Mobile Money API Specification 1.2.0 - Bill Payments

Document Summary

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Document Version	API Release Version	Date	Brief Description of Change	Editor / Company
0.1	1.2.0-beta	Aug 2020	• Initial draft of document	GSMA
0.2	1.2.0	Sep 2020	• Implemented RFC 2020-5, RFC 2020-6, RFC 2020-10, RFC 2020-13, RFC-2020-15, RFC 2020-18	GSMA

Other Information

Type	Description
Document Owner	Mobile Money API Bill Payments Working Group
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1 Introduction

The purpose of this document is to specify the endpoints, fields, objects, and enumerations for Bill Payments Mobile Money APIs, which are a subset of the GSMA Mobile Money API Specification. The Bill Payments Mobile Money APIs allow service providers to accept bill payments from mobile money customers.

For further reading, please refer to the following documents:

- **Mobile Money API Introduction**. Introduces the use and benefits of the Mobile Money API. Also provides a glossary of terms used by the Mobile Money API specifications.
- **Mobile Money API Fundamentals**. Specifies the design principles, behaviours, and error handling of the Mobile Money API.
- **Mobile Money API Master Specification**. Documents all Mobile Money API endpoints, fields, objects, and enumerations.

All documentation can be found on the GSMA Mobile Money API Developer Portal.

This document contains the following sections:

1.1 Intended Audience

Audience	Usage	Role
Mobile Money Providers	• To understand how to implement the Mobile Money API to make bill payments to service providers.	API Consumer
Service Providers	• To understand how to implement the Mobile Money API to accept bill payments from Mobile Money Providers.	API Provider

2 API Endpoints

API endpoint fields are described in this specification as follows:

- The field **name**.
- The field **type**.
- **Description** of the field.
- **Optionality** of the field, i.e. whether the field must be supplied. Optionality is identified as per follows:

  → Request optionality

  ← Response optionality

  O Field is optional

  M Field is mandatory

  C Field is conditional

  NA Field does not need to be supplied. If supplied, it will be ignored.

- **Reference** where the field is an array and/or is defined by another object.
- **Validation** applied to the field, including enumeration, field length and use of regular expressions to validate format.

Please note that string fields have a default maximum length of 256 characters unless specified otherwise.

2.1 Identifying a Target Account

Two methods are provided for identifying an account on all bills and bill payments APIs - the single identifier method, and the multiple identifiers method.

2.1.1 Single Identifier Method

In the scenario where one identifier suffices to uniquely identify an account, the following path is to be used: */{identifierType}/{identifier}*.

2.1.2 Multiple Identifiers Method

Where a single identifier is not sufficient to identify an account, the following path is to be used:
/{accountIdentifier1}@{value1}${accountIdentifier2}@{value2}${accountIdentifier3}@{value3}

The path uses a '$' delimiter to separate each identifier, up to a limit of three account identifiers. Each key/value is delimited by '@'.

The list of permitted account identifiers supported by the Mobile Money API can be found in the Account Identifiers section.

2.2 Bills API

The Bills API is used to return all outstanding bills associated with an account. The main purpose of the API is to support Bill Presentment, i.e. presenting all applicable bills for a payer to view and select for payment. To pay a bill, the Bill Payments API is used. Permitted paths are *GET /accounts/{identifierType}/{identifier}/bills* or *GET /accounts/{Account Identifiers}/bills*.

To filter the number of records returned, the following query string parameters can be used:

Parameter	Type	Format	Description
limit	integer	N/A	Supports pagination. If this is not supplied, then the server will apply a limit of 50 records returned for each request.
offset	integer	N/A	Supports pagination. This value will indicate the cursor position from where to retrieve the set of records. For example, a limit of 50 and offset of 10 will return records 11 to 60.
fromDateTime	string	date-time	Indicates the minimum creationDate for which records should be returned.
toDateTime	string	date-time	Indicates the maximum creationDate for which records should be returned.

Note 1: For a harmonised behavior, API Providers should make sure that the bills are returned in descending date created order.

Note 2: HTTP response headers are returned with each response indicating the total number of records available (X-Records-Available-Count) and total number of records returned (X-Records-Returned-Count).

2.2.1 Bill UML Class Diagram

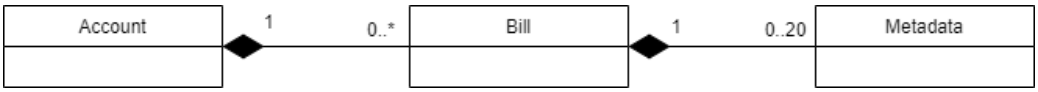

Figure 2-1 Bill UML Class Diagram

2.2.2 Bill Object Definition

Bill Object					
Name	**Type**	**Description**		**Reference**	**Validation**
billReference	string	Reference number for the Bill that the payer can use when making a payment.	→NA ←O		
billStatus	string	Identifies the status of the Bill.	→NA ←O		'paid', 'unpaid', 'partialpaid'
amountDue	string	Amount outstanding on the bill to be paid.	→NA ←O		Please refer to API Fundamentals document for amount validation rules.
billDescription	string	Description of the bill that is to be paid.	→NA ←O		
currency	string	Currency of the bill to be paid.	→NA ←O		Enumeration = ISO Currency Codes
dueDate	date	Date on which the Bill is due to be paid.	→NA ←O		
minimumAmountDue	string	The minimum amount that is outstanding on the bill to be paid.	→NA ←O		Please refer to API Fundamentals document for amount validation rules.
creationDate	date-time	Indicates when the bill was created by the API provider.	→NA ←O		
modificationDate	date-time	Indicates when the bill was modified by the API provider.	→NA ←O		
customData	string	A collection of key/value pairs that can be used for provider specific fields.	→O ←O	Custom Data Object	

metadata	array	A collection of key/value pairs. These can be used to populate additional properties that describe administrative information regarding the bill.	→NA ←O	Metadata	

2.3 Bill Payments API

The Bill Payments API is used to pay a specific bill associated with an account held with a service provider. Bill payments can also be retrieved. Permitted paths are:

Path	Usage
/accounts/{identifierType}/{identifier}/bills/{billReference}/payments	Use when a single identifier suffices to identify the bill account.
/accounts/*{Account Identifiers}*/bills/{billReference}/payments	Use when two or three identifiers are required to identify an account.
/bills/{billReference}/payments	Use when a bill payment is not associated with a service provider account.
/accounts/{identifierType}/{identifier}/bills/payments* OR */accounts/*{Account Identifiers}*/bills/payments	Use when a bill does not have a bill reference.

As per MM API standards, POST is used to create a bill payment whereas GET is used to retrieve all payments associated with a bill.

When retrieving bill payments, the following query string parameters can be used to filter the number of records returned:

Parameter	Type	Format	Description
limit	integer	N/A	Supports pagination. If this is not supplied, then the server will apply a limit of 50 records returned for each request.
offset	integer	N/A	Supports pagination. This value will indicate the cursor position from where to retrieve the set of records. For example, a limit of 50 and offset of 10 will return records 11 to 60.
fromDateTime	string	date-time	Indicates the minimum creationDate for which records should be returned.
toDateTime	string	date-time	Indicates the maximum creationDate for which records should be returned.

Note 1: For a harmonised behavior, API Providers should make sure that the bill payments are returned in descending date created order.

Note 2: HTTP response headers are returned with each response indicating the total number of records available (X-Records-Available-Count) and total number of records returned (X-Records-Returned-Count).

2.3.1 Bill Payment UML Class Diagram

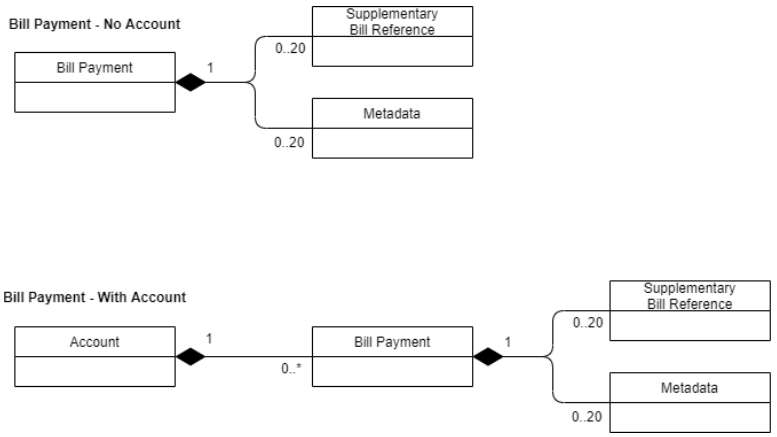

Figure 2-2 Bill Payment UML Class Diagram

2.3.2 Bill Payment Object Definition

Bill Payment Object					
Name	**Type**	**Description**		**Reference**	**Validation**
serviceProviderPaymentReference	string	Reference for the payment generated by the service provider.	→O ←O		
requestingOrganisationTransactionReference	string	The mobile money provider's (or Financial Institution's) transaction reference used to debit the customer and credit the service provider.	→O ←O		
paymentType	string	Describes the type of Bill Payment, i.e. whether a full or partial payment.	→O ←O		Enumeration = 'fullpayment', 'partialpayment'
billPaymentStatus	string	Indicates the status of the bill payment as stored by the API provider.	→N/A ←M		
amountPaid	string	Amount that is being paid.	→M ←M		Please refer to API Fundamentals

					document for amount validation rules.
currency	string	Currency of the amount that is being paid.	→M ←M		Enumeration = ISO Currency Codes
customerReference	string	Textual reference provided by the customer paying the bill.	→O ←O		
requestingOrganisation	string	The originating mobile money provider or financial institution that holds the wallet/account of the payer.	→O ←O		
supplementaryBillReferenceDetails	array	In some cases, a single reference is not sufficient to identify a bill. This key-value collection enables further reference information to be supplied.	→C ←C	Bill References	Not applicable if billReference is no passed in the path.
serviceProviderComment	string	Allows the Service Provider to include specific information regarding the bill payment.	→N/A ←O		
serviceProviderNotification	string	Allows the Service Provider to include specific information that will be included on the notification to the customer by the mobile money provider.	→N/A ←O		
creationDate	date-time	Indicates when the bill payment was created as recorded by the API provider.	→NA ←O		
modificationDate	date-time	Indicates when the bill payment was modified as recorded by the API provider.	→NA ←O		
requestDate	date-time	The date and time of the bill payment request as supplied by the client.	→O ←O		
customData	string	A collection of key/value pairs that can be used for provider specific fields.	→O ←O	Custom Data Object	
metadata	array	A collection of key/value pairs. These can be used to populate additional properties that describe administrative information regarding the bill payment.	→O ←O	Metadata	

3 Supporting Objects

3.1 Account Identifier Object

The Account Identifier object enables one or multiple identifiers to be provided to enable the service provider's system to resolve the account.

Account Identifier Object					
Name	**Type**	**Description**		**Reference**	**Validation**
key	string	Provides the account identifier type.	→M ←M		Enumeration = Account Identifiers
value	string	Provides the account identifier type value.	→M ←M		

3.2 Metadata Object

The metadata object allows fields to be specified to convey administrative information regarding the associated resource in the form of key/value pairs. Additional fields should only be used where no suitable defined field match can be found. The number of key/value pairs is limited to 20.

Metadata Object					
Name	**Type**	**Description**		**Reference**	**Validation**
key	string	Identifies the type of additional fields.	→M ←M		
value	string	Identifies the value of the additional field.	→M ←M		

3.3 Custom Data Object

The custom data object allows additional fields to be specified for the associated resource in the form of key/value pairs. Additional fields should only be used where no suitable defined field match can be found. The number of key/value pairs is limited to 20.

Custom Data Object					
Name	**Type**	**Description**		**Reference**	**Validation**
key	string	Identifies the type of additional fields.	→M ←M		
value	string	Identifies the value of the additional field.	→M ←M		

3.4 Supplementary Bill Reference Object

This object enables additional payment references to be specified for a bill payment in the form of key/value pairs. Additional fields should only be used where no suitable defined field match can be found. The number of key/value pairs is limited to 20.

Supplementary Bill Reference Object					
Name	**Type**	**Description**		**Reference**	**Validation**
paymentReferenceType	string	Identifies the type of the additional payment reference.	→M ←M		
paymentReferenceValue	string	Identifies the value of the additional payment reference.	→M ←M		

4 Enumerations

4.1 ISO Currency Codes

The three-character alphabetic code for currency as defined by ISO 4217 is to be used for all currency fields. The full list of codes is maintained by Swiss Interbank Clearing on behalf of the International Organisation for Standardisation. This list can be obtained via the following website - http://www.currency-iso.org/en/home/tables/table-a1.html.

4.2 Account Identifiers

The Account Identifier enumeration lists all possible means to identify a target account. Identifiers can be combined if necessary, to provide a unique identifier for the target account.

Code	Short Description	Type	Description
accountid	Account Holder Identity	string	Identifier for the account holder.
consumerno	Consumer Number	String	Identifies the consumer associated with the account.
emailaddress	Email Address	String	emailaddress of the party.
msisdn	MSISDN	string	Must contain between 6 and 15 consecutive digits First character can contain a '+' or digit Can contain spaces.
organisationid	Organisation Account Identifier	string	Used to identify the organisation for which a payment is to be made.

serviceprovider	Service Provider	String	Provides a reference for a Service Provider.
username	Username	string	Used to identify target account via an associated username.

4.3 ISO Country Codes

The two-character alphabetic code for country as defined by ISO 3166 is to be used for all fields specifying a country or nationality. The full list of codes is maintained by the International Organisation for Standardisation. The list can be obtained via the following website - http://www.iso.org/iso/country_codes.

5 API Sequence Diagrams

The following sequence diagrams illustrate success and failure flows for bills-related mobile money APIs. For further information on API behaviour and error handling, please refer to the Mobile Money API Fundamentals document.

5.1 Successful Retrieval of Bills

This diagram illustrates how a mobile money provider can retrieve bills for a given service provider customer account.

Figure 5-1 Successful Retrieval of Bills

5.2 Unsuccessful Retrieval of Bills

This diagram illustrates the return of an error object where a service provider is unable to return bill details to a mobile money provider.

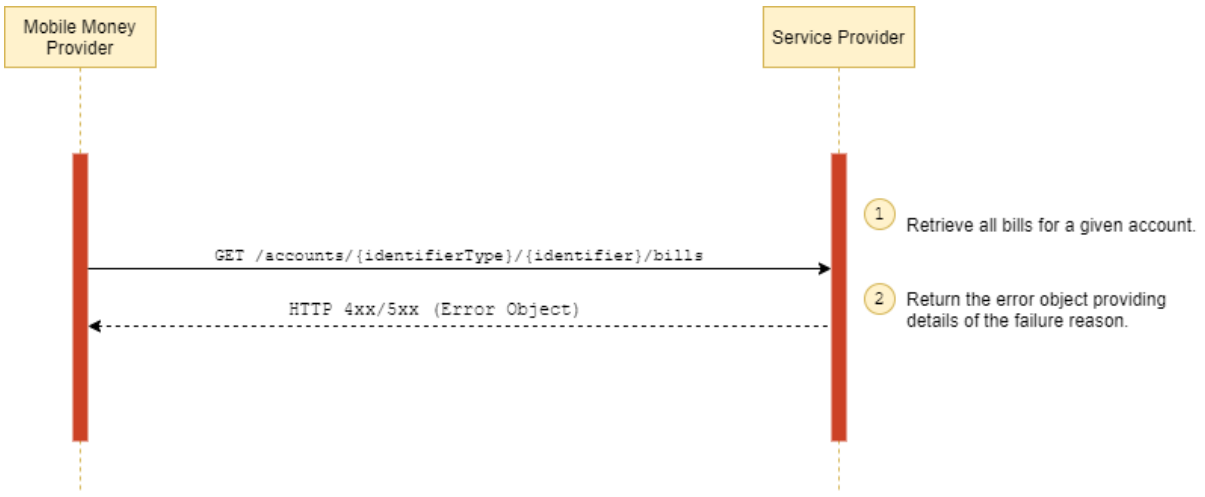

Figure 5-2 Unsuccessful Retrieval of Bills

5.3 Make a Successful Bill Payment with Callback

This diagram illustrates how a mobile money provider can make a bill payment to a service provider using the asynchronous callback method. To illustrate the end to end flow, a leg has been added to describe how a third payment provider can initiate a bill payment request to a mobile money provider.

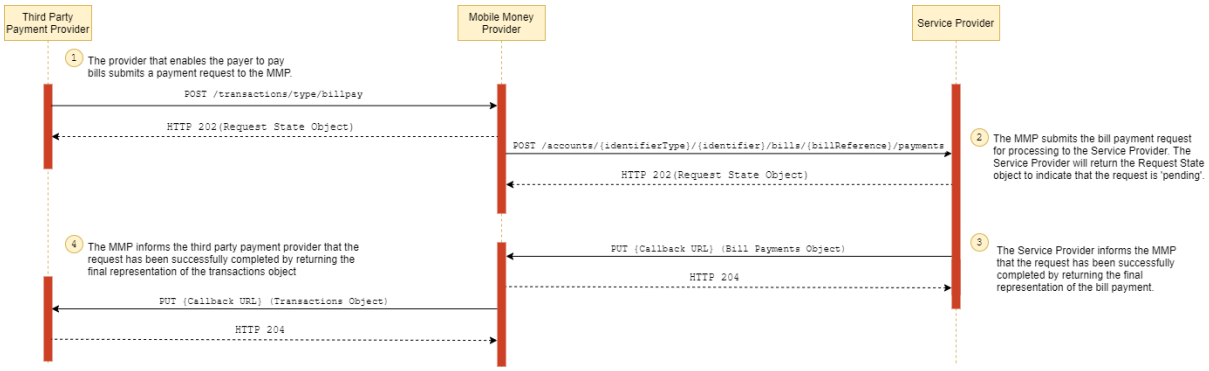

Figure 5-3 Bill Payment with Callback

5.4 Make an Unsuccessful Bill Payment with Callback

This diagram illustrates the return of an error object where a service provider fails to process a bill payment request.

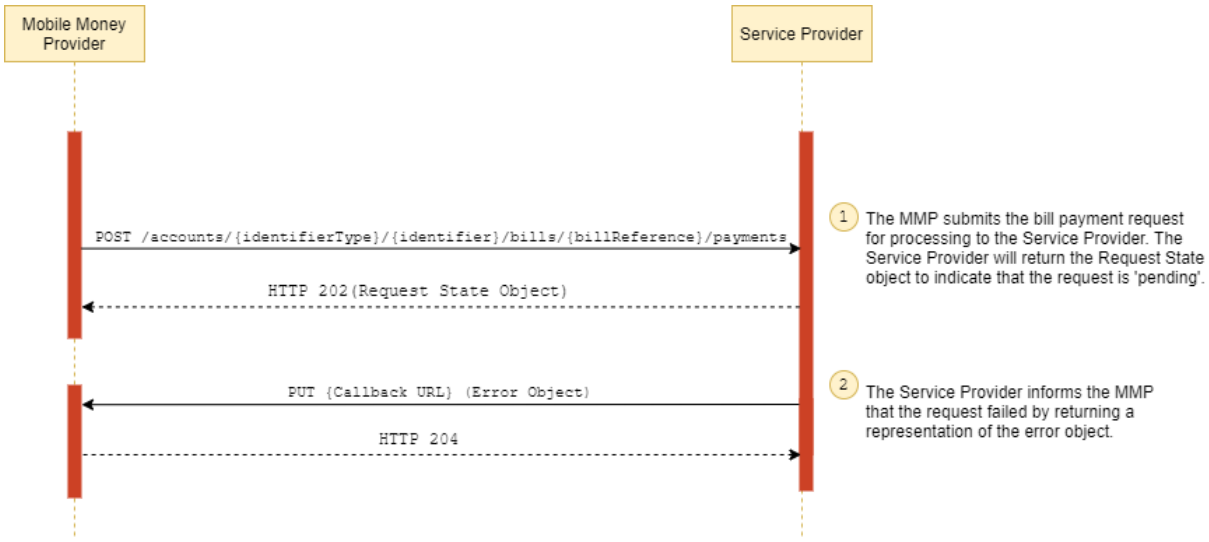

Figure 5-4 Make an Unsuccessful Bill Payment with Callback

5.5 Make a Bill Payment with Polling

This diagram illustrates how a mobile money provider can make a bill payment to a service provider using the asynchronous polling method.

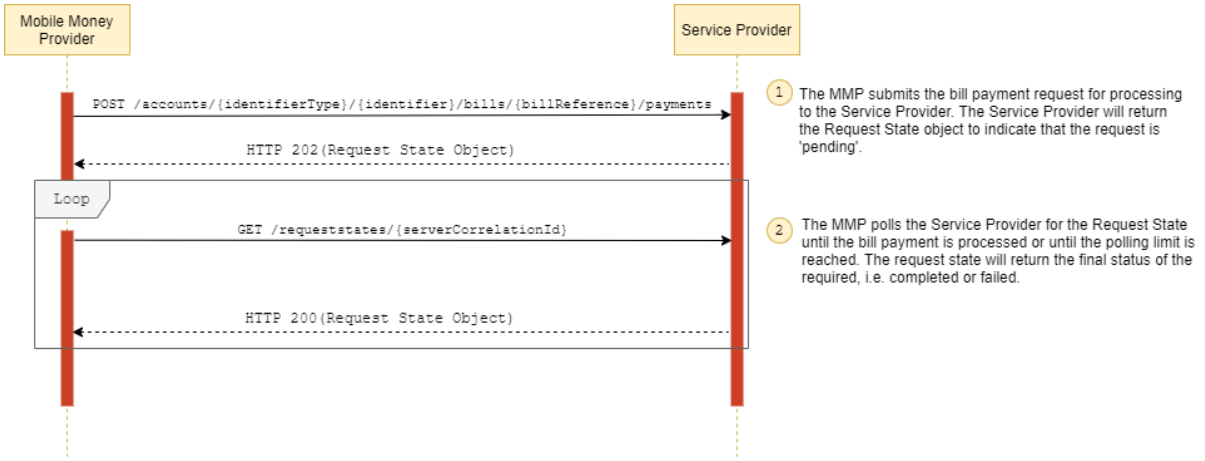

Figure 5-5 Bill Payment with Polling

5.6 Retrieval of Bill Payments

This diagram illustrates how a mobile money provider can retrieve payments against a given bill for a given service provider customer account.

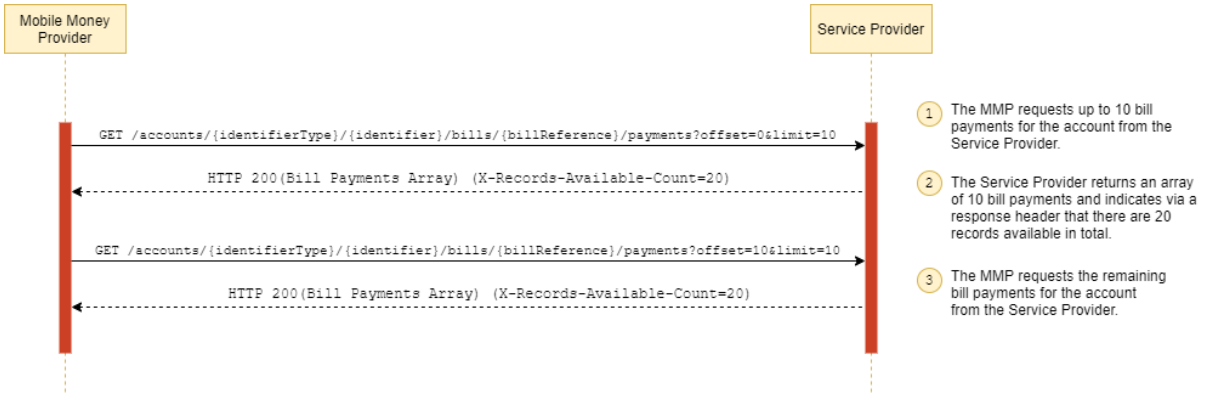

Figure 5-6 Retrieval of Bill Payments

5.7 Check for Service Availability

The Heartbeat API is used for monitoring purposes and establishes whether the Service Provider is in a state that enables an FSP to submit a request for processing.

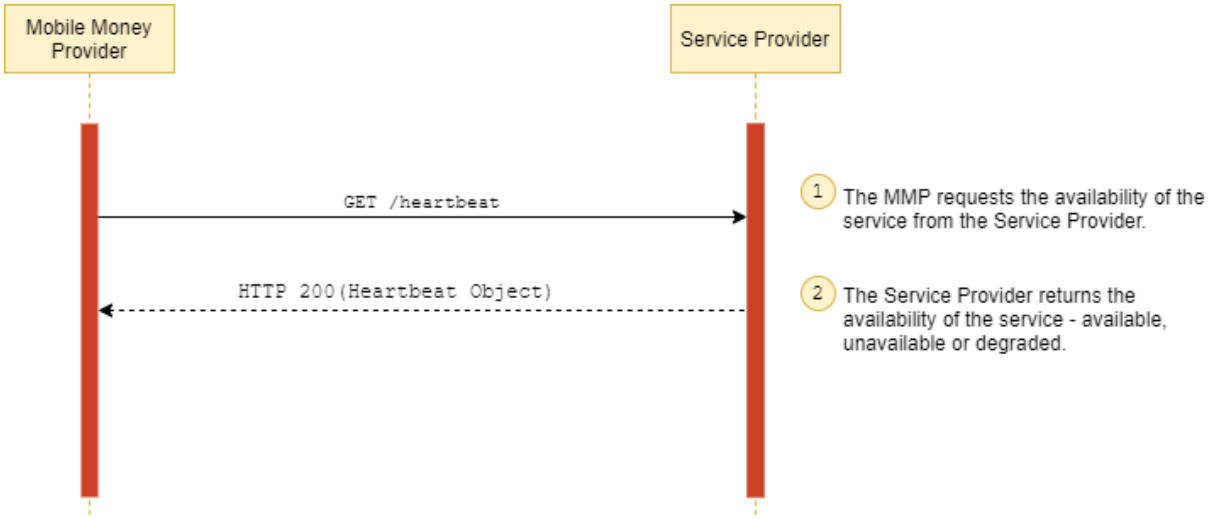

Figure 5-7 Check for Service Availability

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