation message |
| |  |  |  | | --- | --- | --- | | message deliveryConfirmation | | | | Value Type | Parameter | Description | | bool | sentConfirmation | True/False | | string | deliveryConfirmation  Endpoint | Destination Topic for delivery confirmation message | | |

### FCI-FUN-REQ-323048/A-FTCP AlertResponse

#### Requirements

##### FCI-FUR-REQ-323049/A-AlertResponse Dest. Topic

Any FCIOnBoardClient that needs to receive an FTCP AlertResponse must first subscribe to the AlertResponse Destination Topic. This topic shall be used in the Service ID defined in REQ-275712.

|  |  |
| --- | --- |
| **AlertResponse Dest. Topic** | SERVICES/REQUEST/FNV/FTCP/ALERT\_RESPONSE/<svc-id> |

##### SoA Message Header

###### FCI-FUR-REQ-275712/A-Service ID

The Service ID is predefined for each type of FTCP communication. This is the destination Topic for the SoA message being sent/received. The sender of the SoA Message (FCIServer or FCIOnBoardClient) shall set the Service ID to the applicable FTCP Topic, as defined in this SPSS.

###### FCI-FUR-REQ-323050/A-Transaction ID

The Transaction ID is a string value that the FCIServer or FCIOnBoardClient uses/sets to track their FTCP communication requests and responses.

For an FTCP AlertResponse:

* The FCIServer shall set the Transaction ID to the string value of the Transaction ID received in the originating FTCP Alert.

###### FCI-FUR-REQ-275714/B-Command ID

The Command ID is an FTCP message name defined in the FTCP protofiles that indicates the FTCP Command, FTCP QueryResponse, or FTCP AlertResponse type. The string must first be registered to the Service Manager (ex. “LockCommand”, “UnlockCommand”, “onlinetraffic”).

##### SoA Message Payload

###### FCI-FUR-REQ-323051/A-Payload

The SoA Message Payload is the actual FTCP protofile content itself. This is the original/raw FTCP information sent between the FCIOffBoardClient and FCIOnBoardClient, via the FCIServer.

In the case of an FTCP AlertResponse, the FCIOffBoardClient shall set the Payload to the FTCP AlertResponse Message.

##### SoA Message Construct

###### FCI-FUR-REQ-323052/A-SoA Message - FTCP AlertResponse

|  |  |  |
| --- | --- | --- |
| FTCP AlertResponse – SoA Message | | |
| Value Type | Parameter | Description |
| Header | | |
| string | Service ID | SERVICES/REQUEST/FNV/FTCP/ ALERT\_RESPONSE/<svc-id> |
| string | Transaction ID | Trans. ID from original FTCP Alert |
| string | Command ID | FTCP AlertResponse type (ex. “ECGProvisioningAlertResponse”) |
| Payload | | |
| string | Payload | FTCP protofile’s {FTCP AlertResponse Message} |

### FCI-FUN-REQ-275296/B-FTCP Query

#### Requirements

##### FCI-FUR-REQ-275297/B-Query Dest. Topic

Any FCIOnBoardClient that needs to transmit an FTCP Query must publish a SoA message to the Query Destination Topic. This topic shall be used in the Service ID defined in REQ-275712.

|  |  |
| --- | --- |
| **Query Dest. Topic** | SERVICES/REQUEST/FNV/FCI/FTCP/QUERY |

##### SoA Message Header

###### FCI-FUR-REQ-275712/A-Service ID

The Service ID is predefined for each type of FTCP communication. This is the destination Topic for the SoA message being sent/received. The sender of the SoA Message (FCIServer or FCIOnBoardClient) shall set the Service ID to the applicable FTCP Topic, as defined in this SPSS.

###### FCI-FUR-REQ-275818/B-Transaction ID

The Transaction ID is a string value that the FCIServer or FCIOnBoardClient uses/sets to track their FTCP communication requests and responses.

For an FTCP Query:

* The FCIOnBoardClient shall set the Transaction ID to a unique string. This string shall consist of “*featureName*\_QUERY\_#” where # denotes a rolling counter (ex. CONTROL-MY-CAR\_QUERY\_1)

##### SoA Message Payload

###### FCI-FUR-REQ-275809/B-Payload

The SoA Message Payload is the actual FTCP protofile content itself. This is the original/raw FTCP information sent between the FCIOffBoardClient and FCIOnBoardClient, via the FCIServer.

In the case of an FTCP Query, the FCIOnBoardClient shall structure the Payload into an FciQuery message with the following parameters:

|  |  |  |
| --- | --- | --- |
| message FciQuery | | |
| Value Type | Parameter | Description |
| optional bytes | ftcpQuery | This is the Payload set to the FTCP Query Message |
| optional string | queryResponseEndpoint | This is the Destination Topic the FCIOnBoardClient is subscribed to and requesting the QueryResponse be published to from the FCIOffBoardClient. The FCIOnBoardClient shall set this parameter to the QueryResponse Dest. Topic defined in REQ-275299 |
| optional Delivery  Confirmation | deliveryConfirmation | Delivery confirmation message |
| |  |  |  | | --- | --- | --- | | message deliveryConfirmation | | | | Value Type | Parameter | Description | | optional bool | sentConfirmation | This is a request for the FCIServer to send a delivery confirmation message after the FTCP Query is delivered to the FCIOffBoardClient | | optional string | deliveryConfirmation  Endpoint | This is the Destination Topic the FCIOnBoardClient is subscribed to and requesting the delivery confirmation message be published to from the FCIServer | | |

##### SoA Message Construct

###### FCI-FUR-REQ-275824/B-SoA Message - FTCP Query

|  |  |  |
| --- | --- | --- |
| FTCP Query – SoA Message | | |
| Value Type | Parameter | Description |
| Header | | |
| string | Service ID | SERVICES/REQUEST/FNV/FCI/FTCP/QUERY |
| string | Transaction ID | “featureName\_ALERT\_#”  (ex. CONTROL-MY-CAR\_ALERT\_1) |
| Payload (message FciQuery) | | |
| bytes | ftcpQuery | FTCP protofile’s {FTCP Query Message} |
| string | queryResponseEndpoint | SERVICES/REQUEST/FNV/FTCP/ QUERY\_RESPONSE/<svc-id> |
| Delivery  Confirmation | deliveryConfirmation | Delivery confirmation message |
| |  |  |  | | --- | --- | --- | | message deliveryConfirmation | | | | Value Type | Parameter | Description | | bool | sentConfirmation | True/False | | string | deliveryConfirmation  Endpoint | Destination Topic for delivery confirmation message | | |

### FCI-FUN-REQ-275298/B-FTCP QueryResponse

#### Requirements

##### FCI-FUR-REQ-275299/B-QueryResponse Dest. Topic

Any FCIOnBoardClient that needs to receive an FTCP QueryResponse must first subscribe to the QueryResponse Destination Topic. This topic shall be used in the Service ID defined in REQ-275712.

|  |  |
| --- | --- |
| **QueryResponse Dest. Topic** | SERVICES/REQUEST/FNV/FTCP/QUERY\_RESPONSE/<svc-id> |

##### SoA Message Header

###### FCI-FUR-REQ-275712/A-Service ID

The Service ID is predefined for each type of FTCP communication. This is the destination Topic for the SoA message being sent/received. The sender of the SoA Message (FCIServer or FCIOnBoardClient) shall set the Service ID to the applicable FTCP Topic, as defined in this SPSS.

###### FCI-FUR-REQ-275819/B-Transaction ID

The Transaction ID is a string value that the FCIServer or FCIOnBoardClient uses/sets to track their FTCP communication requests and responses.

For an FTCP QueryResponse:

* The FCIServer shall set the Transaction ID to the string value of the Transaction ID received in the originating FTCP Query.

###### FCI-FUR-REQ-275714/B-Command ID

The Command ID is an FTCP message name defined in the FTCP protofiles that indicates the FTCP Command, FTCP QueryResponse, or FTCP AlertResponse type. The string must first be registered to the Service Manager (ex. “LockCommand”, “UnlockCommand”, “onlinetraffic”).

##### SoA Message Payload

###### FCI-FUR-REQ-275813/B-Payload

The SoA Message Payload is the actual FTCP protofile content itself. This is the original/raw FTCP information sent between the FCIOffBoardClient and FCIOnBoardClient, via the FCIServer.

In the case of an FTCP QueryResponse, the FCIOffBoardClient shall set the Payload to the FTCP QueryResponse Message.

##### SoA Message Construct

###### FCI-FUR-REQ-275825/B-SoA Message - FTCP QueryResponse

|  |  |  |
| --- | --- | --- |
| FTCP QueryResponse – SoA Message | | |
| Value Type | Parameter | Description |
| Header | | |
| string | Service ID | SERVICES/REQUEST/FNV/FTCP/ QUERY\_RESPONSE/<svc-id> |
| string | Transaction ID | Trans. ID from original FTCP Query |
| string | Command ID | FTCP QueryResponse type (ex. “AppAccessTokenQueryResponse”) |
| Payload | | |
| string | Payload | FTCP protofile’s {FTCP QueryResponse Message} |

## FCI-FUN-REQ-323053/A-Broadcasting Interface

### Requirements

#### FCI-FUR-REQ-323055/A-Broadcast Dest. Topic

Any FCIOnBoardClient that needs to receive FCI Broadcast data must first subscribe to the Broadcast Destination Topic.

|  |  |
| --- | --- |
| **Broadcast** **Dest. Topic** | SERVICES/DATA/FNV/FCI/BROADCAST |

#### FCI-FUR-REQ-323057/A-Broadcasted Data

FCIServer shall broadcast the following information:

1. FCIOffBoardClient Connection Status
   1. The FCIServer shall broadcast the FCIOffBoardClient Connection Status Message to all subscribed FCIOnBoardClients upon connection/disconnection to/from the FCIOffBoardClient
   2. The FCIOffBoardClient Connection Status Message shall include the connection status and the corresponding interface (Cellular, WiFi, SDL, etc.)
2. Power State
   1. The FCIServer shall broadcast the Power State Message upon change
   2. The Power State Message includes the current power state info (such as full power, lpr, sleep mode, etc.)
3. SMS Messages
   1. The FCIServer shall broadcast SMS type 2 or 3 messages upon reception
   2. In the case of SMS Type 2, the Home URL, Ford APN, or both shall be included

#### FCI-FUR-REQ-323237/A-Broadcast Message

|  |  |  |
| --- | --- | --- |
| Broadcast Message | | |
| Value Type | Parameter | Description |
| optional uint32 | timeStamp | Timestamp for data in UTC in seconds |
| optional  BroadcastType | boadcastType | Broadcast Messge Type |
| |  |  |  | | --- | --- | --- | | boadcastType Message | | | | Value Type | Parameter | Description | | enum | BroadcastType | SDN\_CONNECT\_STATUS = 0;  POWER\_STATE = 1;  SMS\_MESSAGE = 2; | | |
| optional  SdnConnStatus  Message | sdnConnStatusMsg | Sdn Connection Status Message |
| |  |  |  | | --- | --- | --- | | sdnConnStatusMsg Message | | | | Value Type | Parameter | Description | | enum | ConnInterfaceType | CONN\_IFACE\_UNKNOWN = 0;  CONN\_TCU\_CELL = 1;  CONN\_TCU\_WIFI = 2;  CONN\_SYNC\_WIFI = 3;  CONN\_SYNC\_SDL = 4; | | enum | SdnConnStatus | SDN\_CONNECTED = 0;  SDN\_DISCONNECTED = 1; | | |
| optional  PowerState  Message | powerStateMsg | Power State Message |
| |  |  |  | | --- | --- | --- | | powerStateMsg Message | | | | Value Type | Parameter | Description | | enum | PowerStateType | FPO = 1; // Full Power Ign ON  FPC = 2; // Full Power Ign OFF, Charging ON  FPS = 3; // Full Power Ign OFF, Charging OFF  LPR = 4; // Low Power Registered  DWU = 5; // DRX Wake Up  HSLP = 6; // High-Scan Sleep  LSLP = 7; // Low-Scan Sleep  DSLP = 8; // Deep Sleep | | |
| optional  SmsMessage | smsMsg | SMS Message |
| |  |  |  | | --- | --- | --- | | smsMsg Message | | | | Value Type | Parameter | Description | | enum | MessageType | TYPE\_2 = 0;  TYPE\_3 = 1; | | enum | PayloadType | HURL = 0;  FAPN = 1;  HURL\_FAPN = 2; | | string | sdnUrl | SDN URL | | string | fordApn | Ford APN | | |

## FCI-FUN-REQ-323054/A-FCI Service Interface

### Requirements

#### FCI-FUR-REQ-323056/A-GenService Dest. Topic

Any FCIOnBoardClient that needs to publish an FCI Service request must do so via the GenService Destination Topic.

|  |  |
| --- | --- |
| **GenService Dest. Topic** | SERVICES/REQUEST/FNV/FCI/GENSERVICE |

#### FCI-FUR-REQ-323147/A-Generic Services

FCIServer shall provide the following services:

1. FCIOffBoardClient Connect/Disconnect
   1. This service allows an FCIOnBoardClient to send connect request message to the FCIServer with a required interface (cellular, wifi or SDL) type. The FCIServer shall then interface with the WIR feature to set up the corresponding interface connection, and use it to connect to the FCIOffBoardClient
2. FCIOnBoardClient SMS Message
   1. This service allows the FCIOnBoardClient to send Type 1, Type 2 and Type 3 SMS messages to the FCIServer, which the FCIServer handles accordingly

#### FCI-FUR-REQ-323238/A-Generic Service Message

|  |  |  |
| --- | --- | --- |
| FciGenericService Message | | |
| Value Type | Parameter | Description |
| optional  ServiceType | serviceType | Service type: FCIOffBoardClient Connect/Disconnect or FCIOnBoardClient SMS Message |
| |  |  |  | | --- | --- | --- | | serviceType Message | | | | Value Type | Parameter | Description | | enum | ServiceType | SDN\_CONNECT = 0;  TCU\_SMS = 1; | | |
| optional bool | rpcResponseRequired | Request FCI to send a response message |
| optional  SdnConnStatus  Message | sdnConnMsg | Sdn Connection Status Message |
| |  |  |  | | --- | --- | --- | | sdnConnMsg Message | | | | Value Type | Parameter | Description | | enum | SdnConnectType | SDN\_CONNECT\_REQUEST = 0;  SDN\_DISCONNECT\_REQUEST = 1; | | enum | SdnInterfaceType | UNKNOWN = 0;  TCU\_CELL = 1;  TCU\_WIFI = 2;  SYNC\_WIFI = 3;  SYNC\_SDL = 4; | | string | sdnUrl | SDN URL: FCI will connect to over the required interface | | string | ssid | Wifi Profile SSID | | string | password | Wifi Profile Password | | |
| optional  TcuSmsMessage | tcuSmsMsg | TCU SMS Message |
| |  |  |  | | --- | --- | --- | | tcuSmsMsg Message | | | | Value Type | Parameter | Description | | enum | MessageType | MT\_FORD\_TYPE\_1 = 1;  MT\_FORD\_TYPE\_2 = 2;  MT\_FORD\_TYPE\_3 = 3; | | string | srcAddr | Source address of the received SMS message | | string | payload | SMS message payload | | |

# Appendix: Reference Documents

|  |  |
| --- | --- |
| Reference # | Document Title |
| 1 | **FCI Cloud Interface Wiki:**  <https://www.eesewiki.ford.com/display/ecg/FNV2-Ford+Cloud+Interface+%3A+Topics+and+Interfaces> |
| 2 | **Service Manager Wiki:**  <https://www.eesewiki.ford.com/pages/viewpage.action?pageId=24147944> |
| 3 | [**FCI API**](https://www.eesewiki.ford.com/display/ecg/FCI+API) **Wiki:**  <https://www.eesewiki.ford.com/display/ecg/FCI+API> |
| 4 | [**FNV2-Ford Cloud Interface - FCI API (libfciclient)**](https://www.eesewiki.ford.com/pages/viewpage.action?pageId=33134453) **Wiki:**  <https://www.eesewiki.ford.com/pages/viewpage.action?pageId=33134453> |
| 5 | **FTCP Protofiles:**  <https://github.ford.com/FNV/idl/tree/master/ftcp> |
| 6 | **FCI FTCP Protofiles:** https://github.ford.com/FNV/idl/blob/master/fci/fci\_ftcp\_interface.proto |
| 7 | **FCI Broadcast Protofiles:** https://github.ford.com/FNV/idl/blob/master/fci/fci\_broadcast.proto |
| 8 | **FCI Service Protofiles:** https://github.ford.com/FNV/idl/blob/master/fci/fci\_service.proto |