TOTSCO

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Subject: Guidance on use of synchronous and asynchronous responses

TOTSCo has been hosting regular 3-way calls with users connecting to the integration (pre-production) testing environment and general, anonymised observations from those calls were fed back to the One Touch Switch Industry Process Group (IPG) for consideration.

This information has been written by the IPG to provide additional guidance on use of different response patterns to OTS messages.

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Synchronous and asynchronous responses

The **Hub API Specification** and the **OTS Message Specification** define the following pattern for responses to OTS messages:

- All messages must receive a synchronous response from the recipient system.
- For the happy path, this is http 202 – this http response code means that "the message has been accepted for processing, but the processing has not been completed".
    - OTS uses 202 to imply that a request type of message has been received, and the sender should expect a corresponding confirmation or failure type response message within the SLA defined for the request type (e.g. 60 seconds for a response to a match request).
    - The 202 response is a synchronous response, and the subsequent confirmation or failure is an asynchronous response.
    - The TOTSCo Hub will always return 202 for messages which are accepted. It is expected that RCPs will also return 202.
- If the recipient system needs to reject the message, it will generate a http 4xx response.
    - 4xx responses are synchronous responses, and will <u>not</u> be followed by a confirmation or failure response.
- Note that both request and response messages can receive 202 or 4xx.

Expectations on the originator of messages

It is expected that the originator of every message will generate messages that are in compliance with both the **Hub API Specification** and **OTS Message Specification**. This includes:

- Valid JSON format.
- Spelling and capitalisation of element names (and values for elements such as "serviceType and "action") as defined in the **Specifications** – assume that all senders and recipients may have implementations which are case sensitive.

For messages of type request, the originator is the GRCP; for messages of type confirmation and failure, the originator is the LRCP; for delivery failure message, the TOTSCo Hub is the originator.

The corollary to this expectation is that recipients can reject a message which does not match the Specifications, including sensitivity to case / capitalisation.

Acceptable / expected use of http 4xx response
It is acceptable for RCPs to return http 4xx responses for the following scenarios:

- Invalid authentication credentials (e.g. OAuth2 or mTLS).
- Failure of validation against the schema published by TOTSCo – see below for more details.

RCPs should not return 4xx response for the following scenarios:

- Scenarios where the OTS Response Codes spreadsheet includes an asynchronous faultCode.
    - Note that if the RCP chooses to implement schema validation, it is acceptable to return http 400 where an element, documented as mandatory in the published schema, is missing in the inbound message – this applies even where there is also a faultCode covering the same scenario.
- Failure of unreasonable schema validation, notably the exact faultText in failure responses.

Worked example – incorrect capitalisation of message format name
The exact spelling of all the message format names is defined in the **OTS Message Specification**, and repeated in documents such as the **OTS Message Examples** and **OTS Response Codes**.

It is valid to reject a message with a 4xx code if the message format name deviates from the values documents in the **Message Specification**.

Note that the TOTSCo Hub would reject such a message with http 400, and faultCode 9012 ("Unknown or invalid routing ID") if the routingID in the envelope was incorrect, but might not catch if only the message format name (which forms the body of the message) was incorrect.

Worked example – missing name
Name is defined in the **OTS Message Specification** as Required, so the GRCP should always send a value for name.

The **OTS Request & Response Scenarios** spreadsheet (which accompanies the **OTS Matching Best Practice Guide**) defines scenarios in which the name is not required to achieve a match.

faultCode 1102 covers when the name is not provided, but the schema also specifies the name as mandatory.

LRCPs may choose to:

- Perform "up-front" validation against the schema, and reject the request with http 400 if the name is missing.
- Perform validation after accepting the message, and return faultCode 1102 if the name is missing, without any attempt at matching.
- Attempt matching, ignore a missing name if they can achieve a match without using the name, and only respond with 1102 when the name is both missing and required for a match.

Worked example – address
The **OTS Message Specification** documents the address as being required, with at least one addressLine, postTown and postCode.

The **Scenarios** spreadsheet requires some element of the address in all scenarios considered to be a match.

faultCode 1101 cover when the address is missing or invalid, but the schema also specifies that address as mandatory, with postTown, postCode and at least one address line.

LRCPs may choose to:

- Perform "up-front" validation against the schema, and reject the request with http 400 if the address is totally missing, or required elements are missing.
- Perform validation after accepting the message, and return faultCode 1101 if the address is totally missing, or required elements are missing, without any attempt at matching.
- Attempt matching, ignore missing address elements that are not needed to achieve a match, and only respond with 1101 when an element of the address is both missing and required for a match.

Note that GRCPs who are able to supply a UPRN must also supply the other elements of the address for two reasons:

- The LRCP may have an incorrect or no UPRN, and may rely on the other address elements to achieve a match.
- Any investigation of a failed match will likely involve humans, who may need the other address elements to locate the customer or perform any investigation.

Worked example – failure response with faultText that differs from the Response Codes spreadsheet

The **OTS Response Codes** spreadsheet documents the recommended faultText to be used alongside each faultCode – some of these recommendations include optional text that the recipient may choose to include.

Performing schema validation of the faultText is considered as unreasonable. RCPs should accept failure messages which have faultCode and faultText, even where the text does not exactly match the recommended text.

If the faultText is totally unreasonable, the RCP could raise this with the generating RCP, and perhaps seek assistance from TOTSCo. But if it only differs by trailing full stop or capitalisation, they should accept it.

It is recommended that the faultCode is used for internal routing of failures to different teams. Any machine analysis of the faultText should support a reasonable degree of variance.

Schema validation

A member of the original OTS-DDG (design drafting group, who produced the OTS Industry Process) created a schema hosted at letterbox | 0.4.0 | TOTSCO | SwaggerHub. This schema was created in good faith (and corrected in response to feedback) in support of industry.

The IPG is aware that a number of RCPs have locally extended the schema to define "serviceType" and "action" as enumerated values. This is a very sensible extension, and letterbox | 0.4.1 | TOTSCO | SwaggerHub has been created with these two elements as enumerated. This schema has been created in good faith. TOTSCo would welcome any feedback from RCPs who choose to use this schema at their firewall / gateway.