BANK OF AMERICA

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REST API

Developer's Guide v1.1.0

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1 Introduction

This guide is written for application developers who want to use the REST API to integrate payment processing into an order management system.

Implementing the payment services requires software development skills. You must write code that use the API request and response fields to integrate the credit card services into your existing order management system.

1.1 Conventions

These special statements are used in this document:

Important: An *Important* statement containsinformation essential tosuccessfully completing a task or learning a concept.

Warning: A *Warning* contains information or instructions, which, if not heeded, can result in a security risk, irreversible loss of data, or significant cost in time or revenue or both.

1.2 Document Revision History

Version	Release	Changes
1.0.0	December 2022	Initial Release
1.2.0	July 2023	Updates to:

2 Introduction to Payments

This first section will provide a brief overview of payments and payments processing. This will give you the foundational knowledge you will need to successfully create payment transactions.

First, we give a high-level overview of the payments industry. Second, we will walkthrough payments processing, providing both an overview and relevant workflows for each process.

2.1 Introduction to Payments

With Bank of America payment services, you can process payment cards (tokenized or non-tokenized), digital payments such as Apple Pay and Google Pay, and customer ID transactions. You can process payments across the globe and across multiple channels with scalability and security. Bank of America supports an extensive list of payment cards and offers a wide choice of gateways and financial institutions, all through one connection.

2.1.1 Financial Institutions and Payment Networks

Financial institutions and payment networks enable payment services. These entities work together and complete the full payment cycle.

Acquiring (Merchant) Financial Institutions

An acquiring (merchant) financial institution, also known as an acquirer, offers accounts to businesses that accept payment cards. Before you can accept payments, you must have a merchant account from an acquirer. Your merchant account must be configured to process card-not-present, card-present, or mail-order/telephone-order (MOTO) transactions.

Expect to be charged these fees:

- Discount rates
- Interchange fees
- Chargebacks

When chargebacks become excessive or fraudulent changes occur, the following could happen:

- You may be required to undertake business process changes to reduce the number chargebacks, and if the chargebacks are not reduced to a satisfactory level, your account may be terminated.
- If you receive many chargebacks or if many your transactions involve fraud, your acquiring institution may increase your discount rate or revoke your merchant account. Contact your sales representative for information about products that can help prevent fraud.

Issuing (Customer) Financial Institutions

An issuing (customer) financial institution, also known as an issuer, provides payment cards to and underwrites lines of credit for their customers. The issuer provides monthly statements and collects

payments. Issuer must follow the rules of the payment card companies to which they belong.

Payment Networks

Payment networks manage communications between acquiring financial institutions and issuing financial institutions. They also develop industry standards, support their brands, and establish fees for acquiring institutions.

Some payment networks, such as Visa and Mastercard, are trade associations that do not issue cards. Instead, issuers are members of these associations, and they issue cards under license from the association.

Other networks, such as Discover and American Express, issue their own cards. Before you process cards from these companies, you must sign agreements with them.

Before you can accept payments, you must register with Bank of America, where you will be assigned one or more merchant IDs (MID) to your business. These unique codes identify your business during payment transactions.

2.1.2 Payment Types

Payments can be made using these payment types:

- Co-branded cards
- Credit cards
- Debit cards
- Prepaid cards
- Private label cards

Co-Branded Cards

Co-branded cards are credit cards that are branded with a merchant's logo, brand, or other identifier as well as the payment network logo. These cards are not limited for use at the branded merchant and can be used at any merchant that accepts credit cards.

Credit Cards

Credit cards allow cardholders to borrow money to pay for goods and services from merchants that accept credit cards.

Debit Cards

Debit cards are linked to a cardholder's checking account. These cards allow merchants who- accept the debit card to deduct funds directly from the linked institution's account.

You can process debit cards using these services:

- Credit card services

Prepaid Cards

Prepaid cards allow cardholders to pay for goods and services using money stored directly on the card. You can process prepaid cards using these services:

- Credit card services

Private Label Cards

Private label cards are issued by private companies. They allow cardholders to borrow money to pay for goods exclusively at the issuing company's stores.

2.1.3 Types of Transactions

This topic provides information about card-not-present.

Card-Not-Present Transactions

When a customer provides a card number, but you do not have access to the physical card, the purchase is known as a card-not-present transaction. This type of transaction typically occurs over the Internet or through a call center. To process card-not-present transactions, use the credit card services described in this guide.

Card-not-present transactions pose an additional level of risk to your business because you cannot directly verify the customer's identification.

You can reduce that risk by using features such as Address Verification System (AVS) and Card Verification Numbers (CVNs). The AVS and CVN verify the customer's information and notify you when discrepancies occur.

Authorizations with Card Verification Numbers

Card verification numbers (CVNs) are a required feature for the authorization service.

The CVN is printed on a payment card, and only the cardholder can access it. The CVN is used in card- not-present transactions as a verification feature. Using the CVN helps reduce the risk of fraud.

CVNs are not included in payment card track data and cannot be obtained from a card swipe, tap, or dip.

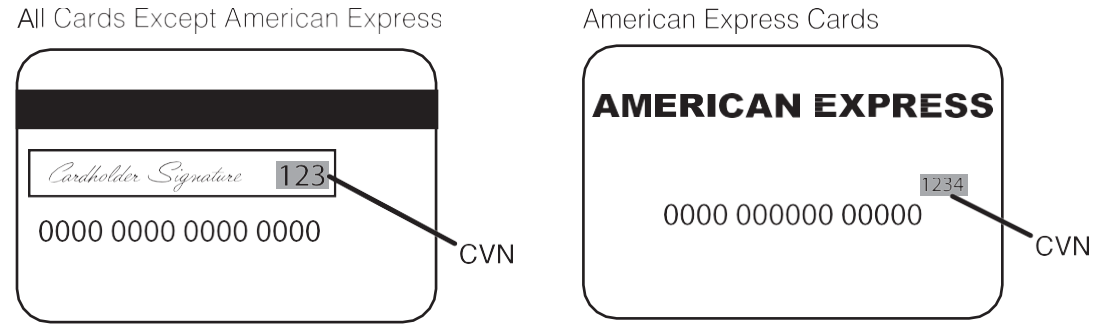
CVNs must not be stored after authorization.

Endpoint

```
POST https://api.merchant-services.bankofamerica.com/pts/v2/payments
```

For most cards, the CVN is a three-digit number printed on the back of the card, to the right of the signature field. For American Express, the CVN is a four-digit number printed on the front of the card above the card number.

CVN Locations



Each payment card company has its own name for the CVN value:

- American Express and Discover call it the *Card Identification Number* (CID).
- JCB calls it the *Card Authentication Value* (CAV2).
- Mastercard calls it the *Card Validation Code* (CVC2).
- Visa calls it the *Card Verification Value* (CVV2).

Token Management Service

The Token Management Service (Token Management) tokenizes, securely stores, and manages customer and payment data. Token Management enables you to:

- Securely store a customer's payment details and their billing and shipping addresses.
- Create a network token of a customer's payment card.

Token Management simplifies your PCI DSS compliance. Token Management passes back to you tokens that represent this data. You then store these tokens in your environment and databases instead of customer payment details.

Token Management Token Types

- Customer — Stores the buyer’s email address and the merchant's account ID for that buyer plus any other custom fields.
- Shipping Address — Stores a shipping address for a specific customer.
- Instrument Identifier — An Instrument Identifier object stores either:

- Payment card number
- [or] ACH bank account and routing number This resource creates either:
  - An Instrument Identifier token using details of a payment card or an ACH bank account.
  - A payment network token using the details of a payment card; also uses the card expiration date and billing address, which are pass-through only fields.

- Payment Instrument — Stores a Payment Instrument using an Instrument Identifier token. It does not store the card number and cannot exist without an associated Instrument Identifier. It stores:
  - Card expiration date
  - Billing address

  You can also choose to store this information yourself instead and store only the card number or bank account and routing number in an Instrument Identifier object.

- Customer Payment Instrument — Creates and stores a payment instrument for a specific customer ID and an Instrument Identifier token.

Token Management Features

- Create, retrieve, update, and delete tokens.
- Set a default payment instrument and shipping address for a customer.
- Process follow-on payment transactions with token IDs.
- Create and update tokens through bundled payment transactions.

2.2 Payment Processing

At the heart of payment processing is the various services used to process payments. These services allow customers to purchase goods and services, merchants receive payments from the customer's accounts, merchants to provide refunds, and merchants to void transactions.

2.2.1 Authorizations

An authorization confirms that a payment card a count includes enough funds to pay for a purchase. There are two basic types of authorizations:

- Online authorization
- Offline authorization

Online Authorizations

Online authorizations provide immediate fund availability confirmations. Further, the customer's financial institution also reduces the amount of credit available in the customer's account, setting aside the authorized funds for the merchant to capture a later time. Authorizations for most payment cards are processed online. Typically, it is safe to start fulfilling the order once you receive an authorization confirmation.

An online authorization confirmation and the subsequent hold on funds will expire after a specific length of time, therefore It is important to capture funds in a timely manner. Most authorizations expire within five to seven days, and the issuing bank sets expiration time interval.

The issuing bank does not inform Bank of America when an authorization confirmation expires. By default, the authorization information for each transaction remains in the BA360 for 60 days after the authorization date. To capture an authorization that has expired with the issuing bank, you can resubmit the authorization request.

Offline Authorizations

Online transactions require an internet connection. In situations where the internet is not available, due to an outage for example, merchants can continue to take credit card payments using offline transactions. An offline authorization is an authorization request for which you do not receive an immediate confirmation about the availability of funds.

Offline authorizations have a higher level of risk than do online transactions because they do not provide fund availability confirmations or set aside the funds for later capture. Further, it can take up to five days to receive payment confirmations for offline transactions. To mitigate this risk, you can choose to only fulfill orders after receiving payment confirmations.

Incremental Authorizations (For Future Use)

Incremental authorizations are useful when a customer adds products and services to an original purchase. After a successful original authorization, the incremental authorization service enables you to request subsequent authorizations and request one capture for the original and incremental authorizations.

The incremental authorization service is not the same as the incremental authorization scenario for a merchant-initiated transaction. There are limitations for using the incremental authorization service. The limitations are:

- Maximum of 100 incremental authorizations per transaction, in addition to the original authorization.
- Interchange optimization is not supported.
- Split shipments ~~are not~~ is supported.

Example Scenario

1. The customer reserves a hotel room for two nights at a cost of 200.00 per night. You request an authorization for 400.00. The authorization request is approved.
2. The customer orders dinner through room service the first night. You request an incremental authorization of 50.00 for the dinner.
3. The customer decides to stay an extra night. You request an incremental authorization of 200.00 for the additional night.
4. The customer uses items from the mini bar. The cost of the mini-bar items is 50.00. You request an incremental authorization of 50.00.
5. When the customer ends their stay and checks out, they signa receipt for 700.00, which is the total of all costs incurred.
6. You request a capture for 700.00.

Authorization Workflow

1. The customer purchases goods or service from the merchant using a payment card.
2. The merchant sends an authorization request to Bank of America Gateway.
3. Bank of America Gateway forwards the authorization request to the payment network.
4. The payment network forwards the authorization request to the issuer (customer) bank.
5. If funds are available, the issuer (customer) bank reserves the amount of the authorization request and returns an authorization approval to the payment network. If the issuer (customer) bank denies the request, it returns an authorization denial.
6. The payment network forwards the message to Bank of America Gateway.
7. Bank of America Gateway forwards the message to the merchant.

Payment Network Tokens Authorizations

You can integrate authorizations with payment network tokens into your existing order management system. For an incremental authorization, you do not need to include any payment network tokenization fields in the authorization request because Bank of America obtains the payment network tokenization information from the original authorization request.

2.2.2 Capture

A capture is a follow-on transaction to an authorization. It is used to transfer the authorized funds from the customer's account to the merchant account. To link the authentication transaction to the capture transaction, you include a request ID in your capture request. This request ID is returned to you during the authentication response.

Captures are typically not performed in real time. They are placed in a batch file and sent to the Bank of America Gateway and the Bank of America Gateway settles all the captures at one time. In most cases these batch files are sent and processed outside of the merchant's business hours. It usually takes two to four days for the acquiring financial institution to deposit the funds into the merchant account.

When fulfilling only part of a customer's order, do not capture the full amount of the authorization. Capture only the cost of the delivered items. When you deliver the remaining items, request a new authorization, and then capture the new authorization.

Important: It is not possible to perform a capture if a transaction is in a review state, which can occur if you use a fraud management service. You must accept the transaction prior to capture. For more information, see the fraud management guides under Fraud in the Merchant Services section of your Online Banking Portal.

Capture Workflow

1. Merchant sends one or more transaction capture requests to the Acquiring (Merchant) bank.
2. Merchant bank sends the capture package to the payment network.
3. The payment network forwards the capture package to correct the Issuer (Customer) banks.
4. Customer banks settle the transactions and transfers the money to the Acquirer (Customer) bank.

Important: To ensure all captures are processed correctly, you should reconcile your capture requests with the capture reports from Bank of America.

2.2.3 Sales

A sale is a bundled authorization and capture, you can request a sale instead of a separate authorization and capture when you provide the goods or services immediately after taking an order.

There are two types of sale processing:

- Dual Message Processing
- Single Message Processing

Dual Message Processing

Dual message processing, as the name indicates, is a two-step process. The authorization is processed first. If the authorization is successful, the capture is processed immediately afterward. The response will include the authorization and the capture information. If the authorization is declined, the capture is not processed, and the response message only includes the authorization information.

Single Message Processing

Single message processing, as the name implies, treats the authorization and capture as a single transaction. There are important differences for single message processing

- Single message processing treats the request as a full-financial transaction, and with a successful transaction, funds are immediately transferred from the customer account to the merchant account.
- Authorization and capture amounts must be the same.
- Some features cannot be used with single message processing.

Sales Workflow

1. The customer purchases goods or service from the merchant using a payment card.
2. The merchant sends an authorization request to the acquiring (merchant) bank.
3. The acquiring (merchant) bank forwards the request to the payment network.
4. The payment network forwards the authentication request to the issuer (consumer) bank.
5. If funds are available, the issuer sends amount of the authorization request to the acquirer and returns an authorization approval to the payment network. If the issuer (customer) bank denies the request, it returns an authorization denial.
6. The payment network forwards the message to the acquiring (merchant) bank.
7. The acquiring (merchant) bank forwards the message to the merchant.

2.2.4 Authorization Reversals

An authorization reversal releases the hold that an authorization placed on the customer's payment card funds.

Each card-issuing financial institution has its own rules for deciding whether an authorization reversal succeeds or fails. When a reversal fails, contact the card-issuing financial institution to learn whether there is a different way to reverse the authorization.

If your Bank of America Gateway supports authorization reversal after void (ARAV), you can reverse an authorization after you void the associated capture. If your Bank of America Gateway does not support ARAV, you can use the authorization reversal service only for an authorization that has not been captured and settled.

An authorization reversal is a follow-on transaction that uses the request ID returned from an authorization. The main purpose of a follow-on transaction is to link two transactions. The request ID links the follow-on transaction to the original transaction. The authorization request ID is used to look up the customer's billing and account information in BA360. You are not required to include those fields in the full authorization reversal request. The original transaction and follow-on transaction are linked in the database and in BA360.

Important: You cannot perform an authorization reversal if a transaction is in a review state, which can occur if you use a fraud management service. You must reject the transaction prior to authorization reversal. For more information, see the fraud management documentation in BA360.

2.2.5 Credits

Credits are cash refunds from a merchant to the cardholder after a cardholder pays for a product or service, and that payment is captured by the merchant. When a credit request is successful, the issuing bank takes money out of the acquiring (merchant) bank account and returns it to the customer. It typically takes two to four days for your acquiring bank to transfer funds from your merchant's account.

Warning: You should carefully control access to the credit service. Do not request this service directly from your customer interface. Instead, incorporate this service as part of your customer service process. This will reduce the potential for fraudulent transactions

There are two basic types of credits:

- Refunds
- Stand-Alone Credits

Refunds

Refunds, also known as follow-on credits, use the capture request ID to link the refund to a specific transaction. This request ID is returned during the capture request (also known as a settlement) and used in all subsequent refunds associated with the original capture. The request ID links the transaction to the customer's billing and account information, so you are not required to include those fields in the credit request. However, when you combine a request for a refund with a request for another service, such as the tax calculation service, you must provide the customer's billing and account information.

Unless otherwise specified, refunds must be requested within 60 days of a settlement. You can request multiple refunds against a single capture. To perform multiple refunds, use the same request ID in each request.

Stand-Alone Credits

Stand-alone credits are credits that are not tied to an original transaction. There are no time restrictions for stand-alone credits and can be used to issue refunds more than 60 days after a transaction settlement.

A credit does not happen in real time. All the credit requests for a day are typically placed in a batch file and sent to the Bank of America Gateway as a single *batch* transaction. In most cases, the batch transaction is settled overnight.

1. The merchant requests a credit.
2. The order information is validated.
3. The credit request is sent to the acquirer.
4. The acquirer transfers the requested funds to the issuer.

3 Order Tracking

Use reconciliation IDs to track your orders.

3.1 Reconciliation IDs

For each of the following services, the reconciliation ID is returned in the specified field in a response message:

- Authorization—reconciliation Id
- Capture—reconciliation Id
  When you perform multiple partial captures for an authorization, each response includes a different reconciliation ID for each capture request.
- Credit—reconciliation Id

On Bank of America Gateway, the reconciliation ID is mapped to the purchase identifier field that is sent to your acquirer.

4 Basic Payment Card Services

This section describes the basic services available for processing payment card transactions.

4.1 Processing Basic Authorizations

This topic shows the minimal set of information required to perform a successful authorization.

4.1.1 Required Fields for Processing Basic Authorizations

`clientReferenceInformation.code`
`orderInformation.amountDetails.currency`
`orderInformation.amountDetails.totalAmount`
`orderInformation.billTo.address1`
`orderInformation.billTo.administrativeArea`
`orderInformation.billTo.country`
`orderInformation.billTo.email`
`orderInformation.billTo.firstName`

orderInformation.billTo.lastName
orderInformation.billTo.locality
orderInformation.billTo.postalCode
paymentInformation.card.expirationMonth
paymentInformation.card.expirationYear
paymentInformation.card.number
paymentInformation.card.type

4.1.2 Declined Authorizations

If an authorization is declined, you can use response categories to help decide if you should retry or block a declined transaction.

These response fields provide additional information:

- paymentInsightsInformation.responseInsights.category
- paymentInsightsInformation.responseInsights.categoryCode

Category codes have possible values (such as 01) that correspond to a category, which contains a description.

You cannot retry the following category code and category:

01 ISSUER_WILL_NEVER_APPROVE

For the following values, you can retry the transaction a maximum of 15 times over a period of 30 days:

02 ISSUER_CANNOT_APPROVE_AT_THIS_TIME
03 ISSUER_CANNOT_APPROVE_WITH_THESE_DETAILS: Data quality issue. Revalidate data prior to retrying the transaction.
04 GENERIC_ERROR
97 PAYMENT_INSIGHTS_INTERNAL_ERROR
98 OTHERS
99 PAYMENT_INSIGHTS_RESPONSE_CATEGORY_MATCH_NOT_FOUND

4.1.3 Authorizing a Payment Using REST APIs

1. Send the service request tothis endpoint:
   https://api.merchant-services.bankofamerica.com/pts/v2/payments
2. Checkthe response message tomake sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

If the authorization is declined, see the following response fields for more information:

- paymentInsightsInformation.responseInsights.category
- paymentInsightsInformation.responseInsights.categoryCode

4.1.4 Example: Processing a Basic Authorization Using the REST API

Request

```
{
  "orderInformation"
     : { "billTo" : {
       "country" : "US",
       "lastName" : "Kim",
      "address1" : "201 S. Division St.",
      "postalCode" : "48104-2201",
      "locality" : "Ann Arbor",
      "administrativeArea" : "MI",
      "firstName" : "Kyong-Jin",
      "email" : "test@cybs.com"
      },
    "amountDetails" : { "totalAmount" :
      "100.00",
      "currency" : "usd"
      }
  },
    "paymentInformation" : {
      "card" : {
        "expirationYear" : "2031",
        "number" : "4111111111111111",
        "expirationMonth" : "12",
        "type" : "001"
    }
  }
}
```

Response: Successful Authorization


```
{
   "_links" : {
   "authReversal" : {
     "method" : "POST",
     "href" : "/pts/v2/payments/6461731521426399003473/reversals"
     },
     "self" : {
       "method" : "GET",
       "href" : "/pts/v2/payments/646173152142639900 3473"
     },
     "capture" : {
        "method" : "POST",
        "href" : "/pts/v2/payments/6461731521426399003473/captures"
     }
    },
    "clientReferenceInformation" : {
         "code" : "1646173152047"
    },
    "id" : "6461731521426399003473",
    "orderInformation" : {
     "amountDetails" : {
     "authorizedAmount" : "100.00",
     "currency" : "usd"
     }
    },
    "paymentAccountInformation" : {
     "card" : {
     "type" : "001"
     }
     },
   "paymentInformation" : {
     "tokenizedCard" : {
     "type" : "001"
     },
     "card" : {
     "type" : "001"
     }
   },
  "paymentInsightsInformation" : {
     "responseInsights" : {
     "categoryCode" : "01"
     }
     },
   "Bank of America
     GatewayInformation" : {
     "systemTraceAuditNumber" :
     "862481",
```

```
      "approvalCode" : "831000",
      "merchantAdvice" : {
      "code" : "01",
       "codeRaw" : "M001"
    },
    "responseDetails" : "ABC",
    "networkTransactionId" :
    "016153570198200",
    "consumerAuthenticationResponse" : {
      "code" : "2",
      "codeRaw" : "2"
    },
    "transactionId" : "016153570198200",
    "responseCode" : "00",
    "avs" : {
    "code" : "Y",
      "codeRaw" : "Y"
    }
  },
  "reconciliationId" : "6461731521426399003473",
  "status" : "AUTHORIZED",
  "submitTimeUtc" : "2022-03-01T22:19:12Z"
}
```


Response: Declined Authorization


```
{
  "clientReferenceInformation": {
  "code": "TC50171_3"
  },
  "errorInformation": {
    "reason": "BANK OF AMERICA
    GATEWAY_ERROR",
    "message": "Invalid account"
  },
  "id": "6583553837826789303954",
  "paymentInsightsInformation": {
    "responseInsights": {
      "categoryCode": "01",
      "category": "ISSUER_WILL_NEVER_APPROVE"
    }
  },
  "pointOfSaleInformation": {
     "amexCapnData": "1009S0600100"
  },
  "Bank of America
    GatewayInformation": {
    "systemTraceAuditNumber": "004544",
    "merchantNumber": "1231231222",
```

```
    "responseCode": "111", "avs": {
       "code": "Y",
       "codeRaw": "Y"
     }
   },
   "status": "DECLINED"
 }
```

Captures

This section shows you how to capture an authorized transaction.

Endpoint

`POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/captures`

`id` is the transaction ID returned in the authorization response.

Required Fields for Capturing a Payment Using the REST API

orderInformation.amountDetails.currency orderInformation.amountDetails.totalAmount

REST Example: Performing an Authorization

Request

Endpoint: `POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/captures`

Request with Minimum Required Fields

Copy

```
{
  "orderInformation": {
    "billTo": {
      "country": "US",
      "lastName": "Kim",
      "address1": "201 S. Division St.",
```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```
        "postalCode": "48104-2201",
        "locality": "Ann Arbor",
        "administrativeArea": "MI",
        "firstName": "Kyong-Jin",
        "email": "
test@cybs.com
"
      },
      "amountDetails": {
        "totalAmount": "100.00",
        "currency": "usd"
      }
    },
    "paymentInformation": {
      "card": {
        "expirationYear": "2031",
        "number": "4111111111111111",
        "expirationMonth": "12",
        "type": "001"
      }
    }
}
```

Response: Successful Authorization

```
Copy

{
  "_links" : {
    "authReversal" : {
      "method" : "POST",
      "href" : "/pts/v2/payments/646173152142639900347 3/reversals"
```

```
  },
  "self" : {
    "method" : "GET",
    "href" : "/pts/v2/payments/646173152142639900 3473"
  },
  "capture" : {
    "method" : "POST",
    "href" : "/pts/v2/payments/646173152142639900 3473/captures"
  }
},
"clientReferenceInformation" : {
  "code" : "1646173152047"
},
"id" : "646173152142639900 3473",
"orderInformation" : {
  "amountDetails" : {
    "authorizedAmount" : "100.00",
    "currency" : "usd"
  }
},
"paymentAccountInformation" : {
  "card" : {
    "type" : "001"
```


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```
  }
},
"paymentInformation" : {
  "tokenizedCard" : {
    "type" : "001"
  },
  "card" : {
    "type" : "001"
  }
},
"paymentInsightsInformation" : {
  "responseInsights" : {
    "categoryCode" : "01"
  }
},
"processorInformation" : {
  "systemTraceAuditNumber" : "862481",
  "approvalCode" : "831000",
  "merchantAdvice" : {
    "code" : "01",
    "codeRaw" : "M001"
  },
  "responseDetails" : "ABC",
```


Cybersource Confidental

```
  "networkTransactionId" : "016153570198200",
  "consumerAuthenticationResponse" : {
    "code" : "2",
    "codeRaw" : "2"
  },
  "transactionId" : "016153570198200",
  "responseCode" : "00",
  "avs" : {
    "code" : "Y",
    "codeRaw" : "Y"
  }
 },
 "reconciliationId" : "6461731521426399003473",
 "status" : "AUTHORIZED",
 "submitTimeUtc" : "2022-03-01T22:19:12Z"
}
```


Cybersource Confidental

Response


```
{
    "_links": {
        "void": {
            "method": "POST",
            "href": "/pts/v2/captures/666299443137668130395 4/voids"
        },
        "self": {
            "method": "GET",
            "href": "/pts/v2/captures/6662994431376681303954"
        }
    },
    "clientReferenceInformation": {
        "code": "1666299443215"
    },
    "id": "6662994431376681303954",
    "orderInformation": {
        "amountDetails": {
            "totalAmount": "100.00",
            "currency": "EUR"
        }
    },
    "reconciliationId": "66535942B9CGT52U",
```


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```
    "status": "PENDING",
    "submitTimeUtc": "2022-10-20T20:57:23Z"
}
```

REST Example: Capturing an Authorization

Request

Endpoint: `POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/captures`

```
{
    "clientReferenceInformation": {
        "code": "1662997399711"
    },
    "orderInformation": {
        "amountDetails": {
            "totalAmount": 100,
            "currency": "USD"
        }
    },
    "paymentAccountInformation": {
        "card": {
         "number": "4111111111111111",
            "type": "001"
        }
    }


}
```

Response

```
{
    "_links": {
        "authReversal": {
            "method": "POST",
            "href": "/pts/v2/payments/6629976031336699803954/reversals"
        },
        "self": {
            "method": "GET",
            "href": "/pts/v2/payments/662997603133669980 3954"
        },
        "capture": {
            "method": "POST",
```


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```
            "href": "/pts/v2/payments/662997603133669980 3954/captures"
        }
    },
    "clientReferenceInformation": {
        "code": "1662997399711"
    },
    "id": "662997603133669980 3954",
    "orderInformation": {
        "amountDetails": {
            "authorizedAmount": "100.00",
            "currency": "USD"
        }
    },
    "paymentAccountInformation": {
        "card": {
            "type": "001"
        }
    },
    "paymentInformation": {
        "tokenizedCard": {
            "type": "001"
        },
        "card": {
            "type": "001"
        }
    },
    "pointOfSaleInformation": {
        "terminalId": "111111"
    },
    "Bank of America
        GatewayInformation": {
        "approvalCode": "888888",
        "networkTransactionId": "123456789619999",
        "transactionId": "123456789619999",
        "responseCode": "100",
        "avs": {
            "code": "1"
        }
    },
    "reconciliationId": "61117545B7TY1MP6",
    "status": "AUTHORIZED",
    "submitTimeUtc": "2022-09-12T15:46:43Z"
}
```


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Multiple Partial Captures (For Future Use)

This feature enables you to request multiple partial captures for one authorization. A multiple partial capture allows you to incrementally settle authorizations over time. Ensure that the total amount of all the captures does not exceed the authorized amount.

Prerequisite

Contact customer support to have your account enabled for this feature.

Limitations

Your account can be enabled for multiple partial captures or split shipments; it cannot be enabled for both features.

Endpoint

```
POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/captures
```

`id` is the transaction ID returned in the authorization response.

Required Fields for Multiple Partial Captures

These fields are required in a request for a capture when you are requesting multiple partial captures:

processingInformation.captureOptions.captureSequenceNumber

Required if you are in the U.S.

processingInformation.captureOptions.totalCaptureCount

When you do not know the total number of captures that you are going to request, set the capture total count to an estimated value or 99 for all capture requests except the final one. For the final capture request, set the capture total count and the capture sequence to the same value.

Required if you are in the U.S.

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REST Example: Processing Multiple Partial Captures

Request

Endpoint: `POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/captures`

`id` is the transaction ID returned in the authorization response.

```
{
    {
  "clientReferenceInformation": {
    "code": "TC50171_3"
  },
  "processingInformation": {
    "captureOptions": {
      "captureSequenceNumber": null,
      "totalCaptureCount": null
    }
  },
  "orderInformation": {
    "amountDetails": {
      "totalAmount": "102.21",
      "currency": "USD"
    }
  }


}
```

Response

```
{
  "_links": {
    "void": {
      "method": "POST",
      "href": "/pts/v2/captures/6742496815656503003954/voids"
    },
    "self": {
      "method": "GET",
      "href": "/pts/v2/captures/6742496815656503003954"
    }
  },
  "clientReferenceInformation": {
    "code": "TC50171_3"
  },
  "id": "6742496815656503003954",
  "orderInformation": {
```


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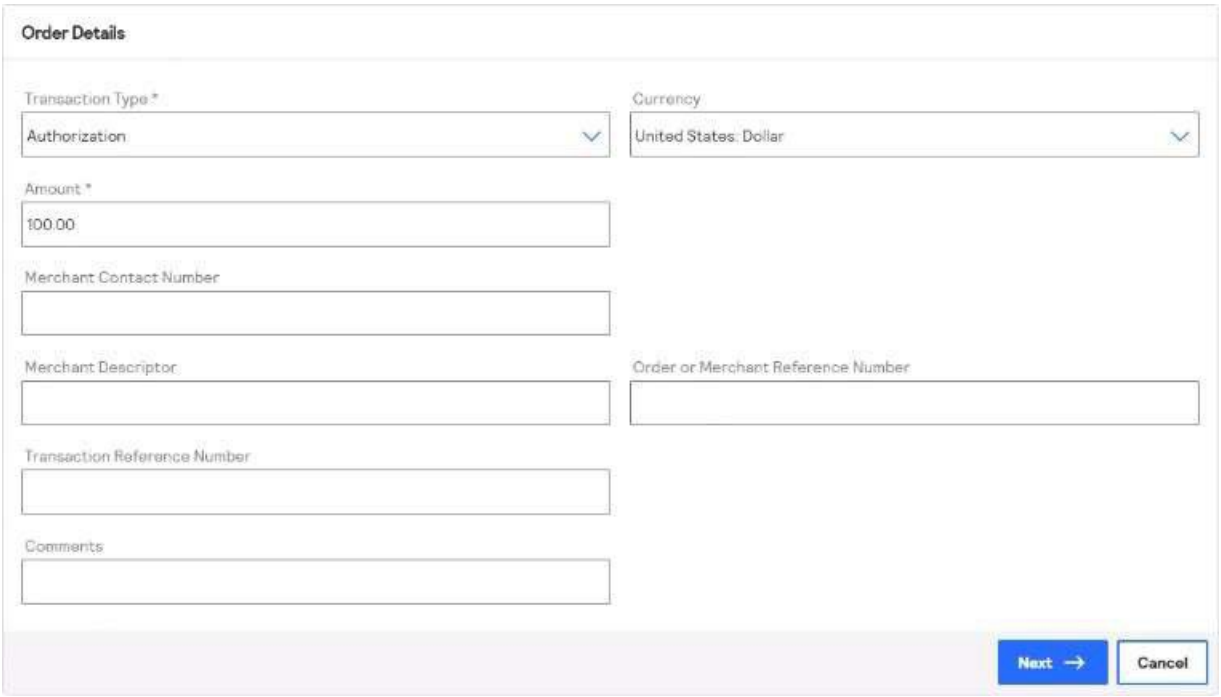
```
    "amountDetails": {
      "totalAmount": "102.21",
      "currency": "USD"
    }
  },
  "reconciliationId": "67332020GD2G1OO1",
  "status": "PENDING",
  "submitTimeUtc": "2023-01-20T21:21:21Z"

}
```


4.1.5 Authorizing Payments Using the Online Banking Portal

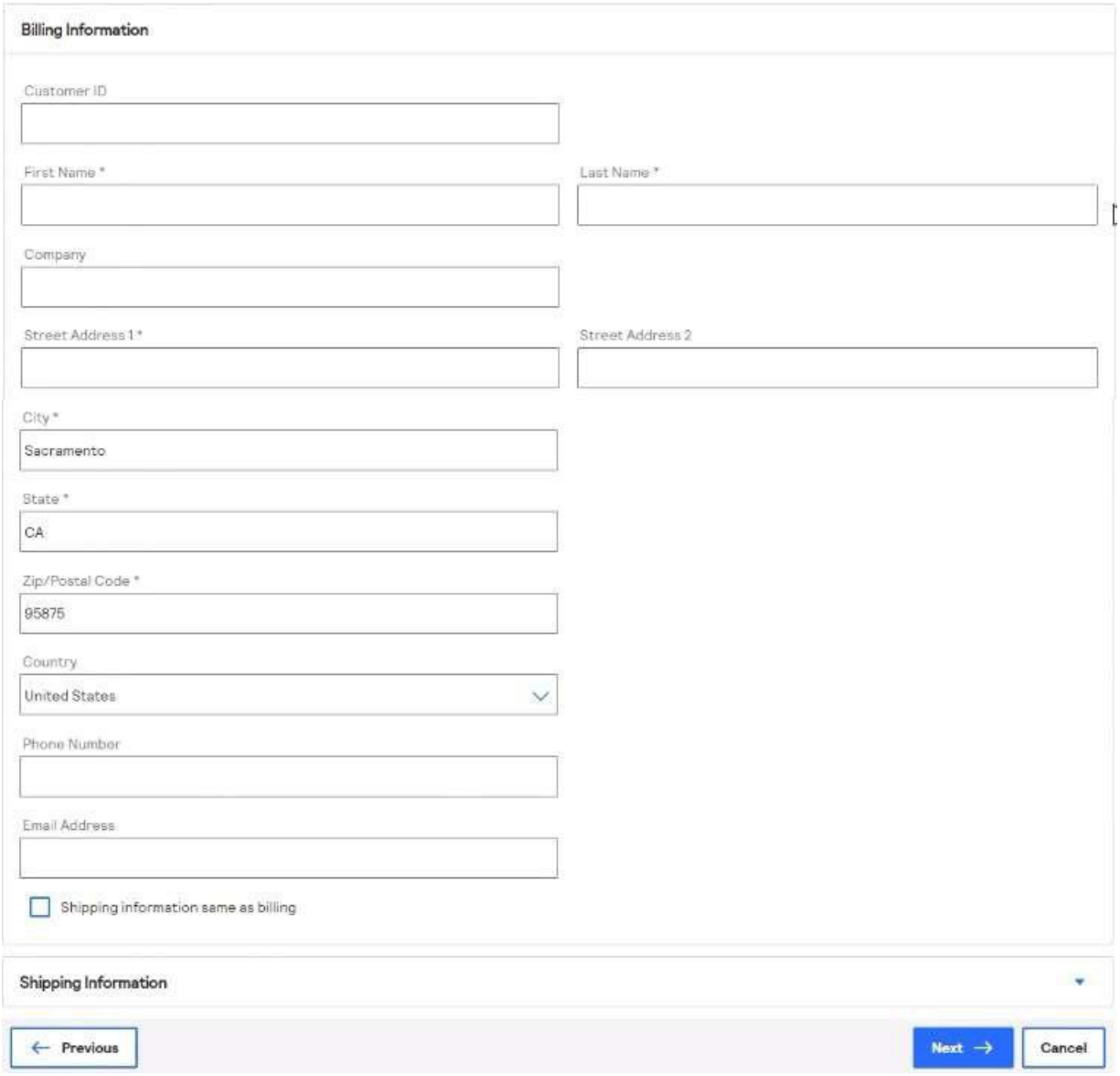
The Virtual Terminal in the Merchant Services section of your online banking portal enables you to process one-time card-present andcard- not-present transactions on the One-Time Payment page just as you would using a register in a retail environment.

Step 1: Enter Order Details



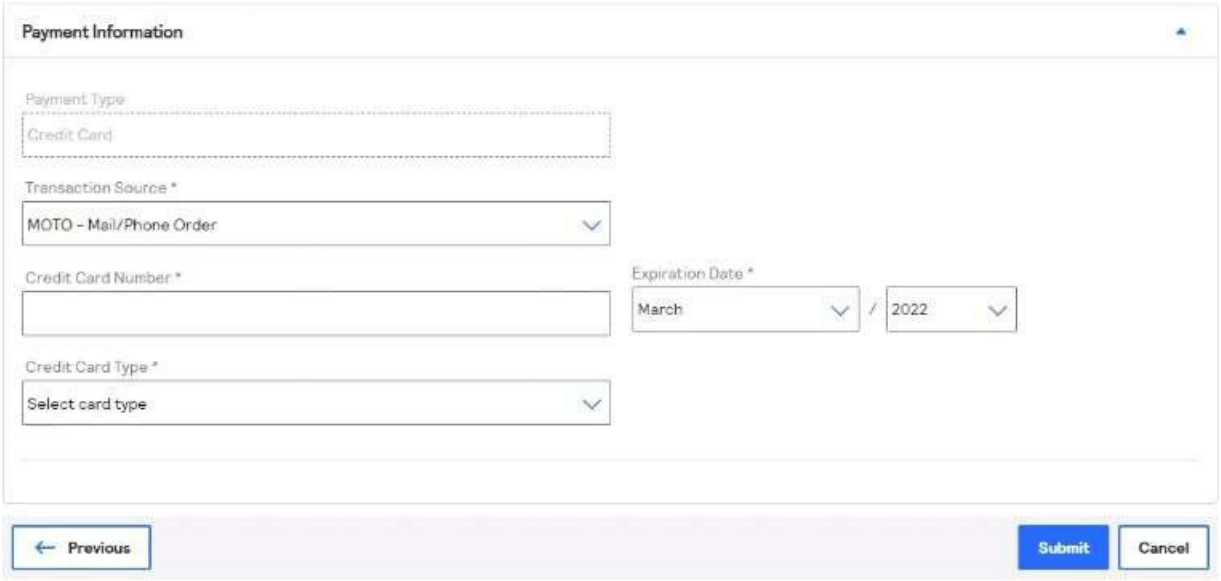
1. Click **One-Time Payment**. The One-Time Payment page appears.
2. Under Customer Presence, click **Present** if the card is present or **Not Present** if the card is not present. The One-Time Payment page updates to reflect your choice.
3. Select **Authorization** in the Transaction Type field.
4. Enter the transaction amount in the Amount field.
5. Click **Next**.

Step 2: Enter Billing Information



1. Enter the cardholder's first name in the First Name field.
2. Enter the cardholder's last name in the Last Name field.
3. Enter the cardholder's billing address in the Street Address 1 field.
4. If a secondline is required for the billing address, enter the secondline in the Street Address 2 field.
5. Enter the billing city in the City field.
6. Enter the billing state in the State field.
7. Enter the billing postal code in the Zip/Postal Code field.
8. Click **Next**.

Step 3: Enter Payment Details



1. Select the transaction type in the Transaction Source dropdown field.
2. Enter the cardnumber in the Credit Card Number field.
3. Select card's expirationmonth and year in the Expiration date dropdown fields.
4. Select the card type in the Card Type dropdown field.
5. Click **Submit**.

4.2 Authorization with Line Itemization

This section will show you how to send a basic authorization request and retrieve a successful response while utilizing line itemization. Using line items, merchants can provide details for each item purchased to the purchaser.

To include line items in an authorization, you remove the `orderInformation.amountDetails.totalAmount` field used in a basic authorization and include one or more line items in the lineItem[] array.

4.2.1 Using Line Items

When using line items, the following fields are required for each line item:

`orderInformation.lineItems[].unitPrice`
`orderInformation.lineItems[].quantity`
`orderInformation.lineItems[].productCode`
`orderInformation.lineItems[].productSku` (Optional when item_#_productCode is set to default, shipping_only, handling_only, or shipping_and_handling)

orderInformation.lineItems[].productName (Optional when item_#_productCode is set to default, shipping_only, handling_only, or shipping_and_handling)

At a minimum, you must include the item_#_unitPrice field to include a line item in an authorization. When this is the only field added, the system sets the following fields as shown:

- orderInformation.lineItems[].productCode: default
- orderInformation.lineItems[].quantity: 1

For example, you could include the following three line items:

```
"orderInformation": {
  "lineItems": [
    {
      "unitPrice": "10.00"
    },
    {
      "unitPrice": "5.99",
      "quantity": "3",
      "productCode":
      "shipping_only"
    },
    {
      "unitPrice": "29.99",
```

4.2.2 Required Fields

orderInformation.amountDetails.currency
orderInformation.amountDetails.totalAmount
orderInformation.billTo.address1
orderInformation.billTo.administrativeArea
orderInformation.billTo.country
orderInformation.billTo.email
orderInformation.billTo.firstName
orderInformation.billTo.lastName
orderInformation.billTo.locality

orderInformation.billTo.postalCode
paymentInformation.card.expirationMonth
paymentInformation.card.expirationYear
paymentInformation.card.number paymentInformation.card.type

4.2.3 Authorizing a Payment Using REST APIs

1. Send the service request to this endpoint:
   `https:// api.m ercha nt-services.bankofamerica.com/pts/v2/payments`
2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

If the authorization is declined, see the following response fields for more information:

- paymentInsightsInformation.response Insights.category
- paymentInsightsInformation.response Insights.categoryCode

4.2.4 Processing a Basic Authorization with Line Items and DCC

Request

```
      "currencyConversion": {
      "indicator": "Y"
      },
    "paymentInformation": {
    "card": {
      "number": "4111111111111111",
      "expirationMonth": "12",
      "expirationYear": "2031"
      }
      },
    "orderInformation": {
     "amountDetails": {
     "currency": "USD",
      "exchangeRate": ".91",
      "originalAmount": "107.33",
      "originalCurrency": "eur"
      },
    "billTo": { "firstName": "John",
      "lastName": "Doe",
      "address1": "1 Market St",
      "locality": "san francisco",
      "administrativeArea": "CA",
      "postalCode": "94105",
      "country": "US",
```

```
      "email": "test@cybs.com"
      },
      "lineItems": [
      {
      "unitPrice": "10.00"
      },
      {
      "unitPrice": "5.99",
      "quantity": "3", "productCode": "shipping_only"
      },
      {
        "unitPrice": "29.99",
        "quantity": "3",
        "productCode":
        "electronic_good",
        "productSku":
        "12384569",
        "productName":
        "receiver"
      }

    ]
  }
}
```

Response

```
{
  "_links": { "authReversal": {
      "method": "POST",
      "href": "/pts/v2/payments/648238551922602880 4003/reversals"
    },
    "self": { "method": "GET",
      "href": "/pts/v2/payments/6482385519226028804003"
    },
    "capture": { "method": "POST",
      "href": "/pts/v2/payments/6482385519226028804003/captures"
    }
  },
  "clientReferenceInformation": { "code":
    "1648238551902"
  },
  "id": "6482385519226028804003",
  "orderInformation": {
  "amountDetails": {
      "authorizedAmount": "117.94",
      "currency": "USD"
    }
  },
```

```
  "paymentAccountInformation": {
  "card": {
      "type": "001"
    }
  },
  "paymentInformation": {
    "tokenizedCard": {
      "type": "001"
    },
    "card": {
      "type": "001"
    }
  },
  "Bank of America
    GatewayInformation": {
    "systemTraceAuditNumber": "191521",
    "approvalCode": "831000",
    "merchantAdvice": {
      "code": "01",
      "codeRaw": "M001"
    },
    "responseDetails": "ABC",
    "networkTransactionId":
    "016153570198200",
    "consumerAuthenticationResponse": {
      "code": "2",
      "codeRaw": "2"
    },
    "transactionId": "016153570198200",
    "responseCod
    e": "00",
    "avs": {
      "code": "Y",
      "codeRaw": "Y"
    }
  },
  "reconciliationId":
  "648238551922602880 4003", "status":
  "AUTHORIZED",
  "submitTimeUtc": "2022-03-25T20:02:32Z"
}
```

4.3 Processing Zero Amount Authorizations

With zero amount authorization, you can authorize a card without charging the account.

Request


```
{
  "_links": {
    "authReversa
    l": {
      "method": "POST",
      "href": "/pts/v2/payments/648238551922602880 4003/reversals"
    },
    "self":
      {
      "meth
      od":
      "GET"
      ,
      "href": "/pts/v2/payments/6482385519226028804003"
    },
    "capture":
      {
      "method"
      :
      "POST",
      "href": "/pts/v2/payments/6482385519226028804003/captures"
    }
  },
  "clientReferenceInformation": {
    "code": "1648238551902"
  },
  "id": "6482385519226028804003",
  "orderInformation"
    : {
    "amountDetails":
    {
      "authorizedAmount": "117.94",
      "currency": "USD"
    }
  },
  "paymentAccountInformation": {
    "card": {
      "type": "001"
    }
  },
  "paymentInformation": {
    "tokenizedCard": {
{
```

```
"unitPrice": "5.99",
"quantity": "3", "productCode": "shipping_only"
        },
        {
          "unitPrice": "29.99",
          "quantity": "3",
          "productCode":
          "electronic_good",
          "productSku":
          "12384569",
          "productName":
          "receiver"
        }

      ]
    }
  }
```

Response

```
{
  "_links": {
    "authReversa
    l": {
      "method": "POST",
      "href": "/pts/v2/payments/648238551922602880 4003/reversals"
    },
    "self": { "method": "GET",
      "href": "/pts/v2/payments/6482385519226028804003"
    },
    "capture": {
      "method": "POST",
      "href": "/pts/v2/payments/6482385519226028804003/captures"
    }
  },
  "clientReferenceInformation": {
    "code": "1648238551902"
  },
  "id": "6482385519226028804003",
  "orderInformation": {
    "amountDetails": {
      "authorizedAmount": "117.94",
      "currency": "USD"
    }
  },
  "paymentAccountInformation": {
    "card": {
      "type": "001"
    }
  },
```

```
  "paymentInformation": {
    "tokenizedCard": {
      "type": "001"
    },
    "card": {
      "type": "001"
    }
  },
  "Bank of America
    GatewayInformation": {
    "systemTraceAuditNumber": "191521",
    "approvalCode": "831000",
    "merchantAdvice": {
      "code": "01",
      "codeRaw": "M001"
    },
    "responseDetails": "ABC",
    "networkTransactionId":
    "016153570198200",
    "consumerAuthenticationResponse": {
      "code": "2",
      "codeRaw": "2"
    },
    "transactionId": "016153570198200",
    "responseCod
    e": "00",
    "avs": {
      "code": "Y",
      "codeRaw": "Y"
    }
  },
  "reconciliationId": "6482385519226028804003",
  "status": "AUTHORIZED",
  "submitTimeUtc": "2022-03-25T20:02:32Z"
}
```


4.3.1 Required Fields for Processing Zero Amount Authorizations

orderInformation.amountDetails.currency
orderInformation.amountDetails.totalAmount
orderInformation.billTo.address1
orderInformation.billTo.administrativeArea

orderInformation.billTo.country
orderInformation.billTo.email
orderInformation.billTo.firstName
orderInformation.billTo.lastName
orderInformation.billTo.locality
orderInformation.billTo.postalCode
paymentInformation.card.expirationMonth
paymentInformation.card.expirationYear paymentInformation.card.number

4.3.2 Authorizing a Payment Using REST APIs

1. Send the service request to this endpoint:
   `https://api.mercha nt-services.bankofamerica.com/pts/v2/payments`
2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

If the authorization is declined, see the following response fields for more information:

- paymentInsightsInformation.response Insights.category
- paymentInsightsInformation.response Insights.categoryCode

4.3.3 Example: Processing a Zero Amount Authorization

Request

```
{
  "orderInformation"
     : { "billTo" : {
       "country" : "US",
       "lastName" : "Kim",
       "address1" : "201 S. Division St.",
       "postalCode" : "48104-2201",
       "locality" : "Ann Arbor",
       "administrativeArea" : "MI",
       "firstName" : "Kyong-Jin",
       "email" : "test@cybs.com"
     },
     "amountDetails" : {
       "totalAmount" : "0.00",
       "currency" : "usd"
     }
   },
```

```
  "paymentInformation" : {
    "card" : {
      "expirationYear" : "2031",
      "number" : "4111111111111111",
      "expirationMonth" : "12"
    }
  }
}
```

Response

```
{
  "_links" : {
    "authReversal" : {
      "method" : "POST",
      "href" : "/pts/v2/payments/6461731521426399003473/reversals"
    },
    "self" : {
      "method" : "GET",
      "href" : "/pts/v2/payments/6461731521426399003473"
    },
              "capture" : {
                "method" :
                "POST",
                "href" : "/pts/v2/payments/6461731521426399003473/captures"
              }
            },
            "clientReferenceInformation" : {
              "code" : "1646173152047"
            },
            "id" : "6461731521426399003473",
            "orderInformation" : {
              "amountDetails" : {
                "authorizedAmount" : "0",
                "currency" : "usd"
              }
            },
            "paymentAccountInformation" :
              { "card" : {
                "type" : "001"
              }
            },
            "paymentInformation" : {
              "tokenizedCard" : {
                "type" : "001"
              },
              "card" : {
```

```
                "type" : "001"
              }
            },
            "Bank of America GatewayInformation" :
              { "systemTraceAuditNumber" : "862481",
              "approvalCode" : "831000",
              "merchantAdvice" : {
                "code" : "01",
                "codeRaw" : "M001"
              },
              "responseDetails" : "ABC",
                "networkTransactionId" : "016153570198200",
                "consumerAuthenticationResponse" : {
                     "code" : "2",
                      "codeRaw" : "2"
              },
              "transactionId" : "016153570198200",
              "responseCode" : "00",
              "avs" : {
                "code" : "Y",
                "codeRaw" : "Y"
              }
            },
            "reconciliationId" : "6461731521426399003473",
  status" : "AUTHORIZED",
  "submitTimeUtc" : "2022-03-01T22:19:12Z"
}
```


4.4 Sales

This basic sale shows the minimal fields required to perform a successful sale transaction.

4.4.1 Required Fields for Processing Basic Sales Using REST APIs

The following fields are required in a request for a sale:

orderInformation.amountDetails.currency
orderInformation.amountDetails.totalAmount
orderInformation.billTo.address1
orderInformation.billTo.administrativeArea
orderInformation.billTo.country
orderInformation.billTo.email

orderInformation.billTo.firstName
orderInformation.billTo.LastName
orderInformation.billTo.locality
orderInformation.billTo.postalCode
paymentInformation.card.expirationMonth
paymentInformation.card.expirationYear
paymentInformation.card.number
paymentInformation.card.securityCode Required only for Bank of America Gateway.
paymentInformation.card.type

Related information API Field Reference for the REST API.

4.4.2 Performing a Sale Using REST APIs

1. Send the service request to:
   `https://api.merchant-services.bankofamerica.com/pts/v2/payments`
2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

4.4.3 Example: Requesting a Sale Using the REST API

Request

```
{
  "processingInformation": {
    "capture": true
  },
  "orderInformation" : {
    "billTo" : {
    "country" : "US",
    "lastName" : "VDP",
    "address1" : "201 S. Division St.",
    "postalCode" : "48104-2201",
    "locality" : "Ann Arbor",
    "administrativeArea" : "MI",
    "firstName" : "RTS",
    "email" : "test@cybs.com"
  },
```

```
      "amountDetails" : {
        "totalAmount" : "100.00",
        "currency" : "usd"
       }
     },
    "paymentInformation" : {
      "card" : {
        "expirationYear" : "2031",
        "number" : "4111111111111111",
        "expirationMonth" : "12",
        "type" : "001"
        "securityCode": "999" <!-- Required only for Bank of America Gateway. -->


     }
    }
  }
```

Response

```
{
 "_links" : {
 "void" : {
 "method" : "POST",
 "href" : "/pts/v2/payments/648500406896654610309 3/voids"
 },
 "self" : {
 "method" : "GET",
 "href" : "/pts/v2/payments/6485004068966546103093"
 }
 },
 "clientReferenceInformation" : {
  "code" : "RTS-Auth"
 },
 "id" : "6485004068966546103093",
 "orderInformation" : {
   "amountDetails" : {
     "totalAmount" : "100.00",
     "authorizedAmount" : "100.00",
     "currency" : "usd"
 }
 },
 "paymentAccountInformation" : {
   "card" : {
     "type" : "001"
 }
 },
 "paymentInformation" : {
   "tokenizedCard" : {
```

```
    "type" : "001"
},
 "card" : {
  "type" : "001"
}
},
"Bank of America GatewayInformation" :
{ "systemTraceAuditNumber" : "841109",
"approvalCode" : "831000",
"merchantAdvice" : {
  "code" : "01",
  "codeRaw" : "M001"
},
"responseDetails" : "ABC",
"networkTransactionId" : "016153570198200",
"retrievalReferenceNumber" : "208720841109",
"consumerAuthenticationResponse" : {
  "code" : "2",
  "codeRaw" : "2"
},
"transactionId" : "016153570198200",
"responseCode" : "00",
  "avs" : {
    "code" : "Y",
    "codeRaw" : "Y"
}
},
"reconciliationId" : "6485004068966546103093",
 "status" : "AUTHORIZED",
"submitTimeUtc" : "2022-03-28T20:46:47Z"
}
```


4.5 Captures

This basic capture shows the minimal fields required to perform a successful credit request transaction.

4.5.1 Required Fields for Processing Basic Captures Using REST APIs

The following fields are required in a request for a capture:

orderInformation.amountDetails.currency
orderInformation.amountDetails.totalAmount

4.5.2 Capturing an Authorization Using REST APIs

1. Pass the original authorization ID in the URL, and send the service request to:
   `POST https://<url_prefix>/v2/payments/{id}/captures`
   Use one of these URL prefixes:
   - Test: apitest.merchant-services.bankofamerica.com
   - Production: api.merchant-services.bankofamerica.com

   Where ID is the authorization ID returned in the authorization response.

   The URL with the ID value is included in the authorization response:

```
{
  "_links": {
    "capture":
      {
      "method":
      "POST",
      "href": "/pts/v2/payments/6481692924466004003001/captures"
    }
  }
```

2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

4.5.3 Example: Processing a Capture Using the REST API

Request

Endpoint: POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/captures

```
{
    "clientReferenceInformation": {
      "code": "1662997399711"
    },
    "orderInformation": {
        "amountDetails": {
            "totalAmount": 100,
            "currency": "USD"
        }
    },
    "paymentAccountInformation": {
        "card": {
         "number": "4111111111111111",
            "type": "001"
        }
    }
}
```

Response


```
{
    "_links": {
        "authReversal": {
            "method": "POST",
            "href": "/pts/v2/payments/662997603133669980 3954/reversals"
        },
        "self": {
            "method": "GET",
            "href": "/pts/v2/payments/662997603133669980 3954"
        },
        "capture": {
            "method": "POST",

            "href": "/pts/v2/payments/662997603133669980 3954/captures"
        }
    },
    "clientReferenceInformation": {
        "code": "1662997399711"
    },
    "id": "662997603133669980 3954",
    "orderInformation": {
        "amountDetails": {
            "authorizedAmount": "100.00",
            "currency": "USD"
        }
    },
    "paymentAccountInformation": {
        "card": {
            "type": "001"
        }
    },
    "paymentInformation": {
        "tokenizedCard": {
            "type": "001"
        },
        "card": {
            "type": "001"
        }
    },
    "pointOfSaleInformation": {
        "terminalId": "111111"
    },
    "Bank of America
        GatewayInformation": {
        "approvalCode": "888888",
        "networkTransactionId": "123456789619999",
        "transactionId": "123456789619999",
        "responseCode": "100",
        "avs": {
```

```
            "code": "1"
        }
    },
    "reconciliationId": "61117545B7TY1MP6",
    "status": "AUTHORIZED",
    "submitTimeUtc": "2022-09-12T15:46:43Z"
    }
```


Multiple Partial Captures

This feature enables you to request multiple partial captures for one authorization. A multiple partial capture allows you to incrementally settle authorizations over time. Ensure that the total amount of all the captures does not exceed the authorized amount.

Prerequisite

Contact customer support to have your account enabled for this feature.

Limitations

Your account can be enabled for multiple partial captures or split shipments; it cannot be enabled for both features.

Endpoint

`POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/captures`

`id` is the transaction ID returned in the authorization response.

Required Fields for Multiple Partial Captures

These fields are required in a request for a capture when you are requesting multiple partial captures:

processingInformation.captureOptions.captureSequenceNumber

Required if you are in the U.S.

processingInformation.captureOptions.totalCaptureCount

When you do not know the total number of captures that you are going to request, set the capture total count to an estimated value or 99 for all capture requests except the final one. For the final capture request, set the capture total count and the capture sequence to the same value.

Required if you are in the U.S.

REST Example: Processing Multiple Partial Captures

Request

Endpoint: `POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/captures`

`id` is the transaction ID returned in the authorization response.

```
{
    {
  "clientReferenceInformation": {
    "code": "TC50171_3"
  },
  "processingInformation": {
    "captureOptions": {
      "captureSequenceNumber": null,
      "totalCaptureCount": null
    }
  },
  "orderInformation": {
    "amountDetails": {
      "totalAmount": "102.21",
      "currency": "USD"
    }
  }


}
```

Response

```
{
  "_links": {
    "void": {
      "method": "POST",
      "href": "/pts/v2/captures/674249681565650300 3954/voids"
    },
    "self": {
      "method": "GET",
      "href": "/pts/v2/captures/6742496815656503003954"
    }
  },
  "clientReferenceInformation": {
    "code": "TC50171_3"
  },
  "id": "6742496815656503003954",
  "orderInformation": {
```

```
    "amountDetails": {
      "totalAmount": "102.21",
      "currency": "USD"
    }
  },
  "reconciliationId": "67332020GD2G1OO1",
  "status": "PENDING",
  "submitTimeUtc": "2023-01-20T21:21:21Z"

}
```


4.6 Authorization Reversals

Use this service to reverse an unnecessary or undesired authorization.

4.6.1 Overview

The full authorization reversal service releases the hold that the authorization placed on the customer's payment card funds.

Each card-issuing financial institution has its own rules for deciding whether a full authorization reversal succeeds or fails. When a reversal fails, contact the card-issuing financial institution to learn whether there is a different way to reverse the authorization.

Bank of America Gateway supports authorization reversal after void (ARAV); therefore, you can reverse an authorization after you void the associated capture.

A full authorization reversal is a follow-on transaction that uses the request ID returned from an authorization. The main purpose of a follow-on transaction is to link two transactions. The request ID links the follow-on transaction to the original transaction. The authorization request ID is used to look up the customer's billing and account information in the BA360. You are

not required to include those fields in the full authorization reversal request. The original transaction and follow-on transaction are linked in the database and in the Merchant Services section of your Online Banking Portal.

For aggregator transactions with American Express, Bank of America retrieves the aggregator information for the authorization that is being reversed.

Related information Authorization Reversal after Void (ARAV) and Required Features for Credit Card Processing

4.6.2 Required Fields for an Authorization Reversal

These fields are required in a request for an authorization reversal:

`Id`

Set the id URL parameter to the request ID that was included in the authorization response message.

`clientReferenceInformation.code`

`reversalInformation.amountDetails.currency`

`reversalInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount Or orderInformation.lineItems[].unitPrice must be included in the request.

The amount of the reversal must be the same as the amount that was authorized:

You can reverse an authorization only for its full amount.

When you use a debit card or prepaid card and only a partial amount was approved, the amount of the reversal must be the amount that was authorized, not the amount that was requested.

Related information API Field Reference for the REST API.

4.6.3 Reversing an Authorization

1. Send the service request to:
   `POST https://<url_prefix>/v2/payments/{id}/reversals`

   Use one of these URL prefixes:

   - Test: apitest.merchant-services.bankofamerica.com
   - Production: api.merchant-services.bankofamerica.com

   Where `id` is the authorization ID returned in the authorization response.

```
{
"id": "648169292446600400 3001"
}
```

The URL with the id value is included in the authorization response:

```
{
    "_links": {
        "authReversal": {
         "method": "POST",
        "href": "/pts/v2/payments/6481692924466004003001/reversals"
        },
```

2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

4.6.4 Example: Authorization Reversal

Request

```
{
  "clientReferenceInformation
    ": { "code":
    "482046C3A7E94F5BD1FE3C66
    C"
  },
  "reversalInformation": { "amountDetails": {
      "totalAmount": "49.95"
      "currency": USD"
    },
    "reason": "testing"
  }
}
```

Response

```
{
    "_links" : {
        "void" : {
            "method" : "POST",
            "href" : "/pts/v2/credits/101982752034829057O293/voids"
        },
        "self" : {
            "method" : "GET",
            "href" : "/pts/v2/credits/10198275203482905702 93"
        }
    },
    "clientReferenceInformation": {
        "code":
        "482046C3A7E94F5BD1FE3C66C"
    },
```

```
    "id": "101982752034829057O293",
    "creditAmountDetails" : {
        "currency" : "USD",
        "creditAmount" : "49.95"
    },
    "orderInformation": {
        "amountDetails": {
            "totalAmount": "49.95",
            "currency": "USD"
        }
    },
    "reconciliationId": "02850840187309570",
    "status" : "REVERSED",
    "submitTimeUtc" : "2021-07-20T21:06:59Z"
}
```


Refunds

This section shows you how to process a refund. You must request a refund within 180 days of the authorization.

Endpoint

`POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/refunds`

`id` is the transaction ID returned during the authorization request.

Required Fields for Processing Refunds Using the REST API

orderInformation.amountDetails.currency

orderInformation.amountDetails.totalAmount

orderInformation.billTo.address1

orderInformation.billTo.administrationArea

orderInformation.billTo.country

orderInformation.billTo.email

orderInformation.billTo.firstName

orderInformation.billTo.lastName

orderInformation.billTo.locality

orderInformation.billTo.postalCode

paymentInformation.card.expirationMonth

paymentInformation.card.expirationYear

paymentInformation.card.number

REST Interactive Example: Processing a Refund

```
Refund a Payment
```

Example: Processing a Refund Using the REST API

Request

Endpoint: `POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/refunds`

```
{
  "orderInformation" : {
    "billTo" : {
      "country" : "US",
      "lastName" : "Kim",
      "address1" : "201 S. Division St.",
      "postalCode" : "48104-2201",
      "locality" : "Ann Arbor",
      "administrativeArea" : "MI",
      "firstName" : "Kyong-Jin",
      "email" : "test@bankofamerica.com"
    },
    "amountDetails" : {
      "totalAmount" : "100.00",
      "currency" : "eur"
    }
  },
  "paymentInformation" : {
    "card" : {
      "expirationYear" : "2031",
      "number" : "4111111111111111",
      "expirationMonth" : "12"
    }
  }



}
```

Response

```
{
    "_links": {
        "void": {
            "method": "POST",
            "href": "/pts/v2/credits/669996458169662260395 5/voids"
        },
        "self": {
            "method": "GET",
            "href": "/pts/v2/credits/669996458169662260395 5"
        }
    },
    "clientReferenceInformation": {
        "code": "1669996458298"
    },
    "creditAmountDetails": {
        "currency": "eur",
        "creditAmount": "100.00"
    },
    "id": "669996458169662260395 5",
    "orderInformation": {
        "amountDetails": {
            "currency": "eur"
        }
    },
    "paymentAccountInformation": {
        "card": {
            "type": "001"
        }
    },
    "paymentInformation": {
        "tokenizedCard": {
            "type": "001"
        },
        "card": {
            "type": "001"
        }
    },
    "processorInformation": {
        "approvalCode": "888888",
        "responseCode": "100"
    },
    "reconciliationId": "61873329OAILG3Q6",
    "status": "PENDING",
    "submitTimeUtc": "2022-12-02T15:54:18Z"
}
```

Credits

This topic shows you how to process a credit.

Endpoint

```
POST https://api.merchant-services.bankofamerica.com/pts/v2/credits/
```

Required Fields for Processing a Credit Using the REST API

These fields are required in a credit request:

orderInformation.amountDetails.currency

orderInformation.amountDetails.totalAmount

orderInformation.billTo.address1

orderInformation.billTo.administrationArea

orderInformation.billTo.country

orderInformation.billTo.email

orderInformation.billTo.firstName

orderInformation.billTo.lastName

orderInformation.billTo.locality

orderInformation.billTo.postalCode

paymentInformation.card.expirationMonth

paymentInformation.card.expirationYear

paymentInformation.card.number

```
Credit
```

REST Example: Processing a Credit

Request

Endpoint: `POST https://api.merchant-services.bankofamerica.com/pts/v2/credits/`

```
{
  "orderInformation" : {
    "billTo" : {
      "country" : "US",
      "lastName" : "Kim",
      "address1" : "201 S. Division St.",
      "postalCode" : "48104-2201",
      "locality" : "Ann Arbor",
      "administrativeArea" : "MI",
      "firstName" : "Kyong-Jin",
      "email" : "test@bankofamerica.com"
    },
    "amountDetails" : {
      "totalAmount" : "100.00",
      "currency" : "eur"
    }
  },
  "paymentInformation" : {
    "card" : {
      "expirationYear" : "2031",
      "number" : "4111111111111111",
      "expirationMonth" : "12"
    }
  }



}
```

Response

```
{
    "_links": {
        "void": {
            "method": "POST",
```

```
                "href": "/pts/v2/credits/6663069906146706403954/voids"
            },
            "self": {
                "method": "GET",
                "href": "/pts/v2/credits/6663069906146706403954"
            }
        },
        "clientReferenceI
            nformation":
            { "code":
            "166630699071
            7"
        },
        "creditAmountDeta
            ils": {
            "currency":
            "eur",
            "creditAmount
            ": "100.00"
        },
        "id": "6663069906146706403954",
        "orderInformation
            ": {
            "amountDetail
            s": {
                "currency": "eur"
            }
        },
        "paymentAccountIn
            formation": {
            "card": {
                "type": "001"
            }
        },
        "paymentInformati
            on": {
            "tokenizedCar
            d": {
                "type": "001"
            },
            "card": {
                "type": "001"
            }
        },
        "processorInforma
            tion": {
            "approvalCode
            ": "888888",
            "responseCode": "100"
        },
        "reconciliationId":
        "66490108K9CLFJPN",
        "status": "PENDING",
        "submitTimeUtc": "2022-10-20T23:03:10Z"
}
```

4.7 Voids

This section describes voids and the required fields and provides an example.

4.7.1 Overview

A void cancels a capture or credit request that you submitted. A transaction can be voided only when the capture or credit request has not already been submitted to your Bank of America Gateway. Capture and credit requests are usually submitted to your Bank of America Gateway once a day, so your window for successfully voiding a capture or credit request is small. A void request is declined when the capture or credit request has already been sent to the Bank of America Gateway.

A void is a follow-on transaction that uses the request ID returned from a capture or credit. The main purpose of a follow-on transaction is to link two transactions. The request ID links the follow- on transaction to the original transaction. The capture or credit request ID is used to look up the customer's billing and account information in the BA360, so you are not required to include those fields in the void request. The original transaction and follow-on transaction are linked in the database and in the Merchant Services section of your Online Banking Portal.

You cannot perform a follow-on credit for a capture that has been voided.

You cannot undo a void.

When you void a capture, a hold remains on the unused credit card funds. If you are not going to re-capture the authorization and if your Bank of America Gateway supports authorization reversal after void, it is recommended that you request an authorization reversal to release the hold on the unused credit card funds.

Related information:

- Authorization Reversals
- Authorization Reversal after Void (ARAV)
- Required Features for Credit Card Processing

4.7.2 Required Fields for a Void

The following fields are required in a request for a void:

`clientReferenceInformation.code`

`id`

Set the id URL parameter to the request ID that was included in the capture or credit response message.

Related information API Field Reference for the REST API

4.7.3 Optional Field for a Void

Additional optional fields are available for specific features. You can include the following optional field in a request for a void:

- clientReferenceInformation.partner.thirdPartyCertificationNumber

Related information API Field Reference for the REST API.

4.7.4 Voiding a Capture or Credit

Do not include any other services in the request. To void a capture or credit:

1. Send the service request to one of these endpoints:
   - To void a capture:
     POST https://api.merchant-services.bankofamerica.com/pts/v2/captures/{id}/voids
   - To void a sale (a bundled authorization and capture):
     `POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/voids`
   - To void a follow-on credit:
     `POST https://api.merchant-services.bankofamerica.com/pts/v2/refunds/{id}/voids`
   - To void a stand-alone credit:
     `POST https://api.merchant-services.bankofamerica.com/pts/v2/credits/{id}/voids`
   - To void a transaction that timed out:
     POST https://api.merchant-services.bankofamerica.com/pts/v2/voids/
2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

4.7.5 Example: Void

Request

```
{
  "clientReferenceInformation
    ": { "code":
    "482046C3A7E94F5BD1FE3C66
    C"
  }
}
```

Response


```
{
  "_links": {
    "self": { "method": "GET",
                "href": "/pts/v2/payments/627650728819641590300 1"
              }
            },
            "clientReferenceInformation": {
              "code": "482046C3A7E94F5BD1FE3C66C"
            },
            "id": "030578265000016790508",
            "orderInformation": {
              "amountDetails": {
                "authorizedAmount": "49.95",
                "currency": "USD"
              }
            },
            "paymentAccountInformat
              ion": { "card": {
                "type": "001"
              }
            },
            "paymentInformation": {
              "tokenizedCard": {
                "type": "001"
              },
              "card": {
                "type": "001"
              },
              "accountFeatures": {
                "category": "CN",
                "group": "0"
              }
            },
            "Bank of America
            GatewayInformation": {
            "approvalCode": "123456",
              "networkTransactionId": "123456789619999",
              "transactionId": "3312345",
              "responseCode": "A",
                "avs": {
                  "code": "Y",
                  "codeRaw": "YYY"
              }
            },
            "reconciliationId": "ABCDE12345FGHIJ67890",
            "status": "VOIDED",
            "submitTimeUtc": "2021-07-30T13:12:09Z"
}
```

4.7.6 Refunds

This section shows you how to process a refund. You must request a refund within 180 days of the authorization.

Endpoint

`POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/refunds`

`id` is the transaction ID returned during the authorization request.

Required Fields for Processing Refunds Using the REST API

orderInformation.amountDetails.currency

orderInformation.amountDetails.totalAmount

orderInformation.billTo.address1

orderInformation.billTo.administrationArea

orderInformation.billTo.country

orderInformation.billTo.email

orderInformation.billTo.firstName

orderInformation.billTo.lastName

orderInformation.billTo.locality

orderInformation.billTo.postalCode

paymentInformation.card.expirationMonth

paymentInformation.card.expirationYear

paymentInformation.card.number

```
Refund a Payment
```

Example: Processing a Refund Using the REST API

Request

Endpoint: `POST https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/refunds`

```
{
  "orderInformation" : {
    "billTo" : {
      "country" : "US",
      "lastName" : "Kim",
      "address1" : "201 S. Division St.",
      "postalCode" : "48104-2201",
      "locality" : "Ann Arbor",
      "administrativeArea" : "MI",
      "firstName" : "Kyong-Jin",
      "email" : "test@bankofamerica.com"
    },
    "amountDetails" : {
      "totalAmount" : "100.00",
      "currency" : "eur"
    }
  },
  "paymentInformation" : {
    "card" : {
      "expirationYear" : "2031",
      "number" : "4111111111111111",
      "expirationMonth" : "12"
    }
  }



}
```

Response

```
{
    "_links": {
        "void": {
            "method": "POST",
```

```
            "href": "/pts/v2/credits/669996458169662260395 5/voids"
        },
        "self": {
            "method": "GET",
            "href": "/pts/v2/credits/669996458169662260395 5"
        }
    },
    "clientReferenceInformation": {
        "code": "1669996458298"
    },
    "creditAmountDetails": {
        "currency": "eur",
        "creditAmount": "100.00"
    },
    "id": "669996458169662260395 5",
    "orderInformation": {
        "amountDetails": {
            "currency": "eur"
        }
    },
    "paymentAccountInformation": {
        "card": {
            "type": "001"
        }
    },
    "paymentInformation": {
        "tokenizedCard": {
            "type": "001"
        },
        "card": {
            "type": "001"
        }
    },
    "processorInformation": {
        "approvalCode": "888888",
        "responseCode": "100"
    },
    "reconciliationId": "61873329OAILG3Q6",
    "status": "PENDING",
    "submitTimeUtc": "2022-12-02T15:54:18Z"
}
```

This topic shows you how to process a credit.

Endpoint

```
POST https://api.merchant-services.bankofamerica.com/pts/v2/credits/
```

Required Fields for Processing a Credit Using the REST API

These fields are required in a credit request:

orderInformation.amountDetails.currency

orderInformation.amountDetails.totalAmount

orderInformation.billTo.address1

orderInformation.billTo.administrationArea

orderInformation.billTo.country

orderInformation.billTo.email

orderInformation.billTo.firstName

orderInformation.billTo.lastName

orderInformation.billTo.locality

orderInformation.billTo.postalCode

paymentInformation.card.expirationMonth

paymentInformation.card.expirationYear

paymentInformation.card.number

```
Credit
```

REST Example: Processing a Credit

Request

Endpoint: `POST https://api.merchant-services.bankofamerica.com/pts/v2/credits/`

```
{
  "orderInformation" : {
    "billTo" : {
      "country" : "US",
      "lastName" : "Kim",
      "address1" : "201 S. Division St.",
      "postalCode" : "48104-2201",
      "locality" : "Ann Arbor",
      "administrativeArea" : "MI",
      "firstName" : "Kyong-Jin",
      "email" : "test@bankofamerica.com"
    },
    "amountDetails" : {
      "totalAmount" : "100.00",
      "currency" : "eur"
    }
  },
  "paymentInformation" : {
    "card" : {
      "expirationYear" : "2031",
      "number" : "4111111111111111",
      "expirationMonth" : "12"
    }
  }



}
```

Response

```
{
    "_links": {
        "void": {
            "method": "POST",
```

```
                "href": "/pts/v2/credits/666306990614670640395 4/voids"
            },
            "self": {
                "method": "GET",
                "href": "/pts/v2/credits/6663069906146706403954"
            }
        },
        "clientReferenceI
            nformation":
            { "code":
            "166630699071
            7"
        },
        "creditAmountDeta
            ils": {
            "currency":
            "eur",
            "creditAmount
            ": "100.00"
        },
        "id": "6663069906146706403954",
        "orderInformation
            ": {
            "amountDetail
            s": {
                "currency": "eur"
            }
        },
        "paymentAccountIn
            formation": {
            "card": {
                "type": "001"
            }
        },
        "paymentInformati
            on": {
            "tokenizedCar
            d": {
                "type": "001"
            },
            "card": {
                "type": "001"
            }
        },
        "processorInforma
            tion": {
            "approvalCode
            ": "888888",
            "responseCode": "100"
        },
        "reconciliationId":
        "66490108K9CLFJPN",
        "status": "PENDING",
        "submitTimeUtc": "2022-10-20T23:03:10Z"
}
```

5 Required Features for Credit Card Processing

This section describes the following kinds of features:

- Features that are required by your Bank of America Gateway, an issuer, or a payment card company.
- Features that are required by a country or government.

5.1 Authorization Reversal after Void (ARAV)

This feature enables you to reverse an authorization after you void the associated capture.

This functionality enables you to meet the Visa mandate requirements to reverse unused authorizations, and it benefits the customer by releasing the hold on unused credit card funds.

5.1.1 Required Fields for an Authorization Reversal

These fields are required in a request for an authorization reversal:

`Id`

Set the id URL parameter to the request ID that was included in the authorization response message.

clientReferenceInformation.code

`reversalInformation.amountDetails.currency`

reversalInformation.amountDetails.totalAmount

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[].unitPrice must be included in the request.

The amount of the reversal must be the same as the amount that was authorized:

You can reverse an authorization only for its full amount.

When you use a debit card or prepaid card and only a partial amount was approved, the amount of the reversal must be the amount that was authorized, not the amount that was requested.

Related information API Field Reference for the REST API.

5.1.2 Required Fields for a Void

The following fields are required in a request for a void:

`clientReferenceInformation.code`

`Id`

Set the id URL parameter to the request ID that was included in the capture or credit response message.

Related information API Field Reference for the REST API.

5.1.3 Optional Field for a Void

Additional optional fields are available for specific features.

You can include the following optional field in a request for a void:

- clientReferenceInformation.partner.thirdPartyCertificationNumber

Related information API Field Reference for the REST API.

5.1.4 Reversing an Authorization After a Void

To reverse an authorization after a void, you void a capture and then reverse an authorization.

If your Bank of America Gateway supports multiple partial captures, you can request the void service multiple times, once for each capture.

1. Send the void service request to one of these endpoints:
   - To void a capture: https://api.merchant-services.bankofamerica.com/pts/v2/captures/{id}/voids.
   - To void a bundled authorization and capture: https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/voids.
2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.
3. Send the authorization reversal service request to https://api.merchant-services.bankofamerica.com/pts/v2/payments/{id}/reversals.
4. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

5.1.5 Example: Void

Request

```
{
  "clientReferenceInformation": {
    "code":"482046C3A7E94F5BD1FE3C66"
  }
}
```

Response


```
{
  "_links": {
    "self": {
    "method": "GET",
      "href": "/pts/v2/payments/627650728819641590 3001"
    }
  },
  "clientReferenceInformation": {
  "code": "482046C3A7E94F5BD1FE3C66C"
  },
  "id": "030578265000016790508",
  "orderInformation": {
   "amountDetails": {
      "authorizedAmount": "49.95",
       "currency": "USD"
    }
  },
  "paymentAccountInformation": {
   "card": {
      "type": "001"
    }
  },
  "paymentInformation": {
    "tokenizedCard": {
      "type": "001"
    },
    "card": {
      "type": "001"
    },
    "accountFeatures": {
    "category": "CN",
      "group": "0"
    }
  },
  "Bank of America GatewayInformation":
   { "approvalCode": "123456",
    "networkTransactionId": "123456789619999",
```

```
    "transactionId": "3312345",
    "responseCode": "A",
    "avs": {
      "code": "Y",
      "codeRaw": "YYY"
    }
  },
  "reconciliationId": "ABCDE12345FGHIJ67890",
  "status": "VOIDED",
  "submitTimeUtc": "2021-07-30T13:12:09Z"
}
```


5.1.6 Example: Authorization Reversal

Request


```
{
  "clientReferenceInformation
    ": { "code":
    "482046C3A7E94F5BD1FE3C66
    C"
  },
  "reversalInformation": {
  "amountDetails": {
      "totalAmount": "49.95"
      "currency": "USD"
    },
    "reason": "testing"
  }
}
```


Response


```
{
    "_links" : {
        "void" : {
            "method" : "POST",
            "href" : "/pts/v2/credits/101982752034829057O293/voids"
        },
        "self" : {
            "method" : "GET",
            "href" : "/pts/v2/credits/101982752034829057O293"
        }
    },
    "clientReferenceInformation": {
    "code": "482046C3A7E94F5BD1FE3C66C"
    },
    "id": "101982752034829057O293",
```

```
    "creditAmountDetails" : {
    "currency" : "USD",
    "creditAmount" : "49.95"
    },
    "orderInformation": {
     "amountDetails": {
           "totalAmount": "49.95",
           "currency": "USD"
        }
    },
    "reconciliationId": "02850840187309570",
    "status" : "REVERSED",
    "submitTimeUtc" : "2021-07-20T21:06:59Z"
}
```


5.2 Card Verification Numbers

Card verification numbers (CVNs) are a required feature for the authorization service.

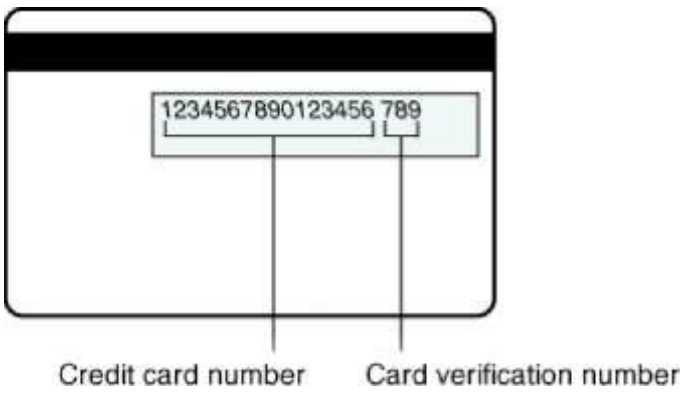
5.2.1 Supported Card Types

Bank of America Gateway	Supported Card Types
Bank of America Gateway	Visa, Mastercard, American Express, Diners Club, JCB, Discover, China UnionPay

5.2.2 CVN Locations and Terminology

The CVN, which is printed or embossed on the back of the card, can be sent with the request and verified to help reduce the risk of fraud.

Location of the Card Verification Number



Each payment card company has its own name for this value:

- American Express and Discover call it the Card Identification Digits (CID).
- Mastercard calls it the Card Validation Code (CVC2).

- UnionPay calls it the Card Validation Number (CVN2).
- Visa calls it the Card Verification Value (CVV2).

To use the CVN, include the field in the request. This number is never transferred during card swipes and should be known only by the cardholder.

5.2.3 CVN Results

The response message includes a raw response code and a mapped response code:

- The raw response code is the value returned by the Bank of America Gateway. This value is returned in the Bank of America GatewayInformation.cardVerification.resultCodeRaw field. Use this value only for debugging purposes; do not use it to determine the card verification response.
- The mapped response code is the pre-defined value that corresponds to the raw response code. This value is returned in the Bank of America GatewayInformation.cardVerification.resultCode field.

Even when the CVN does not match the expected value, the issuing bank might still authorize the transaction. You will receive a CVN decline, but you can still capture the transaction because it has been authorized by the bank. However, you must review the order to ensure that it is legitimate.

Settling authorizations that fail the CVN check might have an impact on the fees charged by your bank. Contact your bank for details about how card verification management might affect your discount rate.

When a CVN decline is received for the authorization in a sale request, the capture request is not processed unless you set the processingInformation.authorizationOptions.ignoreCvResult field to true.

5.2.4 CVN Results for Discover

When the CVN does not match:

- Discover refuses the card and the request is declined.
- The response message does not include the Bank of America GatewayInformation.cardVerification.resultCode field, which indicates that the CVN failed.

5.2.5 CVN Results for Visa and Mastercard

A CVN code of D or N causes the request to be declined with a transaction response code value of 201. You can still capture the transaction, but you must review the order to ensure that it is legitimate.

Bank of America, not the issuing bank, assigns the CVN decline to the authorization. You can capture any authorization that has a valid authorization code from the issuing bank, even when the request receives a CVN decline.

When the issuing bank does not authorize the transaction, and the CVN does not match, the request is declined because the card is refused. You cannot capture the transaction.

5.2.6 Required Field for an Authorization with a Card Verification Number

The following field is required in a request for an authorization that includes a card verification number:

- `paymentInformation.card.securityCode`

Related information API Field Reference for the REST API.

5.2.7 Required Fields for an Authorization

A request for an authorization requires these fields:

Important: It is your responsibility to determine whether a field is required for the transaction that you are requesting.

`clientReferenceInformation.code`

`merchantInformation.transactionLocalDateTime`

`orderInformation.amountDetails.currency`

`orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.billTo.address1`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.administrativeArea`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.country`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.email`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.firstName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.lastName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.locality`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.postalCode`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.address1`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.administrativeArea`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.locality`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.postalCode`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`paymentInformation.card.expirationMonth`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.expirationYear`	Required except when your account is configured for relaxed requirements for address data and expiration date.
`paymentInformation.card.number`	
`paymentInformation.card.securityCode`	
`paymentInformation.card.type`	Required on Bank of America Gateway for all card types.
`processingInformation.commerceIndicator`	Required for requests that include payer authentication data. Otherwise, this field is optional.

Related information API Field Reference for the REST API.

5.2.8 Optional Fields for an Authorization with a Card Verification Number

You can include the following optional fields in a request for card verification numbers:

- `paymentInformation.card.securityCodeIndicator`
- `processingInformation.authorizationOptions.ignoreCvResult`

Related information API Field Reference for the REST API.

5.2.9 Authorizing a Payment with CVN

Do not include any of these services in the request:

- Full authorization reversal
- Credit
- Risk update
- Services for other payment methods

Follow these steps to authorize a payment:

1. Send the service request to:
   `https://api.merchant-services.bankofamerica.com/pts/v2/payments`
2. Include the required fields in the request.
3. Include optional fields in the request as needed.
4. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

5.2.10 Example: Authorization with CVN

Request

```
{
    "clientReferenceInformation": {
        "code": "482046C3A7E94F5BD1FE3C66C"
             },
             "paymentInformation": {
                 "card": {
                     "number": "4111111111111111",
                     "expirationMonth": "12",
                     "expirationYear": "2031",
                     "type": "001",
                     "securityCode": "999"
                     "useAs": "DB", <!-- Required only for China
                     UnionPay. --> "typeSelectionIndicator": "1" <!--
                     Required only for China UnionPay. -->
                 }
             },
             "orderInformation": {
                 "amountDetails": {
                     "totalAmount": "49.95",
                     "currency": "USD"
                 },
                 "lineItems": [{
                       "quantity": "1",
                       "unitPrice": "49.95",
                       "totalAmount": "49.95",
                       "amountIncludesTax": "false",
                       "discountApplied": "false"
                 }],
                 "billTo": {
                     "firstName": "John",
                     "lastName": "Doe",
                     "address1": "1295 Charleston Rd.",
                     "locality": "Mountain View",
                     "administrativeArea": "CA",
                     "postalCode": "94043",
                     "country": "US",
                     "email": "jdoe@example.com",
                     "phoneNumber": "650-965-6000"
                 }
             }
          }
```

Response

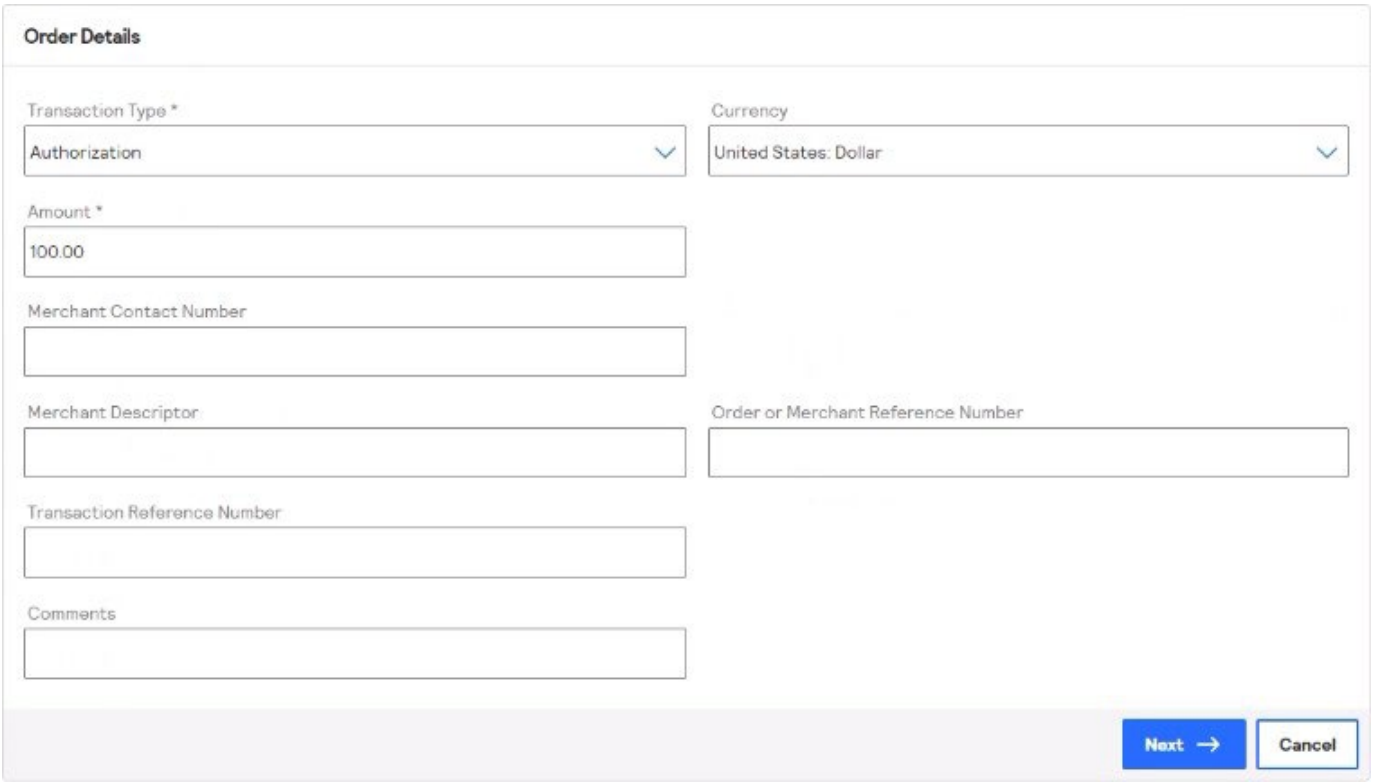
```
{
    "_links": {
        "authReversal": {
```

```
          "method": "POST",
          "href": "/pts/v2/payments/6262667483236171303005/reversals"
                  },
                  "self": {
                      "method": "GET",
                      "href": "/pts/v2/payments/6262667483236171303005"
                  },
                  "capture": {
                      "method": "POST",
                      "href": "/pts/v2/payments/6262667483236171303005/captures"
                  }
              },
              "clientReferenceInformation": {
              "code": "482046C3A7E94F5BD1FE3C66C"
              },
              "id": "6262667483236171303005",
              "orderInformation": {
               "amountDetails": {
                      "authorizedAmount": "49.95",
                      "currency": "USD"
                  }
              },
              "paymentAccountInformation": { "card": {
                      "type": "001"
                  }
              },
              "paymentInformation": {
                  "tokenizedCard": {
                      "type": "001"
                  },
                  "card": {
                      "type": "001"
                  }
              },
              "pointOfSaleInformation": {
                  "terminalId": "111111"
              },
              "Bank of America GatewayInformation": { "approvalCode":
                  "888888", "networkTransactionId": "123456789619999",
                  "transactionId": "123456789619999", "responseCode": "A",
                  "avs": {
                      "code": "Y",
                      "codeRaw": "YYY"
                  }
              },
              "reconciliationId": "72242417DR0JSAV0", "status": "AUTHORIZED",
              "submitTimeUtc": "2021-07-14T12:45:48Z"
}
```

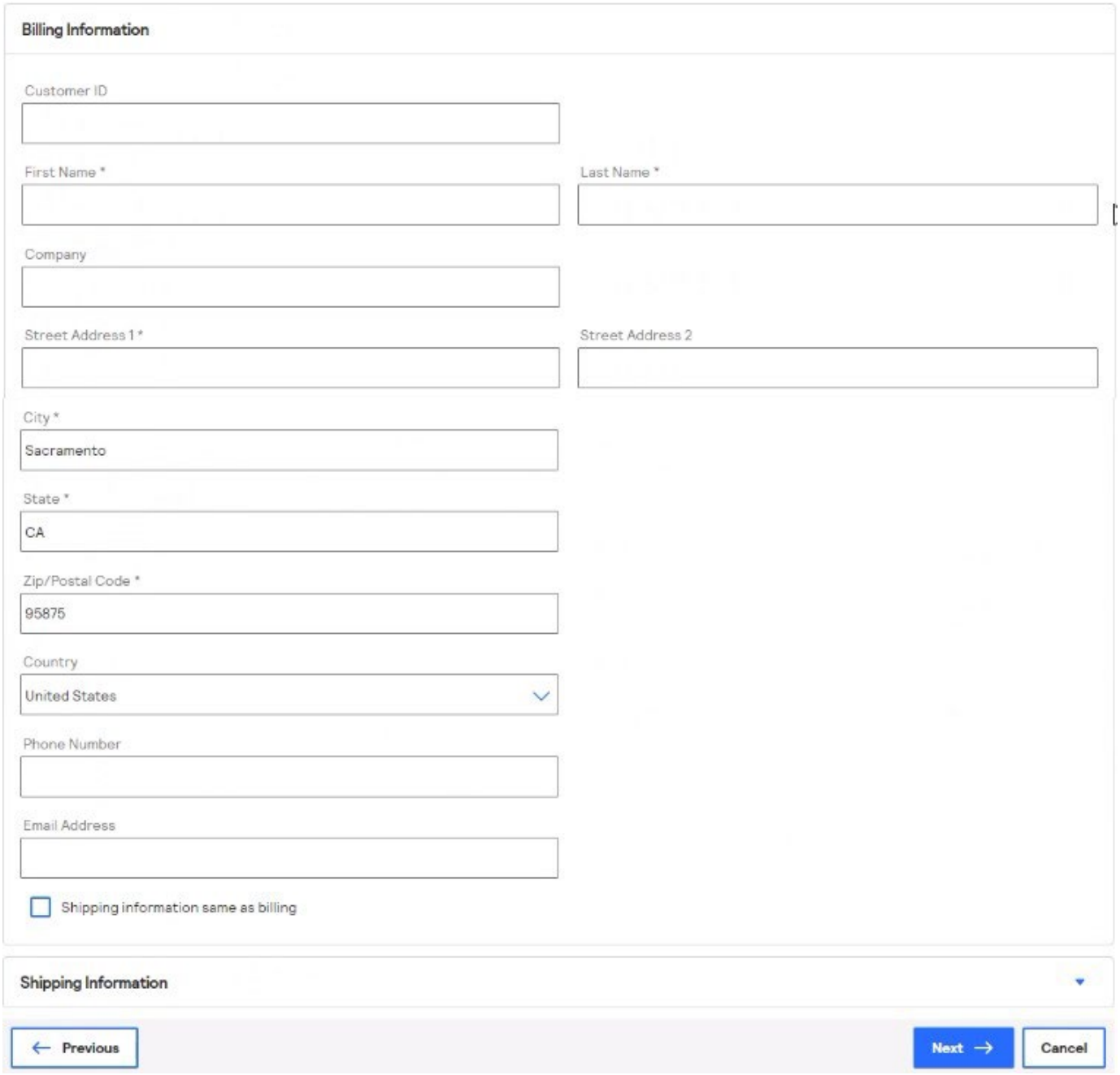
5.3 Authorizing Payments Using BA360

The Virtual Terminal in BA360 enables you to process one-time card-present and card-not- present transactions on the One-Time Payment page just as you would using a register in a retail environment.

Step 1: Enter Order Details



1. Click **One-Time Payment**. The One-Time Payment page appears.
2. Under Customer Presence, click **Present** if the card is present or **Not Present** if the card is not present. The One-Time Payment page updates to reflect your choice.
3. Select **Authorization** in the Transaction Type field.
4. Enter the transaction amount in the Amount field.
5. Click Next.



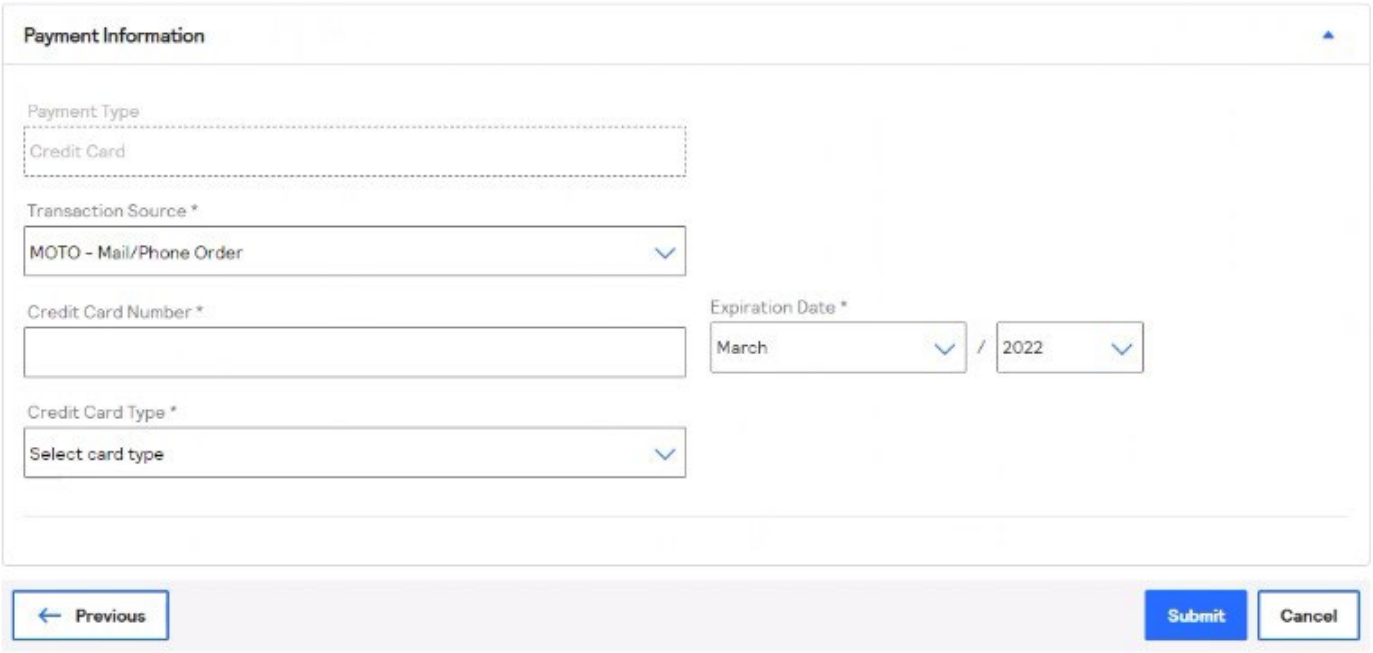
1. Enter the cardholder's first name in the First Name field.
2. Enter the cardholder's last name in the Last Name field.
3. Enter the cardholder's billing address in the Street Address 1 field.
   If a second line is required for the billing address, enter the second line in the Street Address 2 field.
4. Enter the billing city in the City field.

5. Enter the billing state in the State field.

6. Enter the billing postal code in the Zip/Postal Code field.

7. Click Next.

Step 3: Enter Payment Details



1. Select the transaction type in the Transaction Source drop-down field.

2. Enter the card number in the Credit Card Number field.

3. Select card's expiration month and year in the Expiration date drop-down fields.

4. Select the card type in the Card Type drop-down field.

5. Click Submit.

5.4 Final Authorization Indicator

This feature supports a mandate from Mastercard. The purpose of the mandate is to ensure that a customer's funds are available when the order might not be fulfilled.

For an authorization with an amount greater than zero, Mastercard recommends that you indicate whether the authorization is a final authorization, a preauthorization, or an undefined authorization.

5.4.1 Supported Services

- Authorization
- Incremental authorization

5.4.2 Supported Card Types

The following table lists the card types supported for final authorization indicator.

Payment Bank of America Gateway	Card Types
Bank of America Gateway	Mastercard

5.4.3 Final Authorizations

These are the requirements and guidelines for a final authorization:

- Authorization amount is greater than zero.
- Authorization amount is the final amount that the customer agrees to pay.
- Authorization should not be cancelled after it is approved except when a system failure occurs.
- Authorization must be submitted for capture within seven calendar days of the authorization request.
- Capture amount and currency must be the same as the authorization amount and currency.
- Chargeback protection is in effect for seven days after the authorization.

5.4.4 Pre-authorizations

These are the requirements and guidelines for a pre-authorization:

- Authorization amount is greater than zero.
- Authorization amount can be an estimate when the final amount is unknown, which is typical for hotel, auto rental, e-commerce, and restaurant transactions.
- Authorization must be submitted for capture within 30 calendar days of the authorization request.
- When you do not capture the authorization, you must reverse it.
  In the U.S Mastercard charges an additional fee for a preauthorization that is not captured and not reversed.
- Chargeback protection is in effect for 30 days after the authorization.

5.4.5 Required Field for a Final Authorization or Preauthorization

The following field is required in a request for a final authorization or preauthorization:

- `processingInformation.authorizationOptions.authIndicator`

Set this field to 0 for a preauthorization or 1 for a final authorization.

Related information API Field Reference for the REST API.

5.4.6 Required Fields for an Authorization

A request for an authorization requires these fields:

Important: It is your responsibility to determine whether a field is required for the transaction that you are requesting.

`clientReferenceInformation.code`

`merchantInformation.transactionLocalDateTime`

`orderInformation.amountDetails.currency`

`orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.billTo.address1`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.administrativeArea`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.country`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.email`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.firstName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.lastName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.locality`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.postalCode`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.address1`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.administrativeArea`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.locality`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.postalCode`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`paymentInformation.card.expirationMonth`

Required except when your account is configured for relaxed requirements for address data and expiration date.

Related information API Field Reference for the REST API.

5.4.7 Performing a Final Authorization or Preauthorization

Do not include any of these services in the request:

- Full authorization reversal
- Credit
- Risk update
- Services for other payment methods

Follow these steps to authorize a payment:

1. Send the service request to:
   `https://api.merchant-services.bankofamerica.com/pts/v2/payments`
2. Include the required fields in the request.
3. Include optional fields in the request as needed.
4. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

5. The response field `processingInformation.authorizationOptions.authIndicator` specifies the kind of authorization that was performed.

5.5 Standard AVS

This section provides information about the standard Address Verification System (AVS), which is supported for cards that are issued in the U.K., the U.S., and Canada.

5.5.1 Processing AVS Codes

When a Bank of America Gateway supports AVS for a transaction's card type, the issuing bank uses AVS to confirm that the customer has provided the correct billing address. When a customer provides incorrect information, the transaction might be fraudulent.

AVS occurs automatically with every authorization request. The authorization response includes the `Bank of America GatewayInformation.avs.code` field, which contains the AVS code from the issuing bank. The code indicates whether AVS matched the address and whether the address match was partial or complete.

When AVS cannot verify the address, but the authorization is otherwise valid, you might receive an AVS decline. You can capture authorizations that receive an AVS decline. However, you must review these orders to ensure that they are legitimate. Settling authorizations that fail the AVS check might affect the fees charged by Bank of America. Have your merchant contact Bank of America for details about how AVS management might affect your discount rate.

The `Bank of America GatewayInformation.avs.codeRaw` field is the raw AVS code sent directly from the Bank of America Gateway. Do not use this value to handle the AVS response. Use the value only for debugging purposes.

5.5.2 Controlling AVS Results

By default, only the AVS code N results in an AVS decline. You can change this behavior by including the processingInformation.authorizationOptions.declineAvsFlags field in the request.

5.5.3 Supported Card Types

The following table lists the card types for which standard AVS results are returned.

Bank of America Gateway	Payment Card Types
Bank of America Gateway	Visa, Mastercard, American Express, Diners Club, JCB, Discover **Important**: When you populate billing street address 1 and billing street address 2, Bank of America Gateway concatenates the two values. If the concatenated value exceeds 40 characters, Bank of America Gateway truncates the value at 40 characters before sending it to Bank of America Gateway and the issuing bank. Truncating this value affects AVS results and therefore might also affect risk decisions and chargebacks.

5.5.4 No Required Fields for Standard AVS

You are not required to include any specific fields in a request for standard AVS.

5.5.5 Required Fields for an Authorization

A request for an authorization requires these fields:

Important: It is your responsibility to determine whether a field is required for the transaction that you are requesting.

`clientReferenceInformation.code`

`merchantInformation.transactionLocalDateTime`

`orderInformation.amountDetails.currency` `orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.billTo.address1`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.administrativeArea`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.country`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.email`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.firstName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.lastName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.locality`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.postalCode`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.address1`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.administrativeArea`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.locality`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.postalCode`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`paymentInformation.card.expirationMonth`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.expirationYear`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.number`

`paymentInformation.card.securityCode`

`paymentInformation.card.type`

Required on Bank of America Gateway for all card types.

`processingInformation.commerceIndicator`

Required for requests that include payer authentication data. Otherwise, this field is optional.

Related information API Field Reference for the REST API.

5.5.6 Optional Fields for Standard AVS

You can include the following optional fields in a request for standard AVS:

- processingInformation.authorizationOptions.declineAvsFlags

  Use a space to separate the values in the list.

- processingInformation.authorizationOptions.ignoreAvsResult

  When a request includes the processingInformation.authorizationOptions.ignoreAvsResult field set to true, you receive no AVS declines, even when you use the

- processingInformation.authorizationOptions.declineAvsFlags field.

Related information API Field Reference for the REST API.

5.5.7 Example: Authorization with AVS

Request

```
{
  "clientReferenceInformation": {
    "code": "1234567890"
  },
  "orderInformation"
    : {
    "amountDetails":
    {
      "totalAmount": "49.95",
      "currency": "BRL"
    },
    "billTo": {
      "firstName": "Adriana",
      "lastName": "Tavares da Silva",
      "email": "asilva@example.com",
      "phone": "+552121114700",
      "address1": "Rua da Quitanda 187",
      "buildingNumber": "187",
      "locality": "Rio de Janeiro",
      "postalCode": "20091-005",
      "country": "BR"
    },
    "lineItems": [
    {
       "quantity": "1",
       "unitPrice": "49.95",
       "totalAmount": "49.95"
    }
  ]
  },
  "paymentAccountInformatio
    n": { "card": {
      "type": "052"
    }
  },
  "paymentInformation": { "card": {
      "type": "052",
      "number": "5432543254325432",
      "expirationMonth": "12",
      "expirationYear": "2022"
      "securityCode": "999"


    }
  }
}
```

Response


```
{
  "_links": {
    "void": {
    "method": "POST",
      "href": "/pts/v2/payments/12345678901234567890/voids"
    },
    "self": { "method": "GET",
      "href": "/pts/v2/payments/12345678901234567890"
    }
  },
  "clientReferenceInformation": {
  "code": "1234567890"
  },
  "id": "12345678901234567890",
  "orderInformation": {
    "amountDetails": {
      "totalAmount": "49.95",
      "authorizedAmount": "49.95",
      "currency": "BRL"
    }
  },
  "paymentAccountInformation": {
  "card": {
      "type": "052"
    }
  },
  "paymentInformation": {
    "card": {
      "type": "052",
      "number": "5432543254325432",
      "expirationMonth": "12",
```

```
        "expirationYear": "2022"
      },
      "accountFeatures": {
       "category": "CN",
        "group": "0"
      }
    }
    "Bank of America
      GatewayInformation": {
      "approvalCode": "123456",
      "networkTransactionId": "3312345",
      "transactionId": "123456789619999",
      "responseCode": "A",
      "avs": {
        "code": "V"
      }
    },
    "reconciliationId": "19119123456",
    "status": "AUTHORIZED",
    "submitTimeUtc": "2021-07-30T15:07:53Z"
}
```


6 Payer Authentication

This section describes the interface between the authorization service and the payer authentication services.

6.1 American Express SafeKey

American Express SafeKey (AESK) reduces the risk of unauthorized use of a payment card account.

6.1.1 Supported Service

- Authorization

6.1.2 Supported Card Type

- American Express

6.1.3 Overview

When you request an authorization using a supported card type and a supported Bank of America Gateway, you can include payer authentication data in the request. The payer authentication services enable you to add payer authentication support to your website without running additional software on your server.

AESK authenticates the customer during an online purchase and protects payment information as it is transmitted over the Internet.

Related information API Field Reference for the REST API.

6.1.4 Required Fields for an Authorization with American Express SafeKey

These fields are required in a request for an authorization with AESK. The values for these fields are in the response from the payer authentication validate service. When you request the payer authentication validate and authorization services together, the data is automatically passed from one service to the other.

consumerAuthenticationInformation.cavv

`consumerAuthenticationInformation.eciRaw`

`Required when the payer authentication validation service returns a raw ECI value.`

`processingInformation.commerceIndicator`

Set this field to Aesk for a successful authentication or Aesk_attempted if authentication was attempted but unsuccessful.

Related information API Field Reference for the REST API.

6.1.5 Optional Fields for an Authorization with American Express SafeKey

These fields are optional in a request for an authorization with AESK. The values for these fields are in the response from the payer authentication validate service. When you request the payer authentication validate and authorization services together, the data is automatically passed from one service to the other.

`consumerAuthenticationInformation.strongAuthentication.authenticationOutageExemption Indicato`

Set this field to 0 if the transaction is not exempt from strong customer authentication (SCA) requirements or 1 if it is exempt.

`consumerAuthenticationInformation.xid`

Related information API Field Reference for the REST API.

6.1.6 Required Fields for an Authorization

A request for an authorization requires these fields:

> **Important**: It is your responsibility to determine whether a field is required for the transaction that you are requesting.

`clientReferenceInformation.code`

`merchantInformation.transactionLocalDateTime`

`orderInformation.amountDetails.currency` `orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.billTo.address1`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.administrativeArea`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.country`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.email`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.firstName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.lastName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.locality`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.postalCode`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.address1`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.administrativeArea`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.locality`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.postalCode`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`paymentInformation.card.expirationMonth`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.expirationYear`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.number paymentInformation.card.securityCode`

`paymentInformation.card.type`

Required on Bank of America Gateway for all card types.

`processingInformation.commerceIndicator`

Required for requests that include payer authentication data. Otherwise, this field is optional.

Related information API Field Reference for the REST API.

6.1.7 Authorizing an American Express SafeKey Transaction

Do not include any of these services in the request:

- Full authorization reversal
- Credit
- Risk update
- Services for other payment methods Follow these steps to authorize a payment:

1. Send the service request to:

   `https:// api.merchant-services.bankofamerica.com/pts/v2/payments`
2. Include the required fields in the request.
3. Include optional fields in the request as needed.
4. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.
5. Examine the response codes.
   - The authorization service returns a raw response code and a mapped response code:
   - The raw response code is the value returned by the Bank of America Gateway. This value is returned in the Bank of America GatewayInformation.consumerAuthenticationResponse.codeRaw field.
   - The mapped response code is the predefined value that corresponds to the raw response code. This value is returned in the Bank of America GatewayInformation.consumerAuthenticationResponse.code field.

Example: Authorization with American Express SafeKey Using the REST API

Request

```
{
  "clientReferenceInformation": {
    "code": "TC50171_3"
  },
  "processingInformation": {
    "commerceIndicator": "aesk"
  },
  "paymentInformation": {
    "card": {
      "number": "372425119311008",
      "expirationMonth": "01",
      "expirationYear": "2025",
      "type": "003"
    }
  },
  "orderInformation": {
    "amountDetails": {
      "totalAmount": "102.21",
      "currency": "USD"
    },
    "billTo": {
      "firstName": "John",
      "lastName": "Smith",
      "address1": "201 S. Division St._1",
      "locality": "Foster City",
      "administrativeArea": "CA",
      "postalCode": "94404",
      "country": "US",
      "email": "accept@cybs.com",
      "phoneNumber": "6504327113"
    }
  },
  "consumerAuthenticationInformation": {
    "cavv": "AceY+igABPs3jdwNaDg3MAACAAA="
  }
}
```

```
{
  "_links": {
    "authReversal": {
      "method": "POST",
      "href": "/pts/v2/payments/646785860498658000 4004/reversals"
    },
    "self": {
      "method": "GET",
      "href": "/pts/v2/payments/6467858604986580004004"
    },
    "capture": {
      "method": "POST",
      "href": "/pts/v2/payments/6467858604986580004004/captures"
    }
  },
  "clientReferenceInformation": {
    "code": "TC50171_3"
  },
  "id": "6467858604986580004004",
  "orderInformation": {
    "amountDetails": {
      "authorizedAmount": "102.21",
      "currency": "USD"
    }
  },
  "paymentAccountInformation": {
    "card": {
      "type": "003"
    }
  },
  "paymentInformation": {
    "tokenizedCard": {
      "type": "003"
    },
    "card": {
      "type": "003"
    }
  },
  "pointOfSaleInformation": {
    "terminalId": "01411543"
  },
  "processorInformation": {
    "electronicVerificationResults": {
      "phoneNumberRaw": "Y",
      "emailRaw": "Y",
      "phoneNumber": "Y",
      "code": "Y",
```

```
      "postalCodeRaw": "Y",
      "street": "Y",
      "postalCode": "Y",
      "codeRaw": "Y",
      "streetRaw": "Y",
      "email": "Y"
    },
    "merchantNumber": "000846649116882",
    "approvalCode": "831000",
    "responseCode": "00",
    "avs": {
      "code": "Y",
      "codeRaw": "Y"
    }
  },
  "reconciliationId": "11NTJ0I3LW2P",
  "status": "AUTHORIZED",
  "submitTimeUtc": "2022-03-09T00:31:00Z"


}
```


6.2 JCB J/Secure

JCB J/Secure reduces the risk of unauthorized use of a payment card account.

6.2.1 Supported Service

- Authorization

6.2.2 Supported Card Type

- JCB

6.2.3 Overview

When you request an authorization using a supported card type and a supported Bank of America Gateway, you can include payer authentication data in the request. The payer authentication services enable you to add payer authentication support to your website without running additional software on your server.

JCB J/Secure authenticates a customer by adding a password identification step to the online shopping process.

Related information API Field Reference for the REST API.

6.2.4 Required Fields for an Authorization with JCB J/Secure

The following fields are required in a request for an authorization with JCB J/Secure. The values for these fields are in the response from the payer authentication validate service. When you request the payer authentication validate and authorization services together, the data is automatically passed from one service to the other.

`consumerAuthenticationInformation.cavv`

Required when payer authentication is successful. Otherwise, this field is optional.

`consumerAuthenticationInformation.eciRaw`

Required when the payer authentication validation service returns a raw ECI value. Otherwise, this field is optional.

`consumerAuthenticationInformation.xid`

Required when payer authentication is successful. Otherwise, this field is optional.

`processingInformation.commerceIndicator`

Set this field for a successful authentication or `js_attempted` if authentication was attempted but failed.

Related information API Field Reference for the REST API.

6.2.5 Required Fields for an Authorization

A request for an authorization requires these fields:

Important: It is your responsibility to determine whether a field is required for the transaction that you are requesting.

`clientReferenceInformation.code`

`merchantInformation.transactionLocalDateTime`

`orderInformation.amountDetails.currency`

`orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.billTo.address1`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.administrativeArea`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.country`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.email`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.firstName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.lastName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.locality`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.postalCode`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.address1`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.administrativeArea`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.locality`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.postalCode`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`paymentInformation.card.expirationMonth`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.expirationYear`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.number`

`paymentInformation.card.securityCode`

`paymentInformation.card.type`

Required on Bank of America Gateway for all card types.

`processingInformation.commerceIndicator`

Required for requests that include payer authentication data. Otherwise, this field is optional.

Related information API Field Reference for the REST API.

6.2.6 Authorizing a JCB J/Secure Transaction

Do not include any of these services in the request:

- Full authorization reversal
- Credit
- Risk update
- Services for other payment methods

Follow these steps to authorize a payment:

1. Send the service request to:

   `https://api.merchant-services.bankofamerica.com/pts/v2/payments`
2. Include the required fields in the request.
3. Include optional fields in the request as needed.
4. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.
5. Examine the response codes.
   - The authorization service returns a raw response code and a mapped response code:

- The raw response code is the value returned by the Bank of America Gateway. This value is returned in the Bank of America GatewayInformation.consumerAuthenticationResponse.codeRaw field.
- The mapped response code is the predefined value that corresponds to the raw response code. This value is returned in the `Bank of America GatewayInformation.consumerAuthenticationResponse.code` field.

Example: Authorization with JCB J/Secure Using the REST API

Request

```
{
"clientReferenceInformation": {
  "code": "TC50171_3"
},
"processingInformation": {
  "commerceIndicator": "js"
},
"paymentInformation": {
  "card": {
    "number": "3566111111111113",
    "expirationMonth": "01",
    "expirationYear": "2023"
  }
},
"orderInformation": {
  "amountDetails": {
    "totalAmount": "100",
    "currency": "USD"
},
"billTo": {
  "firstName": "John",
  "lastName": "Smith",
  "address1": "201 S. Division St._1",
  "address2": "",
  "locality": "Foster City",
  "administrativeArea": "CA",
  "postalCode": "94404",
  "country": "US",
  "email": "accept@cybs.com",
  "phoneNumber": "6504327113"
  }
```

```
},
  "consumerAuthenticationInformation": {
    "cavv": "AceY+igABPs3jdwNaDg3MAACAAA=",
    "xid": "1234567890987654321ABCDEFabcdefABCDEF123"
  }
}
```

Response

```
{
"_links" : { "authReversal" : {
"method" : "POST",
"href" : "/pts/v2/payments/651005200173628020321 1/reversals"
},
"self" : {
"method" : "GET",
"href" : "/pts/v2/payments/651005200173628020321 1"
},
"capture" : { "method" : "POST",
"href" : "/pts/v2/payments/651005200173628020321 1/captures"
}
},
"clientReferenceInformation" : { "code" : "TC50171_3"
},
"id" : "651005200173628020321 1",
"orderInformation" : { "amountDetails" : {
"authorizedAmount" : "100.00", "currency" : "USD"
}
},
"paymentAccountInformation" : { "card" : {
"brandName" : "JCB",
"type" : "007"
}
},
"paymentInformation" : { "tokenizedCard" : {
"type" : "007"
},
"card" : {
"type" : "007"
}
```

```
  },
  "processorInformation" : {
    "systemTraceAuditNumber" : "819199",
    "approvalCode" : "831000",
    "merchantAdvice" : {
      "code" : "01",
      "codeRaw" : "M001"
    },
    "responseDetails" : "ABC",
    "networkTransactionId" : "016153570198200",
    "retrievalReferenceNumber" : "211620819199",
    "consumerAuthenticationResponse" : {
      "code" : "2",
      "codeRaw" : "2"
    },
    "transactionId" : "016153570198200",
    "responseCode" : "00",
    "avs" : {
      "code" : "Y",
      "codeRaw" : "Y"
    }
  },
  "reconciliationId" : "6510052001736280203211",
  "status" : "AUTHORIZED",
  "submitTimeUtc" : "2022-04-26T20:33:20Z"



}
```


6.3 Mastercard Identity Check

Mastercard Identity Check adds security to online transactions by authenticating Identity Check account holders for specific transactions. Identity Check generates a unique, 32-character transaction token, called the account authentication value (AAV), each time an Identity Check-enabled account holder makes an online purchase. The AAV binds the account holder to a specific transaction. Identity Check transactions use the universal cardholder authentication field (UCAF) as a standard to collect and pass AAV data. For details about signing up for and using Identity Check or UCAF, contact your acquiring bank or go to the Mastercard website.

Fields Specific to this Use Case

Include these fields with a standard authorization:

- `consumerAuthenticationInformation.authenticationTransactionId`-Set this field to the transaction ID returned by Identity Check during the authentication process.
- `consumerAuthenticationInformation.paSpecificationVersion`-Set this field to the Identity Check version returned by Identity Check during the authentication process.
- `consumerAuthenticationInformation.ucafCollectionIndicator`-Set this value to the Collection Indicator returned by Identity Check during the authentication process.
- `processingInformation.commerceIndicator`-Set this value to `spa` for an authentication that was successful or was attempted but did not process.

Prerequisite

Before you implement payer authentication for Mastercard Identity Check, you must contact customer support to have your account configured for this feature.

Endpoint

```
POST https://api.merchant-services.bankofamerica.com/pts/v2/payments
```

Required Fields for an Authorization with Mastercard Identity Check Using REST APIs

The following fields are required in a request for an authorization with Mastercard Identity Check:

consumerAuthenticationInformation.authenticationTransactionId

consumerAuthenticationInformation.paSpecificationVersion

consumerAuthenticationInformation.ucafCollectionIndicator

orderInformation.amountDetails.currency orderInformation.amountDetails.totalAmount

orderInformation.billTo.address1

orderInformation.billTo.administrativeArea

orderInformation.billTo.country

orderInformation.billTo.email

orderInformation.billTo.firstName

orderInformation.billTo.lastName

orderInformation.billTo.locality

orderInformation.billTo.postalCode

paymentInformation.card.expirationMonth

paymentInformation.card.expirationYear

paymentInformation.card.number

processingInformation.commerceIndicator

Set this field to `spa` for an authentication that was successful or was attempted but did not succeed.

Authorizing a Mastercard Identity Check Transaction Using REST APIs

To authorize a payment:

1. Send the service request to:

   `https://api.merchant-services.bankofamerica.com/pts/v2/payments`

2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

3. Examine the **consumerAuthenticationInformation.ucafCollectionIndicator** response field.

> **Important:** A value of `0` for the UCAF collection indicator response field for a Mastercard transaction indicates that Mastercard downgraded the transaction. When Mastercard approves an authorization and downgrades it, you are responsible for the transaction. To confirm the downgrade, look at the e-commerce indicator for the transaction in the Business Center. You can proceed with the transaction if you want to accept responsibility. If you do not want to accept responsibility, reverse the authorization, attempt to authenticate the customer again, and request another authorization.

Request

```
{
  "clientReferenceInformation": {
    "code": "TC50171_3"
  },
  "processingInformation": {
    "commerceIndicator": "spa"
  },
  "paymentInformation": {
    "card": {
      "number": "5555555555554444",
      "expirationMonth": "01",
      "expirationYear": "2023"
    }
  },
  "orderInformation": {
    "amountDetails": {
      "totalAmount": "100",
      "currency": "USD"
    },
    "billTo": {
      "firstName": "John",
      "lastName": "Smith",
      "address1": "201 S. Division St._1",
      "locality": "Foster City",
      "administrativeArea": "CA",
      "postalCode": "94404",
      "country": "US",
      "email": "accept@cybs.com",
      "phoneNumber": "6504327113"
    }
  },
  "consumerAuthenticationInformation": {
    "ucafCollectionIndicator": "1",
    "paSpecificationVersion": "1",
    "authenticationTransactionId": "OiCtXA1j1AxtSNDh5lt1"
  }
}
```

```
{
  "_links" : {
    "authReversal" : {
      "method" : "POST",
      "href" : "/pts/v2/payments/6506578204516496503211/reversals"
    },
    "self" : {
      "method" : "GET",
      "href" : "/pts/v2/payments/6506578204516496503211"
    },
    "capture" : {
      "method" : "POST",
      "href" : "/pts/v2/payments/6506578204516496503211/captures"
    }
  },
  "clientReferenceInformation" : {
    "code" : "TC50171_3"
  },
  "id" : "6506578204516496503211",
  "orderInformation" : {
    "amountDetails" : {
      "authorizedAmount" : "100.00",
      "currency" : "USD"
    }
  },
  "paymentAccountInformation" : {
    "card" : {
      "type" : "002"
    }
  },
  "paymentInformation" : {
    "tokenizedCard" : {
      "type" : "002"
    },
    "card" : {
      "type" : "002"
    }
  },
  "processorInformation" : {
    "approvalCode" : "100",
    "responseCode" : "0",
    "avs" : {
      "code" : "U",
      "codeRaw" : "00"
    }
  },
```

```
  "status" : "AUTHORIZED",
  "submitTimeUtc" : "2022-04-22T20:03:40Z"
}
```

6.3.1 Supported Versions of Mastercard Identity Check

Payment Bank of America Gateway	Supported Versions of Mastercard Identity Check
Bank of America Gateway	Versions 1.0 and 2.0

6.3.2 Supported Service

- Authorization

6.3.3 Supported Card Types

- Mastercard

6.3.4 Overview

When you request an authorization using a supported card type and a supported Bank of America Gateway, you can include payer authentication data in the request. The payer authentication services enable you to add payer authentication support to your website without running additional software on your server.

Mastercard Identity Check adds security to online transactions by authenticating Identity Check account holders for specific transactions. Identity Check generates a unique, 32-character transaction token, called the account authentication value (AAV), each time an Identity Check-enabled account holder makes an online purchase. The AAV binds the account holder to a specific transaction. Identity Check transactions use the universal cardholder authentication field (UCAF) as a standard to collect and pass AAV data. For details about signing up for and using Identity Check or UCAF, contact your acquiring bank or go to the Mastercard website.

6.3.5 Required Fields for an Authorization with Mastercard Identity Check

The following fields are required in a request for an authorization with Mastercard Identity Check. The values for these fields are in the response from the payer authentication validate service.

When you request the payer authentication validate and authorization services together, the data is automatically passed from one service to the other.

`consumerAuthenticationInformation.directoryServerTransactionId`

Required only for Mastercard Identity Check 2.0.

`consumerAuthenticationInformation.eciRaw`

Required when the payer authentication validation service returns a raw ECI value.

`consumerAuthenticationInformation.paSpecificationVersion`

`consumerAuthenticationInformation.ucafAuthenticationData`

Required when the UCAF collection indicator is 1, 2, or 5.
consumerAuthenticationInformation.ucafCollectionIndicator

`processingInformation.commerceIndicator`
Set this field to spa for an authentication that was successful or was attempted but failed.

Related information API Field Reference for the REST API.

6.3.6 Required Fields for an Authorization

A request for an authorization requires these fields:

Important: It is your responsibility to determine whether a field is required for the transaction that you are requesting.

`clientReferenceInformation.code`

`merchantInformation.transactionLocalDateTime`

`orderInformation.amountDetails.currency` `orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.billTo.address1`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.administrativeArea`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.country`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.email`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.firstName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.lastName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.locality`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.postalCode`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.address1`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.administrativeArea`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.locality` Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.
`orderInformation.shipTo.postalCode` Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.
`paymentInformation.card.expirationMonth` Required except when your account is configured for relaxed requirements for address data and expiration date.
`paymentInformation.card.expirationYear` Required except when your account is configured for relaxed requirements for address data and expiration date.
`paymentInformation.card.number  paymentInformation.card.securityCode`
`paymentInformation.card.type`
`Required on Bank of America Gateway for all card types.`
`processingInformation.commerceIndicator` Required for requests that include payer authentication data. Otherwise, this field is optional.

Related information API Field Reference for the REST API.

6.3.7 Authorizing a Mastercard Identity Check Transaction

Do not include any of these services in the request:

- Full authorization reversal
- Credit
- Risk update
- Services for other payment methods

Follow these steps to authorize a payment:

1. Send the service request to:
2. https://api.merchant-services.bankofamerica.com/pts/v2/payments
3. Include the required fields in the request.
4. Include optional fields in the request as needed.
5. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.
6. Examine the consumerAuthenticationInformation.ucafCollectionIndicator response field.

6.4 Visa Secure

Visa Secure reduces the risk of unauthorized use of a payment card account.

6.4.1 Supported Service

- Authorization

6.4.2 Supported Card Types

- Visa

6.4.3 Overview

When you request an authorization using a supported card type and a supported Bank of America Gateway, you can include payer authentication data in the request. The payer authentication services enable you to add payer authentication support to your website without running additional software on your server.

Visa Secure reduces the risk of unauthorized use of a payment card account. Visa Secure enables you to verify a customer's identity using a password and provides results to you in real time during the checkout process. For details about signing up for and using Visa Secure, contact your acquiring bank or go to the Visa website.

For Visa Secure transactions, use card type 001. Do not use card type 033.

For Visa Click to Pay transactions, do not map the Visa Secure data from the decrypt Visa Click to Pay data service response message to the payer authentication fields in the authorization request. The data is mapped for you. The transaction information that is sent to the Bank of America Gateway includes the Visa Secure data.

6.4.4 Required Fields for an Authorization with Visa Secure

The following fields are required in a request for an authorization with Visa Secure. The values for these fields are in the response from the payer authentication validate service. When you request the payer authentication validate and authorization services together, the data is automatically passed from one service to the other.

`consumerAuthenticationInformation.cavv`

`consumerAuthenticationInformation.directoryServerTransactionId`

`consumer AuthenticationInformation.eciRaw`

Required when the payer authentication validation service returns a raw ECI value.

`consumerAuthenticationInformation.paSpecificationVersion`

`consumerAuthenticationInformation.xid`

Required when payer authentication is successful. Otherwise, this field is optional.

`processingInformation.commerceIndicator`

Set this field to vbv for a successful authentication or vbv_attempted if authentication was attempted but failed.

Related information API Field Reference for the REST API.

6.4.5 Required Fields for an Authorization

A request for an authorization requires these fields:

Important: It is your responsibility to determine whether a field is required for the transaction that you are requesting.

`clientReferenceInformation.code`

`merchantInformation.transactionLocalDateTime`

`orderInformation.amountDetails.currency`

`orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.billTo.address1`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.administrativeArea`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.country`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.email`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.firstName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.lastName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.locality`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.postalCode`

Required when the billing country is the U.S. except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.address1`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.administrativeArea`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.locality`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.postalCode`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`paymentInformation.card.expirationMonth`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.expirationYear`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.number` `paymentInformation.card.securityCode`

`paymentInformation.card.type`

Required on Bank of America Gateway for all card types.

`processingInformation.commerceIndicator`

Required for requests that include payer authentication data. Otherwise, this field is optional.

Related information API Field Reference for the REST API.

6.4.6 Authorizing a Visa Secure Transaction

Do not include any of these services in the request:

- Full authorization reversal
- Credit
- Risk update
- Services for other payment methods

Follow these steps to authorize a payment:

1. Send the service request to:

```
https:// api.m ercha nt-services.bankofamerica.com/pts/v2/payments
```

2. Include the required fields in the request.
3. Include optional fields in the request as needed.
4. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.
5. Examine the response codes.
    - The authorization service returns a raw response code and a mapped response code:
    - The raw response code is the value returned by the Bank of America Gateway. This value is returned in the Bank of America GatewayInformation.consumerAuthenticationResponse.codeRaw field.
    - The mapped response code is the predefined value that corresponds to the raw response code. This value is returned in the Bank of America GatewayInformation.consumerAuthenticationResponse.code field.

6.5 Authorization Reversals

Reversing an authorization releases the hold on the customer's payment card funds that the issuing bank placed when processing the authorization.

Each card-issuing financial institution has its own rules for deciding whether an authorization reversal succeeds or fails. When a reversal fails, contact the card-issuing financial institution to learn whether there is a different way to reverse the authorization.

If your Bank of America Gateway supports authorization reversal after void (ARAV), you can reverse an authorization after you void the associated capture. If your Bank of America Gateway does not support ARAV, you can use the authorization reversal service only for an authorization that has not been captured and settled.

An authorization reversal is a follow-on transaction that uses the request ID returned from an authorization transaction to link the transactions together. The authorization request ID is used to look up the customer's billing and account information in the BA360. You are not required to include those fields in the full authorization reversal request. The original transaction and follow-on transaction are linked in the database and in the Merchant Services section of your Online Banking Portal.

6.5.1 Required Fields for Processing Authorization Reversals Using REST APIs

These fields are required in a request for an authorization reversal:

`Id`

Set the id URL parameter to the request ID that was included in the authorization response message.

`reversalInformation.amountDetails.totalAmount`

The amount of the reversal must be the same as the authorization amount that was included in the authorization response message. Do not use the amount that was requested in the authorization request message.

Related information API Field Reference for the REST API.

6.5.2 Capturing an Authorization Using REST APIs

To capture an authorization:

1. Pass the original authorization ID in the URL, and send the service request to:
   `https://api.merchant-services.bankofamerica.com/v2/payments/{id}/captures`
   - Where id is the authorization ID. The authorization ID is passed in the authorization response as id.
   - The URL with the id value is included in the authorization response:
2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

6.5.3 Example: Processing an Authorization Reversal Using the REST API

Request

```
{
  "reversalInformation" : {
    "amountDetails" : {
      "totalAmount" : "100.00"
    }
  }
}
```

Response

```
{
 "_links" : {
    "self" : {
      "method" : "GET",
      "href" : "/pts/v2/reversals/652201071390606890309 3"
    }
  },
  "authorizationInformation" : {
    "approvalCode" : "100"
  },
  "clientReferenceInformation" : {
    "code" : "1652201071257"
  },
  "id" : "652201071390606890309 3",
  "orderInformation" : {
    "amountDetails" : {
      "currency" : "USD"
    }
  },
  "Bank of America GatewayInformation" :
    { "responseCode" : "0"
  },
  "reversalAmountDetails" : {
    "reversedAmount" : "100.00",
    "currency" : "USD"
  },
  "status" : "REVERSED",
  "submitTimeUtc" : "2022-05-10T16:44:31Z"
}
```

6.5.4 Supported Card Types for Partial Authorizations

The following table lists the card types that are supported for partial authorizations.

Bank of America Gateway	Card Types
Bank of America Gateway	Visa, Mastercard, American Express, Diners Club, JCB, Discover **Important**: Partial authorizations are not available for Mastercard transactions in the IDR currency on Bank of America Gateway.

6.5.5 Unsupported Card Types

Prepaid cards and debit cards that are not supported for partial authorization are processed as follows:

- When the card balance is sufficient for the requested transaction, the transaction is successful.
- When the card balance is not sufficient for the requested transaction, the request is declined.

6.5.6 How a Partial Authorization Works

Support for partial authorizations by Bank of America Gateway and card type does not guarantee approval of a partial authorization. The issuing bank decides whether to approve a partial amount.

When the balance on a debit card or prepaid card is less than the requested authorization amount, the issuing bank can approve a partial amount. When this happens, you can accept multiple forms of payment for the order starting with some or all of the approved amount followed by one or more different payment methods:

1. If your account is not configured for partial authorizations, you must enable partial authorizations for the transaction by setting `processingInformation.authorizationOptions.partialAuthIndicator` to true in a request.
2. You submit an authorization request or a sale request for a debit card or prepaid card.
3. The authorization response message includes:
   - `orderInformation.amountDetails.totalAmount`: amount you requested
   - `orderInformation.amountDetails.authorizedAmount`: amount that was authorized
4. You submit a capture request for the partial authorization.
5. When you capture only part of the approved amount, Bank of America or your Bank of America Gateway might be able to perform an automatic partial authorization reversal for you.
6. If you do not capture the partial authorization, you must request a full authorization reversal if this service is supported for your Bank of America Gateway and card type.
7. You use one or more different payment methods for the rest of the order amount.

When you process these payment methods through Bank of America, you can use the processingInformation.linkId field to link the payment requests to the original authorization request. Set processingInformation.linkId to the value that was returned in the response message for the original authorization request.

6.5.7 Required Field for Opting In (Enabling) Partial Authorizations

When your account is not enabled to support partial authorizations, the following field is required to enable partial authorizations:

- `processingInformation.authorizationOptions.partialAuthIndicator`

Set this field to true in an authorization or sale request. When you do this, only that specific transaction is enabled for partial authorization.

Related information API Field Reference for the REST API.

6.5.8 Required Field for Opting Out (Disabling) Partial Authorizations

When your account is enabled to support partial authorizations, the following field is required to disable partial authorizations for a specific transaction:

`processingInformation.authorizationOptions.partialAuthIndicator`

Set this field to false in an authorization or sale request. When you do this, only that specific transaction is enabled for partial authorization.

Related information API Field Reference for the REST API.

6.5.9 Required Fields for an Authorization

A request for an authorization requires these fields:

Important: It is your responsibility to determine whether a field is required for the transaction that you are requesting.

`clientReferenceInformation.code`

`merchantInformation.transactionLocalDateTime`

`orderInformation.amountDetails.currency` `orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.billTo.address1`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.administrativeArea`

Required when the billing country is the U.S.except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.country`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.email`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.firstName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.lastName`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.locality`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.billTo.postalCode`

Required when the billing country is the U.S.except when your account is configured for relaxed requirements for address data and expiration date.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.address1`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.administrativeArea`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.locality`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`orderInformation.shipTo.postalCode`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

`paymentInformation.card.expirationMonth`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.expirationYear`

Required except when your account is configured for relaxed requirements for address data and expiration date.

`paymentInformation.card.number` `paymentInformation.card.securityCode`

`paymentInformation.card.type`

`Required on Bank of America Gateway for all card types.`

`processingInformation.commerceIndicator`

Required for requests that include payer authentication data. Otherwise, this field is optional.

Related information API Field Reference for the REST API.

6.5.10 Required Fields for a Capture

The following fields are required in a request for a capture:

`clientReferenceInformation.code` `id`

Set the id URL parameter to the request ID that was included in the authorization response message. Do not include this value when the authorization and capture requests are bundled.

`orderInformation.amountDetails.currency`

`orderInformation.amountDetails.totalAmount`

Either orderInformation.amountDetails.totalAmount or orderInformation.lineItems[] and orderInformation.lineItems[].unitPrice must be included in the request.

`orderInformation.lineItems[].productName`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].productSku`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.lineItems[].quantity`

Required when the product code is not default or one of the values for shipping or handling. Otherwise, this field is optional.

`orderInformation.shipTo.country`

Required when any shipping address information is included in the request. Otherwise, this field is optional.

`orderInformation.shipTo.postalCode`

Required when any shipping address information is included in the request and shipping to the U.S. Otherwise, this field is optional.

Related information API Field Reference for the REST API.

6.5.11 Optional Field for Enabling and Disabling Partial Authorizations

You can include the following optional field when you are enabling or disabling partial authorizations for a specific transaction:

- processingInformation.linkId

Set this field to the request ID that was returned in the response message from the original authorization request.

Related information API Field Reference for the REST API.

6.5.12 Opting In: Enabling Partial Authorizations

Perform these steps to enable specific transactions for partial authorizations.

1. Send the service request to:
   `https://api.merchant-services.bankofamerica.com/pts/v2/payments`
2. Include the required fields in the request.
3. Include optional fields in the request as needed.
4. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

If the partial amount was approved (instead of the total requested amount), the request amount and total amount fields are included in the response.

Important: If you do not capture the partial authorization, you need to request the full authorization reversal if this service is supported for your Bank of America Gateway and card type.

6.5.13 Opting Out: Disabling Partial Authorizations

If your account is configured for partial authorizations, you can disable a partial authorization for a specific transaction by performing these steps.

1. Send the service request to:

   https://api.merchant-services.bankofamerica.com/pts/v2/payments

2. Include the required fields in the request.
3. Include optional fields in the request as needed.
4. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

6.5.14 Capturing a Partial Authorization

Make sure you capture the partially approved amount in the orderInformation.amountDetails.authorizedAmount field. Do not capture the amount that you requested in the authorization request message. To capture a partial authorization:

1. Pass the original authorization ID in the URL, and send the service request to:
   `POST https://<url_prefix>/v2/payments/{id}/captures`
   Use one of these URL prefixes:
   - Test: apitest.merchant-services.bankofamerica.com
   - Production: api.merchant-services.bankofamerica.com
     - Where id is the authorization ID returned in the authorization response.

       ```
       {
       "id": "648169292446600400 3001"
       }
       ```

     - The URL with the id value is included in the authorization response:

       ```
       {
             "_links": {
             "capture": {
             "method":
             "POST",
             "href": "/pts/v2/payments/648169292446600400 3001/captures"
            }
         }
       ```

2. Check the response message to make sure that the request was successful. A 200-level HTTP response code indicates success. For information about response codes, see Transaction Response Codes.

Use one or more different payment methods for the rest of the order amount. When you process these payment methods through Bank of America, you can use the processingInformation.linkId field to link the payment requests to the original authorization request. Set processingInformation.linkId to the value that was returned in the response message for the original authorization request.

6.5.15 Example: Partially Approved Authorization

Request

```
{
   "clientReferenceInformation":
     { "code": "AB1234.1-1"
     },
   "paymentInformation": {
     "card": {
     "number": "4111111111111111",
     "expirationMonth": "12",
     "expirationYear": "2015",
     "securityCode": "xxx"
     }
     },
   "orderInformation": {
     "amountDetails": {
     "totalAmount": "1401.00",
     "currency": "USD"
    },
    "billTo": {
      "firstName
      ": "John",
      "lastName": "Smith",
      "address1": "201 S.
      Division St.",
      "address2": "Suite 500",
      "locality": "Ann Arbor",
      "administrativeArea":
      "MI", "postalCode":
      "48104-2201", "country":
      "US",
      "email":
      "okgo@example.com",
      "phoneNumber":
      "1234567890"
    }
  }
}
```

Response


```
{
   "clientReferenceInformation": {
     "code": "AB1234.1-1"
     },
     "id": "268863466000016790454O",
     "orderInformation": {
       "amountDetails": {
       "totalAmount": "1401.00",
       "authorizedAmount": "500.00",
     "currency": "USD"
     }
     },
   "Bank of America
     GatewayInformation": {
     "approvalCode": "831000",
     "networkTransactionId": "3312345",
     "transactionId": "123456789619999",
     "responseCode": "100",
     "avs": {
       "code": "A",
       "codeRaw": "A"
     }
     },
     "reconciliationId": "ABCDE12345FGHIJ67890",
     "status": "Request was partially approved.",
     "submitTimeUtc": "2021-08-03T16:38:38Z"
}
```

7 Real-Time Reversals

There are two kinds of real-time reversals:

- A **full authorization reversal** is a service that you can request.
  If you do not capture a partial authorization and if full authorization reversals are supported for the card type, you must request a full authorization reversal to release the hold that the authorization placed on the customer's funds. The amount of the reversal must be the amount that was authorized, not the amount that was requested.
- An **automatic partial authorization reversal** is performed automatically under certain conditions.
  When you capture a partial authorization for an amount that is less than the approved amount, Bank of America automatically performs a partial authorization reversal if it is supported for your Bank of America Gateway and card type. Bank of America performs the automatic partial authorization reversal before sending the capture request to the Bank of America Gateway.

Related information: Authorization Reversals