



USSD S-Gateway HTTP Interface

User's Guide v1.3

Version control

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R0	2010/04/13	Alejandro Leib	Initial Version
V1.1	2010/06/16	Alejandro Leib	MT function added
V1.2	2010/10/01	Alejandro Leib	Transaction ID
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Introduction

LeibICT USSD S-Gateway supports applications over MAP (Mobile Application Part) (phase 2 and 3), either mobile or USSD application originated, using the message set defined in the protocol. The mobile originated data are received by the USSD application and forwarded to the HLR (Home Location Register), where as the network originated messages are forwarded to the HLR at once.

This document presents a description of the HTTP Interface supported and managed by the LeibICT's USSD S-Gateway.

Capacity

The current USSD S-Gateway version supports 65356 incoming and outgoing messages.

Each USSD transaction is identified by a dialog identifier (field named: *Dialoguelid*), represented by a 32bits integer. This parameter must be included in each dialogue message so the USSD application must be capable of controlling such parameter. For each outgoing message coming from the application, the latter must include a *Dialogue Id* between 0 and 65356.

Glosary

HTTP - Hyper Text Transfer Protocol

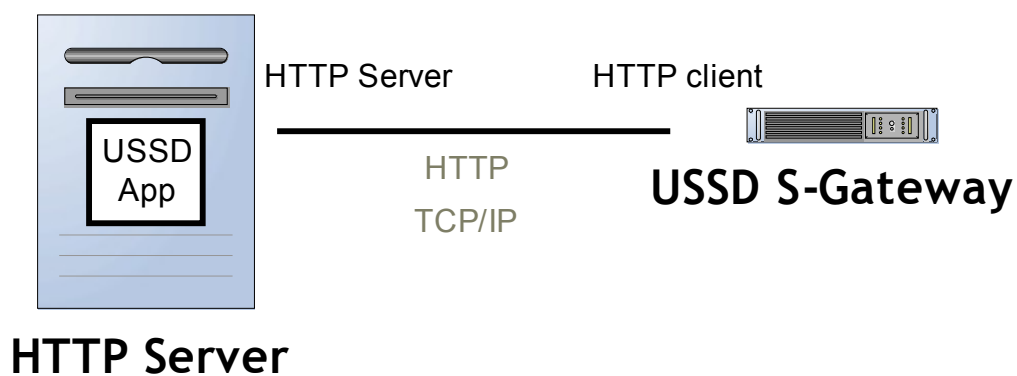
HTTP GET - HTTP GET message call

References: 3GPP 29.002

http://www.3gpp.org/ftp/Specs/archive/29_series/29.002/29002-8c0.zip

Typical system structure

The LeibICT USSD S-Gateway provides Load Balancing and Fault-Tolerance of applications:



Two USSD S-Gateways can be paired to provide Fault-Tolerance on the gateway and GSM Network level.

HTTP Architecture

The USSD Gateway HTTP Client Interface consists in several HTTP v1.0 connections in order to invoke the HTTP application on the server with USSD specific information.

HTTP gives an enormous range of Operating Systems, Programming Languages and Frameworks including:

- Apache/Tomcat for Jsp and Java
- Tomcat for PHP
- MIIS for ASP family

HTTP Messages

.1 Mobile Originated

The HTTP GET message is a synchronic way to request information from a HTTP Server.

The parameters of the GET functions are the following:

<url>?
transactionID=<transactionId>dialogId=<dialogId>&number=<number>&text=<text>&status=
<status>

Parameter	Values
url	Url of the service
transactionId	USSD Transaction Identification (1-4M)
dialogId	USSD Dialog Identification (32k-64k)
number	MSISDN of the Mobile Station
text	Text introduced by Mobile Station
status	Status of the transaction

The status of a USSD transaction could be:

Value	Meaning
begin	Beginning of a new transaction
continue	Continuation of the transaction
end	End of the transaction

For example:

[http://127.0.0.1:/service.php?
transactionID=0x00000001&dialogId=1&number=5723551123&text=*123#&status=begin](http://127.0.0.1:/service.php?transactionID=0x00000001&dialogId=1&number=5723551123&text=*123#&status=begin)

The result of the GET call will be decoded as:

Fist Character:

- “0” to end the transaction with GSM7 text
- “1” to continue the transaction with GSM7 text
- “2” to end the transaction with UCS2 text
- “3” to continue the transaction with UCS2 text

Rest of the result: sent “as is” to the Mobile Station.

The next topics show the usage of “curl” a command line based Linux program that implements the HTTP GET call.

For example:

```
curl http://127.0.0.1:/service.php?  
transactionID=0x00000001&dialogid=1&number=5723551123&text=*123#&status=begin  
0thanks for your transaction!
```

In case of using UCS2 text for example for replying "تیسٹ" the text must be encoded in hexa to "067906CC06330679"

Then the HTTP GET call should be for example:

```
curl http://127.0.0.1:/service.php?  
transactionID=0x00000001&dialogid=1&number=5723551123&text=*123#&status=begin  
2067906CC06330679
```


.2 Mobile Terminated

Mobile Terminated transactions are originated by the application against the GW in the same way: using a HTTP get message.

In this case, the GW opens a HTTP port and the GET request require the next parameters:

Parameter	Values
dialogId	USSD Dialog Identification (1-32k)
number	MSISDN of the Mobile Station
text	Text to be displayed on the Mobile Station
text2	UCS2 text to be displayed on the MS

There are two types or mobile terminated sessions

- 1) With response, they initiate a dialog like the mobile originated one.
- 2) Without response, do not allows to continue.

For example:

```
curl 'http://localhost:8080/begin?dialogId=3&number=573154181691&text=Hello!'
```

for dialog oriented initiation

```
curl 'http://localhost:8080/notify?dialogId=3&number=573154181691&text=Hello!'
```

for notification only

These commands initiate a Mobile Terminate ussd session on dialog 3.

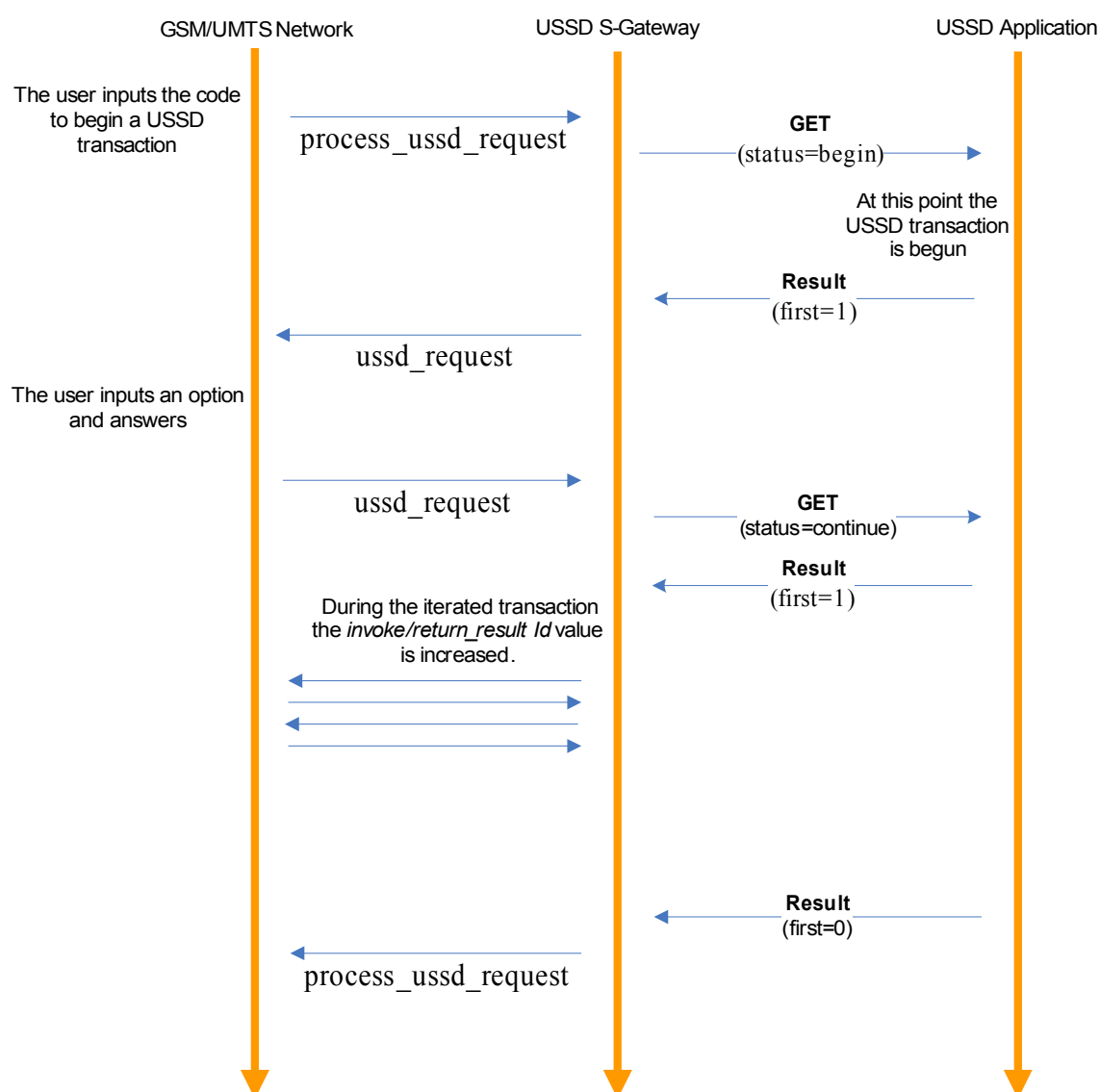
Note1: DialogID should be used sequentially from 1 to 32k in a loop.

Note2: after the dialog is initiated, the HTTP responses are the same as for MO

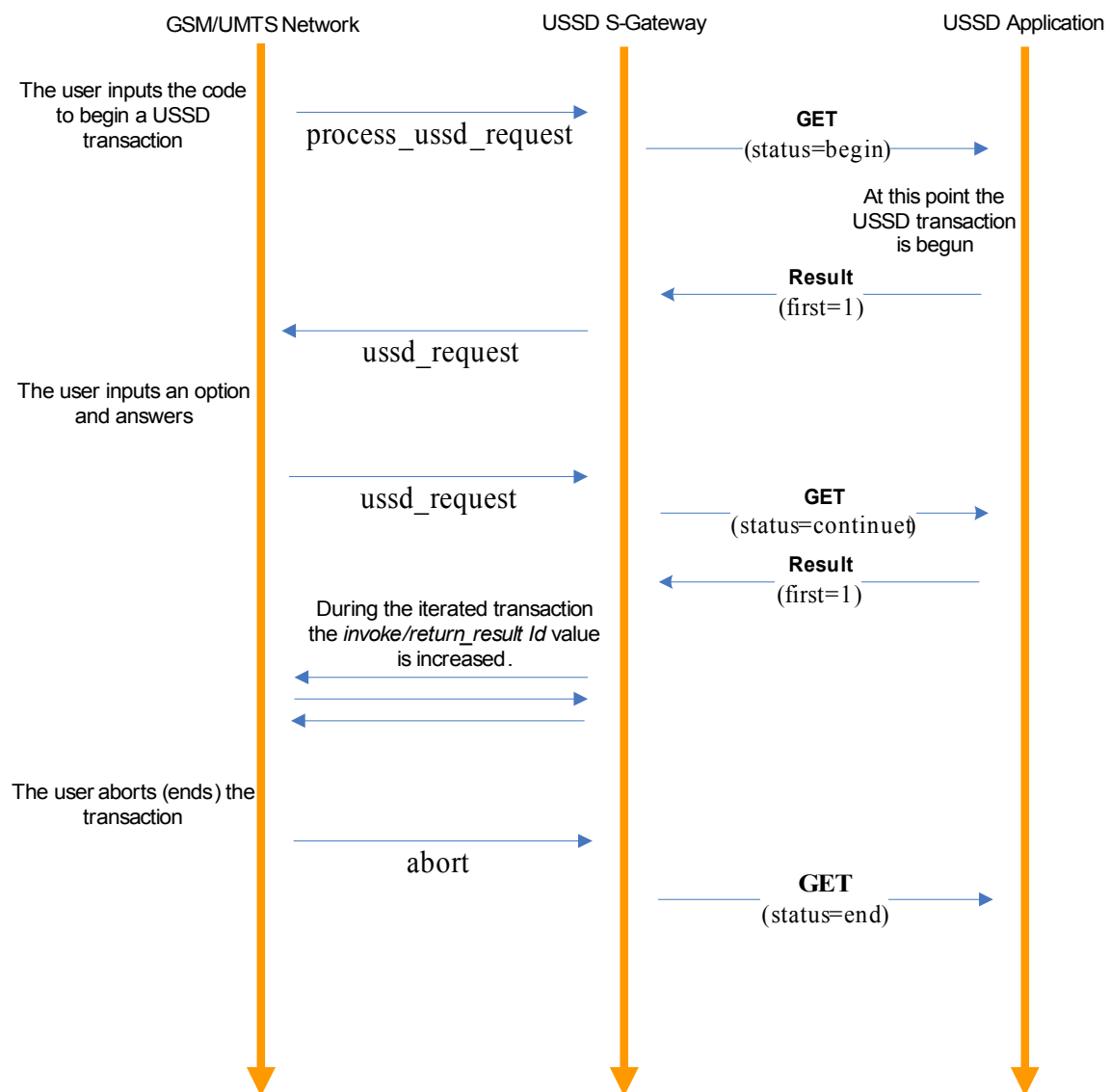
Example Message Sequences

The following chapter gives example message sequences for interacting with USSDJNI Java API.

.1 User Initiated USSD Transaction Ended by Application



.2 User Initiated USSD Transaction Aborted by User



Length of the USSD String

In GSM 0902 160 octets is stated as the maximum length for the USSD string. Due to underlying signalling layers the maximum length of the USSD string depending on the message is:

USSD operation	Max length
Begin, Invoke ProcessUSSDRequest	133
End, Result ProcessUSSDRequest	160
First Continue, Invoke USSDRequest in mobile initiated dialogue	154
Begin, Invoke USSDRequest	144
First Continue, Result USSDRequest in network initiated dialogue	154
Other messages	160

Note: for UCS2 (unicode) character set, the max length is usually under 1/2 times.