Centers for Medicare & Medicaid Services

Medicare Drug Price Negotiation Program

Medicare Transaction Facilitator (MTF)

Drug Manufacturer
Amazon Web Services (AWS)
Simple Storage Service (S3) Data Exchange
Technical Documentation

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1. Purpose

This document provides technical specifications, security requirements and procedural guidance for drug manufacturers using the Medicare Transaction Facilitator Data Module (MTF DM), including instructions for Amazon Web Services (AWS) Simple Storage Service (S3) for file exchange. It is subject to revision pending ongoing development of the MTF.

2. Scope

The audience for this document is drug manufacturers and third-party vendors and provides details including:

- AWS S3 Bucket Specifications
- Replication Configuration
- Identity and Access Management (IAM) Roles and Permissions
- Data Transfer Protocols
- Security Considerations

3. AWS S3 Bucket Specifications

MTF will leverage **AWS S3 replication** to securely exchange data files with its drug manufacturing partners. The replication setup will allow for the automated and bidirectional transfer of data between separate AWS accounts.

3.1 Bucket Setup

- **MTF AWS Account**
    - MTF will create a **dedicated S3 bucket** for each drug manufacturer.
    - Example: `s3://hhs-cms-mdrng-mtfdm-prod-m001`
    - MTF S3 buckets will be hosted in us-east-1 region.

- **Manufacturer AWS Account**
    - Each manufacturer will create their **own S3 bucket** for data exchange with MTF.
    - Suggested bucket name: `s3://manufacturer-prod-mtfdm`
    - In case of a third party supporting multiple manufactures, buckets must be separate for each manufacturer.
    - Testing environment buckets must be different from production buckets.

3.2 Bucket Naming Conventions

As buckets must be separate for each manufacturer and environment (test and production), it is recommended to use manufacturer and environment as part of the bucket name. For example: manufacturer-prod-mtfdm manufacturer-test-mtfdm. (Note: replace “manufacturer” with actual name of the manufacturer.)

3.3 Bucket Structure

S3 buckets on both sides will have the following prefix structure.

Prefix	Purpose	Data Source
/mrn/<DrugID>	Store MRN files for a specific drug	MTF
/mra/<DrugID>	Store MRA files for a specific drug	Manufacturer
/mrr/<DrugID>	Store MRR files for a specific drug	MTF

Note: If there are multiple drugs, then there would be multiple prefix/folders for each drug.

4. File Naming Conventions

Below are the file naming conventions for the files that MTF will exchange with drug manufacturers.

Manufacturer Refund Notice (MRN)

File name pattern: ManufacturerID_DrugID_MRN_<ENV>_CCYYMMDD_HHMMSS.parquet

Examples:

M100_D0001_MRN_TEST_20250605_174754.parquet

M100_D0001_MRN_PROD_20250605_174754.parquet

Manufacturer Refund Advice (MRA)

File name pattern: ManufacturerID_DrugID_MRA_<ENV>_CCYYMMDD_HHMMSS.parquet

Examples:

M100_D0001_MRA_TEST_20250605_174754.parquet

M100_D0001_MRA_PROD_20250605_174754.parquet

Manufacturer Refund Receipt (MRR)

File name pattern: ManufacturerID_DrugID_MRR_<ENV>_CCYYMMDD_HHMMSS.parquet

Examples:

M100_D0001_MRR_TEST_20250605_174754.parquet

M100_D0001_MRR_PROD_20250605_174754.parquet

5. AWS S3 Replication Configuration

- **Cross-Account S3 Replication** will be set up:
  - From MTF's bucket to Manufacturer's bucket.
  - From Manufacturer's bucket to MTF's bucket.
- **Replication Setup**
  - Source Bucket:
    - Replication configuration will need to be configured.
      - Enable Replication Time Control to ensure timely delivery of file.
      - https://docs.aws.amazon.com/AmazonS3/latest/userguide/replication-time-control.html
      - Object ownership: Transfer to destination bucket owner.
    - AWS IAM role will need to be created. Refer to Section 6 for details.
  - Destination Bucket:
    - Bucket policy entries need to be added. Refer to Section 6 for details.

6. Identity and Access Management (IAM) Roles and Permissions

- **IAM Roles**
  - For bidirectional data exchange, a pair of IAM roles would need to be created.
    - MTF to Manufacturer files (MRN, MRR etc.)
      - MTF must create an IAM role
      - MTF to create replication configuration
      - Manufacturer to update Bucket policy on the destination bucket
    - Manufacturer to MTF files (MRA)
      - Manufacturer to create replication configuration
      - Manufacturer to create IAM role
      - MTF to update bucket policy on the destination bucket.
  - Table 1 defines various roles needed:

Table 1: MTF IAM Roles & Responsibilities

IAM Role name example	Responsible party	Purpose
mtf-to-m001-replication-role	MTF	Allows MTF to push files to Manufacturers such as MRN, MRR.
m001-to-mtf-replication-role	Manufacturer	Allows Manufacturer to push files to MTF such as MRA etc.

- **Sample IAM policy for IAM Roles**

  Replace source and destination buckets Amazon Resource Name (ARN) below with appropriate values.

```
{
  "Version":"2012-10-17",
  "Statement":[
    {
      "Effect":"Allow",
      "Action":[
        "s3:GetReplicationConfiguration",
        "s3:ListBucket"
      ],
      "Resource":[
        "arn:aws:s3:::amzn-s3-demo-source-bucket"
      ]
    },
    {
      "Effect":"Allow",
      "Action":[
        "s3:GetObjectVersionForReplication",
        "s3:GetObjectVersionAcl",
        "s3:GetObjectVersionTagging"
```

```
        ],
        "Resource":[
            "arn:aws:s3:::amzn-s3-demo-source-bucket/*"
        ]
    },
    {
        "Effect":"Allow",
        "Action":[
            "s3:ReplicateObject",
            "s3:ReplicateDelete",
            "s3:ReplicateTags"
        ],
        "Resource":"arn:aws:s3:::amzn-s3-demo-destination-bucket/*"
    }
  ]
}
```

Trust Relationships:

- Define following trust relationship on the role

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Principal": {
                "Service": "s3.amazonaws.com"
            },
```

```
            "Action": "sts:AssumeRole"
        }
    ]
```

Sample Bucket policy Entries:

```
{
  "Version":"2012-10-17",
  "Id":"PolicyForDestinationBucket",
  "Statement":[
    {
      "Sid":"Permissions on objects",
      "Effect":"Allow",
      "Principal":{
        "AWS":"arn:aws:iam::source-bucket-account-ID:role/service-role/source-account-IAM-
role"
      },
      "Action":[
        "s3:ReplicateDelete",
        "s3:ReplicateObject"
      ],
      "Resource":"arn:aws:s3:::amzn-s3-demo-destination-bucket/*"
    },
    {
      "Sid":"Permissions on bucket",
      "Effect":"Allow",
      "Principal":{
```

"AWS":"arn:aws:iam::source-bucket-account-ID:role/service-role/source-account-IAM-role"

},

"Action": [

"s3:List*",

"s3:GetBucketVersioning",

"s3:PutBucketVersioning"

],

"Resource":"arn:aws:s3:::amzn-s3-demo-destination-bucket"

}

]

}

7. Data Transfer Protocols

Data transfer protocols include:

- Data will be transferred using S3 replication for all data files.
- MTF will setup replication for all outbound files: MRN, MRR, etc.
- These files will be replicated (pushed) from the MTF S3 bucket to the manufacturer bucket.
- Manufacturer must setup replication rules on their side to push the MRA file to MTF S3 bucket MRA/inbound folder.

Refer to Section 11, Supported File Format, for data format information.

8. Data Security

8.1 Encryption

Data will be encrypted at rest using Amazon S3 managed keys (SSE-S3).

8.2 Access Control

Access control policies include:

- IAM roles must be created with the least privileges specified in Section 5, IAM Roles and Permissions.

- IAM role must be different for testing and production S3 buckets.
- Access to S3 buckets will be revoked if manufacturer stops participating in MTF.

8.3 Monitoring

MTF will implement S3 server access logs within the MTF AWS account. Manufacturers are also recommended to enable server access logs.

8.4 Incident Reporting

To report any security incident, contact the Help Desk at either 877-683-4457 (877-MTF-4HLP) or MFPMedicareTransactionFacilitator@cms.hhs.gov.

9. Testing and Validation

9.1 Test Environment

- MTF will set up a test S3 bucket to enable testing and validation.
- Manufacturers must also setup a separate S3 bucket for testing and validation.
- Separate IAM roles must be used for test and production environments.
- Manufacturers must first be established in the test environment and complete all integration steps before setting up the production environment.

9.2 Integration Testing

MTF anticipates starting integration testing in late summer 2025.

10. Data Files for Exchange

Table 2 describes the three files used for the MTF Drug Manufacturer data exchange:

Table 2: MTF Drug Manufacturer Data Files

File	Description	Exchange	Frequency
Manufacturer Refund Notice (MRN)	A file generated by MTF containing claims data including the standard default refund amount (SDRA).	MTF to Manufacturers	As often as daily
Manufacturer Refund Advice (MRA)	A response file generated by the manufacturer containing all the MRN fields and manufacturer refund payment fields.	Manufacturers to MTF	As often as daily
Manufacturer Refund Receipt (MRR)	A file generated by MTF containing payment confirmation.	MTF to Manufacturers	As often as daily

Interface Control Documents (ICDs) for the files listed above will be posted to CMS' Medicare Drug Price Negotiation website.

11. Supported File Format

The supported file format for the exchange of all files (MRN, MRA, MRR) is Apache Parquet (https://parquet.apache.org), an open source, column-oriented data file format designed for efficient data storage and retrieval.

Parquet format has built in safeguards against transmission errors such as checksums, file format validation, and metadata. These mechanisms help detect errors that might occur during file transmission or storage. When errors are detected, the Parquet readers typically throw exceptions rather than returning potentially corrupted data.

12. Communication Method

For MTF technical or testing related inquiries contact the MTF team at: MFPMedicareTransactionFacilitator@cms.hhs.gov.

Appendix A: Record of Changes

Table 3. Record of Changes

Version Number	Issue Date	Description of Change
1.0	**6-12-25**	**N/A**