



# Micro Focus Mainframe Access Installation Guide 7.0

Standalone

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# Mainframe Access Installation Guide

## Introduction

Mainframe Access is the OS/390 and z/OS server for Micro Focus development environments. It is a common component providing access to host resources for environments. One installation of Mainframe Access can support all of these products, providing connectivity to any number of DB2, IMS, and CICS systems located anywhere in an enterprise. It can also provide access to JES facilities, VSAM data sets, non-VSAM data sets, and data controlled by external library management products such as Panvalet, Librarian and Endeavor.



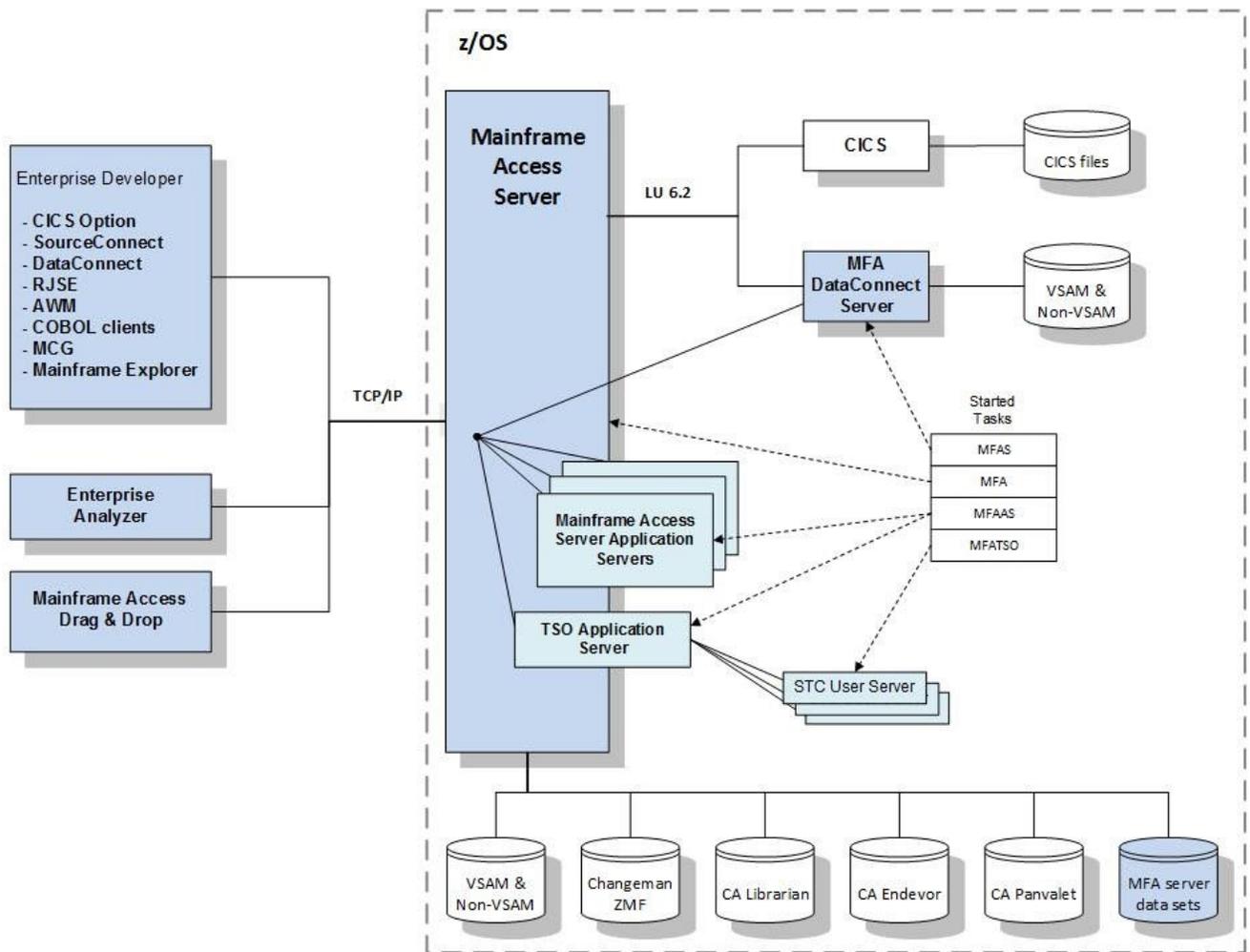
**Note:** Mainframe Access is supported on z/OS and OS/390 environments. Unless specifically stated otherwise, references to z/OS also apply to OS/390.

Mainframe Access is data and transaction middleware that exploits the best features of workgroup and enterprise architectures. Micro Focus client programs can achieve the same performance levels, security, and data integrity that native mainframe applications deliver. The technology requires no changes to existing mainframe security, database, and transaction processing systems.

Mainframe Access provides access to:

- DB2 for z/OS and OS/390 from clients.
- CICS transactions and data from clients.
- IMS data from clients via the Remote IMS Serve.
- Non-relational data sets (VSAM, sequential, partitioned, etc.) from Mainframe Access Client.
- Mainframe source control systems the Mainframe Access Client.
- JES2 and JES3 from the Mainframe Access Client.

The figure below illustrates the relationships between Mainframe Access, its client systems and the z/OS services it provides.



## Communications

Mainframe Access provides comprehensive support for communications between PC clients and mainframe servers. Mainframe Access supports both TCP/IP and LU6.2 protocols. Mainframe Access' ability to bridge client TCP/IP connections to SNA LU6.2 server connections eliminates the need to install, configure and maintain SNA software packages on your client and server workstations. You can even access any DB2 for z/OS and OS/390 database using TCP/IP client connections, without the need for specific levels of DB2 software. Normally, DB2 Version 5.1, or later, is required for TCP/IP access. Mainframe Access, however, dynamically associates TCP/IP client connections with traditional LU6.2 DRDA connections to the DB2 systems.

Details are as follows:

- **TCP/IP Communications**

Mainframe Access has two TCP/IP socket listeners, one for TCP/IP clients using proprietary protocols and one for HTTP clients. The listeners accept client connection requests and examine the request data to determine the target server or internal destination for the request. When the target server is external, the client connection is then associated with an LU6.2 connection to the target server. For each target server type, Mainframe Access creates an initial number of tasks (z/OS TCBs) to handle the client/server connection association and processing. As each connection request arrives, Mainframe Access scans all available tasks for the target server and assigns the new connection request to the task with the lightest load. Mainframe Access' TCP/IP communications support can be used with IBM's z/OS TCP/IP implementation.

- **LU6.2 Communications**

When the first client request for an LU6.2 target server is received, Mainframe Access establishes the LU6.2 connection to the target server and negotiates session limits for the mode name associated with conversations (user transactions) to the target server. Mainframe Access then prepares an LU6.2 Function Management Header 5 (FMH-5) and allocates a conversation to the target server. The FMH-5 includes any LU6.2 security subfields (user ID and password) provided by the client and an LUW ID (SNA Logical Unit of Work ID) generated by Mainframe Access to manage the unit of work. Packaged user data to be processed by the transaction program follows the FMH-5. Acceptance of the conversation request by the target server starts the execution of the remote transaction program that will process the request. Response data from the remote transaction program is received by Mainframe Access and returned to the requesting client through the TCP/IP connection. If an LU6.2 communications error occurs during the request processing, Mainframe Access creates a special packet containing the LU6.2 error information and returns this to the requesting client.

## Security

Mainframe Access provides security features that interact with existing mainframe, operating system, and software security schemes. They are:

- **System Authorization Facility (SAF) interface**

Mainframe Access' security component uses the z/OS SAF interface to verify the user IDs and passwords and to check the authorization of users to access and update z/OS data sets. The Password Expiration Manager (PEM) feature of Mainframe Access is used by some client products; PEM allows PC end users to change their mainframe password using the SAF interface. Mainframe Access uses the SAF RACROUTE interface, and therefore exploits the existing security definitions in your external security manager, such as IBM's RACF, CA-ACF-2, and CA-Top Secret.

- **Encryption**

Mainframe Access and its associated products use several methods of encryption and encoding, including 32-bit private key algorithms, to manage the encryption and decryption of passwords and data.

- **Access List Checking**

You can use this optional feature to restrict client connections based on the IP address of the incoming client. You create an access list that specifies which client IP addresses, or ranges of addresses, are allowed or disallowed. Once you have enabled access list checking, Mainframe Access always validates the incoming client's IP address using your specifications and rejects unauthorized connection attempts.

- **Audit Logging**

Mainframe Access' optional audit logging facility records client login and logout information to a VSAM file. The information that is recorded includes user ID, login and logout times, target server, security status, and other data.

## Data Set Services

Mainframe Access' Data Set Services component uses state-of-the-art z/OS data management interfaces and facilities to provide file services for z/OS data sets. Data Set Services is designed to support the data access and security requirements of VSAM and non-VSAM data sets in a high-performance, multi-user environment.

## Administration

Mainframe Access provides functions to monitor and control the processing of work, for example:

- **Client Timeout Management**

Mainframe Access monitors the activity of clients that have a persistent connection to Mainframe Access for activity and disconnects them from the system after a length of idle time that you specify. It also releases all of the associated client resources on the mainframe, including LU6.2 conversations with server systems.

- **Trace Facility**

The tracing facility of Mainframe Access traces both the client flow (usually TCP/IP) and server flow (usually LU6.2) simultaneously, recording all control information and data to a single output destination. The trace information is very useful for diagnosing client/server communication problems. You can turn tracing on and off dynamically while Mainframe Access is running.

Mainframe Access provides a set of simple commands that you can use to monitor and control its run-time operations. You can use the commands from an z/OS console or from a Telnet client; for further information see the chapter *Administration Using Console Commands*.

You can use Mainframe Access' administrative interfaces to obtain comprehensive displays of current system activity and internal components of the system. The information provided extends from overall systems operation down to details about individual client/server connections. You can update important operational definitions and functions of the system, such as target server parameters, idle timeout value, access list specifications and trace activity while the system is running.

## Dependent Address Space Services

Mainframe Access' Dependent Address Space Services component uses standard z/OS facilities to create and manage auxiliary Application Server address spaces for program execution. This feature is used to automatically start a Mainframe Access Data Connect server address space during Mainframe Access initialization. The Data Connect server is also stopped automatically during Mainframe Access shutdown.

## Mainframe Access Services

Mainframe Access Drag & Drop and Source Connect functions are seamlessly integrated into the overall server workload. Mainframe Access' high-performance task, communications, transaction and data set management services are leveraged to increase the speed, reliability and scalability for these functions.

## Migration information

The migration actions listed here are for the changes required when upgrading from Enterprise Developer 6.0 to Enterprise Developer 7.0.

When installing a new product, Micro Focus recommends that you ensure that any data set that has been customized is checked for changes against the new copy in the product. Any changes found should be merged into your customized copy.

The z/Server scheduler has not been supported since Enterprise Developer 6.0, MFA Server now supports z/Server functionality via the MFA TSO Application Server.

Your JCL for the started tasks (MFA, MFAS, MFAAS, MFAAMS, and MFATSO) will require modification as described in the following sections.

Micro Focus recommends that you keep all Enterprise Developer clients up to date and in sync with the Mainframe Access Server version.

## Migrating from z/Server Scheduler to MFA TSO Application Server

When migrating from the z/Server Scheduler to the new MFA TSO Application Server the following steps must be applied:

- Configure the new MFA TSO Application Server.
  - Any customization made to the z/Server IVPUSRT JCL procedure must be replicated in the hlq.MFA.CNTL(MFATSO) JCL procedure.
-  **Note:** Any data sets added to the STEPLIB in hlq.MFA.CNTL(MFATSO) JCL procedure must be APF Authorized.
- Any customization made to the z/Server IVPINIT1 JCL procedure must be replicated in the hlq.MFA.EXEC(IVPINIT1) JCL procedure.
  - Any customization made to the z/Server Master Configuration file (TAUZCAPP) must be replicated in the hlq.MFA.EXEC(TAUZCAPP) member.
  - Remove the <Scheduler /> and any relevant z/Server configuration items, such as SVC\_NO, from the MFAXML XML configuration.

## General Migration Actions

The following is a list of modifications that you need to make when upgrading to Enterprise Developer 7.0:

### Update Customized TAUZCAPP

When upgrading Enterprise Developer 6.0 or earlier you will need to ensure that the customized copy of TAUZCAPP is updated to reflect changes in the TAUZCAPP shipped with the new product version. Micro Focus recommends that all files that are customized are checked for changes every time an update is installed.

### Update MFA Started Task JCL Procedure

To update the MFA started task JCL procedure:

- Remove the TAUQUAL parameter, and any DD statement that references it in the JCL.
- Change CONFOSR DD statement to point to &DSNQUAL..OSR(MFAOSR).

### Update MFAAS Started Task JCL Procedure

To update MFAAS started task JCL procedure:

- Remove the TAUQUAL parameter, and any DD statement that references it in the JCL.
- Change CONFOSR DD statement to point to &DSNQUAL..OSR(MFAOSR).

### Update MFAAMS Started Task JCL

To update MFAAMS started task JCL:

- Remove the TAUQUAL parameter, and any DD statement that references it in the JCL.
- Change CONFOSR DD statement to point to &DSNQUAL..OSR(MFAOSR).

### Update MFATSO Started Task JCL

To update MFATSO started task JCL:

- Remove the TAUQUAL parameter and any change any DD statements that references to \$DSNQUAL instead of \$TAUQUAL.
- Modify STEPLIB to remove DSN=&TAUQUAL..LOADLIB,DISP=SHR.
- To SYSEXEC add DD DSN=&DSNQUAL..CUSTOM.EXEC,DISP=SHR as the first entry. Remove DSN=&TAUQUAL..EXEC,DISP=SHR and DSN=&TAUQUAL..REXX,DISP=SHR.
- Modify ISPLIB to remove DSN=&TAUQUAL..PANELS,DISP=SHR.
- To ISPLIB add DD DSN=&DSNQUAL..CUSTOM.SKELS,DISP=SHR as the first entry.
- To ISPLIB add DD DSN=&DSNQUAL..MSG,DISP=SHR as the first entry.

# Installation requirements

## Machine requirements

IBM mainframe model zEC12 or later is required for installing and using MFA Server. If your hardware does not meet these requirements please contact Micro Focus support.

## Software requirements

An IBM supported operating system z/OS (V2.1 or later) is required. If your operating system version does not meet these requirements please contact Micro Focus support.

Mainframe Access requirements:

- IBM Communications Server
- Two APPLIDs, and one TCP/IP port
- Availability of APF security authorization support personnel
- Access to a network share with acceptable space for source and data, as well as the ability to access the IP address and ports used to access MFA

Mainframe Access TSO Application Server requirements:

- ISPF
- Binder
- High Level Assembler
- Language Environment
- RACF or an equivalent product
- z/OS Communications Server - IP Services
- IBM REXX Library

To run user applications requested via TCP/IP client calls, there may be additional optional software requirements depending on the application. Typical optional requirements are:

- IBM Enterprise COBOL for z/OS
- IBM Enterprise PL/I
- IBM DB2 for z/OS

Support for Error Feedback (displaying compiler error messages in an Enterprise Developer error view) requires the following additional compiler options:

- For COBOL: EXIT(ADEXIT('/N 100 /W 50',TAURTOCX)), ADATA
- For PL/I: XINFO(XML)
- For Assembler: EXIT(ADEXIT(TAURTOAX('/N 100 /W 25'))),ADATA

The ADEXIT programs TAURTOAX and TAURTOCX support the following parameters:

- /N nnn maximum number of processed errors (default value: 250)
- /W nnn maximum number of warnings processed (default value: 20)
- /AD nnnnn maximum number of ADATA source records (default value: 20000)

To compile CICS applications, a compiler supporting the CICS Transaction Server 2.1 or later is required:

- COBOL applications compiled using any of:
  - IBM® COBOL for OS/390® &VM, Version 2 Release 2, program number 5648-A25, with APAR PQ49375 applied.

- IBM Enterprise COBOL for z/OS and OS/390, Version 3 Release 1, program number 5655-G53, and later COBOL releases.
- PL/I applications compiled using any of:
  - IBM VisualAge PL/I for OS/390 Version 2 Release 2.1, program number 5655-B22, with APAR PQ45562 applied.
  - IBM Enterprise PL/I for z/OS and OS/390, Version 3 Release 1, program number 5655-H31, and later PL/I releases.

## Mainframe Access Configuration Utility

The Mainframe Access configuration utility is a web-based utility that simplifies the process of configuring the XML file that controls how MFA Server operates. The utility guides you through the steps required to create a new XML file, specifying MFA Start Task, Application Servers and Services elements. It validates the specified parameters and values ensuring that the XML file is well-formed. You can modify a basic configuration file adding advanced or custom parameters before uploading it to the mainframe ready for use with MFA Server. You can also download and modify existing XML files directly from the mainframe.

### Features

The Mainframe Access configuration utility has the following features:

- Web-based user interface.
- Validation of XML configuration files.
- Parameter and value validation at the point of entry.
- Ability to upload or download configuration files directly to the mainframe.

### Limitations

The Mainframe Access configuration utility has the following limitations:

- Supports configuration of XML files created with Enterprise Developer 4.0 or greater.
- Internet Explorer does not support saving the XML configuration file directly to the browser's download folder. The XML file is displayed in a browser popup. You can copy from the popup and paste to a new location.
- The web-based utility is restricted to password lengths that are 8 characters or fewer.

## Prerequisites

The Mainframe Access configuration utility has the following software requirements:

- A Web browser (with a minimum required version):
  - Internet Explorer (version 11.0)
  - Firefox (version 39.0)
  - Chrome (version 43.0)

## Starting the Mainframe Access Configuration Utility

To start the Mainframe Access configuration utility, perform the following steps:

1. Click **Start > All Programs > Micro Focus Enterprise Developer > Tools > Enterprise Developer Command Prompt**
2. At the command prompt, type `mfaconfig.bat`.
3. Press **Enter**.

This opens the Mainframe Access configuration utility in your default Web browser, with the URL `http://localhost:2345`.

## Operation

The Mainframe Access configuration utility has two modes of operation:

- Creating a new XML configuration file. The interface takes you through the steps for specifying the MFA Server parameters as well as Application Server and Services parameters. Once you have specified the basic configuration file you can choose to:
  - Upload the file to a mainframe location or you can save it locally in your browser's download directory.
  - Edit your initial MFA Server XML configuration, found in `hlq.MFA.CNTL(MFAXML)`, and customize it for your needs.
- Downloading an XML configuration file from a mainframe location. Once you have downloaded the configuration file you can choose to:
  - Upload the file to an alternative mainframe location or you can save it locally in your browser's download directory.
  - Review the downloaded configuration file. This is performed in stages:
    1. Review the existing MFA Server parameters.
    2. Review the existing RIMS, MCO, MFA and ES-MTO Services parameters.
    3. Review the existing DataConnect, Endeavor, ChangeMan, AMS and TSO Application Server parameters.
    4. Once you have reviewed the configuration you can upload the file to a mainframe location or you can save it locally in your browser's download directory.

## Creating a new XML configuration file

To create a new XML configuration file, perform the following steps:

1. Click **Create**.

2. Review and modify the default MFA Server parameters, and then click **NEXT**.

See *MFA Server Parameters* for more information.

3. Review and modify that Data Connect Application Server parameters, and then click **NEXT**.

See *Data Connect Application Server Parameters* for more information.

- Optionally, you can add more Application Server definitions by clicking **ADD MORE**, and then choosing your Application Server from the list. See *Endeavor Application Server Parameters*, *ChangeMan Application Server Parameters*, and *AMS Application Server Parameters* for more information.

4. Review and modify the MFA Data Connect Service parameters, and then click **NEXT**.

See *MFA Data Connect Service Parameters* for more information.

- Optionally, review and modify the z/Server feature parameters, and then click **NEXT**.

See *z/Server Feature Parameters* for more information.

- Optionally, review and modify the z/Server Scheduler Application Server parameters, and then click **NEXT**.

See *z/Server Scheduler Application Server Parameters* for more information.

### To upload your XML configuration file to a mainframe

To upload your XML configuration file to the mainframe, perform the following steps:

1. In the **NODE** field, type your host name or IP address.
2. In the **PORT** field, type your MFA port number. Alternatively, you can use the up and down arrows to increment or decrement the port number.
3. In the **USER** field, type your username.
4. In the **PASSWORD** field, type your password.
5. In the **DATASET** field, type the fully qualified PDS library name of your XML configuration file.
6. In the **MEMBER** field, type the member name you want your XML configuration file to have.
7. To upload the XML file to the mainframe, click **UPLOAD**.
8. If successful, an **UPLOAD COMPLETE** dialog box is displayed, you can then choose to **SHUTDOWN**, **RESTART** or go **BACK**.

## Downloading an existing XML configuration file

To download an existing XML configuration file, perform the following steps:

1. Click **DOWNLOAD**.
2. In the **NODE** field, type your host name or IP address.
3. In the **PORT** field, type your MFA port number. Alternatively, you can use the up and down arrows to increment or decrement the port number, respectively.
4. In the **USER** field, type in your username.
5. In the **PASSWORD** field, type your password.
6. In the **DATASET** field, type the fully qualified PDS library name of your XML configuration file.
7. In the **MEMBER** field, type the member name containing the XML configuration file you wish to download.
8. Click **NEXT**.

The XML configuration file can now be reviewed. See *Reviewing an XML configuration file* for more information.

## Edit Configuration page

At this point you can choose where to save your XML configuration file, start a new configuration or shutdown the utility:

- To upload your XML configuration file to the mainframe:
  - Click **UPLOAD**.

See *To upload your XML configuration to a mainframe* for more information.
- To save your XML configuration file to your browser's download directory:
  - Click **SAVE**.
- To delete the configuration that you have created and start again:
  - Click **RESTART**.
- To shutdown the configuration utility:
  - Click **SHUTDOWN**.

See *Starting the Mainframe Access Configuration Utility* for more information on how to start the mainframe access configuration utility again.

## Configuration parameters reference

See *Configuration reference* for more information on the parameters in your XML configuration file.

### MFA Server parameters

Standard parameters:

**TCP\_PORT**

The port number to accept connections from Micro Focus clients.

**NETWORK\_ID**

The SSCP network ID used by ACF/VTAM on this z/OS system.

**ORGANIZATION**

Your company name or other meaningful identifier up to 40 characters in length.

**Data Connect Application Server parameters****PROCEDURE**

The name of the started task JCL procedure that can be used to start address spaces for this group. Sample JCL procedure MFAAS provides the basic JCL for an application server address space, and MFAAMS for the AMS application server address space. Specify a JCL procedure name of up to eight characters.

**Endevor Application Server parameters****PROCEDURE**

The name of the started task JCL procedure that can be used to start address spaces for this group. Sample JCL procedure MFAAS provides the basic JCL for an application server address space, and MFAAMS for the AMS application server address space. Specify a JCL procedure name of up to eight characters.

**JOBNAME**

The jobname prefix to be used for address spaces that are started for this group. For multiple-instance address spaces this is a prefix of 1 to 4 characters and Mainframe Access Server will pad this prefix to a full 8-character jobname by appending a 4 to 7 digit sequence number. For example, JOBNAME="MFAE" will result in jobnames MFAE0001, MFAE0002, etc. The sample prefix MFAE can be changed to meet the needs of your installation. If you do change the suggested prefix you will need to review the security subsystem definition for the Mainframe Access started tasks. The configuration process uses a generic STARTED task definition (the generic name specified during Quick Configuration is MFA\*.\*.) that covers generated jobnames such as MFAExxxx, in addition to the MFA (the MFA Server control region) and MFAS (the MFA Server for Data Connect) started task names. Specify a jobname prefix of up to four characters.

**MAXIMUM**

Specifies the maximum number of address spaces that Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum will be started in response to transaction load, up to the maximum allowed by this specification. Mainframe Access server issues messages (to the XDBOUT data set) when a client request must be queued to wait for an available processing address space. Increase the MAXIMUM value (by 1) when you observe frequent queuing of client requests.

**MINIMUM**

Specifies the minimum number of address spaces that Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum will be started in response to transaction load, up to the maximum allowed by this specification.

**ChangeMan Application Server Parameters****PROCEDURE**

The name of the started task JCL procedure that can be used to start address spaces for this group. Sample JCL procedure MFAAS provides the basic JCL for an application server address space, and MFAAMS for the AMS application server address space. Specify a JCL procedure name of up to eight characters.

**JOBNAME**

The jobname prefix to be used for address spaces that are started for this group. For multiple-instance address spaces this is a prefix of 1 to 4 characters and Mainframe Access Server will pad this prefix to a full 8-character jobname by appending a 4 to 7 digit sequence number. For example, JOBNAME="MFAE" will result in jobnames MFAE0001, MFAE0002, etc. The sample prefix MFAE can be changed to meet the needs of your installation. If you do change the suggested prefix you will need to review the security subsystem definition for the Mainframe Access started tasks. The configuration process uses a generic STARTED task definition (the generic name specified during Quick Configuration is MFA\*.\*.) that covers generated jobnames such as MFAExxxx, in addition to the MFA (the MFA Server control region) and MFAS (the MFA Server for Data Connect) started task names. Specify a jobname prefix of up to four characters.

#### **MAXIMUM**

Specifies the maximum number of address spaces that Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum will be started in response to transaction load, up to the maximum allowed by this specification. Mainframe Access server issues messages (to the XDBOUT data set) when a client request must be queued to wait for an available processing address space. Increase the MAXIMUM value (by 1) when you observe frequent queueing of client requests.

#### **MINIMUM**

Specifies the minimum number of address spaces that Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum will be started in response to transaction load, up to the maximum allowed by this specification.

## **AMS Application Server Parameters**

#### **PROCEDURE**

Specifies the name of the started task JCL procedure that can be used to start address spaces for this group. Sample JCL procedure MFAAS provides the basic JCL for an application server address space, and MFAAMS for the AMS application server address space. Specify a JCL procedure name of up to eight characters.

#### **JOBNAME**

Specifies the jobname prefix to be used for address spaces that are started for this group. For multiple-instance address spaces this is a prefix of 1 to 4 characters and Mainframe Access Server will pad this prefix to a full 8-character jobname by appending a 4 to 7 digit sequence number. For example, JOBNAME="MFAE" will result in jobnames MFAE0001, MFAE0002, etc. The sample prefix MFAE can be changed to meet the needs of your installation. If you do change the suggested prefix you will need to review the security subsystem definition for the Mainframe Access started tasks. The configuration process uses a generic STARTED task definition (the generic name specified during Quick Configuration is MFA\*.\*.) that covers generated jobnames such as MFAExxxx, in addition to the MFA (the MFA Server control region) and MFAS (the MFA Server for Data Connect) started task names. Specify a jobname prefix of up to four characters.

#### **MAXIMUM**

Specifies the maximum number of address spaces that Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum will be started in response to transaction load, up to the maximum allowed by this specification. Mainframe Access server issues messages (to the XDBOUT data set) when a client request must be queued to wait for an available processing address space. Increase the MAXIMUM value (by 1) when you observe frequent queueing of client requests.

#### **MINIMUM**

Specifies the minimum number of address spaces that Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum will be started in response to transaction load, up to the maximum allowed by this specification.

## TSO Application Server Parameters

<b>PROCEDURE</b>	Specifies the name of the started task JCL procedure that can be used to start address spaces for this group. Sample JCL procedure MFAAS provides the basic JCL for an application server address space, and MFAAMS for the AMS application server address space. Specify a JCL procedure name of up to 8 characters.
<b>JOBNAME</b>	Specifies the jobname prefix to be used for address spaces that are started for this group. For multiple-instance address spaces this is a prefix of 1 to 4 characters. Mainframe Access Server will pad this prefix to a full 8-character jobname by appending a 4 to 7 digit sequence number. For example, JOBNAME="MFAE" will result in jobnames MFAE0001, MFAE0002, and so on. The sample prefix MFAE can be changed to meet the requirements of your installation. If you do change the suggested prefix you will need to review the security subsystem definition for the Mainframe Access started tasks. The configuration process uses a generic STARTED task definition (the generic name specified during Quick Configuration is MFA*.*) that covers generated jobnames such as MFAExxxx, in addition to the MFA (the MFA Server control region) and MFAS (the MFA Server for Data Connect) started task names. Specify a jobname prefix of up to 4 characters.
<b>MAXIMUM</b>	Specifies the maximum number of address spaces that the Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum will be started in response to transaction load, up to the maximum allowed by this specification. Mainframe Access server issues messages (to the XDBOUT data set) when a client request must be queued to wait for an available processing address space. You can increase the MAXIMUM value (by 1) when you observe frequent queueing of client requests.
<b>MINIMUM</b>	Specifies the minimum number of address spaces that Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum will be started in response to transaction load, up to the maximum allowed by this specification.
<b>TSO_JOBCHAR</b>	Specifies a character which is appended to the user's TSO user id to form a job name for the TSO Command Server task.
<b>TSO_JOBCHAR_PREFIX</b>	Specifies the job char is prefixed to the job name.
<b>TSO_NOTIFY</b>	Specifies a NOTIFY= <i>userid</i> parameter is added to the job card of the TSO task started for the user.
<b>TSO_MSGCLASS</b>	Specifies the JES message class of the TSO session's output data sets. The default of "0" means no MSGCLASS parameter is added to the job card and the system default is used.

## MFA Data Connect Service parameters

### ID

Data Connect client requests do not specify a target server ID and Mainframe Access always looks for the DEFAULT Mainframe Access Data Connect target server definition.

### LUNAME

The LU name of the Mainframe Access Data Connect server (also known as the ACBNAME or VTAM APPLID).

### MODENAME

The SNA log mode name that will be used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions with the Mainframe Access Data Connect server. Specify a log mode name for LU6.2 sessions of up to eight characters. This log mode name must be present in the VTAM log mode table available to Mainframe Access. IBM's default log mode table, ISTINCLM, typically provides several standard log modes that can be used by Mainframe Access, including both IBMRDB and #INTER LU6.2 log modes.

#### **TPNAME**

The transaction program name for Mainframe Access Data Connect server requests.

#### **SYNCLEVEL**

The SNA LU6.2 sync level option to be used on conversations with the Mainframe Access Data Connect server. Conversations use LU6.2 CONFIRM protocols.

#### **SECURITY**

The security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the Mainframe Access Data Connect server. Mainframe Access forwards security subfield information as provided by the Data Connect client and sets the FMH-5 fields accordingly.

### **RIMS Service Parameters**

#### **ID**

If an IMS Option client request does not specify a target server ID or the specified target server ID does not exist, Mainframe Access selects the DEFAULT IMS target server, if one has been defined. This IMS target server ID name is used in the configuration of the client. When a Remote IMS request is sent this name is sent in the request data and is used to locate the target server definition for the IMS system that will receive the request. Specify DEFAULT or an ID of up to four alphanumeric characters.

#### **LUNAME**

The LU name of the IMS server (also known as the ACBNAME or VTAM APPLID). Specify an LU name of up to eight characters. This name must match the ACBNAME defined in an APPC/MVS LU definition for the target IMS system.

#### **MODENAME**

The SNA log mode name that will be used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions with the IMS server. Specify a log mode name for LU6.2 sessions of up to eight characters. This log mode name must be present in the VTAM log mode table available to Mainframe Access. IBM's default log mode table, ISTINCLM, typically provides several standard log modes that can be used by Mainframe Access, including both IBMRDB and #INTER LU6.2 log modes.

#### **TPNAME**

The IMS server transaction program name for IMS Option transactions. This is the LU6.2 transaction program name that will be sent to the IMS server in SNA Attach FMH-5 requests to begin an IMS Option transaction. Specify the APPC/MVS transaction program name that was specified in the APPC/MVS definitions during installation of Remote IMS.

#### **SYNCLEVEL**

The SNA LU6.2 sync level option to be used on conversations with the IMS server.

#### **SECURITY**

The security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the IMS server. Mainframe Access forwards security subfield information as provided by the IMS Option client and sets the FMH-5 fields accordingly.

### **MCO Service Parameters**

#### **ID**

If a CICS client request does not specify a target server ID or the specified target server ID does not exist, Mainframe Access selects the DEFAULT CICS target server, if one has been defined. This CICS target server ID name is used in the configuration of the client. When a CICS request is sent to Mainframe Access this name is sent in the request data and is used to locate the target server definition for the CICS system that will receive the request.

#### **LUNAME**

The LU name of the CICS server (also known as the ACBNAME or VTAM APPLID).

#### **MODENAME**

The SNA log mode name that will be used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions with mainframe CICS. Specify a log mode name for LU6.2 sessions of up to eight characters. This log mode name must be present in the VTAM log mode table available to Mainframe Access. IBM's default log mode table, ISTINCLM, typically provides several standard log modes that can be used by Mainframe Access, including both IBMRDB and #INTER LU6.2 log modes.

#### **TPNAME**

The server transaction program name for CICS requests. This is the LU6.2 transaction program name that will be sent to CICS in SNA Attach FMH-5 requests to begin a CICS transaction. Specify a transaction program name of up to eight characters or specify \* to cause Mainframe Access to use the transaction program name provided by the CICS client. The CICS client prepares a partial FMH-5 request that specifies the standard CICS transaction program names for function shipping, distributed program linking and so on.

#### **SYNCLEVEL**

The SNA LU6.2 sync level option to be used on conversations with CICS.

#### **SECURITY**

The security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the CICS server. Mainframe Access forwards security subfield information as provided by the CICS client and sets the FMH-5 fields accordingly.

## **ES-MTO Service Parameters**

#### **ID**

The ID can be one to four characters in length and must match the SYSID of the ES/MSS server being defined. The initial connection messages exchanged by MFA Server and ES/MSS use this ID.

#### **ACBNAME**

The name of the VTAM ACB associated with this ES/MSS server. MFA Server OPENS and initializes this ACBNAME during startup. The z/OS CICS system(s) must be configured to communicate with this ES/MSS server through this VTAM ACB name using CICS CONNECTION and SESSIONS definition statements.

#### **IPADDRESS**

The internet host name or IP address of the ES/MSS server. Specify either the host name that resolves to the correct IP address or the actual IP address in standard dotted-decimal format. The combination of IPADDRESS and PORT from this definition provides MFA Server with the information it needs to originate a socket connection to ES/MSS and to verify the authenticity of a socket connection request from ES/MSS.

#### **PORT**

The port number where ES/MSS is listening for ISC connections.

#### **SESSIONS**

Specifies the number of concurrent conversations MFA Server can initiate to the ES/MSS server over a single socket connection. If ES/MSS has a different definition for the number

of concurrent sessions, the session count is negotiated to a common value at the time a socket connection is established. Specify a value that supports the required number of concurrently active conversations for your application.

## SOCKETS

Specifies the maximum number of concurrent socket connections between MFA Server and the ES/MSS server. ES/MSS support is currently limited to a single socket connection between MFA Server and an ES/MSS server; therefore, specify a value of 1.

# Host Installation

## Preparing the Installation

### Before you begin

The following list details important configuration data that you need to know in order to complete the quick configuration. Review these items and determine the appropriate values before you proceed with customization:

- userid** TSO user ID that can update proclib, update vtamlst, update RACF, and issue z/OS system commands through SDSF. Alternatively, the cooperation of individuals with the appropriate authorities.
- hlq** High level qualifier that was given to all Mainframe Access data sets when the FRESTORE job was run.
- clientport** A TCP/IP port number on the mainframe that you will reserve for Mainframe Access and client connections.
- stcuserid** RACF user ID that you want to associate with the Mainframe Access started tasks.
- stcgroup** RACF group ID that you want to associate with the Mainframe Access started tasks.
- tcpdata** Data set name of the IBM TCP/IP "TCPIP.DATA" data set that provides configuration information to programs that use TCP/IP.
- proclib** Data set name of a system procedure library.
- vtamlst** Data set name of the active VTAMLST definitions data set.
- netid** VTAM SNA network id used on your system. See NETID= in the active ATCSTRxx vtamlst member.

## Installation procedure

### Upload the software

In the instructions that follow, the information that you must provide is shown as one of the variable names from the table of information in the previous section. For example, if your high-level qualifier (hlq) value is MY.MFA, then substitute MY.MFA for hlq.

To load Mainframe Access Server:

1. Download the installation file from the link in your Electronic Delivery Receipt email and extract its contents to a directory on the PC.
2. On the mainframe, allocate a new partitioned data set named hlq.UPLOAD to receive the uploaded files. Use the following data set characteristics for this upload library:

DSORG=PO	<=== PDS (partitioned data set)
RECFM=FB	<=== record format fixed and blocked

```
LRECL=80          <=== 80 character record size
BLKSIZE=3120     <=== 3120 character block size
SPACE=(3120,(3500,500,50)) <=== allocate blocks (BLKS) size 3120
                                3500 primary blocks
                                500 secondary blocks
                                50 directory blocks
```

3. On the PC, issue the following FTP commands. The actual text of the FTP prompts and responses that you see may differ slightly from those shown in this example:

a. Start FTP:

```
C:\>ftpyour.mainframe.name
Connected to your.mainframe.name.
220-FTPD1 IBM FTP CS/390 VxRy at YOUR.MAINFRAME.NAME, hh:mm:ss
220 Connection will close if idle for more than 5 minutes.
User (your.mainframe.name:(none)): userid
331 Send password please.
Password: pswd
230 userid is logged on. Working directory is "userid."
```

b. Change the working directory on the mainframe to be the upload library that you allocated:

```
ftp> cd 'hlq.UPLOAD'
250 The working directory "hlq.UPLOAD" is a partitioned data set.
```

c. Set file transfer type to binary:

```
ftp> binary
200 Representation type is Image
```

d. Set FTP prompting off to transfer all files without interruption:

```
ftp> prompt
Interactive mode Off.
```

e. Transfer all files from the extracted \Upload directory to members in the hlq.UPLOAD library:

```
ftp> mput drive:\upload\*
200 Port request OK.
125 Storing data set hlq.UPLOAD(Xxxxxxxx)
250 Transfer completed successfully.
ftp: xxxx bytes sent in x.xx seconds (xxx.xx Kbytes/sec)
```

f. When mput has transferred all files the ftp> prompt appears. End the FTP connection:

```
ftp> quit
221 Quit command received. Goodbye.
```

g. On the mainframe, verify that all files transferred successfully and that for each xxxxxxxx file in the \Upload directory there is a corresponding member in the hlq.UPLOAD data set. There should be 20 members.

## Receive the software

In hlq.UPLOAD you now have a partitioned data set with 12 members. Each member except FRESTORE is a data set in transmit format. You need to execute TSO RECEIVE commands on the data sets to create the Mainframe Access data sets.

Member	Description	Received to
F1	The load module library for Mainframe Access server that needs to be APF authorized.	hlq.MFA.LOADLIB
F2	Samples for Mainframe Access server. These include JCL for jobs to be run, JCL for started task procedures and parameter files. The members in this data set are referred to frequently in these configuration instructions.	hlq.MFA.CNTL

Member	Description	Received to
F3	Translation tables used by Mainframe Access server.	hlq.MFA.TABLES
F4	Product source and object files that you might need during setup of the Remote IMS Server feature.	hlq.MFA.RIMS
F5	Contains REXX execs used for MFA TSO support, and includes AWM functions.	hlq.MFA.EXEC
F6	ISPF message library belonging to the ISPF applications in EXEC.	hlq.MFA.MSGS
F7	Optimized schema representation used for internal XML validation.	hlq.MFA.OSR
F8	ISPF skeleton library belonging to the ISPF applications in EXEC.	hlq.MFA.SKELS
F9	Sample models (PDS Explorer).	hlq.MFA.XML
F10	Master configuration file.	hlq.MFA.MASTER
F11	Sample programs.	hlq.MFA.SAMPLIB
FRESTORE	JCL to receive all other members.	

On the mainframe, edit member FRESTORE in the upload library, hlq.UPLOAD. Follow the instructions in that member to customize the JCL and then submit that job to restore the product libraries from the uploaded files and populate your new product run-time libraries.

 **Note:** After running the FRESTORE JCL, a number of CUSTOM data sets will be created as listed in the table below. These should be used to store any user customized members so that they are not overwritten by future installs or updates. These data sets have already been added to the template JCL that is shipped with the product and is customized later in this chapter.

You should ensure that when updating the product any data set or member that is customized is checked against the relevant one delivered with the product update. Any changes should be merged in as appropriate.

Dataset	Description
hlq.MFA.CUSTOM.CNTL	When customizing template JCL (MFA, MFAS, and so on) copy them here first before finally copying them to your PROCLIB.
hlq.MFA.CUSTOM.EXEC	Any customization to existing EXEC members should be done here. This is already added to the SYSEXEC in the template JCL.
hlq.MFA.CUSTOM.MASTER	When customizing HLQ.MF.MASTER it should be copied here first, then customized. You will also need to customize TAUZCAPP to point to this data set.
hlq.MFA.CUSTOM.SKELS	Any customization to existing SKELS members should be done here. This is already added to the ISPSLIB in the template JCL.
hlq.MFA.CUSTOM.XML	Any customisation to existing XML members should be done here.

## Configuration overview

There are two types of configuration tasks that you must complete before you can start and use Mainframe Access. These are:

- Updating the z/OS mainframe system to create an execution environment for Mainframe Access.
- Setting parameters to meet your requirements.

The process of configuring Mainframe Access is separated into two distinct procedures. See *Quick Configuration* and *Advanced Configuration Activities* for more information.

Quick configuration is performed using the UpQuick instructions as indicated during the installation process. These configuration steps must be completed for all installations. Quick configuration takes care of all of the z/OS customization and many basic Mainframe Access customization. This quick configuration is the only Mainframe Access setup required for Mainframe Access Drag and Drop, SQL Option for DB2, and basic Mainframe Access Data Connect server functions.

Additional setup is required if:

- You are going to be using Mainframe Access Data Connect server and you need to use the file name mapping table and/or alter the processing in the SAF security exits.
- You are going to be using the following features:
  - Remote IMS
  - ES/MSS support
  - Mainframe Access's access list checking
  - Mainframe Access's audit log
  - Mainframe Access's support for external library management systems

The section on advanced configuration describes these additional customization.

If you have completed the installation process, including the UpQuick configuration steps, and if you are not going to use features that require additional setup, your configuration is complete.

If you have uploaded and restored the Mainframe Access data sets but you have not completed the UpQuick configuration, you should begin with the *Quick Configuration* topic.

If you have completed the configuration and testing of your basic Mainframe Access server and you need to customize for an advanced feature, you should continue at the *Advanced Configuration Activities* topic.

## Mainframe Access Data Sets

Following the UpQuick instructions from the installation package, you should have already completed the upload and restore of the Mainframe Access data sets. During that process you selected a high level qualifier to be used for all of your Mainframe Access data sets. This guide refers to the qualifier that you selected as <hlq> or hlq. The data sets that you restored are listed in the following table:

Data Set	Description
hlq.MFA.CNTL	Samples for Mainframe Access server. These include JCL for jobs to be run, JCL for started task procedures and parameter files. The members in this data set are referred to frequently in these configuration instructions.
hlq.CUSTOM.CNTL	Used to store customized JCL.
hlq.CUSTOM.EXEC	Used to store customized REXX execs.
hlq.CUSTOM.MASTER	Used to store customized MFA TSO master configuration file.
hlq.CUSTOM.SKELS	Used to store customized skeletons.
hlq.CUSTOM.XML	Used to store customized models.
hlq.MFA.EXEC	Contains REXX execs used for MFA TSO support, and includes AWM functions.
hlq.MFA.LOADLIB	The load module library for Mainframe Access server that needs to be APF authorized.

Data Set	Description
hlq.MFA.MASTER	MFA TSO master configuration file.
hlq.MFA.MFAVCTL	Dynamic allocation control file.
hlq.MFA.MSGS	MFA TSO ISPF message library belonging to the ISPF applications in EXEC.
hlq.MFA.OSR	Optimized schema representation used for internal XML validation.
hlq.MFA.RIMS	Product source and object files that you may need during setup of the Remote IMS Server feature.
hlq.MFA.SAMPLIB	MFA TSO Sample programs.
hlq.MFA.SKELS	MFA TSO skeleton library belonging to the ISPF applications in EXEC.
hlq.MFA.TABLES	Compression tables used by Mainframe Access server.
hlq.MFA.XML	MFA TSO sample models, for example, PDS Explorer.

### Mainframe Access Samples

The installation procedure places many samples in the <hlq>.MFA.CNTL data set. If a sample is provided for a configuration task, use it as a starting point for your configuration. Usually you need to edit the sample, replacing provided information with information that is unique to your system.

The following table summarizes the samples that are provided for Mainframe Access:

Member	Description
ACCESS	List used to restrict access to Mainframe Access consisting of the IP addresses of connecting clients. The access list also contains the list of user IDs that are authorized to access the Mainframe Access administration functions through the Web browser interface. You should add the IP addresses and user IDs for your system. See <i>Editing Access List Definitions</i> for more information.
AUDIT	JCL for creating and initializing a Mainframe Access audit log data set. The audit log is a VSAM key sequenced data set (KSDS). You should edit the sample to include JOB card information, data set names and a volume serial number.
AUDRPT	JCL for running the Mainframe Access audit log report program to list the contents of the audit log data set. You should edit the sample to include JOB card information and data set names.
FRESTORE	A copy of the FRESTORE job for reference purposes. This job was originally transferred from the client to the <hlq>.UPLOAD data set during installation. The job was customized and submitted to allocate the permanent Mainframe Access data sets and restore the data set content from other uploaded files.
GTFCNTL	Input control statements referenced by the sample JCL procedure in member MFAGTF.
INSTALL	A copy of the installation upload instructions for reference purposes. These are the instructions that describe how to allocate the <hlq>.UPLOAD data set and transfer the CD content into that data set.

Member	Description
MFA	JCL for executing Mainframe Access. You should edit the sample to include your data set names. This JCL contains references to the ACCESS, PARMS and SERVERS sample members.
MFAAS	JCL for executing a Mainframe Access Application Server. Application servers are auxiliary address spaces that process specific types of client requests such as Endevor transactions. You should edit the sample to include your data set names. This JCL contains a reference to the PARMSAS sample member.
MFAAMS	JCL for executing a Mainframe Access Application Server for AMS support. Application servers are auxiliary address spaces that process specific types of client requests such as AMS requests. You should edit the sample to include your data set names. This JCL contains a reference to the PARMSAS sample member.
MFIAGTF	JCL for running IBM's Generalized Trace Facility (GTF). GTF provides high-performance recording of diagnostic data and can be useful during problem determination. You should edit the sample to include your data set names.
MFIANLS	JCL for re-compiling the default code page that may be configured at a client workstation. This is equivalent to the MFLSCTRN load module of Mainframe Access Version 2. During installation the default is set to use code pages E037/A437 for EBCDIC/ASCII translation. The sample JCL contains instructions for changing the default code pages selected by installation.
MFIAS	JCL for executing the Mainframe Access Data Connect server. You should edit the sample to include your data set names.
MFIAVTAM	Definition of VTAM applications for Mainframe Access, Mainframe Access Data Connect, ES/MSS and Remote IMS Server. You can edit the sample to include your own ACB names and network names. See <i>VTAMLST Definitions</i> for more information.
MFIAXML	An XML configuration that contains parameters that are read when Mainframe Access and Mainframe Access Application Server is initialized. The sample JCL for executing Mainframe Access refers to this member for parameter input. You will need to edit some of these parameters. See <i>Editing Mainframe Access Parameters</i> for more information. It also contains definitions that describe the z/OS subsystems that will be providing service in response to client requests. The servers are your IMS and CICS subsystems, the Mainframe Access Data Connect server and ES/MSS servers. You must edit the sample to include information specific to your servers and also coordinate the information with definitions in the client packages.
MFIVSUFFX	JCL for executing a migration tool which extracts a text definition from the MFLSCPAN load module of Mainframe Access Version 2. See <i>Panvalet</i> for more information.
MFIISOXMIT	Sample job that uses TSO XMIT to package diagnostic data for transmission.

Member	Description
UPQUICK	A copy of the quick configuration instructions for reference purposes. These are the instructions that describe how to quickly configure z/OS and Mainframe Access to create an operational Mainframe Access server system. See <i>Quick Configuration</i> for more information.

## Quick Configuration

After you have uploaded the mainframe files and successfully run the FRESTORE job, there are some basic customization tasks that must be completed. Quick configuration works through these configuration tasks quickly and gets you to the point where the software can be started and a basic installation verification check can be performed. After the installation verification check, continue with *Advanced Configuration Activities* if there are additional features that you need to set up.

You should be familiar with TSO, ISPF, SDSF, z/OS system commands, JCL procedures and proclibs, VTAMLST definitions and RACF.

 **Note:** These instructions refer to RACF as the security subsystem. Mainframe Access does use the SAF interface to the security subsystem and is compatible with other security products that provide the SAF API. When these instructions refer to RACF-related customizations, please refer to your security product documentation to determine the corresponding security subsystem changes.

If you are using the ISPF editor to make the configuration changes, use the change command once to make the first update to the hlq value and then use ISPF's Rchange command (usually PF6) to apply the same change in all the members that you need to update. For example: use "c HLQ MY.HIGH.LEVEL" the first time and then PF6 to apply the same change in other places. Changes to other parameters are easily accomplished by overtyping the preset value.

### MFA Started Task JCL Procedure

Customize member MFA in the CNTL data set. This is the started task JCL procedure for Mainframe Access server. Use the ISPF change command to change HLQ to your qualifier (hlq).

If you are using IBM's TCP/IP, overtype TCPIP.OS390.TCPDATA with the name of your installation's "TCPIP.DATA" data set (tcpdata). This is the data set used by client programs to obtain the name of the TCP/IP started task and other installation-dependent TCP/IP information.

Micro Focus recommends modifying the XML Configuration CONFXML DD statement shown in bold below:

```

/*-----
/* XML Configuration
/*-----
/*
//CONFXML DD DISP=SHR,DSN=&DSNQUAL..CNTL(MFAXML)
//CONFOSR DD DISP=SHR,DSN=&DSNQUAL..OSR(MFAOSR)

```

Modify it to point to &DSNQUAL..CUSTOM.CNTL(MFAXML). This will prevent your configuration from being overwritten by a future install.

To enable DBCS support, you need to edit the procedure by uncommenting the following four statements:

```

/*-----
/* Optional DBCS code pages
/*-----
/*
//*EZACHLAT DD DSN=TCPIP.SEZADBCX(EZACHLAT),DISP=SHR
//*EZAHLAT DD DSN=TCPIP.SEZADBCX(EZAHLAT),DISP=SHR
//*EZAKJLAT DD DSN=TCPIP.SEZADBCX(EZAKJLAT),DISP=SHR
//*EZASCLAT DD DSN=TCPIP.SEZADBCX(EZASCLAT),DISP=SHR

```

## MFATSO Started Task JCL Procedure

Customize the MFATSO member in the CNTL data set. This is the started task JCL procedure for Mainframe Access TSO Command Server. Use the ISPF change command to change HLQ to your qualifier (hlq).

### *Optional customization*

MFA can have more than one user server per TSO user to be run in parallel. Each user server needs its own exclusive ISPF environment. This implies the allocation of an ISPF user profile data set. The allocation of the user profile data set is done in the sample REXX exec hlq.MFA.EXEC(IVPINIT1) and should be customized to adhere to the installation's standards.

ISPF user profile allocation is performed as follows:

- DD statement ISPPROF is allocated to a temporary data set. If a MFA ISPF profile data set named userid.TAUZCISP.PROFILE already exists for the TSO user, the content of this ISPF profile is copied using IEBGENER to a temporary data set allocated under the ISPPROF DD statement.
- When the ISPF session terminates, control returns to REXX exec MFAREXX and the temporary ISPF profile is copied back to MFA profile data set userid.TAUZCISP.PROFILE.
- The temporary ISPF profile data set is deleted in REXX exec IVPTERM1.

Micro Focus recommends that you allocate the temporary ISPF profile data set to an SMS managed temporary data set pool, which is automatically deleted according to the installation's standards. In this case, the deletion of the temporary ISPF profile data set in the REXX MFAREXX can be omitted.

## MFAAS Started Task JCL Procedure

Customize the MFAAS member in the CNTL data set. This is the started task JCL procedure for Mainframe Access Application Servers such as Endeavor, ChangeMan, and AMS. Use the ISPF change command to change HLQ to your qualifier (hlq).

If you are using IBM's TCP/IP, change TCPIP.OS390.TCPDATA to the name of your installation's "TCPIP.DATA" data set (tcpdata).

Micro Focus recommends that you modify the XML Configuration CONFXML DD statement to match the line in bold below:

```
/*-----  
/* XML Configuration  
/*-----  
/*  
//CONFXML DD DISP=SHR,DSN=&DSNQUAL..CNTL(MFAXML)  
//CONFOSR DD DISP=SHR,DSN=&DSNQUAL..OSR(MFAOSR)
```

Modify it to point to &DSNQUAL..CUSTOM.CNTL(MFAXML). This will prevent your configuration from being overwritten by a future install.

## MFAS Started Task JCL Procedure

Customize member MFAS in the CNTL data set. This is the started task JCL procedure for Mainframe Access Data Connect server. Use the ISPF Rchange command to change HLQ to your qualifier (hlq).

## MFAAMS Started Task JCL Procedure

Customize the MFAAMS member in the CNTL data set. This is the started task JCL procedure for using Access Method Services, required for dataset renaming using MVS Explorer in the Eclipse client. Use the ISPF change command to change HLQ to your qualifier (hlq).

If you are using IBM's TCP/IP, change TCPIP.OS390.TCPDATA to the name of your installation's "TCPIP.DATA" data set (tcpdata).

Micro Focus recommends that you modify the XML Configuration CONFXML DD statement to match the line in bold below:

```
/*-----  
/* XML Configuration  
/*-----  
/*  
//CONFXML DD DISP=SHR,DSN=&DSNQUAL..CNTL(MFAXML)  
//CONFOSR DD DISP=SHR,DSN=&DSNQUAL..OSR(MFAOSR)
```

Modify it to point to &DSNQUAL..CUSTOM.CNTL(MFAXML). This will prevent your configuration from being overwritten by a future install.

### Mainframe Access MFAXML

When customizing the MFAXML member, Micro Focus strongly recommends copying it to HLQ.CUSTOM.CNTL before modifying it. You need to change the template JCL that is supplied with the product (MFA, MFAAS, and MFAAMS) and modify the CONFXML DD statement to point to the new location. More information can be found in the customization topic for each of these members.

The MFAXML member in the CNTL data set contains the Mainframe Access Server initialization parameters referenced by the Mainframe Access started task JCL and Mainframe Access Application Server started task JCL.

Modify TCP\_PORT="2020" to TCP\_PORT="*clientport*". This is the port number that Micro Focus client software is configured to use.

Modify NETWORK\_ID="DDINET1" to NETWORK\_ID="*netid*", the VTAM SNA network id of your system.



**Note:** Ensure that you use CCSID 1047 when editing or uploading the MFAXML configuration file. Otherwise, the XML document might fail validation.

You must make sure that the combination of JOBNAME and PROCEDURE parameters are unique across all Application Servers. For instance, the following is acceptable as although the PROCEDURE parameters match, the JOBNAME parameters are different:

```
<!-- Mainframe Access Application Server(s) for Endeavor -->  
<Endevor PROCEDURE="MFAAS" MAXIMUM="2" JOBNAME="MFAE"  
>  
<!-- Mainframe Access Application Server for TSO command -->  
<TSO PROCEDURE="MFAAS" MAXIMUM="2" JOBNAME="MFAT"  
 TSO_PROCEDURE="MFATSO"  
>
```

The following is invalid as both PROCEDURE and JOBNAME match:

```
<!-- Mainframe Access Application Server(s) for Endeavor -->  
<Endevor PROCEDURE="MFAAS" MAXIMUM="2" JOBNAME="*"  
>  
<!-- Mainframe Access Application Server for TSO command -->  
<TSO PROCEDURE="MFAAS" MAXIMUM="2" JOBNAME="*"  
 TSO_PROCEDURE="MFATSO"  
>
```

### VTAMLST Definitions

Copy member MFAVTAM to vtamlst. This application major node definition contains APPL definitions for Mainframe Access server, Mainframe Access Data Connect server and Remote IMS Server. Use the z/OS VARY command to activate the definition:

```
V NET,ACT,ID=MFAVTAM
```



**Note:**

- If you change any ACBNAME= values or the PRTCT= value in the MFAVTAM sample you must make corresponding changes:
  - in member MFAXML (if ACBNAME=MFM62ACB is changed)
  - in member MFAXML (if PRTCT=MFM62PSW is changed)
  - in member MFAS (if ACBNAME=MFA62ACB is changed)
- You will want to add MFAVTAM into the vtamlst (ATCCONxx) member so that this application major node is automatically activated during VTAM initialization.

### Add Started Task JCL Procedures to Proclib

Copy members MFA, MFAAS, MFAS, and MFATSO to proclib.



#### Note:

- If you store proc MFAS in proclib using a different name, you must also change PROCEDURE attribute of DataConnect in member MFAXML to specify that new procedure name.
- If you store proc MFAAS in proclib using a different name, you must also change PROCEDURE attribute of the relevant Application Server in member MFAXML to specify that new procedure name.
- If you store proc MFATSO in proclib using a different name, you must also change TSO\_PROCEDURE attribute of the relevant TSO Application Server in member MFAXML to specify that new procedure name.

### Add MFATSOIN to System Link List

The MFA TSO initialization module MFATSOIN must be copied from HLQ.MFA.LOADLIB to the system link list. This must then be refreshed by issuing the following console command:

```
F LLA,REFRESH
```



**Note:** If you store load module MFATSOIN in the system link list using a different name, you must also change the TSO\_INITMOD attribute of the relevant TSO Application Server in member MFAXML to specify the new TSO load module name.

### Customize AWM master configuration file

When customizing the member TAUZCAPP in the hlq.MFA.EXEC dataset, Micro Focus recommends that you first copy it to hlq.MFA.CUSTOM.EXEC. This dataset is already added to the SYSEXEC in the relevant template JCL. Copying it will prevent your configuration from being overwritten by a future install.

This is the master configuration file used by the AWM client. Use the ISPF change command to change HLQ to your qualifier (hlq). See *Master Configuration on z/OS* for more information.

### APF-Authorize the Load Module Libraries

Use z/OS SETPROG commands to APF-authorize the load libraries:

```
SETPROG APF,ADD,DSNAME=hlq.MFA.LOADLIB,SMS
SETPROG APF,ADD,DSNAME=hlq.ZSERVER.AUTHLIB,SMS
SETPROG APF,ADD,DSNAME=hlq.ZSERVER.LOADLIB,SMS
```



**Note:** Add these APF library definitions to a SYS1.PARMLIB(PROGxx) member so that these same authorizations are automatically activated during z/OS system initialization.

### Define Mainframe Access to the Security Subsystem

Use RACF TSO commands to define the Mainframe Access started tasks (MFA, MFAAS and MFAS) and assign a userid and groupid to the tasks. The stcuserid should have appropriate access to the Mainframe Access data sets and should also have a basic OMVS RACF segment defined. At a minimum, the stcuserid OMVS segment must have a UID. The stcgroup must also have an OMVS segment with a GID.

The following REDEFINE will provide the necessary definition for all of the started tasks (MFA, MFAAS and MFAS).

```
RDEFINE STARTED MFA*.* STDATA(USER(stcuserid) GROUP(stcgroup))
  OWNER(stcuserid)
SETROPTS RACLIST(STARTED) REFRESH
```

If you are using another security product such as CA-ACF2 or CA-Top Secret you will need to make similar updates to your security system definitions. MFA, MFAAS and MFAS will need a started task definition with an OMVS segment and they will need access to the SAF API for security subsystem calls. Please refer to your security product documentation.

### Define Mainframe Access Web API to the Security Subsystem

You can view and administer the MFA Server using the Enterprise Server Common Web Administration (ESCWA) interface. To do this you will need to give users permission to access it by defining a new class to your Security Subsystem.

There is a sample job that contains the template RACF commands required to achieve this in hlq.MFA.CNTL(MFACDT). You will need to customize this and replace the two lines that have RDEFINE xxxx and yyyy with the User IDs that you wish to grant access to.

The sample JCL is for RACF, if you are using another security product such as CA-ACF2 or CA-Top Secret you will need to make similar modifications to your security system definitions.

The typical steps for RACF are:

1. Define a new class (in the sample this is \$MFM) in your security subsystem that has a unique POSIT number (in the sample this is 26) using REDEFINE CDT.
2. Activate RACLIST processing on the new class using SETROPTS RACLIST.
3. Activate the new general resource class using SETROPTS CLASSACT.
4. Activate generic profile checking for the new class using SETROPTS GENERIC.
5. Refresh the CDT profile using SETROPTS RACLIST REFRESH.
6. Define a new general resource profile, in the sample MFM.RESTCMD, in the new class using RDEFINE.
7. For each user you want to give access to, determine if they require READ or ALTER and add them to the access list for the new profile access using PERMIT.
8. Refresh the new class using RACLIST.

By default, if a user has not been given permissions then they will not be able to access any of the administrative Web API endpoints. The table below outlines the required permissions for individual operations:

Operation	Required Permission
List Tasks	READ
List Statistics	READ
Get Trace Level	READ
List Users	READ
Set Trace Level	ALTER
Terminate User	ALTER

### Define started tasks to WLM

As a server, the importance of the MFA Server address space should be set below TCPIP but above the Data Connect Mainframe Access Server, and other Mainframe Access Application Servers such as Endeavor, Changeman, IDCAMS, and MFATSO Application Servers. This setting is checked when MFA Server starts up, terminates, or when commands are executed against the MFA Server address space.

The user servers should be classified like any TSO user address space, using the response time goal of TSO. All transactions executing within the user server are TSO transactions.

 **Note:** These address spaces are STCs, so the classification must be done under the STC subsystem.

## Starting Mainframe Access

When you have completed all of the tasks described in the preceding sections you are ready to start Mainframe Access to perform some simple installation verification tests. Start Mainframe Access by issuing the following z/OS START command at a system console or using the TSO/ISPF SDSF command facility:

```
S MFA
```

Here is an example that shows the messages displayed during startup. The start command is issued for MFA, the name of the started task JCL sample that has been customized and copied into a system procedure library. The MFXML sample also defines the Mainframe Access Data Connect server as an application server address space that should be started automatically by Mainframe Access during initialization. Mainframe Access issues an internal start command for MFAS, the name of the started task JCL sample for the Mainframe Access Data Connect server.

```
04:11:52.41 XXXXXXXX 00000290 S MFA
04:11:52.47 STC03887 00000090 £HASP100 MFA ON STCINRDR
04:11:52.55 STC03887 00000290 IEF695I START MFA WITH JOBNAME MFA IS ASSIGNED TO
USER XXXXXXXX
, GROUP XXXXXXXX
04:11:52.55 STC03887 00000090 £HASP373 MFA STARTED
04:11:52.56 STC03887 00000090 IEF403I MFA - STARTED - TIME=04.11.52
04:11:53.06 STC03887 00000090 MFM0063I: MFA Direct is active
04:11:53.06 STC03887 00000090 MFM0064I: MFA Direct number of processing tasks is
10
04:11:53.09 STC03887 00000090 MFM0134I: ES/MTO Outbound feature is active
04:11:53.10 STC03887 00000090 MFM0127I: ChangeMan subsystem ID is SERA
04:11:53.20 STC03887 00000090 MFMD5008I DBCS code page support enabled
04:11:53.22 STC03887 00000090 MFMD5051I CA/LIBrarian Ready
04:11:53.27 STC03887 00000090 MFMD5052I CA/PanValet Ready
04:11:53.29 STC03887 00000090 MFMD5053I CA/ENDEVOR API
REL=B1700C,ESI=N,UID=N
04:11:53.46 STC03887 00000090 MFMD5055I MCG/RPC feature active
04:11:53.46 STC03887 00000090 MFMD5001I DSS Server Ready
04:11:54.32 STC03888 00000090 £HASP100 MFAS ON
STCINRDR
04:11:54.39 STC03888 00000090 £HASP373 MFAS STARTED
04:11:54.40 STC03888 00000090 IEF403I MFAS - STARTED -
TIME=04.11.54
04:11:54.48 STC03888 00000090 MFA302I.MFAS.MFDSTART / ATTACHING VTAM
PROCESSOR
04:11:54.48 STC03888 00000090 MFA303I.MFAS.MFDSTART / MFA/DATACONNECT V6.00 - 04000000
COPYRIGHT
(C) 1987-2018 MICRO FOCUS INTERNATIONAL LTD.
04:11:54.49 STC03888 00000090 MFA110I.MFAS.MFAFSQ00 / VTAM PROCESSOR ACTIVE USING
VTAMAPPL MFA62ACB
04:11:59.29 STC03887 00000090 MFM0001I: Mainframe Access V6.00 (04000000) is active
```

## Stopping Mainframe Access

Stop Mainframe Access by issuing the following z/OS STOP command at a system console or using the TSO/ISPF SDSF command facility:

```
P MFA
```

Here is an example that shows the messages displayed during shutdown. The stop command is issued only for Mainframe Access, the Mainframe Access server. Mainframe Access issues an internal stop command for MFAS, the application server address space for Mainframe Access Data Connect that was

defined in the SERVERS member and started automatically by Mainframe Access. MFAS ends first and then Mainframe Access completes its shutdown processing.

```
04:50:44.70 XXXXXXXX 00000290 P MFA
04:50:50.72 STC01318 00000090 MFMD5005I DSS Server shutdown
04:51:01.02 STC01318 00000290 P MFAS
04:51:01.03 STC01319 00000090 MFA112I.MFAS.MFAFSQ00 / VTAM PROCESSOR HAS
TERMINATED
04:51:02.04 STC01319 00000090 MFA317I.MFAS.MFDSTART / HAS BEEN TERMINATED
04:51:02.06 STC01319 00000090 IEF404I MFAS - ENDED - TIME=04.51.02
04:51:02.06 STC01319 00000090 £HASP395 MFAS ENDED - RC=0000
04:51:12.54 STC01318 00000090 MFM0011I: Mainframe Access shutdown completed
04:51:12.59 STC01318 00000090 IEF404I MFA - ENDED - TIME=04.51.12
04:51:12.60 STC01318 00000090 £HASP395 MFA ENDED - RC=0000
```

## Advanced Configuration Activities

Mainframe Access is a general purpose server, supporting a variety of Micro Focus client products. The Quick Configuration process that you have completed enables a large number of Mainframe Access server features that satisfy most access requirements. This section describes the customization (beyond the quick configuration) that are needed to enable various additional features of Mainframe Access server.

The following table summarizes the required updates on a per-feature basis. This will help you to select the correct configuration activities for a specific feature:

Feature	Customization
<b>Audit Log</b>	Refer to <i>Allocating and Initializing an Audit Log Data Set</i> to prepare the data set. Then see <i>Editing Mainframe Access Parameters</i> and update the audit log parameter to <b>AUDIT_LOG="1"</b> .
<b>Access List</b>	Refer to <i>Editing Access List Definitions</i> for guidance in defining IP addresses and address ranges. Then see <i>Editing Mainframe Access Parameters</i> and update the access list check parameter to <b>ACCESS_LIST_CHECK="1"</b> .
<b>CICS support</b>	Using CICS support, clients can interact with z/OS CICS servers for file access, remote program execution, transaction execution, and so on. Activate support for this feature by setting <b>MCOLINK_MAXTASKS="2"</b> . The number of tasks supporting this feature can be increased in the future as your usage dictates.  To complete the setup for this feature you need to customize your client and the z/OS CICS server.
<b>Remote IMS Option</b>	Using the Remote IMS Option, clients can execute DL/I calls that are processed by a z/OS IMS server. Activate support for this feature by setting <b>IMSLINK_MAXTASKS="2"</b> . The number of tasks supporting this feature can be increased in the future as your usage dictates.  To complete the setup for this feature you will need to customize your client and the z/OS IMS server. You must also install the Remote IMS server software in the target z/OS IMS server and enable APPC/MVS communications for that IMS server. All of the machine-readable installation materials for your Remote IMS Server can be found in the <hlq>.RIMS data set.
<b>List DB2</b>	Mainframe Access' List DB2 feature dynamically identifies z/OS DB2 and IMS servers that are active on the z/OS system where Mainframe Access server is

Feature	Customization
<b>Data Connect</b>	executing. This information can be helpful when defining these systems to Mainframe Access server and clients. Activate support for this feature by setting <b>LIST_DB2="1"</b> .
<b>Enterprise Server/Mainframe Subsystem Support</b>	Quick Configuration installs the Mainframe Access Data Connect server with SAF security checking active and without special customization for PC to mainframe file name mapping. If you need to alter this basic setup see the appendix <i>Data Connect</i> .  Enterprise Server/Mainframe Subsystem Support (ES/MSS) enables Mainframe Access server to accept CICS ISC requests initiated by z/OS CICS and route them to an ES/MSS server for execution. The combination of ES/MSS support and the CICS support creates a bi-directional ISC connection between ES/MSS and z/OS CICS.  To complete the setup for this feature you need to customize your ES/MSS server(s) and the z/OS CICS server(s). See your Enterprise Server documentation and IBM z/OS CICS publications for help with this customization.
<b>ChangeMan interface</b>	Mainframe Access' Source Connect feature works with ChangeMan to provide client access to ChangeMan-managed files. For more information see the section <i>ChangeMan ZMF</i> in the appendix <i>External Library Management Systems</i> .
<b>Panvalet interface</b>	Mainframe Access' Source Connect feature works with Panvalet to provide client access to Panvalet-managed files. For more information see the section <i>Panvalet</i> in the appendix <i>External Library Management Systems</i> .
<b>Librarian interface</b>	Mainframe Access' Source Connect feature works with Librarian to provide client access to Librarian-managed files. For more information see the section <i>Librarian</i> in the appendix <i>External Library Management Systems</i> .
<b>Endevor interface</b>	Mainframe Access' Source Connect feature works with Endevor to provide client access to Endevor-managed files. For more information see the section <i>Endevor</i> in the appendix <i>External Library Management Systems</i> .



**Note:** As noted in the preceding customization summaries, you also need to prepare the external servers and clients that Mainframe Access works with.

### Editing Mainframe Access Parameters

You edit the Mainframe Access parameter definitions located in member MFAXML to customize them for your system. The sample parameter definitions are provided here as an example. MFAXML is an XML formatted file, so any lines that are surrounded by the XML comment characters <!-- and --> are treated as comments and are skipped in processing:

```
<Configuration
  TCP_PORT="2020"
  NETWORK_ID="DDINET1"
  LU62_APPLID="MFM62ACB"
  APPLID_PASSWORD="MFM62PSW"
  TRACING="0"
  ORGANIZATION="YOUR_COMPANY_NAME"
>
```

```

<!-- Application Server address space definitions -->
<ApplicationServers>
  <!-- Mainframe Access Server (Data Connect) address space -->
  <DataConnect PROCEDURE="MFAS"
  />

  <!-- Mainframe Access Application Server(s) for Endeavor -->
  <Endevor PROCEDURE="MFAAS" MAXIMUM="2" JOBNAME="MFAE"
  />

  <!-- IDCAMS address space - needed for data set RENAME support -->
  <AMS PROCEDURE="MFAAMS" MAXIMUM="1" JOBNAME="MFAA"
  />

  <!-- Mainframe Access Application Server for TSO command support -->
  <TSO PROCEDURE="MFAAS" TSO_PROCEDURE="MFATSO"
    TSO_JOBCHAR="W"
  />
</ApplicationServers>

<!-- Service Configuration -->
<Services>
  <!-- MFA Data Connect server - only one DEFAULT server is supported -->
  <MFA ID="DEFAULT" LUNAME="MFA62ACB" MODENAME="#INTER"
    TPNAME="FILESHR2" SYNCLEVEL="1" SECURITY="0"
  />

  <!-- Sample IMS servers - multiple servers may be defined -->
  <!--
  <RIMS ID="IMSA" LUNAME="IMSSYSA" MODENAME="IBMRDB"
    TPNAME="MFDBTP6" SYNCLEVEL="0" SECURITY="0"
  />

  <RIMS ID="DEFAULT" LUNAME="IMSTEST" MODENAME="IBMRDB"
    TPNAME="MFDBTP6" SYNCLEVEL="0" SECURITY="0"
  />
  -->

  <!-- Sample CICS servers - multiple servers may be defined -->
  <!--
  <MCO ID="CICA" LUNAME="CICSSYSA" MODENAME="#INTER"
    TPNAME="" SYNCLEVEL="0" SECURITY="0"
  />

  <MCO ID="DEFAULT" LUNAME="CICSTEST" MODENAME="#INTER"
    TPNAME="" SYNCLEVEL="0" SECURITY="0"
  />
  -->

  <!-- Sample ES/MSS servers - multiple servers may be defined -->
  <!--
  <ES-MTO ID="MTO1" ACBNAME="MFAMTO1" IPADDRESS="YOUR.MTO.HOSTNAME"
    PORT="2200" SESSIONS="4" SOCKETS="1"
  />

  <ES-MTO ID="MTO2" ACBNAME="MFAMTO2" IPADDRESS="101.102.103.104"
    PORT="3300" SESSIONS="4" SOCKETS="1"
  />
  -->
</Services>
</Configuration>

```

The section in bold above highlights the area of the XML file that you can edit, add, or remove parameters in order to control Mainframe Access behavior. See *Configuration reference* for more information on the available parameters.



**Note:** Ensure that when editing or uploading the MFAXML configuration file that you use CCSID 1047. Otherwise the XML document might fail validation.

### Enabling Passphrase Support

Mainframe Access Server supports passphrases up to 100 characters in length. To enable this support you need to enable the `MFA_GUI_ACCEPT_PASSPHRASES` configuration option in your MFAXML configuration file.

See `MFA_GUI_ACCEPT_PASSPHRASES` for more information.

### Editing Mainframe Access Application Server Parameters

The MFAXML member also contains definitions that describe both application servers and services. Service definitions such as RIMS, MCO, MFA and ES-MTO provide an ID label and the LU 6.2 parameters needed to contact the server using SNA LU 6.2 protocols. The ID label is used in some client configurations to select a specific target server.

Application server's definitions such as DataConnect, Endeavor, ChangeMan and AMS define address spaces that can be started and controlled by Mainframe Access server. The definition provides a JCL procedure name that can be used to start the address space, a server program name, values that govern the number of address spaces that can be started, etc.

If you use CICS Option or IMS Option, you must edit the Mainframe Access sample services definitions to customize them for your system. The application server and service definitions for the Mainframe Access Data Connect server will need to be edited only if you have changed the JCL procedure name or the VTAM APPL ACBNAME, or if the default logmode name cannot be used.

The sample definitions for services that you will not be using can be commented out and they will not affect the operation of Mainframe Access with services that you have customized. For example, if you are not using CICS Option you can leave the sample CICS target server definitions unchanged; or you can delete them altogether.

The sample server definitions are provided here as an example. Lines that begin with an asterisk are treated as comments and are skipped in processing.

```
<Configuration
    TCP_PORT="2020"
    NETWORK_ID="DDINET1"
    LU62_APPLID="MFM62ACB"
    APPLID_PASSWORD="MFM62PSW"
    TRACING="0"
    ORGANIZATION="YOUR_COMPANY_NAME"
>

<!-- Application Server address space definitions -->
<ApplicationServers>
  <!-- Mainframe Access Server (Data Connect) address space -->
  <DataConnect PROCEDURE="MFAS"
  />

  <!-- Mainframe Access Application Server(s) for Endeavor -->
  <Endevor PROCEDURE="MFAAS" MAXIMUM="2" JOBNAME="MFAE"
  />

  <!-- IDCAMS address space - needed for data set RENAME support -->
  <AMS PROCEDURE="MFAMS" MAXIMUM="1" JOBNAME="MFAA"
  />

  <!-- Mainframe Access Application Server for TSO command support -->
```

```

<TSO      PROCEDURE="MFAAS" TSO_PROCEDURE="MFATSO"
      TSO_JOBCHAR="W"
  />
</ApplicationServers>

<!-- Service Configuration -->
<Services>
  <!-- MFA Data Connect server - only one DEFAULT server is supported -->
  <MFA      ID="DEFAULT" LUNAME="MFA62ACB" MODENAME="#INTER"
          TPNAME="FILESHR2" SYNCLEVEL="1" SECURITY="0"
  />

  <!-- Sample IMS servers - multiple servers may be defined -->
  <!--
  <RIMS     ID="IMSA" LUNAME="IMSSYSA" MODENAME="IBMRDB"
          TPNAME="MFDBTP6" SYNCLEVEL="0" SECURITY="0"
  />

  <RIMS     ID="DEFAULT" LUNAME="IMSTEST" MODENAME="IBMRDB"
          TPNAME="MFDBTP6" SYNCLEVEL="0" SECURITY="0"
  />
  -->

  <!-- Sample CICS servers - multiple servers may be defined -->
  <!--
  <MCO      ID="CICA" LUNAME="CICSSYSA" MODENAME="#INTER"
          TPNAME="" SYNCLEVEL="0" SECURITY="0"
  />

  <MCO      ID="DEFAULT" LUNAME="CICSTEST" MODENAME="#INTER"
          TPNAME="" SYNCLEVEL="0" SECURITY="0"
  />
  -->

  <!-- Sample ES/MSS servers - multiple servers may be defined -->
  <!--
  <ES-MTO   ID="MTO1" ACBNAME="MFAMTO1" IPADDRESS="YOUR.MTO.HOSTNAME"
          PORT="2200" SESSIONS="4" SOCKETS="1"
  />

  <ES-MTO   ID="MTO2" ACBNAME="MFAMTO2" IPADDRESS="101.102.103.104"
          PORT="3300" SESSIONS="4" SOCKETS="1"
  />
  -->
</Services>
</Configuration>

```

The section in bold above highlights the area of the XML file that you can edit, add, or remove parameters in order to control Mainframe Access behavior in regard to *application servers* and *services*. See *Configuration reference* for more information on the available parameters.

### Application Servers

#### Application Server Parameters for the Mainframe Access Data Connect Server

An example of the DataConnect configuration:

```

<!-- Mainframe Access Server (Data Connect) address space -->
<DataConnect PROCEDURE="MFAS"
/>>

```

Use the following parameters to configure Data Connect:

#### **PROCEDURE**

The JCL procedure name that will be used when the address space is started.

See *Configuration reference* for more information on the parameters available for a Data Connect application server.

#### *Application Server Parameters for Endeavor support*

An example of the Endeavor configuration:

```
<!-- Mainframe Access Server (Data Connect) address space -->  
<Endevor PROCEDURE="MFAAS" MAXIMUM="2" JOBNAME="MFAE"  
>
```

Use the following parameters to configure Endeavor:

#### **PROCEDURE**

Specifies the JCL procedure name that is used when the address space is started.

#### **MAXIMUM**

Specifies the maximum number of address spaces that Mainframe Access server starts for Endeavor support.

#### **JOBNAME**

Specifies the jobname prefix to be used for address spaces that are started for Endeavor support.

See *Configuration reference* for more information on the parameters available for an Endeavor application server.

#### *Application Server Parameters for AMS/IDCAMS support*

An example of the AMS configuration:

```
<!-- IDCAMS address space – needed for data set RENAME support -->  
<AMS PROCEDURE="MFAAMS" MAXIMUM="1" JOBNAME="MFAA"  
>
```

Use the following parameters to configure AMS:

#### **PROCEDURE**

Specifies the JCL procedure name that is used when the address space is started.

#### **MAXIMUM**

Specifies the maximum number of address spaces that Mainframe Access server starts for IDCAMS support.

#### **JOBNAME**

Specifies the jobname prefix to be used for address spaces that are started for Endeavor support.

See *Configuration reference* for more information on the parameters available for an AMS application server.

#### *Application Server Parameters for TSO Command support*

An example of the TSO command support configuration:

```
<!-- Mainframe Access Application Server for TSO command support -->  
<TSO PROCEDURE="MFAAS" TSO_PROCEDURE="MFATSO"  
TSO_JOBCHAR="W"  
>
```

Use the following parameters to configure TSO command support:

#### **PROCEDURE**

Specifies the JCL procedure name that is used when the address space is started.

#### **TSO\_PROCEDURE**

Specifies the JCL procedure name that is used when the individual user server address space is started.

### **TSO\_JOBCHAR**

Specifies the character that will be appended to the TSO userid to form the jobname of the running user server.

See *Configuration reference* for more information on the parameters available for a TSO command server.

### *Application Server Parameters for ChangeMan support*

An example of the ChangeMan configuration:

```
<!-- Mainframe Access Server (Data Connect) address space -->  
<ChangeMan PROCEDURE="MFAAS"  
>
```

Use the following parameters to configure ChangeMan:

### **PROCEDURE**

Specify the JCL procedure name that is used when the address space is started.

See *Configuration reference* for more information on the parameters available for a ChangeMan application server.

### *Services*

#### *Service Parameters for ES/MSS*

An example of the ES/MSS configuration:

```
<!-- Sample ES/MSS servers - multiple servers may be defined --  
>  
<ES-MTO ID="MTO1" ACBNAME="MFAMTO1" IPADDRESS="YOUR.MTO.HOSTNAME"  
PORT="2200" SESSIONS="4" SOCKETS="1"  
>  
  
<ES-MTO ID="MTO2" ACBNAME="MFAMTO2" IPADDRESS="101.102.103.104"  
PORT="3300" SESSIONS="4" SOCKETS="1"  
>
```

These statements define an ES/MSS server and provide MFA Server with the information needed to establish a TCP/IP socket connection to the ES/MSS server. This definition also creates a VTAM ACB that represents the ES/MSS server to the z/OS CICS system(s). Use the following parameters to configure ES-MTO:

### **ID**

Specifies the SYSID of the ES/MSS server being defined.

### **ACBNAME**

Specifies the name of the VTAM ACB associated with this ES/MSS server.

### **IPADDRESS**

Specifies the internet host name or IP address of the ES/MSS server.

### **PORT**

Specifies the port number where ES/MSS is listening for ISC connections.

### **SESSIONS**

Specifies the number of concurrent conversations MFA Server can initiate to the ES/MSS server over a single socket connection.

### **SOCKETS**

Specifies the maximum number of concurrent socket connections between MFA Server and the ES/MSS server.

See *Configuration reference* for more information on the parameters available for an ES/MSS services.

### Service Parameters for Mainframe Access Data Connect Server

An example of the ES/MSS configuration:

```
<!-- MFA Data Connect server - only one DEFAULT server is supported -->
<MFA      ID="DEFAULT" LUNAME="MFA62ACB" MODENAME="#INTER"
          TPNAME="FILESHR2" SYNCLEVEL="1" SECURITY="0"
/>
```

These statements define an ES/MSS server and provide MFA Server with the information needed to establish a TCP/IP socket connection to the ES/MSS server. This definition also creates a VTAM ACB that represents the ES/MSS server to the z/OS CICS system(s). Use the following parameters to configure ES-MTO:

#### **ID**

Data Connect client requests do not specify a target server ID and Mainframe Access always looks for the DEFAULT Mainframe Access Data Connect target server definition. Specify DEFAULT.

#### **LUNAME**

The LU name of the Mainframe Access Data Connect server (also known as the ACBNAME or VTAM APPLID). Specify an LU name of up to eight characters.

#### **MODENAME**

The SNA log mode name that will be used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions with the Mainframe Access Data Connect server.

#### **TPNAME**

The transaction program name for Mainframe Access Data Connect server requests. Specify FILESHR2.

#### **SYNCLEVEL**

The SNA LU6.2 sync level option to be used on conversations with the Mainframe Access Data Connect server.

#### **SECURITY**

The security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the Mainframe Access Data Connect server.

See *Configuration reference* for more information on the parameters available for an MFA Data Connect service.

### Service Parameters for IMS Option (Remote IMS)

An example of the RIMS configuration:

```
<!-- Sample IMS servers - multiple servers may be defined -->
<RIMS      ID="IMSA" LUNAME="IMSSYSA" MODENAME="IBMRDB"
          TPNAME="MFDBTP6" SYNCLEVEL="0" SECURITY="0"
/>

<RIMS      ID="DEFAULT" LUNAME="IMSTEST" MODENAME="IBMRDB"
          TPNAME="MFDBTP6" SYNCLEVEL="0" SECURITY="0"
/>
```

Use the following parameters to configure RIMS:

#### **ID**

If an IMS Option client request does not specify a target server ID or the specified target server ID does not exist, Mainframe Access selects the DEFAULT IMS target server, if one has been defined. This IMS target server ID name is used in the configuration of the client.

When a Remote IMS request is sent this name is sent in the request data and is used to locate the target server definition for the IMS system that will receive the request. Specify DEFAULT or an ID of up to four alphanumeric characters.

#### **LUNAME**

The LU name of the IMS server (also known as the ACBNAME or VTAM APPLID). Specify an LU name of up to eight characters. This name must match the ACBNAME defined in an APPC/MVS LU definition for the target IMS system.

#### **MODENAME**

The SNA log mode name that will be used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions with the IMS server.

#### **TPNAME**

The IMS server transaction program name for IMS Option transactions.

#### **SYNCLEVEL**

The SNA LU6.2 sync level option to be used on conversations with the IMS server. Specify 0.

#### **SECURITY**

The security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the IMS server.

See *Configuration reference* for more information on the parameters available for a Remote IMS service.

#### *Service Parameters for CICS*

An example of the CICS configuration:

```
<!-- Sample CICS servers - multiple servers may be defined -->
<MCO      ID="CICA" LUNAME="CICSSYSA" MODENAME="#INTER"
          TPNAME="*" SYNCLEVEL="0" SECURITY="0"
/>

<MCO      ID="DEFAULT" LUNAME="CICSTEST" MODENAME="#INTER"
          TPNAME="*" SYNCLEVEL="0" SECURITY="0"
/>
```

Use the following parameters to configure RIMS:

#### **ID**

If a CICS client request does not specify a target server ID or the specified target server ID does not exist, Mainframe Access selects the DEFAULT CICS target server, if one has been defined. This CICS target server ID name is used in the configuration of the client. When a CICS request is sent to Mainframe Access this name is sent in the request data and is used to locate the target server definition for the CICS system that will receive the request. Specify DEFAULT or an ID of up to four alphanumeric characters.

#### **LUNAME**

Specifies the LU name of the CICS server (also known as the ACBNAME or VTAM APPLID). Specify a LU name of up to eight characters.

#### **MODENAME**

Specifies the SNA log mode name that is used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions with mainframe CICS.

#### **TPNAME**

Specifies the server transaction program name for CICS requests.

#### **SYNCLEVEL**

Specifies the SNA LU6.2 sync level option to be used on conversations with CICS. Specify 0.

## SECURITY

Specifies the security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the CICS server.

### Editing Access List Definitions

You must edit the access list definitions located in member ACCESS to customize them for your installation. The definitions in this list are:

- PERMIT and REJECT lines - these specify the IP addresses from which client connections are allowed or rejected. Client connection requests are checked only if the Mainframe Access parameter ACCESS\_LIST\_CHECK is set to YES. You must customize the PERMIT and REJECT lines with appropriate values for your implementation

The sample access list definitions are provided here as a convenient reference while you read. Lines that begin with an asterisk are treated as comments and are skipped in processing:

```
*-----*
*
* Micro Focus Mainframe Access - Access List
*
*-----*
*
*-----*
* Permission list
*-----*
*
PERMIT=111.111.111
*
*-----*
* Rejection list
*-----*
*
REJECT=222.222.222
*
END
```

#### *Permission and Rejection Lists*

If you specify ACCESS LIST CHECK=YES in the Mainframe Access parameter file and specify the access list filename in an //XDBACC DD statement in the Mainframe Access startup JCL, client connection requests are accepted or rejected according to the values you specify for the PERMIT and REJECT parameters:

```
PERMIT=ipaddress
REJECT=ipaddress
```

The format of the IP address is the familiar dotted decimal notation. A complete Internet address consists of four decimal numbers or address groups, each in the range 0 through 255, with the groups being separated by decimal points.

You can specify complete Internet addresses to permit or reject individual clients.

You can also specify a range of consecutive Internet addresses in a single statement, by omitting one or more trailing address groups. This is known as a masked address specification. To decide whether or not a particular request is to be allowed, Mainframe Access first shortens the client address by removing trailing address groups that correspond to address groups omitted in the specification, then compares the shortened address with the masked address.

If you are using the access list mechanism, client connection requests from all addresses not specified in PERMIT or REJECT parameters are rejected.

Here are two example sets of access list parameters

### Example 1

```
PERMIT = 111.111.148  
REJECT = 111.111.148.244
```

The effect of these parameter values is that all client connection requests from IP addresses in the range 111.111.148.0 to 111.111.148.255 are accepted with the exception of client address 111.111.148.244. Client connections from all other IP addresses are rejected.

### Example 2

```
PERMIT = 11.1.82  
REJECT = 11.1.82.4  
PERMIT = 111.202.111.18
```

The effect of these parameter values is that all client connection requests from IP addresses in the range 11.1.82.0 through 11.1.82.255 are accepted with the exception of client address 11.1.82.4. Client connections requests from the address 11.202.111.18 are also accepted. Connection requests from all other IP addresses are rejected

## Allocating and Initializing an Audit Log Data Set

The Mainframe Access audit log feature uses a VSAM data set to record client login and logout information. The information that is logged includes the user ID, client IP address, login and logout times, target server name and encryption usage. If you want to use the audit log feature you need to prepare the audit log data set and update the Mainframe Access JCL procedure.

Sample member AUDIT contains the JCL to allocate and initialize a Mainframe Access audit log VSAM data set. Edit the JOB card, data set names and volume serial number information, then submit the job and verify that the condition code for the INITLOG step is 0 (zero). Note that a condition code of 8 for the ALLOCLOG step is normal the first time that you run this job.

When editing the data set names you may use a global change command to change all instances of HLQ to the high level qualifier that you selected for Mainframe Access data sets during the installation procedure.

Edit the Mainframe Access startup JCL to make the audit log data set available. Do this by removing the keyword DUMMY and the trailing comma (DUMMY,) from the XDBAUDIT DD statement:

```
/*  
/*-----  
/* Optional audit log data set  
/*-----  
/*  
//XDBAUDIT DD DUMMY,DISP=SHR,DSN=&DSNQUAL..AUDIT
```

## Adding Mainframe Access to TCP/IP's Autolog List

If you are using IBM's TCP/IP, you can add the Mainframe Access started task name (the name of the Mainframe Access JCL procedure in the system procedure library) to the TCP/IP autolog list. TCP/IP will then automatically start Mainframe Access when it starts and stop Mainframe Access when it stops. Do not perform this update until you have finished configuring Mainframe Access and are satisfied with the way Mainframe Access is running.

## Setting Up a Mainframe Access GTF Procedure

Mainframe Access provides sample members MFAGTF and GTFCTL to assist you when you need to use IBM's Generalized Trace Facility (GTF) to obtain trace data for problem determination. In some problem situations our Product Support will request a VTAM trace of an application LU, usually the Mainframe Access server LU.

### Adding the GTF Procedure to a System Procedure Library

Sample JCL to run GTF as a started task is provided in member MFAGTF. Edit this JCL to customize the data set names for your installation and then copy the JCL into a system procedure library that is available when z/OS START commands are processed. Member GTF\_CNTL contains GTF control statements that are referenced by the sample GTF JCL procedure. The USR=(FF1,FEF,0E9) statement in this member specifies the recording of VTAM buffer trace records (FF1 and FEF) and Mainframe Access server trace records (0E9).



**Note:** If you change the Mainframe Access EID="00E9" parameter setting, you should update member GTF\_CNTL with the new value. See *Editing Mainframe Access Parameters* for more information.

### Testing the Mainframe Access GTF Procedure

After you customize and install procedure MFAGTF you can test out the procedure by issuing the following z/OS START command at a system console or using the TSO/ISPF SDSF command facility:

```
S MFAGTF.MYGTF
```

GTF will start and read the GTF\_CNTL parameter file. When the *initialization complete* message is issued GTF is ready to record trace data.

```
S MFAGTF.MYGTF
$HASP100 MFAGTF  ON STCINRDR
IEF695I START MFAGTF WITH JOBNAME MFAGTF IS ASSIGNED TO USER RWITEK, GROUP
CSIDVLP
$HASP373 MFAGTF  STARTED
IEF403I MFAGTF - STARTED - TIME=19.08.44
AHL121I TRACE OPTION INPUT INDICATED FROM MEMBER GTF_CNTL OF PDS
<hlq>.CNTL
TRACE=USRP
USR=(FF1,FEF,0E9)
END
AHL103I TRACE OPTIONS SELECTED --USR=(FEF,FF1,0E9)
AHL906I THE OUTPUT BLOCK SIZE OF  27998 WILL BE USED FOR OUTPUT 228
  DATA SETS:
  <hlq>.TRACE
AHL080I GTF STORAGE USED FOR GTF DATA: 229
  GTFBLOCK STORAGE    82K BYTES (BLOK=    40K)
  PRIVATE STORAGE    1038K BYTES
  SADMP HISTORY      54K BYTES (SADMP=    40K)
  SDUMP HISTORY      54K BYTES (SDUMP=    40K)
  ABEND DUMP DATA    0K BYTES (ABDUMP=    0K)
AHL031I GTF INITIALIZATION COMPLETE
```

You stop GTF by issuing the following z/OS STOP command at a system console or using the TSO/ISPF SDSF command facility:

```
P MYGTF
```

GTF acknowledges the stop command and closes down, as shown in the following example:

```
P MYGTF
AHL006I GTF ACKNOWLEDGES STOP COMMAND
IEF404I MFAGTF - ENDED - TIME=19.10.31
$HASP395 MFAGTF  ENDED
$HASP250 MFAGTF PURGED -- (JOB KEY WAS B9C101AA)
```

## Defining RACF Profiles for JES Spool Access

MFA now uses the RACF classes JESSPOOL and JESJOBS to check a user's authority to read or delete a job on the spool. See *z/OS Security Server RACF Security Administrator's Guide* for more information. When a request to read (IMPORT) a job or SYSOUT is received the following JESSPOOL profile is checked:

```
nodename.userid.jobname.jobid.dsidentifier.name
```

When a CANCEL, HOLD, or RELEASE command is received, first an SDSF-style JESSPOOL profile is checked:

```
nodename.userid.jobname.jobid
```

If that does not exist one of the following JESJOBS profiles is checked:

```
CANCEL.nodename.userid.jobname  
HOLD.nodename.userid.jobname  
RELEASE.nodename.userid.jobname
```

If no profile is defined then MFA reverts to checking the job's ownership.

## Running Multiple Instances of Mainframe Access Server

Mainframe Access server is a robust server that is designed to efficiently handle all of the different client access requirements in high-volume usage. A single instance of Mainframe Access server will most likely meet the needs of your installation. It is, however, possible to run multiple instances of Mainframe Access server on your z/OS system. This might be desirable for establishing test and production servers, isolating specific user groups in their own server, isolating specific feature activations, etc.

Once you have a successful Mainframe Access server installation you can easily create additional instances as follows:

- Create and activate VTAMLST APPL definitions for a new Mainframe Access server and a new Mainframe Access Data Connect server.
- Reserve a unique TCP/IP port for the new Mainframe Access server (a TCP\_PORT).
- Create unique MFAXML and ACCESS members for the new instance and customize them appropriately. You will definitely need to create a unique PARMS member and assign unique values to the LU62\_APPLID="" and TCP\_PORT="" parameters. It is possible to share ACCESS definitions, if that will meet the needs of your configuration. An alternative method would be to create a copy of the CNTL data set and retain the original member names.
- Allocate a unique audit log data set for the new instance if you are using this feature.
- Create a copy of the MFA proc in the proclib data set and update the JCL to reference the new MFAXML and ACCESS members for this instance. Also, update the audit log data set name if you are using this feature.
- Create a copy of the MFAS proc in the proclib data set and update the JCL EXEC statement PARM field to specify the new MFAS ACBNAME in the APPLID="" parameter. Also, update the VSAMCTL DD statement data set name if you want to allocate and manage a different set of mapping members for this instance.
- Update the MFAXML definition for the new instance with the name of the new proc that was created from the MFAS proc (that is, update the PROCEDURE="MFAS" value).

## Troubleshooting

This chapter contains information that will help you to diagnose software problems related to Mainframe Access.

# Abend Codes

An abend, or abnormal end, is the most obvious way for a software problem to be indicated. The z/OS processing for an abend normally creates a dump of the failing program's address space storage for use in problem determination. An abend can be initiated by Mainframe Access itself or by other software components of the z/OS system. Although a program abend is most often the result of a software error within the failing program, abend conditions can also be caused by other software and hardware components of the system.

## System Abend Codes

Many software failures are detected by z/OS and its components. These conditions are normally reported as system abends using a code consisting of the letter S identifying a system abend and three hexadecimal digits, for example, S0C4. Complete descriptions of these conditions can be found in the IBM publications for your specific version of z/OS. If a system abend is reported for Mainframe Access, it is important to review the abend description. This will help you to make an initial determination as to whether this is most likely a Mainframe Access program failure or a failure caused by other system conditions that have affected the execution of Mainframe Access.

## Mainframe Access User Abend Codes

When Mainframe Access detects a condition that prevents the program from continuing, it requests z/OS to begin abend processing for a user abend. Many of these conditions are detected by Mainframe Access initialization or by the item library format utility. z/OS reports user abends using a code consisting of the letter U identifying a user abend and four decimal digits, for example, U2111. The user abend codes that can be issued by Mainframe Access and recommended actions are listed in the following table.

User Abend Code	Description of Cause	Recommended Action
99	Issued when a Data Set Services ISPI module cannot determine the invocation reason.	Contact our Product Support.
801	Processing to establish or remove a Mainframe Access ESTAEX error recovery routine has failed.	Contact our Product Support.
996	The MFA Server DSS Services component failed to initialize properly. This is a <i>should not occur</i> condition.	Contact our Product Support.
997	An Endeavor error has occurred in the application server address space. Common causes include a general setup failure, MSGLOG allocation failure, or the Endeavor C1DEFLTS module could not be found. Endeavor requests cannot be processed.	Examine the joblog and syslog for system messages and server messages that can help identify the specific error. Contact our Product Support if you are unable to resolve the problem
998	There is a difference between the Endeavor support modules available to the MFA Server control region and the Endeavor support modules available in the MFA Server application server region(s). Different versions of Endeavor are being referenced by the regions. Endeavor requests cannot be processed.	This is most likely caused by differences in the STEPLIB or JOBLIB concatenations in the JCL used to start the regions. Contact our Product Support if you are unable to resolve the problem.
999	This abend code indicates that the Endeavor support modules are not	The Endeavor AUTHLIB and CONLIB data sets must be included in the

User Abend Code	Description of Cause	Recommended Action
	available to MFA Server. Endeavor requests cannot be processed.	MFA started task JCL (for both the control region and the application server regions) or these data sets must be available in the standard system LNKLST specifications. Contact our Product Support if you are unable to resolve the problem.
2100	Processing to establish or remove a Mainframe Access ESTAEX error recovery routine has failed.	Contact our Product Support.
3100	Processing associated with Mainframe Access' dependent addresss space services has encountered a <i>should not occur</i> condition.	Contact our Product Support.
3101	Work order allocation for a dependent address space service has failed. This is a <i>should not occur</i> condition.	Contact our Product Support.
3102	Allocation for a dependent address space service program call block has failed. This is a <i>should not occur</i> condition.	Contact our Product Support.
3103	Work order queuing for a dependent address space service has failed. This is a <i>should not occur</i> condition.	Contact our Product Support.

## LU6.2 Diagnostic Information

Mainframe Access uses IBM's VTAM APPCCMD interface for LU6.2 communication with many of the target server systems, such as CICS, IMS and DB2. When problems arise and an error is reported for LU6.2 communication with one of these systems, the exact conditions of the error are indicated to Mainframe Access as return values from the APPCCMD call. These return values are logged to Mainframe Access' XDBOUT SYSOUT data set and can help you to identify and correct the situation. The following tables summarize the return value information. If you need more information, see the z/OS Communications Server SNA Programmer's LU 6.2 Reference manual for your level of z/OS and VTAM.

### RTNCD and FDB2 Return Values for LU6.2 APPCCMD Calls

The RTNCD (return code) and FDB2 (feedback two) values are the major return values associated with an APPCCMD call. The following table summarizes these major return values.

RTNCD	FDB2	Explanation
X'00'	X'0B'	An error occurred during the execution of the APPCCMD call. The specific nature of the error is indicated by secondary return values, RCPRI and RCSEC, as documented in the next section
X'04'	X'05'	Symbolic name known by network-qualified name only
X'10'	X'13'	Attempt to start 6.2 session: request rejected
X'10'	X'14'	Attempt to start 6.2 session: pending session terminated
X'10'	X'15'	An APPCCMD must be issued
X'14'	X'7F'	Policing error: non-APPC macro

## RCPRI and RCSEC Return Values for LU6.2 APPCCMD Calls

The RPL extension contains two fields in which return code information is passed to the application program at the completion of an LU6.2 APPCCMD macroinstruction execution. The RCPRI field returns a primary return code to the application; the RCSEC field returns a secondary return code to the application.

RCPRI	RCSEC	Explanation
X'0000'	X'0000'	OK; no errors
X'0000'	X'0001'	As specified; CNOS values were accepted
X'0000'	X'0002'	As negotiated; CNOS values changed by negotiation
X'0000'	X'0003'	Receive specific rejected
X'0000'	X'0004'	Partner LU supports single session
X'0000'	X'0005'	Internal VTAM error
X'0000'	X'0006'	Restore unnecessary; no modes to restore
X'0000'	X'0007'	Restore complete; input work area too small
X'0000'	X'0008'	No immediately available information
X'0000'	X'0009'	Request terminated by end of conversation
X'0000'	X'000A'	Sessions will use appl name, generic name requested
X'0000'	X'000B'	Sessions will use generic name, appl name requested
X'0000'	X'000C'	As specified, partner LU known by different name
X'0000'	X'000D'	As negotiated, partner LU known by different name
X'0004'	ALL	Allocation error
X'0004'	X'0000'	Allocation failure no retry
X'0004'	X'0001'	Allocation failure retry
X'0004'	X'0002'	Conversation type mismatch
X'0004'	X'0003'	PIP not allowed
X'0004'	X'0004'	PIP not specified correctly
X'0004'	X'0005'	Security not valid
X'0004'	X'0006'	Sync level not supported by LU
X'0004'	X'0007'	Sync level not supported by program
X'0004'	X'0008'	Transaction program name (TPN) not recognized
X'0004'	X'0009'	Transaction program name (TPN) not available; no retry
X'0004'	X'000A'	Transaction program name (TPN) not available; retry

RCPRI	RCSEC	Explanation
X'0004'	X'000B'	Cannot reconnect transaction program; no retry
X'0004'	X'000C'	Cannot reconnect transaction program; retry
X'0004'	X'000D'	Reconnect not supported by program
X'0004'	X'000E'	Mode must be restored before using
X'0004'	X'000F'	Deallocation requested
X'0004'	X'0010'	Allocation error - sync level not valid for full duplex
X'0004'	X'0011'	Allocation error - LU pair not supporting FDX conversation
X'0008'	ALL	CNOS failure
X'0008'	X'0000'	Allocation failure; retry
X'0008'	X'0001'	Allocation failure; no retry
X'0008'	X'0002'	Transaction program not available; retry
X'0008'	X'0003'	Transaction program not available; no retry
X'0008'	X'0004'	Conversation type mismatch
X'0008'	X'0005'	Security not valid
X'0008'	X'0006'	Mode must be restored before using
X'0008'	X'0007'	Network qualified name mismatch
X'000C'	X'0000'	CNOS resource failure; no retry
X'0010'	X'0000'	Partner granted retry
X'0010'	X'0001'	Control operator for local LU retried
X'0010'	X'0002'	Partner CNOS in progress
X'0010'	X'0003'	LU in pending single state
X'0010'	X'0004'	Partner LU starting session
X'0014'	X'0000'	Deallocate abend program
X'0018'	X'0000'	Deallocate abend service
X'001C'	X'0000'	Deallocate abend timer
X'0020'	X'0000'	CNOS failure; retry
X'0024'	X'0000'	Logical record boundary error
X'0028'	X'0000'	LU mode session limit closed
X'002C'	ALL	Parameter error
X'002C'	X'0000'	Invalid LU name or network identifier
X'002C'	X'0001'	Invalid mode
X'002C'	X'0002'	Invalid conversation
X'002C'	X'0003'	Invalid LL
X'002C'	X'0004'	Invalid values for SNASVCMG mode
X'002C'	X'0005'	Invalid DRAINL change

RCPRI	RCSEC	Explanation
X'002C'	X'0006'	SNASVCMG mode cannot currently be reset
X'002C'	X'0007'	MINWINL plus MINWINR exceeds SESSLIM
X'002C'	X'0008'	Supplied length insufficient
X'002C'	X'0009'	Incomplete structure supplied
X'002C'	X'000A'	Incomplete FMH5 supplied
X'002C'	X'000B'	Incomplete GDS variable supplied
X'002C'	X'000C'	Zero EXIT field
X'002C'	X'000D'	Zero ECB field
X'002C'	X'000E'	Request invalid for address space
X'002C'	X'000F'	Control block invalid
X'002C'	X'0010'	Invalid data address or length
X'002C'	X'0011'	Previous macroinstruction outstanding
X'002C'	X'0012'	Buffer list length invalid
X'002C'	X'0013'	No corresponding mode in LM table
X'002C'	X'0014'	Invalid BIND parameters
X'002C'	X'0015'	Invalid TPN
X'002C'	X'0016'	No corresponding LU in LM table
X'002C'	X'0017'	Invalid mode specified
X'002C'	X'0018'	Invalid limit specified
X'002C'	X'0019'	SNASVCMG mode already initialized
X'002C'	X'001A'	All modes specified on single session LU
X'002C'	X'001B'	SNASVCMG or CPSVCMG mode for single session LU
X'002C'	X'001C'	Single session, mode already initialized
X'002C'	X'001E'	CID invalid
X'002C'	X'001F'	APPCCMD issued for non-APPC
X'002C'	X'0020'	Previous REJECT request outstanding
X'002C'	X'0021'	Abnormal deallocate rejected; retry
X'002C'	X'0022'	Invalid CONTROL or QUALIFY value
X'002C'	X'0023'	Invalid session instance identifier
X'002C'	X'0024'	PS header not supplied
X'002C'	X'0025'	PS header length is insufficient
X'002C'	X'0026'	Session instance identifier and conversation identifier mismatch
X'002C'	X'0027'	Invalid deactivation type code
X'002C'	X'0028'	Cryptography not allowed on mode

RCPRI	RCSEC	Explanation
X'002C'	X'0029'	Invalid LIST value specified on APPCCMD for restore
X'002C'	X'002A'	Invalid CGID value specified
X'002C'	X'002B'	Network-qualified name required
X'002C'	X'002C'	Parameter error; invalid expedited data length
X'002C'	X'002D'	Parameter error; invalid sense code value specified
X'002C'	X'002E'	Vector area not valid
X'002C'	X'002F'	Vector area length insufficient
X'002C'	X'0030'	Parameter error; storage type not valid
X'002C'	X'0031'	Parameter error; SENDRCV specified with OPTCD=BUFFLST/XBUFLST
X'002C'	X'0032'	Parameter error; unexpected vector provided on APPCCMD
X'002C'	X'0033'	Parameter error; required vector not provided or incorrect
X'002C'	X'0034'	Password substitution value set in error
X'0030'	X'0000'	Program error; no truncation
X'0034'	X'0000'	Program error purging
X'0038'	X'0000'	Program error truncating
X'003C'	X'0000'	Service error; no truncation
X'0040'	X'0000'	Service error purging
X'0044'	X'0000'	Service error truncating
X'0048'	X'0000'	Resource failure; no retry
X'004C'	X'0000'	Resource failure; retry
X'0050'	X'0000'	State error
X'0054'	X'0000'	Unrecognized mode name
X'0058'	X'0000'	Unsuccessful; session not available
X'005C'	ALL	User error code received
X'005C'	X'0000'	Following negative response
X'005C'	X'0001'	Without negative response
X'0060'	X'0000'	No FMH5 available
X'0064'	X'0000'	Activation failure
X'0068'	X'0000'	LU mode session limit exceeded
X'006C'	X'0000'	Session not pending
X'0070'	X'0000'	Temporary storage shortage or resource shortage
X'0074'	X'0000'	Halt issued
X'0078'	X'0000'	VTAM inactive for your ACB

RCPRI	RCSEC	Explanation
X'007C'	X'0000'	Request aborted
X'0080'	X'0000'	Deallocate normal
X'0084'	X'0000'	Storage shortage
X'0088'	X'0000'	Canceled by reject or abnormal deallocate
X'008C'	X'0000'	Partner committed protocol violation
X'0090'	X'0000'	Application not APPC capable
X'0094'	X'0000'	Invalid condition for sending data
X'0098'	X'0000'	Temporary storage shortage while sending data
X'009C'	X'0000'	Restore rejected - restore issued before SETLOGON start
X'00A0'	ALL	Request not allowed
X'00A0'	X'0001'	LU pair does not support sending expedited data
X'00A0'	X'0002'	Request blocked
X'00A0'	X'0003'	Execution of request terminated
X'00A0'	X'0004'	CONTROL/QUALIFY value invalid for full-duplex conversation
X'00A0'	X'0005'	Response has not been received for a previous SENDEXPD request
X'00A0'	X'0006'	Program not authorized for requested function
X'00A4'	X'0000'	Mode must be restored before using
X'00A8'	ALL	Environment error
X'00A8'	X'0000'	OS level does not support request function
X'00A8'	X'0001'	Suspend failure
X'00A8'	X'0002'	Resume failure
X'00AC'	ALL	Error indication received
X'00AC'	X'0001'	Deallocate abend program
X'00AC'	X'0002'	Deallocate abend service
X'00AC'	X'0003'	Deallocate abend time
X'00AC'	X'0004'	Allocation error
X'00AC'	X'0005'	Unknown error code
X'00AC'	X'0006'	Resource failure; retry
X'00AC'	X'0007'	Resource failure; no retry
X'00B0'	ALL	Name resolution error
X'00B0'	X'0001'	LU name found in a variant name entry
X'00B0'	X'0002'	Name returned differs from associated name

RCPRI	RCSEC	Explanation
X'00B0'	X'0003'	Name returned found in variant name entry
X'00B0'	X'0004'	Name returned found in supplied name entry
X'00B0'	X'0005'	Partner network name mismatch
X'00B0'	X'0006'	LU name found in an unusable name entry
X'00B0'	X'0007'	Name returned found in an unusable name entry
X'00B0'	X'0008'	LU name found in a disassociated name entry
X'00B4'	ALL	CSM detected error
X'00B4'	X'0001'	CSM detected error - not specified
X'00B4'	X'0002'	CSM detected error - invalid buffer token specified
X'00B4'	X'0003'	CSM detected error - invalid instance id specified

## Mainframe Access Host Error Codes

The return code and reason code values documented in the following table may appear in error responses sent from Mainframe Access to client products.

Return Code	Reason Code	Explanation	Action
X'00000008'	X'00000001'	XERROR_ALLOC The LU6.2 session allocation failed.	Check the target DB2 APPLID or MODNAME.
X'00000008	X'00000002'	XERROR_ALLOC The LU6.2 session allocation failed without a conversation block.	Check the APPLID and MODNAME for the target DB2.
X'00000009'	X'00000001'	XERROR_INVALIDPACKET An invalid packet type; the correct packet is an allocation packet.	Check the client program.
X'00000009'	X'00000002'	XERROR_INVALIDPACKET An invalid packet type; the correct packet is a dellocation data packet.	Contact our Product Support.
X'00000010'	X'FFFFFFFF'	XERROR_SEND The maximum number of concurrent users was reached.	Contact a Micro Focus sales representative to purchase more seats for your license.
X'00000011'	X'00000001'	XERROR_RECEIVE	Contact our Product Support.

Return Code	Reason Code	Explanation	Action
X'00000013'	X'00000001'	The LU6.2 session failed in the receive mode. XERROR_FUNCTIONNOT ALLOWED The IMS/VSAM access feature is not available at your site.	Contact a Micro Focus sales representative to purchase a license for this feature.
X'00000013'	X'00000002'	XERROR_FUNCTIONNOT ALLOWED The PEM feature is not available at your site.	Contact a Micro Focus sales representative to purchase a license for this feature.
X'00000014'	X'00000001'	XERROR_INVALIDTRAN The transaction type in the first packet is invalid.	Contact our Product Support.
X'00000015'	X'00000001'	XERROR_CONV The LU6.2 session lost the conversation control block.	Contact our Product Support.
X'00000017'	X'00000rpl'	XERROR_SENDRPL The LU6.2 session failed with the RPL code in the reason code block.	Contact our Product Support.
X'00000018'	X'00000rpl'	XERROR_RECEIVERPL The LU6.2 session failed in receive mode with the RPL code in the reason code block.	Contact our Product Support.
X'00000100'	X'00000100'	XERROR_INTERNAL Unknown request type.	Contact our Product Support.

## Mainframe Access Remote IMS Error Codes

Return Code	Reason Code	Description of Cause	Action
400	Bad request type	TYPE=ALLOCERR: Request type is invalid	The first packet's request type must be ALLOC. Resubmit an ALLOC packet.
400	Bad request, ID block is missing	TYPE=ALLOCERR: Mainframe Access does not have the configuration for the IMSID	Check the IMSID and resubmit.
505	Version not supported	TYPE=ALLOCERR: The client is not supported by Mainframe Access	Contact our Product Support.
602	IMS Applid is not valid	TYPE=ALLOCERR: Either IMS is not available or IMS/APPC is not enabled.	Contact our Product Support.

Return Code	Reason Code	Description of Cause	Action
604	IMS Alloc Failure, RC = <i>rc</i>	TYPE=ALLOCERR: Routine failed to initiate a conversation with the target IMS system. <i>rc</i> is the decimal number of the return code from VTAM.	Contact our Product Support.
606	Receive Error	TYPE=RPL, CODE= <i>rc</i> : Conversation to IMS has failed during a receive operation with RPL code. <i>rc</i> is the return code. The first two bytes are the RPL primary code; the next two bytes are the RPL secondary code.	Check the entries, correct any errors, and resubmit request.
606	Send Error	TYPE=RPL, CODE= <i>rc</i> : Conversation to IMS has failed during a send operation with RPL code. The first two bytes are the RPL primary code; the next two bytes are the RPL secondary code.	Check the entries, correct any errors, and resubmit request.
606	LU6.2 Error	TYPE=RPL, CODE= <i>rc</i> : Conversation to IMS has failed with RPL code. The first two bytes are the RPL primary code; the next two bytes are the RPL secondary code.	Check the entries, correct any errors, and resubmit request.
613	Userid/Password Required	TYPE=ALLOCERR: Security is enforced in the configuration and user ID or password in the request packet is missing.	Check and correct user ID and password and resubmit request packet.
699	Mainframe Access HTTP Parsing Error	TYPE=ALLOCERR: The input HTTP packet has invalid record or format.	Check the record or format of the HTTP packet and resubmit.

## IBM SAF and RACF Error Codes

The return code and reason code values documented in the following table may appear in error messages associated with z/OS security subsystem request failures.

### Error Codes for VERIFY Requests

The return code and reason code values documented in the following table are associated with RACROUTE REQUEST=VERIFY requests that are issued to authenticate a user based on the userid and password that were submitted.

SAF Return Code	RACF Return Code	RACF Reason Code	Description
X'00'	X'00'	X'0000'	Request completed successfully.
X'00'	X'04'	X'000C'	Request completed successfully. TOKENIN was specified but the length was too large.
X'00'	X'04'	X'0010'	Request completed successfully. STOKEN was specified but the length was too large.
X'04'	X'00'	X'0000'	Request could not be completed. No RACF decision was possible. ENVIR=VERIFY was specified without SAF installation exit processing.
X'04'	X'04'	X'0000'	Request could not be completed. No RACF decision was possible. The user profile is not defined to RACF.
X'04'	X'20'	X'0000'	Request could not be completed. No RACF decision was possible. RACF is not active.
X'04'	X'58'	X'0000'	Request could not be completed. No RACF decision was possible. RJE or NJE operator FACILITY class profile not found.
X'08'	X'04'	X'0000'	Request failed. The user profile is not defined to RACF.
X'08'	X'08'	X'0000'	Request failed. The password is not authorized.
X'08'	X'0C'	X'0000'	Request failed. The password has expired.
X'08'	X'10'	X'0000'	Request failed. The new password is not valid.
X'08'	X'14'	X'0000'	Request failed. The user is not defined to the group.
X'08'	X'18'	X'0000'	Request failed.

SAF Return Code	RACF Return Code	RACF Reason Code	Description
			RACROUTE REQUEST=VERIFY was failed by the installation exit routine.
X'08'	X'1C'	X'0000'	Request failed. The user's access has been revoked.
X'08'	X'24'	X'0000'	Request failed. The user's access to the specified group has been revoked.
X'08'	X'28'	X'0000'	Request failed. OIDCARD parameter is required but not supplied.
X'08'	X'2C'	X'0000'	Request failed. OIDCARD parameter is not valid for specified user.
X'08'	X'30'	X'0000'	Request failed. The user is not authorized to the port of entry in the TERMINAL, JESINPUT, or CONSOLE class. Indicates the user is not authorized to the port of entry.
X'08'	X'30'	X'0004'	Request failed. The user is not authorized to the port of entry in the TERMINAL, JESINPUT, or CONSOLE class. Indicates the user is not authorized to access the system on this day, or at this time of day.
X'08'	X'30'	X'0008'	Request failed. The user is not authorized to the port of entry in the TERMINAL, JESINPUT, or CONSOLE class. Indicates the port of entry may not be used on this day, or at this time of day.
X'08'	X'34'	X'0000'	Request failed. The user is not authorized to use the application.
X'08'	X'38'	X'0004'	Request failed. SECLABEL checking failed. MLACTIVE requires a SECLABEL; none was specified.
X'08'	X'38'	X'0008'	Request failed.

SAF Return Code	RACF Return Code	RACF Reason Code	Description
			SECLABEL checking failed. Indicates the user is not authorized to the SECLABEL.
			Request failed.
X'08'	X'38'	X'000C'	SECLABEL checking failed. The system was in a multilevel secure status, and the dominance check failed.
			Request failed.
X'08'	X'38'	X'0010'	SECLABEL checking failed. Neither the user's nor the submitter's SECLABELs dominate. They are disjoint.
			Request failed.
X'08'	X'44'	X'0000'	A default token is used as input token.
			Request failed.
X'08'	X'48'	X'0000'	Indicates that an unprivileged user issued a RACROUTE REQUEST=VERIFY in a tranquil state (MLQUIET).
			Request failed.
X'08'	X'4C'	X'0000'	NODES checking failed. Submitter's node is not allowed access to execution node.
			Request failed.
X'08'	X'4C'	X'0004'	NODES checking failed. NJE failure: UACC of NONE for USERID type of NODES profile.
			Request failed.
X'08'	X'4C'	X'0008'	NODES checking failed. NJE failure: UACC of NONE for GROUP type of NODES profile.
			Request failed.
X'08'	X'4C'	X'000C'	NODES checking failed. NJE failure: UACC of NONE for SECLABEL type of NODES profile.
			Request failed.
X'08'	X'4C'	X'0010'	NODES checking failed. NJE failure: No local submit node specified.
X'08'	X'4C'	X'0014'	Request failed.

SAF Return Code	RACF Return Code	RACF Reason Code	Description
			NODES checking failed. NJE failure: Reverification of translated values failed.  Request failed.
X'08'	X'50'	X'0004'	Indicates that a surrogate submit attempt failed. Indicates the SURROGAT class was inactive.  Request failed.
X'08'	X'50'	X'0008'	Indicates that a surrogate submit attempt failed. Indicates the submitter is not permitted by the user's SURROGAT class profile.  Request failed.
X'08'	X'50'	X'000C'	Indicates that a surrogate submit attempt failed. Indicates that the submitter is not authorized to the SECLABEL under which the job is to run.  Request failed.
X'08'	X'54'	X'0000'	Indicates that a JESJOBS check failed.  Request failed.
X'08'	X'64'	X'0000'	Indicates that the CHECK subparameter of the RELEASE keyword was specified on the execute form of the RACROUTE REQUEST=VERIFY macro; however, the list form of the macro does not have the same release parameter. Macro processing terminates.

## Error Codes for AUTH Requests

The return code and reason code values documented in the following table are associated with RACROUTE REQUEST=AUTH requests. AUTH requests are issued to check the authorization of an already verified user to access a protected resource. The most common use of AUTH is to check if a user is authorized to access a specific data set.

SAF Return Code	RACF Return Code	RACF Reason Code	Description
X'00'	X'00'	X'0000'	Request completed successfully.
X'00'	X'00'	X'0004'	The user is authorized by RACF to obtain use of a RACF-protected resource.
X'00'	X'00'	X'0004'	Request completed successfully.

SAF Return Code	RACF Return Code	RACF Reason Code	Description
			<p>The user is authorized by RACF to obtain use of a RACF-protected resource. Indicates one of the following:</p> <ul style="list-style-type: none"> <li>• STATUS=ERASE was specified and the data set is to be erased when scratched</li> <li>• the warning status of the resource was requested by the RACROUTE REQUEST=AUTH issuer's setting bit X'10' at offset 12 decimal in the request-specific portion of the RACROUTE REQUEST=AUTH parameter list with the resource in warning mode.</li> </ul>
X'00'	X'00'	X'0010'	<p>Request completed successfully.</p> <p>The user is authorized by RACF to obtain use of a RACF-protected resource. When CLASS=TAPEVOL, indicates the TAPEVOL profile contains a TVTOC.</p>
X'00'	X'00'	X'0020'	<p>Request completed successfully.</p> <p>The user is authorized by RACF to obtain use of a RACF-protected resource. When CLASS=TAPEVOL, indicates that the TAPEVOL profile can contain a TVTOC, but currently does not (for a scratch pool volume).</p>
X'00'	X'00'	X'0024'	<p>Request completed successfully.</p> <p>The user is authorized by RACF to obtain use of a RACF-protected resource. When CLASS=TAPEVOL, indicates that the TAPEVOL profile does not contain a TVTOC.</p>
X'00'	X'14'	X'00XX'	<p>Request completed successfully.</p> <p>Requested function with STATUS=ACCESS</p>

SAF Return Code	RACF Return Code	RACF Reason Code	Description
			<p>specified has completed successfully. The user's highest access to the specified resource is indicated by one of the following reason codes:</p> <ul style="list-style-type: none"> <li>• 00 The user has no access.</li> <li>• 04 The user has READ authority.</li> <li>• 08 The user has UPDATE authority.</li> <li>• 0C The user has CONTROL authority.</li> <li>• 10 The user has ALTER authority.</li> </ul>

X'04'	X'00'	X'0000'	<p>Request could not be completed.</p> <p>No RACF decision was possible. No security decision could be made. RACF is not installed -or- the specified requester, subsystem, or class is not in the RACF router table - or- the specified class is not in the RACF class descriptor table.</p> <p>Request could not be completed. No RACF decision was possible.</p> <p>The specified resource is not protected by RACF.</p>
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X'04'	X'04'	X'0000'	<p><b>Note:</b> Note:</p> <p>If PROTECTALL is active, no profile is found, and the user ID whose authority was checked does not have the SPECIAL attribute, RACF returns a return code X'08' instead of a return code X'04' and denies access.</p> 
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X'04'	X'04'	X'0004'	<p>One of the following has occurred:</p> <ul style="list-style-type: none"> <li>• There is no RACF profile protecting the resource</li> <li>• RACF is not active</li> <li>• Specified class is not active</li> <li>• Specified class requires SETROPTS RACLIST option to be active and it is not.</li> <li>• CLASS TEMPDSN was active and the dataset is a temporary dataset.</li> </ul> <p>Request could not be completed.</p> <p>No RACF decision was possible. The specified resource is not protected by RACF.</p> <p>Indicates STATUS=ERASE was specified and the data set is to be erased when scratched.</p> <p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p>
X'08'	X'08'	X'0000'	<p>Indicates a normal completion. A possible cause would be PROTECTALL is active, no profile is found, and the user ID whose authority was checked does not have the SPECIAL attribute.</p> <p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p>
X'08'	X'08'	X'0004'	<p>Indicates STATUS=ERASE was specified and the data set is to be erased when scratched.</p> <p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p>
X'08'	X'08'	X'0008'	<p>Indicates DSTYPE=T or CLASS=TAPEVOL was specified and the user is not authorized to use the specified volume.</p>

X'08'	X'08'	X'000C'	<p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p> <p>Indicates the user is not authorized to use the data set.</p>
X'08'	X'08'	X'0010'	<p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p> <p>Indicates DSTYPE=T or CLASS=TAPEVOL was specified and the user is not authorized to specify TAPELBL=(,BLP).</p>
X'08'	X'08'	X'0014'	<p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p> <p>Indicates the user is not authorized to open a non-cataloged data set.</p>
X'08'	X'08'	X'0018'	<p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p> <p>Indicates the user is not authorized to issue RACROUTE REQUEST=AUTH when system is in tranquil state (MLQUIET).</p>
X'08'	X'08'	X'001C'	<p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p> <p>A user with EXECUTE authority to the data set profile specified ATTR=READ, and RACF failed the access attempt.</p>
X'08'	X'08'	X'0020'	<p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p> <p>The user's security label does not dominate that of the resource; it fails SECLABEL authorization checking.</p>
X'08'	X'08'	X'0024'	<p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p>

X'08'	X'08'	X'0028'	<p>The user's security label can never dominate that of the resource.</p> <p>Request failed. The user is not authorized by RACF to obtain use of the specified RACF-protected resource.</p> <p>The resource must have a security label, but does not have one.</p> <p>Request failed.</p>
X'08'	X'0C'	X'0000'	<p>The OLDVOL specified was not part of the multivolume data set defined by VOLSER, or it was not part of the same tape volume defined by ENTITY.</p> <p>Request failed.</p>
X'08'	X'10'	X'00XX'	<p>RACROUTE REQUEST=VERIFY was issued by a third party, and RACROUTE REQUEST=AUTH failed. The reason code 00XX value is the RACF return code from the RACROUTE REQUEST=VERIFY.</p> <p>Request failed.</p>
X'08'	X'64'	X'0000'	<p>Indicates that the CHECK subparameter of the RELEASE keyword was specified on the execute form of the RACROUTE REQUEST=AUTH macro; however, the list form of the macro does not have the same RELEASE parameter. Macro processing terminates.</p>

## Mainframe Access Audit Report Program

Mainframe Access' optional audit log feature records client logon and logoff information to a VSAM data set. For a description of how to allocate the audit log data set and enable the recording see the section *Allocating and Initializing an Audit Log Data Set* in the chapter *Configuration*. Mainframe Access also provides a batch reporting program to list the audit log records. This section describes the use of the audit log report program.

### Running the Audit Report Program

Member AUDRPT in the Mainframe Access <hlq>.CNTL data set is a sample job for running the audit report program. Customize this job with a valid JOB card and the correct data set qualifier for your installation. The sample member is shown below.

```
//MFASETUP JOB (MFA),'RUN AUDIT REPORT',CLASS=A,MSGCLASS=A
```

```

/*
//AUDITRPT PROC DSNQUAL='HLQ'
/*
/*-----*
/*
/* Micro Focus Mainframe Access - Run the Audit Log Report      *
/*
/* Change the DSNQUAL value on the PROC statement to the correct *
/* value for your installation.
/*-----*
/*
/*-----*
/* Step 1: Run the audit report utility to list the records in the *
/* audit log dataset.
/*-----*
/*
//AUDITRPT EXEC PGM=AUDITRPT,REGION=0M
//STEPLIB DD DSN=&.DSNQUAL..LOADLIB,DISP=SHR
//AUDITIN DD DSN=&.DSNQUAL..AUDIT,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSTEM DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
// PEND
//AUDITRPT EXEC AUDITRPT

```

When you have customized the job, submit it for execution. A report similar to the following is written to a SYSOUT data set.

Audit Log Report							
Report date and time: FRI JUL 25 16:37:57 2003							
Audit data set: <hlq>.AUDIT							
Type of Record	Record Sequence	Sess ID	User ID	IP Address LU	Partner	Date+Time	Type of Encryption used (see note)
Logoff	1	00000	CSIRLW2	10.24.11.15	MFADIR	FRI JUL 25 16:02:51 2003	
Logoff	3	00000	CSIRLW1	10.24.11.15	MFADIR	FRI JUL 25 16:03:33 2003	
Logoff	5	00000				FRI JUL 25 16:04:22 2003 N	
Logoff	10	00000				FRI JUL 25 16:35:48 2003 N	
Logon	0	00001	CSIRLW2	10.24.11.15	MFADIR	FRI JUL 25 16:02:27 2003	
Logon	2	00002	CSIRLW1	10.24.11.15	MFADIR	FRI JUL 25 16:03:20 2003	
Logon	4	00003	CSIRLW1	10.24.11.15	LUDB27R	FRI JUL 25 16:03:59 2003 P	
Logon	6	00004		10.24.11.15	CICSTSR7	FRI JUL 25 16:34:32 2003 N	
Logon	7	00005		10.24.11.15	CICSTSR6	FRI JUL 25 16:34:33 2003 N	
Logon	8	00006		10.24.11.15	CICSTSR3	FRI JUL 25 16:34:34 2003 N	
Logon	9	00007	CSIRLW1	10.24.11.15	IMS6PPC	FRI JUL 25 16:35:42 2003 N	

Note: Encryption values N = None, P = Password, X = Packet encryption, C = Compression is in use

Total type 0 records = 11  
Total logon records = 7  
Total logoff records = 4

## Audit Report Abend Codes

The following table lists the user abends that may be issued by the audit report program.

User Abend Code	Description of Cause	Recommended Action
1211	This abend is issued when a GETMAIN request fails. A console message is also issued to indicate the failure condition. A program dump is not requested.	Increase the region size for the audit report program. If the problem persists contact our Product Support.

## Audit Report Diagnostic Messages

The following messages may be issued by the audit report program when error conditions occur.

### AUD0001E: DDNAME xxxxxxxx WAS NOT FOUND

This message appears when either the SYSPRINT or AUDITIN DD statements are missing. Add the missing DD statements to the JCL for the job.

### AUD0002E: OPEN FAILED FOR xxxxxxxx FILE

This message appears when either SYSPRINT or AUDITIN fails to open. Examine associated system error messages to determine the reason for the failure.

### AUD0003E: VSAM ACB FAILED FOR xxxxxxxx

### AUD0003E: RETURN CODE IS xxxxxxxx

### AUD0003E: REASON CODE IS xxxxxxxx

These messages appear when a critical error occurs while accessing the AUDITIN VSAM data set. The program terminates with the return code 16. Examine any associated system error messages and the VSAM return code and reason code values to determine the reason for the failure.

## Obtaining a VTAM Buffer Trace

During the process of resolving a problem, our Product Support may require you to obtain and submit a VTAM buffer trace (and possibly other VTAM trace data). This section describes how to use IBM's Generalized Trace Facility (GTF) to capture the relevant data.

The procedure for gathering the trace is as follows:

1. Make sure that Mainframe Access, the clients and the target servers are all ready and at a point where you want to start tracing. For example, if the problem is associated with a specific CICS distributed transaction, bring the client up to the point where the transaction will be issued.
2. Start GTF (see the section *Starting GTF*)
3. Activate the VTAM trace (see the section *Activating the VTAM Trace*)
4. Perform the activity that you want to trace (for example, run the transaction that fails)
5. Deactivate the VTAM trace (see the section *Deactivating the VTAM Trace*)
6. Stop GTF (see the section *Stopping GTF*)
7. Package the raw GTF trace data set for transmission to our Product Support.
8. Use the File Transfer Protocol (FTP) utility to send the packaged trace to Micro Focus. Use binary mode for the transfer.

## Starting GTF

Mainframe Access provides a sample procedure, MFAGTF, for running GTF; its use is described in the section *Adding the GTF Procedure to a System Procedure Library* in the chapter *Configuration*. You may want to pre-allocate a permanent GTF trace data set on DASD that can be reused each time you start MFAGTF. If you do so, update the MFAGTF procedure to use this data set.

A PDS member is normally used to automate the specification of GTF options when GTF is started and the sample procedure uses parameters from another sample member, GTFCNTL. This sample is set up to start GTF for recording Mainframe Access' activity trace (USR '0E9' records) and VTAM's buffer trace (USR 'FEF' and 'FF1' records).

A sample system log for the startup of GTF is shown below. Remember to have Mainframe Access and other software components that are part of the tracing activity already running, connected and ready to go, if possible.

```
S MFAGTF.MYGTF
$HASP100 MFAGTF  ON STCINRDR
IEF695I START MFAGTF WITH JOBNAME MFAGTF IS ASSIGNED TO USER RWITEK, GROUP
CSIDVLP
$HASP373 MFAGTF  STARTED
IEF403I MFAGTF - STARTED - TIME=16.34.12
AHL121I TRACE OPTION INPUT INDICATED FROM MEMBER GTFCNTL  OF PDS
<hlq>.CNTL
TRACE=USRP
USR=(FF1,FEF,0E9)
END
AHL103I TRACE OPTIONS SELECTED --USR=(FEF,FF1,0E9)
AHL906I THE OUTPUT BLOCK SIZE OF  27998 WILL BE USED FOR OUTPUT 997
  DATA SETS:
    <hlq>.TRACE
AHL080I GTF STORAGE USED FOR GTF DATA: 998
  GTFBLOCK STORAGE    82K BYTES (BLOK=    40K)
  PRIVATE STORAGE    1038K BYTES
  SADMP HISTORY      54K BYTES (SADMP=   40K)
  SDUMP HISTORY      54K BYTES (SDUMP=   40K)
  ABEND DUMP DATA   0K BYTES (ABDUMP=   0K)
AHL031I GTF INITIALIZATION COMPLETE
```

GTF is now up and running and ready to record type 'FEF' and 'FF1' records from VTAM. z/OS may also force some USR records into the trace data set for system components. GTF wraps trace data when writing trace records to a DASD data set. This means that you can leave GTF tracing on for a long time to catch an intermittent problem, then stop the trace soon after the problem occurs. However, if you do not stop the trace soon after the problem occurs, the trace data that you collected may be overwritten by trace data from other system components.

## Activating the VTAM Trace

When you are ready to perform an action that you want to trace, activate the VTAM buffer trace for the Mainframe Access ACB. You do this using a z/OS Modify command to VTAM. In this example the VTAM JCL procedure name is VTAM. The name may be different on your z/OS system. The only other thing you may want to change is the ID= parameter so that it specifies the name of your Mainframe Access VTAM ACB.

```
F VTAM,TRACE,TYPE=BUF,ID=MFM62ACB,AMOUNT=FULL
IST097I MODIFY ACCEPTED
IST1515I BUFFER TRACE ACTIVE
IST1144I TRACE INITIATED FOR DDINET1.MFM62ACB 316
IST1045I NODE TYPE = APPL
IST314I END
```

GTF should now be up and running and VTAM should be creating TYPE=BUF trace records for any activity associated with MFM62ACB. If someone has previously started a TYPE=BUF trace for another VTAM resource and did not bother to stop the trace, these records may also appear in the trace data set and complicate the analysis of what you are tracing.

## Deactivating the VTAM Trace

When you have finished performing the activity to be traced, turn off the VTAM TYPE=BUF trace for the Mainframe Access ACB. Use the z/OS Modify command as follows:

```
F VTAM,NOTRACE,TYPE=BUF,ID=MFM62ACB
IST097I MODIFY ACCEPTED
IST1143I TRACE TERMINATED FOR DDINET1.MFM62ACB 349
IST1045I NODE TYPE = APPL
IST314I END
```

## Stopping GTF

Stop the GTF process using the z/OS Stop (P) command. In this example GTF was started using "S MFAGTF.MYGTF" where the .MYGTF is assigned as an identifier for the GTF process that is then specified in the Stop command.

```
P MYGTF
AHL006I GTF ACKNOWLEDGES STOP COMMAND
AHL904I THE FOLLOWING TRACE DATASETS CONTAIN TRACE DATA : 353
      <hlq>.TRACE
IEF404I MFAGTF - ENDED - TIME=11.48.15
$HASP395 MFAGTF  ENDED
$HASP250 MFAGTF PURGED -- (JOB KEY WAS B5A444E4)
```

The trace data set, <hlq>.TRACE in this example, now has the raw GTF data.

## Formatting VTAM GTF Trace Records

There may be times when you need, or want, to examine the GTF trace data. In this case, the raw data collected by GTF needs to be processed by a formatting program such as IBM's Interactive Problem Control System (IPCS). You can run IPCS either using a TSO command under ISPF or as a batch job. To run IPCS you need an IPCS dump directory VSAM data set. If you do not already have a dump directory, you can allocate one using a job similar to the following.

```
//jobname JOB (accounting),'name',CLASS=?,MSGCLASS=?,NOTIFY=userid
//-----
//* Allocate an IPCS dump directory VSAM data set
//-----
//IDCAMS EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
DELETE <hlq>.DIR
DEFINE CLUSTER (NAME(<hlq>.DIR)          -
              SHAREOPTIONS(1)          -
              RECSZ(256 3072)          -
              KEYS(128 0)              -
              VOLUMES(volser)
              INDEX (NAME(<hlq>.DIRINDEX) -
              TRK(15 5))              -
              DATA (NAME(<hlq>.DIRDATA)  -
              CYLINDERS(5 1)          -
              CISZ(X'1000'))
```

This example JCL runs IPCS to print all 'FEF' and 'FF1' records from the GTF trace data set.

```
//jobname JOB (accounting),'name',CLASS=?,MSGCLASS=?,NOTIFY=userid
//-----
//* Run IPCS batch to print GTF trace records
//-----
//IPCSBAT EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=0M
```

```

//IPCSDDIR DD DSN=<hlq>.DIR,DISP=SHR
//IPCSPRNT DD SYSOUT=*
//TRACE DD DSN=<hlq>.TRACE,DISP=SHR
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
IPCS NOPARM
DROPDUMP DDNAME(TRACE)
SETDEF DDNAME(TRACE) NOCONFIRM
GTFTRACE DDNAME(TRACE),USR(FEF,FF1),TERMINAL,NOPRINT
END

```

## Obtaining an SVC Dump of Mainframe Access

During the process of resolving a problem, our Product Support may require you to obtain and submit a dump of the Mainframe Access address space. This section describes how to use IBM's DUMP command to create the dump data set. Using the following procedure, you can obtain a dump without stopping or canceling the Mainframe Access address space.

The procedure for creating the dump is as follows:

1. Issue the DUMP command
2. Respond to the DUMP command options request
3. Package the dump data set for transmission to our Product Support
4. Use the File Transfer Protocol (FTP) utility to send the packaged dump to Micro Focus. Use binary mode for the transfer.

The following example shows a DUMP command and the response to the request for operands in bold face. You use the COMM parameter of the DUMP command to specify a meaningful title for the dump. The operands specified in the sample reply, **SDATA=(RGN,LSQA,PSA,SUM,SWA,TRT,CSA,LPA)**, are normally needed for any Mainframe Access dump; you should specify them as shown. Technical support may request additional, or different, options for a specific problem. After the options have been entered it will take the system anywhere from a few seconds to a few minutes to complete the dump. The IEA6111 COMPLETE DUMP message indicates successful completion of the command and it identifies the dump data set that needs to be saved and packaged up for transmission. In this example, the system has created data set SYS1.CSIA.DMP00032 to contain the dump data.

```

DUMP COMM=(MFA DUMP JULY 28 2003)
*63 IEE094D SPECIFY OPERAND(S) FOR DUMP COMMAND
R 63,JOBNAME=MFA,SDATA=(RGN,LSQA,PSA,SUM,SWA,TRT,CSA,LPA)
IEE600I REPLY TO 63 IS:JOBNAME=MFA,SDATA=(RGN,LSQA,PSA,SUM,SWA,TRT
IEA794I SVC DUMP HAS CAPTURED: 138
DUMPID=032 REQUESTED BY JOB (*MASTER*)
DUMP TITLE=MFA DUMP JULY 28 2003
IEF196I IGD100I 0309 ALLOCATED TO DDNAME SYS00036 DATACLAS (    )
IEF196I IEF285I  SYS1.CSIA.DMP00032          CATALOGED
IEF196I IEF285I  VOL SER NOS= DUMP01.
IEA611I COMPLETE DUMP ON SYS1.CSIA.DMP00032 142
DUMPID=032 REQUESTED BY JOB (*MASTER*)
FOR ASID (00A5)
INCIDENT TOKEN: ROCKPLEX CSIA  07/28/2003 21:56:11

```

## Packaging and Transmitting Diagnostic Data

This section provides suggestions and guidelines that will help if you need to send diagnostic data to our Product Support. When you need to send relatively small amounts of text data (for example, short Mainframe Access activity traces, parameter settings, excerpts from the system log, excerpts from a dump listing, etc.), it is often convenient to simply include the text in an email or as a text file attachment to an email. Large amounts of data and non-textual information should be packaged and transmitted as described in the following paragraphs.

After gathering large amounts of diagnostic data (for example, SVC dumps, GTF traces, Mainframe Access activity traces, system log contents, etc.), the most expedient way to send the information is using the TCP/IP File Transfer Protocol (FTP) utility. Before you send the data, it is good practice to package the data for transmission. This will reduce transmission time by compressing the data and it will facilitate the handling of data when it is received.

Our Product Support can accommodate data that is packaged using the TSO Interactive Data Transmission Facility (the TSO XMIT and RECEIVE commands) or data that is packaged using IBM's TRSMMAIN program (the terse utility). Mainframe Access sample TSOXMIT provides a job that demonstrates the use of TSO XMIT to package a data set for transmission. If you want to use TRSMMAIN, we recommend that you start by asking the z/OS systems programming staff at your company if TRSMMAIN is already installed and available for use. If it is not, you can download the IBM TRSMMAIN program from the ftp.software.ibm.com Web site using FTP. You can access the download using the anonymous user ID with your email address provided as the password. Use change directory commands to locate the TRSMMAIN downloads in /s390/mvs/tools/packlib at this IBM ftp site. You should find a single binary file and both plain text and HTML explanations of the procedure for installing the utility.

When your data is ready for transmission, our Product Support can provide additional instructions for sending your data to the ftp.microfocus.com site. This may include specific directory locations, filenames, etc. that should be used. After you have transferred the data, please send a follow-up email to your support representative. This note should list the files that you have sent, the packaging tool(s) that you have used, and the z/OS data set characteristics of both the packaged files and the data sets that will be created when the packages are opened. The z/OS data set characteristics should include the RECFM, LRECL, BLKSIZE, primary space allocation and secondary space allocation.

## Obtaining an MFA Server Trace

MFA server tracing can be enabled in one of two ways, either dynamically against a running server using an operator command, or alternatively, by editing the MFAXML configuration file before starting the MFA Server instance.

Tracing can degrade performance so you should only enable it when directed to do so by Micro Focus support.

### Dynamic Tracing

To enable MFA server tracing dynamically to a running instance, you can use the TRACE ON and TRACE SHORT console commands. See *TRACE ON and TRACE SHORT* for more information.

Once the console command has been issued, tracing is enabled and any further MFA Server activity will be traced to the XDBOUT sysout data set by default.

You can turn tracing off by using the TRACE OFF console command. See *TRACE OFF* for more information.

These console commands can be used for the main MFA Started Task, and also for any other MFAS, MFAAS, MFAAMS, or MFATSO Started Task.

### Configuration File

The MFAXML configuration file can be edited to enable tracing on the main MFA Server Started Task or any of the other Application Servers that may be configured.

See *Configuration parameters - quick reference* for more information on where the TRACING parameter can be used.

For example, to enable tracing for the main MFA Started Task :

```
<Configuration
  TCP_PORT="2020"
  LU62_APPLID="MFM62ACB"
```

```

        APPLID_PASSWORD="MFM62PSW"
        TRACING="1"
>
.....
</Configuration>

```

 **Note:** XML has been truncated for illustrative purposes.

For example, to enable tracing for the main MFA TSO Application Server:

```

<Configuration
    TCP_PORT="2020"
    LU62_APPLID="MFM62ACB"
    APPLID_PASSWORD="MFM62PSW"
    TRACING="0"
>
.....
<!-- Application Server address space definitions -->
<ApplicationServers>
  <!-- Mainframe Access Application Server(s) for TSO Command -->
  <TSO    PROCEDURE="MFAAS" MAXIMUM="1" JOBNAME="MFAT"
        TSO_PROCEDURE="MFATSO" TRACING="1"
  />
</ApplicationServers>
.....
</Configuration>

```

 **Note:** XML has been truncated for illustrative purposes.

Tracing can be enabled for multiple targets at once.

Once enabled tracing behaves the same way as for Dynamic Tracing detailed earlier. To disable tracing edit the MFAXML configuration file again and set TRACING to 0 and then restart the MFA server for it to take effect.

 **Note:** Any modifications made to the MFAXML configuration file will require a restart before the modifications take effect.

## Customizing Data Connect

This section describes advanced configuration for the Mainframe Access Data Connect server.

### Introduction

At the completion of Mainframe Access installation and quick configuration, the Mainframe Access Data Connect server is ready to use for most Data Connect applications. This chapter will help you with the necessary customization if you need to change the default user verification and data set authorization checking. This chapter also describes how to customize a FSTAB file mapping table and the MFAVCTL file mapping data set.

### Samples for Configuration

The installation procedure places several samples in the <hlq>.MFA.MFACNTL data set. If a sample is provided for a configuration task, use it as a starting point for your configuration. Usually you need to edit the sample, replacing provided information with information that is unique to your system.

The following table summarizes the samples that are provided for Mainframe Access Data Connect server.

MEMBER	DESCRIPTION
FSTAB	Assembler language macro used by the MFASFTAB sample.
MFASFTAB	Sample job and source statements for creating your own FSTAB module for file name mapping operations.

## JCL Change for Data Connect

In order to supply all MFA and Data Connect function within one authorized library, the Data Connect module names have been renamed, and slightly reorganized as static load modules rather than dynamic overlays. All Data Connect load modules now begin with the prefix MFD.

```
//MFAS  PROC DSNQUAL='HLQ.MFA'
//*
//*-----*
//*                                     *
//* Micro Focus Mainframe Access - Data Connect / FILESHARE          *
//*                                     *
//* Change the DSNQUAL value on the PROC statement to the correct    *
//* value for your installation.                                     *
//*-----*
//MFAS  EXEC PGM=MFDSTART,PARM='APPLID=MFA62ACB',
//      REGION=0M,TIME=1440
//STEPLIB DD DISP=SHR,DSN=&DSNQUAL..LOADLIB
//      DD DSNAME=CEE.SCEERUN,DISP=SHR
//      DD DSNAME=CEE.SCEERUN2,DISP=SHR
//CEEOPTS DD DISP=SHR,DSN=&DSNQUAL..CNTL(CEEOPTS)
//SYSUDUMP DD SYSOUT=*
//FSMSGGA DD SYSOUT=*          for IDCAMS
//FSMSGC  DD SYSOUT=*          for APPC errors
//FSMSGGL DD SYSOUT=*          for FileShare log
//VSAMCTL DD DISP=SHR,DSN=&DSNQUAL..MFAVCTL
```

## Configuring Access to External Library Management Systems

This section describes the Mainframe Access support for external library management systems and change management systems.

### About External Library Management

Mainframe Access provides seamless access to objects housed in repositories controlled by the following external management systems:

- Panvalet from Computer Associates ([www.cai.com](http://www.cai.com))
- Librarian from Computer Associates ([www.cai.com](http://www.cai.com))
- Endeavor from Computer Associates ([www.cai.com](http://www.cai.com))
- ChangeMan ZMF

Contact the appropriate vendor for further information about these products.

### Panvalet

Panvalet is a direct access library system marketed by Computer Associates. It's primary use is as a source control system for software development.

## About Panvalet

With Panvalet, all source members are managed as fixed length records. The default size is the historical card image of 80 bytes. Panvalet may be used to manage any fixed-length data up to 4096 characters in length.

Panvalet provides licensed users with programmable access to their repository services via the PAM API. This is a read-only interface which permits multiple concurrent access for Mainframe Access threads to browse source members residing in Panvalet repositories. During Server initialization, Mainframe Access attempts to load this interface into memory. If this API interface is available through the standard search order (STEPLIB, JOBLIB, or SYS1.LINKLIB at the customer site) then Panvalet services are offered. Startup initialization messages indicate if Panvalet is available.

It is a customer responsibility to provide a suitable STEPLIB concatenation which enables selection of the desired release and version of the Panvalet components. At most sites, PANVALET is installed as an MVS Subsystem. Therefore the API is available within SYS1.LINKLIB. No override would be necessary unless a new version is being tested.

```
//STEPLIB DD DSN=hlq.MFA.LOADLIB,DISP=SHR
//      DD DSN=CAI.PANV144.CAILIB,DISP=SHR
```

The following messages are typical of the information written to the SYSLOG during Mainframe Access startup:

```
MFM0063I: MFA Direct is active MFM0064I: MFA Direct number of processing tasks is 5 MFMD5051I CA/
LIBrarian Ready MFMD5052I CA/PanValet Ready MFMD5053I CA/ENDEVOR API 39 Ready MFMD5055I
MCG/RPC feature active MFMD5001I DSS Server Ready MFM0001I: Mainframe Access V6.00
(04000000) is active
```

For source additions or updates under Panvalet, Mainframe Access must invoke the standard Panvalet batch utility PAN#1. Access to this utility is serialized, since Panvalet does not support multiple, concurrent access to this service. In some cases, you may have renamed the Batch Update utility PAN#1. If this is the case, the new name at this site must be defined to Mainframe Access as a parameter override.

## References

*PANVALET System Management Guide*  
*PANVALET Messages Guide*  
*PANVALET Installation Guide*  
*PANVALET User Guide*  
*PANVALET Extended Features Guide*

## Panvalet Suffix Table

Panvalet recognizes the following programming language or object types:

- BAL
- COBOL
- DATA
- FORTRAN
- JCL
- PL/I
- RPG

Specification of such a native language type allows Panvalet to format the source files, and automatically add or remove the sequence numbers in the appropriate position for that language. In order to automate this language selection process, Mainframe Access has introduced a Panvalet Suffix Table to specify the

language type based upon the file suffix as used on the workstation. In addition, the Suffix Table also specifies the default options to be specified on the ADD command of the PAN#1 batch update utility.

SUFFIX	++ADD Options
(default)	DATA,LIST,NOFORMAT
ASM	BAL,LIST,NOFORMAT
ASSEM	BAL,LIST,NOFORMAT
BAL	BAL,LIST,NOFORMAT
BMS	BAL,LIST,NOFORMAT
CBL	COBOL,LIST,NOFORMAT
CNTL	JCL,LIST,NOFORMAT
COB	COBOL,LIST,NOFORMAT
COBOL	COBOL,LIST,NOFORMAT
COP	COBOL,LIST,NOFORMAT
COPY	COBOL,LIST,NOFORMAT
CPY	COBOL,LIST,NOFORMAT
DATA	DATA,LIST,NOFORMAT
DBD	BAL,LIST,NOFORMAT
JCL	JCL,LIST,NOFORMAT
JOB	JCL,LIST,NOFORMAT
MAC	BAL,LIST,NOFORMAT
MFS	BAL,LIST,NOFORMAT
PLI	PL/1,LIST,NOFORMAT
PL1	PL/1,LIST,NOFORMAT
PSB	BAL,LIST,NOFORMAT

The above table describes the default Suffix Table as provided within Mainframe Access. If no changes are desired, no further customization is necessary.

## Suffix Table Override

The built-in Panvalet Suffix Table may be replaced by including a special DD card in the Mainframe Access task JCL as follows:

```
//PANSUFX DD DSN=hlq.MFA.CNTL(PANVALET),DISP=SHR
```

During initialization, this text file is analyzed and a new Suffix Table is created dynamically. The first entry defines a default language type to be used if no match is found in the table. The following extract illustrates the free-form format of the text file:

```
*
* MFA PANVALET CONFIGURATION CONVERSION TOOL
*   AS ON 06/07/2003 AT 12:40
*
* SUFFIX TYPE  ++ADD OPTIONS
*****
*
DEFAULT DATA  LIST,NOFORMAT
ASM  BAL  LIST,NOFORMAT
ASSEM  BAL  LIST,NOFORMAT
```

```

BAL BAL LIST,NOFORMAT
BMS BAL LIST,NOFORMAT
DBD BAL LIST,NOFORMAT
MAC BAL LIST,NOFORMAT
MFS BAL LIST,NOFORMAT
MLC BAL LIST,NOFORMAT
PSB BAL LIST,NOFORMAT
CBL COBOL LIST,NOFORMAT
COB COBOL LIST,NOFORMAT
COBOL COBOL LIST,NOFORMAT
COP COBOL LIST,NOFORMAT
COPY COBOL LIST,NOFORMAT
CPY COBOL LIST,NOFORMAT
JCL JCL LIST,NOFORMAT
JOB JCL LIST,NOFORMAT
PLI PL/I LIST,NOFORMAT
PL1 PL/I LIST,NOFORMAT

```

In this way, customers may change the search order, the suffix name, and the Panvalet ADD options to meet their needs. You may have already compiled a custom Suffix Table from Mainframe Access Version 2. A migration tool is provided to convert this configuration back into a text file which may be presented to Mainframe Access Version 3.

```

//jobname JOB (MFA),'PANVALET SUFFIX',CLASS=A,MSGCLASS=X
//*****
//*      EXTRACT PANVALET SUFFIX FROM MFA SERVER V2
//*****
//*
//PVSUFFIX EXEC PGM=MFAUTL01,REGION=1M
//STEPLIB DD DISP=SHR,DSN=hlq.MFA.V3.LOADLIB
//MFALIB DD DISP=SHR,DSN=hlq.MFA.V2.LOADLIB
//MFAPARM DD DISP=SHR,DSN=hlq.MFA.CNTL(PANVALET)

```

## Panvalet Security Exit

MFA supports a customized user exit (MFAPVXIT) that enables you to implement member-level security within your Panvalet repositories. This user exit is required because security is not available via RACF, and a proprietary Panvalet exit (PSPILXIT) is only available under TSO dialogs.

MFAPVXIT is automatically invoked to approve access rights for all Panvalet activity: import, export, and directory requests. A sample exit and test harness is provided within the .CNTL file shipped with the MFA product libraries:

Member	Description
MFAPVXIT	Sample Panvalet member security exit
PVTESTX	Test harness for MFAPVXIT
ASMPVT	Assemble and link PVTESTX
ASMPVX	Assemble and link MFAPVXIT

MFA provides the user ID, member name, and Panvalet master file name to MFAPVXIT, and interprets a return code of zero to mean that access is permitted. Any other return code results in access being denied. This means that the MFAPVXIT can create a directory filter based on the access rights of the individual or his department. The algorithm is entirely up to the site, and will be based on table-driven data compiled into the exit. The sample exit demonstrates how naming conventions, or tables of authorized users can be used to accomplish this.

## Librarian

Librarian is a powerful change management system for source modules and data records.

## About Librarian

Under Librarian, all source is stored within proprietary Librarian master files in a highly compressed format. Individual source modules may be stored and retrieved by name. Multiple master files may be defined and shared among the user groups.

Librarian provides licensed users with programmable access to source modules via the File Access Interface Routines (FAIR) API. This is a read-only interface which permits multiple concurrent access for Mainframe Access threads to browse source members residing in a Librarian master file. During Server initialization, Mainframe Access attempts to load this interface into memory. If this API interface is available through the standard search order (STEPLIB, JOBLIB, or SYS1.LINKLIB at the customer site) then Librarian services are offered. Startup initialization messages are indicated if Librarian is available. It is a customer responsibility to provide a suitable STEPLIB concatenation which enables selection of the desired release and version of the Librarian components.

```
//STEPLIB DD DSN=hlq.MFA.LOADLIB,DISP=SHR
//      DD DSN=CAI.LIBR43.CAILIB,DISP=SHR
```

For source additions or updates under Librarian, Mainframe Access invokes the standard Librarian batch utility AFOLIBR. Access to this utility is serialized, since Librarian does not support multiple, concurrent access to this service from the same address space. In some cases, you may have renamed the Batch Update utility AFOLIBR. If this is the case, the new name at this site must be defined to Mainframe Access as a parameter override.

```
MFA_LIBRARIAN_HISTORY="1"          - MFA default
MFA_LIBRARIAN_UPD_MODULE="LIBRUPD" - site override
```

## References

*Librarian Command Reference Guide*  
*Librarian File Access Interface Routines*  
*Librarian Messages Guide*  
*Librarian Installation Guide*  
*Librarian User Guide*  
*Librarian Systems Services Guide*  
*Librarian Security Administration Guide*

## Librarian Exit Table

Librarian does support user exits under its Batch Update facility. The user exit may be common, or may be assigned to a specific master file. In order to configure this option, MFA references a reserved DD named LIBXIT\$. If specified in the JCL, MFA builds a memory table to specify the Output Exit to be used for the given master file.

```
* Librarian Exit Table (fixed format)
*
* EXIT columns 1-8 is an exit module name
*   found in the STEPLIB, JOBLIB, LINKLIB concatenation
* LIBRARIAN MASTER name resides in columns 11-54
*   any master file with this prefix will invoke the exit
*
* EXIT  Librarian Master file prefix or full name
*****
LIBREXIT  PROD.LIB
LBXIT02  MY.LIBRARIAN.MASTER
```

# Endevor

Endevor is a full function change control system with signout controls and extensive user customization.

## About Endevor

Through the use of Exits and Processor Groups, it is possible to automatically re-compile the changed objects, and re-link any components which require those objects. Endevor also has several optional system features such as External Security, and alternate RACF user ID support.

Starting with Release 39, Endevor provides licensed users a powerful Endevor Services API (ENA \$NDVR). This interface permits full-function access to read or update source objects residing in an Endevor repository. During Server initialization, Mainframe Access will attempt to load this interface into memory. If this API interface is available through the standard search order (STEPLIB, JOBLIB, or SYS1.LINKLIB at the customer site) then Endevor services will be offered. Startup messages will indicate if Endevor is available. It is a customer responsibility to provide a suitable STEPLIB concatenation for selection of the desired release and version of the Endevor components. Mainframe Access will examine the Endevor C1DEFLT5 table to determine the version of Endevor being used. This is necessary because the control structures used by the Endevor API versions are not fully downward-compatible. Mainframe Access must build the API request using the format demanded by the version in effect at your site. If no C1DEFLT5 table is found, Endevor support will not be enabled.

```
//STEPLIB DD DSN=hlq.MFA.LOADLIB,DISP=SHR
//      DD DSN=CAI.NDVRR16.CSIQAUTU,DISP=SHR
//      DD DSN=CAI.NDVRR16.CSIQAUTH,DISP=SHR
//CONLIB DD DSN=CAI.NDVRR16.CSIQLOAD,DISP=SHR
```

Note that the Endevor API was designed to be a batch-oriented service. It is a file-based interface, not a record-based interface. That is, an object is moved from an Endevor-managed repository, to a specified work file; or vice-versa. Mainframe Access will dynamically create the necessary files as required. A transaction history log is likewise written to a log file. Mainframe Access may optionally be configured to retain a full Endevor transaction log to be used as an audit trail. Access to the Endevor interface is serialized since Endevor does not support concurrent accesses from the same address space. At the same time, all Endevor user exits and packages are operational. This means that site customization will affect the response time for an end-user accessing Endevor data under Mainframe Access. This may require adjustments to the timeout parameters on the clients.

Since all data movement is facilitated through temporary files, Mainframe Access is not able to support the Dsname Validation feature of Endevor. The temporary file used by Mainframe Access is deleted as soon as the transaction (Import or Export) ends. For those sites employing this feature, users could use the Endevor dialog tools under TSO to move their members into their own PDS. Then Mainframe Access could be used to move the PDS member from the mainframe to the workstation, and vice-versa. A subsequent promotion to Endevor would then indeed come from the exact same PDS that received the file at sign-out.

Mainframe Access does maintain the user ID security context for each active thread using the standard IBM security environment and standard SAF calls. Mainframe Access will always invoke the Endevor API interface using the security credentials of the end-user as provided during client logon. To minimize some administrative overhead, Micro Focus recommends the adoption of an Alternate RACF user ID to simplify the administration of RACF access rights for the user population. Access security remains a SITE responsibility. This is no different than standard BATCH or TSO access under Endevor. Mainframe Access will not schedule any Endevor access using the Mainframe Access started-task profile. Also be mindful that some change control "processors" might better be managed by specialist personnel using the Endevor ISPF panels rather than being triggered repeatedly by online Mainframe Access users.

Endevor support is available for R14 and later.

## References

*Endevor Administration Guide*  
*Endevor API Guide*  
*Endevor Error Codes and Messages*  
*Endevor Exits Guide*  
*Endevor Footprints Guide*  
*Endevor Installation Guide*  
*Endevor Packages Guide*  
*Endevor Security Guide*  
*Endevor User Guide*  
*Endevor Utilities Guide*

## Endevor Dependent Regions

In order to isolate the Endevor run-time environment from the Mainframe Access address space, and improve the concurrency (and hence scalability) of Endevor accesses, Mainframe Access will schedule the execution of the Endevor API in an independent processing region referred to as an Endevor Dependent Region. This is a special purpose address space that Mainframe Access creates dynamically and shares with all Mainframe Access/Endevor users. It is serially assigned to whatever thread is in need of Endevor API services.

Multiple Endevor dependent regions may be started to meet your throughput requirements. The sample SERVERS member contains a definition for an Endevor address space group that allows a maximum of 2 address spaces to be started for Endevor processing. This value can be increased if the demands of your Endevor usage will benefit from greater concurrency.

You will need to update the started task JCL for dependent regions before you can use the Endevor support. Review the sample JCL member MFAAS and follow the instructions in that member to add your Endevor AUTHLIB and CONLIB program libraries to the STEPLIB concatenation. If you use Processor Groups to compile and relink automatically, specify DYNAMNBR=300 on the EXEC statement and eliminate the pre-allocation of SYSPRINT and SYSTEM which conflict with Endevor procedures to allocate compile and link output files.

For those sites where the logged in users may not have the authority to create transient files using their USERID as the high-level qualifier, there is a configuration parameter to set that high-level qualifier to some other value where all users have READ/WRITE/ALTER access.

```
ENDEVOR_DSNQUALIFIER="prefix" --- OVERRIDE FOR ENDEVOR ACCESS
```

This must be specified within the configuration parameters specified by DD=XDBIN both in the MFA Control region, and the MFA Endevor Dependant Region.

In addition, the Endevor Dependent Region will automatically shutdown after a pre-defined idle period. The default is 30 minutes. This automatic shutdown feature allows Endevor resource allocation to quiesce with non-use, and thereby permits overnight backups to run without manual intervention. This idle period is defined as two scan intervals as specified in the Dependent Region parameter file:

```
DSS_SCAN_INTERVAL="15" --- idle timeout for shutdown
```

By default, the Endevor Dependent Region will create a new VIO file (DDNAME=ENDVMSG) to be used as the Endevor transaction log for all subsequent transactions within that dependent region. The DCB attributes are:

```
PS,FBA,LRECL=133,UNIT=VIO,DISP=(NEW,DELETE),DSN=&MSGLOG
```

This file will effectively be a memory resident file, buffered by JES. Note that during initialization there is no end-user profile in effect. That means the VIO file will be owned by the started task. Therefore, the started

task security profile must allow any end-user to write to this file. Endeavor will OPEN the file as the transaction log. This behavior can be taken as the default, or specified by:

```
VIO_FOR_ENDEVOR_LOG="1"      default VIO
```

If this causes a security violation at your site, you may configure the log to be disk-resident, provided the high-level qualifier will allow universal READ/WRITE access to the log. To override the default, use:

```
VIO_FOR_ENDEVOR_LOG="0"      use DISK
```

Now Mainframe Access will supply overrides to disk as follows:

```
UNIT=SYSALLDA,DSNAME=prefix.jobname.ASnnnnn.MSGLOG
```

where the jobname and address space number will ensure uniqueness. The prefix will be taken from the ENDEVOR\_ DSNQUALIFIER described above.

## Endevor C1DEFLTS File

It may be necessary to modify the C1DEFLTS table to facilitate the Endeavor support in a multi-user environment. If you do modify the C1DEFLTS table, the resulting C1DEFLTS load module should be stored in the STEPLIB of the MFA server start-up JCL to allow for a custom usage. Your Endeavor administrator will have the current C1DEFLTS source and corresponding JCL.

The following C1DEFLTS table change is required:

- The BATCHID= parameter must be 1. This permits signout and security accesses to be based on the security profile of the user, not the MFA Server started task.

```
C1DEFLTS TYPE=MAIN,
  ACCSTBL=,    ACCESS SECURITY TABLE          X
  APRVFLG=N,   APPROVAL PROCESSING (Y/N)      X
  ASCM=0,      ASCM CONTROL PASSWORD          X
  BATCHID=1,   BATCH UID FROM JOBNAME/USER=   X
  CIPODSN=,    CCID VALIDATION DSNNAME        X
  .
  .
  .
C1DEFLTS TYPE=END
END
```

## Endevor Setup Errors

Several environmental conditions are validated when the first transaction is processed on an Endeavor Dependent Region. Failure to provide a consistent run-time environment will result in the following abends:

Abend	Description
996	MFAS startup error - no DSS environment found
997	Endevor DR setup error - no MSGLOG established
998	Endevor version mismatch between CR and DR
999	No Endeavor support found in STEPLIB or JOBLIB

## ChangeMan ZMF

Micro Focus's ChangeMan ZMF is a comprehensive mainframe specific solution that provides reliable, streamlined implementation of changes in z/OS environments. Its version, build and release management functions can be used to manage system changes from development to deployment.

## About ChangeMan ZMF

ChangeMan ZMF 5.3 introduced the ChangeMan ZMF XML Services, an open interface for interoperability and data interchange with ChangeMan ZMF. This new interface is intended to replace the RPC and API interfaces that were used with earlier releases of ChangeMan. Mainframe Access Server implements the ChangeMan functions using the XML Services interface.

Mainframe Access requires ChangeMan Version 5.5.6 or later.

## Customization

The customizations required in Mainframe Access Server are simple and deal primarily with defining the interface to the ChangeMan ZMF subsystem. There are four MFA Server startup parameters for defining this interface and they are described in detail below. The parameters are also documented in the section *Editing Mainframe Access Parameters* in the chapter *Configuration*.

The Server's ChangeMan interface uses Mainframe Access Application Server address spaces (also known as dependent regions) to provide isolation for the ChangeMan processing. Separating the processing from the MFA Server control region avoids potential interference with other client requests being processed in the control region.

Both the control region and the dependent region(s) have startup parameter requirements for the ChangeMan interface definition. The sample control region parameters are found in member PARMAS and the sample dependent region parameters are found in member PARMASAS. Review the startup parameter information in the sections that follow and update your parameter definitions with values appropriate for your installation.

### Control Region Startup Parameters

CHANGEMAN_COMMON_BUILD	Specifies whether or not Mainframe Access accommodates group builds submitted under AppMaster Builder. Specify 1 to enable group builds or 0 to disable them. The default is 0. When enabled for group builds, MFA modifies the build options for each member of the AMB group to match the component name and type submitted, ensuring that each build request in the group is properly executed.
CHANGEMAN_DSNQUALIFIER	<p>Specifies a high-level qualifier for dynamically allocated data sets created by MFA Server to hold input files during the staging process. MFA Server creates these data sets dynamically as card-image sequential data sets that are deleted when the associated client request completes. The default qualifier is the login ID of the current user. You should set an alternate qualifier if your installation's SERNET does not have RACF authority to read or write data into files stored in data sets named with the current user's login ID as the high-level qualifier.</p> <p>If an alternate qualifier is required, see your ChangeMan administrator or your security administrator for assistance in selecting a proper value.</p> <p>If your ChangeMan functionality is restricted by security subsystem authorizations, you might need to specify your dataset high-level qualifier such that read access to the data sets is always permitted.</p>
CHANGEMAN_INTERFACE	Specifies the name of the ChangeMan ZMF module. During ChangeMan request processing, MFA Server loads and branch enters this module. Valid values are

SERXMLBC and SERXMLAC. The default is SERXMLAC.

The preferred interface module is SERXMLAC, which is not documented in ChangeMan ZMF; however, it provides better interface performance than SERXMLBC by using virtual storage instead of data sets for XML input and output exchange between MFA Server (the requester) and ChangeMan ZMF.

ChangeMan ZMF documents only the SERXMLBC interface, which is the XML services batch client. SERXMLBC is intended for use in a batch job stream and requires XMLIN and XMLOUT DD statements to define its required data sets. The MFAAS JCL sample provides sample DD statements for XMLIN and XMLOUT; however, they are commented out. If you must use SERXMLBC, contact Customer Care for assistance with data set definitions.

CHANGEMAN\_SSID

Initializes the Mainframe Access ChangeMan interface by providing the final character of the z/OS subsystem ID used to identify ChangeMan. Omit this parameter to bypass Mainframe Access initialization for the ChangeMan interface. Valid values are any single alphabetic or numeric character. The character specified is appended to the subsystem ID string "SER", completing the four-character ID. For example, if you specify CHANGEMAN\_SSID="A", the z/OS subsystem ID becomes "SERA".

Your ChangeMan administrator can help you to determine the correct subsystem ID to use.

CHANGEMAN\_TEST\_OPTION

Specify whether or not MFA uses the XML trace option. Specify 1 to enable XML trace or 0 to disable it. The default is 0. When enabled, SERNET logs information in XML format into the standard SERPRINT DD file. This file can be used to identify problems and to validate MFA services. Enabling XML trace is not recommended for production systems due to the large volume of log data generated.

CHANGEMAN\_XMS\_SIZE

Specifies the size in megabytes of the cross-memory buffer used by MFA for transmitting XML requests and responses to the ChangeMan dependant Region. A single integer in the range of 1 through 8 is accepted. Note that about 2500 directory entries, or 10,000 lines of source code may be passed in 1 megabyte. If your requirements exceed these limits, then you can configure a more appropriate value. The default value with no configuration is 1 megabyte.

### Control Region Started Task JCL

You can customize the sample JCL procedure for the MFA Server started task with required and optional DD statements for the ChangeMan interface.

#### CMNOPTS

Include and customize this DD to provide MFA with your site-dependent user options and your default build options. MFA reads the XML file you specify, using only the options defined for field names that correspond

to build and user options. These options enable MFA to properly check out and stage ChangeMan components. See your ChangeMan ZMF documentation for ZDD Build Options for more information.

```
//CMNOPTS DD DSN=youroptions.xml,DISP=SHR
```

Where *youroptions* represents a filename prefix of your choice.

The following is an example of an XML file containing user and build options:

```
<?xml version="1.0"?>
<options name="BUILD">
  <profile application="*" language="*" procname="*" libtype="*">
    <field name="Language"    editable="Y" default="CBL"/>
    <field name="BuildProc"   editable="Y" default="CMNCOB2"/>
    <field name="Db2PreCompile"  editable="Y" default="N" />
    <field name="Db2Subsystem"  editable="Y" default="DSN7" />
    <field name="CompileOptions"  editable="Y" default="RENT,LIST,XREF(SHORT)" />
    <field name="LinkOptions"   editable="Y" default="RENT,MAP,XREF" />
    <field name="UserOption01"  editable="Y" default="N"
      tag="Compile only" required="Y" validation="YN" />
    <field name="UserOption02"  editable="Y" default="N"
      tag="IMS DLIT entry" required="N" validation="YN" />
    <field name="UserOption03"  editable="Y" default="N"
      tag="CICS precompile" required="N" validation="YN" />
    <field name="UserOption04"  editable="Y" default="N"
      tag="Drop INCLUDEs" required="Y" validation="YN" />
    <field name="UserOption05"  editable="Y" default="N"
      tag="Easytrieve" required="Y" validation="YN" />
    <field name="UserOption06"  editable="Y" default="N"
      tag="AMB Generation" required="Y" validation="YN" />
  </profile>
</options>
```

The user build options tags <UserOption*nn*> support a special keyword for validation. If the valuation="*text*" corresponds to a reserved keyword as described by ChangeMan ZMF, then a generic test will be made for NUMERIC, ALPHABETIC, or ALPHANUMERIC text. Otherwise, the "*text*" characters themselves will become the customized set of characters to be used as the validation string. Only a character found in this string will be allowed to act as the User Option value.

### CMNLIB\$

Optionally include and customize this DD to enable MFA to determine which component types are buildable, depending on the language type and build procedures specified. This not only identifies which Library types Drag & Drop may build, but also provides default language names for new components which have no component history which would otherwise provide this information.

```
//CMNLIB$ DD DSN=hlq.MFA.CNTL(CMNLIB$),DISP=SHR
```

Where *hlq* is a high level qualifier that was given to all Mainframe Access data sets when the FRESTORE job was run.

The following is the default data:

```
* ChangeMan Library Table (fixed format)
*   Like Source only
* L
* IBLDPROC LANGUAGE
* B NAME   Name
*** *****
ASM CMNASM  ASM
COB CMNCOB2 COBOL
APS DGSAPCOM COBOL
ASC DGSAPSCR COBOL
```

## CMNJOB\$

Optionally include and customize this DD to define up to four job cards ChangeMan can submit for a build request, which is scheduled as an independent job by SERNET as part of the staging process.

```
//CMNJOB$ DD DSN=hlq.MFA.CNTL(CMNJOB$),DISP=SHR
```

Where *hlq* is a high level qualifier that was given to all Mainframe Access data sets when the FRESTORE job was run.

The default job card contains:

```
//useridB JOB (MFA),'CMN-BUILD',CLASS=A,MSGCLASS=X  
//*  
//*  
//*
```

## Dependent Region Started Task JCL

The MFAAS sample JCL procedure contains JCL statements you must customize and enable for the ChangeMan interface. If you update sample JCL in the MFA Server samples data set, be sure to copy it to the system procedure library.

## References

*ChangeMan ZMF XML Services User Guide*  
*ZMF Administrator Guide*  
*ZMF Messages Guide*

## AppMaster Builder Support using APS Components

ChangeMan contains an optional feature for managing APS file types in a ChangeMan application. This support is incompatible with the AppMaster Builder support for APS components as provided by Micro Focus as it does not allow you to over-ride the Build procedures to invoke the AppMaster Builder Generation process.

As a result, when configuring ChangeMan for use with applications and packages used by AppMaster Builder, ChangeMan Administration should not configure the file types using the Selectable Option column, as shown in the following screen shot from the ChangeMan Administration Panels under TSO:

```
----- WAC4 - LIBRARY TYPES PART 1 OF 2 ----- Row 1 of 65  
COMMAND ==> SCROLL ==> PAGE
```

Enter END command to save changes or CANCEL to exit.  
Enter \* in line command field for global staging libraries selection list.

LIB	TYPE DESCRIPTION	LIKE	DEFER	TARGET	SEL.	TYPE	OPT.
					(S/C/L/P)(Y/N)		
""	COB Cobol					S	Y LOD
""	CPY Copy Books					C	Y
""	JCL Job Control Language				P	Y	
""	CTC Control cards				P	Y	
""	LOD Load Library				L	Y	
""	ACI APS COBCICS					S	Y LCI
""	ACN APS APSCNTL					P	Y
""	ADA APS APSDATA					P	Y
""	ADE APS APSDE					P	Y
""	ADG APS COBDLG					S	Y LDG
""	AEX APS APSEXPS					P	Y
""	AFE APS APSSCFE					P	Y
""	AID APS COBIDMS					S	Y LOD
""	AIM APS COBIMS					S	Y LIM
""	AIO APS APSCNIO					P	Y LOD
""	AIS APS COBISPF					S	Y LOD
""	AMA APS APSMACS					C	N

```
"" AMS APS AMSERV _____ P Y  
"" AMV APS COBMVS _____ S Y LOD —
```

## Configuring Access to Enterprise Server Mainframe Subsystem Support

Mainframe Subsystem Support (MSS) is an Enterprise Server feature that provides an execution environment for CICS transaction programs on Windows and UNIX platforms. These programs can be ones migrated from the z/OS platform, or entirely new applications, developed specifically for the Enterprise Server MSS environment.

Mainframe Access runs on z/OS and functions as middleware, providing a transparent bridge between your ES/MSS systems and your z/OS CICS systems and enabling a full range of peer ISC communications between these systems including transaction routing, function shipping, distributed program link and distributed transaction processing. The configuration elements in MFA Server create the relationship between MSS and CICS and enable MFA Server to convert between MSS's TCP/IP-based protocol and CICS's LU6.2-based ISC protocol.

This section presents a step-by-step approach to completing the Mainframe Access Server customizations for ES/MSS support. Use this section to work through the customizations.

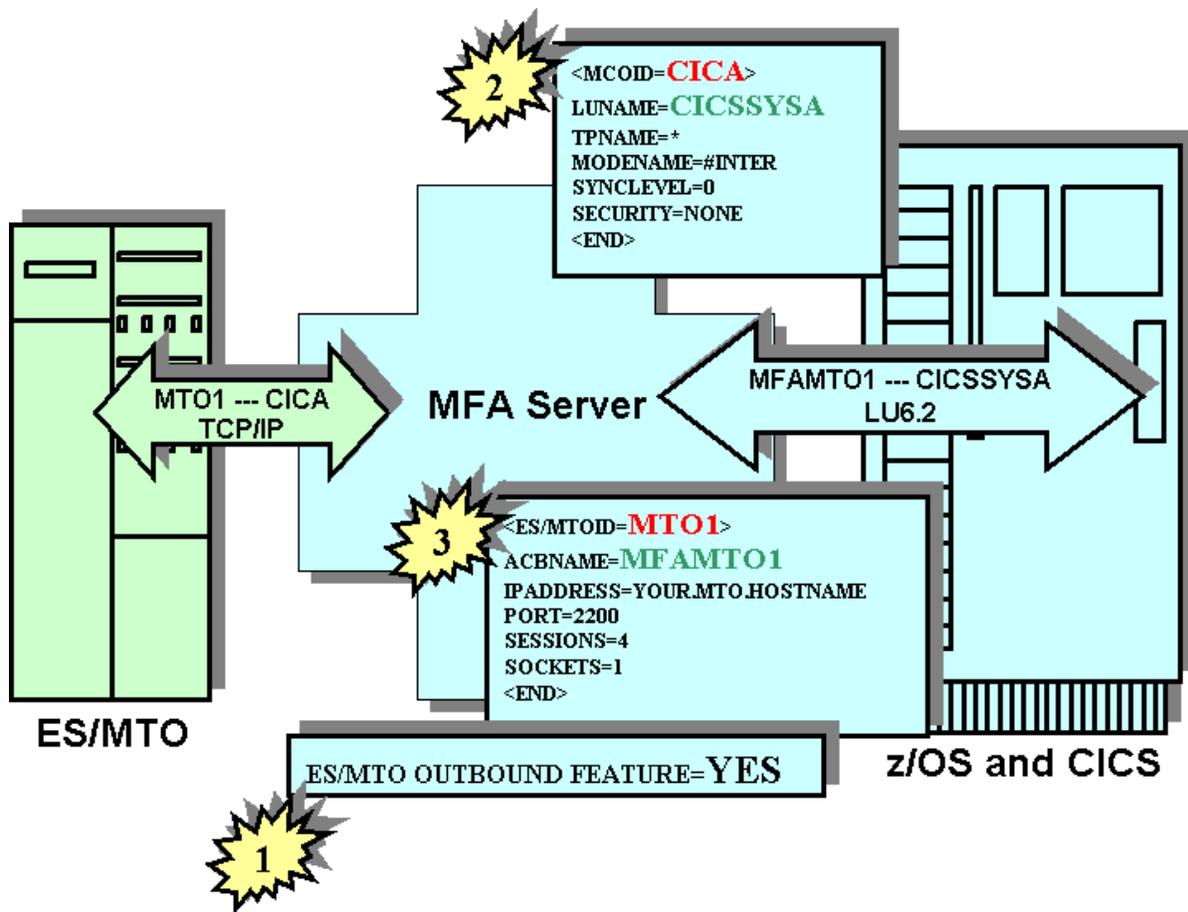
### Prerequisites

Be sure to complete the basic configuration and installation testing of your Mainframe Access Server before you start the advanced configuration activities for ES/MSS support. See the section *Quick Configuration* in the *Configuration* chapter for information on the basic configuration. The configuration described in this appendix assumes that you have completed all of the quick configuration steps that establish your parameter file, server definitions, JCL procedures, etc. Also complete the installation verification testing to ensure that you have a running configuration.

### MFA Server Configuration for ES/MSS

The diagram below shows a single MSS to CICS connection. The MFA Server configuration statements that enable this bi-directional connection are highlighted in the diagram. Keep in mind that there are corresponding configuration requirements in MSS and CICS, and the entire configuration relies on the communications infrastructure provided by your TCP/IP stack and VTAM SNA server.

ES/MSS runs on a Windows or UNIX platform and is connected to your z/OS system by TCP/IP communications. The other software elements reside on a z/OS platform(s). MFA Server runs on z/OS and functions as middleware, providing a transparent connection between ES/MSS and the CICS system. MFA Server is normally installed on the same z/OS system as CICS, although this is not a requirement. The connection between MFA Server and CICS uses standard CICS ISC LU6.2 protocols and MFA Server and CICS may reside in different systems on your SNA network. ES/MSS and MFA Server participate in the TCP/IP network by starting socket listeners, and by accepting and originating socket connection requests. CICS and MFA Server participate in the VTAM SNA network as Logical Units (LUs) by creating and opening a VTAM Access Method Control Block (ACB), and by allocating and managing LU6.2 conversations.



The MFA Server configuration is easy. There are three distinct parts to the configuration, numbered 1, 2, and 3 in the diagram. Part 1 is a simple enabling, or activation, statement. Part 2 defines your z/OS CICS system and provides the information needed for a VTAM SNA connection to this system. Part 3 defines your ES/MSS system and provides the information needed for a TCP/IP connection to this system. All of these statements can be found in the PARMS (Part 1) and SERVERS (Parts 2 and 3) members of your MFA Server <hlq>.CNTL data set. The definitions shown here for ES/MSS and CICS are two of the actual samples from that data set. When you understand the configuration requirements and have determined the correct values for your systems, complete your configuration using a text editor to update these sample definitions with your values. There is no pre-processor or configuration utility used with the MFA Server definitions and there is no configuration information maintained by MFA Server across restarts. So, each time MFA Server is started, your current definitions will be read in during start up, processed and activated. If you need to make changes during your testing, simply update the configuration statements and restart MFA Server.

The following subsections describe the customizations needed for your ES/MSS - CICS connection. The discussion refers to sample definitions that are provided by MFA Server installation and if this is your first ES/MSS configuration it will be easy to update the sample definitions as described.

## Enable ES/MSS Support

MFA Server automatically activates the outbound feature and processes other definition statements for the MSS feature when it detects a valid (uncommented) MCO configuration in the MFAXML member.

## Define the Target z/OS CICS System

Your MFAXML member in the MFA Server <hlq>.CNTL data set contains two sample CICS server definitions, one being the CICA sample shown here:

```
<MCO      ID="CICA" LUNAME="CICSSYSA" MODENAME="#INTER"  
          TPNAME="*" SYNCLEVEL="0" SECURITY="0"  
>
```

### **ID="CICA"**

Identifies the start of a z/OS CICS target server definition and provides the SYSID value for that server. Change this value to the SYSID of your z/OS CICS system. Specify the same SYSID when you define this CICS to your ES/MSS server in a connection definition.

### **LUNAME="CICSSYSA"**

Provides the SNA LU name (also referred to as the VTAM ACB name or VTAM APPL name) of your CICS system. Change the value to the LU name of your CICS system.

### **TPNAME="\*"**

Identifies the transaction program name used in LU6.2 requests. The actual transaction program name used in each LU6.2 request depends on the function that is requested, and the value is supplied by the system that originates a request. MFA Server adapts depending on the value supplied. Leave this parameter as-is.

### **MODENAME="#INTER"**

Provides the name of the VTAM SNA logmode used for LU6.2 sessions. If necessary, change the value to the name of the VTAM SNA logmode you want to use for your LU6.2 sessions. This same logmode name should be used in your CICS SESSIONS definition for the ES/MSS server.

### **SYNCLEVEL="0"**

Sets the synchronization level for LU6.2 requests and is supplied by the system that originates a request. MFA adapts depending on the value supplied. Leave this parameter as-is.

### **SECURITY="0"**

Sets the security level for LU6.2 requests and is supplied by the system that originates a request. MFA adapts depending on the value supplied. Leave this parameter as-is.

## Define the Target ES/MSS Server

Your MFAXML member in the MFA Server <hlq>.CNTL data set contains two sample ES/MSS server definitions, one being the MSS1 sample shown here:

```
<ES-MTO   ID="MTO1" ACBNAME="MFAMTO1" IPADDRESS="YOUR.MTO.HOSTNAME"  
          PORT="2200" SESSIONS="4" SOCKETS="1"  
>
```

### **ID="MTO1"**

Identifies the start of an ES/MSS target server definition and provides the ES/MSS SYSID needed to identify the ES/MSS system to MFA Server. Change this value to the SYSID of your ES/MSS server. Specify the same SYSID for the CONNECTION(name) when you define this ES/MSS server to your z/OS CICS system.

### **ACBNAME="MFAMTO1"**

Assigns a VTAM ACB name (also referred to as the SNA LU name or VTAM APPL name) to the ES/MSS server. You can define more than one ES/MSS server and each server you define must have its own ACBNAME, giving it a unique identity in the z/OS CICS system. MFA Server provides two VTAM APPL definitions for ES/MSS servers - MFAMTO1 and MFAMTO2. These are installed and activated in your VTAM SNA configuration during MFA

Server installation. If you are defining only one ES/MSS server, leave the ACBNAME as MFAMTO1. Use the MFAMTO2 ACB name if you define a second server. To define more than two ES/MSS servers, you must first install additional VTAM APPL definitions.

**IPADDRESS="YOUR.MTO.HOSTNAME"**

Identifies the internet address of your ES/MSS server machine. Change this value to either the machine name of the server where you're running ES/MSS or the internet IP address of the server.

**PORT="2200"**

Identifies the TCP/IP port on your ES/MSS server that has been configured as an ISC listener. Change this value to the ISC listener PORT number on your ES/MSS server.

**SESSIONS="4"**

Identifies the maximum number of transaction processing sessions that will be managed on a single socket connection. Each active LU6.2 conversation requires a session and the session traffic is interleaved on the MSS to MFA socket connection. For testing purposes, leave this value as-is. However, you might need to adjust it upwards to satisfy your installation's demand as usage increases.

**SOCKETS="1"**

Identifies the number of sockets available for each MSS to CICS connection. Because ES/MSS requires a single socket for each connection to CICS, leave this value as-is.

## Restart MFA Server

When you complete the configuration steps, save your updated definitions and restart your MFA Server to activate the definitions. Be sure to complete the related configuration activities in ES/MSS and z/OS CICS before you begin testing.

## Technical Details

The more detailed technical information in this section will increase your understanding of the configuration requirements. You will also be better prepared to respond to operational issues that may arise during the testing of this feature.

### How ES/MSS Understands the Connection

The communication between ES/MSS and MFA Server uses a proprietary TCP/IP protocol that conveys the necessary LU6.2 protocol information in TCP/IP packets. The SYSIDs used in the MFA Server configuration are the key to this communication. In the example definitions, the target z/OS CICS system is identified as CICA and the target ES/MSS server is identified as MTO1. The initial connection messages between ES/MSS and MFA Server use these SYSID values to exactly identify the two target systems.

If ES/MSS initiates the socket connection to MFA Server, ES/MSS will send a "bind" packet for SYSID CICA. The bind packet also contains the SYSID of the originating MSS, MTO1. The initial packet from ES/MSS is identical to the initial packet from a CICS support client, so MFA Server needs to identify the type of requester. If MFA Server finds a definition for an ES/MSS server with a SYSID of MTO1 (the ID parameter in the MCO definition) and the request originated from the IP address specified in that definition, then MFA Server recognizes this as a request from an ES/MSS server. Otherwise, the connection is recognized as a request from a CICS support client.

At this point, it is important to note that support for CICS has been available in earlier versions of MFA Server and this support allows MFA Server clients to originate requests INTO a z/OS CICS system. This same level of support has also been used by ES/MSS systems, before the availability of the ES/MSS outbound feature. This level of support does not require a definition for the ES/MSS server and it does not require the ES/MSS outbound feature support. In this case, the only definition required is the definition of the target z/OS CICS system (number 2 in the diagram). If your only need is for ES/MSS requests into CICS, you may continue to configure your MFA Server in this way. However, our recommendation is that

you follow the configuration requirements as outlined in this appendix and define a complete bi-directional connection for the systems that uses MFA Server's ES/MSS outbound feature. The extra effort is minimal and your systems will be ready to support CICS requests into ES/MSS, when they are needed. The complete configuration also results in each ES/MSS having a unique identity from the perspective of the z/OS CICS systems.

Once the initial connection is established, the ES/MSS and CICS definitions have been selected and MFA Server has all of the information it needs to accept a request from ES/MSS and send it into z/OS CICS over an LU6.2 ISC connection. MFA Server will allocate LU6.2 conversations using the MFAMTO1 ACB that has been defined for this ES/MSS. The conversation partner will be the z/OS CICS system that is using the ACB named CICSSYSA and the SNA session for the conversation will use the #INTER SNA logmode. The VTAM SNA logmodes are part of your VTAM SNA configuration and the suggested name can be changed to any other logmode name used for LU6.2 ISC connections in your system. Just be sure that the specified logmode definition is available to both MFA Server and CICS. The MFAMTO1 ACB name used in this sample definition is defined to the VTAM SNA network using a VTAM APPL definition. The APPL definition for MFAMTO1 is provided in another MFA Server sample, the MFAVTAM member in your <hlq>.CNTL data set. This member is installed in your VTAMLST definitions and activated during MFA Server installation.

Each ES/MSS server that you define must have its own ACBNAME and it is this ACBNAME that gives each server a unique identity in the z/OS CICS system(s).

## How z/OS CICS Understands the Connection

The communication between z/OS CICS and MFA Server uses standard LU6.2 ISC protocol as implemented by CICS. The SNA logical unit names used in the MFA Server configuration are the key to this communication. In the example, the target z/OS CICS system is identified as CICSSYSA (LUNAME="CICSSYSA") and the target ES/MSS server is identified as MFAMTO1 (ACBNAME="MFAMTO1").

Our target z/OS CICS initiates work to ES/MSS when a request is directed to an external CICS SYSID that is associated with the MFAMTO1 LU name by CICS definitions. A CICS CONNECTION defines the MFAMTO1 LU name and assigns an external SYSID. A CICS SESSIONS definition for that connection defines the SNA logmode to be used for the ISC conversations. It is important to note that the SYSID values known to z/OS CICS do not have to match the SYSID values known to MFA Server and ES/MSS, however, MFA Server and ES/MSS must agree in their definitions. Although the SYSID values known to CICS can be different from the ES/MSS and MFA Server definitions, we recommend that the same SYSID values be used throughout the definitions.

CICS handles the request to the external SYSID by establishing the LU6.2 sessions that support the ISC exchanges, if they are not already established. CICS then sends the initial FMH-5 Attach request for the conversation to MFAMTO1. MFA Server recognizes this request as a conversation for ES/MSS because CICS used the MFAMTO1 LU name. MFA Server also checks that the request originated in a defined CICS server by locating the definition for the originator's LU name (CICSSYSA) and logmode name (#INTER) combination. Having located the two sets of definitions, MFA Server can forward the request on to the target ES/MSS server. If there is currently no socket connection to ES/MSS, MFA Server has the IP address and port number needed to contact ES/MSS's ISC listener. Now the request can be forwarded to ES/MSS over the socket connection associated with the MTO1-CICA SYSID combination.

## Console Commands

### Introduction

Mainframe Access provides a number of console commands that you can use to control execution and display the operational status of Mainframe Access. To use these commands, you must be authorized to

use z/OS system console commands. Most of the commands are variants of the z/OS Modify (F) command, with the general format:

```
F <your-procedure-name>,<command-text>
```

where:

**<your-procedure-name>**

The name of your Mainframe Access startup JCL. See *Mainframe Access Data Sets* for more information.

**<command-text>**

See *Console Commands* for more information on the commands available.

To use the z/OS Start (S) command to start Mainframe Access:

```
S <your-procedure-name>
```

To use the z/OS Stop (P) command to stop Mainframe Access:

```
P <your-procedure-name>
```

You can enter the commands in any of the following ways:

- From an z/OS system console.
- Using an interface that allows the entry of z/OS system commands, such as IBM's TSO/ISPF SDSF (System Display and Search Facility).

## Console Commands

### General Mainframe Access Server commands

#### C CONV=id

Cancels a specific conversation. Theid parameter is a conversation identifier of eight hexadecimal characters as shown in the information displayed by DISPLAY CONVERSATION and DISPLAY TCPSTATUS commands. Canceling a conversation ends the LU6.2 conversation to the target server and releases the LU6.2 session for use by other conversations. It also disconnects the client by closing the client socket associated with the conversation and cancels the DDF thread if the conversation partner is DB2.

Here is an example of the CANCEL CONVERSATION command that cancels the second conversation shown in the DISPLAY CONVERSATION example:

```
F MFA,C CONV=1ABFF2E0
MFM0015I: Cancel Command accepted
```

#### DISPLAY CONVERSATION

Displays detailed information about every active conversation between Mainframe Access and the target servers.

Here is an example of a DISPLAY CONVERSATION command and the resulting display:

```
F MFA,DISPLAY CONVERSATION
MFM0015I: *****
MFM0015I: *          Conversation Status          *
MFM0015I: *****
MFM0015I:
MFM0015I: ***** Conversation Status
MFM0015I: Conversation ID..1AA14028
MFM0015I: Conv Address.....1AC79968
MFM0015I: Alloc Address....1A928DC0
```

```

MFM0015I: Task Address.....1AA4CE28
MFM0015I: Conv Status.....Active
MFM0015I: TCP/IP Status....Send
MFM0015I: User Id.....CSIRLW1
MFM0015I: Target LU.....LUDB27R
MFM0015I: Peer IP address..10.10.11.130
MFM0015I: Socket Number....9
MFM0015I: Start Time.....07/17/03 15:10:32
MFM0015I: LUW Id.....DDINE.MFM62ACB.B9BBC4F61840001
MFM0015I: Packets Sent.....14
MFM0015I: Packets Rcv'd....27
MFM0015I: Conversation ID..1ABFF2E0
MFM0015I: Conv Address.....1ACD0968
MFM0015I: Alloc Address....1A928BA0
MFM0015I: Task Address.....1AA4CA78
MFM0015I: Conv Status.....Active
MFM0015I: TCP/IP Status....Send
MFM0015I: User Id.....CSIRLW1
MFM0015I: Target LU.....MFA62ACB
MFM0015I: Peer IP address..10.10.11.130
MFM0015I: Socket Number....13
MFM0015I: Start Time.....07/17/03 15:11:40
MFM0015I: LUW Id.....DDINET1.MFM62ACB.B9BBC538B9410001
MFM0015I: Packets Sent.....4

```

## DISPLAY LU

Displays information about the target servers which Mainframe Access has successfully connected to by establishing one or more LU6.2 sessions in response to client requests. Target servers are known to Mainframe Access by their SNA LU name or APPLID.

Here is an example of a DISPLAY LU command and the resulting display:

```

F MFA,DISPLAY LU
MFM0015I: *****
MFM0015I: *          PLU Status          *
MFM0015I: *****
MFM0015I:
MFM0015I: ***** Partner LU Status
MFM0015I: LU Name.....LUDB27R
MFM0015I: Mod Entry.....IBMRDB
MFM0015I: Status.....Active
MFM0015I: LU Name.....MFA62ACB
MFM0015I: Mod Entry.....#INTER
MFM0015I: Status.....Active

```

## DISPLAY TCPSTATUS

Displays basic TCP/IP configuration information from the Mainframe Access parameters (port number, company name and connection backlog) followed by the information displayed by the *DISPLAY LU* and *DISPLAY CONVERSATION* commands.

Here is an example of a DISPLAY TCPSTATUS command and the resulting display:

```

F MFA,DISPLAY TCPSTATUS
MFM0015I: *****
MFM0015I: *          TCP Status          *
MFM0015I: *****
MFM0015I:
MFM0015I: Server Port Number.....1503
MFM0015I: Web Server Port Number...1504
MFM0015I: OID.....YOUR_COMPANY_NAME
MFM0015I: Number of Backlogs.....5

```

```

MFM0015I: ***** Partner LU Status
MFM0015I: LU Name.....LUDB27R
MFM0015I: Mod Entry.....IBMRDB
MFM0015I: Status.....Active
MFM0015I: LU Name.....MFA62ACB
MFM0015I: Mod Entry.....#INTER
MFM0015I: Status.....Active
MFM0015I: ***** Conversation Status
MFM0015I: Conversation ID..1AA14028
MFM0015I: Conv Address....1AC79968
MFM0015I: Alloc Address....1A928DC0
MFM0015I: Task Address....1AA4CE28
MFM0015I: Conv Status.....Active
MFM0015I: TCP/IP Status....Send
MFM0015I: User Id.....CSIRLW1
MFM0015I: Target LU.....LUDB27R
MFM0015I: Peer IP address..10.10.11.130
MFM0015I: Socket Number...9
MFM0015I: Start Time.....07/17/03 15:10:32
MFM0015I: LUW Id.....DDINE.MFM62ACB.B9BBC4F618400001
MFM0015I: Packets Sent.....14

```

## FLUSH XDBOUT

Flushes trace data and operational messages to the //XDBOUT DD SYSOUT data set. Operational data is written to XDBOUT during normal operation; trace data is written to XDBOUT only when tracing is switched on and the trace destination is SYSPRINT. The FLUSH command causes any partially filled buffer to be written to the SYSOUT data set, making the output available for browsing. This can be helpful when you are testing and trying to view trace data interactively as the test progresses.

Here is an example of a FLUSH XDBOUT command and the response:

```

F MFA,FLUSH XDBOUT
MFM0015I: Flush XDBOUT completed

```

## REFRESH ACCESSLIST

Directs Mainframe Access to re-read the access list from the currently active access list data set (the access list identified by the //XDBACC DD statement in the Mainframe Access startup JCL). You can update the access list by adding, removing or updating PERMIT, REJECT and ADMUSER lines, as described in the section *Editing Access List Definitions* in the chapter *Configuration*. When your updates are complete, use REFRESH ACCESSLIST to replace the currently active access list with your updated list without stopping and restarting Mainframe Access.

Here is an example of a REFRESH ACCESSLIST command and the response:

```

F MFA,REFRESH ACCESSLIST
MFM0015I: Refresh Access List has completed

```

## RESET TIMEOUT=n

Changes the TIME OUT FOR CONNECTION parameter value without you having to stop and restart Mainframe Access. The n parameter is the number of minutes that a client connection can remain idle before the connection will be broken and Mainframe Access resources dedicated to the client will be released. Resources that are released when an idle client is disconnected include allocated storage, TCP/IP resources and LU6.2 conversations to target servers such as DB2, IMS, CICS and Mainframe Access Data Connect. Specify 0 (zero) to disable the client timeout feature and allow unlimited idle time.

If you use the RESET TIMEOUT command to establish a new timeout value, rather than SET TIMEOUT, both the Mainframe Access timeout and any Mainframe Access client timeout remain in effect. The

connection partner (Mainframe Access client or Mainframe Access) having the smaller timeout value initiates the disconnection first.

Here is an example of a RESET TIMEOUT command and the response:

```
F MFA,RESET TIMEOUT=30
MFM0015I: Timeout parameter reset to 30
```

## SDUMP

Creates a dynamic SVC dump of MFA while leaving the task running.

Here is an example of an SDUMP command:

```
F MFA,SDUMP
```

## SET TIMEOUT=n

Changes the TIME OUT FOR CONNECTION parameter value without you having to stop and restart Mainframe Access. The n parameter is the number of minutes that a client connection can remain idle after which the connection will be broken and Mainframe Access resources dedicated to the client will be released. Resources that are released when an idle client is disconnected include allocated storage, TCP/IP resources and LU6.2 conversations to target servers such as DB2, IMS, CICS and Mainframe Access Data Connect. Specify 0 (zero) to disable the client timeout feature and allow unlimited idle time.

If you use the SET TIMEOUT command to establish a new timeout value, rather than RESET TIMEOUT, then when a Mainframe Access client subsequently starts up, Mainframe Access' connection timeout is disabled, and only the inactivity timeout period specified by the Mainframe Access client is in effect.

Here is an example of a SET TIMEOUT command and the response:

```
F MFA,SET TIMEOUT=20
MFM0015I: Timeout parameter set to 20
```

## Start

Starts the Mainframe Access task. Mainframe Access automatically starts the Mainframe Access Data Connect server, MFAS, during initialization.

Here is an example of a Start command and the response:

```
15:49:32.45 CSIRLW1 00000290 S MFA
15:49:32.47 STC05579 00000090 $HASP100 MFA ON STCINRDR
15:49:32.55 STC05579 00000290 IEF695I START MFA WITH JOBNAME MFA IS ASSIGNED TO USER
RWITEK, GROUP DEVELOP
15:49:32.55 STC05579 00000090 $HASP373 MFA STARTED
15:49:32.55 STC05579 00000090 IEF403I MFA - STARTED - TIME=15.49.32
15:49:32.85 STC05579 00000090 MFM0014I: Mainframe Access V3.01 (ga) for
YOUR_COMPANY_NAME
15:49:32.85 STC05579 00000090 MFM0066I: Address space type is CTLRGN
15:49:32.86 STC05579 00000090 MFM0057I: GTF user record id (eid) is 00E9
15:49:32.86 STC05579 00000090 MFM0012I: TCP port number is 1503
15:49:32.86 STC05579 00000090 MFM0013I: Admin port number is 1504
15:49:32.86 STC05579 00000090 MFM0047I: DSS maximum shared public files is 10
15:49:32.86 STC05579 00000090 MFM0055I: DSS scan interval is 2 minutes
15:49:32.86 STC05579 00000090 MFM0054I: SMF recording is off, record id is zero or invalid
15:49:32.87 STC05579 00000090 MFM0063I: MFA Direct is active
15:49:32.87 STC05579 00000090 MFM0064I: MFA Direct number of processing tasks is 5
15:49:33.16 STC05579 00000090 MFMD5052I CA/PanValet Ready
15:49:33.21 STC05579 00000090 MFMD5055I MCG/RPC feature inactive
15:49:33.22 STC05579 00000090 MFMD5001I DSS Server Ready
15:49:36.92 STC05579 00000090 MFM0001I: Mainframe Access V3.01 (ga) is active
15:49:37.00 STC05580 00000090 $HASP100 MFAS ON STCINRDR
15:49:37.06 STC05580 00000090 $HASP373 MFAS STARTED
15:49:37.06 STC05580 00000090 IEF403I MFAS - STARTED - TIME=15.49.37
```

```
15:49:37.23 STC05580 00000090 MFA302I.MFAS.MFARSC00 / ATTACHING VTAM PROCESSOR
15:49:37.24 STC05580 00000090 MFA303I.MFAS.MFARSC00 / MFA/MVS V3.01 - PTF 2001PTF6
COPYRIGHT (C)
1987-2003 MICRO FOCUS INTERNATIONAL LTD.
15:49:37.24 STC05580 00000090 MFA110I.MFAS.MFAFSQ00 / VTAM PROCESSOR ACTIVE USING
VTAMAPPL MFA62ACB
```

## Stop

Stops the Mainframe Access task. Mainframe Access automatically stops the Mainframe Access Data Connect server, MFAS, during shutdown. Shutdown may take anywhere from 30 seconds to a few minutes, depending on the level of activity in the system.

Here is an example of a Stop command and the response:

```
16:44:18.52 CSIRLW1 00000290 P MFA
16:44:21.52 STC05579 00000290 P MFAS
16:44:21.53 STC05580 00000090 MFA112I.MFAS.MFAFSQ00 / VTAM PROCESSOR HAS TERMINATED
16:44:21.68 STC05580 00000090 MFA317I.MFAS.MFARSC00 / HAS BEEN TERMINATED
16:44:21.69 STC05579 00000090 MFMD5005I DSS Server shutdown
16:44:21.70 STC05580 00000090 IEF404I MFAS - ENDED - TIME=16.44.21
16:44:21.70 STC05580 00000090 $HASP395 MFAS ENDED
16:44:32.77 STC05579 00000090 MFM0011I: Mainframe Access shutdown completed
16:44:32.82 STC05579 00000090 IEF404I MFA - ENDED - TIME=16.44.32
16:44:32.82 STC05579 00000090 $HASP395 MFA ENDED
```

## TRACE OFF

This command turns off the Mainframe Access activity trace started by the TRACE ON or TRACE SHORT command.

For example, the following disables tracing and displays the resulting response message:

```
F MFA,TRACE OFF
MFM0015I: MFM0026I: Trace set to data level off
```

## TRACE ON and TRACE SHORT

Activates detailed tracing of all Mainframe Access activity. Trace output is directed to the destination (SYSPRINT, GTF or CONSOLE) specified by the TRACE parameter during Mainframe Access startup. For more information about these options see the entry for the TRACE parameter in the section *Editing Mainframe Access Parameters* in the chapter *Configuration*. For a tip about viewing trace data sent to SYSPRINT interactively see the *FLUSH XDBOUT* command description

Here is an example of a TRACE ON command and the response:

```
F MFA,TRACE ON
MFM0015I: MFM0025I: Trace set to data level on
```

The TRACE SHORT command activates the same detailed tracing as does the TRACE ON command. The SHORT option limits the display of send data, receive data and storage areas to 256 characters. This can be useful in reducing the amount of trace output, particularly when the message sizes are large.

Here is an example of a TRACE SHORT command and the response:

```
F MFA,TRACE SHORT
MFM0015I: MFM0025I: Trace set to data level on
```

# Mainframe Access Messages

Mainframe Access and the z/OS operating system use messages to document both normal and abnormal conditions while Mainframe Access is running. The z/OS system log, the Mainframe Access job log and the

Mainframe Access SYSOUT data sets are all possible destinations for important messages about Mainframe Access operation. You should already be familiar with z/OS system messages.

## Mainframe Access Server Messages

Some Mainframe Access messages are directed to system consoles as specified by the ROUTE Mainframe Access configuration parameter. Other messages are directed to the job log for the started task or to the XDBOUT file (or both). If you experience problems with Mainframe Access operation, it is important that you review the various message destinations for information that may help you diagnose the problem. This section includes an explanation of each of these messages, ordered by message number.

### Mainframe Access Operational Messages Format

Mainframe Access operational messages are of the form:

*mm/dd/yy hh:mm:ss.t taskname taskid MFMnnnna text*

or

*mm/dd/yy hh:mm:ss.t taskname taskid MFMDSnna-text*

where

<i>mm/dd/yy</i>	indicates the date when the message was issued.
<i>hh:mm:ss.t</i>	indicates the time when the message was issued.
<i>taskname</i>	is the name of the Mainframe Access task that issued the message.
<i>taskid</i>	is a two hexadecimal digit task identifier that helps to uniquely identify the Mainframe Access task for tasks that share a common task name. For instance, task name XDBMFADM processes Mainframe Access Direct client requests and there may be several instances of this task, each managing the work of a different subset of client connections. When examining XDBOUT trace messages for a specific client, trace messages from other clients and their processing tasks may be interleaved with the trace messages for the client that is of interest. The taskid value helps to identify the messages associated with a particular task.
DS	indicates that the message was produced by the Data Set Services (DSS) component of Mainframe Access, which provides all file allocation and record access services.
<i>nnnn</i>	is an integer in the range 0001 through 9999
<i>a</i>	is I if the message is for information only, or E if the message indicates an error condition
<i>text</i>	is the error message text

Messages may be issued that do not have the MFMnnnna or MFMDSnna message prefix. These messages are diagnostic and/or trace messages that are not documented in this messages section. They are intended for use by Product Support.

### Mainframe Access Messages

#### **MF0001I: Mainframe Access version (service) is active**

Issued when Mainframe Access initialization completes. version identifies the Mainframe Access product version and service indicates the current maintenance level that has been applied to Mainframe Access.

#### **MF0002I: listener socket number is n**

Issued during startup by the process that serves client requests arriving on the TCP port, as specified in your Mainframe Access configuration parameter TCP\_PORT. This message identifies the socket number n that has been allocated for listening and accepting the client connections.

**MFM0003I: getsockopt return code is n**

Issued during startup by the process that serves client requests arriving on the TCP port, as specified in your Mainframe Access configuration parameter TCP\_PORT. n is the return code from the TCP/IP getsockopt call and a value of zero indicates that startup is proceeding normally.

A non-zero value may indicate a problem. Refer to your TCP/IP provider's socket API return code documentation for an explanation of the non-zero value.

**MFM0004I: setsockopt reus return code is n**

Issued during startup by the process that serves client requests arriving on the TCP port, as specified in your Mainframe Access configuration parameter TCP\_PORT. n is the return code from the TCP/IP setsockopt REUS call and a value of zero indicates that startup is proceeding normally.

A non-zero value may indicate a problem. Refer to your TCP/IP provider's socket API return code documentation for an explanation of the non-zero value.

**MFM0005I: setsockopt linger return code is n**

Issued during startup by the process that serves client requests arriving on the TCP port, as specified in your Mainframe Access configuration parameter TCP\_PORT. n is the return code from the TCP/IP setsockopt call and a value of zero indicates that startup is proceeding normally.

A non-zero value may indicate a problem. Refer to your TCP/IP provider's socket API return code documentation for an explanation of the non-zero value.

**MFM0006E: Tcpc socket error, sd=n1, function=name, errno=n2**

Issued by the process that serves client requests arriving on the TCP port, as specified in your Mainframe Access configuration parameter TCP\_PORT. This process establishes the client connection and then assigns the client to a processing subtask based on the client type (for example, CICS Option client, IMS client, Telnet client). This message indicates that an error has occurred during the processing of a socket API call associated with this connection establishment process. name identifies the specific socket API call, n1 identifies the socket (either the listening socket or a new socket created when a client request is accepted) and n2 is the TCP/IP errno value that was reported for the call.

Refer to your TCP/IP provider's socket API return code documentation for an explanation of the errno value for the specified function.

**MFM0007E: Tcpc socket error, sd=n1, function=name, errno=n2**

Issued by the process that serves client requests arriving on the TCP port, as specified in your Mainframe Access configuration parameter TCP\_PORT. This process establishes the client connection and then assigns the client to a processing subtask based on the client type (for example, CICS Option client, IMS client, Telnet client). This message indicates that an error has occurred during the processing of a socket API call associated with this connection establishment process. name identifies the specific socket API call, n1 identifies the socket (either the listening socket or a new socket created when a client request is accepted) and n2 is the TCP/IP errno value that was reported for the call.

Refer to your TCP/IP provider's socket API return code documentation for an explanation of the errno value for the specified function.

**MFM0008E: Parameter initialization has failed**

Issued during initialization if parameters processed from the active configuration data set specified by the //XDBIN data definition statement contain errors that make it impossible for Mainframe Access to complete startup. Mainframe Access shuts itself down after issuing this message.

Review the startup messages to identify and correct any configuration errors before restarting Mainframe Access.

#### **MFM0009E: APF authorization has failed**

Issued during initialization if Mainframe Access finds that it is not executing as an z/OS authorized program. Mainframe Access must execute as an z/OS authorized program and the z/OS TESTAUTH service is used to verify this during startup. Mainframe Access shuts itself down with a U2199 abend after issuing this message.

Check each program library name in the //STEPLIB data definition statement and make sure that each is identified to z/OS' Authorized Program Facility as an authorized program library. Common mistakes are misspelled data set names and incorrect DASD volume identifications.

#### **MFM0010E: Global data area initialization failed**

Issued during initialization if Mainframe Access cannot load required service modules and initialize its global data areas. Mainframe Access shuts itself down with a U2202 abend after issuing this message.

If you see this message contact our Product Support.

#### **MFM0011I: Mainframe Access shutdown completed**

This is the last message issued during shutdown to indicate that all processes have been stopped. The Mainframe Access job or started task should end immediately after issuing this message. If the Mainframe Access stop command is issued and you do not see this message within a reasonable amount of time (approximately 30 seconds) there is most likely a problem quiescing one or more of the Mainframe Access processes. This may be due to a Mainframe Access problem or it may be the result of other problems in the system.

If such a condition occurs frequently and no associated system condition can be identified, contact our Product Support for assistance.

#### **MFM0012I: TCP port number is n**

Issued during initialization as parameters are processed from the active configuration data set specified by the //XDBIN data definition statement. n is the TCP port number for client connections, as specified in your Mainframe Access configuration parameter TCP\_PORT.

#### **MFM0014I: Mainframe Access version (service) for company**

Issued during initialization as parameters are processed from the active configuration data set specified by the //XDBIN data definition statement. version identifies the Mainframe Access product version and company is your company name as specified in your Mainframe Access configuration parameter ORGANIZATION.

#### **MFM0015I: message text**

Message MFM0015I is a blank template that is used during the creation of Mainframe Access displays in response to administrative commands. message text is a self-explanatory line of display information created by command processing routines. For examples of how this message is used see the sample command output in the chapter Console Commands.

#### **MFM0016E: Tcps socket error, sd=n1, function=name, errno=n2**

Issued by the process that serves clients that use DB2 connectivity. This message indicates that an error has occurred during the processing of a socket API call associated with client communication. name identifies the specific socket API call, n1 identifies the client socket and n2 is the TCP/IP errno value that was reported for the call.

Refer to your TCP/IP provider's socket API return code documentation for an explanation of the errno value for the specified function.

**MFM0017E Tcps socket error, sd=n1, function=name, errno=n2**

Issued by the process that serves clients that use DB2 connectivity. This message indicates that an error has occurred during the processing of a socket API call associated with client communication. name identifies the specific socket API call, n1 identifies the client socket and n2 is the TCP/IP errno value that was reported for the call.

Refer to your TCP/IP provider's socket API return code documentation for an explanation of the errno value for the specified function.

**MFM0018I: name-address Task initialization has completed**

Issued during startup by Mainframe Access' specialized z/OS processing subtasks as they successfully complete initialization. name identifies the type of subtask and address is the address of Mainframe Access' task control block for the process.

**MFM0019I: name-address Task shutdown has completed**

Issued during shutdown by Mainframe Access' specialized z/OS processing subtasks as they complete shutdown. name identifies the type of subtask and address is the address of Mainframe Access' task control block for the process. These messages can sometimes help to identify the general nature of a Mainframe Access shutdown delay or failure by identifying the processes that have successfully finished their cleanup procedures.

**MFM0020E: Wwww socket error, sd=n1, function=name, errno=n2**

Issued by the process that serves HTTP client requests arriving on the administration port. This process establishes the client connection and then assigns the client to a processing subtask based on the HTTP request (for example, simple resource retrieval of a page or image, or ISPI program request). This message indicates that an error has occurred during the processing of a socket API call associated with this connection establishment process. name identifies the specific socket API call, n1 identifies the socket (either the listening socket or a new socket created when a client request is accepted) and n2 is the TCP/IP errno value that was reported for the call.

Refer to your TCP/IP provider's socket API return code documentation for an explanation of the errno value for the specified function.

**MFM0023E: Conversation id returned null for socket blockaddress**

Issued by the processes that serve Remote IMS and CICS Option client requests arriving on the TCP port, as specified in your Mainframe Access configuration parameter TCP\_PORT. This message indicates that an error occurred when Mainframe Access tried to access the LU6.2 conversation associated with this client's IMS or CICS connection. address identifies the Mainframe Access socket block associated with the requesting client.

If this problem occurs frequently, contact our Product Support for assistance.

**MFM0024E: Client data length error, length is 0**

Issued by the processes that serve Remote IMS and CICS Option client requests arriving on the TCP port, as specified in your Mainframe Access configuration parameter TCP\_PORT. This message indicates that an error occurred when Mainframe Access received a request message from the client.

If this problem occurs frequently, contact our Product Support for assistance.

**MFM0025I: Trace set to data level on**

Issued in response to the Trace On command to confirm that Mainframe Access activity tracing has been initiated. Trace data is written to the destination specified by the configuration parameter TRACE, or to the default destination, the XDBOUT data set.

**MFM0026I: Trace set to data level off**

Issued in response to the Trace Off command to confirm that Mainframe Access activity tracing has been stopped.

**MFM0027I: Telnet mode on**

Issued to confirm that Mainframe Access is accepting Telnet client connection requests.

**MFM0028I: Telnet mode off**

Issued to confirm that Mainframe Access is not accepting Telnet client connection requests.

**MFM0029E: Command is not allowed**

Issued to indicate that the previously entered command could not be processed although it was entered correctly.

**MFM0030E: name invalid command, please reenter**

Issued to indicate that the previously entered command name could not be processed due to an error in the format of the command parameters.

Reenter the command with correct parameters.

**MFM0031E: Wtrm task shutdown initiated for unrecoverable error**

Issued by the Mainframe Access task that processes operator commands. This message indicates that a severe error occurred during the processing of a command. Commands can originate from the system console (z/OS Modify command) and Telnet clients.

Restart Mainframe Access after shutdown is complete. If this problem occurs frequently, contact our Product Support for assistance.

**MFM0032E: Wtrm task is recovered**

Issued by the Mainframe Access task that processes operator commands. This message indicates that a severe error occurred during the processing of a command and Mainframe Access was able to resume normal processing. Commands can originate from the system console (z/OS Modify command) and Telnet clients.

If this problem occurs frequently, contact our Product Support for assistance.

**MFM0042E: DLL DD name is missing**

Issued when a request for an ISPI program is received and Mainframe Access' ISPI program loader cannot find a data definition statement for the ISPI program libraries (the //DLL DD statement). An error response is sent to the requester.

Stop Mainframe Access, add the missing //DLL data definition statements to the Mainframe Access startup JCL and then restart Mainframe Access.

**MFM0043E: Open DLL file has failed**

Issued when a request for an ISPI program is received and Mainframe Access' ISPI program loader receives an error indication from z/OS when opening the ISPI program libraries identified by the //DLL DD statements. An error response is sent to the requester.

Examine the system log and job log for I/O error messages associated with this failure and use that information to correct the problem. If the problem persists or cannot be identified, contact our Product Support for assistance.

**MF0045E: Unable to allocate LU6.2 conversation with target CICS**

Issued by the process that serves CICS Option client requests arriving on the TCP port, as specified in your configuration parameter TCP\_PORT. This message indicates that an error has occurred while Mainframe Access was attempting to allocate an LU6.2 conversation to the target CICS region. In some cases the actual error may have occurred during session establishment with the target CICS system and preceding error messages may contain LU6.2 return code information that will be helpful in diagnosing the problem.

Verify that all of the Mainframe Access target server configuration parameters for the CICS region are correct. Also check that the CICS definitions for Mainframe Access are correct and that the VTAM log mode specified in the target server configuration is available to both CICS and Mainframe Access. If this problem occurs frequently, contact Micro Focus Product Support for assistance.

**MF0046E: Function ship error, errno=n, desc=text, data=string**

Issued by the process that serves CICS Option client requests arriving on the TCP port, as specified in your configuration parameter TCP\_PORT. This message indicates that an error has occurred while Mainframe Access was communicating with the target CICS region. n is an error code assigned by Mainframe Access. text provides a short description of the type of error or the current state of processing. string provides additional error information appropriate for the type of error being reported.

If this problem occurs frequently, contact our Product Support for assistance.

**MF0047I: DSS maximum shared public files is n**

Issued during initialization as parameters are processed from the active configuration data set specified by the //XDBIN data definition statement. n is the value specified in the configuration parameter MAX\_PUBLIC\_FILES. This value indicates the maximum number of shared files that can be concurrently open.

**MF0049I: DLL name scheduled for refresh**

Issued in response to the ISPI module refresh command to confirm that Mainframe Access has accepted the refresh request. A new copy of the requested ISPI load module will be brought into storage using the z/OS LOAD service and used to process subsequent HTTP requests for the program.

**MF0053I: SMF recording is on, record id is n**

Issued during initialization as parameters are processed from the active configuration data set specified by the //XDBIN data definition statement. n is the value specified in the configuration parameter SMF\_RECORDID. This is a valid user SMF record id and recording is activated.

**MF0054E: SMF recording is off, record id is zero or invalid**

Issued during initialization as parameters are processed from the active configuration data set specified by the //XDBIN data definition statement. If the configuration parameter SMF\_RECORDID was specified as 0 (zero), you have elected to disable SMF recording. If the configuration parameter SMF\_RECORDID was specified as a non-zero value, the value is not valid for SMF user records. In this case, SMF recording is disabled.

If SMF recording is required, stop Mainframe Access, correct the parameter value and then restart Mainframe Access.

**MF0055I: DSS scan interval is n minutes**

Issued during initialization as parameters are processed from the active configuration data set specified by the //XDBIN data definition statement. n is the value specified in the configuration parameter DSS\_SCAN\_INTERVAL.

**MF0056E: DSS scan interval is not valid, defaults to 2 minutes**

Issued during initialization as parameters are processed from the active configuration data set specified by the //XDBIN data definition statement. An invalid value was specified for the configuration parameter DSS\_SCAN\_INTERVAL. The default value of two minutes was substituted for the invalid parameter value.

If two minutes is not an acceptable value, stop Mainframe Access, correct the parameter value and then restart Mainframe Access.

**MFM0059E: BLDL for ISPI DLL module name failed**

A request to execute ISPI module name was received from an HTTP client. The z/OS BLDL service was unable to locate this load module in the program library concatenation specified by the //DLL data definition statement.

Check that the load module name is correct and that all required program libraries are available.

**MFM0060E: LOAD for ISPI DLL module name failed rc=n1 reason=n2**

A request to execute ISPI module name was received from an HTTP client. The z/OS LOAD service reported a failure when reading the load module from the program library concatenation specified by the //DLL data definition statement. Return code n1 is the z/OS system completion code that would normally be reported as an abend failure by the z/OS LOAD service and n2 is the additional reason code associated with the abend code. Both values are given as hexadecimal numbers.

Refer to the z/OS system codes manual for your level of z/OS to interpret the return code/reason code pair and take appropriate corrective action.

**MFM0061E: ISPI DLL module name unavailable due to rc=n1 reason=n2**

A request to execute ISPI module name was received from an HTTP client. This ISPI module has been logically disabled by Mainframe Access due to a previous error condition associated with the module. The previous error may have been an z/OS LOAD service failure or a module execution failure. Return code n1 is the z/OS completion code that was reported for the original failure and n2 is the additional specific reason code associated with the completion code. Both values are given as hexadecimal numbers.

If the completion code value is of the form 00xxx000, xxx is an z/OS system completion code and you should refer to the z/OS system codes manual for your level of z/OS to interpret the return code/reason code pair and take appropriate corrective action. If the completion code value is of the form 00000xxx, the xxx value is a hexadecimal user abend code. User abend codes are normally documented as decimal values and you should convert the xxx hexadecimal value to decimal, if necessary. Refer to the program documentation for the meaning of the user abend code.

**MFM0062E: Initialization failed (by name - explanation)**

During initialization processing a condition was encountered that would prevent proper execution of Mainframe Access. For example, Mainframe Access' listening process for client connections was unable to allocate and/or open a socket for TCP\_PORT. The component that detected the condition has initiated shutdown processing. The name identifies the task that detected the condition and explanation provides a concise statement of the problem.

Examine associated error messages in the system log, joblog and XDBOUT data set to determine the cause of the initialization failure. In most cases, the related error messages can be found just before this message in the XDBLOG data set. Correct the problem and restart Mainframe Access.

**MFM0063I: MFA Direct is active**

This message is issued during initialization to acknowledge that MFADIRECT=YES was specified in the parameter file.

**MFM0064I: MFA Direct number of processing tasks is n**

This message is issued during initialization to acknowledge that the MFADIRECT\_MAXTASKS=n parameter file specification has been processed. Mainframe Access will start n z/OS tasks for Mainframe Access request processing. During execution Mainframe Access will create up to n additional tasks for Mainframe Access request processing if the transaction rate and processing load warrant.

**MFM0065I: usage port number for client connections is n**

This message is issued during initialization to acknowledge that the TCP\_PORT parameter file specifications have been processed. The usage indicates that the "Enterprise Server" (for TCP\_PORT) will be listening on port number n for client connections.

**MFM0066I: Address space type is astype**

This message is issued during initialization to acknowledge that the ASTYPE parameter file specification has been processed. The address space type can be "STANDARD", "CTLRGN" or "APPSERVER". The "STANDARD" address space is a stand-alone Mainframe Access server. The "CTLRGN" is a Mainframe Access server capable of starting application server regions such as the Mainframe Access Data Connect server. The "APPSERVER" address space is lightweight subset of the Mainframe Access server that is started and managed by a CTLRGN.

**MFM0068I: parmname parameter specification invalid**

This message is issued during initialization to indicate that the usage of parameter parmname is incorrect and this parameter was not successfully processed.

Correct the parameter specification and restart Mainframe Access.

**MFM0069E: MFADirect not configured - rejecting sd=n ip=addr**

Issued by the TCP/IP listener for TCP\_PORT when a client connection request for Mainframe Access services is received and MFADirect services have not been configured in the initialization parameters. The client (from IP address addr on socket n) is disconnected.

Check that MFADirect services are enabled by the MFADIRECT and MFADIRECT\_MAXTASKS initialization parameter settings. Restart Mainframe Access if parameter settings are changed.

**MFM0070E: MFA Data Connect not configured - rejecting sd=n ip=addr**

Issued by the TCP/IP listener for TCP\_PORT when a client connection request for Mainframe Access Data Connect services is received and the Mainframe Access Data Connect server has not been configured in the initialization parameters. The client (from IP address addr on socket n) is disconnected.

Check that the Mainframe Access Data Connect server is enabled by the Mainframe Access FEATURE, MFALINK\_MAXTASKS and ASTYPE initialization parameter settings. Restart Mainframe Access if parameter settings are changed.

**MFM0071E: process access list check condition client ipaddr**

This message may be issued by the TCP/IP port listeners when access list checking is active. If process is XDBTCPPM, this is a connection attempt through the TCP\_PORT for Micro Focus clients. Each client's IP address (ipaddr) is checked against the PERMIT and REJECT specifications in the access list. If the condition reported is "rejected", the client IP address was found to match a reject specification in the access list. In this case the client's connection request is immediately rejected. If the condition reported is "warning for", no matching reject or accept specification was found in the access list. In this case the client connection is accepted. You may wish to add an access list specification for this client or an appropriate range of similar client IP addresses.

**MF0072E: Shutdown starting due to failure (in taskname)**

This message is issued when one of the Mainframe Access tasks encounters a software failure and ESTSEX processing is unable to fully recover and guarantee the integrity of subsequent processing in the address space. In this case, the ESTSEX recovery routine processing will start an automatic shutdown of Mainframe Access.

Examine the XDBOUT data set, joblog and system log for associated error messages. This may identify a problem that requires you to take a corrective action. Restart Mainframe Access and report the incident to Product Support.

**MF0074E: The following parameter statement is rejected (line n)**

This message is issued during startup when an invalid parameter is found in the Mainframe Access configuration parameter file. The statement containing the invalid parameter is displayed in the message line that follows.

Mainframe Access Server completes processing of the parameter file and then shuts down due to the parameter error. Correct the invalid parameter and restart Mainframe Access Server.

**MF0077E: CG production log (ddname) open failed, errno=n \_msgno=m**

This message is issued during startup when the data set specified by Mainframe Access configuration parameter CGMQOTMA LOGDD cannot be OPENed.

**MF0079I: CG production log closed**

This message is issued during shutdown to confirm that the data set specified by the Mainframe Access configuration parameter CGMQOTMA LOGDD has been successfully closed.

**MF0080I: MQ message queue configuration information****MF0083I: Cross-memory initialization starting (dac=address)**

This message is issued during startup when dependent address spaces are configured. Mainframe Access is preparing to create the z/OS cross-memory resources that allow Mainframe Access address spaces to communicate using Program Call. The control region is first to initialize and it establishes the cross-memory environment that allows dependent regions to call back into the control region. As dependent regions initialize (either at startup or on-demand) each dependent creates a cross-memory environment that allows the control region to call into the dependent region. This creates a bi-directional calling mechanism between the control region and each dependent region. The DAC is the primary control table for dependent address space services.

**MF0084I: Cross-memory initialization complete**

This message is issued during startup when Mainframe Access has completed the setup of z/OS cross-memory resources that allow Mainframe Access address spaces to communicate using Program Call.

**MF0085I: > Start\_Program sent to [rcvd from] stcname (seq=n grp=cccc pgm=ccccccc uid=ccccccc)**

This message is issued when Program Call is used to pass a Start Program request to a dependent address space. The control region issues the "sent" form of the message and the dependent region issues the "rcvd" form of the message. seq= is the request sequence number used to correlate the cross-memory activity grp= is the ASGROUP name for the dependent region pgm= is the name of the program to be called uid= is the user id that will provide the program execution security environment

**MF0086I: > Program\_Complete sent to [rcvd from] stcname (seq=n ServerRC=n ProgramRC=xxxxxxx)**

This message is issued when Program Call is used to pass a Program Complete indication to the control region. The Program Complete indication returns the result of a Program Call request that was passed to the dependent region. seq= is the request sequence number used to correlate the cross-memory activity ServerRC= is the Mainframe Access return code 0 = the requested program was called and executed successfully (ProgramRC contains the return code) 1 = the requested program abended (ProgramRC contains the ABEND code) 2 = the dependent region could not load the requested program module 3 = the dependent region Mainframe Access load and call service failed 4 = the call request was not successfully passed to a dependent processing region 5 = the user credentials (userid and password) were invalid ProgramRC= is the return code value from the called program (if the ServerRC is zero)

**MFM0087I: Cross-memory environment created**

This message is issued during startup to confirm that the z/OS cross-memory Program Call infrastructure was successfully created in this address space.

**MFM0088I: Asparm extracted (length=n)**

This message is issued during startup of a dependent region to confirm that information needed to establish cross-memory communication was successfully passed from the control region to this dependent region. The asparm data is displayed in dump format following this message.

**MFM0089E: Cross-memory start failed (Da\_Start rc=n rs=xxxxxxx)**

This message is issued during startup if Mainframe Access is unable to create the z/OS cross-memory Program Call infrastructure.

Mainframe Access ABENDs with code U3100. Contact product support if you cannot resolve the reason for the initialization failure by examining related messages, etc.

**MFM0090I: Waiting for server task to initialize**

This message is issued during startup when the dependent region has received a request and the required processing task has not yet complete initialization.

This message is issued repeatedly (every second) until the server task completes initialization and is ready to accept the request.

**MFM0091I: < Appserver\_Started received from stcname (dab=xxxxxxx)**

This message is issued by the control region when a started dependent region has completed its cross-memory initialization and issued a confirming Program Call back to the control region. The dependent's call provides the cross-memory information that the control region needs to Program Call into the dependent region.

**MFM0092I: Appserver stcname connected (dab=xxxxxxx)**

This message is issued by the control region when a started dependent region has been successfully contacted by the control region using the dependent's cross-memory Program Call information.

**MFM0093E: Appserver stcname connection failed (Da\_Conn rc=n rs=xxxxxxx)**

This message is issued by the control region when a started dependent region could not be contacted by the control region using the dependent's cross-memory Program Call information.

Contact product support if this problem persists.

**MFM0094I: < Ctrlgn\_Acknowledgement received from stcname**

This message is issued by the dependent region when the control region contacts the dependent by using the cross-memory Program Call information provided by the dependent.

**MFM0095I: < Start\_Shutdown received from stcname**

This message is issued by the dependent region when the control region uses Program Call to start shutdown processing in the dependent region.

**MFM0096I: Cross-memory cleanup complete**

This message is issued during shutdown to confirm that all of the z/OS cross-memory resources allocated by this address space have been successfully released.

**MFM0097E: Cross-memory cleanup failed (DA\_Stop rc=n rs=xxxxxxx)**

This message is issued during shutdown to report that some z/OS cross-memory resources allocated by this address space were not successfully released.

Contact product support if this problem persists.

**MFM0098I: Appserver stcname is being shutdown (dab=xxxxxxx)**

This message is issued during shutdown by the control region when an active dependent region is selected to receive a Start\_Shutdown Program Call. After the call the PC linkage for the dependent is removed from the control region.

This message is also issued when a dependent region is being shut down in response to a request processing ABEND in that region. When a processing ABEND occurs the control region will shut down the associated dependent region because that address space is considered unstable. For example, storage contents may be corrupted, excessive storage allocations may be accumulating, etc. A new instance of a dependent region will be automatically started when one is needed for subsequent request processing.

**MFM0099I: Appserver stcname disconnected (dab=xxxxxxx)**

This message is issued during shutdown by the control region to confirm that the named dependent region has received the Start\_Shutdown Program Call and its PC linkage has been removed from the control region.

This message is also issued to confirm the shutdown of an dependent region that has become unstable due to a previous processing ABEND.

**MFM0100E: Appserver stcname disconnect failed (Da\_Ashut rc=n rs=xxxxxxx)**

This message is issued during shutdown by the control region when the cross-memory linkage to the named dependent region cannot be successfully removed.

Contact product support if this problem persists.

**MFM0101I: groupname address space group successfully created (dag=xxxxxxx)**

This message is issued during startup by the control region when the definition for an address space group has been successfully processed. This message confirms that the control structures for managing the group's address spaces have been successfully created. Message MFM0102I follows and displays the parameter values for the group. Address space group definitions are read from the Mainframe Access SERVERS file during initialization.

This message does not confirm that all values in the address space group definition are valid and usable. For example, the JCL procedure name in the definition may not exist in the proclib or the JCL procedure may have syntactical errors that will prevent it from starting.

**MFM0102I: groupname - Proc(name) STCPrefix(cccc) GroupID(n) Min(n) Max(n) Server(name)**

This message is issued during startup by the control region and follows message MFM0101I for a successful address space group creation. This message displays the parameter values from the SERVERS definition for the group.

**MFM0103I: groupname is the default address space group**

This message is issued during startup by the control region when an address space group definition with GroupID=1 is processed. GroupID=1 specifies that this is the definition for a default group that will be selected if the group name or group id in a request cannot be found in an active address space group definition.

**MFM0104I: No default address space group has been defined**

This message is issued during startup by the control region when all address space group definitions have been processed and no default group was defined. GroupID=1 is used in a group definition to indicate the default group. There is no requirement to define a default group and system operation can proceed normally without a default group definition. Processing requests that do not specify a valid active group name or group id will be rejected.

**MFM0105I: Address space stcname started for group groupname (dab=xxxxxxx)**

This message is issued by the control region when a new dependent address space is started. The stcname is the started task name assigned to the job. The groupname identifies the address space group for which this address space was started.

**MFM0106E: Address space for groupname could not be started (Da\_Ascrc rc=n rs=xxxxxxx)**

This message is issued by the control region when a new dependent address space cannot be started. The return code and reason code from the address space creation routine are reported in the message.

The most common reason, indicated by rc=5, indicates that the maximum number of address spaces defined for the group has been reached. When rc=5 is reported, the request that initiated the address space creation must be queued to wait for one of the existing address spaces to become available.

If rc=5 is frequently reported for your system you should increase the MAXIMUM value for the address space group by 1. This allows an additional address space to be started and reduces the queueing delays for client requests. Contact product support if the problem persists.

For TSO Application Servers the number specified in the MAXIMUM parameter should be set to the number of users you expect to be logged on to the MFA Server concurrently.

The groupname in this context will inform you which type of dependant address space cannot be started, and so which one you need to increase the MAXIMUM parameter for. The mapping is as follows:

Group Name	Application Server Type
AMSQ	AMS Application Server
CHGX	ChangeMan Application Server
ENDV	Endevor Application Server
TSOX	TSO Application Server

For example, if the error message has TSOX as the groupname and rc=5 then you should modify the MAXIMUM parameter of the TSO Application Server shown in bold below:

```
<!-- Mainframe Access Application Server for TSO command -->
<TSO      PROCEDURE="MFAAS" MAXIMUM="2" JOBNAME="MFAT"
        TSO_PROCEDURE="MFATSO"
/>
```

**MFM0107E: Definition failed for group groupname (Da\_Mkgrp rc=n rs=xxxxxxx)**

This message is issued during startup by the control region when the control structures for an address space group definition cannot be successfully created.

Mainframe Access ABENDs with code U3100. Contact product support if you cannot resolve the reason for the initialization failure by examining related messages, etc.

**MFM0108I: > Start\_Tran sent[rcvd] to groupname (seq=n pri=n len=n1+n2 grp=cccc src=n.n.n.n)**

This message is issued when Program Call is used to pass a Start Transaction request to a dependent address space. The control region issues the "sent" form of the message and the dependent region issues the "rcvd" form of the message. seq= is the request sequence number used to correlate the cross-memory activity pri= is the priority assigned to the transaction by the originator len= shows the header length (n1) and the content length (n2) grp= is the ASGROUP name for the dependent region src= is the IP address of the originator

**MFM0109I: > Tran\_Complete sent to [rcvd from] groupname (seq=n ServerRC=n ProgramRC=xxxxxxx)**

This message is issued when Program Call is used to pass a Transaction Complete indication to the control region. The Transaction Complete indication returns the result of a Start Transaction request that was passed to the dependent region. seq= is the request sequence number used to correlate the cross-memory activity

ServerRC is the Mainframe Access return code 0 -> the requested transaction was called and executed successfully (ProgramRC contains the transaction return code) 1 -> the requested transaction abended (ProgramRC contains the ABEND code) 2 -> the client socket connection could not be obtained by the dependent region

ProgramRC is the return code value from the called transaction program (if the ServerRC is zero)

**MFM0110I: Request queued for group groupname (qcount=n dapc=xxxxxxx rc=n rs=xxxxxxx)**

This message is issued when a request (Start Program or Start Transaction) is received and no dependent address space is immediately available to process the request. The request is queued to the address space group to wait for an available dependent address space. If the maximum number of address spaces for the group have not been started, a new dependent region will be started to process this request. qcount= is the current number of requests waiting in the queue for this address space group dapc= is the address of the control structure that represents the unit of work rc= and rs= are the return and reason code values from the Da\_Qwork service .

If this message occurs frequently, your system may perform better if you update the servers definition file for the indicated group. Increasing the MAXIMUM value of the group by 1 will provide an additional address space for processing client requests. This should reduce the frequency of request queueing which should result in improved response time for requests that would otherwise be queued.

**MFM0111I: SAF logon for userid (sd=n (xxxxxxx) rc=n type=n aausr=xxxxxxx acee=xxxxxxx)**

This message is issued when a user at a Mainframe Access client successfully authenticates by providing a userid and password that are accepted by the z/OS SAF authentication routines. Security resources, including a z/OS SAF ACEE control block, are obtained to create a security environment for this user.

**MFM0112I: SAF logoff for userid (sd=n (xxxxxxx) rc=n type=n)**

This message is issued when a previously authenticated user at a Mainframe Access client changes user ids or disconnects from the server. This message confirms that the z/OS SAF ACEE and related security resources have been released.

**MFM0113E: SAF error for userid (sd=n (xxxxxxx) SafRC=n RacfRC=n RacfRS=n)**

This message is issued when the userid and password submitted by a Mainframe Access client are rejected by z/OS SAF authentication routines. The specific SAF and RACF return and reason codes are reported in the message. The SAF and RACF return and reason code definitions are summarized elsewhere in this section.

**MFM0114E: Timeout for sd=n n.n.n.n at mm/dd/yy hh:mm:ss, last time: mm/dd/yy hh:mm:ss**

This message is issued when a Mainframe Access client is idle for the number of minutes specified by the TIME OUT FOR CONNECTION parameter. The idle client is disconnected and associated resources are released. sd= is the socket number of the client connection n.n.n.n is the IP address of the client mm/dd/yy hh:mm:ss is the date and time when the time out occurred The "last time" is the date and time when the last client TCP/IP activity occurred.

**MFM0115E: Access list I/O task initialization has failed**

This message is issued during initialization if the access list file (DDNAME XDBACC) is not usable.

Disregard this error message for dependent regions. Dependent regions do not use an access list data set. If the error message is for the control region, examine related Mainframe Access and system message to determine the cause of the error. Contact product support if the problem persists.

**MFM0116E: Access list DDname is missing**

This message is issued during initialization if a data definition statement for DDNAME XDBACC is not found in the started task JCL.

Disregard this error message for dependent regions. Dependent regions do not use an access list data set. If the error message is for the control region, correct the started task JCL for the Mainframe Access control region and restart Mainframe Access Server. Contact product support if the problem persists.

**MFM0117I: Mainframe Access ParmBlock is located at xxxxxxxx**

This message is issued during initialization to display the address of the Mainframe Access Server primary control table, the ParmBlock.

**MFM0118I: type [parameter definition statement]**

This message is issued during initialization to display the active parameter definitions when LIST PARMS=YES is specified in the Mainframe Access startup parameters. All statements from the XDBIN parameter file (type "Parms") and the SERVERS definition file (type "Srvrs") are echoed to the XDBOUT sysout data set.

**MFM0119I: Mainframe Access jobname is ccccccc**

This message is issued during initialization to display the jobname assigned to this Mainframe Access address space.

**MFM0120E: Servers definition for MCOID=mcoid not found sd=n (xxxxxxx)**

This message indicates that an error has occurred while Mainframe Access was processing the initial client request to bind a target CICS region to the current socket connection. The mcoid contained in the client request did not match any of the defined CICS servers and no default CICS server was defined.

Verify that the MCOID is specified correctly in the client configuration. Also verify that the Mainframe Access Server definition for that target CICS system is correct. The "Connect id" in the CICS Resource Definition should match the MCOID in the Mainframe Access Server definition. You may also create a default CICS server definition that is to be used when the client-specified MCOID does not exist. If the definitions are correct and this problem persists, contact Micro Focus Product Support for assistance

**MFM0121E: MFA startup error: no DSS environment**

When a transaction arrives at an Endeavor Dependant Region, MFA will attempt to validate that Global Storage has been assigned for Endeavor use. This messages indicates that MFA initialization has failed, and no global work areas have been pre-assigned for Endeavor.

**MFM0122E: Endeavor setup error: No MSGLOG established**

When a transaction arrives at an Endeavor Dependant Region, MFA will attempt to validate that an Endeavor transaction message log has been successfully allocated to this job. This is either dynamically created as jobname.CR\_jobname.MFA.ENDEVOR.MSGLOG or pre-defined by the site within the DR started task JCL:

```
//ENDVMSG DD DISP=NEW,DSN=&&MSGLOG,UNIT=VIO,  
//      DCB=(RECFM=FBA,LRECL=133,BLKSIZE=13300),  
//      SPACE=(13300,(10,10))
```

An Endeavor transaction cannot be processed without a MSGLOG file.

**MFM0123E: Endeavor version mismatch between CR and DR**

When a transaction arrives at an Endeavor Dependant Region, MFA will attempt to validate that the same Endeavor API version was used in both address spaces. This is necessary because the Endeavor API is not downward compatible. The transaction is aborted if the version does not match. The STEPLIB concatenation must specify the same Endeavor load library version in both address spaces.

**MFM0124E: No Endeavor API modules found**

When a transaction arrives at an Endeavor Dependant Region, MFA will attempt to load the module ENA\$NDVR. This the entry point of the Endeavor API. The transaction is aborted if the Endeavor API cannot be located.

**MFM0125E: name-address Task shutdown forced**

Issued during shutdown when one of the Mainframe Access subtasks does end properly. name identifies the type of subtask and address is the address of Mainframe Access' task control block for the process.

This message is normal when the associated task has had a processing failure prior to shutdown. Contact product support if this message appears frequently.

**MFM0126E: Tasks (n) forced during shutdown forced**

Issued during shutdown when one or more of the Mainframe Access subtasks does not end properly (see message MFM0125E).

This message is normal when the associated tasks have had processing failures prior to shutdown. Contact product support if this message appears frequently.

**MFM0128I MCG subtask MCGEXEC cc xxxxxxxx started for XDBMFADM cc xxxxxxxx**

This is a normal operational message to log the fact that a new subtask was started for Mainframe Call Generator program execution.

**MFM0128E MCG Non-zero return from IGZERRE set call; rc=ddd**

The IBM IGZERRE module was called to establish a COBOL run time environment but has indicated there is a problem by returning with a non-zero return code. See the section IGZERRE Entry Conditions and Return Codes in the appendix Mainframe Call Generator for information on the return code values.

**MFM0128E MCG Module IGZERRE is not available for set call**

This message indicates that the IBM IGZERRE module was not loaded during startup and could therefore not be called to establish a COBOL run time environment.

**MFM0128E MCG Non-zero return from IGZERRE reset call; rc=ddd**

The IBM IGZERRE module was called to terminate a COBOL run-time environment during Mainframe Call Generator cleanup but has indicated there is a problem by returning with a non-zero return code. See the section IGZERRE Entry Conditions and Return Codes in the appendix Mainframe Call Generator for information on the return code values.

**MF0128E MCG No IGZERRE COBOL environment found for reset**

The Mainframe Call Generator cleanup service found that no COBOL environment was previously established for the Mainframe Call Generator session that is ending.

**MF0129E MCG Unable to execute user program ccccccc**

An execute request could not be completed for the named program. The preceding error messages will identify the exact cause.

**MF0129E MCG Unable to find or load user program ccccccc**

The z/OS BLDL or LOAD operation for the named program failed. The preceding error messages will identify the exact cause.

**MF0129E MCG Request message sequence error**

An unexpected Mainframe Call Generator request message was received from the client. The Mainframe Call Generator request is not appropriate for the current state of the remote execution operation. Start the Mainframe Access Server trace facility and recreate the problem to create a log of messages showing the sequence of messages being exchanged.

**MF0129E MCG Request message not recognized**

An unexpected request message was received from the client. The request message could not be identified as a Mainframe Call Generator request. Start the Mainframe Access Server trace facility and recreate the problem to log the erroneous message.

**MF0130E MCG ccccccc ABENDED, System=Sxxxx Reason=xxxxxxx User=Uddd**

This message is issued after the Mainframe Call Generator ESTAE extension has trapped and recovered from an ABEND condition. The message provides the system (hexadecimal) or user (decimal) ABEND code. System reason codes are also logged for system ABENDs. If a SYSUDUMP (or SYSMDUMP) DD statement is available to the server, a dump is recorded for the ABEND.

**MF0130E MCG unable to call ccccccc, iSvcRC=dddd iSvcRS=dddd**

This message is issued when server preparation for the Mainframe Call Generator call operation encounters an internal logic error. The MD\_MCGEXEC\_RUN service was called to execute the user program but this service ended with an error indicated by the return code and reason code values. The preceding error messages identify the exact cause.

**MF0130E MCG cleanup failed, iSvcRC=dddd iSvcRS=dddd**

This message is issued if the MD\_MCGEXEC\_CLEANUP service encounters an internal logic error. The preceding error messages identify the exact cause.

**MF0131E Task ccccccc xxxxxxxx TCB xxxxxxxx terminated Uddd; callrtm rc=ddd**

This message is issued when a subtask is forcibly terminated by Mainframe Access Server. The Uddd user ABEND code will be U201 for forced terminations of a MCGEXEC subtask. This could occur when the end user logs off or terminates the client while a Mainframe Call Generator session is active.

## Data Set Services Messages

**MFMDS001I DSS Server Ready**

Mainframe Access has successfully initialized the DSS component. Any pre-allocated item libraries are now ready for use.

**MFMDS002I DSS Initialization failed**

Mainframe Access failed to initialize the DSS component. The services normally provided by DSS are therefore not available.

**MFMDS003I Cell pool build failed**

The DSS component was unable to acquire enough virtual memory to build a pool of reusable resources. Adjust the configuration or memory allocation for the Mainframe Access started task.

**MFMDS004I Public File non-VSAM**

The DSS component was unable to initialize a shared public file because the file specified was not a VSAM key-sequenced data set. DSS discards the request and continues processing. All item libraries are shared public files.

Ensure that all item libraries are created as VSAM key-sequenced data sets.

**MFMDS005I DSS Server shutdown**

The DSS server has been successfully shut down as part of the Mainframe Access shutdown procedure.

**MFMDS006I DSS Server unidentified request**

The DSS server detected an invalid request. DSS discards the request and continues processing. If you see this message contact Micro Focus SupportLine.

**MFMDS007I****MFMDS008I Online ITEM LIBRARY=data-set-name**

The item library named is now online and available.

**MFMDS009I Offline ITEM LIBRARY=data-set-name**

The item library named has been taken offline and is no longer available.

Adjust the configuration or memory allocation for the Mainframe Access started task.

Ensure that all item libraries are created as VSAM key-sequenced data sets.

If you see this message contact Micro Focus SupportLine.

**MFMDS010I DAIR reas/info DSN=data-set-name**

DSS encountered a dynamic allocation error while attempting to allocate the specified data set. Here are some possible reason and information codes:

Reason	Info	Description
02xx		Environmental errors: memory or authorization
0352	0002	Invalid data set name
	0003	Invalid member name

Reason	Info	Description
	0004	Invalid disposition
1708	0002	Unable to locate data set name in catalog

All reason codes and information codes are in hexadecimal notation. For a full list of errors and further information on z/OS dynamic allocation errors, see Chapter 26 of the IBM manual MVS Authorized Assembler Services Guide.

#### **MFMD5011I TIOT ENQ INTERFERENCE**

A dynamic allocation request has been aborted because another system service request within this task has already locked access to the TIOT (Task Input/Output Table). The request will be re-tried after a 50 millisecond delay. For further information on OS/390 Dynamic Allocation errors, refer to Chapter 26 of the IBM publication (GC27-1763) MVS Authorized System Services Guide.

#### **MFMD5012I M=member ENQ FAILURE RC=nnn**

A member of a PDS was to be locked for exclusive access by this operation. However, the PDS member could not be locked at this time due to competition from another user. This request has already been retried several times over a three second period, and now the transaction is being aborted due to BLOCKED status. For further information on OS/390 ENQ errors, refer to the IBM publication MVS Assembler Services Reference (GC28-1910).

RC	Description ENQ RET=USE
04	Resource not available
08	Task already has control of this resource
12	Task has previously failed to acquire this resource

#### **MFMD5013E OPEN FAILED FOR SNAP | READER | SYSOUT**

A transient file was not opened properly for subsequent use by MFA resource cleanup (SNAP) or job submission (READER) or logging (SYSOUT). The request is aborted. Additional IBM messages may have been displayed on the SYSLOG to explain the nature of the failure. The MFA Direct server continues to run with degraded services.

#### **MFMD5020E Invalid z/OS file format**

The file named in the associated message MFMD5031 has a file format that is not currently supported by MFA. This includes such formats as ISAM, HFS files, direct-access keyed files, and various spanned record formats.

#### **MFMD5021E LRECL too high**

DSS detected an attempt to write a logical record which exceeded the maximum logical record size for the file named in the associated message MFMD5031.

#### **MFMD5022E Invalid file handle**

DSS detected an invalid parameter list passed by a calling program.

If you see this message contact Micro Focus SupportLine.

#### **MFMD5024E Invalid file name**

DSS detected an attempt to create an invalid filename.

If you see this message contact Micro Focus SupportLine.

**MFMD5026E LRECL EXCEEDS DEFINITION FOR DSN=dsname**

During an update operation, a logical record was too large to be written to the selected file. The operation was aborted.

**MFMD5029E RECALL FAILURE=nnnnn FOR DSN=dsname**

An internal error occurred during an attempt to recall a file from IBM's HSM (Hierarchical Storage Manager). See the product documentation DFSMSHsm Managing Your Own Data (SC35-0420) for details.

RC	Description
100	DFSMSHsm not available
400	Invalid request
402	Dataset not found
403	Invalid dataset name
806	Service module not found

**MFMD5030E STOW error RC=nn Reason=nnnn M=member**

DSS encountered an error while writing to the PDS directory for the file named in the associated message MFMD5031. The first eight characters of the member name are displayed. Here are some possible return code (RC) and reason values:

RC	Reason	Description
4	0	Member name specified already exists
8	0	Member name specified could not be found
12	0	No space remains in the directory
16	01	Permanent physical error
	02	Unable to add EOF marker to directory
	04	Unable to flush system buffers
	3383	SD37 failure: no secondary space available
	3639	SE37 failure: no secondary space available

For a full list of return codes and reasons, see the IBM manual Macro Instructions

**MFMD5031I DSN=data-set-name**

This information message may accompany other system messages to indicate which data set is affected. The data set name appears as a string of up to 44 characters.

**MFMD5032E FIND error RC=nn Reason=nnnM=member**

DSS encountered an error while locating a member in the PDS directory for the file named in the associated message MFMD5031. The first eight characters of the member name are displayed. Here are some possible return code (RC) and reason values:

RC	Reason	Description
4	0	Member name specified could not be found
	4	Insufficient RACF authority for this request
	8	Share options not granted on this PDSE
	12	This PDSE already open for output on another member

RC	Reason	Description
8	0	Permanent physical error
	4	Insufficient virtual storage available
	8	Invalid DEB (data extent block) or data set owned by another task
	12	Physical error on buffer flush
	16	Invalid DCB

#### MFMD5033E BLDL error RC=nnReason=nnn M=member

DSS encountered an error while building directory information from the PDS directory for the file named in the associated message MFMD5031. The first eight characters of the member name are displayed. Here are some possible return code (RC) and reason values:

RC	Reason	Description
4	8	Member name specified could not be found
8	0	Permanent physical error
	4	Insufficient virtual storage available
	8	8 Invalid DEB (data extent block) or data set owned by another task

For a full list of return codes and reasons, see the IBM manual Macro Instructions for Data Sets.

#### MFMD5034E Directory error RC=nn Reason=nnnn

DSS encountered an error while trying to identify the PDS member for the file named in the associated message MFMD5031. Here are some possible return code (RC) and reason values:

RC	Reason	Description
8	1012	No members found in directory
12	1041	Invalid parameter list
	1054	Invalid DEB (data extent block)
	1057	PDS is not open
	1058	Invalid DCB

For a full list of return codes and reasons, see the topic DESERV (Directory Entry Services) in the IBM manual Macro Instructions for Data Sets.

#### MFMD5035E QSAM abend Sxxx-yy

DSS has detected a QSAM failure and has directed QSAM to ignore the failure. The failure occurred while DSS was processing the file named in the associated message MFMD5031. Sxxx is the abend or system completion code and yy is the reason code. These codes are presented in hexadecimal format. Possible failures include:

Abend	Reason	Description
C37	4	Invalid extents found on end-of-volume
D37	4	No secondary space specified on this file, and the primary space has been entirely used. Reallocate the file to allow secondary extents or a larger primary extent.

Abend	Reason	Description
E37	4	No secondary space was available on this volume, or the number of extents has already reached 16 for this file. Reallocate the file to use larger secondary extents or move the file to a different volume where space is available.

**MFMD5040E VSAM error DD=ddname RC=nn FB=nnn REQ=verb**

DSS has detected a VSAM error probably associated with an input/output operation on an item library. Possible values for verb include:

Verb	Description
GET	Read a record
PUT	Write a record
CHECK	Verify completion of an event
POINT	Position to a specific location
ENDREQ	Cancel an operation
ERASE	Erase a record

Common return code (RC) values and feedback code (FB) values include:

RC	FB	Description
8	8	Attempt to store a duplicate key
	12	Conflicting options specified violate stored sequence
	16	Record not found
	20	Physical locking conflict
	24	Volume not available
	28	Insufficient space on volume to extend the
	32	Invalid relative byte address specified
	36	Key range specified in definition excludes this key
	40	Insufficient virtual storage in the Mainframe Access address space
	48	Conflicting options on VSAM request
	64	No virtual storage to handle this level of concurrency
	68	File not open for type of processing requested
	72	Keyed request made to an ESDS
	88	Invalid switch to sequential processing without positioning
	92	Invalid replace or erase without key
	96	Attempt to modify a key on update
	104	Conflicting RPL options
	108	Invalid record length specified
	112	Invalid key length specified
	4	Read error on data component of file
	8	Read error on index component of file
	16	Write error on data component of file

RC	FB	Description
	20	Write error on index component of file

For a full list of return codes and reason codes see the IBM publication DFSMS/MVS Macro Instructions for Data Sets.

#### **MFMD5041E VSAM open error DD-ddname RC=nnFB=nnn**

DSS has detected an error while attempting to open a VSAM data set. This message is accompanied by the z/OS system message IEC161I to describe the problem further. Common return code (RC) values and feedback code (FB) values include:

RC	FB	Description
4	116	Warning: file was not closed properly after previous use and has not been recovered using an internal VSAM verify
	118	Warning: file was not closed properly after previous use but has been recovered using an internal VSAM verify
8	128	No DD statement was found for this file
	136	Not enough virtual storage to complete the open processing
	144	I/O error while reading the catalog
	152	RACF denied open access
	160	Inconsistent open options specified
	168	File already open by another user

For a full list of return codes and reason codes see the IBM publication DFSMS/MVS Macro Instructions for Data Sets. VSAM system messages are documented in the IBM manual z/OS System Messages Volume 4.

For a full list of abend codes and reasons, see the IBM manual MVS System Codes.

#### **MFMD5050E DSS services not available**

An attempt has been made to use DSS; however, it is not currently available. This may be due to a failure during initialization or configuration, or it may have been terminated during system shutdown while a transaction is still running.

Review the z/OS system log and the Mainframe Access job log and SYSOUT data sets for messages related to the failure. If you need further assistance contact Micro Focus SupportLine.

#### **MFMD5052I CAPANVALET READY**

MFA has initialized full access to CA/Panvalet services.

#### **MFMD5053I CAENDEVOR API REL Brrvvv ESI**

MFA has initialized full access to CA/Endevor API services using the release and version specified, and noting whether the External Security (ESI) or Alternate User ID (UID) features are active.

#### **MFMD5054I Librarian Exit Table active**

MFA has created a memory table to describe the selected exits to be specified during batch updates against the corresponding Librarian master file.

### MFMD5055I MCGRPC feature (in)active

Indicates whether the MCGLIB DD card was specified as the LOAD library for remote calls as used by the Mainframe Call Generator (MCG) interface.

### MFMD5056I ChangeMan DD=CMNxxxx Open failure

Access to site overrides specified for DD=CMNLIB\$ and DD=CMNOPTS (to define default build procedures and site options respectively) failed during MFA startup.

### MFMD5057I CAPANVALET member security exit loaded

The user exit MFAPVXIT was found and loaded to provide member-level security for Import, Export, and Directory access calls against Panvalet master files.

### MFMD5058I Librarian ELIPSGEN not found

This site configuration file is used to validate library types and language names for establishing Librarian run-time parameters. Without this information, new objects will default to TYPE=COB.

## MFA Direct Messages

### MFA0101I LOGON USER=userid TIME=hhmm DAY=nnn ID=nnnnnnn VER=nn

This information message indicates the time and date that a user session was established with the MFA Direct component. The time is specified using 24-hour clock notation, and the day is the day of the year. The ID represents the relative session number so as to differentiate when the same user has logged on multiple times.

### MFA0102I LOGOFF USER=userid ID=nnnnnnn

A user has logged off the system. This message is added to both the MFALOG and the SYSLOG.

### MFA0103I AUTH FAIL USER=userid RC=rc RACF=rr/ss

A user logon failed to pass security authorization. The reason codes are tabulated below. MFA also inserts a logon failure message into the AUDIT log. Similarly, an IBM system diagnostic (RACF) may be added to the SYSLOG

RC	RACF	Description
04	04/00	No decision made
	04/04	No RACF profile found
	04/08	Request failed
08	08/00	Not authorized to logon

### MFA0105I {AUTH or FAIL} USER=userid INTENT=action AM=method DSN=dsname

where:

<b>action</b>	is READ, WRITE or ALTER
<b>method</b>	is QSAM, BPAM, VSAM, LIBR, PANV, IMS or DB2
<b>dsname</b>	is the file being accessed

The results of a user access attempt are logged in the MFALOG. This provides an audit trail of the individual file accesses processed by MFA Direct. The information is only accumulated for those systems configured with the parameter: MFA\_SAF\_HISTORY=YES

### MFA0111E MFA INVALID DISPATCHING VERB

MFA Direct has been scheduled with an invalid request. The request will not be serviced. This represents an internal protocol error by MFA. Please contact Micro Focus support if the problem persists.

### MFA0112E MFA MCB Environment failure

MFA Direct is unable to initialize a new thread due to an unexpected environmental error. The new thread is rejected. Please contact Micro Focus support to report the problem.

### MFA0113E MFA TSA already in use

An MFA thread has been unexpectedly re-dispatched while it is still processing a prior request. The new request is rejected. Please contact Micro Focus support to report the problem.

### MFA0801E JES/SAPI RC=xx REASON=yy

A request using the JES Sysout API to retrieve a held file from JES spool has failed. Return codes and reason codes are documented in the IBM publication: Using the Subsystem Interface (SC28-1879) A partial list is provided below:

RC	Reason	Description
08		Invalid search argument(s)
12		Unable to process now
16		Duplicate job name
20		Invalid destination
32		Logic error
	32	Conflicting arguments
	36	Invalid destination arguments
	40	Invalid job number
	44	Invalid form
	96	SAPI request header error
36		Invalid CLASS
40		Invalid disposition options

### MFA0802E I/O ERROR ON INTERNAL READER

A request to submit a job to the JES internal reader has failed. The action is aborted. There may be an associated IBM system diagnostic on the SYSLOG indicating the nature of the failure.

### MFA0803E JES SSI ERROR FUNC=xx RC=yy

A request using the JES Subsystem interface has failed. The only functions issued by MFA are FUNC=79 (SYSOUT API) or FUNC=80 (Extended Status API). Return codes and reason codes are described in the IBM publication: Using the Subsystem Interface (SC28-1879) A partial list is provided below:

RC	Description
04	Function not supported
08	JES not available
12	JES does not exist
16	Fatal error

RC	Description
20	Logic error
24	SSI not initialized

#### MFA0804E JES STATUS RC=xx REASON=yy

A request using the JES Extended Status API to acquire details of the next held output on JES spool has failed. Return codes and reason codes are documented in the IBM publication: Using the Subsystem Interface (SC28-1879) A partial list is provided below:

RC	Reason	Description
04		Invalid search argument(s)
08		Logic error
	04	Invalid destination
	08	Job ID low invalid
	0C	Job ID high invalid
	10	Job ID high too low
	14	Invalid Job class
	20	Unable to access Job queue
	24	Invalid control structure
	28	Invalid length
	2C	Invalid job name
	30	Invalid user name
	34	Invalid system name

#### MFA1034I CSI CATALOG ERROR nn RC=nnn REASON=nnn (ID) filter

An error occurred within the Catalog Search Interface as provided by IBM as part of the DF/SMS z/OS middleware. The ID represents an internal IBM software module ID, and the filter is the Catalog Search argument derived from the client input. The return codes are described in the IBM publication DF/SMS Managing Catalogs (SC26-7401), but a partial list is shown below. Most other return codes and reason codes are documented as part of IBM System Message IDC3009I and can also be found using the IBM Web Service LOOKAT.

RC	REASON	Description
100	04	Access error on catalog
122	04	Invalid filter key

#### MFA1035I CATALOG ERROR RC=nnn VOL=void DSN=dsname

An error occurred attempting to OBTAIN a catalog record for the specified dsname on the specified volume ID. The dsname may no longer be catalogued on that volume, and MFA is unable to determine the file attributes. It is possible that the volume is simply not mounted, or is no longer in active service. This file will be ignored and processing will continue. The return codes are described in the IBM publication DFSMSdfp Advanced Services (SC26-7400)

RC	Description
04	Volume not mounted

RC	Description
08	The format-1 DSCB was not found in the VTOC of the specified volume
12	A permanent I/O error was encountered reading the VTOC of the specified volume
16	An invalid workarea pointer was encountered

**MFA1036I CSI VSAM ERROR RC=nnn REASON=nnn DSN=dsname**

An error occurred attempting to use the CSI interface to identify the VSAM attributes of the specified dataset. This file will be ignored and processing continues. The return codes are as described for message MFA1034I.

**MFA1037I CSI GDGB ERROR RC=nnn REASON=nnn DSN=dsname**

An error occurred attempting to use the CSI interface to identify the file attributes of the specified generation data group. This file will be ignored and processing continues. The return codes are as described for message MFA1034I.

**MFA4001E CA/LIBRARIAN ERROR REQ=aaaa RC=nnn**

An internal CA/Librarian error occurred while processing the FAIR API request identified as: aaaa={OPN or LOC or MOD or REC or CLS} The return codes are described in the CA licensed documentation CA/Librarian File Access Interface Routines Guide. A partial list is provided below:

REQ	RC	Description
OPN	1	Invalid filename or unauthorized
	2	DDname missing
	8	Invalid parameter
	9	Not enough storage to process
LOC	1	Required module not found
	2	Caller not authorized for request
	6	Disk access failure
	7	Format error on access
	8	Invalid parameter
MOD	1	No modules found
	2	Caller not authorized for request
	3	Module not archived
	6	Disk access failure
	7	Format error on access
REC	1	End of module
	6	Disk access error
	7	Format error on access
	8	Invalid parameter
	9	Virtual storage shortfall

REQ	RC	Description
CLS	81	Close failed

#### **MFA4002E OPEN FAILED ON LIBRARIAN UPDATE**

The system was unable to open a temporary work file for use with the batch update utility AFOLIBR in an attempted Librarian update operation. Additional information may be available on the SYSLOG if an associated IBM internal system problem was encountered. As well, a small MFA snap dump will be issued to provide additional problem determination data. No batch update will be attempted. If you are unable to resolve the problem, open an incident with Micro Focus product support, and include the Snap Dump and the MFALOG as part of the problem description.

#### **MFA4003E WRITE ERROR ON LIBRARIAN UPDATE**

The system was unable to write to a temporary work file for use with the batch update utility AFOLIBR. Additional information may be available on the SYSLOG if an associated IBM data access error was encountered. As well, a small MFA snap dump will be issued to provide additional problem determination data. No batch update will be attempted. The probable cause here is an attempt to write a record (from the workstation) which exceeds the logical record size of the work file.

#### **MFA5001E CA/PANVALET ERROR REQ=aaaa RC=nnn MSG=PVnnn**

An internal Panvalet error occurred while processing a PAM API request identified as: aaa={OPEN or CLS or READ or SRCH} The return codes and PanValet message numbers are documented within the CA licensed documentation: CA/Panvalet Messages Guide CA/Panvalet System Management Guide An incomplete summary follows:

Message	Description
PV001	Invalid command
PV002	Member name invalid
PV003	Invalid sequence number
PV004	Excessive parameters
PV005	Required parameter missing
PV006	Numeric parameter too large
PV007	Parameter exceeds 10 characters
PV008	Unsupported language format
PV009	Invalid parameter
PV012	No statement found
PV023	Name not found
PV032	Sequence error
PV033	Library error
PV036	Access error: member locked
PV043	Library storage exceeded
PV046	Panvalet library empty
PV047	Virtual storage shortfall
PV051	Invalid Library file
PV066	Function terminated due to errors
PV070	Statement truncated

Message	Description
PV095	Invalid DCB for Library
PV118	LRECL must be 80 for this language type
PV124	Invalid file

#### **MFA5002E CA/PANVALET LICENSE FAILURE: access quiesced**

This site is not licensed to access the PanValet API. Further attempts to access PanValet will be suspended by MFA to avoid repetitive errors. Contact PanValet support to re-establish your license keys. Re-starting MFA will resume PanValet access attempts.

#### **MFA5003E CA/PANVALET PAN#1 error RC=nnnnn**

An internal Panvalet error was encountered while processing a batch update request using the PAN#1 utility. The return codes are described within the CA licensed documentation: CA/Panvalet Messages Guide CA/Panvalet User Guide

#### **MFA5004E I/O ERROR on PANVALET Temporary file**

A QSAM error was encountered while writing a temporary file needed as a pre-requisite for the PAN#1 batch update utility. Normally, an IBM system error will appear on the SYSLOG to describe the actual reason, The probable cause is an attempt to write a logical record from the workstation which exceeds the logical record size of the host file.

#### **MFA6001E ENDEVOR API ERROR REQ=aaaa RC=nnn/rrrr/msgid**

An Endeavor internal processing error occurred while processing an API request identified as: aaaa={ERET or LELM or EADD} A copy of the actual Endeavor error message is inserted into the MFALOG listing if MFA\_ENDEVOR\_LOGGING is active. The return code, reason code, and Endeavor message numbers are described in the licensed CA/Endevor documentation: Endeavor for z/OS Messages and Codes Endeavor for z.OS API Guide

#### **MFA6002E I/O ERROR ON ENDEVOR TEMPORARY FILE**

A QSAM error was encountered while writing a temporary file needed as a pre-requisite for an Endeavor API request. Normally, an IBM system error will appear on the SYSLOG to describe the actual reason, The probable cause is an attempt to write a logical record from the workstation which exceeds the logical record size of the temporary file.

#### **MFA6003E SYNTAX ERROR ON ENDEVOR ENVIRONMENT STRING**

An invalid environment string was encountered during an Endeavor request. The transaction is aborted. Use you client software to re-specify the Endeavor prompts and properties correctly.

#### **MFA6004E ENDEVOR INTERFACE ABEND: abend-reason userid session-id**

The Mainframe Access ESTAE recovery routines detected an abend while processing an Endeavor transaction. The transaction is aborted. The above message appears in the MFALOG showing the diagnostic abend code and reason code.

## **Data Connect Messages**

#### **MFA100E ESTAE ENTERED ABEND CODE Uxxx/Sxxx**

Data Connect has detected an abend. The client software is notified and the dump is normally suppressed. See the MVS console log for additional information.

### **MFA101E LIMIT OF 256 PROCESSES EXCEEDED**

Logic within Data Connect can manage up to 256 concurrent sessions. It is unable to retain positioning and recovery information for additional sessions.

### **MFA110I VTAM PROCESSOR ACTIVE USING VTAMAPPL applid**

Data Connect has successfully created a VTAM connection and is available to service message traffic using APPLID=applid.

### **MFA111W VTAM ACB CLOSE FAILURE**

Data Connect was unable to close the VTAM connection successfully. This may be a VTAM environmental problem. See the MVS console log for additional information. Shutdown processing continues without VTAM access.

### **MFA112I VTAM PROCESSOR HAS TERMINATED**

Data Connect is no longer servicing VTAM message traffic. Shutdown processing continues normally.

### **MFA113E USING VTAMAPPL applid ACB OPEN ERROR X"xx"**

Data Connect was unable to open the specified APPLID. Therefore, access cannot be provided to network clients. Common errors are identified as described below.

<b>Error</b>	<b>Description</b>
54	APPLID not defined to VTAM
58	APPLID already in use
5A	APPLID inactive to VTAM

### **MFA114E APPC SESSION REJECTED PRI=xxxxxxxx SEC=xxxxxxxx**

Data Connect was unable to complete the logon attempt. See the VTAM APPC documentation for a description of the primary and secondary return codes provided by IBM.

### **MFA115E MFA DOES NOT SUPPORT 3270 DATASTREAMS**

Data Connect does not support LU2 3270 data stream connections. Only APPC VTAM message traffic is supported.

### **MFA201W ERROR OPENING DDNAME=VSAMCTL**

A file open error was encountered for the VSAM control file. Verify that DDNAME was provided in the Data Connect started task as shown in the sample JCL as MFAS. See the z/OS console log for additional error messages.

### **MFA202I ERROR READING VSAMCTL FOR membername**

A file read error was encountered for the indicated member name. The physical data may be corrupted. See the z/OS console log for additional error information.

### **MFA299E ADDRESS SPACE NOT AUTHORIZED**

The Data Connect modules must reside in an authorized library. The STEPLIB concatenation probably contains at least one load library which is not APF-authorized. Please call your system programmer to authorize your libraries.

### MFA301E JCL PARM INVALID OR OMITTED

The parm passed on the // EXEC PGM=MFDSTART,PARM='...' is invalid. The only keyword supported is APPLID=applid. Correct the JCL before resubmitting this job.

### MFA302I ATTACHING VTAM PROCESSOR

Data Connect is now initializing APPC access for client messages as relayed through the Host Connectivity interface.

### MFA303I MFA/DATACONNECT V4.00 - vers

This message identifies the Data Connect version and copyright information.

### MFA310E INVALID OPERATOR REQUEST IGNORED

An invalid operator command was sent to Data Connect. The command is being ignored.

### MFA311W PROCESS ALREADY RUNNING

VTAM APPC support is already active. It is not possible to re-cycle comminations while the APPLID is still active.

### MFA317I jobname HAS BEEN TERMINATED

The Data Connect task has been successfully terminated.

## Drag and Drop Error Messages

## Status Codes and Error Messages

This section contains a list of status codes that Mainframe Access servers can return to a client program. It also documents the anomalies in file status settings based upon the environment in which the I/O statements are executed.



**Note:** For additional information on MFA messages, see your Mainframe Access Administrator's Guide.

## Status Codes Returned by the MVS Server

Table 1: File Status Codes Returned by the MVS Server

Status Code	Description
0/0	The MVS server returns a status of 0/0 when writing a record to an indexed file which results in two or more records with identical keys. Both IBM VS COBOL II batch processing and Micro Focus COBOL return a status of 0/2 when such a condition arises.
0/5	A file status 0/5 indicates an open operation was successful, but the file is empty. A file status of 0/5 is returned in some cases where IBM VS COBOL II returns a status of 0/0 and in other cases where IBM VS COBOL II returns a status of 3/5. See the appendix <i>File Status Comparisons</i> for some examples of the conditions under which this status code is returned during open processing.
4/3	A status code of 4/3 is returned if an attempt is made to delete a VSAM record via an alternate index, if another record in that file contains the same key as the record being deleted.
4/6	If an I/O operation is attempted which requires a previous I/O operation to have set the current record pointer, and the previous I/O operation failed, a file status of 4/6 is returned. It is also issued if the MVS server loses track of the current record position, probably due to an invalid sequence of I/O statements.

Status Code	Description
9/100	A file status of 9/100 is returned if the MVS server receives an operation code that it does not support. This status is also returned when the server attempts to execute a command at a time when that command is invalid. In this case, the operation code received by the server was valid, but the I/O operation was invalid given the type of operation requested and the nature of the previous I/O operations executed for the file.
9/125	A status code of 9/125 will be returned when the maximum number of concurrent Users has been exceeded.
9/242	The requested function or component has not been licensed.

## File Status Comparisons

This section documents the anomalies in file status settings based upon the environment in which the I/O statements are executed. Expected results, including expected anomalies (for example, the order of records returned when reading an alternate index in reverse order), are not included in this list unless they help clarify the conditions under which the anomalies were detected.

These results were compiled from a set of test programs executed in the following three environments:

- MVS-batch using IBM VS COBOL II accessing VSAM datasets
- OS/2 using Micro Focus COBOL accessing sequential
- Relative and indexed files

The test programs used an extensive combination of file definitions (organization and access mode), open types (INPUT, I/O, OUTPUT, EXTEND, etc.), and I/O verbs for example READ, WRITE, REWRITE) to examine the behavior of execution environment and the results of the file status information returned to the test programs.

In the Cross Reference of File Status Setting table that follows, file status information obtained for the tests in each environment is displayed in the format 'a/b', where 'a' represents the first byte of the file status (file status 1) and 'b' represents the second byte of the file status (file status 2).

For run-time errors, the first byte displayed is '9' and the value for the second byte is the ordinal value of the file status 2 field (e.g. 9/100). When an I/O operation is invalid, a key of 'N/A' is used. When an I/O operation is valid but was not tested because of the results of an earlier I/O operations, a file status of '-/-' is used.

### Cross Reference of File Status Setting

#### READ SEQUENTIAL TEST WITH EMPTY FILES

FILE ORG-ACC	I/O statements	MVS-BATCH	OS/2	CICS server
		COBOL II	MF/COBOL	
SEQ SEQ	OPEN I/O	3/5	0/5	0/5
	READ NEXT	-/-	1/0	1/0
SEQ SEQ	OPEN I/O REVERSED	N/A	0/0	0/5
	READ NEXT	-/-	1/0	1/0
REL SEQ	OPEN I/O	3/5	0/5	0/5
	READ NEXT	-/-	1/0	1/0
REL SEQ	OPEN I/O	3/5	0/5	0/5
	START RRN=20	-/-	2/3	2/3

FILE ORG-ACC	I/O statements	MVS-BATCH	OS/2	CICS server
		COBOL II	MF/COBOL	
REL SEQ	OPEN I/O	3/5	0/0	3/5
	START RRN=0	-/-	2/3	-/-
IDX SEQ	OPEN INPUT	0/0	3/5	0/0
	READ NEXT	1/0	-/-	1/0
IDX SEQ	OPEN I/O	0/0	0/5	0/0
	START KEY < VALUE	N/A	2/3	2/3

When Micro Focus COBOL attempts to open a sequential dataset for I/O REVERSED processing and that dataset does not exist, a status code of 3/5 is returned. If the dataset does exist but is empty, a status code of 0/0 is returned on the open request.

#### WRITE SEQUENTIAL TEST WITH EMPTY FILES

FILE ORG-ACC	I/O statements	MVS-BATCH	OS/2	CICS server
		COBOL II	MF/COBOL	
IDX SEQ	OPEN OUTPUT	0/0	0/0	0/0
	WRITE (RECORD W/ DUPLICATE ALT KEY)	0/2	0/2	0/0
IDX SEQ	OPEN EXTEND	0/0	0/0	0/0
	WRITE (RECORD W/ DUPLICATE ALT KEY)	0/2	0/2	0/0

The CICS server cannot determine if the result of this write operation would cause any alternate indexes to have two or more records with the same key value.

#### DELETE SEQUENTIAL TEST

FILE ORG-ACC	I/O statements	MVS-BATCH	OS/2	CICS server
		COBOL II	MF/COBOL	
IDX SEQ	OPEN I/O	0/0	0/0	0/0
	START ALT KEY GTEQ LOW-VALUES	0/0	0/2	0/0
	DELETE	0/0	0/0	1/0

The CICS server does not permit the deletion of a record via the alternate index if another record in the file has the same key for the alternate index. A status code of 4/3 is returned. The current record position is unaffected by the failed request.

### RANDOM WRITE TEST

FILE ORG-ACC	I/O statements	MVS-BATCH	OS/2	CICS server
		COBOL II	MF/COBOL	
IDX RAN	OPEN I/O	0/0	0/0	0/0
	WRITE (RECORD W/ DUPLICATE ALT KEY)	0/2	0/2	0/0

The CICS server cannot determine if the result of this write operation would cause any alternate indexes to have two or more records with the same key value.

### READ SEQUENTIAL TEST WITH DATA IN FILES

FILE ORG-ACC	I/O statements	MVS-BATCH	OS/2	CICS server
		COBOL II	MF/COBOL	
IDX SEQ	OPEN INPUT	0/0	0/0	0/0
	START KEY GTEQ HIGH-VALUES	2/3	2/3	0/0
	READ NEXT	-/-	-/-	1/0

VSAM treats this as: 'position the current record pointer to the end of the file'; a subsequent READ PREVIOUS request would return the last record in the file.

### READ DYNAMIC TEST WITH DATA IN FILES

FILE ORG-ACC	I/O statements	MVS-BATCH	OS/2	CICS server
		COBOL II	MF/COBOL	
IDX DYN	OPEN INPUT	0/0	0/0	0/0
	START KEY GTEQ HIGH-VALUES	2/3	2/3	0/0
	READ NEXT	-/-	-/-	1/0

VSAM treats this as: 'position the current record pointer to the end of the file'; a subsequent READ PREVIOUS request would return the last record in the file.

### DELETE DYNAMIC TEST WITH DATA IN FILES

FILE ORG-ACC	I/O statements	MVS-BATCH	OS/2	CICS server
		COBOL II	MF/COBOL	
IDX DYN	OPEN I/O	0/0	0/0	0/0
	START ALT KEY GTEQ LOW-VALUES	0/0	0/0	0/0
	READ NEXT (DUPLICATE KEY)	0/2	0/2	0/2
	READ NEXT (LAST OF DUPLICATE KEY)	0/0	0/0	0/0

FILE ORG-ACC	I/O statements	MVS-BATCH COBOL II	OS/2 MF/COBOL	CICS server
	DELETE (LAST OF DUPLICATE KEY)	0/0	0/0	4/3

The CICS server does not permit the deletion of a record via the alternate index if another record in the file has the same key for the alternate index. A status code of 4/3 is returned. The current record position is unaffected by the failed request.

## Configuration reference

You can configure many aspects of z/Server's behavior by using any of z/Server's configuration parameters.

## Mainframe Access Server configuration parameters

### Configuration parameters - quick reference

The following list provides Mainframe Access Server configuration parameters and for each parameter, which servers and services it applies to:

Parameter	General	Application Servers					Services			
		Data Conn ect	End evo ur	Chan geMa n	AMS	TSO	RIMS	MCO	MFA	ES-MTO
<a href="#">ACBNAME</a>	N	N	N	N	N	N	N	N	N	Y
<a href="#">ACCESS_LIST_CHECK</a>	Y	N	Y	Y	Y	Y	N	N	N	N
<a href="#">APPLID_PASSWORD</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">AUDIT_LOG</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">BACK_LOG</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">BIND_NETADDR</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">BUFFER_SIZE</a>	Y	N	Y	Y	Y	Y	N	N	N	N
<a href="#">CHANGEMAN_COM MON_BUILD</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">CHANGEMAN_DSN QUALIFIER</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">CHANGEMAN_INTE RFACE</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">CHANGEMAN_SSID</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">CHANGEMAN_TEST _OPTION</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">CHANGEMAN_XMS _SIZE</a>	Y	N	N	N	N	N	N	N	N	N
<a href="#">COMPRESSION</a>	Y	N	Y	Y	Y	Y	N	N	N	N

Parameter	General	Application Servers					Services			
		Data Connect	End evor	Chan geMa n	AMS	TSO	RIMS	MCO	MFA	ES-MTO
COMPRESSION_TY PE	Y	N	Y	Y	Y	Y	N	N	N	N
CONSOLE_NAME	Y	N	N	N	N	N	N	N	N	N
DSS_SCAN_INTERV AL	Y	N	Y	Y	Y	Y	N	N	N	N
EID	Y	N	Y	Y	Y	Y	N	N	N	N
ENDEVOR_DSNQU ALIFIER	Y	N	N	N	N	N	N	N	N	N
ES- MTO_MAXTASKS	Y	N	N	N	N	N	N	N	N	N
ID	N	N	N	N	N	N	Y	Y	Y	Y
IMSLINK_MAXTASK S	Y	N	N	N	N	N	N	N	N	N
IPADDRESS	N	N	N	N	N	N	N	N	N	Y
JES_BUFFER_TRAC E	Y	N	N	N	N	N	N	N	N	N
JES_CONCHAR	Y	N	N	N	N	N	N	N	N	N
JOBNAME	N	N	Y	Y	Y	Y	N	N	N	N
LIST_DB2	Y	N	N	N	N	N	N	N	N	N
LIST_PARAMETERS	Y	N	Y	Y	Y	Y	N	N	N	N
LU62_APPLID	Y	N	N	N	N	N	N	N	N	N
LUNAME	N	N	N	N	N	N	Y	Y	Y	N
MAX_DS_ALLOCATI ONS	Y	N	N	N	N	N	N	N	N	N
MAX_PUBLIC_FILES	Y	N	N	N	N	N	N	N	N	N
MAXIMUM	N	N	Y	Y	Y	Y	N	N	N	N
MCOLINK_MAXTAS KS	Y	N	N	N	N	N	N	N	N	N
MFA_ACCEPT_EMP TY_FILES	Y	N	N	N	N	N	N	N	N	N
MFA_ENDEVOR_HIS TORY	Y	N	N	N	N	N	N	N	N	N
MFA_ENDEVOR_INT ERFACE	Y	N	N	N	N	N	N	N	N	N
MFA_GUI_ACCEPT_ PASSPHRASES	Y	N	N	N	N	N	N	N	N	N
MFA_GUI_BLANKPA SSWORD	Y	N	N	N	N	N	N	N	N	N
MFA_GUI_IGNOREU SERCTO	Y	N	N	N	N	N	N	N	N	N
MFA_JOBNAME_CH ECK	Y	N	N	N	N	N	N	N	N	N

Parameter	General	Application Servers						Services		
		Data Connect	End evour	Chan geMa n	AMS	TSO	RIMS	MCO	MFA	ES-MTO
MFA_LIBRARIAN_DIR_INFO	Y	N	N	N	N	N	N	N	N	N
MFA_LIBRARIAN_HISTORY	Y	N	N	N	N	N	N	N	N	N
MFA_LIBRARIAN_INTERFACE	Y	N	N	N	N	N	N	N	N	N
MFA_LIBRARIAN_UPD_MODULE	Y	N	N	N	N	N	N	N	N	N
MFA_LISTING_DATA_CLASS	Y	N	N	N	N	N	N	N	N	N
MFA_MCG_DB2CONNECTION	Y	N	N	N	N	N	N	N	N	N
MFA_PANVALET_HISTORY	Y	N	N	N	N	N	N	N	N	N
MFA_PANVALET_INTERFACE	Y	N	N	N	N	N	N	N	N	N
MFA_PANVALET_UPD_MODULE	Y	N	N	N	N	N	N	N	N	N
MFA_SAF_HISTORY	Y	N	N	N	N	N	N	N	N	N
MFA_SYSOUT_CLASSES	Y	N	N	N	N	N	N	N	N	N
MFA_SYSOUT_DEST	Y	N	N	N	N	N	N	N	N	N
MFADIRECT	Y	N	N	N	N	N	N	N	N	N
MFADIRECT_MAXTASKS	Y	N	N	N	N	N	N	N	N	N
MFALINK_MAXTASKS	Y	N	N	N	N	N	N	N	N	N
MINIMUM	N	N	Y	Y	Y	Y	N	N	N	N
MODENAME	N	N	N	N	N	N	Y	Y	Y	N
NETWORK_ID	Y	N	N	N	N	N	N	N	N	N
ORGANIZATION	Y	N	N	N	N	N	N	N	N	N
PEM_FEATURE	Y	N	N	N	N	N	N	N	N	N
PORT	N	N	N	N	N	N	N	N	N	Y
PROCEDURE	N	Y	Y	Y	Y	Y	N	N	N	N
RACF_APPLID	Y	N	N	N	N	N	N	N	N	N
REST_API	Y	N	N	N	N	N	N	N	N	N
REST_BUFFER_SIZE	Y	N	N	N	N	N	N	N	N	N
REST_INACTIVITY_TIMEOUT	Y	N	N	N	N	N	N	N	N	N
REST_MAXTASKS	Y	N	N	N	N	N	N	N	N	N

Parameter	General	Application Servers						Services		
		Data Connect	End evour	Chan geMa n	AMS	TSO	RIMS	MCO	MFA	ES-MTO
REUSE_ASID	Y	N	N	N	N	N	N	N	N	N
ROUTE	Y	N	Y	Y	Y	Y	N	N	N	N
SCLM_WARN_LEVEL	Y	N	N	N	N	N	N	N	N	N
SECURITY	N	N	N	N	N	N	Y	Y	Y	N
SESSIONS	N	N	N	N	N	N	N	N	N	Y
SMF_RECORDID	Y	N	Y	Y	Y	Y	N	N	N	N
SOCKETS	N	N	N	N	N	N	N	N	N	Y
SYNCLLEVEL	N	N	N	N	N	N	Y	Y	Y	N
SYSOUT	Y	N	Y	Y	Y	Y	N	N	N	N
TCP_PORT	Y	N	N	N	N	N	N	N	N	N
TCPLINK_MAXTASKS	Y	N	N	N	N	N	N	N	N	N
TIMEOUT_FOR_CONNECTION	Y	N	Y	Y	Y	Y	N	N	N	N
TIMEOUT_FOR_INITIAl_RECEIVE	Y	N	N	N	N	N	N	N	N	N
TPNAME	N	N	N	N	N	N	Y	Y	Y	N
TRACE	Y	N	Y	Y	Y	Y	N	N	N	N
TRACING	Y	N	Y	Y	Y	Y	N	N	N	N
TSO_INITMOD	N	N	N	N	N	Y	N	N	N	N
TSO_JOBCHAR	N	N	N	N	N	Y	N	N	N	N
TSO_JOBCHAR_PREFIX	N	N	N	N	N	Y	N	N	N	N
TSO_PCNAME	Y	N	N	N	N	N	N	N	N	N
TSO_MSGCLASS	N	N	N	N	N	Y	N	N	N	N
TSO_NOTIFY	N	N	N	N	N	Y	N	N	N	N
TSO_PROCEDURE	N	N	N	N	N	Y	N	N	N	N
VIO_FOR_ENDEVOR_LOG	N	N	Y	N	N	N	N	N	N	N

## Configuration parameters - alphabetical list

### ACBNAME

**Name** ACBNAME

**Summary** The name of the VTAM ACB associated with this ES/MSS server. MFA Server OPENS and initializes this ACBNAME during startup. The z/OS CICS system(s) must be configured to communicate with this ES/MSS server through this VTAM ACB name using CICS CONNECTION and SESSIONS definition statements.

**Default** NULL

Supported Values	Value	Description
	acbname	A valid VTAM ACBNAME.

**Example** ACBNAME="acbname"

### ACCESS\_LIST\_CHECK

**Name** ACCESS\_LIST\_CHECK

**Summary** Indicates whether or not the access list feature is to be activated for clients. This enables you to restrict access to Mainframe Access according to the connecting client's IP address. See *Editing Access List Definitions* for more information. Specify 0 to accept all client connection requests, regardless of the client's IP address. Specify 1 to permit client connections based on the PERMIT and REJECT rules for IP addresses defined in your access list.

**Default** 0

Supported Values	Value	Description
	0	Allow client access regardless if the clients IP address.
	1	Restrict client access based on PERMIT and REJECT rules.

**Example** ACCESS\_LIST\_CHECK="1"

### APPLID\_PASSWORD

**Name** APPLID\_PASSWORD

**Summary** The ACF/VTAM ACB password to be used when Mainframe Access opens its VTAM ACB. Specify a password consisting of between one and eight characters. This value must match the password value specified by the PRTCT parameter in the Mainframe Access VTAM application program major node definition in VTAMLST.

**Default** MFM62PSW

Supported Values	Value	Description
	applidpswd	A valid VTAM APPLID password.

**Example** APPLID\_PASSWORD="applidpswd"

### AUDIT\_LOG

**Name** AUDIT\_LOG

**Summary** Indicates whether or not the audit log is to be activated. Specify 1 to activate or 0 to deactivate. If audit logging is selected, be sure to complete the tasks described in *Allocating and Initializing an Audit Log Data Set*.

**Default** 0

Supported Values	Value	Description
	0	Deactivate audit logging.

Value	Description
1	Activate audit logging.

**Example**      `AUDIT_LOG="1"`

## BACK\_LOG

**Name**            `BACK_LOG`

**Summary**        The number of pending TCP/IP connection requests that the TCP/IP network software should hold while Mainframe Access is processing the current connection request. Connection processing is typically handled very quickly and a small backlog of between 5 and 10 should be adequate for most installations. If you have an unusually high number of concurrent connection requests, some end users might receive a connection reject message. Specify a positive integer value in the range 5 through 50.

**Default**            5

**Minimum Value**   5

**Maximum Value**   50

**Example**           `BACK_LOG="10"`

## BIND\_NETADDR

**Name**            `BIND_NETADDR`

**Summary**        Selects the network address(es) to which the Mainframe Access listening port (TCP\_PORT) should be bound. Specify 0.0.0.0 (or omit this parameter) to bind the ports to all network addresses assigned to the host system. Specify a specific network address or a logical host name (64-character maximum) to restrict Mainframe Access to a single, specific host network address.

**Default**            0.0.0.0

**Supported Values**

Value	Description
bindnetaddr	A valid IP address or logical host name.

**Example**           `BIND_NETADDR="bindnetaddr"`

## BUFFER\_SIZE

**Name**            `BUFFER_SIZE`

**Summary**        The maximum amount of data that Mainframe Access should send or receive through the TCP/IP network software in one send or receive operation. Specify 0 (zero) to allow Mainframe Access to use the optimum buffer size; this is recommended, as it will reduce the number of send or receive calls made to the TCP/IP network software. Specify an explicit value in the range 512 to 32767 only if you have diagnosed a problem with your TCP/IP network software that is associated with large message sizes.

**Default**            0

**Minimum Value**   512

**Maximum Value**   32767

**Example**      BUFFER\_SIZE="600"

### CHANGEMAN\_COMMON\_BUILD

**Name**            CHANGEMAN\_COMMON\_BUILD

**Summary**        Specifies whether or not Mainframe Access accommodates group builds submitted under AppMaster Builder. Specify 1 to enable group builds or 0 to disable them. The default is 0. When enabled for group builds, MFA modifies the build options for each member of the AMB group to match the component name and type submitted, ensuring that each build request in the group is properly executed.

**Default**         0

**Supported Values**

Value	Description
0	Disable group builds.
1	Enable group builds.

**Example**         CHANGEMAN\_COMMON\_BUILD="1"

### CHANGEMAN\_DSNQUALIFIER

**Name**            CHANGEMAN\_DSNQUALIFIER

**Summary**        Specifies a high-level qualifier for dynamically allocated data sets created by MFA Server to hold input files during the staging process. MFA Server creates these data sets dynamically as card-image sequential data sets that are deleted when the associated client request completes. The default qualifier is the login ID of the current user. You should set an alternate qualifier if your installation's SERNET does not have RACF authority to read or write data into files stored in data sets named with the current user's login ID as the high-level qualifier.

If an alternate qualifier is required, see your ChangeMan administrator or your security administrator for assistance in selecting a proper value.

If your ChangeMan functionality is restricted by security subsystem authorizations, you might need to specify your dataset high-level qualifier such that read access to the data sets is always permitted.

**Default**         NULL

**Supported Values**

Value	Description
changemands	A valid dataset HLQ.

**Example**         CHANGEMAN\_DSNQUALIFIER="changemandsn"

### CHANGEMAN\_INTERFACE

**Name**            CHANGEMAN\_INTERFACE

**Summary**        Specifies the name of the ChangeMan ZMF module. During ChangeMan request processing, MFA Server loads and branch enters this module. Valid values are SERXMLBC and SERXMLAC. The default is SERXMLAC.

The preferred interface module is SERXMLAC, which is not documented in ChangeMan ZMF. It provides better interface performance than SERXMLBC by using virtual storage

instead of data sets for XML input and output exchange between MFA Server (the requester) and ChangeMan ZMF.

ChangeMan ZMF documents only the SERXMLBC interface, which is the XML services batch client. SERXMLBC is intended for use in a batch job stream and requires XMLIN and XMLOUT DD statements to define its required data sets. The MFAAS JCL sample provides sample DD statements for XMLIN and XMLOUT which are commented out by default. If you must use SERXMLBC, contact Micro Focus Customer Care for assistance with data set definitions.

**Default** SERXMLAC

**Supported Values**

Value	Description
SERXMLAC	Use XML to interface with ChangeMan.
SERXMLBC	Use batch client to interface with ChangeMan.

**Example** CHANGEMAN\_INTERFACE="SERXMLBC"

## CHANGEMAN\_SSID

**Name** CHANGEMAN\_SSID

**Summary** Initializes the Mainframe Access ChangeMan interface by providing the final character of the z/OS subsystem ID used to identify ChangeMan. Omit this parameter to bypass Mainframe Access initialization for the ChangeMan interface. Valid values are any single alphabetic or numeric character. The character specified is appended to the subsystem ID string "SER", completing the four-character ID. For example, if you specify CHANGEMAN\_SSID=A, the z/OS subsystem ID becomes "SERA".

This parameter is required in both the PARMS member and the PARMSAS member used by application server address spaces.

Your ChangeMan administrator can help you to determine the correct subsystem ID to use.

**Default** NULL

**Supported Values**

Value	Description
changemanssid	Any single alphabetic or numeric character.

**Example** CHANGEMAN\_SSID="changemanssid"

## CHANGEMAN\_TEST\_OPTION

**Name** CHANGEMAN\_TEST\_OPTION

**Summary** Specify whether or not MFA uses the XML trace option. Specify 1 to enable XML trace or 0 to disable it. The default is 0. When enabled, SERNET logs information in XML format into the standard SERPRINT DD file. This file can be used to identify problems and to validate MFA services. Enabling XML trace is not recommended for production systems due to the large volume of log data generated.

**Default** 0

**Supported Values**

Value	Description
0	Disable MFA ChangeMan XML tracing.

Value	Description
1	Enable MFA ChangeMan XML tracing.

**Example**      CHANGEMAN\_TEST\_OPTION="1"

### CHANGEMAN\_XMS\_SIZE

**Name**              CHANGEMAN\_XMS\_SIZE  
**Summary**          The size of the XML buffer used to receive members when using ChangeMan.  
**Default**            1  
**Minimum Value**    1  
**Maximum Value**    8  
**Example**            CHANGEMAN\_XMS\_SIZE="5"

### COMPRESSION

**Name**              COMPRESSION  
**Summary**          Indicates whether or not Mainframe Access should apply data compression when communicating with SQL Option for DB2 clients. Specify 1 to activate data compression or 0 to deactivate it.  
**Default**            0

**Supported Values**

Value	Description
0	Deactivate data compression.
1	Activate data compression.

**Example**            COMPRESSION="1"

### COMPRESSION\_TYPE

**Name**              COMPRESSION\_TYPE  
**Summary**          Indicates whether or not Mainframe Access should negotiate to turn off data compression, which can enhance performance especially when transferring binary files. Specify 1 to activate the negotiation of data compression or 0 to deactivate it.  
**Default**            0

**Supported Values**

Value	Description
0	Deactivate negotiation.
1	Activate negotiation.

**Example**            COMPRESSION\_TYPE="1"

### CONSOLE\_NAME

**Name**              CONSOLE\_NAME

**Summary** Specifies the name of an MCS console for MFA to use when it issues JES commands. By default, MFA uses the master console but a named console could be used in constructing RACF permissions.

**Default** NULL

<b>Supported Values</b>	<b>Value</b>	<b>Description</b>
	<i>conname</i>	

**Example** CONSOLE\_NAME="*conname*"

### DSS\_SCAN\_INTERVAL

**Name** DSS\_SCAN\_INTERVAL

**Summary** The time period in minutes between Data Set Services checks for abandoned buffers, open files, or inactive application servers. Due to unforeseen environmental errors, transactions may abnormally terminate while holding open files and other I/O resources. These scans locate idle resources and return them to an available status and ensure that no file is held idle for more than two consecutive scan intervals. Specify the number of minutes as an integer value between 5 and 120. The default for MFA is 30 minutes, most application servers 5 minutes, and TSO 20 minutes.

**Default** 30

**Minimum Value** 5

**Maximum Value** 120

**Example** DSS\_SCAN\_INTERVAL="80"

### EID

**Name** ACBNAME

**Summary** The event ID of Mainframe Access GTF user trace records. The EID must be available for exclusive use by Mainframe Access and must match the USR=(eid) parameter specified to GTF when GTF is started (see the sample member GTFCTL). This parameter is valid only when TRACE="GTF" is specified. Specify a hexadecimal number of up to four bytes that GTF recognizes as a valid user trace record identifier.

**Default** 00E9

<b>Supported Values</b>	<b>Value</b>	<b>Description</b>
	eid	

**Example** EID ="eid"

### ENDEVOR\_DSNQUALIFIER

**Name** ENDEVOR\_DSNQUALIFIER

**Summary** Specifies a high-level qualifier for dynamically allocated data sets created by MFA Server to hold input files during the staging process. For those sites where the logged in users may not have the authority to create transient files using their USERID as the

high-level qualifier, there is a configuration parameter to set that high-level qualifier to some other value where all users have READ/WRITE/ALTER access.

**Default** NULL

**Supported Values**

Value	Description
endeavorsn	A valid data set HLQ.

**Example** ENDEVOR\_DSNQUALIFIER="endeavorsn"

### ES-MTO\_MAXTASKS

**Name** ES-MTO\_MAXTASKS

**Summary** The number of z/OS subtasks (TCBs) to be started and dedicated to processing requests from ES/MTO clients. Specify 0 (zero) or a positive integer value between 1 and 50.

**Default** 0

**Minimum Value** 1

**Maximum Value** 50

**Example** ES-MTO\_MAXTASKS="25"

### ID

**Name** ID

**Summary**

**ES-MTO:** The ID can be one to four characters in length and must match the SYSID of the ES/MSS server being defined. The initial connection messages exchanged by MFA Server and ES/MSS use this ID.

**IMS:** If an IMS Option client request does not specify a target server ID or the specified target server ID does not exist, Mainframe Access selects the DEFAULT IMS target server, if one has been defined. This IMS target server ID name is used in the configuration of the client. When a Remote IMS request is sent this name is sent in the request data and is used to locate the target server definition for the IMS system that will receive the request. Specify DEFAULT or an ID of up to four alphanumeric characters.

**MCO:** If a CICS client request does not specify a target server ID or the specified target server ID does not exist, Mainframe Access selects the DEFAULT CICS target server, if one has been defined. This CICS target server ID name is used in the configuration of the client. When a CICS request is sent to Mainframe Access this name is sent in the request data and is used to locate the target server definition for the CICS system that will receive the request. Specify DEFAULT or an ID of up to four alphanumeric characters.

**MFA:** Data Connect client requests do not specify a target server ID and Mainframe Access always looks for the DEFAULT Mainframe Access Data Connect target server definition. Specify DEFAULT.

**Supported Values**

Value	Description
id	A valid ID according to the rules above.

**Example** ID ="id"

## IMSLINK\_MAXTASKS

**Name** IMSLINK\_MAXTASKS

**Summary** The number of z/OS subtasks (TCBs) to be started and dedicated to processing requests from IMS Option (Remote IMS) clients. Specify 0 (zero) or a positive integer value between 1 and 50.

**Default** 0

**Minimum Value** 1

**Maximum Value** 50

**Example** IMSLINK\_MAXTASKS="25"

## IPADDRESS

**Name** IPADDRESS

**Summary** The internet host name or IP address of the ES/MSS server. Specify either the host name that resolves to the correct IP address or the actual IP address in standard dotted-decimal format. The combination of IPADDRESS and PORT from this definition provides MFA Server with the information it needs to originate a socket connection to ES/MSS and to verify the authenticity of a socket connection request from ES/MSS.

**Default** NULL

**Supported Values**

Value	Description
ipaddress	A valid IP address or logical host name.

**Example** IPADDRESS="ipaddress"

## JES\_BUFFER\_TRACE

**Name** JES\_BUFFER\_TRACE

**Summary** Enables tracing of interactions between MFA and the JES subsystem. This may be useful for diagnostic purposes.

**Default** 0

**Supported Values**

Value	Description
0	Disable MFA JES tracing.
1	Enable MFA JES tracing.

**Example** JES\_BUFFER\_TRACE="1"

## JES\_CONCHAR

**Name** JES\_CONCHAR

**Summary** Specifies the character that is used to identify JES2 commands from local consoles.

**Default** \$

**Supported Values**

Value	Description
conchar	A valid CONCHAR character as defined in IBM manual <i>JES2 Initialization and Tuning Reference SA32-0992</i> .

**Example** JES\_CONCHAR ="conchar"

**JOBNAME**

**Name** JOBNAME

**Summary** The jobname prefix to be used for address spaces that are started for this group. For multiple-instance address spaces this is a prefix of 1 to 4 characters and Mainframe Access Server will pad this prefix to a full 8-character jobname by appending a 4 to 7 digit sequence number. For example, JOBNAME="MFAE" results in jobnames MFAE0001, MFAE0002, and so forth. The sample prefix MFAE can be changed to meet the needs of your installation. If you do change the suggested prefix you need to review the security subsystem definition for the Mainframe Access started tasks. The configuration process uses a generic STARTED task definition (the generic name specified during Quick Configuration is MFA\*.\* ) that covers generated jobnames such as MFAExxxx, in addition to the MFA (the MFA Server control region) and MFAS (the MFA Server for Data Connect) started task names. Specify a jobname prefix of up to four characters.

**Supported Values**

Value	Description
jobname	A alphanumeric string up to 4 characters long.

**Example** JOBNAME="jobname"

**LIST\_DB2**

**Name** LIST\_DB2

**Summary** Indicates whether or not the Mainframe Access LIST DB2 feature is to be activated. This obtains information about the DB2 and IMS subsystems. Specify 1 to activate LIST DB2 or 0 to deactivate it.

**Default** 0

**Supported Values**

Value	Description
0	Deactivate retrieval of DB2 and IMS subsystem information.
1	Activates retrieval of DB2 and IMS subsystem information.

**Example** LIST\_DB2="1"

**LIST\_PARAMETERS**

**Name** LIST\_PARAMETERS

**Summary** Controls the listing of Mainframe Access parameter definitions on the XDBOUT sysout data set. The parameter listing is helpful when you need to examine the active configuration settings. Specify 1 to echo parameter definitions to the XDBOUT sysout data set or 0 to inhibit the listing.

**Default** 1

**Supported Values**

Value	Description
0	Do not echo parameter definitions to XDBOUT data set.
1	Echo parameter definitions to XDBOUT data set.

**Example** LIST\_PARAMETERS="0"

## LU62\_APPLID

**Name** LU62\_APPLID

**Summary** The ACF/VTAM ACBNAME to be used by Mainframe Access. This ACBNAME must match the ACBNAME parameter of an active VTAM application major node. See *Editing Mainframe Access Server Definitions* for more information. Mainframe Access issues a VTAM OPEN request for this ACBNAME during start up and initialization fails if the OPEN is not successful. This ACBNAME (or possibly a different "network name" specified in the VTAM application major node definition) is the SNA LU name that identifies Mainframe Access to other applications in your SNA network. Specify the ACBNAME that has been defined and activated for Mainframe Access.

**Default** MFM62ACB

**Supported Values**

Value	Description
lu62applid	A valid VTAM APPLID.

**Example** LU62\_APPLID ="lu62applid"

## LUNAME

**Name** LUNAME

**Summary**

- IMS:** The LU name of the IMS server (also known as the ACBNAME or VTAM APPLID). Specify an LU name of up to eight characters. This name must match the ACBNAME defined in an APPC/MVS LU definition for the target IMS system.
- MCO:** The LU name of the CICS server (also known as the ACBNAME or VTAM APPLID). Specify an LU name of up to eight characters.
- MFA:** The LU name of the Mainframe Access Data Connect server (also known as the ACBNAME or VTAM APPLID). Specify an LU name of up to eight characters.

**Default** NULL

**Supported Values**

Value	Description
luname	A LU name of up to 8 characters.

**Example** LUNAME="luname"

## MAX\_DS\_ALLOCATIONS

<b>Name</b>	MAX_DS_ALLOCATIONS
<b>Summary</b>	Controls the maximum number of simultaneous data set allocations (24-bit memory constraint, max 512).
<b>Default</b>	128
<b>Minimum Value</b>	128
<b>Maximum Value</b>	512
<b>Example</b>	MAX_DS_ALLOCATIONS="300"

## MAX\_PUBLIC\_FILES

<b>Name</b>	MAX_PUBLIC_FILES
<b>Summary</b>	Specifies the maximum number of shared public files that Mainframe Access Data Set Services will keep available. When the maximum is reached the next request for a new public file is rejected, and you must close one of the item libraries to make space for the new one. Specify an integer value between 24 and 64. Defaults to 32.
<b>Default</b>	32
<b>Minimum Value</b>	24
<b>Maximum Value</b>	64
<b>Example</b>	MAX_PUBLIC_FILES="40"

## MAXIMUM

<b>Name</b>	MAXIMUM
<b>Summary</b>	Specifies the maximum number of address spaces that Mainframe Access server starts for a multiple-instance group. Additional address spaces beyond the minimum is started in response to transaction load, up to the maximum allowed by this specification. Mainframe Access server issues messages (to the XDBOUT data set) when a client request must be queued to wait for an available processing address space. Increase the MAXIMUM value (by 1) when you observe frequent queueing of client requests. Specify a value from 1 to 10.
<b>Default</b>	0
<b>Minimum Value</b>	1
<b>Maximum Value</b>	10
<b>Example</b>	MAXIMUM="5"

## MCOLINK\_MAXTASKS

<b>Name</b>	MCOLINK_MAXTASKS
<b>Summary</b>	The number of z/OS subtasks (TCBs) to be started and dedicated to processing requests from CICS clients. Specify 0 (zero) or a positive integer value between 1 and 50.
<b>Default</b>	0
<b>Minimum Value</b>	1
<b>Maximum Value</b>	50

**Example** MCOLINK\_MAXTASKS="25"

### MFA\_ACCEPT\_EMPTY\_FILES

**Name** MFA\_ACCEPT\_EMPTY\_FILES

**Summary** Indicates whether or not empty VSAM or VB data sets can be downloaded. Set to 1 to allow empty files to be downloaded, or set to 0 to restrict this. When the files are downloaded, they are converted to MF format using DFCONV. The default value is 1.

**Default** 1

**Supported Values**

Value	Description
0	Disallow downloading empty files.
1	Allow downloading empty files.

**Example** MFA\_ACCEPT\_EMPTY\_FILES="0"

### MFA\_ENDEVOR\_HISTORY

**Name** MFA\_ENDEVOR\_HISTORY

**Summary** This dynamically creates a cumulative Endeavor transaction history file (MFALOG) to house the access history of all file access attempts using Endeavor. The Endeavor API interface produces this log for each access requested.

**Default** 1

**Supported Values**

Value	Description
0	Do not create Endeavor transaction history file MFALOG.
1	Create Endeavor transaction history file MFALOG.

**Example** MFA\_ENDEVOR\_HISTORY="0"

### MFA\_ENDEVOR\_INTERFACE

**Name** MFA\_ENDEVOR\_INTERFACE

**Summary** By default, the MFA Server offers access to Endeavor services.

**Default** 1

**Supported Values**

Value	Description
0	Prevent MFA Server offering Endeavor access.
1	Permit MFA Server offering Endeavor access.

**Example** MFA\_ENDEVOR\_INTERFACE="0"

### MFA\_GUI\_ACCEPT\_PASSPHRASES

**Name** MFA\_GUI\_ACCEPT\_PASSPHRASES

**Summary** Enables MFA Server to support 100 character passphrases.

**Default** 0

**Supported Values**

Value	Description
0	Disable passphrase support in MFA Server.
1	Enable passphrase support in MFA Server.

**Example** MFA\_GUI\_ACCEPT\_PASSPHRASES="1"

### MFA\_GUI\_BLANKPASSWORD

**Name** MFA\_GUI\_BLANKPASSWORD

**Summary** Set to 1 to clear the password input field on the Drag and Drop user dialog.

**Default** 0

**Supported Values**

Value	Description
0	Do not blank password input field on the Drag and Drop user dialog.
1	Blank password input field on the Drag and Drop user dialog.

**Example** MFA\_GUI\_BLANKPASSWORD="1"

### MFA\_GUI\_IGNOREUSERCTO

**Name** MFA\_GUI\_IGNOREUSERCTO

**Summary** Set to 1 to disable the inactivity timeout on the Drag and Drop user dialog.

**Default** 0

**Supported Values**

Value	Description
0	Enable the inactivity timeout on the Drag and Drop user dialog.
1	Disable the inactivity timeout on the Drag and Drop user dialog.

**Example** MFA\_GUI\_IGNOREUSERCTO="1"

### MFA\_JOBNAME\_CHECK

**Name** MFA\_JOBNAME\_CHECK

**Summary** Set to 1 to check that the batch job name starts with the submitter's userid.

**Default** 0

**Supported Values**

Value	Description
0	Do not check batch job name start with submitter's userid.
1	Check batch job name start with submitter's userid.

**Example** MFA\_JOBNAME\_CHECK="1"

### MFA\_LIBRARIAN\_DIR\_INFO

**Name** MFA\_LIBRARIAN\_DIR\_INFO

**Summary** LONG is the default. This directs MFA Server to request complete member information from Librarian. The LONG specification significantly increases response time when accessing Librarian master files containing over 1,000 members. Specify SHORT to reduce the amount of member information requested from Librarian.

**Default** LONG

**Supported Values**

Value	Description
SHORT	Only retrieve a small amount of member information from Librarian.
LONG	Retrieve a large amount of member information from Librarian.

**Example** MFA\_LIBRARIAN\_DIR\_INFO="SHORT"

### MFA\_LIBRARIAN\_HISTORY

**Name** MFA\_LIBRARIAN\_HISTORY

**Summary** By default, this will include a summary audit trail of all LIBRARIAN data accesses as part of the MFALOG output log.

**Default** 1

**Supported Values**

Value	Description
0	Do not create summary audit trail of Librarian data access in MFALOG.
1	Create summary audit trail of Librarian data access in MFALOG.

**Example** MFA\_LIBRARIAN\_HISTORY="0"

### MFA\_LIBRARIAN\_INTERFACE

**Name** MFA\_LIBRARIAN\_INTERFACE

**Summary** By default, MFA Server offers access to Librarian services.

**Default** 1

**Supported Values**

Value	Description
0	Prevent MFA Server offering Librarian access.
1	Permit MFA Server offering Librarian access.

**Example** MFA\_LIBRARIAN\_INTERFACE="0"

### MFA\_LIBRARIAN\_UPD\_MODULE

**Name** MFA\_LIBRARIAN\_UPD\_MODULE

**Summary** The name of the Librarian Batch update utility originally shipped as AFOLIBR by Computer Associates. If this module has not been renamed, then this parameter need not be specified.

**Default** AFOLIBR

**Supported Values**

Value	Description
updmodule	Name of the Librarian Batch update utility.

**Example** MFA\_LIBRARIAN\_UPD\_MODULE="updmodule"

### MFA\_LISTING\_DATA\_CLASS

**Name** MFA\_LISTING\_DATA\_CLASS

**Summary** Specifies an SMS data class used to create the Endeavor listing data set. This enables the site to specify how large the data set may extend (allow for 1216 bytes per member transferred in one directory listing). Attributes to consider include: primary and secondary space allocations; number of volumes; the volumes where the data set is created.

**Default** NULL

**Supported Values**

Value	Description
mfadcls	A valid SMS data class name.

**Example** MFA\_LISTING\_DATA\_CLASS="mfadcls"

### MFA\_MCG\_DB2CONNECTION

**Name** MFA\_MCB\_DB2CONNECTION

**Summary** Controls which attachment facility is used by Mainframe Access Server for DB2 connections. Specify CAF (to use the DB2 call attach facility) or RRSF (to use the DB2 Recoverable Resource Manager Services attachment facility). RRSF is the default if this parameter is omitted.

**Default** RRSF

**Supported Values**

Value	Description
CAF	Use DB2 Call attach facility.
RRSF	Use DB2 Recoverable Resource Manager Services attachment facility.

**Example** MFA\_MCB\_DB2CONNECTION="CAF "

### MFA\_PANVALET\_HISTORY

**Name** MFA\_PANVALET\_HISTORY

**Summary** By default, this will include a summary audit trail of all user accesses to Panvalet as part of the MFALOG output log.

**Default** 1

<b>Supported Values</b>	<b>Value</b>	<b>Description</b>
	0	Do not create summary audit trail of Panvalet data access in MFALOG.
	1	Create summary audit trail of Panvalet data access in MFALOG.

**Example** MFA\_PANVALET\_HISTORY="0"

### MFA\_PANVALET\_INTERFACE

**Name** MFA\_PANVALET\_INTERFACE  
**Summary** By default, the MFA Server offers access to Panvalet services.  
**Default** 1

<b>Supported Values</b>	<b>Value</b>	<b>Description</b>
	0	Prevent MFA Server offering Panvalet access.
	1	Permit MFA Server offering Panvalet access.

**Example** MFA\_PANVALET\_INTERFACE="0"

### MFA\_PANVALET\_UPD\_MODULE

**Name** MFA\_PANVALET\_UPD\_MODULE  
**Summary** The name of the Panvalet Batch update utility originally shipped as PAN#1 by Computer Associates. If this module has not been renamed, then this parameter need not be specified.  
**Default** PAN#1

<b>Supported Values</b>	<b>Value</b>	<b>Description</b>
	updmodule	Name of the Panvalet Batch update utility.

**Example** MFA\_PANVALET\_UPD\_MODULE="updmodule"

### MFA\_SAF\_HISTORY

**Name** MFA\_SAF\_HISTORY  
**Summary** By default, this will include a summary audit trail of all file access authorizations as part of the MFALOG output log.  
**Default** 1

<b>Supported Values</b>	<b>Value</b>	<b>Description</b>
	0	Do not create summary audit trail of file access in MFALOG.
	1	Create summary audit trail of file access in MFALOG.

**Example** MFA\_SAF\_HISTORY="0"

## MFA\_SYSOUT\_CLASS

**Name** MFA\_SYSOUT\_CLASS

**Summary** By default, this sets the SYSOUT class as "A" for any held data produced by Mainframe Access. This includes MFALOG, MFALOG, and SNAPDUMP message files.

**Default** A

Supported Values	Value	Description
	class	A valid job class character.

**Example** MFA\_SYSOUT\_CLASS="class"

## MFA\_SYSOUT\_DEST

**Name** MFA\_SYSOUT\_DEST

**Summary** By default, the value LOCAL is used as the SYSOUT destination for any held data produced by Mainframe Access. This includes MFALOG, MFALOG, and SNAPDUMP message files.

**Default** LOCAL

Supported Values	Value	Description
	sysoutdest	A valid SYSOUT destination.

**Example** MFA\_SYSOUT\_DEST="sysoutdest "

## MFADIRECT

**Name** MFADIRECT

**Summary** Indicates whether or not Mainframe Access Source Connect and Drag & Drop services are to be activated. Specify 1 to activate these services or 0 to disable these services. The default value is YES (the recommended setting).

**Default** 1

Supported Values	Value	Description
	0	Deactivate Mainframe Access Source Connect and Drag & Drop services.
	1	Activate Mainframe Access Source Connect and Drag & Drop services.

**Example** MFADIRECT="0"

## MFADIRECT\_MAXTASKS

**Name** MFADIRECT\_MAXTASKS

**Summary** The number of z/OS subtasks (TCBs) to be started and dedicated to processing requests from Mainframe Access Drag & Drop and Source Connect clients, including Mainframe Access client functions and other development environment clients. Specify 0 (zero) or a positive integer value between 1 and 50. The default value is 5.

**Default** 5

**Minimum Value** 1  
**Maximum Value** 50  
**Example** MFADIRECT\_MAXTASKS="25"

### MFALINK\_MAXTASKS

**Name** MFALINK\_MAXTASKS  
**Summary** The number of z/OS subtasks (TCBs) to be started and dedicated to processing requests from Mainframe Access Data Connect clients including Mainframe Access client functions originating in COBOL development environment clients. Specify 0 (zero) or a positive integer value between 1 and 50.  
**Default** 0  
**Minimum Value** 1  
**Maximum Value** 50  
**Example** MFALINK\_MAXTASKS="25"

### MINIMUM

**Name** MINIMUM  
**Summary** Specifies the maximum number of address spaces that Mainframe Access server will start for a multiple-instance group. Additional address spaces beyond the minimum is started in response to transaction load, up to the maximum allowed by this specification.  
**Default** 0  
**Minimum Value** 1  
**Maximum Value** 10  
**Example** MINIMUM="5"

### MODENAME

**Name** MODENAME  
**Summary**  
**IMS:** The SNA log mode name that is used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions with the IMS server. Specify a log mode name for LU6.2 sessions of up to eight characters. This log mode name must be present in the VTAM log mode table available to Mainframe Access. IBM's default log mode table, ISTINCLM, typically provides several standard log modes that can be used by Mainframe Access, including both IBMRDB and #INTER LU6.2 log modes.  
**MCO:** The SNA log mode name that is used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions with mainframe CICS. Specify a log mode name for LU6.2 sessions of up to eight characters. This log mode name must be present in the VTAM log mode table available to Mainframe Access. IBM's default log mode table, ISTINCLM, typically provides several standard log modes that can be used by Mainframe Access, including both IBMRDB and #INTER LU6.2 log modes.  
**MFA:** The SNA log mode name that is used by Mainframe Access to indirectly specify SNA session parameters when Mainframe Access initiates sessions

with the Mainframe Access Data Connect server. Specify a log mode name for LU6.2 sessions of up to eight characters. This log mode name must be present in the VTAM log mode table available to Mainframe Access. IBM's default log mode table, ISTINCLM, typically provides several standard log modes that can be used by Mainframe Access, including both IBMRDB and #INTER LU6.2 log modes.

**Default** NULL

**Supported Values**

Value	Description
modename	A valid SNA log mode name that matches the VTAM definition.

**Example** MODENAME="modename"

## NETWORK\_ID

**Name** NETWORK\_ID

**Summary** The SSCP network ID used by ACF/VTAM on this z/OS system. This parameter must match the NETID parameter in the active ATCSTRxx VTAM start parameters member of VTAMLST. This Network ID value is used by Mainframe Access to build an LUWID (SNA Logical Unit of Work ID for LU6.2) when an LU6.2 conversation is allocated to the DB2 DDF. Specify the 1 to 8 character Network ID from ACF/VTAM's startup parameters.

**Default** DDINET1

**Supported Values**

Value	Description
networkid	A valid VTAM NETID.

**Example** NETWORK\_ID="networkid"

## ORGANIZATION

**Name** ORGANIZATION

**Summary** Your company name or other meaningful identifier up to 40 characters in length. Spaces are not permitted. Use underscores or other non-blank characters to separate words if necessary.

**Default** YOUR\_COMPANY\_NAME

**Supported Values**

Value	Description
organization	A non spacey alphanumeric string up to 40 characters.

**Example** ORGANIZATION="organization"

## PEM\_FEATURE

**Name** PEM\_FEATURE

**Summary** Indicates whether or not the Mainframe Access Password Expiration Manager (PEM) feature is to be activated.

PEM is used in some Micro Focus client products to enable users of the client software on PCs to change passwords for their z/OS user IDs without logging on directly to z/OS. This is especially useful when the security subsystem indicates that the current password is expired and must be replaced. Specify 1 (this setting is recommended) to activate the PEM feature or 0 to deactivate it.

**Default** 1

**Supported Values**

Value	Description
0	Disable clients from changing user passwords.
1	Enable clients to change user password.

**Example** PEM\_FEATURE ="0"

## PORT

**Name** PORT

**Summary** The port number where ES/MSS is listening for ISC connections.

**Default** 0

**Minimum Value** 1

**Maximum Value** 65525

**Example** PORT="3030"

## PROCEDURE

**Name** PROCEDURE

**Summary** The name of the started task JCL procedure that can be used to start address spaces for this group. Sample JCL procedure MFAAS provides the basic JCL for an application server address space, and MFAAMS for the AMS application server address space. Specify a JCL procedure name of up to eight characters.

**Supported Values**

Value	Description
procedure	A valid JCL procedure name up to eight characters.

**Example** PROCEDURE="procedure"

## RACF\_APPLID

**Name** RACF\_APPLID

**Summary** Specifies the use of passtickets with functions that require a password.

**Default** NULL

**Supported Values**

Value	Description
NULL	MFA Server uses a userid and password to protect the system.
applname	MFA Server uses a password or passticket to protect the system.

**Example**            RACF\_APPLID ="applname"

## REST\_API



**Attention:** This topic applies to a feature that is in Early Adopter Program (EAP) release status. We intend to provide the finalized feature in a future release. Please contact Micro Focus Customer Care if you require further clarification.

**Name**                REST\_API

**Summary**            The MFA Server Web API enables you to access the functionality provided by MFA Server via an HTTP interface.

**Default**             0

**Supported Values**

Value	Description
0	Disable REST API support.
1	Enable REST API support.

**Example**            REST\_API="1"

## REST\_BUFFER\_SIZE

**Name**                REST\_BUFFER\_SIZE

**Summary**            Specifies the size, in megabytes (MB), of the buffer used in REST processing to send or receive data. One buffer is allocated for each REST TCB.

**Default**             16

**Minimum Value**    1

**Maximum Value**   64

**Example**            REST\_BUFFER\_SIZE="25"

## REST\_INACTIVITY\_TIMEOUT

**Name**                REST\_BUFFER\_SIZE

**Summary**            The number of seconds that a client connection via the Web API can remain idle, after which the session will be terminated.

**Default**             300

**Minimum Value**    1

**Maximum Value**   86400

**Example**            REST\_INACTIVITY\_TIMEOUT="25"

## REST\_MAXTASKS

**Name**                REST\_MAXTASKS

**Summary**            The number of z/OS subtasks (TCBs) to be started and dedicated to processing requests from REST clients. Specify a positive integer value between 1 and 50.

**Default**             5

**Minimum Value**    1

**Maximum Value** 50

**Example** REST\_MAXTASKS="25"

## REUSE\_ASID

**Name** REUSE\_ASID

**Summary** Indicates whether or not MFA's dependent ASIDs are reusable. Specify 1 for reusable ASIDs or 0 otherwise.

MFA creates dependent ASIDs using the reusable ASID attribute because they use cross-memory services. If this is not done, ASIDs may become depleted leading to the following system message:

IEA061E REPLACEMENT ASID SHORTAGE HAS BEEN DETECTED

Due to DB2, if it is invoked from a reusable ASID it will abend 0D3. Setting REUSE\_ASID to 0 will avoid this.

If message IEA061E is received, all MFA ASIDs should be shutdown to mitigate the shortage.

**Default** 1

**Supported Values**

Value	Description
0	Dependent ASIDs are not reusable.
1	Dependent ASIDs are reusable.

**Example** REUSE\_ASID="1"

## ROUTE

**Name** ROUTE

**Summary** The message route codes to be used by Mainframe Access when console messages are issued using the z/OS WTO (Write to Operator) and WTOR (Write to Operator with Reply) services. See your IBM system documentation for valid values.

**Default** (2,1)

**Supported Values**

Value	Description
route	A valid ROUTCODE.

**Example** ROUTE="route"

## SCLM\_WARN\_LEVEL

**Name** SCLM\_WARN\_LEVEL

**Summary** Specifies the SCLM\_WARN\_LEVEL to MFA Server. Depending on the value selected you will get different behavior when attempting to export to a PDS member that is under SCLM control. The default behavior is to enable overwriting PDS members that are under SCLM control.

**Default** 0

**Supported Values**

Value	Description
0	No warning when editing SCLM members.

Value	Description
1	Display a warning when editing SCLM members.
2	Fail when editing SCLM members.

**Example** SCLM\_WARN\_LEVEL="1"

## SECURITY

**Name** SECURITY

**Summary**

**IMS:** The security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the IMS server. Mainframe Access forwards security subfield information as provided by the IMS Option client and sets the FMH-5 fields accordingly. Specify 0.

**MCO:** The security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the CICS server. Mainframe Access forwards security subfield information as provided by the CICS client and sets the FMH-5 fields accordingly. Specify 0.

**MFA:** The security level to be indicated in SNA LU6.2 Attach FMH-5 requests sent to the Mainframe Access Data Connect server. Mainframe Access forwards security subfield information as provided by the Data Connect client and sets the FMH-5 fields accordingly. Specify 0.

**Default** 0

**Supported Values**

Value	Description
0	Disable security on LU6.2 connections.
1	Enable security on LU6.2 connections.

**Example** SECURITY="1"

## SESSIONS

**Name** SESSIONS

**Summary** Specifies the number of concurrent conversations MFA Server can initiate to the ES/MSS server over a single socket connection. If ES/MSS has a different definition for the number of concurrent sessions, the session count is negotiated to a common value at the time a socket connection is established. Specify a value that supports the required number of concurrently active conversations for your application.

**Default** 4

**Minimum Value** 1

**Maximum Value** 8

**Example** SESSIONS="5"

## SMF\_RECORDID

**Name** SMF\_RECORDID

**Summary** The SMF user record ID that Mainframe Access should use when writing SMF (IBM's System Management Facility) records to the z/OS SMF data sets. If an SMF user record ID is specified, that ID value should be assigned to Mainframe Access exclusively. Specify a valid SMF user record ID number to activate the Mainframe Access SMF support. Specify 0 (zero), or omit the parameter altogether, to disable the writing of SMF records.

**Default** 0

**Supported Values**

Value	Description
0	Disable writing of SMF records.
smfrecordid	A valid SMF user record ID number.

**Example** SMF\_RECORDID="smfrecordid"

## SOCKETS

**Name** SOCKETS

**Summary** Specifies the maximum number of concurrent socket connections between MFA Server and the ES/MSS server. ES/MSS support is currently limited to a single socket connection between MFA Server and an ES/MSS server, specify a value of 1.

**Default** 1

**Minimum Value** 1

**Maximum Value** 1024

**Example** SOCKETS="5"

## SYNCLEVEL

**Name** SYNCLEVEL

**Summary**

- IMS:** The SNA LU6.2 sync level option to be used on conversations with the IMS server. Specify 0.
- MCO:** The SNA LU6.2 sync level option to be used on conversations with CICS. Specify 0.
- MFA:** The SNA LU6.2 sync level option to be used on conversations with the Mainframe Access Data Connect server. Specify 1. Conversations use LU6.2 CONFIRM protocols.

**Default** NULL

**Minimum Value** 0

**Maximum Value** 2

**Example** SYNCLEVEL="1"

## SYSOUT

**Name** SYSOUT

**Summary** The SYSOUT class for the XDBOUT data set if it is dynamically allocated. Mainframe Access operational messages and trace data (when TRACE="SYSPRINT" is specified and tracing is active) are written to this data set. XDBOUT is dynamically allocated to

this SYSOUT class if an XDBOUT DD statement is not present in the Mainframe Access JCL. Specify a SYSOUT class designator that is valid for your z/OS system.

**Default** A

**Supported Values**

Value	Description
class	A valid SYSOUT class character.

**Example** SYSOUT="class"

### TCP\_PORT

**Name** TCP\_PORT

**Summary** The port number to accept connections from Micro Focus clients.

**Default** 2020

**Minimum Value** 1

**Maximum Value** 65525

**Example** TCP\_PORT="3030"

### TCPLINK\_MAXTASKS

**Name** TCPLINK\_MAXTASKS

**Summary** The number of z/OS subtasks (TCBs) to be started and dedicated to processing requests from SQL Option for DB2 clients. Specify a positive integer value between 1 and 50.

**Default** 2

**Minimum Value** 1

**Maximum Value** 50

**Example** TCPLINK\_MAXTASKS="25"

### TIMEOUT\_FOR\_CONNECTION

**Name** TIMEOUT\_FOR\_CONNECTION

**Summary** The number of minutes that a client connection can remain idle, after which the connection will be broken and Mainframe Access resources dedicated to the client will be released. Resources that are released when an idle client is disconnected include allocated storage, TCP/IP resources and connections to server subsystems such as DB2, IMS, CICS and Mainframe Access. Specify 0 (zero) to disable the client timeout feature and allow unlimited idle time, or a positive integer value.

**Default** 30

**Minimum Values** 0

**Maximum Value** 35791394

**Example** TIMEOUT\_FOR\_CONNECTION="25"

## TIMEOUT\_FOR\_INITIAL\_RECEIVE

<b>Name</b>	TIMEOUT_FOR_INITIAL_RECEIVE
<b>Summary</b>	The number of seconds that the listener process (Micro Focus client listener or Web Server listener) waits to receive the initial client message after a socket connection has been accepted from a new client. If the time value expires before a complete initial message is received, the client is disconnected and the listening process prepares to accept another client connection request. The default value of 3 seconds is appropriate for all installations. This low value helps keep the listeners running smoothly, even during occasional network and/or client malfunctions. Specify a positive integer value between 1 and 59 (inclusive) to alter the time out value. This may be useful for diagnostic purposes.
<b>Default</b>	10
<b>Minimum Value</b>	1
<b>Maximum Value</b>	59
<b>Example</b>	TIMEOUT_FOR_INITIAL_RECEIVE="25"

## TPNAME

<b>Name</b>	TPNAME				
<b>Summary</b>	<p><b>IMS:</b> The IMS server transaction program name for IMS Option transactions. This is the LU6.2 transaction program name that is sent to the IMS server in SNA Attach FMH-5 requests to begin an IMS Option transaction. Specify the APPC/MVS transaction program name that was specified in the APPC/MVS definitions during installation of Remote IMS.</p> <p><b>MCO:</b> The server transaction program name for CICS requests. This is the LU6.2 transaction program name that is sent to CICS in SNA Attach FMH-5 requests to begin a CICS transaction. Specify a transaction program name of up to eight characters or specify * to cause Mainframe Access to use the transaction program name provided by the CICS client. The CICS client prepares a partial FMH-5 request that specifies the standard CICS transaction program names for function shipping, distributed program linking and so on.</p> <p><b>MFA:</b> The transaction program name for Mainframe Access Data Connect server requests. Specify FILESHR2.</p>				
<b>Default</b>	NULL				
<b>Supported Values</b>	<table border="1"><thead><tr><th>Value</th><th>Description</th></tr></thead><tbody><tr><td>tpname</td><td>A valid LU6.2 transaction program name.</td></tr></tbody></table>	Value	Description	tpname	A valid LU6.2 transaction program name.
Value	Description				
tpname	A valid LU6.2 transaction program name.				
<b>Example</b>	TPNAME="tpname"				

## TRACE

<b>Name</b>	TRACE
<b>Summary</b>	The destination for trace data when tracing is activated: <ul style="list-style-type: none"><li>Specify SYSPRINT to send print formatted trace output to the data set identified by the XDBOUT DD statement, normally a SYSOUT data set. Micro Focus recommends</li></ul>

this setting during initial product testing and when you are performing controlled problem determination.

- Specify GTF to trace a very active Mainframe Access that is processing a high transaction volume. Trace data collected by GTF is written to external storage (tape or DASD) in a raw data format while tracing is active. You can use IBM's IPCS (Interactive Problem Control System) to format the data for analysis after tracing has been completed. Trace records are sent to the console if GTF is not available when TRACE=GTF is specified.
- Specify CONSOLE to send trace output to the system log and console (not recommended because of the large volume of messages).

**Default** SYSPRINT

**Supported Values**

Value	Description
CONSOLE	Send trace to system log.
GTF	Send trace to GTF.
SYSPRINT	Send trace to SYSPRINT identified by XDBOUT DD statement.

**Example** TRACE="GTF"

## TRACING

**Name** TRACING

**Summary**

Specifies whether or not detailed tracing of Mainframe Access Server program activity should be started during initialization processing. Normally, tracing should be turned off during initialization and during normal product operation. Activity tracing writes detailed information to the XDBOUT sysout data set and this can slow down performance in a busy server. Tracing is normally controlled by the TRACE ON and TRACE OFF commands after initialization is complete. The TRACING parameter makes it possible to trace the initialization activity, before the server is ready to accept TRACE ON/OFF commands. Activity trace started by the TRACING parameter can be stopped later using the TRACE OFF command. Specify 1 to activate tracing during initialization or specify 0 to inhibit activity tracing until a TRACE ON command is issued.

**Default** 0

**Supported Values**

Value	Description
0	Disable MFA Server tracing.
1	Enable MFA Server tracing.

**Example** TRACING="1"

## TSO\_INITMOD

**Name** TSO\_INITMOD

**Summary**

Specifies the name of the address space initialization module used by TSO sessions. It must be specified if more than one version of MFA is running in the same LPAR. If a non-default value is used, the MFATSOIN module in the MFA load library must be renamed to match the parameter value before it is copied into a system LNKLST library.

**Default** MFATSOIN

**Supported Values**

Value	Description
<i>tsoname</i>	A valid load module name.

**Example** TSO\_INITMOD="*tsoname*"

### TSO\_JOBCHAR

**Name** TSO\_JOBCHAR

**Summary** Specifies a character which is appended to the user's TSO user id to form a job name for the TSO Command Server task.

**Default** X

**Supported Values**

Value	Description
alphanumeric	A character in the range A-Z, 0-9.

**Example** TSO\_JOBCHAR="X"

### TSO\_JOBCHAR\_PREFIX

**Name** TSO\_JOBCHAR\_PREFIX

**Summary** Specifies the job char is prefixed to the job name.

**Default** 0

**Supported Values**

Value	Description
0	The job char is a suffix to the job name.
1	The job char is prefixed to the job name.

**Example** TSO\_JOBCHAR\_PREFIX="1"

### TSO\_MSGCLASS

**Name** TSO\_MSGCLASS

**Summary** Specifies the JES message class of the TSO session's output data sets. The default of "0" means no MSGCLASS parameter is added to the job card and the system default is used.

**Default** 0

**Supported Values**

Value	Description
<i>alphanumeric</i>	A character in the range A-Z, 0-9.

**Example** TSO\_MSGCLASS="A"

### TSO\_NOTIFY

**Name** TSO\_NOTIFY

**Summary** Specifies a NOTIFY=*userid* parameter is added to the job card of the TSO task started for the user.

**Default** 0

**Supported Values**

Value	Description
<i>binary</i>	0 or 1.

**Example** TSO\_NOTIFY="1"

## TSO\_PCNAME

**Name** TSO\_PCNAME

**Summary** Specifies the name of the PC support module used by TSO sessions. It needs to be specified if more than one version of MFA is running in the same LPAR. If a non-default value is used, the MFATSOPC module in the MFA load library must be renamed to match the parameter value.

**Default** MFATSOPC

**Supported Values**

Value	Description
<i>tsoname</i>	A valid load module name.

**Example** TSO\_PCNAME="*tsoname*"

## TSO\_PROCEDURE

**Name** TSO\_PROCEDURE

**Summary** Specifies the name of the JCL procedure used to run the TSO Command Server.

**Default** MFATSO

**Supported Values**

Value	Description
Name	A valid JCL procedure name.

**Example** TSO\_PROCEDURE="MFATSO"

## VIO\_FOR\_ENDEVOR\_LOG

**Name** VIO\_FOR\_ENDEVOR\_LOG

**Summary** By default, the Endeavor Dependent Region creates a new VIO file (DDNAME=ENDVMSG) to be used as the Endeavor transaction log for all subsequent transactions within that dependent region. The DCB attributes are:

```
PS,FBA,LRECL=133,UNIT=VIO,DISP=(NEW,DELETE),DSN=&MSGLOG
```

This file is effectively be a memory resident file, buffered by JES.



**Note:** During initialization there is no end-user profile in effect. That means the VIO file is owned by the started task. Therefore, the started task security profile must allow any end-user to write to this file. Endeavor will OPEN the file as the transaction log. This is the default behavior.

If this causes a security violation at your site, you may configure the log to be disk-resident, provided the high-level qualifier allows universal READ/WRITE access to the log. This is allocated as:

```
UNIT=SYSALLDA,DSNAME=prefix.jobname.ASnnnnn.MSGLOG
```

Where the jobname and address space number ensures uniqueness. The prefix is taken from the DSNQUALIFIER\_ENDEVOR parameter

**Default** 1

**Supported Values**

Value	Description
0	MFA Server allocates a data set for the Endeavor transaction log.
1	MFA Server uses the default VIO file for Endeavor transaction log stored in ENDVMSG.

**Example** VIO\_FOR\_ENDEVOR\_LOG="0"

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