



**Technical Specification Document - Fonepay
Merchant Integration through
Device for Dynamic QR**

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1.0	Aug 2023	First version of the document	Vijaya Khadka
1.1	Jul 2024	Updated Test Credentials and API Request	Kushal Bhakta Joshi

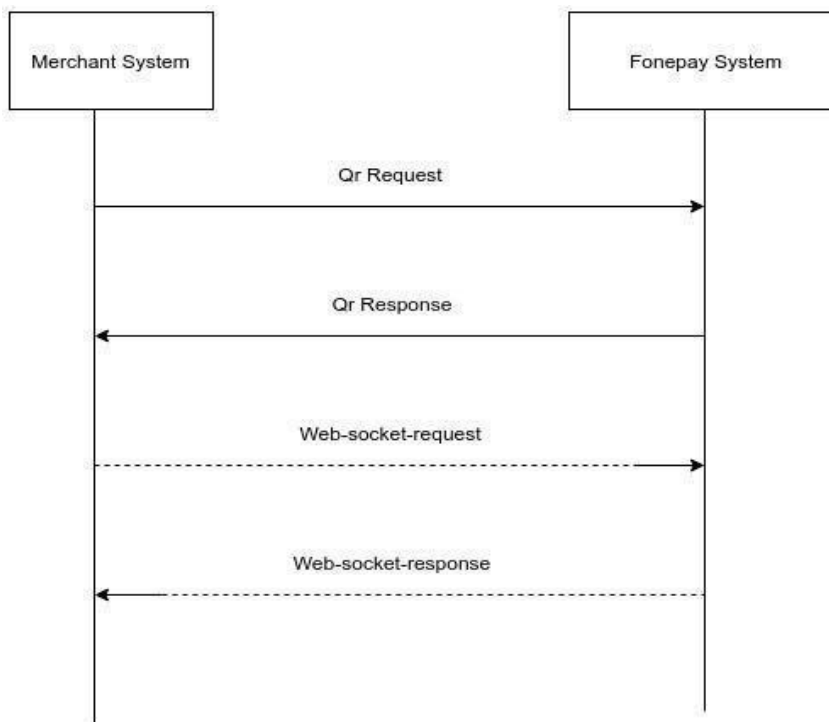
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1. Introduction

This document contains the standard specifications of the interface between the merchant System and Fonepay system for generating QR data. The interface specification describes a technical level while communicating with a system through API's for QR data. Data exchanged which does not strictly match the format specified in this document will be rejected.

2. System Flow



Merchant System sends QR request to Fonepay System. Fonepay system shall validate the request data and return the response to the merchant system. The merchant system shall initiate the web-socket connection to receive transaction acknowledgement from Fonepay server.

Fonepay system will send QR verification status and Payment notification whether the payment is approved, rejected or pending to merchant system through web- socket.

3. Implementation

3.1. Fonepay System URL API

Dev Server (For Testing):

<https://uat-new-merchant-api.fonepay.com/api>

Live Server:

<https://merchantapi.fonepay.com/api>

3.2. QR Request

Merchant needs to send POST request from merchant system to Fonepay system with following details:

Example:

`https://FonepaySystemURL/api/merchant/merchantDetails/ForThirdParty/thirdPartyDynamicQRDownload`

Replace Fonepay System URL with Dev Server (For Testing)

`https://uat-new-merchant-api.fonepay.com/api/merchant/merchantDetailsForThirdParty/thirdPartyDynamicQRDownload`

`ws://acquirer-websocket.fonepay.com/merchantEndPoint`

OR

Replace Fonepay System URL with Live Server

`https://merchantapi.Fonepay.com/api/merchant/merchantDetailsForThirdParty/thirdPartyDynamicQRDownload`

`wss://ws.fonepay.com/convergent-webSocket-web/merchantEndPoint`

3.2.1. QR Request Parameters

Fieldname	Format	Length	Condition	Description
amount	N	1-10	mandatory	The value shall only include (numeric) digits "0" to "9" and may contain a single "." character as the decimal mark. When the amount includes decimals, the "." character shall be used to separate the decimals from the integer value.
remarks1	AN	1-25	mandatory	Narration of the transaction.
remarks2	AN	1-25	mandatory	If additional narration is needed, it can be sent in this field.
prn	ANS	1-25	mandatory	Product Number. This should be unique for all request
merchantCode	AN	1-15	mandatory	Merchant Code provided by Fonepay system
dataValidation	ANS		mandatory	Signature: (HMAC_SHA512Hash)
username	ANS	1-25	mandatory	Username provided by Fonepay system
password	ANS	1-25	mandatory	Password provided by Fonepay system

3.3. HMAC Signature for QR request

To Generate Data Validation Token (DV) generate HMAC_SHA512 with Key for HMAC_SHA512=>Secret Key which can be found in your merchant profile page after you login. Note: Do not share Secret Key with other and do not store where other may easily find them like frontend app of website, generate HMAC_SHA512 in backend and store Secret Key it in backend.

3.3.1. HMAC For Request

Message for HMAC_SHA512=> AMOUNT,PRN,MERCHANT-CODE,REMARKS1,REMARKS2

Replace Param above with actual value.

Note: Values should be comma separated and value should not be URL encoded. For

Example:

Key=> a7e3512f5032480a83137793cb2021dc

Message =>14,5d76d323-d1f6,NBQM,test1,test2 So, our Data Validation Token (DV) is
5ae718032328ae5615fa4694dfbf3ecd13432bd49031e7285a3f8bc122ecbb8e833e83c7a11f89
5d 30f3e8fd1906317aece113675166ae0d804ecf32a8bbdbaf

3.3.1.1. Sample code

```
public String generateHash(String secretKey, String message) {
    Mac sha512_HMAC = null;

    String result = null;
    try {
        byte[] byteKey = secretKey.getBytes("UTF-8");
        final String HMAC_SHA512 = "HmacSHA512";

        sha512_HMAC = Mac.getInstance(HMAC_SHA512);

        SecretKeySpec keySpec = new SecretKeySpec(byteKey, HMAC_SHA512);
        sha512_HMAC.init(keySpec);

        result = bytesToHex(sha512_HMAC.doFinal(message.getBytes("UTF-8")));
        return result;
    } catch (Exception e) {
        log.error("Exception while Hashing Using HMAC256");
        return null;
    }
}

private static String bytesToHex(byte[] bytes) {
    final char[] hexArray = "0123456789ABCDEF".toCharArray();
    char[] hexChars = new char[bytes.length * 2];

    for (int j = 0; j < bytes.length; j++) {
        int v = bytes[j] & 0xFF;

        hexChars[j * 2] = hexArray[v >>> 4];
        hexChars[j * 2 + 1] = hexArray[v & 0x0F];
    }
}
```

```
return new String(hexChars);
}
```

3.3.2. JSON Message Sample

Json format that merchant system should generate while sending QR request and the response generated by the Fonepay system as:

<https://uat-new-merchant-api.fonepay.com/ap/merchant/merchantDetailsForThirdParty/thirdPartyDynamicQrDownload>

Request

```
{
  "amount": "14",
  "remarks1": "test1",
  "remarks2": "test2",
  "merchantCode": "NBQM",
  "dataValidation":
"43d2f0939e58e038c3122cc1e65f86af01998dce3e9f70a41a664dc0dbd45dfd74b4c4cbb77af
ef8a5ae9854ab48fcb d7edfc93156f663a8c60f28830e
aca7d7",
  "username": "admin",
  "password": "admin123456"
}
```

Success Response

```
{
  "message": "successfull",
  "qrMessage": "000201010212153137910524005204460000000NBQM:29226400011fonepay.
com0104NBQM020329206061367695204541153035245402145802NP5911Fonepaytest6008Distri
ct622107032 92021098418456336304d3f7",
  "status": "CREATED",
  "statusCode": 201,
  "success": true,
  "thirdpartyQrWebSocketUrl": "wss://dev-ws.fonepay.com/convergent-webSocket-
web/merchantEndPoint/Td35588c2d9a647f28f4959f96f905bec/NBQM/Y"
}
```

Failure Responses

```
{
  "documentation": "Merchant request Exception",
  "errorCode": 406,
  "message": "Data Validation Failed"
}
```

```
{
  "documentation": "Merchant request Exception",
  "errorCode": 406,
  "message": "Invalid Merchant Code"
}
```

```
{
  "documentation": "Merchant request Exception",
```

```

"errorCode": 406,
"message": "Invalid username"
}

```

3.4. Web Socket Connection

Web socket connection can be established to communicate between server and browser to get QR verification notification and Payment Status. After getting message from websocket merchant should call Check QR Request Status api.

For the Web Socket implementation, the Merchant System needs to establish WebSocket connection using thirdpartyQRWebSocketUrl from json response during merchant QR request.
ws://acquirer-websocket.fonepay.com/merchantEndPoint/556780a5-1239-4a79-a2b4-48e0cbf1de13/4271420000054621/Y

Note For live websocket url will be <wss://ws.Fonepay.com/>

Web Socket json message on QR Verified & QR Payment

When the customer scans the QR and makes payment, server will send QR verification and payment request as given below;

QR Verification Response	<pre> { "merchantId": 70, "deviceId": "Td35588c2d9a647f28f4959f96f905bec", "transactionStatus": "{ \"success\": true, \"message\": \"VERIFIED\", \"QRVerified\": true }" }</pre>
QR Payment Response	<pre> Payment Success: { "merchantId": 70, "deviceId": "Td35588c2d9a647f28f4959f96f905bec", "transactionStatus": "{</pre>

	<pre> \remarks1\": \"test1\", \remarks2\": \"test2\", \" transactionDate\": \"Apr 11, 2019 1:43:23 PM\", \"productNumber\": \"5 d76d323-d1f6-4a38-8231-0063f9581c98\", \"amount\": \"14\", \" message\": \"Request Complete\", \"success\": true, \" commissionType\": \"CHARGE\", \"commissionAmount\": 0.0, \" totalCalculatedAmount\": 14.0, \"paymentSuccess\": true } } </pre>
--	--

Note

Check paymentSuccess of transactionStatus from websocket response

```

{
  "traceld":17015,
  "remarks1":"test1",
  "remarks2":"test2",
  "transactionDate":"Apr 11, 2019 1:43:23 PM",
  "productNumber": "5d76d323-d1f6-4a38-8231- 0063f9581c98",
  "amount": "14",
  "message": "Request Complete",
  "success": true,
  "commissionType": "CHARGE",
  "commissionAmount": 0.0,
  "totalCalculatedAmount": 14.0,
  "paymentSuccess": true
}

```

}

3.5. Check QR Request Status

Merchant should verify the QR status after web socket notification or the merchant can check QR request status if it does not get response from web socket connection.

Merchant needs to send POST request with following details:

Example:

https://FonepaySystemURL/api/merchant/merchantDetailsForThirdParty/thirdPartyDynamicQRGetStatus Replace Fonepay System URL with Dev Server (For Testing)

https://uat-new-merchant-

api.fonepay.com/api/merchant/merchantDetailsForThirdParty/thirdPartyDynamicQRGetStatus

OR Replace Fonepay System URL with Live Server

https://merchantapi.Fonepay.com/api/merchant/merchant

DetailsForThirdParty/thirdPartyDynamicQRGetStatus Check QR Request Parameters

Check QR Request Parameters

Field Name	Format	Length	Condition	Description
prn	ANS	1-25	mandatory	Product Number. prn send during QR request
merchantCode	AN	1-15	mandatory	Merchant Code provided by Fonepay system
dataValidation	ANS		mandatory	Signature (HMAC_SHA512 Hash)
username	ANS	1-25	mandatory	Username provided by Fonepay system
password	ANS	1-25	mandatory	Password provided by Fonepay system

3.5.1. HMAC Signature for Check QR Request

To Generate Data Validation Token (DV) generate HMAC_SHA512 with Key for HMAC_SHA512=>Secret Key which can be found in your merchant profile page after you login.

Note

Do not share Secret Key with other and do not store where other may easily find them like frontend app of website, generate HMAC_SHA512 in backend and store Secret Key it in backend.

Message for HMAC_SHA512=>

PRN,MERCHANT-CODE

Replace Param above with actual value.

Note: Value is separated by comma and value should not be URL encoded.

For Example:

Key=> a7e3512f5032480a83137793cb2021dc

Message => 5d76d323-d1f6-4a388,NBQM

So, our Data Validation Token (DV) is

b816affc4599162bdbd9b8c7f6b7b83508dadfcceb0d58ba01f1042d749a7b5d71ea5b6f409ca
2d61607043555733c9240d2651a3473e7a195a326b21e9faf8

3.5.2. JSON Message Sample

Json format that merchant system should send while sending Check QR Request and the response generated by the Fonepay system as:

https://uat-new-merchant-
api.fonepay.com/api/merchant/merchantDetailsForThirdParty/thirdPartyDynamicQrGetStatu
s

Request

```
{
  "prm": "5d76d323-d1f6",
  "merchantCode": "NBQM",
  "dataValidation":
  "de5fd3bbbd7d36c766a47c0a137e41de7587028d2f6e3deacb5bebe30992326876a6fba4f9cc
  fd55 a1d302a81aba94733d6c1db04f749483be63b619a9b032b7",
  "username": "admin",
  "password": "admin123456"
}
```

Success Response

```
{
  "fonepayTraceId": 17404,
  "merchantCode": "NBQM",
  "paymentStatus": "success",
  "prm": "5d76d323-d1f6"
}
```

Failed Response

```
{
  "fonepayTraceId": 17420,
  "merchantCode": "NBQM",
  "paymentStatus": "failed",
  "prm": "654df0eb-0740"
}
```

Pending Response

```
{
```

```
"fonepayTraceId": 17420,  
"merchantCode": "NBQM",  
"paymentStatus": "failed",  
"prn": "654df0eb-0740"  
}
```

3.6. Testing Credentials

merchant code: fonepay123
secret key: fonepay

username: bijayk
password: password

3.7. Postman Curl

```
curl --location 'https://uat-new-merchant-  
api.fonepay.com/api/merchant/merchantDetailsForThirdParty/thirdPartyDynamicQrDownlo  
ad' \  
--header 'Content-Type: application/json' \  
--data '{  
  "amount": "50",  
  "prn": "check",  
  "merchantCode": "fonepay123",  
  "remarks1": "test1",  
  "remarks2": "test2",  
  "dataValidation":  
"f036eb09c5402a91e1926e904a423e66d041add18423959dad512b6f5fa37f1ea023197f6faae4  
2f84b357914f5ed77723255d108b38c20c058677cfc8ac4204",  
  "username": "bijayk",  
  "password": "password"  
}'
```

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