NeST Digital HACKATHON, 2022

Customer Credit Transfer

BackBenchers

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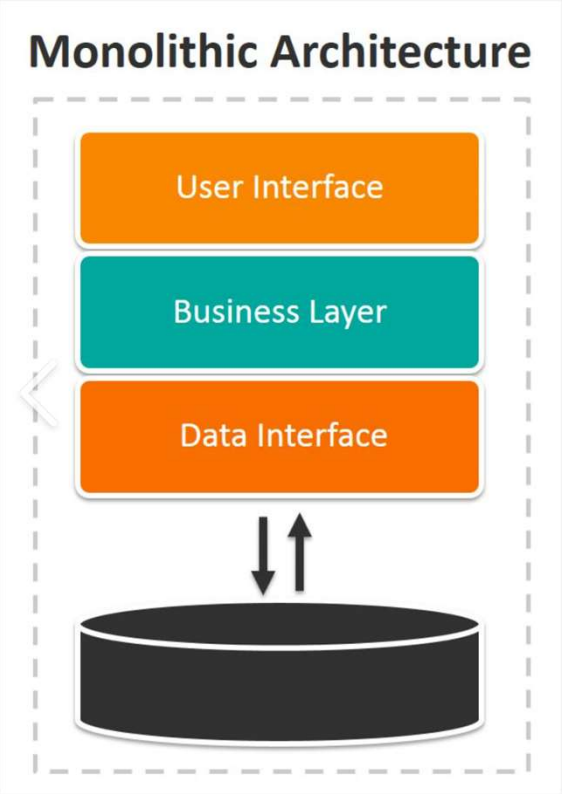
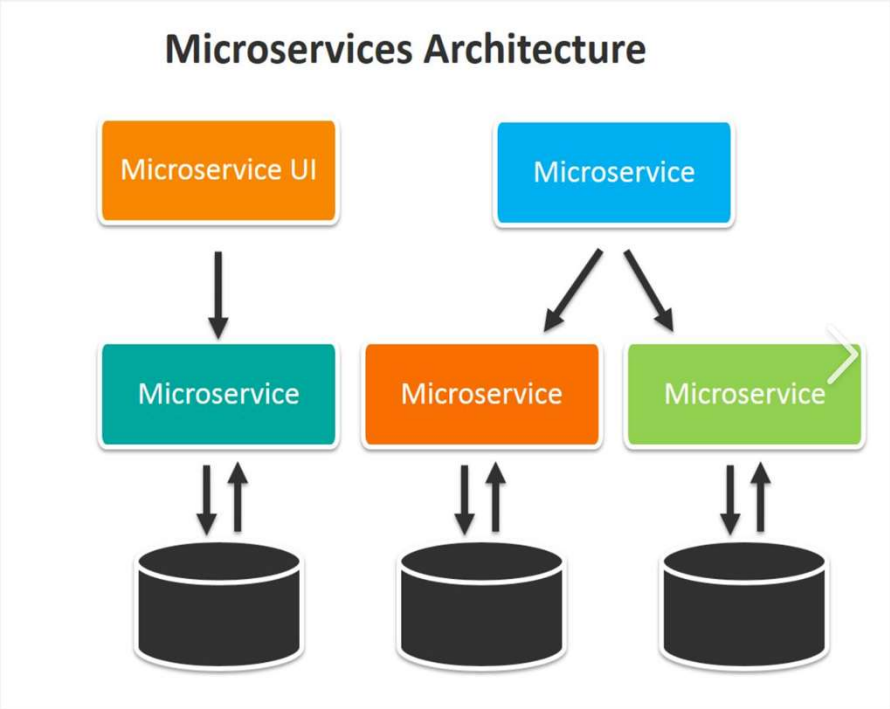
MONOLITHIC SYSTEM ARCHITECTURE

- Monolithic is an **all-in-one architecture.**
- All aspects of the software operate as a single unit.
- It is tightly coupled and entangled as the application evolves, making it difficult to isolate services for purposes such as independent scaling or code maintainability.
- Each component fully depends on each other.



MICRO-SERVICE SYSTEM ARCHITECTURE

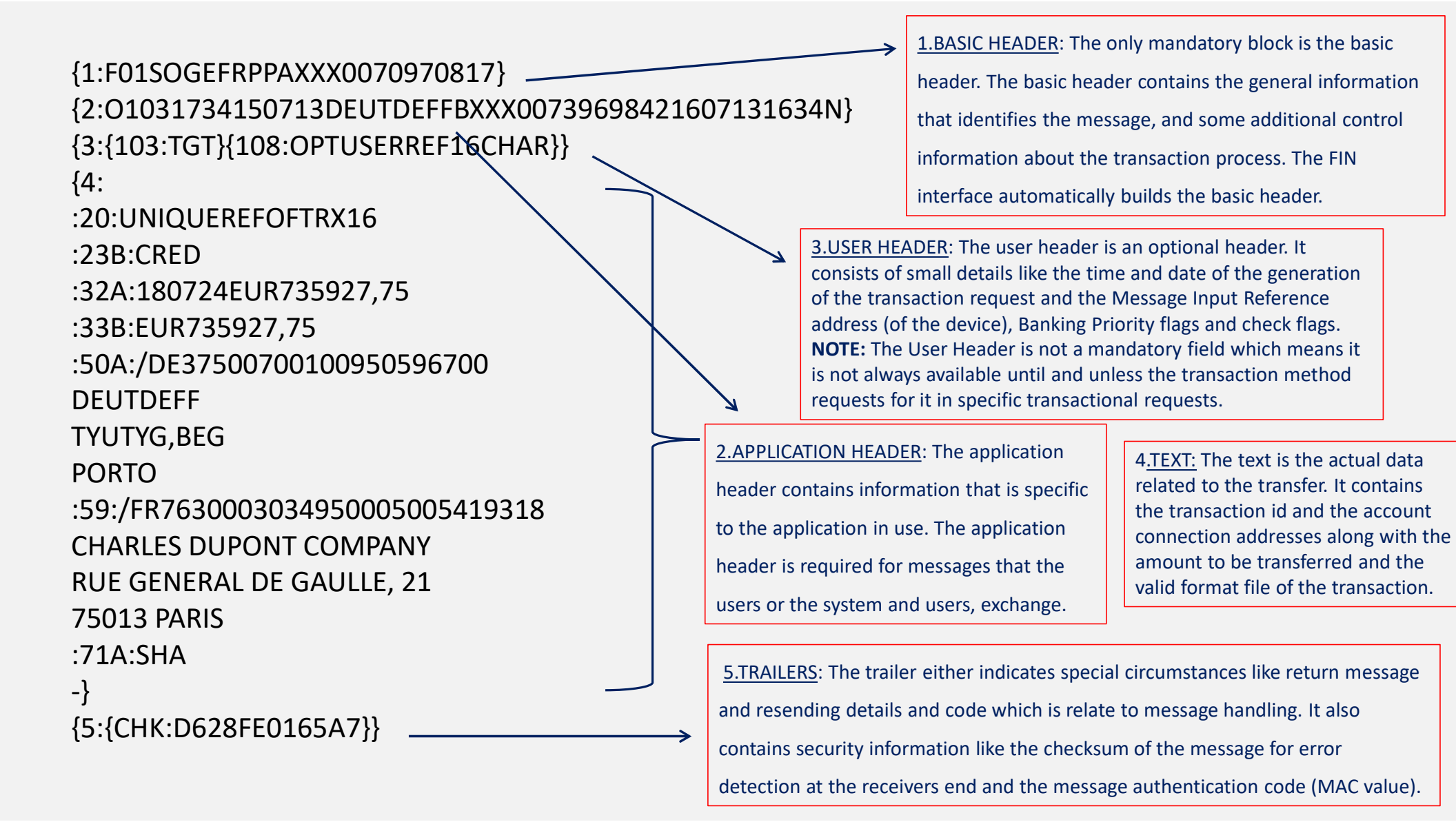


- Microservice is the process of implementing Service-oriented Architecture (SOA) by dividing the entire application as a collection of interconnected services.
- It is highly maintainable and testable.
- Each component can work independently and is not effected by the performance of other components.

MT 103 Format File

- An MT103 is an international standard legacy message format that banks and financial institutions use in the SWIFT network in order to instruct a transfer of funds from one customer to another bank customer.
- MT103s are globally accepted as proofs of payment.
- Includes all payment details such as date, amount, currency, sender and recipient.

{1:F01SOGEFRPPAXXX0070970817}
{2:O1031734150713DEUTDEFFBXXX007396984216071316 34N}
{3:{103:TGT}{108:OPTUSERREF16CHAR}}
{4:
:20:UNIQUEREFOFTRX16
:23B:CRED
:32A:180724EUR735927,75
:33B:EUR735927,75
:50A:/DE37500700100950596700
DEUTDEFF
TYUTYG,BEG
PORTO
:59:/FR7630003034950005005419318
CHARLES DUPONT COMPANY
RUE GENERAL DE GAULLE, 21
75013 PARIS
:71A:SHA
-}
{5:{CHK:D628FE0165A7}}


{1:F01SOGEFRPPAXXX0070970817}
{2:O1031734150713DEUTDEFFBXXX0073969842160713163 4N}
{3:{103:TGT}{108:OPTUSERREF16CHAR}}
{4:
:20:UNIQUEREFOFTRX16
:23B:CRED
:32A:180724EUR735927,75
:33B:EUR735927,75
:50A:/DE37500700100950596700
DEUTDEFF
TYUTYG,BEG
PORTO
:59:/FR7630003034950005005419318
CHARLES DUPONT COMPANY
RUE GENERAL DE GAULLE, 21
75013 PARIS
:71A:SHA
-}
{5:{CHK:D628FE0165A7}}
1.BASIC HEADER: The only mandatory block is the basic header. The basic header contains the general information that identifies the message, and some additional control information about the transaction process. The FIN interface automatically builds the basic header.
3.USER HEADER: The user header is an optional header. It consists of small details like the time and date of the generation of the transaction request and the Message Input Reference address (of the device), Banking Priority flags and check flags. NOTE: The User Header is not a mandatory field which means it is not always available until and unless the transaction method requests for it in specific transactional requests.
2.APPLICATION HEADER: The application header contains information that is specific to the application in use. The application header is required for messages that the users or the system and users, exchange.
4.TEXT: The text is the actual data related to the transfer. It contains the transaction id and the account connection addresses along with the amount to be transferred and the valid format file of the transaction.
5.TRAILERS: The trailer either indicates special circumstances like return message and resending details and code which is relate to message handling. It also contains security information like the checksum of the message for error detection at the receivers end and the message authentication code (MAC value).

MX - PACS.008 Format File

- MX messages are structured according to the ISO 20022 standard
- MX messages use the XML format
- MX messages are more structured, robust and comprehensive and composed of 940 separate fields

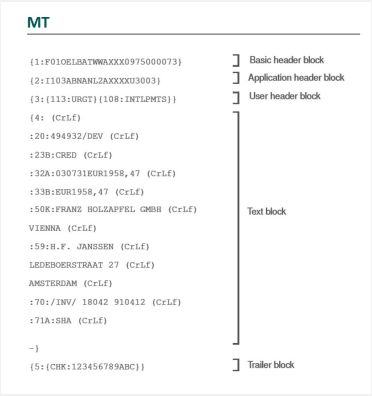
```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<Document>
    <FIToFICstmrCdtTrf>
        <CdtTrfTxInf>
            <PmtId>
                <InstrId>0061350113089908</InstrId>
            </PmtId>
            <PmtTpInf>
                <LclInstrm>
                    <Prtry>CRED</Prtry>
                </LclInstrm>
            </PmtTpInf>
            <IntrBkSttlmAmt>100000</IntrBkSttlmAmt>
            <Dbtr>
                <Nm>AGENTES DE BOLSA FOO AGENCIA</Nm>
                <PstlAdr>
                    <AdrLine>AV XXXXX 123 BIS 9 PL12345 BARCELONA</AdrLine>
                </PstlAdr>
            </Dbtr>
            <DbtrAcct>
                <Id>
                    <Othr>
                        <Id>/12345678</Id>
                    </Othr>
                </Id>
            </DbtrAcct>
            <Cdtr>
                <Nm>FOO AGENTES DE BOLSA ASOC</Nm>
            </Cdtr>
            <CdtrAcct>
                <Id>
                    <Othr>
                        <Id>/ES0123456789012345671234</Id>
                    </Othr>
                </Id>
            </CdtrAcct>
        </CdtTrfTxInf>
    </FIToFICstmrCdtTrf>
</Document>
```

Benefits of MX over MT (Simple Words)

- MX format allows faster transfers with more detailed data and larger bulks of data as well (system can send and processes multiple transfer requests from one file).
- The banking systems make mistakes in comprehending the complex and heavy files of MT format, rolling back and re-transfers cost time and money which will be avoided by using the MX format because of its simple format type.
- Saves transaction time and load on servers thus utilizing lesser expensive resources.
- XML format is easy to read and produce, thus the conversion process does not demand heavy capital to set up the new code.
- As per original plan of SWIFT- MT category 1, 2 and 9 messages used in cross-border and cash reporting payments will be decommissioned in November 2025.

Abstract of Problem Statement

This specification is a Payment Method specification for use with the Payment Request API. With it, merchants and payers can exchange information required for Cross Border credit transaction across payment system, by converting MT103 message (sample input file) to pacs008 MX message sample (XML file).



Verification Of MT 103 Format

Once the input MT file is Uploaded we verify the format.

The verification is done based on length, tags and sectional blocks, etc..

Each field of the MT format is verified separately.

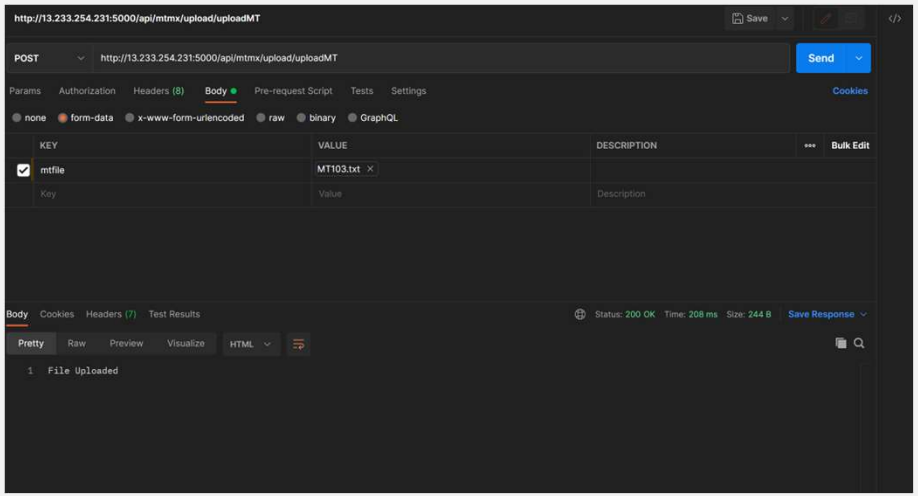
If the format is invalid, an appropriate message is returned to the client.

If verification is successful then the user can request for the MX conversion

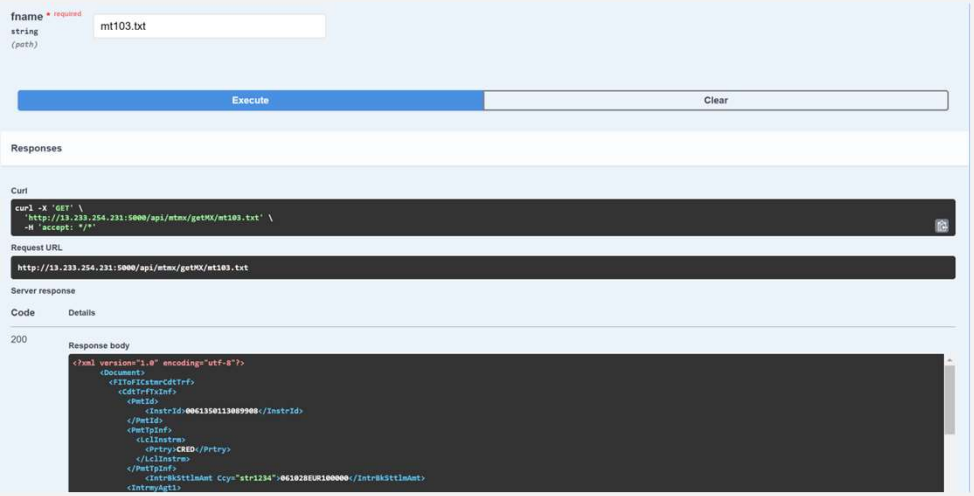
MT 103 Format to MX PACS.008 Format Conversion

When the MT to MX conversion request is sent, we are redirected to the getMX where using the predefined rules of conversion the MT file gets converted into the XML file and this new file is returned to the requester.

J_Meter Test Results

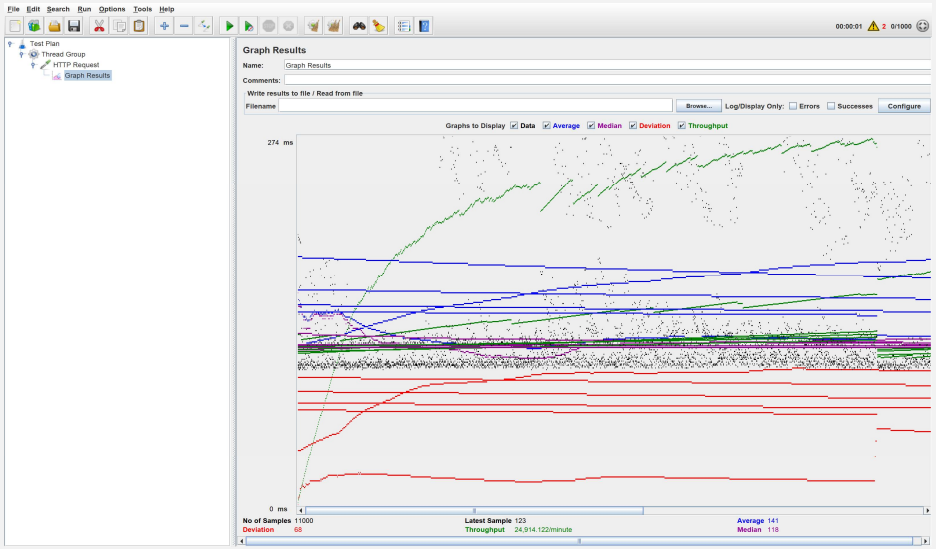


Unit Testing, Uploads

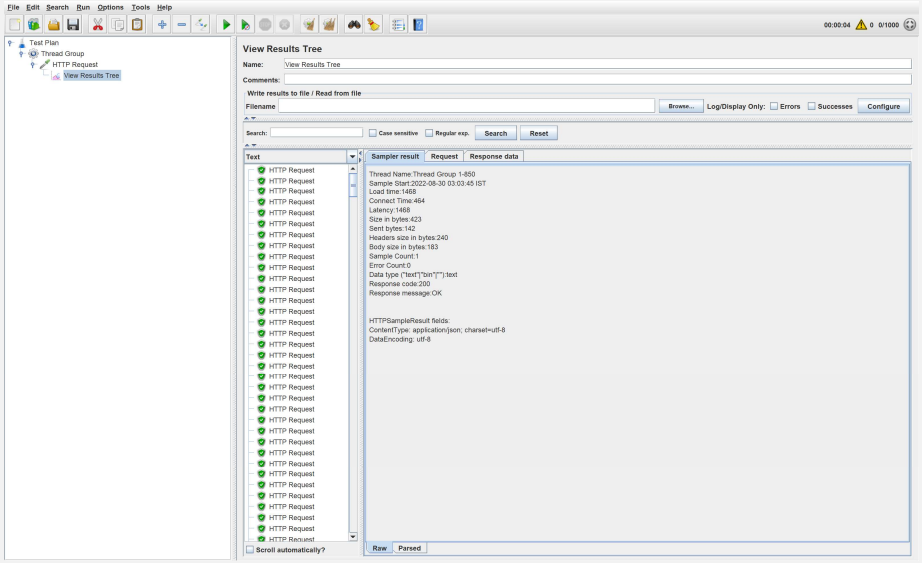


Unit Testing, getMX

J_Meter Test Results

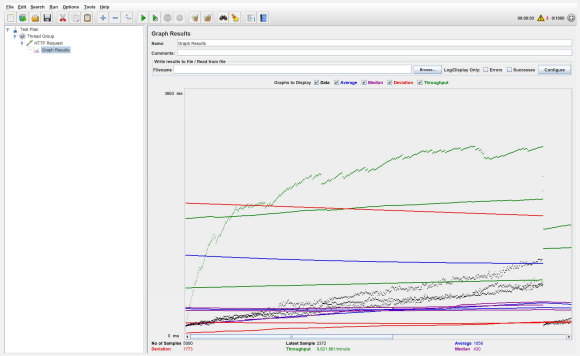


Graph Results

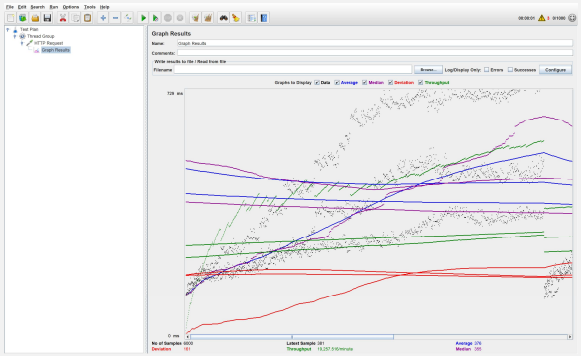


Result Tree, Verify

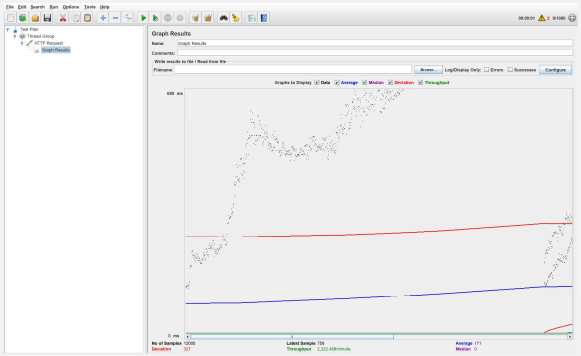
J_Meter Test Results



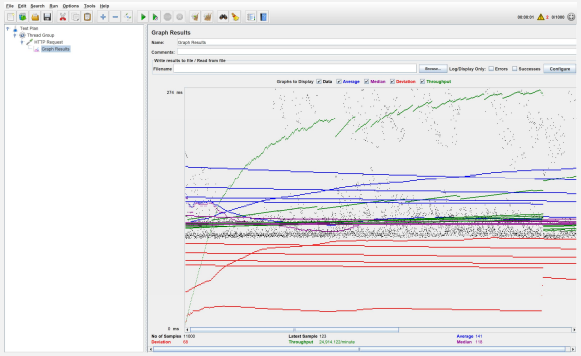
MX file



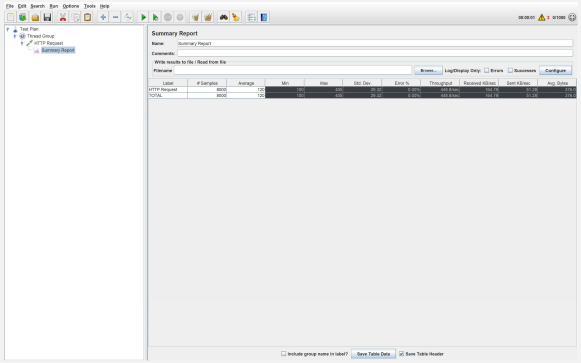
Verify file



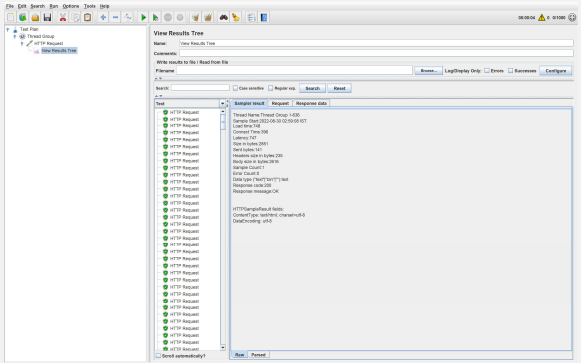
Upload



Gateway

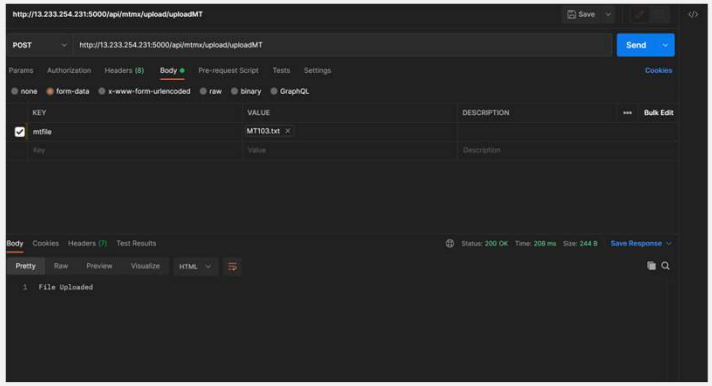


Gateway

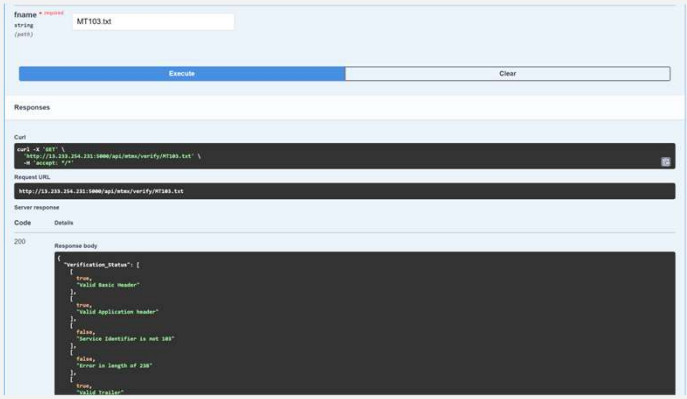


Upload

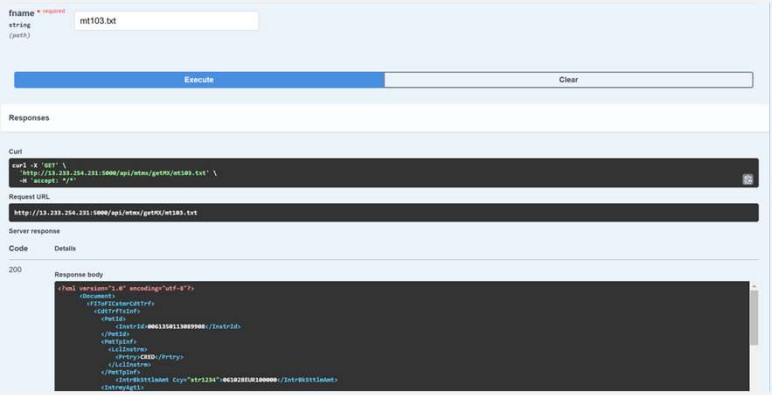
Unit Testing Result



Upload



Verify



Get MX Message

Thank You