



ELIT MFT SSH (SFTP)

User Guide

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Introduction

Terminology and Acronyms

Term	Definition
ASCII	American Standard Code for Information Interchange – a standard developed by the American National Standards Institute (ANSI) for the numeric representation of alphanumeric and special characters.
AUTH SSL	An FTP command that negotiates an explicit secure connection.
COMPORD	EDI standard for the steel industry.
Dataset Name	The equivalent to a file name on an IBM mainframe computer.
DNS	Domain Name Server
DSN	Data Set Name, the equivalent to a file name on an IBM mainframe computer.
EBCDIC	Extended Binary Coded Decimal Interchange Code – numeric code developed by IBM for the representation of alphanumeric and special characters.
EDI	Electronic Data Interchange – electronic application-to-application exchange of structured business data between companies.
EDI Data	Text files formatted according to an industry standard such as EDIFACT, X12 ISA, ICS, BG, COMPORD, VICS, or TRADACOM.
EDIFACT	Electronic Data Interchange for administration, commerce, and transport. ISO standard for EDI.
ELIT MFT ID	A unique code that identifies a user in the ELIT MFT network, i.e., an ELIT MFT User ID. User ID, Mailbox, and Location Code are synonymous.
ELIT MFT	DXC Technology's Managed File Transfer
ELIT MFT Filename	A name from 1 to 10 characters assigned by the Sender that identifies the transfer operation within ELIT MFT. This name is often dictated by the recipient to identify the receiving application or the specific transmission.
SFTP	SSH File Transfer Protocol
GUI	Graphical User Interface
IP	Internet Protocol

Location Code	A unique code that identifies a user in the ELIT MFT network, i.e., an ELIT MFT User ID. User ID, Mailbox, and Location Code are synonymous.
Mailbox	Identifies a holding place for files sent to your ELIT MFT ID. A mailbox ID is equivalent to an ELIT MFT ID or Location Code.
Mainframe	IBM Multiple Virtual Storage Mainframe
Obtainable Files	Files in your mailbox waiting to be retrieved.
PGP	Pretty Good Privacy – data encryption and decryption computer program that provides cryptographic privacy and authentication for data communication.
ReceiverID	ELIT MFT ID of the receiver of a file.
RFC	Request for Comments. A document in which an Internet standard or protocol is published.
SenderID	ELIT MFT ID of the sender of a file.
SSH	Secure Shell
SSL	Secure Sockets Layer
Switcher	An ELIT MFT ID mailbox that can send and receive files on behalf of one or more other ELIT MFT IDs.
TCP/IP	Transmission Control Protocol/Internet Protocol
*THS/THD/TTR	ELIT MFT proprietary envelope records that contain file routing information.
Trading Partner	The sending and/or receiving parties involved in exchanging electronic data.
VAN	Value-Added Network
VPN	Virtual Private Network
X12	ANSI standard for EDI.

How to use this document

This document describes how to access ELIT MFT using SSH SFTP. It assumes that you have a basic understanding of SFTP commands and functions, and that you are using the SFTP command line interface.

References of the SFTP commands supported by the ELIT MFT SSH server are detailed in the [Command Reference](#) section. However, the entire document should be reviewed to gain an understanding of the ELIT MFT SSH Server.

Feedback

Comments on this document are welcome and encouraged. Please send your feedback to mft.services@dxs.com.

About ELIT MFT

ELIT MFT is the acronym for DXC Technology's Managed File Transfer, a highly scalable, multi-platform, multi-protocol B2B communication service suite. ELIT MFT allows organizations and their trading partners (suppliers, customers, banks, freight forwarders, and the like) to access and exchange data across a single secure, global network. ELIT MFT supports multiple types of data file transfer: EDI, Electronic Funds Transfer (EFT), and proprietary data structures. ELIT MFT also supports multiple platforms and network communication protocols [File Transfer Protocol (FTP), FTP/s, HyperText Transfer Protocol (HTTP) and AS2] and network interconnections with both public and private third-party Value-Added Networks (VANs).

ELIT MFT SSH Server

An SSH SFTP server (also called a server application) is an application program that accepts connections using the Secure Shell (SSH) protocol in order to service requests.

Secure Shell or SSH is a [network protocol](#) that allows data to be exchanged over a [secure channel](#) between two computers. [Encryption](#) provides confidentiality and integrity of data.

SSH is typically used to log into a remote machine and execute commands, but it also supports [tunneling](#), forwarding arbitrary [TCP ports](#) and [X11](#) connections; it can transfer files using the associated [SFTP](#) protocol.

An SSH [server](#), by default, listens on the [standard TCP port](#) 22.

SSH is a commonly used protocol for exchanging files over any network that supports the [TCP/IP](#) protocol (such as the [Internet](#) or an [intranet](#)). There are two [computers](#) involved in an SSH transfer: a [server](#) and a [client](#). The SSH server, running SSH server software, listens on the network for connection requests from other computers. The client computer, running [SSH client software](#), initiates a connection to the server. Once connected, the client can do a number of file manipulation operations such as uploading files to the server or downloading files from the server.

The supported protocol enabled in the ELIT MFT SSH Server is:

- SSH File Transfer Protocol (SFTP) using Secure Shell (SSH)

The ELIT MFT SSH Server accepts SFTP commands as described in this document. Certain SFTP commands (such as `cd` and `pwd`) have been enhanced in ELIT MFT and function differently from other SFTP implementations. For example, in ELIT MFT, the `cd` command specifies file routing and other file transfer parameters, whereas in “typical” SFTP environment the `cd` command changes a directory. The same is true for the second parameter in the `put` command. The [Command Reference](#) section describes each command parameter and how it is used with ELIT MFT.

SSH Client Software

SSH client software is required to access ELIT MFT. SSH client software is not standardized, therefore, support for common SFTP commands may not be in all implementations. You may need to consult your software vendor for assistance on the options discussed in this document. Likewise, you may need to consult the vendor if your software uses a graphical user interface (GUI) instead of the command line interface. ELIT MFT SSH Server has been tested and is compatible with, but not limited to, the following SSH/sftp packages:

- Sun_SSH_1.1, SSH protocols 1.5/2.0, OpenSSL 0x0090704f
- OpenSSH_4.3p2, OpenSSL 0.9.7a Feb 19 2003
- PuTTY, psftp: Release 0.60

Specifications Implemented by ELIT MFT SSH Server

The **SSH File Transfer Protocol** or **SFTP** is a network protocol that provides file transfer and manipulation functionality over any reliable data stream. It is used with the [SSH-2](#) protocol to provide secure file transfer. It is the only Protocol enabled in the ELIT MFT SSH Server. ELIT MFT SSH attempts to conform to the following SSH RFC specifications:

- RFC 4250: The Secure Shell (SSH) Protocol Assigned Numbers
- RFC 4251: The Secure Shell (SSH) Protocol Architecture
- RFC 4252: The Secure Shell (SSH) Authentication Protocol
- RFC 4253: The Secure Shell (SSH) Transport Layer Protocol

Getting set up with ELIT MFT

Before using the ELIT MFT SSH service, you must have an ELIT MFT ID configured for SSH use. You can request a new ELIT MFT ID or have an existing ELIT MFT ID converted by contacting ELIT MFT Services via e-mail, mft.services@dxs.com.

File Types

ELIT MFT can accept any type of data. Data files are considered text files (human-readable) or binary data.

Text files are referred to as either Electronic Data Interchange (EDI) data or proprietary data. EDI data files are formatted according to an industry standard such as EDIFACT, X12 ISA, ICS, BG, COMPORD, VICS, or TRADACOM.

Binary files are often not human-readable, such as compressed or encrypted.

SFTP File Transfer Modes

SFTP is an extension of the SSH protocol suite and functions similarly to an FTP with the major difference being that all communication is encrypted and one communication channel is used for transferring both sftp commands and data.

The ELIT MFT SSH Server supports binary transfer mode with optional character encoding conversion

Connecting to ELIT MFT

How SSH Uses Public-Key Cryptography (with Analogy)

First, a pair of [cryptographic keys](#) is generated. One is the private key, the other is the public key. As an [analogy](#), they can be thought of as a matching private-key and a public [padlock](#). The public padlock is what is installed on the remote machine and is used by ssh to authenticate users which use the matching private key. As a user of the system, you don't care who can see or copy the padlock (i.e. the public key), since only the secret private key fits it. The private key is the part you keep secret inside a secure box that can only be opened with the correct [passphrase](#). When the user wants to access a remote system, he/she opens the secure box with his passphrase and uses the private-key to authenticate himself or herself with the padlock on the remote computer. Neither the passphrase nor the private key leave the user's machine. However, the user still needs to trust the local machine not to scrape his passphrase or copy his private-key while it's out of the secure box.

Connecting to ELIT MFT

Because of different network connectivity configurations, ELIT MFT Services will provide you with the appropriate DNS name for the ELIT MFT SSH Server servicing your network environment.

Authentication

Your assigned ELIT MFT ID is the logon ID to your ELIT MFT mailbox. The ELIT MFT SSH server uses key authentication for authenticating users. In order to use key authentication, you are required to generate an SSH key pair using the authentication key generation utility provided by the SSH client software (ssh-keygen). The public key of the generated key pair must be submitted to ELIT MFT Services to be associated with the ELIT MFT ID that will use key authentication. The example below illustrates logging on to the ELIT MFT SSH Server. Note the exact text that displays on your screen may be slightly different depending on your connection method.

```
-bash-3.00$ sftp -oIdentityFile=sshkey ABC@ftp6.elit.eds.com
Connecting to ftp6.elit.eds.com...
      Welcome to the ELIT SSH Server
Use of this system is restricted to authorized users.
User activity is monitored and recorded by system personnel.
Anyone using this system expressly consents to such monitoring
and recording.  BE ADVISED: If possible criminal activity is detected,
system records, along with certain personal information,
may be provided to law enforcement officials.
sftp>
```

Data Elements for ELIT MFT Transfers

Trading partners are the sending and/or receiving parties involved in exchanging electronic data. The Sender sends the data to ELIT MFT to be delivered to the Receiver of the data. The Sender and Receiver are identified by their assigned ELIT MFT IDs.

ELIT MFT needs the following data elements to route a file to its destination.

- The ELIT MFT ID of who sent the file, referred to as the SenderID.
- The ELIT MFT ID of who is to receive the file, referred to as the ReceiverID (or destination).
- ELIT MFT Filename, which is a label for the transmission. This is specified by the Sender at the time of transmission. However, it is often dictated by the Receiver to route the file to the receiving application.

In addition to the above, every ELIT MFT transmission also has the following associated with it.

- Reference (ACR). This is an optional string of 1 to 5 characters specified by the Sender to further identify the file.

- File Control Number (Control#). This is a number assigned by ELIT MFT to identify a specific transmission. This distinguishes transmissions from others with the same SenderID, ReceiverID, and ELIT MFT Filename.

All of the above data elements are specified with the `cd` and `put` commands.

Routing a File Through ELIT MFT

Standard SFTP commands are used to specify ELIT MFT routing parameters. Detailed descriptions of all of the commands used in this section can be found in the Command Reference section.

Parameters for file delivery

To route a file, you need to specify a minimum of three data elements as follows: SenderID, ReceiverID, and the ELIT MFT Filename. Your trading partner should be able to provide you with the ReceiverID and the required ELIT MFT Filename, if any. The Reference element is optional and can be used to further identify the data.

For files sent to a mainframe destination, you must also provide ELIT MFT with the following. Your trading partner should be able to provide you with this information, as well.

- Logical record length required by the receiving application (specified with the `cd` command `lrecl=n`).
- Indicate how carriage return/line feed characters should be handled (`keepLf` or `striplf` parameter).

Considerations

Using standard SFTP commands, there are multiple ways to specify the file routing for ELIT MFT. You can instruct ELIT MFT to extract routing information from the data itself using the `fromdata` option (see the [FROMDATA Option](#) section), or you can explicitly route each individual file. All of the explicit routing options are supported by the `cd` and `put` commands.

If you are not using `fromdata`, the SenderID defaults to the ELIT MFT ID that logged in. However, if your ELIT MFT ID is defined as a switcher (can send and receive files on behalf of other ELIT MFT IDs) you may need to specify the SenderID for each file if it is different from the ELIT MFT ID that logged in.

PGP Decryption

Applications requiring data to be PGP encrypted can instruct ELIT MFT SSH server to decrypt and optionally verify signature of received data. This process can be imposed on the ELIT MFT ID that is used to transmit data to ELIT MFT, or it can be selectively invoked during the transmission. If the process needs to be imposed on ELIT MFT ID, ELIT MFT services can configure the ELIT MFT ID for automatic PGP decryption and optional

signature verification. ELIT MFT Services will also provide PGP public key with which the data needs to be encrypted. ELIT MFT Services will also require a PGP public key of the sender if PGP key verification is required. For selective PGP decryption, keyword `pgpd` or `pgpdv` (if signature verification is required) can be used as reference values. See `put` command in the Command reference section for more information on how to use PGP reference values. As with automatic PGP decryption, selective PGP decryption and signature key verification requires exchange of PGP public keys.

FROMDATA Options

When the `fromdata` option is used, ELIT MFT extracts the routing information, i.e., `SenderID`, `ReceiverID`, and ELIT MFT Filename, from the data within the file. `fromdata` works with two types of files.

1. A file that contains EDI data (EDIFACT and X.12 ISA, ICS, or BG, COMPORD, VICS, or TRADACOM) and has the `SenderID` and `ReceiverID` predefined in ELIT MFT. One file can contain multiple documents, each with its own header and trailer records. The header record (e.g., ISA, UNB) for a subsequent document can immediately follow the trailer record (e.g., IEA, UNZ) for a previous document. Optionally, the subsequent header can start in column 1 of the next record, with the previous trailer padded out to the `lrecl` value.
2. For backward compatibility, `fromdata` can be used with files that contain ELIT MFT proprietary header and trailer records of `*THS/*THD/*TTR`, `*P*`, or `*#F/*#S/*#D`. These records contain the ELIT MFT `SenderID` and `ReceiverID` among other data and must begin in column 1. A file can contain multiple documents, each with its own header and trailer records.

`*THS` records must contain the correct transmission logical record length (`lrecl`) in columns 20-23 and the correct transmission block size (`blkksz`) in columns 24-27. In addition, the total size of the file has to be a multiple of the record length specified; the last data record must be padded with spaces to the complete length of the record (the `lrecl` value).

Contact ELIT MFT Services for more information on this option.

Here are a few things to note when using `fromdata`:

1. The `SenderID` and `ReceiverID` in the headers must be valid, predefined, ELIT MFT IDs. In addition, the `SenderID` must be one of the following:
 - The same ELIT MFT ID as the one that logged in
 - Must convert to the ELIT MFT ID that logged in, i.e., be defined in ELIT MFT as an alias to the ELIT MFT ID that logged in
 - Defined as switching through the ELIT MFT ID that logged in

2. Parameter values extracted from a file override those set with the `cd` or `put` commands.

The command `cd fromdata` will set `keep1f` for all files within the data stream.

Session Flow

This section describes what needs to occur in an SSH session to route a file through ELIT MFT for delivery. If your SSH client software uses a GUI, please consult with the software vendor on how to configure the software for the options discussed here.

Your SSH procedure should include the following steps. The [Examples of Routing Files](#) section at the end of this chapter illustrate the use of the commands.

- Log on to ELIT MFT with the SSH/sftp client application by executing it with the URL option by specifying ELIT MFT SSH server and ELIT MFT location code as the user id.
- Specify the routing (SenderID, ReceiverID, and ELIT MFT Filename) and optional parameters (Feedback Filename, Application Reference) with the appropriate commands:

`cd` command (optional if `put` supplies the parameters)

Note: routing parameters can also be specified on the `put` command (see below).

- If routing to a mainframe destination (an IBM mainframe), specify the record length with the `CD lrecl=n` command, and how to handle carriage return/line feed characters (see the [Appendix A - Sending Files to a mainframe](#) section).
- Include the `put` command to transfer the file. If routing and session parameters were not set with `cd`, specify them on the `put` command line.

Command Options

This section illustrates the different command options when routing a file through ELIT MFT.

Assume a file is to be sent to the destination of QE5 with the ELIT MFT Filename of DESADVT. QE5 resides on a mainframe and requires a record length of 80. The file contains EDI data and does not contain carriage return/line feed characters.

The following groups of commands are equivalent to each other, and each would successfully transfer the file. Note the SenderID defaults to the ID that logged on.

```
sftp> cd qe5/desadvrt/./keep1f/lrecl=80
sftp> put asn.txt

sftp> quit

- or -
sftp> put asn.txt qe5/desadvrt/./keep1f/lrecl=80
sftp> quit
```

Using the same example, the commands below illustrate how a company with multiple mailboxes can specify a different SenderID from the one that is logged in. Again, these equivalent groups of commands show how different commands can achieve the same results.

```
sftp> cd /lam/qe5/desadvtd/.
sftp> cd keep1f/lrecl=80
sftp> put asn.txt
sftp> bye
```

- or -

```
sftp> cd /lam/qe5/desadvtd/./keep1f
sftp> cd lrecl=80
sftp> put asn.txt
sftp> bye
```

When `fromdata` is used, the routing (SenderID, ReceiverID, ELIT MFT Filename) is extracted from the data. In addition, if ELIT MFT *THS/*THD/*TTR records are used, the record length is also taken from the header.

The following groups of commands are equivalent to each other.

```
sftp> cd fromdata
sftp> put asn.txt
sftp> quit
```

- or -

```
sftp> put asn.txt fromdata/asn.txt
sftp> quit
```

Examples of routing files

The examples below illustrate the commands that can be used to route files to another ELIT MFT ID. In both examples, ELIT MFT location ID LAM is assumed to be logged in.

```
sftp> cd /lam/pol/release/./keep1f      (set parameters for the upload)
sftp> cd lrecl=80                      (set the record size required by the receiver)
sftp> put release.dat                  (transfer the file)
Uploading release.dat to /lam/jaz/release/./keep1f/lrecl=80/release.dat
```

```
sftp> cd /lam/pol/release/./keep1f/lrecl=80 (get the routing from the data, note KEEPLF)
sftp> put release.dat                    (transfer the file)
Uploading release.dat to /lam/pol/release/./keep1f/lrecl=80/release.dat
sftp> bye
```

This example shows how to specify a sender other than the one that is logged in. The ELIT MFT ID that logged in, POL, must be set-up by ELIT MFT Services as a switcher, and PO7 must be set-up as switching through POL. Note that a "/" preceding the first parameter of the `cd` command indicates it is the SenderID.

```
sftp> cd /po7/tdl/invoice      (specify parameters; note the sender)
sftp> put invoice.dat          (transfer the file)
Uploading invoice.dat to /pol7/tdl/invoice/invoice.dat
```

Listing Files

To display files in the mailbox sftp commands `dir` or `ls` are used. ELIT MFT lists files using original data set names with appended unique file control number. For long lists (-l), ownership information shows ELIT MFT sender ID as the owner of the file and ELIT MFT filename (or Application ID) as the group of a file.

The sample session below illustrates `dir` and `ls` commands.

```

Welcome to the ELIT SSH Server
Use of this system is restricted to authorized users.
User activity is monitored and recorded by system personnel.
Anyone using this system expressly consents to such monitoring
and recording.  BE ADVISED: If possible criminal activity is detected,
system records, along with certain personal information,
may be provided to law enforcement officials.

Key authentication                                (log in)
sftp> dir                                          (list files)
RushOrder.txt.18602
C0000000.C0169814.34295
C0000000.C0169732.08587
orders.dat.31160
sftp> ls                                          (list files)
RushOrder.txt.18602
C0000000.C0169814.34295
C0000000.C0169732.08587
orders.dat.31160
sftp> ls -l
-rwx-----  1 mrahtest appfilet      8364 Nov 21 14:21 testfile.txt.63719
-rwx-----  1 mrahtest carfile       8364 Nov 21 14:23 testfile.txt.63872
-rwx-----  1 mrpltest testfile      8364 Nov 21 14:31 testfile.txt.64145
-rwx-----  1 mrpltest testing       8364 Nov 21 14:31 testfile.txt.64188
```

Retrieving Files from your ELIT MFT Mailbox

You can retrieve files from your ELIT MFT mailbox with the SFTP `mget` and `get` commands. The `mget` command retrieves all files waiting to be picked up from your mailbox, subject to the maximum default number of files of 250. If more than the maximum default files are in the mailbox multiple `mget` commands can be used or maximum default value of listed files can be overridden with `maxlist` qualifier. See the `ls` command in the [Command reference](#) section for more information on `maxlist` qualifier. The `get` command retrieves one specific file. Detailed descriptions on the commands used in this section can be found in the [Command Reference](#) section.

ELIT MFT generates unique filenames for your downloaded files. By default, the name is the sender's original dataset name plus the file's control number, a unique identifier.

Session Flow to retrieve all obtainable files

Your SFTP procedure should include the following steps. The [Examples of Retrieving Files](#) section at the end of this chapter illustrates use of the commands.

- Log on to ELIT MFT.
- Issue the `mget *` command to retrieve all pending files.
- Log off by issuing a `bye` or `quit` command.

Session Flow to retrieve a specific file

ELIT MFT assigns a unique control number to each file transfer. This distinguishes a specific file from others with the same SenderID, ReceiverID, and ELIT MFT Filename. Files can be retrieved individually by supplying the control number on the `get` command line.

Your SFTP procedure should include the following:

- Log on to ELIT MFT with SSH/sftp client software.
- Display files with the `dir` command to retrieve the ELIT MFT control number.
- Issue the `get` command with the control number.
- Log off by issuing `bye` command.

Session Flow to retrieve selective files

An ELIT MFT user can selectively retrieve a specific file by issuing the `dir` or `ls` command along with ELIT MFT qualifiers and following it with the `mget *` command. With this command scheme, the `mget *` command will only retrieve those files that meet the criteria presented by the ELIT MFT qualifiers specified. Further use of the `dir/ls` and `mget` commands will not be restricted to specific files unless specific qualifiers are used. A qualified `dir` or `ls` command actually provides a subset of files to be used as input to a succeeding `dir`, `ls`, or `mget *` command. For example, if a `dir` or `ls` command is issued

with qualifiers, then a second `dir` or `ls` is issued without qualifiers (instead of an `mget *`), only the files resulting from the first `dir` or `ls` are visible to the second one, so all files in your mailbox may not be displayed. However, the second `dir` or `ls` command releases the qualifications, so they are not in affect for any subsequent commands.

See the `ls` command in the [Command Reference](#) section for the list of qualifiers.

Your SFTP procedure should include the following:

- Log on to ELIT MFT with SSH/sftp client software.
- Display files with a qualified `dir` or `ls` command.
- Issue the `mget *` command to retrieve qualified files.
- Log off by issuing `bye` command.

Examples of retrieving files

The following example sessions illustrate various ways to retrieve files from ELIT MFT.

Example 1.

Welcome to the ELIT SSH Server

Use of this system is restricted to authorized users.

User activity is monitored and recorded by system personnel.

Anyone using this system expressly consents to such monitoring

and recording. BE ADVISED: If possible criminal activity is detected,

system records, along with certain personal information,

may be provided to law enforcement officials.

```
Key authentication                                (log in)
sftp> ls                                           (list files)
B0000000.B0034465.621
B0000000.B0034466.4724
B0000000.B0034467.4725
sftp> mget *                                      (pull all files)
Fetching ./B0000000.B0034465.621 to B0000000.B0034465.621
Fetching ./B0000000.B0034466.4724 to B0000000.B0034466.4724
Fetching ./B0000000.B0034467.4725 to B0000000.B0034467.4725
sftp>sftp> bye
```

Example 2.

Welcome to the ELIT SSH Server

Use of this system is restricted to authorized users.

User activity is monitored and recorded by system personnel.

Anyone using this system expressly consents to such monitoring and recording. BE ADVISED: If possible criminal activity is detected, system records, along with certain personal information, may be provided to law enforcement officials.

```
Key authentication                (log in)
sftp> dir                        (list files)
invoice01.dat.659
invoice02.dat.658
invoice03.dat.636
sftp> get invoice02.dat.658      (pull specific file)
Fetching ./invoice02.dat.658 to invoice02.dat.658
sftp> dir
invoice01.dat.659
invoice03.dat.636
sftp> bye
```

Example 3.

Welcome to the ELIT SSH Server

Use of this system is restricted to authorized users.

User activity is monitored and recorded by system personnel.

Anyone using this system expressly consents to such monitoring and recording. BE ADVISED: If possible criminal activity is detected, system records, along with certain personal information, may be provided to law enforcement officials.

```
Key authentication                (log in)
sftp> ls -l                      (list all files)
-rwx-----  1 0          0          8200 Oct 21 07:50 C0000000.C0835745.2848
-rwx-----  1 0          0          800160 Oct 22 02:57 testfile.txt.162sftp>
sftp> ls s=jaz (list files from ELIT MFT source location JAZ)
s=jaz/C0000000.C0835745.2848
sftp> mget *                    (retrieve listed files from JAZ)
Fetching ./C0000000.C0835745.2848 to C0000000.C0835745.2848
./C0000000.C0835745.2848          100% 8200      8.0KB/s    00:01
sftp> bye
```

Command Reference

This section describes the commands that can be used with the ELIT MFT SSH Server.

Note that parameter values supplied to ELIT MFT (to the right of the equals sign) are not case sensitive.

CD Command

The `cd` command specifies parameters for subsequent `put` commands.

```
cd /SenderID/ReceiverID/ELITMFTFilename/Reference/bin|keep|strip|lrecl=x
```

SenderID Optional. 3 to 17 characters. The ELIT MFT ID that is sending files. This value defaults to the ELIT MFT ID that logged on. This is mostly used by ELIT MFT IDs defined as switchers.

ReceiverID Required; 3 to 17 characters. The ELIT MFT ID to receive the files being sent or the fromdata verb (refer to **Error! Reference source not found.** for more information). If a SenderID is not specified, a "/" should not prefix the ReceiverID.

ELITMFTFilename Optional. 1 to 10 alphanumeric characters. The name to be given to identify the next transmission. This value is often dictated by the Receiver. The default is \$DEFAULT.

Reference Optional. 1 to 35 alphanumeric characters. The reference string to be assigned to any files sent. This value is optional, however if keep| or strip| is specified, a "." must be used here as a placeholder. The default is tcpip. A Reference value PGPD is used to trigger PGP decryption of the payload sent to ELIT MFT. A value of PGPDv will PGP decrypt as well as verify the PGP signature of the payload.

Bin Optional. This qualifier is used to transmit binary data to a mainframe system, without character encoding conversion from ASCII to EBCDIC, when the lrecl qualifier is used.

keep| Optional. This qualifier keeps carriage return/line feed characters in your files. Please refer to the Appendix A - Sending Files to a Mainframe Application section for more information. The default mode is bin.

strip| Optional. This qualifier removes carriage return/line feed characters from your files but uses their position to determine the end of the record. Please refer to the Appendix A - Sending Files to a Mainframe Application section for more information. The default mode is bin.

lrecl Optional. This specifies the logical record length of the file, which is a value from 1 to 32760. This value is needed when the Receiver is on a mainframe and is expecting a file with fixed-length records.

Notes

- The session default is `bin`. Refer to the [Appendix A - Sending Files to a Mainframe Application](#) section for more information.
- The values extracted from a file with `fromdata` overrides any value set with the `cd` command. Please see the [FROMDATA Option](#) section for more information. The session default for `fromdata` changes to `keep1f`. The use of `fromdata` changes the default to `keep1f`.

Examples

Assume that ELIT MFT ID TDL has issued the following commands.

```
sftp> cd pol      (minimum parameter - destination location)
sftp> cd pol/prodrpt      (destination location and filename)
sftp> cd pol/prodrpt/./keep1f      (destination location, filename and keep1f)
sftp> cd pol/summrpt/decem/keep1f      (destination, filename, reference and keep1f)
sftp> cd pol/summrpt/./bin/lrecl=80      (destination, filename, binary and logical record length)
sftp> cd pol/summrpt/pgpd      (destination, filename and PGP decrypt the payload)
```

CD FROMDATA

`cd fromdata`

The `cd fromdata` command instructs ELIT MFT to extract the file routing from the data in the file. This can be used with two types of files: 1) Files that contain EDI data. 2) Files wrapped in ELIT MFT proprietary headers, such as `*THS/*THD/*TTR` headers. The routing and certain other fields (ELIT MFT Filename, Record Length, feedback, etc.) are taken from the headers. The SenderID and ReceiverID in the data must be predefined in ELIT MFT.

Notes

- The values extracted from a file with `fromdata` overrides any value set with the `cd` or `put` commands. Please see the [FROMDATA Option](#) section for more information.
- This command changes the session default to `keep1f`.

Example

```
sftp> cd fromdata
sftp> put edi.dat
Uploading edi.dat to ./fromdata/edi.dat
sftp> bye
```

DIR Command

The `dir` command displays files in your mailbox waiting to be picked up. It is a synonym command for `ls`. See the `ls` command for more information.

Example

```
sftp> dir (list files)
invoice01.dat.659
invoice02.dat.658
invoice03.dat.636
```

GET Command

The `get` command downloads an individual file.

get *ELITMFTfile* *Localfile*

ELITMFTfile Required. The ELIT MFT filename composed of the original dataset name plus control number.

Localfile Optional. The name of the local file to contain the data.

Example

```
sftp> dir (list files)
invoice01.dat.659
invoice02.dat.658
invoice03.dat.636

sftp> get invoice02.dat.658 (pull specific file)
Fetching ./invoice02.dat.658 to invoice02.dat.658
sftp> bye
```

LS Command

This command displays a brief list of files waiting to be picked up. Only the *DataSetName* with control number is displayed. To display additional details, including file size, permissions and ownership information the `-l` flag can be used with the `ls` command. Ownership information displays sender ID as the owner of a file and ELIT MFT filename (Application ID) as the group of a file. To change the maximum limit of 250 files in the list command, `maxlist=x` qualifier can be used, where `x` is the new limit. For a selective listing the following qualifiers can be used with the `ls` command:

ls *s=SenderID, f=ELITMFTFilename, r=Reference, d=DataSetName*

no parameter Displays the DataSetName of files not yet retrieved.

s=SenderID Optional. Displays files sent to you with the SenderID specified. A wildcard value can be used within the SenderID value.

f=ELITMFTFilename Optional. Displays files sent to you with the given ELITMFTFilename value. A wildcard value can be used within the ELITMFTFilename value.

r=Reference Optional. Displays only those files with the specified Reference. A wildcard value can be used within the Reference value.

d=DataSetName Optional. Displays only the file with the given DataSetName. A wildcard value can be used within the DataSetName value.

Examples

```
sftp> ls (list files)
C0000000.C0687243.01776
sftp> bye
ls maxlist=25000 (change the default limit of 250 files to 25000)
mget * (get all files, could be more than 250)
```

MGET Command

The `mget` command retrieves all files from your mailbox, subject to the default limit of 250 files. If a selective `ls` or `dir` command was used prior to the `mget` command, files qualified by the `ls` or `dir` command will be retrieved. Default limit of 250 files can be changed with `maxlist` qualifier in `ls` command. ELIT MFT generates unique filenames for the downloaded files. By default, the name is the sender's original dataset name plus the file's control number.

One can also use wildcard character qualification on the sender's original dataset name to retrieve a subset of files. Please see the [Session Flow to Retrieve Selective Files](#) section for more information. `mget *` retrieves all files waiting to be picked up. When issued by an ELIT MFT ID defined as a switcher, files with the status of OBTAINABLE for all subordinate ELIT MFT IDs are retrieved.

Examples

```
sftp> ls (list files)
B0000000.B0034465.621
B0000000.B0034466.4724
B0000000.B0034467.4725
sftp> mget * (pull all files)
Fetching ./B0000000.B0034465.621 to B0000000.B0034465.621
```

```

Fetching ./B0000000.B0034466.4724 to B0000000.B0034466.4724
Fetching ./B0000000.B0034467.4725 to B0000000.B0034467.4725
sftp>sftp> bye
psftp> ls
Listing directory ./
-rwx-----  1 0      0      8200 Oct 22 05:51 test100.txt.1853
-rwx-----  1 0      0      8200 Oct 22 05:51 test200.txt.1852
-rwx-----  1 0      0      8200 Oct 22 05:51 test201.txt.1841
-rwx-----  1 0      0      8200 Oct 22 05:51 test202.txt.2967
-rwx-----  1 0      0      8200 Oct 22 05:51 test300.txt.1836
-rwx-----  1 0      0      800160 Oct 22 02:57 testfile.txt.162
psftp> mget *20*
remote:./test200.txt.1852 => local:test200.txt.1852
remote:./test201.txt.1841 => local:test201.txt.1841
remote:./test202.txt.2967 => local:test202.txt.2967
psftp> bye
.
```

PUT Command

Sends a file to ELIT MFT to be delivered to the *ReceiverID* specified.

```
put Localfile
/SenderID/ReceiverID/ELITMFTFilename/Reference/bin|keep|striplf/lrecl=x
```

Localfile Required. The name of the file to upload; the filename must start with an alphabetic character.

SenderID Optional. 3 to 17 characters. The ELIT MFT ID that is sending files. This value defaults to the ELIT MFT ID that logged on. This is mostly used for ELIT MFT IDs defined as switchers.

ReceiverID Optional. 3 to 17 characters. The ELIT MFT ID to receive the files being sent or the fromdata verb. If a SenderID is not specified, a "/" should not prefix the ReceiverID.

ELITMFTFilename Optional. 1 to 10 alphanumeric characters. The name to be given to identify the next transfer. This value is often dictated by the Receiver. The default is \$default. If this parameter is specified, the ReceiverID must also be specified.

Reference Optional. 1 to 35 alphanumeric characters. The Reference value to be assigned to any files sent. This value is user-defined and further identifies the file. It is optional unless keep|f or striplf is specified, in which case a "." can be used here as a placeholder. If this parameter is specified, the ELITMFTFilename must also be specified. Reference value of PGPd is used to trigger PGP decryption of the payload sent to ELIT MFT. A value of PGPdv will PGP decrypt as well as verify the PGP signature of the payload.

`bin` Optional. This qualifier is used to transmit binary data to a mainframe system, without character encoding conversion from ASCII to EBCDIC, when the `lrecl` qualifier is used.

`keeplf` Optional. This qualifier keeps carriage return/line feed characters in your files. Please refer to the Appendix A - Sending Files to a Mainframe Application section for more information. The default mode is `bin`.

`striplf` Optional. This qualifier removes carriage return/line feed characters from your files but uses their position to determine the end of the record. Please refer to the Appendix A - Sending Files to a Mainframe Application section for more information. The default mode is `bin`.

`lrecl` Optional. This specifies the logical record length of the file, which is a value from 1 to 32760. This value is needed when the Receiver is on a mainframe and is expecting a file with fixed-length records.

Notes

- The session default is `bin`. Refer to the [Appendix A - Sending Files to a Mainframe Application](#) section for more information.
- The values extracted from a file with `fromdata` overrides any value set with the `put` command. Please see the [FROMDATA Option](#) section for more information. The session default for `fromdata` changes to `keeplf`.
- This command is made up of two parameters: the filename and the routing parameter. The routing parameter is made up of several elements: SenderID, ReceiverID, ELITMFTFilename, Reference, `keeplf|striplf`, and DataSetName.

Examples

```
sftp> cd qe5/desadvtdt/./keeplf/lrecl=80
sftp> put asn.txt
sftp> quit
```

or -

```
sftp> put asn.txt qe5/desadvtdt/./keeplf/lrecl=80
sftp> quit
```

Using ELIT MFT to pull files from another SFTP Server

ELIT MFT can be used to pull data files into your ELIT MFT mailbox from SFTP servers outside of the ELIT MFT network. This is done by sending a trigger file to ELIT MFT which contains the SFTP commands to execute on the remote server.

An ELIT MFT ID has to be defined by ELIT MFT Services for the SFTP server you want to access. The pull function is initiated by sending a file to that ELIT MFT ID with an ELIT MFT Filename of "FTPPULL".

The FTP commands allowed in the trigger file are listed below.

```
USER Userid/Password or Userid/keyauth
nodelete
requeue
site sid=SenderID,rid=ReceiverID,fnm=FileName,ref=Reference
site failmail=eMailId,emptymail=eMailId,keep1f,strip1f
site lrecl=RecordLength,as1.5
cd RemoteDirectory
mget *
get RemoteFileName
ignore RemoteFileName
```

Minimally, the trigger file must contain a `USER` command and either a `get` or `mget` command; the other commands are optional. If a `ReceiverID` is not given in a `site` command, the files pulled from the remote SFTP server will be sent to the `SenderID` that sent the trigger file. See previous descriptions for `SenderID`, `ReceiverID`, `ELITMFTFilename`, `Reference`, `strip1f`, `keep1f`, and `lrecl`.

`USER Userid/Password` Specifies the logon `Userld` and `Password` on the remote system. For SSH key authentication `/keyauth` keyword can be used instead of password. For key authentication, the sender of the FTTPULL trigger file must be authorized to pull files from the remote system with a unique SSH key pair generated by ELIT MFT Services.

`nodelete` By default, ELIT MFT deletes the file from the remote system after the data has been retrieved. This prevents pulling the file repeatedly from subsequent "pull" sessions. Some SFTP servers provide this operation automatically and disallows the delete function, hence, the ELIT MFT "delete" command results in error. This parameter removes the delete command from the dialogue.

`failmail=eMailId` Specifies the email address to receive notice of a problem in the "pull" operation.

`emptymail=eMailId` Specifies the email address to receive notice of a "pull" attempt that did not find any files on the remote SFTP server. Additionally, this parameter controls the way ELIT MFT acknowledges the FTTPULL file. If present and either the single file to be pulled when using a GET command is not available, or a empty directory is found when

using the MGET * command, the FTPPULL file will be positively acknowledged within ELIT MFT which will prevent any further attempted pulls.

cd RemoteDirectory Specifies the remote directory from which to "pull" files. If not specified, files are pulled from the default directory of the logon UserId.

mget * Indicates that all files in the remote directory should be retrieved.

get RemoteFileName Indicates to retrieve the single file specified by RemoteFileName.

ignore RemoteFileName Instructs ELIT MFT to exclude specific files from being pulled when mget * command is used. Ignore can be used multiple times within the same script. This directive can be used to avoid problems associated with an attempt to pull none-retrievable files using mget * command.

Example

```
USER testuser/secret
```

```
nodelete
```

```
site sid=SENDERID,rid=MYELITMFTID,fnm=TESTFILE
```

```
site failmail=some.body@company.com
```

```
cd OutBox
```

```
mget *
```

```
.
```

Appendix A – Sending files to a Mainframe Application

Because of differences in computer platforms, you may need to specify parameters that allow ELIT MFT to provide a native text file to a receiving z/OS (mainframe) or midrange server. This is done by indicating the logical record length required by the receiving application, and how ELIT MFT should handle carriage return/line feed characters in your data. The latter depends on the type of text file you are sending to ELIT MFT, which can contain:

Un-delimited data, which is a continuous, unbroken stream of text without carriage return and/or linefeed characters separating the data into records. EDI data is often formatted this way.

Delimited data, which is data that contains carriage return/line feed characters to separate records. The records can be of fixed-length (all the same length) or of variable-length (each record can have a different length).

Carriage Return/Line Feed Characters – KEEPLF & STRIPLF

Essentially, you need to instruct ELIT MFT whether to strip carriage return/line feed characters out of your data and whether records should be separated based on where carriage return/line feed characters appear in the data. This is controlled by the `keeplf` and `striplf` options, which are specified with the `cd` and `put` commands. Note that this only applies to files you send to ELIT MFT, not files you retrieve from ELIT MFT.

`Keeplf` and `striplf` work in conjunction with the `cd lrecl= n` command, where `n` is the record length required by the receiving mainframe application. Your trading partner should be able to tell you what record length, if any, is required by their application. `Keeplf` or `striplf` parameters are mainly used when data is destined to mainframe application, therefore automatic conversion from ASCII to EBCDIC encoding character sets takes place when `keeplf` or `striplf` is detected by ELIT MFT.

KEEPLF

When you specify `keeplf`, carriage return/line feed characters are not removed from the file, and the data is separated into fixed-length records with the length given in the `lrecl` parameter.

This option is often used for EDI data files (which usually do not contain carriage return/line feed characters). EDI files requiring 80 byte fixed-length records are common and are sent using an `lrecl` of 80 and `keeplf`.

Notes

The session default when `cd fromdata` is used is `keeplf`. Please see the [FROMDATA Option](#) section for more information.

STRIPLF

`striplf` is the default setting for SFTP file transfers and is often used for non-EDI, proprietary-formatted files or files that are meant for display on a terminal. `striplf` causes ELIT MFT to remove carriage return/line feed characters, however, their position in the data determines the end of each record.

In detail, if `cd lrecl= n` is specified, the resulting file will contain records of the same size. If the position of the carriage return/line feed character is less than the value specified in the `cd lrecl= n` command, the record is padded with spaces up to position `n`. If it is greater than `n`, the record is truncated to the `n`th position. If no carriage return/line feed characters are in the file, the entire file is considered one large record, and the record will be truncated to a length of `n`.

For example, assume an `lrecl` of 80 is specified. If a carriage return/line feed appears at position 100, the record is truncated at the 80th position, and the characters in positions 81-100 are discarded. If a carriage return/line feed appears in position 60, the record is padded with spaces from positions 60 to 80. If no carriage return/line feed characters are in the file, the file will contain one record that is 80 bytes long.

If the destination requires a file with fixed-length records and your file has a carriage return/line feed at the same position in every record (and that position is the same as the `lrecl` value), `striplf` can be used. For example, `striplf` would work well with a file that has carriage return/line feed characters in every record at positions 81 and 82, and the destination requires an `lrecl` value of 80.

Note that if `cd lrecl=n` is not specified and your data does not contain carriage return/line feed characters, the maximum file size allowed is 32760.

Appendix B – ELIT MFT SSH Supported Specification Options

Supported Kex	[diffie-hellman-group1-sha1]
Supported Public Keys	[ssh-rsa]
Supported Encryption Client->Server	[blowfish-cbc, twofish192-cbc, 3des-cbc, aes128-cbc, twofish256-cbc, aes256-cbc, aes192-cbc, twofish128-cbc, cast128-cbc]
Supported Encryption Server->Client	[blowfish-cbc, twofish192-cbc, 3des-cbc, aes128-cbc, twofish256-cbc, aes256-cbc, aes192-cbc, twofish128-cbc, cast128-cbc]
Supported Mac Client->Server	[hmac-sha1, hmac-md5-96, hmac-md5, hmac-sha1-96]
Supported Mac Server->Client	[hmac-sha1, hmac-md5-96, hmac-md5, hmac-sha1-96]
Supported Compression Client->Server	[none, zlib]
Supported Languages Client->Server	[]
Supported Languages Server->Client	[]
First Kex Packet Follows	[FALSE]

Appendix C – Frequently Asked Questions

Q: I'm having problems sending a file to a mainframe application that requires 80-byte records. What could be the problem?

A: When you send a file with 80 byte records to a mainframe application, your data cannot contain carriage return or line feed characters. You must also include the following command in your SFTP procedure.

```
cd lrecl=80, keep1f
```

This formats the file properly for a mainframe application by blocking the data into 80 byte records.

Q: I can't transmit a file via SSH SFTP Server. What could be the problem?

A: There are many reasons why a file may not successfully transmit or route to the receiving application. You may want to check the following.

- Connectivity issues.
- Ensure that you are connecting to the correct IP address or DNS name.
- Check that you are not having a firewall issue and that all appropriate ports are open.
- Ensure that you can log in with your key.
- Your transmission may not be authorized because of billing issues.
- If using the `fromdata` option, ensure that the SenderID and ReceiverID in your EDI-formatted document are valid and predefined in the ELIT MFT Network. If `fromdata` is not used, ensure a valid ELIT MFT ReceiverID is specified with the `cd` or `put` commands.
- If the file is very large, you might be experiencing a time-out condition.
- The file is transmitting successfully, but the receiving application may be expecting a file of a different format (`keep1f`, `striplf`, `lrecl`) or with a different ELIT MFT Filename.

Q: Does ELIT MFT support the EBCDIC or ASCII character set?

A: SSH/SFTP uses binary mode for transferring data to/from ELIT MFT. When data is destined to platforms with EBCDIC character encoding set, mainframe for example, `keep1f` or `striplf` parameters must be used to enforce character conversion by ELIT MFT.

Q: Does ELIT MFT support non-EDI data?

A: Yes, however the receiver must not reside on a VAN other than ELIT MFT.

Appendix D – Contacts and Assistance Information

If you encounter problems or need assistance, contact the individual at your site responsible for ELIT MFT. Whenever you have trouble transmitting data to another location, check with your local ELIT MFT support group first before assuming that something went wrong at the other end. Your local ELIT MFT support group will work with the receiver site, if necessary, to resolve the problem.

If you need assistance to add, change or delete an ELIT MFT ID please contact our ELIT MFT Services team at mft.services@dx.com.

If you are unsure of who to contact please notify ELIT MFT Operations for assistance at 866-214-0108 option 1, 1, 1 or [**BESOperations@dx.com**](mailto:BESOperations@dx.com).

Document Version History

Version No.	Version Date	Revised By	Affected Section & Description of Change
1.0			Copied from FTP User Guide and changed/updated for SSH. Revised to reflect SSH capabilities.
1.1	12/05/2007		Updated for JDE071-041. Clarified password in section 4.1
1.2	10/09/2008		JDE081-040. Updated SFTP pull section.
1.3	11/05/2008		Updated format to meet EDS/HP standards
1.4	11/13/2008		JDE081-041 – Added PGP decryption and selective listing.
1.5	12/22/2009		Updated format to meet HP standards
1.6	06/08/2010		Removed references to logging in using password authentication
1.7	08/12/2010		Updated Service Desk local number in Appendix E
1.8	10/19/2010		Updated copyright statement
1.9	04/26/2011		Added ignore to FTTPULL commands JDE111-017
1.10	11/17/2011		Updated description of 'emptyemail' parameter
1.11	11/21/2011		Added maxlist option in ls keyauth in FTTPULL and additional PGP information. JDE111-072
1.12	05/17/2012		Replaced ELIT with HP MFT.
1.13	10/13/2015	Julie Noelke	Change HP MFT to HPE MFT, @hp.com to @hpe.com, Hewlett-Packard to Hewlett Packard Enterprise, updated copyright.
1.14	11/13/2015	Julie Noelke	Updated to HPE template standard.
1.15	06/06/2017	Julie Biafore	Removed/updated references for HPE and Hewlett Packard Enterprise to DXC and DXC Technology.
1.16	12/08/2017	Julie Biafore	Removed 248-365-2248 from Appendix D
1.17	07/20/2021	Julie Biafore	Converted to new DXC template format.
1.18	5/27/2026	Mike Magill	Converted to new DXC template format.