DASHUR EXTERNAL WALLET INTEGRATION

VERSION 1.17

2022-09-28

Revisions Log:

Date	Version	By	Action
23/11/2016	1.0	Nike	Initialized document contents.
06/12/2016	1.1	Jordan	Added parameter include_transfer to **Transaction Feed API**
23/8/2017	1.2	Jordan	Change account username length in **ENDPOINT: AUTH**
12/10/2017	1.3	Jordan	Added new info for HTML5 Demo in **API: Launcher**
02/02/2018	1.4	Jordan	Added new column for Titanium LD game launch in **API: Launcher**
06/02/2018	1.5	Jordan	Added new option for Titanium LD game launch in **API: Launcher**
05/03/2018	1.6	Jordan	Added new columns to perform the redirection for the lobby/banking of HTML5 slot game and logout/failed for HTML5 Diamond Live Dealer game in **API: Launcher**
19/12/2019	1.7	Bonnie	New columns for transaction feed meta_data, "ext_w_tx_id"
19/12/2019	1.7	Bonnie	Add remark to tx_id that it should be a reference to make sure the uniqueness of the transactions.
19/12/2019	1.7	Bonnie	Remove Titanium:select
15/01/2020	1.8	Bonnie	Add new columns for endround in transaction feed, and delete logout_url which was for HTML5 Diamond Live Dealer game

01/04/2020	1.9	Bonnie	Add “account_ext_ref” in Transaction feed API
17/04/2020	1.10	Bonnie	Add “currency” to balance, transaction and endround endpoint
20/05/2020	1.11	Bonnie	Update transaction endpoint and the limit of login_context.meta_data
08/06/2020	1.12	Nike	Added context columns in request of Auth, Balance, Transaction, and End-Round
11/06/2020	1.13	Nike	Disregard app_id in Launcher call.
23/09/2020	1.15	Nike	1) Update of context columns. 2) Support multiple campaign_ids in Launcher request.
13/10/2021	1.16	Lank	Update version to 1.16
28/09/2022	1.17	Lank	1)Add $.err_code field in Error Response 2)Add description for GET method parameters in request. 3) Token non mandatory for request of End-Round.

INTRODUCTION

This document describes the API and processes to integrate an external wallet with the Dashur system.

There are three main flows of calls between Dashur and the External System.

- Dashur calls to authenticate, get balance, create transaction and close transaction rounds
- Dashur calls to push any failed transactions to the External System. Any failed transactions and refunds will be put in a push service that will retry delivery during 1 week until it is dropped.
- External System calls Dashur's Launch API to authenticate / get URL's for a member.

Additionally there is also a Dashur Transaction Feed which gives a full list of all transactions for the integration. The feed can be used to verify that all transactions have been processed, action any refunds that have been issues by Dashur and also get additional data about the transaction such as Device Type, OS and many more (depending on data provided initially)

This feed can be accessed either via Pull from the Dashur System or Push where Dashur will push all new transactions to the External System

DEFINITIONS

ITEM	DEFINITION
Auth Username	The username to use when calling the auth service. *This will be provided*
Auth Secret	The password for the auth service. *This will be provided*
API Username	The username of the user calling the API's. *This will be provided*
API Password	The password of the user calling the API's. *This will be provided*
Base Account ID	This is the base account id, from the id all child accounts can be found by traversing the API. *This will be provided*
Base URL	The base url of the APIs. *This will be provided*
Currency Codes	Dashur uses ISO three character currency codes Example USD, CNY, GBP, EUR See all supported currency codes in Appendix B
Error Response	There are two types of error responses. One for a general error and one for errors when validating input data. **Example General Error** `{ "meta": { "currency": "USD", "time_zone": "UTC", "transaction_id": "XXXX-XXX", "processing_time": -1 } "error": { "type": "HTTP_EXCEPTION", "code": "403", "message": "Forbidden", } }`

ITEM	DEFINITION

	Example Validation Error
	
	`{`
	`  “meta”: {`
	`  "currency": "USD",`
	`  "time_zone": "UTC",`
	`  "transaction_id": "XXXX-XXX",`
	`  "processing_time": -1`
	`  }`
	`  “error”: {`
	`  “type”: “HTTP_EXCEPTION”,`
	`  “code”: “403”,`
	`  “message”: “Forbidden”,`
	`  “fields”: [`
	`  {`
	`  “field”: “field1”,`
	`  “message”: “The reason for failure”,`
	`  }`
	`  ]`
	`  }`
	`}`

Headers	These are headers that are used to configure currency, time zone and locale for the response from Dashur. They need to be provided in each API Call. Additionally an Authorization header and an Accept header needs to be provided **Authorization –** This header is used to send the token to the API and is then used for authentication purposes **Accept** – The Accept header is used to indicate what format the caller wants the response in. Currently only “application/json” is supported **X-DAS-TZ** – This is the time zone used for dates requested and responded. All timezones are accepted in the following format: UTC, UTC+8, UTC-2 **X-DAS-CURRENCY** – This is the currency that will be used as default currency when querying different APIs. Most currencies are supported by using the ISO code for the currency (USD, CNY etc)

ITEM	DEFINITION

	X-DAS-LANG – The Language used in responses. Currently en and zh-CN are supported. **The language codes are case sensitive**
	
	X-DAS-TX-ID – A unique ID of the request. This is used to be able to trace transactions and requests if something goes wrong. An example would be to use UUID to make sure it is unique.
	
	Example Headers
	
	`Authorization: Bearer cn389ncoiwuencr`
	`Accept: application/json;charset=UTF-8`
	`X-DAS-TX-ID: 123e4567-e89b-12d3-a456-426655440000`
	`X-DAS-CURRENCY: USD`
	`X-DAS-TZ: UTC+9`
	`X-DAS-LANG: en`

Money	Any monetary data in Dashur follows ISO standards when it comes to rounding, number of decimals etc **See all supported currencies and supported number of decimals in Appendix A** Dashur follows the following logic when processing incoming amounts 1. Remove trailing zeroes100.12000 becomes 100.12 2. Check if amount of decimals are same or less than the max amount of decimals allowed for the currency. Most currencies allow two decimals, as an example KRW and JPY don't allow any decimals See https://en.wikipedia.org/wiki/ISO_4217#Active_codes for a full list of allowed number of decimals. 3. If to many decimals are provided then reject the request 4. If decimals are ok then process the request Dashur follows the following logic when sending currencies out

ITEM	DEFINITION
	1. Uses Round Half to Even algorithm (Bankers Rounding) when adding or subtracting totals https://en.wikipedia.org/wiki/Rounding#Round_half_to_even 2. Round to the requested currencies number of decimals. Most normally this will be two decimals but for currencies like KRW and JPY there will be no decimals. See **https://en.wikipedia.org/wiki/ISO_4217#Active_codes** for a full list of allowed number of decimals.

ITEM	DEFINITION
Success Response	All responses from the Dashur system are of type JSON. Most responses will come as a JSON Object with two properties meta and data. The meta field contains data such as requested currency, timezone, transaction id and the internal processing time of the request. If the request is paginated then there will also be a pagination object under the meta object which shows current page, page size, available pages etc Please note that for a paginated result totalPages and totalResults may be -1 if the system hasn't calculated them. If that's the case then the API caller can call the API while increasing the current "page" until the result is empty. **Example Non Paginated Response** `{ "meta": { "currency": "USD", "time_zone": "UTC", "transaction_id": "XXXX-XXX", "processing_time": -1 } "data": { "property": "value" } }`

ITEM	DEFINITION
Success Response (Continued)	**Example Paginated Response**

```
{
  "meta": {
    "currency": "USD",
    "time_zone": "UTC",
    "transaction_id": "XXXX-XXX",
    "processing_time": -1,
    "pagination": {
      "page": 1,
      "pageSize": 500,
      "totalPages": 10,
      "totalResults": 5000
  }
  "data": {
    [
      {
        "property": "value"
      }
     ]
  }
}
```

ITEM	DEFINITION
Timestamp	Dashur uses UTC offsets for timezones **See Appendix C for a full list of supported offsets** A timestamp follows these format 2015-11-01 -> yyyy-MM-dd 2015-11-01T17:12:45 -> yyyy-MM-ddTHH:mm:ss 2015-11-01T17:12:45 +0800 -> yyyy-MM-ddTHH:mm:ss ZZ 2015-11-01T17:12:45 UTC+0800 -> yyyy-MM-ddTHH:mm:ss 'UTC'ZZ, please note only UTC is accepted 2015-11-01 17:12:45.000 -> yyyy-MM-dd HH:mm:ss.SSS

ENDPOINT: COMMON

The Dashur External Wallet API uses JSON as the common interchange format in both request and response encoded with UTF-8.

Error Codes

Any error codes should use the normal HTTP Error codes. And send an error in the following format

Http Status Code	Deterministic	Description
>= 500	No	Unspecified Error
401	Yes	Invalid token or expired token
400	No	Bad Request or invalid message format
402	Yes	Balance not enough to execute transaction
409	Yes	Transaction has already been processed

Error Response

JSON	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.
$.timestamp	Timestamp	Yes	The time the response was sent yyyy-MM-dd HH:mm:ss.SSS 2016-12-27 18:32:22.123

$.processing_time	32-bit Int	Yes	The internal processing time for the External System in milliseconds.
			
			This is used to make sure Dashur can detect networking issues or External System issues when there is slow response times
			
			Example:
			
			`var start = new Date().getTime()`
			`//Process transaction`
			`var end = new Date().getTime()`
			`tx.processing_time = end - start`

$.token	String(1000)	Yes	The new token to use for next request. It is suggested that the External System issues a new token for each request. Please note Dashur does not guarantee that it will always use the last issued token for the next request. Therefor the External System should allow a token to be valid for at least 2 hours.
$.err_code	String(0-100)	No	The code of the error.

JSON	Format	Mandatory	Description
$.err_desc	String(0-500)	No	A description of the error

General Error Response Example

```
HTTP/1.1 500 Unspecified Error
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "processing_time": 100,
  "token": "xxxxx",
  "err_desc": "Unspecified Error"
}
```

Custom Error Response Example

```
HTTP/1.1 500 Unspecified Error
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "processing_time": 100,
  "token": "xxxxx",
  "err_code": "IP_BLOCKED",
  "err_desc": " The given IP had been blocked."
}
```

ENDPOINT: AUTH

This is the endpoint at the external system that will be called when Dashur tries to verify a token passed in via the Launch API

Auth	
URL	{base_url}/v1/auth
Method	POST

Request

Request	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.
$.timestamp	Timestamp	Yes	The time the request was initiated yyyy-MM-dd HH:mm:ss.SSS 2016-12-27 18:32:22.123
$.token	String(1000)	Yes	The token from the External System provided via Dashurs Auth or Launch endpoint.
$.context.opr_meta	Json Map(1000)	No	The meta_data passed in by operator on Game Launcher call ($.login_context.meta_data). The value will be in JSON format.
$.context.platform	String(1000)	No	The platform type of current game. Possible values are [UNKNOWN, HTML5, FLASH, NATIVE]

Response

JSON	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.
$.timestamp	Timestamp	Yes	The time the response was sent yyyy-MM-dd HH:mm:ss.SSS 2016-12-27 18:32:22.123

$.processing_time	32-bit Int	Yes	The internal processing time for the External System in milliseconds.
			
			This is used to make sure Dashur can detect networking issues or External System issues when there is slow response times
			
			Example:
			
			`var start = new Date().getTime()`
			`//Process transaction`
			`var end = new Date().getTime()`
			`tx.processing_time = end - start`

$.token	String(1000)	Yes	The new token to use for next request. It is suggested that the External System issues a new token for each request. Please note Dashur does not guarantee that it will always use the last issued token for the next request. Therefor the External System should allow a token to be valid for at least 2 hours.
$.username	String(6-100)	Yes	The unique username of the user being authenticated.

JSON	Format	Mandatory	Description
$.account_ext_ref	String(2-50)	Yes	The id of the account in the External System. This needs to be unique in the External System
$.balance	Money	Yes	The balance of the member in the External System
$.currency	String(3)	Yes	The ISO Currency Code of the members balance
$.country	String(2)	Yes	The ISO Country Code of the Member
$.lang	String(0-5)	No	The preferred language of the Member

Example auth request

```
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "timestamp": "2016-09-09 04:00:13.297",
  "token": "xxxxx",
  "context": {
    "opr_meta": {"opr_key":"opr value 1"},
    "platform": "UNKNOWN"
  }
}
```

Example auth response

```
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  “processing_time": 100,
  "token": "xxxxx",
  "username": “username”,
  “account_ext_ref”: “acc001”,
  “balance”: 123400,
  “country”: “US”,
  “currency”: “USD”,
  “lang”: “en”,
  "timestamp": "2016-09-09 04:00:13.297"
}
```

ENDPOINT: BALANCE

This is the endpoint at the external system that will be called when Dashur to get the Members balance

Auth	
URL	{base_url}/v1/balance
Method	POST

Request

Request	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.
$.timestamp	Timestamp	Yes	The time the request was initiated yyyy-MM-dd HH:mm:ss.SSS 2016-12-27 18:32:22.123
$.token	String(1000)	Yes	The token from the External System provided via Dashurs Auth or Launch endpoint.
$.account_ext_ref	String(2-50)	Yes	The id of the account in the External System.
$.account_id	Number	**Yes**	**The id of the account in the system.**

Request	Format	Mandatory	Description
$.currency	String(3)	Yes	The ISO Currency Code of the members balance
$.context.opr_meta	Json Map(1000)	No	The meta_data passed in by operator on Game Launcher call ($.login_context.meta_data). The value will be in JSON format.
$.context.os	String(1000)	No	The Operating System of player's device.
$.context.session_key	String(1000)	No	The unique key of current session.
$.context.device_type	String(1000)	No	The type of the device that player is using. Possible values are [UNKNOWN, MOBILE, TABLET, DESKTOP, TV]
$.context.platform	String(1000)	No	The platform type of current game. Possible values are [UNKNOWN, HTML5, FLASH, NATIVE]

Response

JSON	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.
$.timestamp	Timestamp	Yes	The time the response was sent yyyy-MM-dd HH:mm:ss.SSS

JSON	Format	Mandatory	Description
			2016-12-27 18:32:22.123
$.token	String(1000)	Yes	The new token to use for next request. It is suggested that the External System issues a new token for each request. Please note Dashur does not guarantee that it will always use the last issued token for the next request. Therefor the External System should allow a token to be valid for at least 2 hours.
$.balance	Money	Yes	The balance of the member in the External System

$.processing_time	32-bit Int	Yes	The internal processing time for the External System in milliseconds.
			
			This is used to make sure Dashur can detect networking issues or External System issues when there are slow response times
			
			Example:
			
			`var start = new Date().getTime()`
			`//Process transaction`
			`var end = new Date().getTime()`
			tx.processing_time = end – start

Example balance request

```
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "timestamp": "2016-09-09 04:00:13.297",
  "token": "xxxxx",
  "account_ext_ref": "acc001",
  "account_id": #########,
  "currency":"USD",
  "context": {
    "opr_meta": {"opr_key":"opr value 1"},
    "os": "UNKNOWN",
    "session_key": "#########-#########-#",
    "device_type": "UNKNOWN",
    "platform": "UNKNOWN"
  }
}
```

Example balance response

```
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "timestamp": "2016-09-09 04:00:13.397",
  "processing_time": 100,
  "token": "xxxxx",
  "balance": 123400.12
}
```

ENDPOINT: TRANSACTION

This is the endpoint at the external system that will be called when a transaction against a Members wallet is created

Auth	
URL	{base_url}/v1/transaction
Method	POST

Request

Request	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.
$.timestamp	Timestamp	Yes	The time the request was initiated yyyy-MM-dd HH:mm:ss.SSS 2016-12-27 18:32:22.123
$.token	String(1000)	Yes	The token from the External System provided via Dashurs Auth or Launch endpoint.
$.account_ext_ref	String(2-50)	Yes	The id of the account in the External System.
$.account_id	Number	Yes	The id of the account in the system.
$.category	Enum • WAGER	Yes	The category of the transaction

Request	Format	Mandatory	Description
	• PAYOUT • REFUND		
$.sub_category	Enum • WAGER • POOL	NO	The transaction subcategory. Optional if tx has sub_category. The subcategory of Refund transaction is WAGER , and the subcategory of progressive payout is POOL
$.tx_id	64-bit Int	Yes	The id of the transaction in the Dashur system. This **should be a reference to make sure the uniqueness of the transactions.**
$.refund_tx_id	64-bit Int	Yes	This is the id of the transaction to refund if the transaction category is REFUND
$.currency	String(3)	YES	The ISO Currency Code used on the transaction
$.amount	Money	Yes	The amount of the transaction or the amount to refund if the transaction category is REFUND
$.pool_amount	Money	Yes	The amount of the transaction allocated to any pooling (example progressive games). Pool amount is included in the amount property
$.item_id	64-bit Int	Yes	The Item that the transaction was executed against
$.application _id	64-bit Int	Deprecated	The id of the Dashur application that this Transaction originated from
$.round_id	String(255)	Yes	The round the transaction belongs to

Request	Format	Mandatory	Description
$.meta_data	JSON Map(1000)	Yes	Meta_data of the transaction, including **campaign_id, bonus_amount**
$.context.opr_meta	Json Map(1000)	No	The meta_data passed in by operator on Game Launcher call ($.login_context.meta_data). The value will be in JSON format.
$.context.os	String(1000)	No	The Operating System of player's device.
$.context.session_key	String(1000)	No	The unique key of current session.
$.context.device_type	String(1000)	No	The type of the device that player is using. Possible values are [UNKNOWN, MOBILE, TABLET, DESKTOP, TV]
$.context.platform	String(1000)	No	The platform type of current game. Possible values are [UNKNOWN, HTML5, FLASH, NATIVE]
$.campaign_id	64-bit Int	No	The ID of campaign.
$.campaign_ext_ref	String(1000)	No	The external reference of campaign.

Response

JSON	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.

JSON	Format	Mandatory	Description
$.timestamp	Timestamp	Yes	The time the response was sent yyyy-MM-dd HH:mm:ss.SSS 2016-12-27 18:32:22.123

$.processing_time	32-bit Int	Yes	The internal processing time for the External System in milliseconds.
			
			This is used to make sure Dashur can detect networking issues or External System issues when there are slow response times
			
			Example:
			
			`var start = new Date().getTime()`
			`//Process transaction`
			`var end = new Date().getTime()`
			`tx.processing_time = end - start`

$.token	String(1000)	Yes	The new token to use for next request. It is suggested that the External System issues a new token for each request. Please note Dashur does not guarantee that it will always use the last issued token for the next request. Therefor the External System should allow a token to be valid for at least 2 hours.
$.balance	Money	Yes	The balance of the member in the External System after the transaction has been commited
$.ext_tx_id	String(255)	Yes	The id of the transaction in the External System.

Example transaction request

```
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "timestamp": "2016-09-09 04:00:13.297",
  "token": "xxxxx",
  "account_ext_ref": “acc001"
  "account_id": #########,
  "category": “WAGER",
  "sub_category":"",
  "tx_id": 12345678,
  "refund_tx_id": 0,
  "currency":"USD",
  "amount": 5000.00,
  "pool_amount": 50.23,
  "item_id": 1234,
  "application_id": 1234,
  "round_id": "####-####-#########-##”,
  "campaign_id": 372,
  "campaign_ext_ref": "freegame-1600864125853”,
  "meta_data":{
    "campaign_id":"12345",
    "bonus_amount":0
  },
  "context": {
    "opr_meta": {"opr_key":"opr value 1"},
    "os": "UNKNOWN",
    "session_key": "#########-#########-#",
    "device_type": "UNKNOWN",
    "platform": "UNKNOWN"
  }
}
```

Example transaction response

```
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "processing_time": 100,
  "token": "xxxxx",
  "balance": 123400.12,
  "ext_tx_id": "XXX123456",
  "timestamp": "2016-09-09 04:00:13.297"
}
```

ENDPOINT: END ROUND

This is the endpoint at the external system that will be called when a round of transactions closes. **Several rounds can be open at once against one member**

Auth	
URL	{base_url}/v1/endround
Method	POST

Request

Request	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.
$.timestamp	Timestamp	Yes	The time the request was initiated yyyy-MM-dd HH:mm:ss.SSS 2016-12-27 18:32:22.123
$.token	String(1000)	No	The token from the External System provided via Dashurs Auth or Launch endpoint.
$.account_ext_ref	String(2-50)	Yes	The id of the account in the External System.
$.account_id	Number	Yes	The id of the account in the system.
$.currency	String(3)	YES	The ISO Currency Code used on the transaction

Request	Format	Mandatory	Description
$.tx_id	64-bit Int	Yes	The id of the transaction in the Dashur system
$.application_id	64-bit Int	Deprecated	The application id creating the transaction in the Dashur system
$.item_id	64-bit Int	Yes	The Item that the transaction was executed against
$.round_id	String(255)	Yes	The round the transaction belongs to
$.txs	List(64-bit Int)	Yes	A list of Dashur transaction ids for the round
$.start_time	Timestamp	Yes	The time the round was initiated yyyy-MM-dd HH:mm:ss.SSS 2016-12-27 18:32:22.123
$.round_stats[].	Array	Yes	An array containing statistics about each Transaction category type that was present during the round
$.round_stats[].category	Enum • WAGER • PAYOUT • REFUND	Yes	The category of the transaction stats.
$.round_stats[].count	32-Bit int	Yes	The number of transactions for the category
$.round_stats[].sum	Money	Yes	The total amount for this transaction category in the round
$.round_stats[].sum_credit	Money	Yes	Total refund amount for Wager. Only be used in refund category.

Request	Format	Mandatory	Description
$.round_stats[].sum_debit	Money	Yes	Total refund amount for Payout. Only be used in refund category.
$.revenue	Money	Yes	**The revenue for this round**
$.context.opr_meta	Json Map(1000)	No	The meta_data passed in by operator on Game Launcher call ($.login_context.meta_data). The value will be in JSON format.
$.context.os	String(1000)	No	The Operating System of player's device.
$.context.session_key	String(1000)	No	The unique key of current session.
$.context.device_type	String(1000)	No	The type of the device that player is using. Possible values are [UNKNOWN, MOBILE, TABLET, DESKTOP, TV]
$.context.platform	String(1000)	No	The platform type of current game. Possible values are [UNKNOWN, HTML5, FLASH, NATIVE]

Response

JSON	Format	Mandatory	Description
$.req_id	UUID (32)	Yes	The unique request id in UUID format.
$.timestamp	Timestamp	Yes	The time the response was sent yyyy-MM-dd HH:mm:ss.SSS

JSON	Format	Mandatory	Description
			2016-12-27 18:32:22.123

$.processing_time	32-bit Int	Yes	The internal processing time for the External System in milliseconds.
			
			This is used to make sure Dashur can detect networking issues or External System issues when there is slow response times
			
			Example:
			
			`var start = new Date().getTime()`
			`//Process transaction`
			`var end = new Date().getTime()`
			`tx.processing_time = end - start`

$.token	String(1000)	Yes	The new token to use for next request. It is suggested that the External System issues a new token for each request. Please note Dashur does not guarantee that it will always use the last issued token for the next request. Therefor the External System should allow a token to be valid for at least 2 hours.
$.balance	Money	Yes	The balance of the member in the External System after the transaction has been commited

Example end round request

```
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "timestamp": "2016-09-09 04:00:13.297",
  "token": "xxxxx",
  "account_ext_ref": "acc001",
  "account_id": #########,
  "currency":"USD"
  "tx_id": 123456789,
  "application_id ": 1234,
  "item_id": 1234,
  "round_id": 12345678,
  "txs":[123456787,123456789],
  "round_stats": [
    {
      "category": "WAGER",
      "count": 1,
      "sum": 1000
    },
    {
      "category": "PAYOUT",
      "count": 1,
      "sum": 800
    },
    {
      "category": "REFUND",
      "count": 0,
      "sum_credit":0,
      "sum_debit":0
    }
  ]
  "start_time":"2019-09-19"
  "revenue":200,
  "context": {
    "opr_meta": {"opr_key":"opr value 1"},
    "os": "UNKNOWN",
    "session_key": "#########-#########-#",
    "device_type": "UNKNOWN",
    "platform": "UNKNOWN"
  }
}
```

Example end round response

```
{
  "req_id": "db673297-7238-4a06-a585-441f110924db",
  "processing_time": 100,
  "token": "xxxxx",
  "balance”: 123400.12,
  "timestamp": "2016-09-09 04:00:13.297"
}
```

API: AUTHENTICATION

The Dashur API works by first calling the Auth service to login to the API. The response will then be an access_token and refresh_token. The access_token is valid for 1 hour and used to call the API endpoints. The refresh_token is valid for 3 hours and can be used to get a new access_token without providing the initial username and password. The use of the refresh_token is to minimize sending the username/password across the network.

When requesting the token you need to send Basic Authentication to the token endpoint. The authentication is the Auth Username and Auth Secret separated by : and base64 encoded.

Authenticate	
URL	/oauth/token
Method	POST

Example Create Basic Authentication

```
Auth username: testauthuser
Auth secret: testsecret
$ echo "testauthuser:testsecret" | base64
dGVzdGF1dGh1c2VyOnRlc3RzZWNyZXQK
```

Alternatively the site https://www.base64encode.org/ can be used to encode the token.

Example Request

```
POST /oauth/token
Authorization: Basic dGVzdGF1dGh1c2VyOnRlc3RzZWNyZXQK
Content-Type: application/x-www-form-urlencoded
X-DAS-TX: 123e4567-e89b-12d3-a456-426655440000
X-DAS-CURRENCY: USD
X-DAS-TZ: UTC+9
X-DAS-LANG: en

grant_type=password&username=apiusername&password=apipassword
```

Example Response


```
{"access_token":"xxxxxxxxxxxxxxx","token_type":"bearer","refresh_token":"x
xxxxxxxx","expires_in":3599,"scope":"scope1:r,scope2:w","jti":"a2426760-
10e8-4ed3-95c9-a9ac991eaec6"}
```


The tokens in the response are JWT tokens and can be decoded at https://jwt.io/. The token includes data such as account id, username, scopes allowed etc.

Curl Example

```
curl --location --request POST 'https://{base_url}/oauth/token' \
--header 'X-DAS-TZ: UTC' \
--header 'X-DAS-CURRENCY: USD' \
--header 'X-DAS-TX-ID: THIS_IS_YOUR_TX_ID' \
--header 'X-DAS-LANG: en_US' \
--header 'Authorization: Basic xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx' \
--header 'Content-Type: application/x-www-form-urlencoded' \
--data-urlencode 'grant_type=password' \
--data-urlencode 'username=xxxxxxxxxxxxxx' \
--data-urlencode 'password=xxxxxxxxxxxxxx'
```

Make sure to change base_url to the hostname provided and also switch out the usernames and secrets to the ones provided

API: LAUNCHER

API to generate a redirect link that can be used to redirect a member. The API will make sure the member gets logged in, generate the token, construct the url and send the url back in the response.

Launch Item	
URL	/v1/launcher/item
Method	POST

Request

JSON Request	Format	Mandatory	Description
$.token	String(1500)	Yes	The token used by the External System. This token will be used to verify against the External Auth Endpoint. Either token or demo has to be provided.
$.demo	**Boolean**	No	When demo is set to true, the launch url generated will launch the game in demo mode. **Demo mode enabled for Flash and HTML5 RNG Slot Game.**
$.external	Bool	Yes	Should always be set to true to enable Dashur External Wallet login

JSON Request	Format	Mandatory	Description
$.game_id	64-bit Int	Yes	It was item_id before.The item to generate the link for.
$.campaigns	Array Int	No	The ID of one or more campaign to be assigned to the player. As one campaign could contain more than one game, only the game matching current launches will be assigned.
$.login_context	JSON Map(1000)	No	The login context is used to enhance the reporting of transaction data across Transaction Feeds and Reporting Services.
$.login_context.promotion_key	String(0-32)	No	Any promotion the member is currently part of
$.login_context.lang	String(0-5)	No	The language of the members. This will be used for selecting the correct language in the launch urls. See Appendinx A for valid values.
$.login_context.country_id	String(0-2)	No	The country the member belongs to using ISO country codes (FR, US, CN) etc.
$.login_context.session_key	String(0-32)	No	The current session id of the member in the external system.

JSON Request	Format	Mandatory	Description
$.login_context.ip	String(0-45)	No	The IP of the member. This is used for IP restrictions and reporting
$.login_context.user_agent	String(0-1024)	No	The current browser user agent the Member is using. This allows reporting on device types, os versions etc
$.login_context.meta_data	JSON Map(256)	No	The meta data object is a JSON Map that can contain any fields that the caller wants to tag the login context with. This data will then be added to any transaction and will follow through into External Wallet API
$.conf_params	JSON Map(1000)	No	The meta data object is a JSON Map that can contain any fields that the caller wants to tag the conf params with.
$.conf_params.lobby_url	String(255)	No	Define game-lobby page for HTML5 RNG slots game launch. This will enable the related button within the game, and perform the redirection when the button is clicked.
$.conf_params.banking_url	String(255)	No	Define banking page for HTML5 RNG slots game launch. This will enable the related button within

JSON Request	Format	Mandatory	Description
			the game, and perform the redirection when the button is clicked.
$.conf_params.logout_url	String(255)	No	Define default logout page for HTML5 Diamond Live Dealer game launch. Player will be redirect to this page once perform logout.
$.conf_params.failed_url	String(255)	No	Define failed page for HTML5 Diamond Live Dealer game launch. Player will be redirect to this page once perform failed.
$.conf_params.titanium	Enum • default • embedded	No	This is required when generate Live Dealer Titanium URL.

Response

JSON Response	Format	Description
$.meta	Object	The standard non paginated meta response. Including processing time, transaction_id, currency and timezone
$.data	String(0-2048)	The generated url

JSON Response	Format	Description

Example request to launch item

```
POST /v1/launcher/item

{
  "token": "XYC1234556",
  "external": true,
  "item_id": 2074,
  "campaigns": [100,101],
  "login_context": {
    "ip": "192.168.1.100",
    "session_key": "xyz",
    "user_agent": "Mozilla\/5.0 (Windows NT 6.1; WOW64; rv:40.0"
  }
}
```

Example response launching an item

```
{
  "meta": {
    "currency": "USD",
    "time_zone": "UTC+08:00",
    "transaction_id": "tx_id_1234",
    "processing_time": 843
  },
  "data": "https://redirec.com/redirect_url.."
}
```

Curl Example

```
curl -H "Content-Type: application/json" \
     -H "Authorization: Bearer accesstokenXXXXX" \
     -H "X-DAS-TX-ID: tx_id_1234" \
     -H "X-DAS-TZ: UTC+8" \
     -H "X-DAS-LANG: en" \
     -H "X-DAS-CURRENCY: USD" \
     -X POST \
     -d '{"token": "externalsystemtoken", "game_id": 2074,"campaigns ":
[100,101], "login_context": { "ip": "192.168.1.100", "session_key": "xyz",
"user_agent": "Mozilla/5.0 (Windows NT 6.1; WOW64; rv:40.0) Gecko/20100101
Firefox/40.1"}}' \
     http://{{base_url}}/v1/launcher/item
```

API: LAUNCH TRANSACTION DETAIL API

API to generate a link to any transaction detail pages an Application provides.

Launch Transaction		
URL	/v1/launcher/tx/{transaction_id}?lang={lang}	
Method	GET	This request is for GET method. Please add parameters on api url, do not add parameters in form body.

Request

Request	Format	Mandatory	Description
Transaction_id	64-bit Integer	Yes	The Dashur transaction id to get the link for
lang	String(0-5)	No	The language to use for the transaction detail page. Will default to English if no code is provided or a non-supported code is provided.

Response

JSON Response	Format	Description
$.meta	Object	The standard non paginated meta response. Including processing time, transaction_id, currency and timezone
$.data	String(0-2048)	The url to the transaction detail page

Example request to launch transaction detail

```
GET /v1/launcher/tx/{12345}?lang=en
```

Example response launching transaction detail

```
{
  "meta": {
    "currency": "USD",
    "time_zone": "UTC+08:00",
    "transaction_id": "tx_id_1234",
    "processing_time": 843
  },
  "data": "https://redirec.com/redirect_url.."
}
```

Curl Example

```
curl -H "Content-Type: application/json" \
     -H "Authorization: Bearer accesstokenXXXXX" \
     -H "X-DAS-TX-ID: tx_id_1234" \
     -H "X-DAS-TZ: UTC+8" \
     -H "X-DAS-LANG: en" \
     -H "X-DAS-CURRENCY: USD" \
     -X GET \
     http://{{base_url}}/v1/launcher/transaction/12345?lang=en
```

API: TRANSACTION FEED

API to get a log of transactions. The feed can be configured for either push or pull usage.

If pull usage is requested, then a URL needs to be provided to your account manager who will configure the system to push either all transactions or only transactions that have failed with non-deterministic errors. Please discuss with the account manager on which options are suitable

The Transaction feed API returns a list of transactions base on the various query parameters. The returned transactions are sorted by transaction time in descending order. There are two query patterns:

1. query by external_ref, returns all transactions that match the external ref
2. query by company_id, start_time, end_time, all parameters are mandatory. This will return all the transaction for members below this company
3. query by account_ext_ref, start_time, end_time, all parameters are mandatory. This will return all the transactions for the member

For query 2, all matched transactions are returned according to page size and page.

Pull TX Feed		
URL	/v1/feed/transaction	
Method	GET	This request is for GET method. Please add parameters on api url, do not add parameters in form body.

Request by Ext Ref

Request	Format	Mandatory	Description
external_ref	String (0-50)	Yes	The external reference of the transaction.

Request by Company Id or Account external reference

Request	Format	Mandatory	Description
company_id	64-bit Integer	Yes	The account_id of the company to list transactions for. All Member transactions will be included. Either company_id or account_ext_ref should be provided.
account_ext_ref	String (2-50)	Yes	The external reference of the account. Only transactions for this member will be included. Either company_id or account_ext_ref should be provided.
start_time	Timestamp	Yes	The starting time to list transactions from 2015-11-01 -> yyyy-MM-dd 2015-11-01T17:12:45 -> yyyy-MM-ddTHH:mm:ss 2015-11-01T17:12:45 +0800 -> yyyy-MM-ddTHH:mm:ss ZZ 2015-11-01T17:12:45 UTC+0800 -> yyyy-MM-ddTHH:mm:ss 'UTC'ZZ, please note only UTC is accepted 2015-11-01 17:12:45.000 -> yyyy-MM-dd HH:mm:ss.SSS

Request	Format	Mandatory	Description
end_time	Timestamp	Yes	The end time to list transactions to Timestamp format is same as for start_time
page	32-bit Integer	No	The page to get transactions for
page_size	32-bit Integer	No	The size of the page to list

Response

JSON Response	Format	Description
$.meta	Object	The standard non paginated meta response. Including processing time, transaction_id, currency and timezone
$.data[]. wallet_code	String(2-20)	The wallet the transaction was executed against
$.data[].external_ref	String(0-50)	The external reference used to create the transaction
$. data.[]. category	Enum • WAGER • PAYOUT • END_ROUND • REFUND	The transaction category.
$. data.[].subcategory	Enum • WAGER • POOL	The transaction subcategory. The subcategory of Refund transaction is WAGER , and the

JSON Response	Format	Description
		subcategory of progressive payout is POOL
$.data.[].balance_type	Enum • CASH_BALANCE	System info
$. data.[].type	Enum • CREDIT • DEBIT	If the wallet was debited or credited
$. data.[]. amount	Money	The amount of the transaction
$.data.[].id	64-bit Integer	The id of the created transaction
$.data.[]. parent_transaction_id	64-bit Integer	The id of any linked transaction. If there is no linked transaction the the parent_id is the same as the id of the transaction
$.data.[].account_id	64-bit Integer	The account_id of the account the transaction is created for.
$.data.[]. account_ext_ref	String (2-50)	The account external reference
$.data.[]. application_id	64-bit Integer	The application that created the transaction
$.data.[]. currency_unit	String(3)	The currency code used for the transaction
$.data.[]. transaction_time	Timestamp	The time the transaction was created

JSON Response	Format	Description
$.data.[].balance	Money	The new balance of the wallet that the transaction was executed against
$.data.[].pool_amount	Money	The amount progressive contribution or progressive payout.
$. data.[].created_by	64-bit Integer	The id of the user who created the account
$. data.[].created	Timestamp	The time the account was created
$.data.[].session	String(0-32)	The login session that the transaction was created in.
$. data.[].ip	String	The IP of the API user who created the transaction
$.data.[].meta_data	JSON Map(1000)	The meta data of the transaction
$.meta_data.[].round_seq_id	String	System info
$.meta_data.[].ext_w_tx_id	String	The id of the transaction in External System. This is retrieved from Endpoint: transaction.
$.meta_data.[].context	JSON Map(1000)	System info
$. context.[].os	String	The operation system that member uses, “WIN” refers to Windows

JSON Response	Format	Description
$. context.[].os_version	String	The version of the operation system that member uses.
$. context.[].browser_type	String	The browser that member uses.
$. context.[].isp	String	The ISP of the member
$. context.[].ip	String	The IP of the member
$. context.[].device_type	String	The type of the device that member uses.
$. context.[].country_ip	String	Member's country
$. context.[].browser_version	String	The version of the browser that member uses
$. context.[].platform	ENUM • FLASH • HTML5 • NATIVE	The platform that member execute the transactions
$.meta_data.[].round_id	String	An unique id of the transactions for the round
$.meta_data.[].mg	JSON Map(1000)	System info
$.mg.[].action_id	64-bit Integer	System info
$.mg.[].session_id	64-bit Integer	System info
$.mg.[].server_id	String	System info

JSON Response	Format	Description
$.mg.[].game_id	64-bit Integer	The id of the round for the member
$.meta_data.[].ext_item_id	String	System info
$.meta_data.[].item_id	64-bit Integer	The id of the item where the transaction was executed.
$.num_of_wager	64-bit Integer	The number of the wagers in the round
$.sum_of_wager	Money	The sum of the wagers in the round
$.num_of_payout	64-bit Integer	The number of payouts in the round
$.sum_of_payout	Money	The sum of payouts in the round
$.num_of_refund	64-bit Integer	The number of the refunds in the round
$.sum_of_refund_credit	Money	Sum of refund credit
$.sum_of_refund_debit	Money	Sum of refund debit
$.revenue	Money	Revenue of the round
$.transaction_ids	array	The transaction ids for the round

Example request to get a feed

```
GET /v1/feed/transaction?company_id=111111&start_time=2016-01-26
T00:00:00&end_time=2016-01-28T00:00:00

GET /v1/feed/transaction?account_ext_ref=test1111&start_time=2016-01-26
T00:00:00&end_time=2020-04-01 T00:00:00

GET /v1/feed/transaction?external_ref=ext123
```

Example transaction response from transaction feed


```
{
  "meta": {
    "currency": "USD",
    "time_zone": "UTC+08:00",
    "transaction_id": "tx_id_1234",
    "processing_time": 312,
    "pagination": {
      "page": 1,
      "page_size": 1,
      "total_pages": 1,
      "total_results": 1
    }
  },
  "data": [
        {
        "test": false,
        "wallet_code": "EXTERNAL1",
        "external_ref": "3403-19-60893550215",
        "category": "WAGER",
        "sub_category": "",
        "balance_type": "CREDIT_BALANCE",
        "type": "DEBIT",
        "amount": 2.50,
        "meta_data": {
            "round_id": "1001-3403-49866148-19",
            "round_seq_id": "60893550215",
            "ext_w_tx_id": "tx-123456789"
            "ext_item_id": "MGS_SoManyMonsters_FlashBonusSlot",
            "item_id": 1001,
            "context": {
                "os": "OSX",
                "os_version": "10_14_5",
                "browser_type": "CHROME",
                "isp": "XXXXXX",
                "ip": "123.121.222.111",
                "device_type": "DESKTOP",
                "country_ip": "US",
                "browser_version": 77,
                "platform": "FLASH"
            },
            "mg": {
                "action_id": "60893550215",
                "session_id": "141866598",
                "server_id": "3403",
                "game_id": "19"
            },
```

```
        "id": 17176000768,
        "parent_transaction_id": 17176000768,
        "account_id": 49866148,
        "account_ext_ref": "ext1234",
        "application_id": 1001,
        "currency_unit": "ZAR",
        "transaction_time": "2019-09-20 05:49:24.207",
        "balance": 273.50,
        "pool_amount": 0.00,
        "created_by": 12345678,
        "created": "2019-09-20 05:49:24.207",
        "session": "49866148-48834805-6",
        "ip": "123.121.222.111"
       }
   ]
}
```

Example endround response from transaction feed


```
{
      "test": false,
      "num_of_wager": 2,
      "sum_of_wager": 8.00,
      "num_of_payout": 1,
      "sum_of_payout": 3.00,
      "num_of_refund": 0,
      "sum_of_refund_credit": 0.00,
      "sum_of_refund_debit": 0.00,
      "revenue": 5.00,
      "transaction_ids": [
            102446645,
            102446647,
            102446649,
            102446652
      ],
      "wallet_code": "CASH1",
      "external_ref": "3403-round-2193232-1578888567-48-0",
      "category": "ENDROUND",
      "balance_type": "CASH_BALANCE",
      "type": "UNKNOWN",
      "amount": 0.00,
      "meta_data": {
            "round_seq_id": "0",
            "context": {
                  "os": "UNKNOWN",
                  "browser_type": "UNKNOWN",
                  "device_type": "TV",
                  "browser_version": 0,
                  "platform": "UNKNOWN"
            },
            "round_id": "1005-3403-2193232-round-2193232-1578888567-48",
            "mg": {
                  "action_id": "0",
                  "server_id": "3403",
                  "game_id": "round-2193232-1578888567-48"
            },
            "ext_item_id": "tx_app_monitoring_sc2",
            "item_id": 5831
      },
```

```
      "id": 102446652,
      "parent_transaction_id": 102446652,
      "account_id": 2193232,
      "account_ext_ref": "ext_ref_2193213_1532681036",
      "application_id": 7062,
      "currency_unit": "USD",
      "transaction_time": "2020-01-13 12:09:29.732",
      "balance": 122.00,
      "pool_amount": 0.00,
      "created_by": 2202519,
      "created": "2020-01-13 12:09:29.732",
      "session": "2193232-2202519-3387"
}
```


Curl Example

```
curl -H "Content-Type: application/json" \
     -H "Authorization: Bearer accesstokenXXXXX" \
     -H "X-DAS-TX-ID: tx_id_1234" \
     -H "X-DAS-TZ: UTC+8" \
     -H "X-DAS-LANG: en" \
     -H "X-DAS-CURRENCY: USD" \
     -X GET \
'https://{{base_url}}/v1/feed/transaction?company_id=111111&start_time=201
6-01-26T00:00:00&end_time=2016-01-28T00:00:00'
```

APPENDIX A SUPPORTED LOCALES

Language	Country	Locale ID
Albanian	Albania	sq_AL
Arabic	Algeria	ar_DZ
Arabic	Bahrain	ar_BH
Arabic	Egypt	ar_EG
Arabic	Iraq	ar_IQ
Arabic	Jordan	ar_JO
Arabic	Kuwait	ar_KW
Arabic	Lebanon	ar_LB
Arabic	Libya	ar_LY
Arabic	Morocco	ar_MA
Arabic	Oman	ar_OM
Arabic	Qatar	ar_QA
Arabic	Saudi Arabia	ar_SA

Language	Country	Locale ID
Arabic	Sudan	ar_SD
Arabic	Syria	ar_SY
Arabic	Tunisia	ar_TN
Arabic	United Arab Emirates	ar_AE
Arabic	Yemen	ar_YE
Belarusian	Belarus	be_BY
Bulgarian	Bulgaria	bg_BG
Catalan	Spain	ca_ES
Chinese (Simplified)	China	zh_CN
Chinese (Simplified)	Singapore	zh_SG
Chinese (Traditional)	Hong Kong	zh_HK
Chinese (Traditional)	Taiwan	zh_TW
Croatian	Croatia	hr_HR

Language	Country	Locale ID
Czech	Czech Republic	cs_CZ
Danish	Denmark	da_DK
Dutch	Belgium	nl_BE
Dutch	Netherlands	nl_NL
English	Australia	en_AU
English	Canada	en_CA
English	India	en_IN
English	Ireland	en_IE
English	Malta	en_MT
English	New Zealand	en_NZ
English	Philippines	en_PH
English	Singapore	en_SG
English	South Africa	en_ZA

Language	Country	Locale ID
English	United Kingdom	en_GB
English	United States	en_US
Estonian	Estonia	et_EE
Finnish	Finland	fi_FI
French	Belgium	fr_BE
French	Canada	fr_CA
French	France	fr_FR
French	Luxembourg	fr_LU
French	Switzerland	fr_CH
German	Austria	de_AT
German	Germany	de_DE
German	Luxembourg	de_LU
German	Switzerland	de_CH

Language	Country	Locale ID
Greek	Cyprus	el_CY(*)
Greek	Greece	el_GR
Hebrew	Israel	iw_IL
Hindi	India	hi_IN
Hungarian	Hungary	hu_HU
Icelandic	Iceland	is_IS
Indonesian	Indonesia	in_ID
Irish	Ireland	ga_IE
Italian	Italy	it_IT
Italian	Switzerland	it_CH
Japanese (Gregorian calendar)	Japan	ja_JP
Japanese (Imperial calendar)	Japan	ja_JP_JP

Language	Country	Locale ID
Korean	South Korea	ko_KR
Latvian	Latvia	lv_LV
Lithuanian	Lithuania	lt_LT
Macedonian	Macedonia	mk_MK
Malay	Malaysia	ms_MY
Maltese	Malta	mt_MT
Norwegian (Bokmål)	Norway	no_NO
Norwegian (Nynorsk)	Norway	no_NO_NY
Polish	Poland	pl_PL
Portuguese	Brazil	pt_BR(*)
Portuguese	Portugal	pt_PT(*)
Romanian	Romania	ro_RO
Russian	Russia	ru_RU

Language	Country	Locale ID
Serbian (Cyrillic)	Bosnia and Herzegovina	sr_BA
Serbian (Cyrillic)	Montenegro	sr_ME
Serbian (Cyrillic)	Serbia	sr_RS
Serbian (Latin)	Bosnia and Herzegovina	sr_Latn_BA
Serbian (Latin)	Montenegro	sr_Latn_ME
Serbian (Latin)	Serbia	sr_Latn_RS
Slovak	Slovakia	sk_SK
Slovenian	Slovenia	sl_SI
Spanish	Argentina	es_AR
Spanish	Bolivia	es_BO
Spanish	Chile	es_CL
Spanish	Colombia	es_CO

Language	Country	Locale ID
Spanish	Costa Rica	es_CR
Spanish	Dominican Republic	es_DO
Spanish	Ecuador	es_EC
Spanish	El Salvador	es_SV
Spanish	Guatemala	es_GT
Spanish	Honduras	es_HN
Spanish	Mexico	es_MX
Spanish	Nicaragua	es_NI
Spanish	Panama	es_PA
Spanish	Paraguay	es_PY
Spanish	Peru	es_PE
Spanish	Puerto Rico	es_PR
Spanish	Spain	es_ES

Language	Country	Locale ID
Spanish	United States	es_US
Spanish	Uruguay	es_UY
Spanish	Venezuela	es_VE
Swedish	Sweden	sv_SE
Thai (Western digits)	Thailand	th_TH
Thai (Thai digits)	Thailand	th_TH_TH
Turkish	Turkey	tr_TR
Ukrainian	Ukraine	uk_UA
Vietnamese	Vietnam	vi_VN

APPENDIX B SUPPORTED CURRENCIES

Currency	Decimals
AED	2
AFN	2
ALL	2
AMD	2
ANG	2
AOA	2
ARS	2
AUD	2
AWG	2
AZN	2
BAM	2
BBD	2
BDT	2
BGN	2
BHD	3
BIF	0

Currency	Decimals
BMD	2
BND	2
BOB	2
BRL	2
BSD	2
BTN	2
BWP	2
BYR	0
BZD	2
CAD	2
CDF	2
CHF	2
CLF	0
CLP	0
CNY	2
COP	2
CRC	2
CUC	2

Currency	Decimals
CUP	2
CVE	2
CZK	2
DJF	0
DKK	2
DOP	2
DZD	2
EEK	2
EGP	2
ERN	2
ETB	2
EUR	2
FJD	2
FKP	2
GBP	2
GEL	2
GHS	2
GIP	2

Currency	Decimals
GMD	2
GNF	0
GTQ	2
GYD	2
HKD	2
HNL	2
HRK	2
HTG	2
HUF	2
IDR	2
ILS	2
INR	2
IQD	3
IRR	2
ISK	0
JMD	2
JOD	3
JPY	0

Currency	Decimals
KES	2
KGS	2
KHR	2
KMF	0
KPW	2
KRW	0
KWD	3
KYD	2
KZT	2
LAK	2
LBP	2
LKR	2
LRD	2
LSL	2
LTL	2
LVL	2
LYD	3
MAD	2

Currency	Decimals
MDL	2
MGA	2
MKD	2
MMK	2
MNT	2
MOP	2
MRO	2
MTL	2
MUR	2
MVR	2
MWK	2
MXN	2
MYR	2
MZN	2
NAD	2
NGN	2
NIO	2
NOK	2

Currency	Decimals
NPR	2
NZD	2
OMR	3
PAB	2
PEN	2
PGK	2
PKR	2
PLN	2
PYG	0
QAR	2
RON	2
RSD	2
RUB	2
RWF	0
SAR	2
SBD	2
SCR	2
SDG	2

Currency	Decimals
SEK	2
SHP	2
SLL	2
SOS	2
SRD	2
STD	2
SVC	2
SYP	2
SZL	2
THB	2
TJS	2
TMT	2
TND	3
TOP	2
TRY	2
TTD	2
TWD	2
TZS	2

Currency	Decimals
UAH	2
UGX	0
USD	2
UYU	2
UZS	2
VEF	2
VND	0
VUV	0
WST	2
XAF	0
XCD	2
XOF	0
XPF	0
YER	2
ZAR	2
ZMK	2
ZMW	2
ZWL	2

APPENDIX C SUPPORTED TIMEZONES

A list of countries and their respective UTC offsets can be found at
https://en.wikipedia.org/wiki/List_of_UTC_time_offsets

Dashur UTC Offset Codes
UTC-12
UTC-11
UTC-10
UTC-9
UTC-8
UTC-7
UTC-6
UTC-5
UTC-4
UTC-3
UTC-2
UTC-1
UTC
UTC+1
UTC+2

Dashur UTC Offset Codes

UTC+3
UTC+4
UTC+5
UTC+6
UTC+7
UTC+8
UTC+9
UTC+10
UTC+11
UTC+12
UTC+13
UTC+14