

Project Ubin Phase 2 - Hyperledger Fabric

This is the API blueprint for Project Ubin Phase 2 Hyperledger Fabric prototype.

Please refer to the project repositories on GitHub to get the postman collections for this set of APIs.

Bank

ALL BANK BALANCES

GET

/api/bank/balance/all

Get account info for all banks

Returns a list of account information of all banks in the network.

Note: This API can only be called by the central bank (MAS).

Example URI

GET www.hl.net/api/bank/balance/all

Response 200

Headers

Content-Type: application/json

Body

```
[
  {
    "bic": "CHASSGSG",
    "balance": 1000000,
    "channels": [
      {
        "accountID": "CHASSGSG",
        "amount": 1000000,
        "currency": "SGD",
        "docType": "account",

        "status": "NORMAL",
        "channel": "chassgsgcsfbgsxchannel",
        "counterparty": "CSFBGSX"
      },
      {
        "accountID": "CHASSGSG",
        "amount": 0,
        "currency": "SGD",
```

[Back to top](#)

```

        "docType": "account",
        "status": "NORMAL",
        "channel": "chassgsgscblsgsgchannel",
        "counterparty": "SCBLSGSG"
    },
    {
        "accountID": "CHASSGSG",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "chassgsgmtbcsgsgchannel",
        "counterparty": "MTBCSGSG"
    },
    {
        "accountID": "CHASSGSG",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "chassgsgocbcsgsgchannel",
        "counterparty": "OCBCSGSG"
    },
]
},
{
    "bic": "CSFBGSX",
    "balance": 0,
    "channels": [
        {
            "accountID": "CSFBGSX",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "chassgsgcsfbgsxchannel",
            "counterparty": "CHASSGSG"
        },
        {
            "accountID": "CSFBGSX",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "csfbgsxscblsgsgchannel",
            "counterparty": "SCBLSGSG"
        },
        {
            "accountID": "CSFBGSX",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "csfbgsxocbcsgsgchannel",
            "counterparty": "OCBCSGSG"
        },
    ],
    {

```

```

        "accountID": "CSFBGSX",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "csfbgsxmtbcsgsgchannel",
        "counterparty": "MTBCSGSG"
    }
]
},
{
    "bic": "MTBCSGSG",
    "balance": 0,
    "channels": [
        {
            "accountID": "MTBCSGSG",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "chassgsgmtbcsgsgchannel",
            "counterparty": "CHASSGSG"
        },
        {
            "accountID": "MTBCSGSG",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "csfbgsxmtbcsgsgchannel",
            "counterparty": "CSFBGSX"
        },
        {
            "accountID": "MTBCSGSG",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "mtbcsgsgocbcsgsgchannel",
            "counterparty": "OCBCSGSG"
        },
        {
            "accountID": "MTBCSGSG",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "mtbcsgsgscblsgsgchannel",
            "counterparty": "SCBLSGSG"
        }
    ],
}
},
{
    "bic": "OCBCSGSG",
    "balance": 0,
    "channels": [
        {

```

```

        "accountID": "OCBCSGSG",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "chasssgsgocbcsgsgchannel",
        "counterparty": "CHASSGSG"
    },
    {
        "accountID": "OCBCSGSG",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "csfbsgsxocbcsgsgchannel",
        "counterparty": "CSFBGSX"
    },
    {
        "accountID": "OCBCSGSG",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "ocbcsgsgscblsgsgchannel",
        "counterparty": "SCBLSGSG"
    },
    {
        "accountID": "OCBCSGSG",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "mtbcsgsgocbcsgsgchannel",
        "counterparty": "MTBCSGSG"
    }
],
},
{
    "bic": "SCBLSGSG",
    "balance": 0,
    "channels": [
        {
            "accountID": "SCBLSGSG",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "chasssgsgscblsgsgchannel",
            "counterparty": "CHASSGSG"
        },
        {
            "accountID": "SCBLSGSG",
            "amount": 0,
            "currency": "SGD",
            "docType": "account",
            "status": "NORMAL",
            "channel": "csfbsgsxscblsgsgchannel",

```

```

        "counterparty": "CSFBGSX"
      },
      {
        "accountID": "SCBLSGSG",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "ocbcsgsgscblsgsgchannel",
        "counterparty": "OCBCSGSG"
      },
      {
        "accountID": "SCBLSGSG",
        "amount": 0,
        "currency": "SGD",
        "docType": "account",
        "status": "NORMAL",
        "channel": "mtbcsgsgscblsgsgchannel",
        "counterparty": "MTBCSGSG"
      }
    ]
  }
}

```

BANK COUNTERPARTIES

GET

/api/bank/counterparties

Get list of valid counterparties

Returns a list of all counterparties in the network and their respective channel with the caller.

Example URI

GET www.hl.net/api/bank/counterparties

Response 200

Headers

Content-Type: application/json

Body

```

[
  {
    "channel": "bofasg2xmtbcsgsgchannel",
    "bic": "BOFASG2X"
  },
  {
    "channel": "chasssgsgmtbcsgsgchannel",
    "bic": "CHASSGSG"
  },
  {

```

```
[
  {
    "channel": "citisgsgmtbcsosgsgchannel",
    "bic": "CITISGSG"
  },
  {
    "channel": "csfbsgsxmtbcsosgsgchannel",
    "bic": "CSFBGSX"
  },
  {
    "channel": "dbsssgsgmtbcsosgsgchannel",
    "bic": "DBSSSGSG"
  },
  {
    "channel": "hsbcsosgsgmtbcsosgsgchannel",
    "bic": "HSBCSGSG"
  },
  {
    "channel": "mtbcsosgsgocbcsosgsgchannel",
    "bic": "OCBCSGSG"
  },
  {
    "channel": "mtbcsosgsgscblsgsgchannel",
    "bic": "SCBLSGSG"
  },
  {
    "channel": "mtbcsosgsguobvsgsgchannel",
    "bic": "UOBVSGSG"
  },
  {
    "channel": "mtbcsosgsgxsimgsgsgchannel",
    "bic": "XSIMSGSG"
  }
]
```

BANK INFO

GET

/api/bank/info

Get account info for self

Returns overall balance and channel-level balance for each bilateral channel the caller is a participant in.

Example URI

GET www.hl.net/api/bank/info

Response 200

Headers

Content-Type: application/json

Body

```
{
  "bic": "MTBCSGSG",
  "balance": 300,
  "channels": [
    {
      "accountID": "MTBCSGSG",
      "amount": 100,
      "currency": "SGD",
      "docType": "account",
      "status": "NORMAL",
      "channel": "mtbcsgsgocbcsgsgchannel",
      "counterparty": "OCBCSGSG"
    },
    {
      "accountID": "MTBCSGSG",
      "amount": 0,
      "currency": "SGD",
      "docType": "account",
      "status": "NORMAL",
      "channel": "chasssgsgmtbcsgsgchannel",
      "counterparty": "CHASSGSG"
    },
    {
      "accountID": "MTBCSGSG",
      "amount": 200,
      "currency": "SGD",
      "docType": "account",
      "status": "NORMAL",
      "channel": "bofasg2xmtbcsgsgchannel",
      "counterparty": "BOFASG2X"
    },
    {
      "accountID": "MTBCSGSG",
      "amount": 0,
      "currency": "SGD",
      "docType": "account",
      "status": "NORMAL",
      "channel": "mtbcsgsguobvsgsgchannel",
      "counterparty": "UOBVSGSG"
    },
    {
      "accountID": "MTBCSGSG",
      "amount": 0,
      "currency": "SGD",
      "docType": "account",
      "status": "NORMAL",
      "channel": "mtbcsgsgscblsgsgchannel",
      "counterparty": "SCBLSGSG"
    },
    {
      "accountID": "MTBCSGSG",
      "amount": 0,
      "currency": "SGD",
      "docType": "account",
      "status": "NORMAL",
      "channel": "mtbcsgsgxsimsgsgchannel",

```

```

    "counterparty": "XSIMSGSG"
  },
  {
    "accountID": "MTBCSGSG",
    "amount": 0,
    "currency": "SGD",
    "docType": "account",
    "status": "NORMAL",
    "channel": "csfbsgsxmtbcsgsgchannel",
    "counterparty": "CSFBGSX"
  },
  {
    "accountID": "MTBCSGSG",
    "amount": 0,
    "currency": "SGD",
    "docType": "account",
    "status": "NORMAL",
    "channel": "citisgsgmtbcsgsgchannel",
    "counterparty": "CITISGSG"
  },
  {
    "accountID": "MTBCSGSG",
    "amount": 0,
    "currency": "SGD",
    "docType": "account",
    "status": "NORMAL",
    "channel": "hsbcsgsgmtbcsgsgchannel",
    "counterparty": "HSBCSGSG"
  },
  {
    "accountID": "MTBCSGSG",
    "amount": 0,
    "currency": "SGD",
    "docType": "account",
    "status": "NORMAL",
    "channel": "dbsssgsgmtbcsgsgchannel",
    "counterparty": "DBSSSGSG"
  }
]
}

```

TRANSACTION HISTORY

GET

/api/bank/transactions

Get transaction history

Returns the entire transaction history across all channels the caller is a participant of. If called by the central bank(MAS), this will return the history of all pledge and redeem transactions across all channels.

Example URI

GET www.hl.net/api/bank/transactions

Response 200

Headers

Content-Type: application/json

Body

```
[
  {
    "channelName": "hsbcsgsgmtbcsgsgchannel",
    "transType": "completedtx",
    "transId": "cf2f6efa63c33079673ce3ee615df57c889910c211e4e1e9ee",
    "sender": "MTBCSGSG",
    "receiver": "HSBCSGSG",
    "transactionAmount": 6000,
    "currency": "SGD",
    "status": "CANCELLED",
    "requestedDate": "2017-11-10T02:28:55.938Z",
    "updatedAt": "2017-11-10T03:03:33.905Z"
  },
  {
    "channelName": "csfbsgsxmtbcsgsgchannel",
    "transType": "completedtx",
    "transId": "c442ac3af5233d600dbccacc040d2019b935f09398692ad369",
    "sender": "CSFBSGSX",
    "receiver": "MTBCSGSG",
    "transactionAmount": 200,
    "currency": "SGD",
    "status": "SETTLED",
    "requestedDate": "2017-11-10T05:37:16.789Z",
    "updatedAt": "2017-11-10T05:37:16.789Z"
  },
  {
    "channelName": "csfbsgsxmtbcsgsgchannel",
    "transType": "completedtx",
    "transId": "def183de047a51e5e81148d0834feebe5c607cedfc1fda19c9",
    "sender": "CSFBSGSX",
    "receiver": "MTBCSGSG",
    "transactionAmount": 200,
    "currency": "SGD",
    "status": "SETTLED",
    "requestedDate": "2017-11-10T05:55:42.158Z",
    "updatedAt": "2017-11-10T05:55:42.158Z"
  },
  {
    "channelName": "mtbcsgsgxsimsgsgchannel",
    "transType": "pledgefund",
    "transId": "5bac2f60ca86bd6a443c4daeb8c2585b4505bdd261eb061547",
    "sender": "MASGSGSG",
    "receiver": "MTBCSGSG",
    "transactionAmount": 10000,
    "currency": "SGD",
    "status": "CREATED",
    "requestedDate": "2017-11-10T10:29:18.656Z",
    "updatedAt": "2017-11-10T10:29:18.656Z"
  }
]
```

```
}  
]
```

Fund

PLEDGE

POST

`/api/fund/pledge`

Request to pledge funds

Pledge funds to a particular account in a particular channel. The ID returned is the ledger transaction ID generated by Hyperledger Fabric core.

Note: This API can only be called by the central bank(MAS)

Example URI

POST `www.hl.net/api/fund/pledge`

Request

Headers

Content-Type: `application/json`

Body

```
{  
  "receiver": "CSFBSGSX",  
  "channel": "csfbsgsxmtbcsgsgchannel",  
  "amount": 3000  
}
```

Response `201`

Headers

Content-Type: `application/json`

Body

```
{
  "status": 200,
  "fabricId": "65cff5b5ae42e979d0de491ac9990768439547502631d5381da
  "payload": ""
}
```

REDEEM

POST

/api/fund/redeem

Request to redeem funds

Redeem funds from a particular account in a particular channel. The ID returned is the ledger transaction ID generated by Hyperledger Fabric core.

Note: This API can only be called by the central bank(MAS)

Example URI

POST www.hl.net/api/fund/redeem

Request

Headers

Content-Type: application/json

Body

```
{
  "receiver": "CSFBSGSX",
  "channel": "csfbsgsxmtbcsgsgchannel",
  "amount": 3000
}
```

Response 201

Headers

Content-Type: application/json

Body

```
{
  "status": 200,
  "fabricId": "31c5ed1745ea1d179b7fe49d2a2f946c952d615a50caa05d0ff
}
```

```
"payload": "",
"channel": "csfbsgsxmtbcsgsgchannel",
"transactionAmount": 9000,
"sender": "CSFBGSX"
}
```

TRANSFER

POST

`/api/fund/transfer`

Create a new payment instruction

Create a new payment instruction in the bilateral channel which the caller and receiver is a participant of.

The currency and enqueue fields are optional and defaulted to "SGD" and "false" respectively.

Example URI

POST www.hl.net/api/fund/transfer

Request

Headers

Content-Type: `application/json`

Body

```
{
  "receiver": "MTBCSGSG",
  "priority": 0,
  "transactionAmount": 200,
  "currency": "SGD",
  "enqueue": "true"
}
```

Response `201`

Headers

Content-Type: `application/json`

Body

```
{
  "fabricId": "536407140e37b6013e9420eee3e5a54d0f57711cfffed5cc7cde",
  "msg": "Success: Transaction is completed",
  "transId": "c442ac3af5233d600dbccacc040d2019b935f09398692ad369f6"
}
```

CROSS-CHANNEL FUND MOVEMENT

POST

`/api/fund/interchannel/transfer`

Move funds

Move funds from one bilateral channel to another bilateral channel. The caller must be a participant in both channels.

Example URI

POST `www.hl.net/api/fund/interchannel/transfer`

Request

Headers

Content-Type: `application/json`

Body

```
{
  "fromChannel": "csjpmchannel",
  "toChannel": "jpmocbcchannel",
  "amount": 50
}
```

Response `201`

Headers

Content-Type: `application/json`

Body

```
{
  "moveOutFundID": "21ee07124444ac597d0bd9e7185980a33bc0f93e12573a",
  "createTransientFundPayload": {
    "docType": "transientfund",
    "refID": "21ee07124444ac597d0bd9e7185980a33bc0f93e12573a652712",
    "accountID": "CSFBSGSX",
    "channelFrom": "csfbsgsxmtbcsgsgchannel",

```

```

    "channelTo": "csfbsgsxuobvsgsgchannel",
    "amount": 50,
    "currency": "SGD",
    "createTime": "2017-11-10T06:00:19.439Z"
  },
  "moveInFundPayload": {
    "docType": "moveinfund",
    "refID": "21ee07124444ac597d0bd9e7185980a33bc0f93e12573a652712",
    "accountID": "CSFBSGSX",
    "channelFrom": "csfbsgsxmtbcsgsgchannel",
    "channelTo": "csfbsgsxuobvsgsgchannel",
    "amount": 50,
    "currency": "SGD",
    "createTime": "2017-11-10T06:00:21.617Z"
  }
}

```

CROSS-CHANNEL FUND MOVEMENT SUGGESTION

GET

/api/fund/suggest

Get suggestion for fund movement

Returns a list of all cross-channel fund movement suggestions for the caller.

Headers:

`showtransactions` (optional) [Default: `false`]: If set to `true`, the IDs of the payment instructions that can be settled after the fund transaction will be included in the response.

`strategy` (optional) [Default: `best-fit`]: Defines the strategy/algorithm used for fund movement suggestion (available values: `worst-fit`, `best-fit`).

Example URI

GET www.hl.net/api/fund/suggest

Request

Headers

```

strategy: "worse-fit"
showtransactions: true

```

Response `200`

Headers

```

Content-Type: application/json

```

Body

```
[
  {
    "fromChl": "csfbsgsxmtbcsgsgchannel",
    "toChl": "bofasg2xcfsbgsxchannel",
    "amount": 3000,
    "Trx": [
      "5635121c87d82b0b647f885268aa3e08b935953a64766cad193224a0f3e"
    ]
  },
  {
    "fromChl": "csfbsgsxmtbcsgsgchannel",
    "toChl": "chasssgsgcsfbsgsxchannel",
    "amount": 1000,
    "Trx": [
      "13f97bc68b6bb13fe679645a92ee23b4f9ea0cfb1e2907fd0d48778a016"
    ]
  }
]
```

Queue

QUEUE ALL

GET

/api/queue

Get All Payment Instructions

Get all current incoming/outgoing payment instructions in the queue from all bilateral channels the caller is a participant in.

Example URI

GET www.hl.net/api/queue

Response 201

Headers

Content-Type: application/json

Body

```
[
  {
    "docType": "queue",
    "transId": "9a6cf9de6baf1edafb62a117138b21b8aa339c3bb4d196184a"
    "channel": "csfbsgsxmtbcsgsgchannel",
  }
]
```

```

    "sender": "CSFBGSX",
    "receiver": "MTBCSGSG",
    "priority": 0,
    "nettable": true,
    "transactionAmount": 10000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "requestedDate": "2017-11-10T02:31:47.546Z",
    "updatedAt": "2017-11-10T02:31:47.546Z"
  },
  {
    "docType": "queue",
    "transId": "64f10796c54c082066236ea5455f03abda93771ab0bfcc94eb",
    "channel": "mtbcsgsgscblsgsgchannel",
    "sender": "MTBCSGSG",
    "receiver": "SCBLSGSG",
    "priority": 0,
    "nettable": true,
    "transactionAmount": 5000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "requestedDate": "2017-11-10T02:29:06.576Z",
    "updatedAt": "2017-11-10T02:29:06.576Z"
  },
  {
    "docType": "queue",
    "transId": "cf2f6efa63c33079673ce3ee615df57c889910c211e4e1e9ee",
    "channel": "hsbcsgsgmtbcsgsgchannel",
    "sender": "MTBCSGSG",
    "receiver": "HSBCSGSG",
    "priority": 0,
    "nettable": true,
    "transactionAmount": 6000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "requestedDate": "2017-11-10T02:28:55.938Z",
    "updatedAt": "2017-11-10T02:28:55.938Z"
  }
]

```

QUEUE OUT

GET

/api/queue/out

Get Outgoing Payment Instructions

Get all outgoing payment instructions in the queue from all bilateral channels the caller is a participant in.

Example URI

GET www.hl.net/api/queue/out

Response 200

Headers

Content-Type: application/json

Body

```
[
  {
    "docType": "queue",
    "transId": "cf2f6efa63c33079673ce3ee615df57c889910c211e4e1e9ee",
    "channel": "hsbcsgsgmtbcsosgsgchannel",
    "sender": "MTBCSGSG",
    "receiver": "HSBCSGSG",
    "priority": 0,
    "nettable": true,
    "transactionAmount": 6000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "requestedDate": "2017-11-10T02:28:55.938Z",
    "updatedAt": "2017-11-10T02:28:55.938Z"
  },
  {
    "docType": "queue",
    "transId": "64f10796c54c082066236ea5455f03abda93771ab0bfcc94eb",
    "channel": "mtbcsgsgschblsgsgchannel",
    "sender": "MTBCSGSG",
    "receiver": "SCBLSGSG",
    "priority": 0,
    "nettable": true,
    "transactionAmount": 5000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "requestedDate": "2017-11-10T02:29:06.576Z",
    "updatedAt": "2017-11-10T02:29:06.576Z"
  }
]
```

QUEUE IN

GET

/api/queue/in

Get Incoming Payment Instructions

Get all incoming payment instructions in the queue from all bilateral channels which the caller is a participant in.

Example URI

GET www.hl.net/api/queue/in

Response 200

Headers

Content-Type: application/json

Body

```
[
  {
    "docType": "queue",
    "transId": "97320a3686490d3baee7b21ac8dbeab8dbecc9c80cb2195d6c",
    "channel": "mtbcsgsgxsmsgsgchannel",
    "sender": "XSIMSGSG",
    "receiver": "MTBCSGSG",
    "priority": 0,
    "nettable": true,
    "transactionAmount": 70000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "requestedDate": "2017-11-10T02:50:22.89Z",
    "updatedAt": "2017-11-10T02:50:22.89Z"
  },
  {
    "docType": "queue",
    "transId": "9a6cf9de6baf1edafb62a117138b21b8aa339c3bb4d196184a",
    "channel": "csfbsgsxmtbcsgsgchannel",
    "sender": "CSFBSGSX",
    "receiver": "MTBCSGSG",
    "priority": 0,
    "nettable": true,
    "transactionAmount": 10000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "requestedDate": "2017-11-10T02:31:47.546Z",
    "updatedAt": "2017-11-10T02:31:47.546Z"
  },
  {
    "docType": "queue",
    "transId": "9ed1009e3446a09645c1f89d57f1f6e853433bbb67793f6e36",
    "channel": "csfbsgsxmtbcsgsgchannel",
    "sender": "CSFBSGSX",
    "receiver": "MTBCSGSG",
    "priority": 0,
    "nettable": true,
    "transactionAmount": 9000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
  }
```

```
    "requestedDate": "2017-11-10T02:50:06.95Z",  
    "updatedAt": "2017-11-10T02:50:06.95Z"  
  }  
]
```

QUEUE PRIORITY

PUT

/api/queue/priority

Update Payment Instruction Priority

Updates priority of payment instructions in the queue with one of the following {priority: 1 (High Priority), 0 (Normal Priority)}

Example URI

PUT www.hl.net/api/queue/priority

Request

Headers

Content-Type: application/json

Body

```
[  
  {  
    "transId": "64f10796c54c082066236ea5455f03abda93771ab0bfcc94eb"  
    "priority": 1,  
    "receiver": "SCBLSGSG"  
  }  
]
```

Response 201

Headers

Content-Type: application/json

Body

```
[  
  {  
    "status": "200",  
    "transId": "64f10796c54c082066236ea5455f03abda93771ab0bfcc94eb"  
    "message": "Success"  
  }  
]
```

```
}  
]
```

QUEUE STATUS

PUT

`/api/queue/status`

Update Payment Instruction Status

Updates status of a payment in the queue based on current status. This would set payment status to active if current is hold and vice versa

Example URI

PUT `www.hl.net/api/queue/status`

Request

Headers

Content-Type: `application/json`

Body

```
[  
  {  
    "receiver": "DBSSSGSG",  
    "transId": "8350a5e6a6d33516bfc6e9b5f01d276ac5b95d19fd17ea7e15"  
  }  
]
```

Response `201`

Headers

Content-Type: `application/json`

Body

```
[  
  {  
    "status": "200",  
    "transId": "8350a5e6a6d33516bfc6e9b5f01d276ac5b95d19fd17ea7e15"  
  }  
]
```

QUEUE CANCEL

PUT

/api/queue/cancel

Cancel Payment Instruction

Cancel payment instructions that are in the queue based on payment instruction id.

Example URI

PUT www.hl.net/api/queue/cancel

Request

Headers

Content-Type: application/json

Body

```
[
  {
    "receiver": "CHASSGSG",
    "transId": "94fab9c4162756fc05a3000116543109ece7c97c7e089f172c"
  }
]
```

Response 201

Headers

Content-Type: application/json

Body

```
[
  {
    "status": "200",
    "transId": "cf2f6efa63c33079673ce3ee615df57c889910c211e4e1e9ee"
  }
]
```

QUEUE SETTLE

GET

/api/queue/settle/{counterparty}

Settle Outgoing Payments

Settle outgoing payment in the queue. In the current design, this would be invoked by scheduler to settle payment regularly.

Example URI

GET www.hl.net/api/queue/settle/counterparty

URI Parameters

counterparty `string` (required)
To be replaced with BIC code of counterparty. This will determine the channel to try settlement in

Response `201`

Headers

Content-Type: `application/json`

Body

```
{
  "status": 200,
  "fabricId": "5c8c88405af4786dabd72ba05298b7db52791ad64035e95272c",
  "payload": "Bilateral Netting"
}
```

Netting

EXECUTE MULTILATERAL NETTING

POST

`/api/netting`

Intiate/participate in Netting

Initiates a multilateral netting cycle if there is no current ongoing multilateral netting cycle. Otherwise, participate in the current ongoing multilateral netting cycle if there is already an ongoing cycle.

Example URI

POST www.hl.net/api/netting

Response `200`

Headers

Content-Type: application/json

Body

```
{
  "outgoingarray": [
    {
      "docType": "queue",
      "refID": "e5ca2007215bd302e9b39aa578e23fe6ffc4cb57f6ba6d3261",
      "sender": "MTBCSGSG",
      "receiver": "CSFBSGSX",
      "priority": 0,
      "nettable": true,
      "amount": 4000,
      "currency": "SGD",
      "status": "ACTIVE",
      "isFrozen": false,
      "createTime": "2017-11-10T10:28:25.563Z",
      "updateTime": "2017-11-10T10:28:25.563Z"
    },
    {
      "docType": "queue",
      "refID": "511fdad0d2c93790140f7b60c9cd2cc9739a998c169b4223df",
      "sender": "MTBCSGSG",
      "receiver": "CHASSGSG",
      "priority": 0,
      "nettable": true,
      "amount": 2000,
      "currency": "SGD",
      "status": "ACTIVE",
      "isFrozen": false,
      "createTime": "2017-11-10T10:28:35.206Z",
      "updateTime": "2017-11-10T10:28:35.206Z"
    },
    {
      "docType": "queue",
      "refID": "7f4a4bcfc8761b14e0d6518dcfa31d0ac89e7cdc729caa826b",
      "sender": "MTBCSGSG",
      "receiver": "HSBCSGSG",
      "priority": 0,
      "nettable": true,
      "amount": 3000,
      "currency": "SGD",
      "status": "ACTIVE",
      "isFrozen": false,
      "createTime": "2017-11-10T10:28:51.887Z",
      "updateTime": "2017-11-10T10:28:51.887Z"
    }
  ],
  "nettable": [
    {
      "docType": "queue",
      "refID": "e5ca2007215bd302e9b39aa578e23fe6ffc4cb57f6ba6d3261",
      "sender": "MTBCSGSG",
```

```
    "receiver": "CSFBGSX",
    "priority": 0,
    "nettable": true,
    "amount": 4000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "createTime": "2017-11-10T10:28:25.563Z",
    "updateTime": "2017-11-10T10:28:25.563Z"
  },
  {
    "docType": "queue",
    "refID": "511fdad0d2c93790140f7b60c9cd2cc9739a998c169b4223df",
    "sender": "MTBCSGSG",
    "receiver": "CHASSGSG",
    "priority": 0,
    "nettable": true,
    "amount": 2000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "createTime": "2017-11-10T10:28:35.206Z",
    "updateTime": "2017-11-10T10:28:35.206Z"
  },
  {
    "docType": "queue",
    "refID": "7f4a4bcfc8761b14e0d6518dcfa31d0ac89e7cdc729caa826b",
    "sender": "MTBCSGSG",
    "receiver": "HSBCSGSG",
    "priority": 0,
    "nettable": true,
    "amount": 3000,
    "currency": "SGD",
    "status": "ACTIVE",
    "isFrozen": false,
    "createTime": "2017-11-10T10:28:51.887Z",
    "updateTime": "2017-11-10T10:28:51.887Z"
  }
],
"nonnettable": [],
"args": [
  "",
  "MTBCSGSG",
  "[\\\"e5ca2007215bd302e9b39aa578e23fe6ffc4cb57f6ba6d3261dfbf73d1\\\"]",
  "[ ]",
  "-9000"
],
"orgname": "org7",
"peers": [
  "FabricNx02:7051",
  "FabricNx03:8051",
  "FabricNx04:9051",
  "FabricNx05:10051",
  "FabricNx06:11051",
  "FabricNx07:12051",
  "FabricNx08:13051",
  "FabricNx09:14051",
```



```
    "FabricNx010:15051",  
    "FabricNx011:16051",  
    "FabricNx012:17051",  
    "FabricNx013:18051"  
  ]  
}
```

GET NETTING STATUS

GET

/api/netting/status

read current netting status

Returns the current multilateral netting object which includes all bank proposals and current cycle status and ID.

Available Statuses: ACHIEVED, EXPIRED, FAILED, INVALID, ONGOING, SETTLED

Example URI

GET www.hl.net/api/netting/status

Response 200

Headers

Content-Type: application/json

Body

```
{  
  "bankRequests": {  
    "CHASSGSG": {  
      "bankID": "CHASSGSG",  
      "docType": "bankrequest",  
      "netValue": 0,  
      "nettableList": [  
        "26be6bca028dc545a9d61934b81bda8a7a2394e0abe89f0680ad9482d",  
        "8cd3644038d7cc36dbb6045698840dbd9b3c1269d5b53e47ff45e3106",  
        "ab711bc6a537a4420085e21a615ae4d79223cbfbaa0dd8e0f9178de1a"  
      ],  
      "nonNettableList": []  
    },  
    "CSFBSGSX": {  
      "bankID": "CSFBSGSX",  
      "docType": "bankrequest",  
      "netValue": 0,  
      "nettableList": [  
        "65f0d436c56f84d9189a446300c62a1e712cff9ce9fe93aabd17c9dc1",  
        "26be6bca028dc545a9d61934b81bda8a7a2394e0abe89f0680ad9482d"  
      ],  
      "nonNettableList": []  
    }  
  },  
}
```

```
    "MTBCSGSG": {
      "bankID": "MTBCSGSG",
      "docType": "bankrequest",
      "netValue": 0,
      "nettableList": [
        "ab711bc6a537a4420085e21a615ae4d79223cbfbaa0dd8e0f9178de1a",
        "8cd3644038d7cc36dbb6045698840dbd9b3c1269d5b53e47ff45e3106",
        "65f0d436c56f84d9189a446300c62a1e712cff9ce9fe93aabd17c9dc1"
      ],
      "nonNettableList": []
    },
    "created": "2017-10-10T15:09:06.807Z",
    "cycleID": 1,
    "docType": "nettingcycle",
    "status": "ACHIEVED",
    "updated": "2017-10-10T15:09:29.148Z"
  }
}
```

MULTILATERAL NETTING SETTLEMENT

POST

/api/netting/settle

Settle achieved multilateral netting cycle

Example URI

POST www.hl.net/api/netting/settle

Response 200

Headers

Content-Type: application/json

Body

```
{
  "bankRequests": {
    "CHASSGSG": {
      "bankID": "CHASSGSG",
      "docType": "bankrequest",
      "netValue": 0,
      "nettableList": [
        "26be6bca028dc545a9d61934b81bda8a7a2394e0abe89f0680ad9482d",
        "8cd3644038d7cc36dbb6045698840dbd9b3c1269d5b53e47ff45e3106",
        "ab711bc6a537a4420085e21a615ae4d79223cbfbaa0dd8e0f9178de1a"
      ],
      "nonNettableList": []
    },
    "CSFBSGSX": {
      "bankID": "CSFBSGSX",
```

```

    "docType": "bankrequest",
    "netValue": 0,
    "nettableList": [
      "65f0d436c56f84d9189a446300c62a1e712cff9ce9fe93aabd17c9dc1",
      "26be6bca028dc545a9d61934b81bda8a7a2394e0abe89f0680ad9482d"
    ],
    "nonNettableList": []
  },
  "MTBCSGSG": {
    "bankID": "MTBCSGSG",
    "docType": "bankrequest",
    "netValue": 0,
    "nettableList": [
      "ab711bc6a537a4420085e21a615ae4d79223cbfbaa0dd8e0f9178de1a",
      "8cd3644038d7cc36dbb6045698840dbd9b3c1269d5b53e47ff45e3106",
      "65f0d436c56f84d9189a446300c62a1e712cff9ce9fe93aabd17c9dc1"
    ],
    "nonNettableList": []
  }
},
"created": "2017-10-10T15:09:06.807Z",
"cycleID": 1,
"docType": "nettingcycle",
"status": "ACHIEVED",
"updated": "2017-10-10T15:09:29.148Z"
}

```

TOGGLE MULTILATERAL NETTING

GET

/api/netting/toggle

Toggle participation/settlement auto scheduling

Toggle auto-participation if the caller is a commercial bank. Toggle auto-settlement if caller is the central bank(MAS).

Headers:

`time` (optional) [Default: 30000]: Defines the interval between execution of participation/settlement (in ms).

Example URI

GET www.hl.net/api/netting/toggle

Request

Headers

`time: 30000`

Response `202`

Headers

Content-Type: application/json

Body

```
{  
  "message": "toggled ON. every 30000 ms"  
}
```

Miscellaneous

RESET DATA

PATCH

/api/resetdata

reset all data in the network

Resets all data and states across all channels (bilateral and multilateral).

Note: This API can only be called by the central bank(MAS)

Headers:

all (optional) [Default: false]: if true, all data, including transaction history will be reset.
resets every data including history transactions default: false, resets data keep history

Example URI

PATCH www.hl.net/api/resetdata

Request

Headers

```
all: true
```

Response 200

Headers

Content-Type: application/json

Body

```
{
  "nettingchannel": {
    "status": 200,
    "fabricId": "6dc93a8a035c603def43cd80b7ea6997a00538a07fad3573b",
    "payload": ""
  },
  "fundingchannel": {
    "status": 200,
    "fabricId": "0f92ad3f1a0949c317f93c6075dae91f405b4117929a9cca6",
    "payload": ""
  },
  "csfbsgsxdbsssgsgchannel": {
    "status": 200,
    "fabricId": "c621fe771316f112e08dd48f22c808ad56ac69eb86c7938c2",
    "payload": "Successfully reset all assets"
  },
  "csfbsgsxhsbcsgsgchannel": {
    "status": 200,
    "fabricId": "521159e5385eda13617a22f0e46f06365c5d82d0c5ea21888",
    "payload": "Successfully reset all assets"
  },
  "csfbsgsxmtbcsgsgchannel": {
    "status": 200,
    "fabricId": "8a1bf9fb3f9dc71bf2ab7b52fefa99fa1e553d0666b4c70fe",
    "payload": "Successfully reset all assets"
  },
  "csfbsgsxocbcsgsgchannel": {
    "status": 200,
    "fabricId": "222df3beca31d2bf7f5611e75d13450447da5a6c0f584b524",
    "payload": "Successfully reset all assets"
  },
  "csfbsgxsxscblsgsgchannel": {
    "status": 200,
    "fabricId": "553042fbe4507d6c5f42f83232f3a66b80df2c79c670246dc",
    "payload": "Successfully reset all assets"
  },
  "csfbsgsxuobvsgsgchannel": {
    "status": 200,
    "fabricId": "ce4144957999bf157755b72a8c128f8bbf5589b5fcbcb9d2c6",
    "payload": "Successfully reset all assets"
  },
  "csfbsgsxxsimsgsgchannel": {
    "status": 200,
    "fabricId": "11e913079baa3bc77f48fe491d08e1110eafa68bccafbf540",
    "payload": "Successfully reset all assets"
  },
  "dbsssgsghsbcsgsgchannel": {
    "status": 200,
    "fabricId": "0ecfa0a44653ad2e434d338c2a2f62a6a2b2dfcb225a57192",
    "payload": "Successfully reset all assets"
  },
  "dbsssgsgmtbcsgsgchannel": {
    "status": 200,
    "fabricId": "bea684e1a83d9f7e3a9bc427c73dcfaeb7814e8a3ab9c82a3",
    "payload": "Successfully reset all assets"
  },
}
```

```
"dbsssgsgocbcsgsgchannel": {
  "status": 200,
  "fabricId": "29a4420fab8bdf4b752dcc5237e00835fef97264ea3b19a10"
  "payload": "Successfully reset all assets"
},
"dbsssgsgscblsgsgchannel": {
  "status": 200,
  "fabricId": "5fe91d7a26cdd9c161591f7c6bf005e5e178ab4b27baba99f"
  "payload": "Successfully reset all assets"
},
"dbsssgsguobvsgsgchannel": {
  "status": 200,
  "fabricId": "f99322659a5f10f005abd0645fe1ceb03619bcb0c22f1b4ed"
  "payload": "Successfully reset all assets"
},
"dbsssgsgxsimgsgsgchannel": {
  "status": 200,
  "fabricId": "983bdb93202897f92ac33d23800a0eaf4ac58bc52ee4c6662"
  "payload": "Successfully reset all assets"
},
"hsbcsgsgmtbcsgsgchannel": {
  "status": 200,
  "fabricId": "d07def7bc2858fb1e5ff05058322367e7744ba5e1c1117332"
  "payload": "Successfully reset all assets"
},
"hsbcsgsgocbcsgsgchannel": {
  "status": 200,
  "fabricId": "036d7e773354d1cf8cacec7de8913ebd3d8dfa0102493afb3"
  "payload": "Successfully reset all assets"
},
"hsbcsgsgscblsgsgchannel": {
  "status": 200,
  "fabricId": "c9ba649f0390ac8501e0e381ef3df780f09c6d52c95b76b94"
  "payload": "Successfully reset all assets"
},
"hsbcsgsguobvsgsgchannel": {
  "status": 200,
  "fabricId": "f36b0b00f61ebdf94bdd6d26be56a3864c802c4cc7f6f2ce8"
  "payload": "Successfully reset all assets"
},
"hsbcsgsgxsimgsgsgchannel": {
  "status": 200,
  "fabricId": "796e5616705a0d17ad51065e335eb84108025f435a4b58388"
  "payload": "Successfully reset all assets"
},
"mtbcsgsgocbcsgsgchannel": {
  "status": 200,
  "fabricId": "f39627f83a74795add35b14b33c0935c53b66d3d9a75c7ba5"
  "payload": "Successfully reset all assets"
},
"mtbcsgsgscblsgsgchannel": {
  "status": 200,
  "fabricId": "c8de896c777bc625668336ce5428efe3f854704c2e09fcad8"
  "payload": "Successfully reset all assets"
},
"mtbcsgsguobvsgsgchannel": {
  "status": 200,
```

```
    "fabricId": "a57f92fcfa87203fa9a137772e08696417b92314c6d4f584b",
    "payload": "Successfully reset all assets"
  },
  "mtbcsgsgxsmsgsgchannel": {
    "status": 200,
    "fabricId": "35ccd63db19c2c55e295765ecae83d4db3ac0f2d5cce94ee9",
    "payload": "Successfully reset all assets"
  },
  "ocbcsgsgscblsgsgchannel": {
    "status": 200,
    "fabricId": "281da65c60052c88e10b3149cc73ff6785607976880e7640e",
    "payload": "Successfully reset all assets"
  },
  "ocbcsgsguobvsgsgchannel": {
    "status": 200,
    "fabricId": "de81ce60a343a3604592f6f5fba39d08b76da36537db404fb",
    "payload": "Successfully reset all assets"
  },
  "ocbcsgsgxsmsgsgchannel": {
    "status": 200,
    "fabricId": "0fbfcf5c4a36b8ac782760f2cde5995d16217e62a009c8833",
    "payload": "Successfully reset all assets"
  },
  "scblsgsguobvsgsgchannel": {
    "status": 200,
    "fabricId": "66f1da2e02ca0c601c7732f619d09d94978ceelc14a0c16b8",
    "payload": "Successfully reset all assets"
  },
  "scblsgsgxsmsgsgchannel": {
    "status": 200,
    "fabricId": "1f8774673be7d8887395a8ad40f0491f6dee34b097c75b2cd",
    "payload": "Successfully reset all assets"
  },
  "uobvsgsgxsmsgsgchannel": {
    "status": 200,
    "fabricId": "736067576bceb9df3d46468820c872f15e7ce325180cd1c0d",
    "payload": "Successfully reset all assets"
  }
}
```

