USSD HTTP 2
Interface Specification

Conor Information Technologies PTY (LTD)

Prepared by Philip Foulkes

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
API	Application Program Interface
HTTP	Hypertext Transfer Protocol
ID	Identifier
NGF	Next Generation Framework
USSD	Unstructured Supplementary Services Data
XML	Extensible Markup Language

REVISION HISTORY

Version Number	Date	Sections Affected	Description of Revision
1.00	2017-06-14	All	Initial document

REFERENCED DOCUMENTS

DOCUMENT NAME	DOCUMENT VERSION	PUBLISHER	DOCUMENT DATE

1. Legal Notices

This document, or any part thereof, may not, without the written consent of Conor Information Technologies (Pty) Ltd, be copied, reprinted or reproduced in any material form including but not limited to photocopying, transcribing, transmitting or storing it in any medium or translating it into any language, in any form or by any means, be it electronic, mechanical, optical, magnetic or otherwise.

Conor, the Conor logo and the v.Services, v.Connect, v.Billing and v.Profile products are registered trademarks of Conor Information Technologies (Pty) Ltd in various jurisdictions. All other products and/or trademarks are the properties of their respective owners. The information contained herein is believed to be accurate and reliable. Conor Information Technologies (Pty) Ltd accepts no responsibility for its use by any means or in any way whatsoever. Conor Information Technologies (Pty) Ltd shall not be liable for any expenses, costs or damage that may result from the use of the information contained within this document. The information contained herein is subject to change without notice.

2. About Us

Conor was founded in 2007 and has since built up a comprehensive track record of successes as a leading South African Telco services and solutions provider. Our management team has grown in experience, kept up with the latest technology and retains a very hands on approach. Conor has assembled the products, tools, solutions, systems and most important of all, a group of talented, passionate people that enable global businesses to establish and maintain critical competitive advantage. This advantage is rooted in the ability to understand the client experience and to proactively develop services on the basis of this understanding. We take a long-term view of your growth and sustainability in an ever-evolving marketplace, only recommending Telco solutions and services that conform to strict parameters. These we back with fast and unwavering services – because we know that your business health depends on it.

We provide project implementation and consulting services, which focus on new technological trends that enable our clients to implement solutions that are stable, cost effective and of high quality. Our holistic approach includes system auditing/analysis, architecture, infrastructure establishment, application development, high availability, performance tuning and support services. Conor’s quality assurance processes and proven development methodology ensures that well documented scalable solutions are delivered on time and in budget. As a company we acknowledge and value our co-workers and their families. Conor is headquartered in Pretoria, South Africa. We have a heritage of 8 years leadership in the mobile market delivering carrier class mobile data services to more than 20 customers globally, especially in Africa where we have presence in 14 countries. The solutions we offer our customers manage more than 2 Billion mobile data transactions and 60 million subscribers per day.

3. Introduction

This document describes the Unstructured Supplementary Services Data (USSD) Extensible Markup Language (XML)/Hypertext Transfer Protocol (HTTP) interface, which allows external systems to send USSD requests to applications running on the USSDGW1 systems at Vodacom Tanzania. The interface defines a single request message, and a single response message.

The listing below shows the USSD Request Message.

```
<ussd>
    <msisdn>MMM</msisdn>
    <sessionId>SSS</sessionId>
    <transactionId>TTT</transactionId>
    <type>1</type>
    <msg>USSD MSG</msg>
    <disableCharge>yes|no</disableCharge>
    <systemId>SID</systemId>
</ussd>
```

The listing below shows the USSD Response Message.

```
<ussd>
    <type>3</type>
    <sessionId>SSS</sessionId>
    <transactionId>TTT</transactionId>
    <msg>USSD MSG</msg>
    <result>125XX</result>
    <appResult>RRR</appResult>
    <premium>
        <cost/>
        <ref/>
    </premium>
</ussd>
```

The general structure of these messages will be discussed throughout this document.

4. USSD Request

The USSD Request Message is represented by the `<ussd>` XML root element, and has the sub elements shown in the table below.

Field	Type	Maximum Length	Description
msisdn	String	17	The MSISDN of the subscriber that the USSD request should be performed against.

sessionId	String	20	The session ID of the request. The session ID should be unique for each individual USSD session. Currently, this interface does not support multiple USSD requests per session. When this is implemented in the future, the same session ID should be used within each USSD request within the session.
transactionId	String	64	The Transaction ID of the request. The transaction ID may be used by NGF applications when uniform transaction IDs are required across multiple systems. For example, the Cheka application will use this transaction ID when subscribing a subscriber to Packages on Unified.
type	Integer	4	The type of message. Currently, the only value supported in a request is 1, which means the message is a request message. All other values are reserved for future use.
msg	String	182	The actual USSD string that should be sent to the application. E.g., *149*60#
disableCharge	String	3	This flag indicates to the application as to whether or not charging for the USSD request should be disabled or not. Currently, the only application that supports this flag is Cheka. As this flag is not a native USSD flag, it will have to be added to additional applications on request.
systemId	Integer	4	The system sending the request should supply its system ID. This ID is logged to the interface's event records for each request it receives. System IDs are allocated by the service provider. Thus, if you need one, request one from the service provider.

5. USSD Response

The USSD Response Message is represented by the `<ussd>` XML root element, and has the sub elements shown in the table below.

Field	**Type**	**Maximum Length**	**Description**
type	Integer	4	The type of message. Currently, the only value

			supported in a response is 3, which means the message is a response message. All other values are reserved for future use.
sessionId	String	20	The session ID sent in the request is echoed back in the response.
transactionId	String	64	The transaction ID is an echo of the transaction ID received in the request.
msg	String	182	The USSD response string as generated by the application it was routed to. For example, if the request was sent to Cheka, it will contain a USSD response string generated by the Cheka application.
result	Integer	4	The result code generated by the USSD HTTP module. If the request was successfully performed, the result code will be 12500. If the request was not successful, the result code will be in the range 12501 to 12599.
appResult	Integer	4	The result code of the application that the USSD request was routed to. The range of expected values is dependent on the application the request was sent to.
premium	XML Element	0	The `<premium>` element is not used, thus is not populated.

7. appResult Values

The `<appResult>` element contains the result code of the application to which the request was routed to. This section details the expected result codes.

7.1. Cheka Application

For the Cheka application, the following result codes are returned within `<appResult>`:

- **20900**: The application successfully performed the transaction;
- **20901**: Known error. The transaction failed in a known manner, and the bundle purchase was not successful, and the application is sure of it;
- **20902, or -1**: Unknown error. The transaction failed in an unknown manner. The bundle purchase may or may not have been successful. The application is not sure if the bundle purchase succeeded or not.

6. HTTP Header Fields

USSD requests are sent to the NGF USSD module by POSTing the request. The request URL is configurable on the USSDGW1 systems. Each external system should use a unique URL, which should be requested from Vodacom Tanzania. The content type should be set to `text/xml`, and the connection string should be `Keep-Alive`. An example HTTP header is shown in the listing below.

```
POST /USSD2/request HTTP/1.1
Content-Type: text/xml
Content-Length: 180
Host: localhost:3000
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.1.1 (java 1.5)
```

9. Conclusion

All queries and corrections relating to this USSD interface specification should be directed to Conor Solutions.