Ford Motor Company

Product Development

FNV2-Ford Cloud Interface
Topics and Interfaces

Version 1.25

Version Date: June 21st, 2019

UNCONTROLLED COPY IF PRINTED

FORD CONFIDENTIAL

Table of Contents

1. Interfaces for FTCP Message

1.1. FTCP COMMAND

- TOPIC : "**SERVICES/REQUEST/FNV/FTCP/COMMAND/<svc-id>**" (recommended format)
  - A component that consumes a FTCP COMMAND must register the topic with its service id to Service Manager. The component must subscribe to the topic in order to receive the SOA message containing the FTCP COMMAND. Upon receiving a FTCP COMMAND message, FCI retrieves the destination, topic, for the command from Service Manager.
  Then FCI publishes a SOA message containing the FTCP COMMAND message to the registered topic.

- SOA Message Header
  - Service ID : FCI sets with the topic string described above.
  ex. "SERVICES/REQUEST/FNV/FTCP/COMMAND/CONTROLMYCAR"

  - Transaction ID : FCI sets with an unique string among FCI SOA messages. It consists of "FCI_" + rolling counter.
  ex. "FCI_1"

  - Command ID : FCI sets with an unique string to identify COMMAND type. This string is a FTCP message name defined in FTCP protofiles and has to be registered to the Service Manager with the topic by the component that consumes the COMMAND.
  ex. "LockCommand", "UnlockCommand"

- SOA Message Payload
  - FCI sets the FTCP COMMAND message to SOA message payload.

- References
  - Service Manager Programmer's Guide
  - FTCP protos : see proto files in idl/ftcp

Ford	**Ford Motor Company**

1.2. FTCP COMMAND-RESPONSE

- TOPIC : "**SERVICES/REQUEST/FNV/FCI/FTCP/RESPONSE**"
  -FCI subscribes the tpoic noted above to receive SOA messages containing COMMAND_RESPONSE messages. One topic is used for all command-response from multiple components.
  Any component which needs to send COMMAND_RESPONSE must publish a SOA message containing COMMAND_RESPONSE message to this topic.

- SOA Message Header
  - Service ID : The component must set with the topic noted above, "SERVICES/REQUEST/FNV/FCI/FTCP/RESPONSE".

  - Transaction ID : The component must set with the Transaction ID received from the SOA message containing FTCP COMMAND message.

- SOA Message Payload
  - The component must set a FciCommandResponse message to SOA message payload. FciCommandResponse message contains FTCP CommandResponse message.

  message FciCommandResponse
  {
  // FTCP COMMAND_RESPONSE message
  optional bytes ftcpCommandResponse = 1;

  // Delivery confirmation message
  optional DeliveryConfirmation deliveryConfirmation = 2;
  }

- The correlationId in COMMAND-RESPONSE message
  - The component must set this field with the FTCP COMMAND message's cloudMessageId.

- References
  - See FCI Document: Who Sets FTCP message properties
  - FCI protos : idl/fci/fci_ftcp_interface.proto

1.3. FTCP ALERT

- TOPIC : "**SERVICES/REQUEST/FNV/FCI/FTCP/ALERT**"
  - FCI subscribes the tpoic noted above to receive SOA messages containing FTCP ALERT messages. One topic is used for all alerts from multiple components.
  Any component which wants to send FTCP ALERT must publish a SOA message containing FTCP ALERT message to this topic.

Ford Motor Company

- SOA Message Header
  - Service ID : The component must set with the topic noted above, "SERVICES/REQUEST/FNV/FCI/FTCP/ALERT".

  - Transaction ID
  1. correlated alert case: The component must set with the Transaction ID received from the SOA message containing FTCP COMMAND message.
  2. non-correlated alert case: The component must set with an unique string to identify among FTCP ALERT messages sent by the component. ex. "CONTROL-MY-CAR_ALERT_1"

  The Transaction ID is used to find the corresponding delivery confirmation message if the component set the sentConfirmation field in FciAlert described below to true. The component must maintain this Transaction ID locally and use in match FTCP ALERT and delivery confirmation message.

- SOA Message Payload
  - The component must set a FciAlert message to SOA message payload. FciAlert message contains FTCP ALERT message.

```
message FciAlert
{
// FTCP ALERT message
optional bytes ftcpAlert = 1;

// The component can be set this field with the topic string that the component subscribes
// to receive a SOA message containing the corresponding ALERT_RESPONSE.
// FCI will store this endpoint, topic, to publish ALERT_RESPONSE later.
optional string alertResponseEndpoint = 2;

// Configured value for DRX mode
optional int32 drxConfig = 3 [default = 0];

// Qos value for sending an alert message
optional uint32 qos = 4 [default = 1];

// Delivery confirmation message
optional DeliveryConfirmation deliveryConfirmation = 5;
}
```

- correlationId in FTCP ALERT message
  1. correlated alert case : The component must set this field with the FTCP COMMAND message's cloudMessageId.
  2. non-correlated alert case: no need to set

- References
  - See FCI Document: Who Sets FTCP message properties
  - FCI protos : idl/fci/fci_ftcp_interface.proto

Ford Motor Company	

1.4. FTCP ALERT_RESPONSE

- TOPIC, the alertResponseEndpoint : "**SERVICES/REQUEST/FNV/FTCP/ALERT_RESPONSE/<svc-id>**" (recommended format)
  - FCI stores the alertResponseEndpoint , topic, found in a FciAlert message containing FTCP ALERTmessage.
  The component must subscribe to the topic in order to receive the SOA message containing the FTCP ALERT_RESPONSE.
  Upon receiving the corresponding FTCP ALERT_RESPONSE, FCI publishes a SOA message containing the FTCP ALERT_RESPONSE to this topic.

- SOA Message Header
  - Service ID : FCI sets with the topic noted above.
  ex. "SERVICES/REQUEST/FNV/FTCP/ALERT_RESPONSE/CONTROLMYCAR"

  - Transaction ID : FCI sets with the Transaction ID received from the SOA message containing FTCP ALERT.

  - Command ID : FCI sets with the unique string to identify FTCP ALERT_RESPONSE message type. This string is a FTCP message name defined in FTCP protofiles.
  ex. "ECGProvisioningAlertResponse"

- SOA Message Payload
  - FCI sets the FTCP ALERT_RESPONSE message to SOA message payload.

1.5. FTCP QUERY

- **TOPIC : "SERVICES/REQUEST/FNV/FCI/FTCP/QUERY"**
  - FCI subscribes the tpoic noted above to receive SOA messages containing FTCP QUERY messages. One topic is used for all queries from multiple components.
  Any component which wants to send FTCP QUERY must publish a SOA message containing FTCP QUERY message to this topic.

- SOA Message Header
  - Service ID : The component must set with the topic noted above, "SERVICES/REQUEST/FNV/FCI/FTCP/QUERY".

  - Transaction ID : The component must set with an unique string to identify among FTCP QUERY messages sent by the component. It is used to find the corresponding FTCP QUERY message when a FTCP QUERY_RESPONSE message comes back. The component must maintain this Transaction ID locally and use in match FTCP QUERY_RESPONSE and FTCP QUERY.
  ex. "CONTROL-MY-CAR_QUERY_1"

- SOA Message Payload
  - The component must set a FciQuery message to SOA message payload. FciQuery message contains FTCP QUERY message.

Ford Motor Company

```
message FciQuery
{
// FTCP QUERY message
optional bytes ftcpQuery = 1;

// The component must set this field with the topic string that the component subscribes
// to receive a SOA message containing the corresponding FTCP QUERY_RESPONSE.
// FCI will store this endpoint, topic, to publish FTCP QUERY_RESPONSE later.
optional string queryResponseEndpoint = 2;

// Delivery confirmation message
optional DeliveryConfirmation deliveryConfirmation = 3;
}
```

- References
  - See FCI Document: Who Sets FTCP message properties
  - FCI protos : idl/fci/fci_ftcp_interface.proto

1.6. FTCP QUERY_RESPONSE

- TOPIC, the queryResponseEndpoint : "**SERVICES/REQUEST/FNV/FTCP/QUERY_RESPONSE/<svc-id>**" (recommended format)
  - FCI stores the queryResponseEndpoint, topic, found in a FciQuery message containing FTCP QUERY message. The component must subscribe to the topic in order to receive the SOA message containing the FTCP QUERY_RESPONSE
  Upon receiving the corresponding FTCP QUERY_RESPONSE, FCI publishes a SOA message containing the FTCP QUERY_RESPONSE to this topic.

- SOA Message Header
  - Service ID : FCI sets with the topic noted above.
  ex. "SERVICES/REQUEST/FNV/FTCP/QUERY_RESPONSE/CONTROLMYCAR"

  - Transaction ID : FCI sets with the Transaction ID received from the SOA message containing FTCP QUERY.

  - Command ID : FCI sets with the unique string to identify FTCP QUERY_RESPONSE message type. This string is a FTCP message name defined in FTCP protofiles.
  ex. "AppAccessTokenQueryResponse"

- SOA Message Payload
  - FCI sets the FTCP QUERY_RESPONSE message to SOA message payload.

2. Interfaces for Broadcasting

FCI broadcasts SDN connection status, power state and SMS messages.
When FCI connects/disconnects with SDN server, FCI will broadcast the SDN connect status message to all subscribed parties.
The connection status message includes the connection status and the corresponding interface (cellular, WiFi or SDL). When the power state is changed, FCI will broadcast the power state. The power state message includes the current power state info (such as full power, lpr, sleep mode). When FCI receives SMS type 2 or 3 message from TCU, FCI will broadcast it. In a SMS Type 2 case, either the Home URL or Ford APN or both are included.

- TOPIC : "**SERVICES/DATA/FNV/FCI/BROADCAST**"
  - FCI publishes a SOA message containing FCI BroadcastMessage to this topic

- References
  - FCI broadcast protos : idl/fci/fci_broadcast.proto

3. Interfaces for FCI Service

FCI provides the services that a component can use to request SDN connect/disconnect or pass SMS message.

- TOPIC : **"SERVICES/REQUEST/FNV/FCI/GENSERVICE"**
  - The component can publish a FCI service message to this topic.

- SDN Connect service allows a component to send a sdn connect/disconnect request message to FCI .
  * This service is used by SPCM only during provisioning.

- SMS Message Service allows TCU to forward SMS message to FCI.

- References
  - FCI service protos : idl/fci/fci_service.proto