

z/OS Communications Server



Improved CSSMTP TLS compatibility with mail servers

Version 2 Release 2

Note:

Links to related publications are from original documents and might not work. The links to publications are included for reference purposes only.

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Chapter 1. New Function Summary

V2R2 new function summary

Application, middleware, and workload enablement

Improved CSSMTP TLS compatibility with mail servers

The function adds a TLSEhlo option to the CSSMTP configuration file.

With APAR PI56614 installed, z/OS V2R2 Communications Server enables the SMTP servers that require an EHLO SMTP command after a successful TLS negotiation to send an EHLO command after a successful TLS negotiation. RFC 3207 (SMTP Service Extension for Secure SMTP over Transport Layer Security) specifies that sending an EHLO command is optional for a SMTP client after a successful TLS negotiation. However, some SMTP servers require an EHLO command after a successful TLS negotiation. To accommodate these servers, a configuration option is provided to enable the sending of an EHLO command after a successful TLS negotiation.

Improved CSSMTP TLS compatibility with mail servers

To enable the sending of an EHLO command after a successful TLS negotiation, perform the appropriate tasks in Table 1.

Table 1. Improved CSSMTP TLS compatibility with mail servers

Task/Procedure	Reference
Specify TLSEhlo Yes on the CSSMTP configuration Options statement to request CSSMTP to send an EHLO command after a successful TLS negotiation.	<ul style="list-style-type: none">• TLSEhlo parameter on Options statement in z/OS Communications Server: IP Configuration Reference.• Steps for using Transport Layer Security for CSSMTP in z/OS Communications Server: IP Configuration Guide to enable the SMTP client to use Transport Layer Security (TLS).

Chapter 2. IP Configuration Guide

Mail on z/OS

Configuring the CSSMTP application

Steps for using Transport Layer Security for CSSMTP

You can enable the SMTP server and client to use Transport Layer Security (TLS) to provide private, authenticated communication over the Internet.

Procedure

Perform the following steps to use Transport Layer Security (TLS) for CSSMTP:

1. Set up secure mail using the YES option on the Secure parameter of the TargetServer statement, the STARTTLS command in the JES batch job, or both. Table 2 shows whether TLS is required between CSSMTP and a target server based on various JES batch job and CSSMTP configuration combinations.

Table 2. JES batch job and CSSMTP configuration combinations for secure mail

STARTTLS command?	Secure parameter value	TLS required?
Yes	YES	Yes
No	YES	Yes
Yes	NO	Yes
No	NO	No

If secure communication is required according to Table 2 and no available target servers support TLS (as indicated by server capabilities in response to the EHLO command), the mail message fails and is not delivered.

For information about the TargetServer statement, see *z/OS Communications Server: IP Configuration Reference*. For information about the STARTTLS command, see *z/OS Communications Server: IP User's Guide and Commands*.

2. See the following simple example to get started with TLS. For more information about TLS, see *Application Transparent Transport Layer Security data protection*.

In this example, assume the following characteristics:

- The mail contains sensitive data, and you want CSSMTP to communicate with only TLS protocols.
- CSSMTP is using port 25 to communicate with a target server on another platform.
- There is only one TCP/IP stack over which mail is delivered, referred to as the client stack.

To set up TLS for this sample environment, take the following actions:

- a. Create the key ring.

The client key ring needs the root certification used to sign the server certificates. For a TLS/SSL primer and some step-by-step examples, see *TLS/SSL security*. For more information about managing key rings and certificates with RACF® and the RACDCERT command, see *z/OS Security Server RACF Security Administrator's Guide*. For more information about

managing key rings and certificates with gskkyman, see z/OS Cryptographic Services System SSL Programming.

- b. Configure CSSMTP to require secure communication. Configure the TargetServer statement with the Secure parameter set to YES, which specifies that TLS protocols are always required. For information about the TargetServer statement, see z/OS Communications Server: IP Configuration Reference.
- c. Configure the client system to use TLS with AT-TLS policies as follows:
 - 1) Specify TTLS on the TCPCONFIG statement in the TCP/IP profile for the client stack. For information about the TCPCONFIG statement, see z/OS Communications Server: IP Configuration Reference.
 - 2) Block the ability of applications to open a socket before AT-TLS policy is loaded into the TCP/IP stack by setting up EZB.INITSTACK.sysname.tcpname for the client stack.
 - 3) Create a main Policy Agent configuration file containing a TcpImage statement for the client stack, and create a TcpImage policy file for the client stack. For more information about AT-TLS policy statements, see z/OS Communications Server: IP Configuration Reference.
 - 4) Add a TTLSConfig statement to each TcpImage policy file to identify the TTLSConfig policy file location:

```
TTLSConfig clientPath
```

- 5) Add the AT-TLS policy statements to the *clientPath* file:

```
TTLSRule                                CSSMTPRule
{
  RemotePortRange                        25
  Direction                               Outbound
  TTLSGroupActionRef                     CSSMTPGroup
  TTLSEnvironmentActionRef               CSSMTPEnvironment
}
TTLSGroupAction                          CSSMTPGroup
{
  TTLSEnabled                             On
}
TTLSEnvironmentAction                    CSSMTPEnvironment
{
  HandshakeRole Client
  TTLSKeyRingParms
  {
    Keyring                               client_key_ring
  }
  TTLSEnvironmentAdvancedParms
  {
    ApplicationControlled                 On
  }
}
}
```

Tip: You can use the IBM® Configuration Assistant for z/OS® Communications Server to generate the AT-TLS Policy Agent files. For information about the configuration assistant, see Option 1: Use the IBM Configuration Assistant for z/OS Communications Server.

3. If the server requires an EHLO command to be sent after a successful TLS negotiation, configure TLSEhlo Yes on the Options statement in the CSSMTP configuration. For more information, see Options statement in z/OS Communications Server: IP Configuration Reference.

Results

You know you are done when CSSMTP can successfully deliver mail to a target server using secure connections. If SECURE YES is configured and CSSMTP is able to successfully negotiate and establish a TLS session, the following message is displayed:

```
EZD1821I  csproc ABLE TO USE TARGET SERVER  ipAddress
```

Restriction: To use the STARTTLS command with a target server, the target server must have a certificate that can be validated by the AT-TLS component of z/OS Communications Server as configured by Policy Agent. This certificate can be a self-signed certificate or a certificate that can be validated by a known certificate authority. If the certificate of the server cannot be validated, secure communication with the server fails and mail that requires security cannot be delivered to that server.

Chapter 3. IP Configuration Reference

Communications Server SMTP application

CSSMTP sample started procedure

CSSMTP configuration statements

Table 3 lists CSSMTP configuration file statements.

Table 3. CSSMTP configuration statements

Configuration file statement	Default	Required or optional	Update allowed by modify refresh	Purpose
BadSpoolDisp	Hold	Optional	Yes	Specifies the action to be taken when errors are encountered while the JES spool file is being processed.
ChkPointSizeLimit	64000	Optional	No	Specifies the number of concurrent mail messages for which checkpoint information is saved.
ExtendedRetry	<ul style="list-style-type: none">• Age 5• Interval 30• MailDirectory /var/cssmtp/ extwrtname/mail/	Optional	Yes (except MailDirectory)	Specifies the limits that CSSMTP uses when it attempts to resend mail messages that are not immediately deliverable after RetryLimit processing.
ExtWrtName	task job name	Optional	No	Specifies the external writer name that is used by CSSMTP for selection criteria when interfacing with the JES2 or JES3 subsystems.
Header	<ul style="list-style-type: none">• Date Yes• UserInfo Yes	Optional	Yes	Specifies the action to be taken when creating RFC 2822 mail headers.
JESJobSize	0 (unlimited)	Optional	Yes	Specifies the maximum data set size that is accepted from the JES spool file in thousands of bytes.

Table 3. CSSMTP configuration statements (continued)

Configuration file statement	Default	Required or optional	Update allowed by modify refresh	Purpose
JESMsgSize	0 (unlimited)	Optional	Yes	Specifies the maximum mail message size that is accepted from a JES spool file, in thousands of bytes.
JESSyntaxErrLimit	5	Optional	Yes	Specifies the maximum number of syntax errors that are acceptable in a JES spool file before the rest of the JES spool file processing is stopped.
LogLevel	7	Optional	Yes	Specifies the level of logging and tracing.
MailAdministrator	No e-mail address is configured to send a report.	Optional	Yes	Specifies an e-mail address to which CSSMTP delivers reports for certain errors. This statement can be specified up to four times in a configuration file to deliver reports to multiple administrators.
Options	<ul style="list-style-type: none"> • NullTrnc No • DataLineTrunc No • TestMode No • AtSign @ • TLSEhlo No 	Optional	Yes (except TestMode)	CSSMTP options
Report	Sysout	Optional	Yes	Specifies the action to be taken when problems are reported with JES spool files.
RetryLimit	Interval 1 Count 5	Optional	Yes	Specifies the limits that CSSMTP uses when attempting to re-send mail messages that are not immediately deliverable.
SMF119	No SMF recording	Optional	Yes	Specifies the records to be written to SMF.

Table 3. CSSMTP configuration statements (continued)

Configuration file statement	Default	Required or optional	Update allowed by modify refresh	Purpose
TargetServer	<ul style="list-style-type: none"> • ConnectPort 25 • ConnectLimit 5 • MaxMsgSent 0 • MessageSize 524288 • Secure No <p>You must provide a value for TargetIP, TargetName, or TargetMx.</p>	Required	Yes	Specify one or multiple TargetServer statements to define target servers (resolved or configured IP addresses) and their connection attributes to which CSSMTP connects for sending mail.
Timeout	<ul style="list-style-type: none"> • AnyCmd 300 • ConnectRetry 120 • DataBlock 180 • DATAcmd 120 • DataTerm 600 • InitialMsg 300 • MAILCmd 300 • RCPTCmd 300 • ConnectIdle 0 	Optional	Yes	Specifies the timeout values, in seconds, for the interaction between CSSMTP and a target server.
Translate	IBM-1047	Optional	No	Specifies the translation code page of the records read from the JES spool data set.
Undeliverable	<p>ReturnToMailFrom Yes</p> <p>DeadLetterAction Store</p> <p>DeadLetterDirectory /var/cssmtp/ extwrtname/ deadletter/</p>	Optional	Yes	Specifies the method to use for handling undeliverable mail.
UserExit	None	Optional	Yes	Controls whether this CSSMTP calls CSSMTP exit program provided by the customer to examine data being sent to CSSMTP from the JES spool data set.

Options statement:

Use the Options statement to change the processing behavior of CSSMTP.

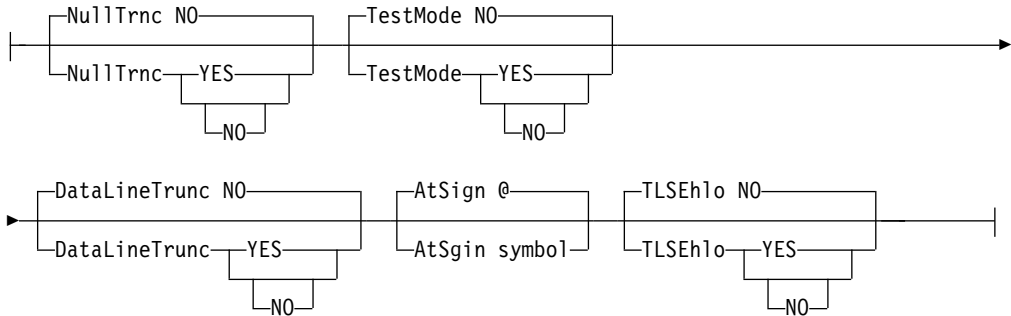
Syntax

►►—Options—| Put Braces and Parameters on Separate Lines |—————►►

Put Braces and Parameters on Separate Lines:



Options Parameters:



Parameters

NullTrnc

Specifies whether the trailing null characters are stripped from mail command records. The mail command records include EHLO, HELO, MAIL, RCPT, DATA, and STARTTLS.

NO The trailing null characters are not stripped from the mail command records by CSSMTP. This is the default value.

YES

The trailing null characters are stripped from the mail command records by CSSMTP.

TestMode

Indicates that CSSMTP runs in test mode and does not deliver mail messages. You can use the function to verify whether CSSMTP properly handles JES spool file mail messages that are currently being handled by another mail program, such as SMTPD.

NO Indicates that CSSMTP runs as a normal mail server and processes and delivers mail messages. This is the default value.

YES

Indicates that CSSMTP runs in compatibility test mode. CSSMTP processes mail messages from the spool file but does not deliver them. After the processing completes, mail messages are discarded instead of delivered or put into retry modes. In this mode, the only output that mail messages produce is error messages in the error report if any errors are encountered.

Result: If TestMode is set to Yes and no errors are found in a spool file, CSSMTP deletes the file when it completes processing. If errors are found, CSSMTP handles the spool files according to the setting of the BADSPOOLDISP configuration statement.

Guideline: When TestMode is set to Yes, ensure that the REPORT statement is coded with a valid destination for the error report; otherwise, warning message EZD1841I is issued.

Tip: When CSSMTP is running with TestMode set to Yes, another mail program, such as SMTPD, needs to get copies of the spool files and process mail messages. You can use EZBMCOPY with CSSMTP running in this mode to ensure that both CSSMTP and the active mail reader program get copies of mail spool files. For more information about EZBMCOPY, see CSSMTP compatibility test and EZBMCOPY in z/OS Communications Server: IP Configuration Guide.

Restriction: TestMode cannot be dynamically changed. You must stop and restart CSSMTP to change its value.

DataLineTrunc

Indicates what CSSMTP does when a message data line is too long. RFC 2821 specifies a maximum message data line length of 1000 bytes, including the CR/LF characters.

Guideline: This parameter is provided for compatibility with the SMTPD daemon. Use this parameter only when you migrate SMTPD to CSSMTP. In all other cases, use the default value.

NO CSSMTP rejects a mail message as an error if the data length of message lines, including the CR/LF characters exceeds 1000 bytes. This is the default behavior and is compatible with RFC 2821. It is suggested to use this value.

YES

If lines within a mail message exceed 1024 bytes, CSSMTP truncates message lines at 1024 bytes and continues processing the mail message. This value mimics the behavior of the SMTPD daemon.

Guideline: When DataLineTrunc is set to Yes, repair the line lengths of mail messages that are generated in JES spool. This function is not compatible with RFC 2821. Mail messages that are sent with line lengths longer than 1000 bytes can be rejected or truncated by successive SMTP gateways.

AtSign

Specifies the at sign symbol that is used in SMTP mail message commands and headers. CSSMTP updates mail message commands and headers by replacing the specified AtSign symbol with the industry standard at sign symbol @. Note that mail messages that are using the industry standard at sign symbol are not changed.

@ This is the default value.

symbol

symbol is the at sign character that is used in mail message commands and headers. It can be any character except the following ones:

ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789
abcdefghijklmnopqrstuvwxyz+*/.,&()'=-: "\ "%<>?;

Tip: This parameter simplifies migration from SMTPD to CSSMTP for customers that use a code page other than the default IBM-1047 and that have modified mail generation programs to generate mail addresses with an at sign character other than the industry standard @. To avoid updating existing mail generation programs when migrating from SMTPD to CSSMTP, you can configure the AtSign parameter with the character that is used by the mail generation programs for the at sign. CSSMTP updates mail message commands and headers by replacing the specified AtSign symbol with the industry standard at sign symbol @.

Guideline: If you want to specify the AtSign symbol in a code page other than the default IBM-1047, use the CSSMTP_CODEPAGE_CONFIG environment variable.

Result: If the AtSign option is not specified, the default value @ is processed using code page IBM-1047.

| **TLSEhlo**

| Specifies whether an EHLO SMTP command is sent after a successful TLS
| negotiation.

| **NO** EHLO command is not sent after a successful TLS negotiation. This is the
| default value.

| **YSE**

| EHLO command is sent after a successful TLS negotiation.

| **Tip:** Configure TLSEhlo Yes to enable communication with a mail server that
| requires an EHLO command after a successful TLS negotiation. RFC 3207
| (SMTP Service Extension for Secure SMTP over Transport Layer Security)
| specifies that sending an EHLO command is optional for a SMTP client after a
| successful TLS negotiation. However, some SMTP servers require an EHLO
| command after a successful TLS negotiation. To communicate with these
| servers, configure TLSEhlo Yes. For more information on enabling the SMTP
| client to use Transport Layer Security (TLS), see Steps for using Transport
| Layer Security for CSSMTP in z/OS Communications Server: IP Configuration
| Guide.

Chapter 4. IP System Administrator's Commands

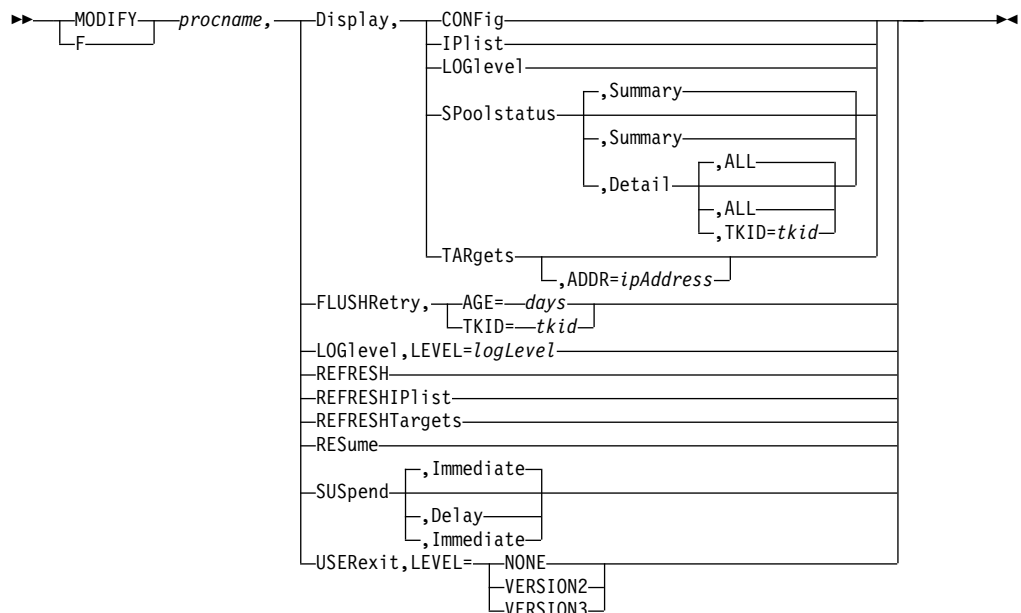
Operator commands and system administration

MODIFY command

MODIFY command: Communications Server SMTP application (CSSMTP)

Use the MODIFY command to control the Communications Server SMTP (CSSMTP) application from the operator console. For descriptions of terms that are used in this section, see the CSSMTP information in z/OS Communications Server: IP Configuration Guide.

Format



Parameters

procname

The member name of the cataloged procedure that is used to start the CSSMTP application.

Display, CONFig

Display the CSSMTP application configuration and global values that are used for processing mail.

Display, IPlist

Display all target server IP addresses and their preferences that are used by CSSMTP. A target server is the resolved or configured IP addresses from TargetServer statements. See the TargetServer statement information in z/OS Communications Server: IP Configuration Reference for details about how the target server addresses are obtained.

DISplay,LOGlevel

Display CSSMTP active log levels.

Display,SPOOLstatusDisplay,SPOOLstatus,Summary

Display summary information for all tasks that are processing spool files for CSSMTP. You can use this display to determine the number of mail messages that are pending or you can use it on the long-retry queue for each spool file that is being processed. The summary option is the default for the MODIFY DISPLAY,SPOOLSTATUS command.

Tip: Use this command to obtain the task ID to use on other modify commands that use task ID values as options.

Display,SPOOLstatus,DetailDisplay,SPOOLstatus,Detail,ALL

Display detailed information for all tasks that are not idle. The ALL option is the default for the MODIFY DISPLAY,SPOOLSTATUS,DETAIL command.

Display,SPOOLstatus,Detail,TKID=*tkid*

Display detailed information for this specific task that processes spool files for CSSMTP.

Tip: You can use the MODIFY DISPLAY,SPOOLSTATUS command to obtain a valid TKID value.

Display,TARGETs[,ADDR=*ipAddress*]

Display global and specific information about target servers. If the ADDR parameter is not specified, all configured target servers are displayed. If the ADDR parameter is specified, then the IP address value must match the IP address of an existing target server that is in use by CSSMTP.

Tip: You can use the MODIFY DISPLAY IPLIST command to obtain IP addresses for the list of target servers that are being used by CSSMTP.

FLUSHRetry,TKID=*tkid*

Initiate a request for the CSSMTP application to remove mail messages from the long retry queue, and send those mail messages to the list of target servers. If CSSMTP cannot send a mail message, that mail message becomes subject to long-term retry processing; if any mail message is not defined, it becomes an undeliverable mail message. For more information about undeliverable mail, see *z/OS Communications Server: IP Configuration Guide*.

A nonzero TKID (task ID) value requests that only the mail messages for the specified TKID value is flushed. A TKID value 0 requests that all mail messages in the long-retry queue be flushed.

Tip: You can use the MODIFY DISPLAY,SPOOLSTATUS command to obtain a valid TKID value.

FLUSHRetry,AGE=*days*

Initiate a request for the CSSMTP application to remove the mail messages that are older than *days* days from the extended retry queue, and send those mail messages to the list of target servers. If CSSMTP cannot send a mail message, that message becomes an undeliverable mail message. To make this command effective, the target servers must be available. For details, see the information about extended retry mail in *z/OS Communications Server: IP Configuration Reference* and the information about undeliverable mail in *z/OS Communications Server: IP Configuration Guide*.

A days value of 0 specifies that all messages in the extended retry list are to be processed.

Tip: You can use the command to monitor the number of the mail messages in the extended retry list and the state of the target servers used by CSSMTP.

LOGLevel, LEVEL=*logLevel*

Change the CSSMTP application log level. The *logLevel* value specifies the log level. If a *logLevel* value is not specified, then the current log level remains in effect. See the LogLevel statement information in z/OS Communications Server: IP Configuration Reference for details about defining the CSSMTP application log level.

REFRESH

Initiate a dynamic reconfiguration using the configuration file that is defined at initialization. If a configuration error is detected during a dynamic refresh, the entire refresh is rejected, the error message is written to the log and console, and the CSSMTP application continues to run with the old configuration values.

Results:

- While the new configuration file is being processed, the existing log level is used, regardless of how it was set (using the last configuration file or with the MODIFY LOGLEVEL command). After the new configuration file has been successfully processed, the value that is specified on the LogLevel statement of the new configuration file takes effect. If the LogLevel statement is not specified in the new configuration file, the log level defaults to level 7 (ERROR, WARNING, and EVENT). If the new configuration file contains errors that cause it to be rejected, the log level that was in effect prior to the dynamic reconfiguration is used.
- If an update to the ExtWrtName statement is detected during a dynamic refresh, then the CSSMTP application continues to run with the old external writer name and a warning message is written to the log and console.
- If an update to the Translate statement is detected during a dynamic refresh, then the CSSMTP application continues to run with the old *translate* value and a warning message is written to the log and console.
- If an update to the ChkPointSizeLimit statement is detected during a dynamic refresh, then the CSSMTP application continues to run with the old ChkPointSizeLimit value and a warning message is written to the log and console.
- While the new configuration file is being processed, the existing UserExit value is used, regardless of how it was set (using the last configuration file or with the MODIFY USEREXIT command). After the new configuration file has been successfully processed, the value that is specified on the UserExit statement of the new configuration file takes effect when the next JES spool file is opened. If the new configuration file contains errors that cause it to be rejected, the UserExit value that was in effect prior to the dynamic reconfiguration is used.
- An update to the TargetServer statement can force CSSMTP to stop and restart connections on the affected IP addresses. If CSSMTP is in the process of sending a mail message on the affected IP address, the mail message is retried at another IP address or placed in the long retry queue. For more information about the TargetServer statement, see the TargetServer statement information in z/OS Communications Server: IP Configuration Reference.

REFRESHIPlist

Initiates a dynamic DNS refresh of the target that is identified by the configured TargetName or TargetMx parameter value. This parameter does not cause the configuration file to be reprocessed.

Result: If a TargetServer statement has TargetName or TargetMx parameters configured, new IP addresses might be resolved. If the IP address list is changed, CSSMTP might be forced to stop and restart connections on the affected IP addresses. If CSSMTP is in the process of sending a mail message on the affected IP address, the mail message is retried at another IP address or placed in the long retry queue.

REFRESHTargets

Reinitiates a connection to all target servers. The CSSMTP application can learn about any capability changes from the target servers.

Tip: This command causes all active connections to all target servers to be stopped and restarted; therefore, use this command only when there is a change in the network topology and no work is being done by the CSSMTP application because the command interrupts all active connections.

Result: If you issue this command while CSSMTP is in the process of sending a mail message on the connection, the mail message is retried at another IP address or placed in the long retry queue.

RESume

Resumes processing of any JES spool files whose processing was suspended with the MODIFY SUSPEND operator command.

SUSpendSUSpend, Immediate

Suspends the reading of mail messages immediately for all active spool files. To resume this processing, issue the MODIFY RESUME operator command. The IMMEDIATE option is the default for the MODIFY SUSPEND command.

SUSpend, Delay

Suspends the reading of any new spool files immediately but completes reading any spool files that are already in process. To resume reading of spool files, issue the MODIFY RESUME operator command.

USERexit, LEVEL=userExitValue

Change the CSSMTP application user exit value. The USEREXIT keyword can be set to NONE, VERSION2, or VERSION3. If a *userExitValue* parameter value is not specified, then the current user exit value remains in effect. See the USEREXIT statement information in z/OS Communications Server: IP Configuration Reference for details about how to define the CSSMTP application user exit value.

Result: The user exit value does not change until the next JES spool file is opened.

Examples

Example 1: The MODIFY DISPLAY,LOGLEVEL command displays the current logging level that is being used by CSSMTP.

```
F CSSMTP, DISPLAY, LOGLEVEL  
EZD1828I CSSMTP DISPLAY LOGLEVEL = 15
```

Example 2: The MODIFY DISPLAY,CONFIG command displays the current configuration that is being used by CSSMTP.

```
F CSSMTP, DISPLAY, CONFIG  
EZD1829I CSSMTP CONFIGURATION: 730  
CONFIGFILENAME      : //'USER1.CSSMTP.CNTL(CSSMTP)'  
LOGFILENAME         : /tmp/cssmtp.log  
CHKPOINTFILENAME   : 'USER1.CSSMTP.CHKPOINT'  
PID                 : 67108878
```

```

LOGLEVEL           : 7           USEREXIT          : VERSION3
CHKPOINTSIZELIMIT : 64000        CHKPOINT           : WARM
CONFIG CODEPAGE    : IBM-1047
TRANSLATE          : ibm-1047
START OPTION TCPNAME : N/A         IPV6 ENABLED      : YES
EXTWRRTNAME       : CSSMTP        HOST NAME         : SY1
DOMAIN NAME        : example.com
HEADER:
DATE               : YES
USERINFO           : YES
JESJOBSize        : 0             JESMSGSize        : 0
JESSYNTAXERRLIMIT : 6
BADSPoolDISP      : HOLD         REPORT            : ADMIN
OPTIONS:
NULLTRNC          : YES          DATALINETRUNC     : NO
TESTMODE          : NO          ATSIGN            : 7C
TLSEHLO           : NO
UNDELIVERABLE:
RETURNToMAILFROM  : YES          DEADLETTERACTION  : STORE
DEADLETTERDIRECTORY : /var/cssmtp/deadletter/
SMF119:
CONFIG            : YES          CONNECT           : YES
MAIL              : YES          SPOOL            : YES
STATS             : YES
RETRYLIMIT:
COUNT            : 5            INTERVAL          : 1
EXTENDEDRETRY: ACTIVE
AGE               : 5            INTERVAL          : 30
MAILDIRECTORY     : /var/cssmtp/mail/
TARGETSERVER:
TARGETNAME        : mail.example.com
CONNECTPORT       : 25           CONNECTLIMIT      : 5
MAXMSGSENT        : 0            MESSAGESize       : 524288
SECURE            : NO
TIMEOUT:
ANYCMD            : 300          CONNECTRETRY      : 120
DATABLOCK        : 180          DATACMD           : 120
DATATERM         : 600          INITIALMSG        : 300
MAILCMD          : 300          RCPTCMD           : 300
CONNECTIDLE      : 60
MAILADMINISTRATOR : postmaster@example.com
                  user1@example.com
                  user2@example.com

```

For definitions of statements and parameters that are obtained from configuration file, see the CSSMTP information in z/OS Communications Server: IP Configuration Reference.

CONFIGFILENAME

The configuration name from the CONFIG DD statement in the started procedure.

LOGFILENAME

The configured log file name from LOGFILE DD statement in the started procedure.

PID

The process ID.

LOGLEVEL

The logging level.

CHKPOINT

Indicates whether checkpointing is active.

WARM

Checkpointing was initiated using the CHKPOINT DD statement.

COLD

Checkpointing was initiated using the -f start option.

NONE

There was no CHKPOINT DD statement.

CONFIG CODEPAGE

The code page value specified on the CSSMTP_CODEPAGE_CONFIG statement or the default value.

TRANSLATE

The code page value that is configured on the Translate statement.

CHKPOINT FILENAME

The name of the configured checkpoint file, if a CHKPOINT DD statement is configured in the started procedure.

START OPTION TCPNAME

The TCP name that is passed on the -p start option or the value N/A if the -p start option is not used.

IPV6 ENABLED

Indicates whether IPV6 is supported.

EXTENDEDRETRY

Indicates whether extended retry processing is ACTIVE or INACTIVE.

ATSIGN

The hex value of the configured AtSign symbol.

Result: Code page IBM-1047 is always used for the CSSMTP display. The CSSMTP_CODEPAGE_CONFIG environment variable is not used for the display. The value displayed is the hex value that is defined in the IBM-1047 code page for the configured symbol.

The remaining values that are displayed are the values for the matching statement or parameter from the configuration file.

Example 3: The MODIFY DISPLAY,IPLIST command displays the IP address of the configured target servers from the TargetServer statement and TargetIp parameter, or it displays the resolved target server addresses from the TargetServer statement and TargetName parameter, that are being used by CSSMTP.

F CSSMTP,DISPLAY,IPLIST

EZD1830I CSSMTP IPLIST:

TARGETIP	: 9.100.1.5		
CONNECTPORT	: 25	CONNECTLIMIT	: 5
MAXMSGSENT	: 1000	MESSAGESIZE	: 524288
SECURE	: NO		
TARGETIP	: 9.56.231.69		
CONFIG TARGETNAME	: RALVMS		
CONNECTPORT	: 25	CONNECTLIMIT	: 2
MAXMSGSENT	: 2000	MESSAGESIZE	: 524288
SECURE	: YES		
TARGETIP	: 9.200.1.6		
CONNECTPORT	: 25	CONNECTLIMIT	: 5
MAXMSGSENT	: 1000	MESSAGESIZE	: 524288
SECURE	: NO		

For the definitions of statements and parameters that are obtained from the configuration file, see the CSSMTP information in z/OS Communications Server: IP Configuration Reference.

TARGETIP

The IP address of the target server.

CONFIG TARGETNAME

The name that is used to resolve this target server address for a resolver A or AAAA query.

The remaining values that are displayed are the same values that are specified on the matching statement or parameter in the configuration file.

Example 4: The MODIFY DISPLAY,IPLIST command displays the resolved target servers from the TargetServer statement and TargetMx parameter that are being used by CSSMTP.

F CSSMTP, DISPLAY, IPLIST

```
EZD1830I USER1408 IPLIST:
TARGETIP           : 9.56.231.69
CONFIG TARGETMX    : mxName
PREFERENCE         : 1
CONNECTPORT        : 25          CONNECTLIMIT      : 2
MAXMSGSENT         : 2000       MESSAGE SIZE      : 524288
SECURE             : YES
TARGETIP           : 9.56.200.55
CONFIG TARGETMX    : mxName
PREFERENCE         : 1
CONNECTPORT        : 25          CONNECTLIMIT      : 2
MAXMSGSENT         : 2000       MESSAGE SIZE      : 524288
SECURE             : NO
```

For the definition of statements and parameters that are obtained from configuration file, see the CSSMTP information in z/OS Communications Server: IP Configuration Reference.

TARGETIP

This is the IP address of the target server.

CONFIG TARGETMX

The name that is used to resolve this target server address for resolver MX query.

The remaining values that are displayed are the values for the matching statement or parameter from the configuration file.

Example 5: The MODIFY DISPLAY,SPOOLSTATUS command displays the summary information for all tasks that are processing JES spool files.

F CSSMTP, DISPLAY, SPOOLSTATUS

```
EZD1832I CSSMTP SPOOLSTATUS:
TKID JOBNAME STATE PEND LRT TKID JOBNAME STATE PEND LRT
W 002 JOBNM25 ACTIVE 15 5 D 003 JOBNM132 READ 5 0
W 004 JOBNM45 ACTIVE 10 10 D 005 JOBNM232 READ 10 0
W 006 JOBNM48 ACTIVE 20 0 D 007 JOBNM332 IDLE 0 0
W 008 JOBNM50 ACTIVE 20 5 D 009 JOBNM432 IDLE 0 0
W 010 JOBNM60 ACTIVE 10 0 D 011 JOBNM532 IDLE 0 0
W 012 JOBNM80 ACTIVE 0 0 D 013 JOB00632 IDLE 0 0
W 014 JOBNM90 ACTIVE 10 10 D 015 JOB00732 IDLE 0 0
W 016 JOBNM190 ACTIVE 20 0 D 017 JOB00832 IDLE 0 0
W 018 JOBNM150 ACTIVE 20 5 D 019 JOB00932 IDLE 0 0
W 020 JOBNM160 ACTIVE 10 0 D 021 JOB01132 IDLE 0 0
```

For definitions of terms that relate to this information, see the CSSMTP common terms information in *z/OS Communications Server: IP Configuration Guide*.

W A writer JES task, if the JES spool file was generated by the IEBGENER utility.

D A dest JES task, if the JES spool file was generated by the SMTPNOTE command or by the TSO Transmit (XMIT) command.

TKID

The task ID, which can be used to identify a specific task.

Tip: You can use the task ID in the MODIFY FLUSHRetry command and the MODIFY DISPLAY,SPOOLSTATUS,DETAIL,TKID=*tkid* command.

JOBNAME

The JES job name for this task. If the task is in the IDLE state, this is the name of the previous job.

STATE

This parameter can have one of the following values:

WAITS

The task is waiting because virtual storage is constrained.

READ

The task is reading a spool file.

IDLE

The task is waiting for a JES spool file to process.

ACTIVE

The task is actively waiting for all mail in the spool file to be processed.

WAIT

The task is waiting because no target server is active to receive mail.

SUPND

The task was suspended by the MODIFY SUSPEND command.

PEND

The number of mail messages that are waiting to be sent to target server.

LRT

The number of mail messages that are currently queued in the long-retry queue.

The MODIFY DISPLAY SPOOLSTATUS,DETAIL command displays detailed information for all tasks that are not in the IDLE state that are processing JES spool files.

F CSSMTP, DISPLAY, SPOOLSTATUS, DETAIL

EZD1833I CSSMTP SPOOLSTATUS:

TASK ACTIVE	: WRITER	TKID	: 2
JOBNAME	: JOBNM25	JOBID	: STC00055
PEND	: 15	LRT	: 5
MAIL READ	: 0	UNDELIVERABLE:	0
TASK ACTIVE	: WRITER	TKID	: 4
JOBNAME	: JOBNM45	JOBID	: STC00060
PEND	: 10	LRT	: 10
MAIL READ	: 10	UNDELIVERABLE:	0

... <active task TKID=006,008,010,012,014,016,018,020 not shown>

TASK READ	: DEST	TKID	: 3
JOBNAME	: JOBNM132	JOBID	: STC00055
PEND	: 5	LRT	: 0
MAIL READ	: 5	UNDELIVERABLE:	20

```

TASK READ          : DEST      TKID          : 5
JOBNAME           : JOBNM232  JOBID        : STC00255
PEND              : 10        LRT          : 0
MAIL READ         : 5          UNDELIVERABLE: 20

```

The MODIFY DISPLAY SPOOLSTATUS,DETAIL command displays detailed information for all tasks that are not in the IDLE state that are processing JES spool files; in this example all state tasks are idle.

```

F CSSMTP,Display,Spoolstatus,detail
EZD1833I CSSMTP SPOOLSTATUS:
No non-idle TKIDs to display

```

The MODIFY DISPLAY SPOOLSTATUS,DETAIL,TKID=11 command displays detailed information for a specific TKID 11 task that is processing a spool file for the CSSMTP application.

```

F CSSMTP,DISPLAY,SPOOLSTATUS,DETAIL,TKID=11
EZD1833I CSSMTP SPOOLSTATUS:
TASK ACTIVE       : WRITER    TKID          : 11
JOBNAME          : JOBNM532  JOBID        : STC00532
PEND             : 0         LRT          : 0
MAIL READ        : 25        UNDELIVERABLE: 0

```

The MODIFY DISPLAY SPOOLSTATUS,DETAIL,TKID=3 command displays detailed information for a specific TKID 3 task that is currently idle.

```

F CSSMTP,DISPLAY,SPOOLSTATUS,DETAIL,TKID=2
EZD1833I CSSMTP SPOOLSTATUS:
TASK IDLE        : WRITER    TKID          : 2
JOBNAME          : JOB00032  JOBID        : STC00055
PEND             : 0         LRT          : 0
MAIL READ        : 2         UNDELIVERABLE: 1

```

TASK

The TASK parameter has the following fields:

state

Possible values are:

WAITS

The task is waiting because virtual storage is constrained.

READ

The task is reading a spool file.

IDLE

The task is waiting for a JES spool file to process.

ACTIVE

The task is actively waiting for all mail in the spool file to be processed.

WAIT

The task is waiting because no target server is active to receive mail.

SUPND

The task was suspended by the MODIFY SUSPEND command.

type task

Possible **type task** values are:

WRITER

This is a writer JES task if the JES spool file was generated by the IEBGENER utility.

DEST

This is a DEST JES task if the JES spool file was generated by the SMTPNOTE command or by the TSO Transmit (XMIT) command.

TKID

The task ID, which can be used to identify a specific task.

Tips:

- You can use the task ID in the MODIFY FLUSHRetry command and the MODIFY DISPLAY,SPOOLSTATUS,DETAIL,TKID=*tkid* command.
- You can use the task ID to identify log information that is in the log file. If the *tkid* value is 2, that TKID value is represented in the following example by the value :002.

```
08/01 07:10:20 CSSMTP DEBUG :002:m1JESThread:Message(0): ...
```

JOBNAME

The JES job name for this task. If the task is in the IDLE state, then this is the previous job name.

JOBID

This is the JES job ID for this task. If the task is in the IDLE state, then this is the previous job ID.

PEND

The number of mail messages that are waiting to be sent to a target server. If the task is in the IDLE state, then this value is always 0.

LRT

The number of mail messages that are currently in the long-retry queue. If the task is in the IDLE state, then this value is always 0.

MAIL READ

The total number of mail messages that have been read for the job. If the task is in the IDLE state, then this is the mail for the previous job.

UNDELIVERABLE

The total number of undeliverable mail messages for this job name. If the task is in IDLE state, then this value is the undeliverable count of the previous job.

Example 6: The MODIFY DISPLAY,TARGETS command displays the global and specific information that is related to sending email to target servers. For definitions of statements and parameters that are obtained from the configuration file, see the CSSMTP information in z/OS Communications Server: IP Configuration Reference.

F CSSMTP,DIS,TARGETS

```
EZD1831I CSSMTP TARGETS:
GLOBAL INFORMATION:
MAIL SENT : 0                TOTAL RETRY : 0
DEADLETTER: 0                CURRENT RETRY: 0
UNDELIVER : 0
EXTENDED RETRY:
CURRENT : 0                  TOTAL : 0
TARGET SERVER 1.1.1.1
STATE : ACTIVE
ESMTP : YES                  MESSAGE SIZE : 20000000
STARTTLS : NO                MAIL ATTEMPTS: 24
MAIL SENT : 24                CONNECT FAIL : 0
TARGET SERVER ::6
STATE : ACTIVE
ESMTP : YES                  MESSAGE SIZE : 20000000
STARTTLS : YES                MAIL ATTEMPTS: 30
MAIL SENT : 30                CONNECT FAIL : 0
```

The following global target server information for this application is displayed:

MAIL SENT

Count of all mail messages that were processed successfully after all mail messages were sent.

TOTAL RETRY

Cumulative count of mail messages that have been in the long-retry state.

DEADLETTER

Cumulative count of all mail messages that were classified as dead letters.

CURRENT RETRY

Count of mail messages that are currently in the long-retry queue.

UNDELIVER

Count of all mail messages that were undeliverable.

EXTENDED RETRY

CURRENT

Count of mail messages currently in the extended retry directory while extended retry is active.

TOTAL

Cumulative count of mail messages that have been in the extended retry directory.

The following fields are displayed for each target server:

STATE

State of the target server.

ACTIVE

The target server is active.

NOT USABLE

This target server is not usable. For example, CSSMTP has lost connectivity to this target server.

UNKNOWN

This target server is new and its capabilities have not been learned at this time.

ESMTP

Type of target server. If the ESMTP value is YES, the target server type is ESMTP. If the ESMTP value is NO, the target server type is SMTP.

MESSAGE SIZE

The actual message size.

- For ESMTP this value was obtained from the SIZE extension when the connection was made. The value 0 indicates that there is no predefined message size limit.
- For SMTP, this value is the value that is configured for the MessageSize parameter of the TargetServer statement. For details, see the TargetServer statement information in z/OS Communications Server: IP Configuration Reference

STARTTLS

Indicates that the target server has acknowledged that it is capable of establishing secure connections.

- For ESMTP see the information that describes using Transport Layer Security TLS in z/OS Communications Server: IP Configuration Guide for details.

- For SMTP this is always set to NO.

MAIL ATTEMPTS

The total number of mail messages that CSSMTP has sent or has attempted to send to the target server.

Tip: A single mail message operation can be attempted on multiple target servers.

MAIL SENT

The number of mail messages that were sent successfully for this target server.

Tip: A single mail message that contains multiple recipients can be sent successfully on multiple target servers.

CONNECT FAIL

Count of the number of SMTP connections that the application was unable to establish when it attempted to send mail to a target server.

Example 7: The MODIFY DISPLAY,TARGETS,ADDR=*x.x.x.x* command displays the global and specific information related to sending e-mail to a specific target server.

```
F CSSMTP,DIS,TARGETS,ADDR=1.1.1.1
EZD1831I CSSMTP TARGETS:
GLOBAL INFORMATION:
MAIL SENT : 24                LONG RETRY   : 0
DEADLETTER: 0                UNDELIVERABLE: 0
TARGET SERVER 1.1.1.1
STATE      : ACTIVE
ESMTP     : YES              MESSAGE SIZE : 20000000
SECURE    : NO              MAIL ATTEMPTS: 24
MAIL SENT : 24              CONNECT FAIL : 0
```

Example 8: The MODIFY LOGLEVEL,LEVEL=15 command requests the CSSMTP application to change the logging level to 15. The EZD1809I message indicates that the logging level was updated successfully.

```
F CSSMTP,LOGLEVEL,LEVEL=15
EZD1809I CSSMTP1 MODIFY LOGLEVEL COMMAND COMPLETED : UPDATED
```

Example 9: The MODIFY REFRESH command requests that the CSSMTP application reprocess the configuration file. The following messages indicate that the configuration was updated successfully with no errors.

```
F CSSMTP,REFRESH
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED
EZD1840I CSSMTP UPDATED CONFIGURATION
EZD1846I CSSMTP UPDATED TARGET SERVERS
EZD1848I CSSMTP MODIFY REFRESH COMMAND COMPLETED
```

Result: If an update to the TestMode value is detected during a dynamic refresh, the CSSMTP application continues to run with the old TestMode value and a warning message is written to the log and console.

Example 10: The MODIFY REFRESHIPLIST command requests that the CSSMTP application perform a dynamic DNS refresh of the TargetName or TargetMx field. The following messages indicate that the target server addresses were successfully updated.

```
F CSSMTP,REFRESHIPLIST
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED
EZD1845I CSSMTP UPDATED TARGET SERVERS
EZD1842I CSSMTP MODIFY REFRESHIPLIST COMMAND COMPLETED
```

Example 11: The MODIFY FLUSHRETRY,TKID=0 command initiates a request to move all mail that is in the long-retry queue to the send queue.

The following messages indicate that all mail messages have been moved from the long-retry queue to the send queue.

```
F CSSMTP,FLUSHRETRY,TKID=0
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED
EZD1810I CSSMTP MODIFY FLUSHRETRY,TKID=0 COMMAND COMPLETED
```

Example 12: The MODIFY FLUSHRETRY command initiates a request to move all mail for TKID 2 from the long-retry queue to the send queue.

The following messages indicate that all mail messages for TKID 2 have been moved from the long-retry queue to the send queue.

```
F CSSMTP,FLUSHRETRY,TKID=2
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED
EZD1810I CSSMTP MODIFY FLUSHRETRY,TKID=2 COMMAND COMPLETED
```

Example 13: The MODIFY REFRESHTARGETS command reinitiates a connection to all target servers.

The following messages indicate that the CSSMTP application completed this request.

```
F CSSMTP,REFRESHTARGETS
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED
EZD1821I CSSMTP ABLE TO USE TARGET SERVER 9.1.1.1
```

Example 14: The MODIFY RESUME command resumes processing of any JES spool files when processing was suspended using the MODIFY SUSPEND operator command.

The following messages indicate that the CSSMTP application will start processing any JES spool files.

```
F CSSMTP,RESUME
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED
EZD1814I CSSMTP MODIFY RESUME COMMAND COMPLETED
```

Example 15: The MODIFY SUSPEND command suspends the reading of mail messages immediately for all JES spool files.

The following messages indicate that the CSSMTP application has suspended the processing of mail messages for all JES spool files.

```
F CSSMTP,SUSPEND
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED
EZD1822I CSSMTP MODIFY SUSPEND IMMEDIATE COMMAND COMPLETED
```

Example 16: The MODIFY FLUSHRETRY,AGE=0 command initiates a request to move all the mails that are in the extended retry queue to the send queue.

The following messages indicate that all mail messages have been moved from the extended retry queue to the send queue.

```
F CSSMTP,FLUSHRETRY,AGE=0
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED
EZD1823I CSSMTP MODIFY FLUSHRETRY,AGE=0 COMMAND COMPLETED
```

Example 17: The MODIFY FLUSHRETRY,AGE=2 command initiates a request to move all mail messages that have been in the extended retry queue for more than two days from the extended retry queue to the send queue.

The following messages indicate that all the extended retry mail messages that are older than two days have been moved from the extended retry queue to the send queue.

```
F CSSMTP,FLUSHRETRY,AGE=2  
EZD1834I CSSMTP MODIFY COMMAND ACCEPTED  
EZD1823I CSSMTP MODIFY FLUSHRETRY,AGE=2 COMMAND COMPLETED
```

Chapter 5. IP Diagnosis Guide

Diagnosing Communications Server SMTP application problems

Resolving mail problems

Mail problems

Duplicate mail messages:

If you run CSSMTP with SMTPD to test compatibility of your mail workload, ensure that you have set TestMode to YES in the CSSMTP configuration file. This parameter cannot be changed dynamically. If you do not set the parameter, CSSMTP delivers mail messages that do not contain errors, resulting in duplicate mail messages being delivered if SMTPD also runs and delivers mail messages.

Bad sequence of commands:

If you run CSSMTP with Transport Layer Security (TLS) and you are receiving reply code 503 bad sequence of commands after a successful TLS negotiation, it is possible that the mail server requires an EHLO SMTP command following the TLS negotiation. Set the TLSEhlo option to Yes in the CSSMTP configuration file if an EHLO SMTP command is required following the TLS negotiation.

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