

HP NonStop Data Transformation Engine

FTP Adapter Reference Guide

Abstract

This manual provides information about using the HP NonStop™ Data Transformation Engine (NonStop DTE) FTP adapter on the NonStop server.

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About This Document

This document contains detailed information about using the FTP Adapter. For general information regarding using any of the Mercator Resource adapters, see the *Resource Adapters Reference Guide*.

This document assumes that the reader knows the Windows environment, has used the *Mercator Design Studio*, and understands words such as mapping, type trees, and other basic Mercator terminology.

Related References

For more information about all products or about topics frequently discussed in this document, refer to the [Mercator Online Library](#) or the [SDK Online Library](#).

Related Reference	Description
Resource Adapters Reference Guide	Using resource adapters as map sources and map targets in general. Specific information for each adapter can be found in their respective reference guide.

Chapter 1 - FTP Adapter

This chapter introduces the File Transfer Protocol (FTP) adapter. You can use this adapter with a Command Server, Event Server, Platform API, or map in a map rule.

Overview

Use the FTP adapter to transport data. When source data arrives at its target, it often must be transformed into a different format in order for a receiving application to use it successfully.

If you have the Command Server, Event Server, or Platform API on one platform, you can use the FTP adapter to retrieve or send data to another platform.

Note The adapter can connect to any FTP server that complies with [RFC 959](#). To take full advantage of the adapter's capabilities, the server should conform to [RFC 1123](#). Those servers that are noncompliant may generate errors in the adapter.

System Requirements

The minimum system requirements and operating system requirements for the FTP adapter are detailed in the release notes. It is assumed that a Command Server has already been installed on the computer where the adapter is to be installed for run-time purposes.

See the [Getting Started](#) book for details about the installation program.

In addition, the following are additional requirements for installing and running the FTP adapter:

- ◆ The FTP adapter must be installed in the same directory as the Command Server for your specific platform.
- ◆ TCP/IP must be installed on the machine where the adapter is installed.
- ◆ The machine where the FTP adapter is installed must be able to access the desired FTP servers over a TCP/IP network.

About Sockets

Windows (NT) or BSD (UNIX) Sockets must be installed on the client computer.

- ◆ The Sockets installation must support TCP/IP.
- ◆ The client computer must be able to access an appropriate server. Test this as follows:
 - **telnet** *target-ip* **25** (to test a SMTP e-mail target)
 - **telnet** *target-ip* **110** (to test a POP3 e-mail source)

where *target-ip* is the server IP address. If the test is successful, you receive a welcome message from the server. Shut down the session by typing **QUIT** and pressing **Enter**.

Note You might not be able to see what you are typing on the screen.

Access to International VANs

Access to international VANs is available when using the FTP adapter. The FTP adapter can be used rather than the VAN adapter when communicating with a Commerce Manager post office. For detailed configuration information, see the [Partner Manager Reference Guide](#).

Chapter 2 - Command Alias

Specify adapter commands by using a command string on the command line or by creating a command file that contains adapter commands. The command syntax is:

-IA[*alias*]card_num

-OA[*alias*]card_num

In the command syntax, **-IA** is the Input Source Override execution command and **-OA** is the Output Target Override execution command, *alias* is the adapter alias, and *card_num* is the number of the map card. The FTP adapter alias and corresponding execution commands are listed below.

Adapter	Alias	As Input	As Output
FTP	FTP	-IAFTP card_num	-OAFTP card_num

Chapter 3 - FTP Commands

This chapter describes the functions and use of the FTP commands and their options.

List of Commands

The following table lists valid commands for the FTP adapter, the command syntax, and whether the command is supported (√) for use with data sources, targets, or both.

Name	Syntax	Source	Target
Account	-ACCT <i>account_id</i>	√	√
Audit	-AUDIT[+][S] [<i>full_path</i>]	√	√
Certificate Authority	-CA <i>filename</i> Note Only available if Security Option is installed.	√	√
Client Certificate	-CERT <i>filename</i> Note Only available if Security Option is installed.	√	√
Client Certificate Password	-CPASS <i>password</i> Note Only available if Security Option is installed.	√	√
Code Page Local (OS/390, z/OS only)	-CPL <i>code_page_name</i>	√	√
Code Page Remote (OS/390, z/OS only)	-CPR <i>code_page_name</i>	√	√
Firewall Connection Method URL	-FIREWALL <i>FTP://firewall_URL</i>	√	√
FTP URL	-URL FTP:// <i>ftp_URL</i>	√	√
Ignore	-IGNORE <i>error_code[:error_code...]</i>	√	√

Name	Syntax	Source	Target
Keep Server	-KS	√	√
List Option	-LS <i>sort_type</i>	√	√
Make Directory	-MKD	√	√
Passive Mode	-PASV	√	√
Port Mode	-PORT	√	√
Private Key	-PKEY <i>filename</i> Note Only available if Security Option is installed.	√	√
Private Key Password	-KPASS <i>password</i> Note Only available if Security Option is installed.	√	√
Quantity	-QTY <i>number</i>	√	
Site	-SITE <i>command_text</i>	√	√
SSL Encryption Strength	-STR { WEAK STRONG ANY } Note Only available if Security Option is installed.	√	√
SSL Protocol	-SPROTO { SSLv2 SSLv3 SSLv23 TLSv1 } Note Only available if Security Option is installed.	√	√
Stage	-STAGE [<i>file_name</i>]		√
System	-SYS { WIN32 UNIX UNKNOWN }	√	√
Trace	-TRACE [+][S V] [<i>full_path</i>]	√	√

Account (-AC or -ACCT)

If required for logon, use the Account adapter command (**-AC** or **-ACCT**) to specify the account for connecting to an FTP server. If the account is required for logon, *account_id* must be specified.

-ACCT *account_id*

Option	Description
<i>account_id</i>	Specify the account for connecting to an FTP server.

Audit (-A or -AUDIT)

Use the Audit adapter command (**-A** or **-AUDIT**) to produce a log file in the map directory where the adapter is installed with the default name **m4ftp.log**. The log file records audit information detailing files sent or received from each host, elapsed time, file size, and retry count for each file.

-AUDIT[+][S] [*full_path*]

Option	Description
+	Append audit information to the existing log file. If a log file does not exist, one is created.
S	Summary mode. Record only minimal information in the log file.
<i>full_path</i>	Create audit file with the specified name in the specified directory. By default, the directory is where the map is located and the file name is m4ftp.log .

Certificate Authority (-CA)

Use the Certificate Authority adapter command (**-CA**) to specify the file from which to load trusted CA certificates.

-CA *filename*

Option	Description
<i>filename</i>	Specify the file from which to load the trusted CA certificates.

Client Certificate (-CERT)

Use the Client Certificate adapter command (**-CERT**) to specify the file containing the client certificate (if used).

-CERT *filename*

Option	Description
<i>filename</i>	Specify the file containing the client certificate.

Client Certificate Password (-CPASS)

Use the Client Certificate Password adapter command (**-CPASS**) to specify the password for the client certificate (if password protected).

-CPASS *password*

Option	Description
<i>password</i>	Specify the password for the client certificate.

Code Page Local (-CPL)

Use the Code Page Local adapter command (**-CPL**) to specify the code page of the data on the local system (the system on which Mercator is running).

Use this command in conjunction with the TYPE=ASCII feature of the **-URL** command. This command must be used if the Code Page Remote adapter command (**-CPR**) is specified.

This command is only valid on OS/390 and z/OS systems. The default value is the default **EBCDIC** code page for your system.

-CPL *code_page_name*

Option	Description
<i>code_page_name</i>	Specify the code page name of the data on the local system.

See IBM publication "OS/390: C/C++ Run-Time Library Reference" (SC28-1663) function **__atoe_1** or go to http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/EDCLB130/3.50?SHELF=CBCBS130&DT=20020620175922 for more information.

Code Page Remote (-CPR)

Use the Code Page Remote adapter command (**-CPR**) to specify the code page of the data on the remote system to which, or from which the data is being transferred.

Use this command in conjunction with the TYPE=ASCII feature of the **-URL** command. This command must be used if the Code Page Local adapter command (**-CPL**) is specified.

This command is only valid on OS/390 and z/OS systems. The default value is ISO **8859-1**.

-CPR *code_page_name*

Option	Description
<i>code_page_name</i>	Specify the code page name of the data on the local system.

Firewall Connection Method URL (-FW or -FIREWALL)

If required for connection, use the Firewall Connection Method URL (**-FW** or **-FIREWALL**) command to specify the URL for the proxy server (firewall). One of the following connection methods must be specified:

- ◆ OPEN
- ◆ SITE
- ◆ TRANSPARENT
- ◆ USER
- ◆ USERFW
- ◆ USERFWPASS
- ◆ USERLOGON or USER
- ◆ USERLOGONFW or USERFW

-FIREWALL **FTP://**[*fw_user*[:*fw_pass*]@][*fw_host*[:*fw_port*]]/*method*

Option	Description
<i>fw_user</i>	Specify the user name to connect to the proxy server. Unless you are also specifying a password, this parameter must be followed by @ if you specify <i>fw_host</i> .
: <i>fw_pass</i>	Specify the password that authenticates the user name. This parameter must be followed by @ if you are also specifying <i>fw_host</i> .
<i>fw_host</i>	The name (or address) of the proxy server to which to connect.
: <i>fw_port</i>	The name (or number) of the port to use for connection.
/ <i>method</i>	Required value. The method dictates how the firewall connection is established based on a combination of the connection information provided using -FIREWALL (for proxy server URL) and -URL (for FTP URL). Select one of the following Methods, which specifies the corresponding Connection Information.

Method	Connection Information
OPEN	OPEN <i>ftp_host</i> , USER <i>ftp_user</i> , PASS <i>ftp_pass</i>

Option	Description
SITE	USER <i>fw_user</i> , PASS <i>fw_pass</i> , SITE <i>ftp_host</i> , USER <i>ftp_user</i> , PASS <i>ftp_pass</i>
TRANSPARENT	USER <i>fw_user</i> , PASS <i>fw_pass</i> , USER <i>ftp_user</i> , PASS <i>ftp_pass</i>
USER	USER <i>ftp_user@ftp_host</i> , PASS <i>ftp_pass</i>
USERFW	USER <i>ftp_user@ftp_host fw_user</i> , PASS <i>ftp_pass</i>
USERFWPASS	USER <i>ftp_user@fw_user@ftp_host</i> , PASS <i>ftp_pass@fw_pass</i>
USERLOGON or USER	USER <i>fw_user</i> , PASS <i>fw_pass</i> , USER <i>ftp_user@ftp_host</i> , PASS <i>ftp_pass</i>
USERLOGONFW or USERFW	USER <i>fw_user@ftp_host</i> , PASS <i>fw_pass</i> , USER <i>ftp_user</i> , PASS <i>ftp_pass</i>

Note **TRANSPARENT** is the only method that directly connects to the FTP server; all other methods connect to the firewall. See the [FTP URL \(-URL\)](#) adapter command for more information on the FTP variables shown in the [Connection Information](#) column.

Example

The following command uses the **USERLOGON** (or **USER**) method to connect to the proxy server **fire** (no port specified) with a user name of **jbond** and password of **007**:

```
-FW FTP://jbond:007@fire/userlogon
```

See [URL Syntax](#) and [URL Encoding](#) for more information.

Adapter Behavior when -FIREWALL Command Present

A firewall is used in order to isolate (restrict) some computers from reaching other computers.

If a firewall comes into discussion, only a small part of the FTP adapter is aware of the presence of the firewall.

Without a firewall the start of a file transfer begins with:

- ◆ Establish a Socket connection to the remote host.
- ◆ Issue the **USER** command over the connection.
- ◆ Issue the **PASS** command over the connection.

When a firewall is present (used) more steps are performed in the beginning of the transfer of the files.

These steps are dependent on the */method* specified in the last part of the **-FIREWALL** command.

OPEN

- ◆ Establish a Socket connection to the firewall host
- ◆ Issue the following command over the connection in this order:

```
OPEN ftp_host  
USER ftp_user  
PASS ftp_pass
```

SITE

- ◆ Establish a Socket connection to the firewall host
- ◆ Issue the following command over the connection in this order:

```
USER fw_user  
PASS fw_pass  
SITE ftp_host  
USER ftp_user  
PASS ftp_pass
```

TRANSPARENT

- ◆ Establish a Socket connection to the remote host
- ◆ Issue the following command over the connection in this order:

```
USER fw_user  
PASS fw_pass  
USER ftp_user  
PASS ftp_pass
```

USERFW

- ◆ Establish a Socket connection to the firewall host
- ◆ Issue the following command over the connection in this order:


```
USER ftp_user@ftp_host fw_user
PASS ftp_pass
USER ftp_user
PASS ftp_pass
```

USERFWPASS

- ◆ Establish a Socket connection to the firewall host
- ◆ Issue the following command over the connection in this order:

```
USER ftp_user@fw_user@ftp_host
PASS ftp_pass@fw_pass
```

USERLOGON or USER

- ◆ Establish a Socket connection to the firewall host
- ◆ Issue the following command over the connection in this order:

```
USER fw_user
PASS fw_pass
USER ftp_user@ftp_host
PASS ftp_pass USER
```

USERLOGONFW or USERFW

- ◆ Establish a Socket connection to the firewall host
- ◆ Issue the following command over the connection in this order:

```
USER fw_user@ftp_host
PASS fw_pass
USER ftp_user
PASS ftp_pass
```

URL Syntax

Because the syntax for the rest of the URL varies depending on the scheme selected, URL schemes that involve the direct use of an IP-based protocol for a specified host on the Internet use a common syntax for the scheme-specific data:

```
//user:password@host:port/url_path
```

Some or all parts of *user:password@*, *:password*, *:port*, and */url_path* may be excluded. The scheme-specific data starts with a double slash (*//*) to indicate that it complies with the common Internet scheme syntax. The different components obey the following rules:

- user* An optional user name. Some schemes such as FTP allow the specification of a user name.
- password* An optional password. If present, it follows the user name, separated by a colon. The user name and password are followed by an at-sign (@). Within the user and password field, any :, @, or / characters must be encoded.

The URL does not need to be completely URL-encoded. You only need to use escape characters for tokens specifically used in an FTP URL as shown in the following table. Any FTP URL that contains spaces must be enclosed in quotes; for example:

```
-FIREWALL FTP://Home Machine/FTP Files
```

Tokens	Replaced with
% (percent)	%25
@ (at)	%40
/ (forward slash)	%2F
: (colon)	%3A
; (semicolon)	%3B
& (ampersand)	Escape not needed, use as is
# (pound)	Escape not needed, use as is
8-bit or control characters	Escape not needed, use as is

FTP URL (-URL)

The FTP URL adapter command (**-URL**) is required for connection to an FTP server. Specify the file name(s) to be retrieved (adapter source) or created/appended (adapter target).

```
-URL [FTP:[//]][ftp_user[:ftp_pass]@][ftp_host[:ftp_port]]
[//][dir/dir/...] [filename][;type=xfer_type[+]]
```

Option	Description
FTP:	Specify as a connection to an FTP server. If not specified, FTP: is assumed, along with the //. Another / is required to separate the user and host parameters from file and transfer type, if specified.
<i>ftp_user</i>	Specify the user name to connect to the FTP server. Unless you are also specifying a password, this parameter must be followed by @ if you specify <i>ftp_host</i> .
: <i>ftp_pass</i>	Specify the password that authenticates the user name. This parameter must be followed by @ if you are also specifying <i>ftp_host</i> .
<i>ftp_host</i>	Specify the FTP server name or address to which to connect. If not specified, the default of localhost is assumed.
: <i>ftp_port</i>	The port name or number to use for connection
<i>dir</i> /...	Specify the directory path for the file. The ellipsis (...) indicates this field can repeat, depending on your directory structure.
<i>filename</i>	Specify the name of the target file. This is required for an adapter target but optional for an adapter source. If not specified, all files in the path are retrieved.
; type = <i>xfer_type</i>	Specify the transfer type or mode. The supported transfer types vary from server to server. Depending on the server, there may be additional or omitted transfer types. Valid transfer types are: A [<i>len</i>][!] ASCII <i>len</i> specifies the optional record length to which to pad or truncate the record. ! indicates no line terminator for the record(s).

Option	Description
	Note When sending an FTP request to the AS/400, the file must first be created on the AS/400 in order for the <i>len</i> parameter to pad the record correctly.
I	Image (binary)
L8	Local 8-bit types (usually equivalent to I)
D	Directory (file names only)
D1	Directory (file names only)
D2	Directory (server-defined format)
D3	Directory (easily parsed line format, as defined in Internet draft draft-bernstein-eplf-02.txt)
D4	Directory (machine-readable list format as defined in Internet draft draft-ietf-ftpext-m1st-02.txt)
+	Append the transferred data to the existing file.

Note An additional forward slash (/) is required to separate the user and host parameters from file and transfer type, if specified.

Example

The following is an example of the input card command in the Map Designer:

```
-T -URL FTP://sales@host/c:/forms/myfile.txt
```

The command causes the **myfile.txt** file to be retrieved from a remote host named **sales**. The **-T** adapter command specifies that the adapter create a trace file to report adapter activity information during the FTP process.

Ignore (-I or -IGNORE)

The Ignore command (**-I** or **-IGNORE**) allows specified FTP error codes to be ignored by the adapter.

```
-IGNORE error_code[:error_code...]
```

Option	Description
<i>error_code</i>	Specify the FTP error codes to be ignored by the adapter. A colon (:) must separate multiple error codes.

For example, if you specified the command:

```
-I 450:550
```

the adapter ignores errors of type 450 (file busy) and errors of type 550 (file not available) and returns a zero-length file to the map. A list of error codes appears in RFC 959 (beginning on page 37 of the document at <http://www.ietf.org/rfc/rfc0959.txt>).

Keep Server (-KS)

Use the Keep Server adapter command (**-KS**) to specify in a map rule that when retrieving a file from an FTP server, it should not be deleted after transfer.

This option should be used if this behavior is desired when using the **GET** mapping function. When invoking the adapter from an input card, the same behavior can be accomplished through the card property, **OnSuccess**, by setting it to **Keep**.

This is an optional command.

```
-KS
```

For example:

```
-KS -URL ftp://user:pass@server/file.txt
```

List Option (-LS)

Use the List Option adapter command (**-LS**) to allow files to be retrieved based on a user supplied sorting preference.

This command is used in conjunction with the existing FTP URL (**-URL**) adapter command and supports a subset of FTP options that control the order in which the files are transferred.

This is an optional command.

```
-LS sort_type
```

The adapter passes the **-LS** command value to a remote FTP server as an argument when it lists the files in the directory. One of three events happens at this point:

- ◆ FTP server accepts the option and lists the files in the specified order
- ◆ FTP server ignores the option and lists the files in the default order
- ◆ FTP server rejects the option and the adapter returns an error

For example:

```
-URL ftp://testftp:test@host/mydir -ls tr
```

The **-LS** command is issued by the adapter before any file transfer, so that its results are used to control the order of the file transfer. In the example above, all files from *mydir* would be transferred, the oldest file being transferred first.

Allowable command options include:

Option	Description
<i>t</i>	Sorts by time stamp.
<i>r</i>	Reverses the order of sort.
<i>tr</i>	Reverses the order of sort by time stamp.
<i>rt</i>	Same as -LS tr .

All other list options result in the error message: `invalid ls option` that is logged in the adapter trace file.

Note The List Option (**-LS**) command options, (*t*, *r*, *tr*, and *rt*) may be ignored by some ftp servers.

Make Directory (-MKD)

Use the Make Directory adapter command (**-MKD**) to create a directory. For example, if a file specified in a **PUT** operation belongs in a directory that does not exist, the **-MKD** command creates the new directory.

If the **-MKD** command is not specified and the file specified on a **PUT** operation points to a directory that does not exist, the adapter will fail.

This is an optional command.

-MKD

For example:

```
PUT("FTP", "-URL ftp://jdoe:secret@server1/some/folder/data.txt  
-MKD", "Some data")
```

will force **jdoe/some** and then the **jdoe/some/folder** to be created. A new file called **data.txt** will be added to this new directory.

Passive Mode (-PV or -PASV)

The Passive Mode adapter command (**-PV** or **-PASV**) specifies that you only try passive mode for the FTP data connection. Passive mode is primarily useful for firewalls and is a preferred connection method for security reasons.

By default, the adapter attempts to connect using passive mode. If unsuccessful, the adapter uses Port Mode; see the Port Mode adapter command (**-PT**). During a passive mode connection, the server listens for the connection and dictates where the adapter is to connect.

-PASV

Note Older servers might not support passive mode.

Port Mode (-PT or -PORT)

The Port Mode adapter command (**-PT** or **-PORT**) specifies that you only try port mode for the FTP data connection. This is an older connection method and may be the only way to connect on older servers.

By default, the adapter first tries to connect using passive mode; see the Passive Mode adapter command (**-PV**). If the adapter is unsuccessful, it uses port mode. During a port mode connection, the adapter listens for the connection and dictates where the server is to connect.

-PORT

Private Key (-PKEY)

The Private Key adapter command (**-PKEY**) specifies the file containing the client private key (if used).

-PKEY *filename*

Option	Description
<i>filename</i>	Specify the file containing the client private key.

Private Key Password (-KPASS)

Use the Private Key Password adapter command (**-KPASS**) to specify the password for the client private key (if password protected).

-KPASS *password*

Option	Description
<i>password</i>	Specify the password for the client private key.

Quantity (-QTY)

Use the Quantity command (**-QTY**) to capture the number of files to be retrieved by the adapter.

If you are running in burst mode, each burst may return less than **-QTY** messages, but the total number of messages returned by the adapter will not exceed the value specified by the **-QTY** command.

If not specified, the default quantity is the **FetchUnit** size of the burst.

-QTY *number*

Option	Description
<i>number</i>	The number of files to be retrieved by the adapter.

Note If you want the maximum number of files retrieved in burst mode to be infinite, then you must set the **-QTY** command option *number* to 'S' and specify "**-LSN 0**" on the command line. The **-LSN** command is currently unsupported, however, it must be used in conjunction with the **-QTY** command in this scenario only.

Site (-SITE)

Use the Site adapter command (**-SITE**) to send an FTP server specific site command to the FTP server software.

```
-SITE 'command_text'
```

Option	Description
<i>'command_text'</i>	Specify the FTP-server-specific site command (enclosed in single quotes) to send to the FTP server software

For example:

```
-SITE 'namefmt=1'
```

sends the **NAMEFMT** command to an AS/400 FTP server before files are transferred.

To see what commands are accepted by the server use a BSD-based command line client (typically the FTP command installed with your Windows or UNIX operating system) and log in to the server and type the following from the **ftp>** prompt: **quote HELP SITE** or **quote SITE HELP**.

Note The command specified by **-SITE** is executed prior to the files being transferred.

SSL Encryption Strength (-STR)

The SSL Encryption Strength (**-STR**) command can be either **WEAK** (only use weak algorithms) or **STRONG** (only use strong algorithms). If not specified, any available algorithm is used (if **STRONG** is not available then **WEAK** is used). If the export version of the libraries is used, only weak algorithms are available and this command is ignored.

-STR {**WEAK** | **STRONG** | **ANY**}

Option	Description
STRONG	Use strong (non-exportable) encryption only.
WEAK	Use exportable encryption only.
ANY	Use any available encryption.

SSL Protocol (-SPROTO)

Use the SSL Protocol adapter command (**-SPROTO**) to set the Secure Socket Layer (SSL) protocol level. SSL enables the adapter to process FTPS URLs. If **-SPROTO** is not specified, the SSL Protocol defaults to **SSLv23**.

-SPROTO {**SSLv2** | **SSLv3** | **SSLv23** | **TLSv1**}

Option	Description
SSLv2	Specify SSL protocol version 2.
SSLv3	Specify SSL protocol version 3.
SSLv23	Specify SSL protocol version 2 or version 3.
TLSv1	Specify Transport Layer Security (TLS) protocol version 1.

Stage (-STG or -STAGE)

Use the Stage adapter command (**-STG** or **-STAGE**) to accomplish the following:

- ◆ To specify that uploaded data should be staged in a temporary or shadow file.
- ◆ To prevent partial updates of a file to be transferred. This is especially important if the FTP server processes uploads in an automated fashion.

During an upload, the FTP server generates a uniquely-named temporary file. When the transfer has completed successfully, the original file is deleted and the temporary file is renamed. For this process to succeed you must have access rights associated with your user ID to delete and rename files, and if the optional file name (*file_name*) is omitted the server must provide a correct Store Unique (STOU) response. The adapter issues a warning if the server response cannot be interpreted. It is recommended that you run a preliminary test to ensure that the process completes successfully.

-STAGE [*file_name*]

Option	Description
<i>file_name</i>	Specify a unique file name for the temporary file. This option is especially useful if a server does not supply unique file names.

System (-SYS)

Use the System adapter command (**-SYS**) to specify the system type when the adapter cannot accurately determine the system type of the FTP server.

Note The FTP server system type is not necessarily the same as the operating system of the machine it is running on. Some Windows FTP servers use UNIX conventions. If in doubt, consult your server documentation or use the **dir** command and then view the results.

-SYS {**WIN32** | **UNIX** | **UNKNOWN**}

Option	Description
WIN32	The server follows Windows conventions. For example, directories in pathnames are separated by a backward slash (\).
UNIX	The server follows UNIX conventions. For example, directories in pathnames are separated by a forward slash (/).
UNKNOWN	Because the platform is not known, exercise generic code. Do not perform anything that is specific to a platform.

Trace (-T or -TRACE)

Use the Trace adapter command (**-T** or **-TRACE**) to produce a diagnostics file with the default name **m4ftp.mtr** in the map directory where the adapter is installed. The file records trace information detailing the FTP adapter activity.

```
-TRACE[+][S|V] [full_path]
```

Option	Description
+	Append trace information to the existing log file.
S	Summary mode. Record only minimal information only in the log file. This is the default value.
V	Verbose mode. Record in the log file all activity occurring while the adapter is retrieving data. If not specified, summary mode assumed.
<i>full_path</i>	Create trace file with the specified name in the specified directory. By default, the directory is where the map is located and the file name is m4ftp.mtr .

Note Because summary mode is the default, using **-TRACES** provides the same output as **-TRACE**.

Chapter 4 - Syntax Summary

This chapter discusses the FTP syntax summary and how it is used.

Data Sources

The following is the command syntax of the FTP adapter commands used for data sources:

```
-URL [FTP:[//]][ftp_user[:ftp_pass]@][ftp_host[:ftp_port]]
  [//[//]][dir/[dir/...]] [filename][;type=xfer_type[+]]
[-ACCT account_id]
[-AUDIT[+][S] [full_path]]
[-CERT filename]
[-CPASS password]
[-CPL code_page_name]
[-CPR code_page_name]
[-FIREWALL
FTP://[fw_user[:fw_pass]@][fw_host[:fw_port]]/method]
[-IGNORE error_code[:error_code...]]
[-KPASS password]
[-KS]
[-LS sort_type]
[-MKD ]
[-PASV]
[-PKEY filename]
[-PORT]
[-QTY number]
[-SITE command_text]
[-SPROTO {SSLv2|SSLv3|SSLv23|TLSv1}]
[-STR {WEAK|STRONG|ANY}]
[-SYS {WIN32|UNIX|UNKNOWN}]
[-TRACE[+][S|V] [full_path]]
```

Data Targets

The following is the command syntax of the FTP adapter commands used for data targets:

```

-URL [FTP:[//]][ftp_user[:ftp_pass]@][ftp_host[:ftp_port]]
  [//[//]][dir/[dir/...]] [filename][;type=xfer_type[+]]
[-ACCT account_id]
[-AUDIT+[S] [full_path]
[-CA filename]
[-CERT filename]
[-CPASS password]
[-CPL code_page_name]
[-CPR code_page_name]
[-FIREWALL
FTP://[fw_user[:fw_pass]@][fw_host[:fw_port]]/method]
[-IGNORE error_code{:error_code...}]
[-KPASS password]
[-KS]
[-LS sort_type]
[-MKD ]
[-PASV]
[-PKEY filename]
[-PORT]
[-SITE command_text]
[-SPROTO {SSLv2|SSLv3|SSLv23|TLSv1}]
[-STAGE [file_name]
[-STR {WEAK|STRONG|ANY}]
[-SYS {WIN32|UNIX|UNKNOWN}]
[-TRACE+[S|V] [full_path]]

```

Using FTP Adapter Commands

Use the adapter commands from the Map Designer or Integration Flow Designer as the data source of an input map card and as the data target for an output map card. You can also use the adapter on the command line or in a map rule using the functions **GET**, **PUT**, or **RUN**.

The FTP adapter requires the **-URL** adapter command for the **GET > Source > Command** and **PUT > Target > Command** settings.

See [Chapter 3 - FTP Commands](#) for more information on FTP adapter commands and their syntax. For general information about commands, refer to the [Resource Adapters Reference Guide](#).

Examples

To retrieve the file **mine.txt**, located on the **host** computer (no port specified) under **c:\forms** with no user name or password specified, enter the following command:

```
-URL FTP://host/c:/forms/mine.txt
```

The command example would retrieve the entire contents of the **forms** directory (because the file name is omitted) from the **host** computer:

```
-URL FTP://host/c:/forms/
```

URL Syntax

The syntax for the rest of the URL varies depending on the scheme selected. URL schemes that involve the direct use of an IP-based protocol for a specified host on the Internet use the following common syntax for scheme-specific data:

```
//user:password@host:port/url_path
```

Some or all parts of *user:password@*, *:password*, *:port*, and */url_path* may be excluded. The scheme-specific data start with a double slash (*//*) to indicate that it complies with the common Internet scheme syntax. The *user:password* component conforms to the following rules:

user An optional user name. Some schemes allow the specification of a user name.

password An optional password. When present, it follows the user name and is separated by a colon. The user name and password are followed by

an at sign (@). Within the user and password field, any :, @, or / characters must be encoded. See [URL Encoding](#).

The *url_path* of an FTP URL has the following syntax:

```
cwd1/cwd2/.../cwdN/name;type= xfer_type
```

where *cwd1* through *cwdN* and *name* are (possibly encoded) strings and *xfer_type* is one of the characters **a**, **i**, or **d**. The part **;type= xfer_type** may be omitted. The *cwdx* and *name* parts may be empty. The whole *url_path* may be omitted, including the /, delimiting it from the prefix containing *user*, *password*, *host*, and *port*.

The *url_path* is interpreted as a series of FTP commands as follows:

- ◆ Each *cwd* element is to be sequentially supplied as the argument to a **CWD** (change working directory) command.
- ◆ If the typecode is "**d**", perform a **NLST** (name list) command with *name* as the argument and interpret the results as a file directory listing.
- ◆ Otherwise, perform a **TYPE** command with *xfer_type* as the argument and then access the file named *name* (for example, using the **RETR** command).

Note The *xfer_type* argument has been extended beyond what is supported by the RFC, specifically the D1, D2, D3, and D4 sections. Also, *host:port* may be excluded, although it is rarely useful to do so; *host* defaults to **localhost**.

URL Encoding

The URL does not need to be completely 'URL-encoded'. You only need to use escape characters for tokens specifically used in an FTP URL, as shown in the following table. Any FTP URL that contains spaces must be enclosed in quotes; for example:

-URL "FTP://Home Machine/FTP Files"

Tokens	Replaced with
% (percent)	%25
@ (at)	%40
/ (forward slash)	%2F
: (colon)	%3A
; (semicolon)	%3B
& (ampersand)	Escape not needed, use as is
# (pound)	Escape not needed, use as is
8-bit or control characters	Escape not needed, use as is

Chapter 5 - Troubleshooting

For information about error codes and messages returned by the adapters, see [Appendix A - Return Codes and Error Messages](#).

Various troubleshooting tools are available in case of problems using the FTP adapter for data sources or targets for a map. For example, if you attempt to run a map that uses the FTP adapter and encounter problems or do not receive the expected results, use the following adapter troubleshooting tools:

- ◆ adapter audit log (.log)
- ◆ adapter trace file (.mtr)

Adapter Audit Log

The adapter audit log is a text file created during the adapter execution that records information about the events that occurred during the adapter activity. To produce an adapter audit log, use the adapter command (**-AUDIT**). The default log name is **m4ftp.log** and is located in the map directory. See the [Trace\(-T\)](#) adapter command for more information.

The adapter audit log contains information including the:

- ◆ host identifier
- ◆ files sent or received
- ◆ size of each file
- ◆ elapsed time
- ◆ retry count for each file

Sample FTP Adapter Audit Log

```
BEGIN MERCATOR FTP AUDIT
Receiving from Host: localhost
Filename                               Filesize   Time   Retry
-----
rollback.gif                           183 KBytes 000s   0
END MERCATOR FTP AUDIT
```

Adapter Trace File

The adapter trace file contains detailed information provided by the adapter and records the actions taking place such as connections established and statements executed. The trace file is produced during the adapter execution and can be used as a debugging aid. To produce a trace file for the adapter, use the (**-TRACE**) adapter command. The default adapter trace file name is **m4ftp.mtr** and is located in the map directory. See the [Audit](#) adapter command for more information.

Sample FTP Adapter Trace File

```
Mercator FTP Adapter, Version 6.0(560)
Copyright © 1999-2000, Mercator Software, Inc.
Built for WIN32 - INTEL on Mar 23 2000 at 15: 13: 00 by BocaBuild.
Mercator Command Server is 'C:\Mercator6.0\mercmt.exe'.
Retry Count is 0. Retry Interval is 0. Rollback is OFF.
Fetch Unit is 0. Burst Mode is OFF
Run Started at 08: 49: 38.911 on 03/28/00.
>220- (S)
>220-This is a demo version of the Vermillion FTP Daemon, licensed only for (S)
>220-a 30 day evaluation period. For continued use, you must purchase a (S)
>220-license. For more information or to download the latest version, please (S)
>220-visit Arcane Software on the web at 'http://www.arcanesoft.com'. (S)
>220- (S)
>220-Note: This session is limited to 15 minutes. If you are transferring a (S)
>220-      file at that time, the system will wait until it is complete (S)
>220-      before automatically disconnecting you. (S)
>220 (S)
<USER sls

>331 Password required for sls. (S)
<PASS sls

>230 User sls logged in. (S)
<SYST

>215 UNIX Type: L8 (S)
Setting AIX/UNIX-specific parameters.
<CWD /d:

>250 CWD command successful. (S)
<TYPE I

>200 Type set to I. (S)
<PASV

>227 Entering passive mode (127,0,0,1,8,230) (S)
Using port '2278' for the connection.
Connecting to '127.0.0.1'.
Socket Opened.
Connected.
<RETR rollback.gif

>150 Opening BINARY mode data connection for rollback.gif (187714 bytes). (S)
```

```
(187714 bytes received)
Socket Closed.
Connection closed.
>226 Transfer Complete. (S)
<QUIT

>221 Goodbye. (S)
Socket Closed.
Connection closed.
Winsock Client ID 1 disabled.
Read 187714 bytes from /d: /rollback.gif.
Data in E: \167.tmp kept.
Run Completed at 08: 49: 39.742 on 03/28/00.
```

Appendix A - Return Codes and Error Messages

Return codes and messages are returned when the particular activity completes. Return codes and messages may also be recorded as specified in the audit logs, trace files, execution summary files, etc.

Messages

The following is a listing of all the codes and messages that can be returned as a result of using the FTP adapter for sources or targets.

Note Adapter return codes with positive numbers are warning codes that indicate a successful operation. Adapter return codes with negative numbers are error codes that indicate a failed operation.

Return Code	Message
0	OK
-1	Insufficient memory to continue
-1	Library Initialization Failed
-2	Invalid Entry Point. (AIX adapters only)
-3FTP	Could not load adapter
-3	Error Sending Data
-4	Error Receiving Data
-5	FTP: Insufficient memory to continue
1	No data provided. Create on content specified: no data sent.
2	Could not interpret STOU response! Target file will not be renamed.
-1	FTP Setup failed
-1	FTPRecv() failed
-1	FTPSend() failed
-101	No URL was specified

Return Code	Message
-102	Invalid SSL protocol
-103	Invalid SSL algorithm strength
-104	Code page values invalid for this system
-105	Unable to initialize code page descripton
-106	Specify both -CPR and -CPL or neither
-107	Code page translation results in unequal character counts
-108	Iconv() failed to convert all characters
-600	Internal Error: Resource Manager Error
-???	???? where -??? Is an error code returned from the server, made negative and where ???? is a server-supplied error message

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