IBM Sterling Connect:Direct for z/OS

User Guide

Version 5.2

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Contents

Chapter 1. Introduction to Sterling Connect:Direct commands

Use Sterling Connect:Direct® commands to submit and manipulate Processes stored in the Transmission Control Queue (TCQ). For example, you can select, delete, and suspend Processes by using Sterling Connect:Direct commands.

You can use either of the following two methods to issue commands:

Method	Description
Batch Interface	Enables you to issue Sterling Connect:Direct commands with the DGADBATC program in a batch environment. See Introduction to the Batch Interface for more information about how to use the Batch Interface.
Interactive User	Provides easy-to-use command entry through fill-in-the-blank screens. The Interactive User Interface (IUI) is an ISPF Dialog online interface. See Introduction to the Interactive User Interface (IUI), for more information on how to use the IUI.

Some command options which you can select through the IUI do not have a batch equivalent. The documentation notes these exceptions in option descriptions.

Supported commands

The following table lists Sterling Connect:Direct commands, which perform various administrative and user functions.

Command	IUI	Function
CHANGE PROCESS	CP	Modify a Process in the TCQ
DELETE PROCESS	DP	Remove a Process from the TCQ
DELETE TYPE	DT	Delete a record from the Type file (both a user and administrative task)
DELETE USER	DU	Delete a user from the Authorization file (administrative task)
FLUSH PROCESS	FP	Terminate an Executing Process (both a user and administrative task)
FLUSH TASK	TF	Remove a task from the Execution queue (administrative task)
INQUIRE1	INQ	View information about Sterling Connect:Direct DTF status
INQUIRE SNMP	INQ SNMP	Display SNMP Trap Table
INSERT TYPE	IT	Insert a record in the Type file (both a user and administrative task)
INSERT USER	IU	Add a user to the Authorization file (administrative task)
MODIFY	MD	Run diagnostics and modify initialization parameters (administrative task)
SELECT MESSAGE	SEL MSG	Display message detail using message ID

Command	IUI	Function
SELECT NETMAP	NM	Display node from the network map file
SELECT PROCESS	SP	Examine a Process in the TCQ
SELECT STATISTICS	SS	Examine records in the Statistics Log
SELECT TASK	TS	Display Sterling Connect:Direct system tasks status (administrative task)
SELECT TCPXLAT	NM	Translate TCP/IP host names - addresses
SELECT TYPE	ST	Examine the records in the Type file (both a user and administrative task)
SELECT USER	SU	Examine user authorization (administrative task)
SIGNON		Connect to Sterling Connect:Direct DTF
SIGNOFF	X	Terminate a connection to the Sterling Connect:Direct DTF
STATISTICS	STAT	Perform statistics functions (administrative task)
STOP CD	SN	Stop Sterling Connect:Direct operation (administrative task)
SUBMIT	SB	Submit a Process for execution
SUSPEND PROCESS	SUS	Suspend Process execution
SWAP NODE	SW	Swap to another Sterling Connect:Direct node
UPDATE NETMAP	UNM	Update the network map file (administrative task)
UPDATE TYPE	IT	Update a record in the Type file (both a user and administrative task)
UPDATE USER	IU	Change user privileges (administrative task)

Writing Sterling Connect:Direct commands

A Sterling Connect:Direct command is a string of characters that conveys your requests to the Sterling Connect:Direct Data Transmission Facility (DTF) for execution. You write these commands by using a unique syntax called the Sterling Connect:Direct native format.

If you are using the batch interface, operator interface, or your own user-written application, you write the commands in this native format. If you are using the IUI, Sterling Connect:Direct builds the commands in the format for you.

Native format

The following table shows the structure of a Sterling Connect:Direct command in its native format.

```
Label    Command    Parameters and Subparameters
```

The following table explains each command component:

Component	Description
Label (optional)	You can optionally identify your Sterling Connect:Direct command through use of a label. A label must begin in position 1 and consists of a 1-8 character alphanumeric string, with the first character alphabetic.

Component	Description
Command	The command itself specifies the Sterling Connect:Direct function requested and must begin after position 1. Use one or more blanks to separate the command from the parameters which follow it.
Parameters or Subparameters	Parameters or subparameters specify further instructions for the command. Separate your parameters by one or more blanks. Parameters can be either keyword or positional. Keyword parameters are usually followed by an equal sign and can have a set of subparameters. An example of a keyword parameter is CASE in the following command. SIGNON NETMAP=network.map.name CASE=Yes|No You must type positional parameters in a specific order, with commas replacing any parameter not typed. These parameters are always on the right of the equal sign. Enclose positional subparameters in parentheses, with the parentheses preceded and followed by blanks or commas. In the following command USERID is an example of a keyword parameter, and ID,pswd,newpswd are examples of positional subparameters: SIGNON USERID=(ID,pswd,newpswd) A positional parameter or the variable information in a keyword parameter is sometimes a list of subparameters. Such a list can include both positional and keyword parameters.

Command example

The following CHANGE PROCESS command changes a preexisting Process named PAYROLL so that the new destination node is DALLAS1 and the Process executes every Friday:

```
CH PROC   WHERE (PNAME=PAYROLL)  -
          DEST=DALLAS1           -
          RETAIN=Y               -
          STARTT=(FR)
```

Command syntax

This section describes the syntax used to construct Sterling Connect:Direct commands and Processes.

For a complete description of Process syntax and examples, see the *IBM Sterling Connect:Direct Process Language Reference Guide*.

Asterisks

Use asterisks to indicate generic specifications of parameters in the SELECT commands. With generics, you request information by specifying just a single asterisk (*) or a character string plus an asterisk.

To examine records for users whose user IDs begin with ST, specify the following parameter:

```
USERID=ST*
```

Commas

Commas function to separate items within a list (except in the case of symbolic substitution. Refer to Symbolic Substitution), and to control the order of values specified as positional parameters. You must use a comma to indicate omission of a positional parameter. In the following example, the omission of the pswd subparameter is indicated by the extra comma.

```
SIGNON USERID=(ID,,newpswd)
```

Continuation Marks

A command can continue across multiple lines. Use the hyphen (-), preceded and followed by a space, to indicate that the command continues on the following line. The hyphen can appear anywhere in positions 3-79. The following command is continued on a second line.

```
CHANGE PROCESS WHERE (PNAME=PAYROLL) -
               DEST=DALLAS1
```

Parentheses

In the following example, parentheses enclose lists and associate a group of values.

```
SIGNON USERID=(MYUID1,MYPSWD)
```

Symbolic Substitution

Use symbolic substitution to substitute information in a Sterling Connect:Direct Process. The substitution is represented by an ampersand (&) plus 1-8 alphanumeric characters. In the following example, the value for &DATA is resolved when you submit the Process.

```
DSN=&DATA
```

If you have multiple symbolics, separate them with one or more spaces.

Single and Double Quotation Marks

The rules for using single and double quotation marks are:
- Single-quote strings allow the parsing of parameters as typed.
- Double-quote strings allow the resolution of symbolic substitution in a quoted string.

The following example shows the use of single quotation marks to enable you to embed special characters or blanks within a parameter or subparameter value.

```
SIGNON PACCT='JOB FOR SYSMAINT,DEPT.27'
```

The following example shows the use of double quotation marks to allow for the resolution of symbolic substitution.

```
SIGNON PACCT="JOB FOR SYSMAINT,DEPT. &DEPND"
```

Single quotation marks are not valid for symbolic substitution in a Sterling Connect:Direct command but can be used with a keyword parameter in a Process statement (refer to the *IBM Sterling Connect:DirectProcess Language Reference Guide*

For example, the following SUBMIT Process command, which uses single quotation marks:

```
SUB PROC=DCB HOLD=YES  -
  &DCB='DCB=(LRECL=80,BLKSIZE=3120,RECFM=FM)'
```

results in the following invalid Process.

```
SUB PROC=DCB HOLD=YES     &DCB='DCB=(LRECL=80,BLKSIZE=3120,RECFM=FB)'
```

The following example which uses the same Process information as the example above but this time with double quotation marks:

```
SUB PROC=DCB HOLD=YES  -
  &DCB="DCB=(LRECL=80,BLKSIZE=3120,RECFM=FM)"
```

resolves to:

```
SUB PROC=DCB HOLD=YES     &DCB=DCB=(LRECL=80,BLKSIZE=3120,RECFM=FB)
```

Comments

Comments allow you to include descriptive information within a command. Comments are available for your convenience and do not affect Sterling Connect:Direct. Use the following formats for comments:

- Preceded by a slash-asterisk (/*) and followed by an asterisk-slash (*/).
- An asterisk (*) in position 1, followed by the comment.

All three of the following lines are valid comments, indicating that the SIGNON command labeled DSIGN signs on to the DALLAS node.

```
/* SIGN ON TO DALLAS */
*SIGN ON TO DALLAS
DSIGN SIGNON NODE=DALLAS /*DALLAS*/
```

Concatenation

Use the double bar (||) to concatenate, or link together, character strings. You must precede the double bar and follow it with a blank. Use the double bar to join a long value that continues over multiple records. For example, you can type the following command.

```
PACCT=JOBACCTDATA ||   -
WITHNOBLANKS
```

The vertical bar is x'4F'.

Sterling Connect:Direct resolves your command to the following format:

```
PACCT=JOBACCTDATAWITHNOBLANKS
```

Special Characters

Certain characters cause Sterling Connect:Direct to take special actions. These special characters are the hyphen (-), double bar (||), ampersand (&), and the Sterling Connect:Direct delimiters. The following table lists the delimiters recognized by Sterling Connect:Direct.

Delimiters	Description
	blank
<	less than sign
>	greater than sign
*	asterisk

Delimiters	Description
(	open parenthesis
)	close parenthesis
¬	not sign
/	slash
\	backslash
,	comma
.	period
'	single quotation mark
"	double quotation mark
=	equal sign
{	opening brace
}	closing brace
[	opening bracket
]	closing bracket

Special Purpose Bracketing

You must often maintain special characters as part of a string. To maintain special characters, enclose the string in bracketing characters. Bracketing characters are backslashes (\), single quotation marks ('), and double quotation marks (").

Bracketing backslashes are indicators of special processing of a character string. Sterling Connect:Direct does not maintain them as part of the string at its final resolution. Use bracketing backslashes to:

- Continue a string containing special characters across multiple lines
- Ensure that quotation marks within the string are maintained

The following is an example of using bracketing backslashes in a command:
```
PACCT=\'DEPT\MIS\ || -
      \602'\
```

Sterling Connect:Direct resolves the command as follows:
```
PACCT='DEPT\MIS602'
```

Indicating case sensitivity

The CASE parameter specifies whether parameters associated with accounting data, user ID, password, and data set name in the commands and Processes are case-sensitive. You can make this designation at the signon level for all commands that are issued for the session that is established by the signon, and at the command level.

The following table describes the levels at which you can set the CASE parameter.

Level	Description
Session	The CASE parameter of the SIGNON command indicates if commands entered during this session are case-sensitive. The default value is NO. You can override this setting at the command level.

Level	Description
Individual Command	You can change the CASE parameter for an individual command and override the session case sensitivity as follows: • In the Sterling Connect:Direct for z/OS® IUI, the CASE parameter is usually indicated on the IUI by the following words: **DO YOU WANT VALUES FOR THIS REQUEST TO BE CASE SENSITIVE? ==>** Reply Y or N to this question. The value for the CASE parameter stays in effect as long as you reuse the same panel. When you change panels, the value reverts to the session default. • In native command mode, such as used in the Batch Interface, you must designate your override on each command record if you want to override the CASE parameter of the SIGNON command.
Process	For commands that refer to Processes already in the TCQ, only the CASE parameter applies to the fields in the command. For commands that refer to Processes that are not yet in the TCQ, the case sensitivity applies to the Process statements.

Indicating selection criteria

Use the WHERE parameter to specify which records to select, change, or delete based on subparameters, such as Process name or Userid.

Selection subparameters are optional; however, you must specify at least one. These subparameters are special in that they identify which records are selected for the command activity defined by the other parameters.

Use the WHERE parameter to indicate selection criteria for commands which affect Process, Task, Type, User, and Statistic records. The command function applies to all records which match the selection criteria.

For example, in the CHANGE PROCESS command, you can use the WHERE parameter with its PNUMBER subparameter to select a list of Processes by number and release all of them through the RELEASE parameter.

In the IUI, the WHERE parameter is represented by the list of selection criteria which precedes the command parameters themselves. For example, you see the following on the CHANGE PROCESS screen:

```
PROCESS NUMBERS:
  ==> _____   ==> _____    ==> _____   ==> _____
```

Additionally, you see lists for Process name and submitter to indicate the selection criteria. The Sterling Connect:Direct IUI builds the WHERE parameter for the command as it selects the fields from left to right on the screen.

Indicating output destination

The FILE, PRINT, TABLE, and DISPLAY parameters specify the form in which information is presented when the command produces output.

The following table describes each parameter.

Parameter	Description
FILE	Causes Sterling Connect:Direct to return the output as unformatted records to the temporary file. You indicate the name of your temporary file through the TMPDSN parameter of your SIGNON command. See "Using SIGNON through the Batch Interface" on page 46, for a description of the TMPDSN parameter. The statistics record macros in the Sterling Connect:Direct sample library provide the output record format. When Sterling Connect:Direct puts the unformatted records in a temporary file, other programs can process the records and customize reports for specific needs. You can use this functionality to process statistics records. You can archive a statistics file each day with a Generation Data Group (GDG). The Sterling Connect:Direct product provides sample job streams that extract statistics on a daily basis.
PRINT	Routes output of the command to the destination specified in the PRINT keyword of the SIGNON command. See "Using SIGNON through the Batch Interface" on page 46, for a description of the PRINT parameter.
TABLE or DISPLAY	Stores the output of the command in the Sterling Connect:Direct temporary file or file specified in the TMPDSN parameter and displays it upon successful completion of the command. (For more information on the TMPDSN parameter, see "Using SIGNON through the Batch Interface" on page 46.) The output is usually in tabular format. You can browse the output by using such commands as UP, RIGHT, or FIND. Press the **PF1** key for Help on how to browse the file.

Some screens offer additional output format, such as summary tables. These options are listed along with the display, file, and print options.

Chapter 2. The batch interface

You request Sterling Connect:Direct services in the batch environment through the batch interface program, DGADBATC.

When you submit a job stream that contains Sterling Connect:Direct commands such as SYSIN input, DGADBATC reads the input data stream and processes the requested functions. DGADBATC supports all Sterling Connect:Direct commands.

Batch interface job requirements

Batch interface jobs must meet certain requirements.

* You cannot use Process statements in the job stream. Use the SUBMIT command with a preexisting Process that contains Process statements. Unless MAXDELAY is used, DGADBATC processing of the SUBMIT is asynchronous. The batch job is notified of a successful SUBMIT, but not whether the PROCESS itself is successful.
* For DGADBATC, specify a region size of 0 megabytes (REGION=0M), especially if you specify MAXDELAY. If you specify a different region size, the DGADBATC job can ABEND with an 878 code.
* The Processes that you submit must be in the Sterling Connect:Direct Public Process Library, allocated to the DMPUBLIB DD statement in the DGADBATC JCL. If the Process is not in the Sterling Connect:Direct Public Process Library, use the DSN parameter of the SUBMIT command to indicate the location of the Process. See Building, Modifying, and Submitting Processes, for the DSN parameter description.

   The Sterling Connect:Direct commands that you use in the batch job stream must follow the syntax that is outlined in Writing Sterling Connect:Direct Commands.
* If you are not using the Extended Submit Facility (ESF), the DTFs that you sign on to must be active when you submit the DGADBATC job.
* You can specify ESF as a SIGNON command parameter. You can only issue SIGNON, SIGNOFF, and SUBMIT commands by using ESF. ESF is only available for Processes you submit on the local node.

Processing rules

The following rules apply to Sterling Connect:Direct commands and options in the DGADBATC job stream.

* The first command in the job stream must be a SIGNON command.
* The maximum command string length is 4,096 bytes. Each new Sterling Connect:Direct command in the job stream must start on a separate line. You can split a command across more than one line by using the continuation mark. However, the first word or string of the next command must start on a new line as shown in the following example.

```
SIGNON USERID=(LYNN) -
       NODE=CD.BOSTON
SEL STAT WHERE (PNUM=24)
SIGNOFF
```

* All Sterling Connect:Direct commands must start in column 2. Any data in column 1 is considered a label.

Sample job stream to run the batch interface

The following example shows a sample job stream to run the DGADBATC program. The job stream is located in $CD.SDGAJCL(DGADBATC).

```
//JOBNAME JOB (ACCNTNG),PROGRAMMER,TIME=2,CLASS=A,
//         MSGCLASS=A
//DGADBATC  EXEC PGM=DGADBATC,REGION=0M,PARM= 'YYSLYNNNNNN'
//STEPLIB   DD DISP=SHR,DSN=$CD.SDGALINK
//DMNETMAP  DD DISP=SHR,DSN=$CD.NETMAP
//DMPUBLIB  DD DISP=SHR,DSN=$CD.SDGAPROC
//DMMSGFIL  DD DISP=SHR,DSN=$CD.MSG
//DMPRINT   DD  SYSOUT=*
//SYSUDUMP  DD  SYSOUT=*
//SYSIN     DD  *
  SIGNON USERID=(USERID,-
    PASSWORD)
  SUBMIT PROC=COPY SNODE=CD.NODE.B  -
                HOLD=NO           -
                &NODE=PNODE       -
                &DSN1=DATASET1    -
                &DSN2=DATASET2    -
                &DISP1=RPL        -
                &DISP2=CATLG      -
                &COMPRESS=COMPRESS
  SEL PROC WHERE (QUEUE=A) TABLE
  SIGNOFF
/*
```

The following example shows the COPY Process submitted in the previous example as it is displayed in the Sterling Connect:Direct Public Process Library, $CD.SDGAPROC:

```
COPY       PROCESS
STEP1      COPY    FROM(&NODE DSN=&DSN1   DISP=SHR)    -
                   TO  (DSN=&DSN2  DISP=(&DISP1,&DISP2)) -
                   &COMPRESS
```

DDNAMES for DGADBATC

The DGADBATC program has both required and optional ddnames.

The following table describes the required and optional ddnames for the DGADBATC program shown in the sample job stream example.

DDNAME	Description
STEPLIB	Indicates the location of the library that contains the Sterling Connect:Direct load modules. This DD statement is required, unless the data set is in linklist.
DMNETMAP	Indicates the name of the network map for the node you are signing on to. You can also specify this name through the SIGNON command NETMAP parameter. If you use both methods, the network map file name specified on the SIGNON command takes precedence. This DD statement is optional.
DMPUBLIB	Indicates the library that contains the Sterling Connect:Direct Processes. This DD statement is required.
DMMSGFIL	Indicates the Sterling Connect:Direct message file that contains Sterling Connect:Direct messages. This DD statement is required.
DMPRINT	Indicates the destination of the job output from DGADBATC that collects output messages such as error messages. This DD statement is required. Always check DMPRINT output for verification of the processing that occurred.

DDNAME	Description
SYSPRINT	Indicates the destination of the job execution messages. This DD statement is optional.
NDMCMDS	Use to test new job streams. If specified, it prints an image of each command sent to Sterling Connect:Direct after processing all symbolic substitution and parameter overrides. This DD statement is optional.
SYSIN	Indicates the location of the Sterling Connect:Direct commands. You can represent it as a sequential file, PDS member, or instream data. If using a file, its DCB should be RECFM=FB,LRECL=80. This DD statement is required.

DGADBATC EXEC parameters

The DGADBATC EXEC parameters identify optional output formatting routines.

The characters in the PARM keyword in the DGADBATC EXEC statement are required parameters. The output is displayed in the data set defined by DMPRINT. In the following table which lists the positional DGADBATC EXEC parameters, Y stands for yes, N for no, S for short text, and L for long text.

Position	Value	Description
1	Y	Display the command string that executed.
	N	Do not display the command string that executed.
2	Y	Display the API return code and message ID.
	N	Do not display the API return code and message ID.
3	S	Display short message text when the API sends a return code of zero.
	L	Display long message text when the API sends a return code of zero.
	N	Do not display message text when the API sends a return code of zero.
4	S	Display short message text when the API sends a non-zero return code.
	L	Display long message text when the API sends a non-zero return code.
	N	Do not display message text when the API sends a return code greater than zero.
5	Y	Display the data that generated in the temporary file.
	N	Do not display the data that generated in the temporary file.
6	N	Reserved
7	N	Reserved
8	Y	If parameter 9 is specified as N, this parameters prints output from a SELECT STATS command to DMPRINT when a MAXDELAY Process fails with a return code other than 52.

Position	Value	Description
9	Y	Enables monitoring of the MAXDELAY Restart Process. Produces informational messages about monitoring and about the submitted and monitored Process number. For more information about MAXDELAY restart, see *Using the MAXDELAY keyword parameter to synchronize submitted Processes*
	N	Allows the MAXDELAY Process to execute without restart. The DGADBATC step is suspended until the Process completes execution.
10 Applies to MAXDELAY Restart only.	Y	If parameter 9 is specified as Y, the MAXDELAY progress is processed on a status report to the DMPRINT DD using the Select Process command. **Note:** Using this parameter may result in a large amount of data for DMPRINT DD.
	N	Suppresses the progress report.
11 Applies to MAXDELAY and MAXDELAY Restart.	Y	Forces the DGADBATC step to terminate on the first return code of 8 or greater.
	N	Allows the DGADBATC step to continue to process the commands in SYSIN even after a non-zero return code.

DGADBATC return codes with DGADCHLA

DGADBATC communicates with the Sterling Connect:Direct API through a high-level application interface program, DGADCHLA. The DGADCHLA program detects error situations while processing commands for DGADBATC, and issues special return codes based on these situations.

The return code from DGADBATC reflects the highest return code of all commands processed.

If you receive a return code of 4 or 8, check the DMPRINT DD output for the exact error that is encountered during command processing to DGADBATC.

A return code of 8 normally indicates an invalid parameter or keyword. A return code of 4 indicates that DGADCHLA found nothing for the command. For example, you could receive a return code of 4 if you issued a SELECT STATISTICS command for a Process with no statistics.

If you receive a DGADBATC return code greater than 8, check return codes for error information.

Return Code	Description
0000000C	A session is lost in a multiple session environment.
00000010	The master session is lost.
00000014	The master session is signed off successfully.
0000001C	A non-master signon failed.
00000020	High-level interface program, DGADCHLA, received an invalid number of input parameters.

Return Code	Description
00000024	The output specification included an invalid parameter.
00000028	Invalid pointer to the UICB is passed to DGADCHLA.

Using the MAXDELAY keyword parameter to synchronize submitted Processes

You can synchronize submitted Processes by coding the MAXDELAY keyword parameter in either the SUBMIT command or the PROCESS statement.

To suspend the execution of the DGADBATC job step until the submitted Process either completes or a specified interval of time elapses, use the MAXDELAY keyword.

For a detailed description of the MAXDELAY parameter, See the Submit Command in the Connect:Direct Process Language help.

Important: Because of the following restrictions, you might want to code MAXDELAY in the SUBMIT command instead of the PROCESS statement:

- If you code MAXDELAY in a PROCESS and submit it through the IUI, the submit will fail with the message SCBI220I MAXDELAY not supported feature for IUI.
- If you use the MAXDELAY PROCESS statement keyword, the message SCBI221I MAXDELAY not supported for ESF submits is displayed when the DTF is down and the Process does not submit.

To place a job stream in a wait status for a specified period and set return codes that indicate step or task completion, use the DGADWAIT program as a batch step or a RUN TASK. For more information, see Run Task Wait Program (DGADWAIT).

The following example shows the MAXDELAY keyword that is coded in the SUBMIT command.

```
//SYSIN    DD  *
 SIGNON USERID=(USER01,PASSWRD)
 SUBMIT PROC=PROCAAA MAXDELAY=UNLIMITED
 SIGNOFF
/*
```

You can also place the MAXDELAY keyword in the PROCESS statement for PROCAAA, as in the following example.

```
PROCAAA  PROC SNODE=REMOTE.NODE.B MAXDELAY=UNLIMITED
STEP01   COPY TO   (DSN=USER01.TESTDATA.OUTPUT    -
                    DISP=RPL                       -
                    SNODE)                         -
              FROM (DSN=USER01.TESTDATA.INPUT     -
                    DISP=SHR                       -
                    PNODE)
```

SIGNON Parm Options

When the DGADBATC parameter nine enables the MAXDELAY Restart, it also enables new SIGNON command parameters, MAXWAIT and MAXRETRY. These

parameters control how often the API issues commands to monitor MAXDELAY processes and how many times the API attempts to restart a failed API session while monitoring a MAXDELAY process.

MAXRETRY defines the number of attempts to restart the API session if a session failure occurs after a successful SUBMIT using MAXDELAY. If the failure occurs before SUBMIT returns the Process name and Process number, no restart will be attempted. If the MAXRETRY count is exhausted without successfully restarting the session, DGADBATC terminates with MSGID=SCIB024I. The value for nn has a range of 1 to 20, with a default value of 3.

MAXWAIT defines the interval between commands used to monitor execution of a MAXDELAY RESTART process. Also, it defines the delay between restart attempts after a failed API session. The value for nn specifies seconds to wait and has a range of 0 (no wait) to 60 (1 minute), with a default value of 10 seconds.

Example:
```
SIGNON USERID=(joe,joepwd) -
     MAXRETRY=nn     -
     MAXWAIT=nn
```

MAXDELAY Restart

MAXDELAY Restart allows the API to respond to API session failures while waiting for a MAXDELAY Process to complete and is only valid for processes submitted with the MAXDELAY parameter and activated using new DGADBATC PARM values. Without the new PARM values, there is no change in behavior for MAXDELAY or the API.

When activated with the new DGADBATC PARM values, the C:D Server will return Process name and Process number immediately for processes submitted with the MAXDELAY parameter. The API monitors process execution using Select Process commands until the process is no longer active in the queues. When the process is no longer in the queues, the API issues a Select Statistics command to determine process disposition.

Depending on process disposition, the MAXDELAY parameter requested, and DGADBATC PARM options, the API will either proceed to the next command or issue commands to delete the process and terminate the API session.

If a API session failure occurs while monitoring the MAXDELAY process, the API will attempt to restart the session then continue monitoring the process. API session restarts are controlled by new parameters specified or defaulted from the SIGNON command.

DGADBATC Parm Options

Three DGADBATC PARM options activate and control the MAXDELAY RESTART. These values are represented as Y or N values in positions nine, ten and eleven of the PARM string.

Parameter nine enables or disables the MAXDELAY RESTART. To enable MAXDELAY RESTART and shift the MAXDELAY processing to the API, set this parameter to Y. The default for this parameter is N, causing the MAXDELAY, as described above, to be used.

Parameter ten allows the API to display to DMPRINT, a process progress report from the Select Process commands used to monitor the process. To enable this progress report, set this parameter to Y. The default for this parameter is N.

Important: Setting the tenth parameter to Y may produce additional output to DMPRINT for long running MAXDELAY processes. You may want to consider utilizing other facilities, such as the IUI or Sterling Control Center to monitor the progress of the process.

Parameter eleven provides control over the remaining commands within SYSIN in the event that a SUBMIT with MAXDELAY terminates with a non-zero return code. When specified as Y, this parameter forces an EOF or EOJ of the API without attempting to execute the remaining commands in SYSIN. This value defaults to N.

For example, if the SYSIN has 100 SUBMIT commands using MAXDELAY and the second submit fails with a non-zero return, with parameter eleven specified as Y the remaining 98 submit commands will not execute.

```
 //STEP1    EXEC PGM=DGADBATC,PARM='yyllyyyyYNN'
```

"yyllyyyy" are the old 8 parameters and YNN represent the new parameters.

MAXDELAY Limitations and Restrictions

There are many considerations to take into account when using PROCESS submission and MAXDELAY. These considerations include:

- ESF and MAXDELAY are mutually exclusive and when using an ESF session, the only command possible is SUBMIT and once it is completed, using MAXDELAY is no longer possible. An ESF submit occurs when the API cannot establish the connection to the Server for any reason, such as when the Server is down or when there is not enough SNA APPLID defined in the NETMAP; in these cases, it is the responsibility of the API to construct and assign the process number, and write the process to the TCQ.

- When using a MAXDELAY parameter of UNLIMITED, processes submitted that are not immediately eligible for execution are subject to the intelligent retry logic when a PROCESS to the same SNODE cannot establish a session. These processes will be placed into the HOLD queue while the failing process retries. If this failing process exceeds its maximum retry, all processes for that same SNODE with be placed into the HOLD and will require manual intervention to run. This will cause the API to hang while not producing your desired results.

- If the connection between the API and the C:D Server is lost due to a time out or other network issues, the API is terminated without any knowledge of the results of the submitted process.

How MAXDELAY Affects PROCESS Submission

When the Server constructs and writes the PROCESS to the TCQ , the Server does not communicate the results or process number back to the API; instead, it places the API in a WAIT status. The API waits until the PROCESS completes its execution; it does not know the process number assigned. The API remains in WAIT status and is dependent on the positional parameter defined with the MAXDELAY, unlimited, queued, time value or 0 (zero).

If set as unlimited or MAXDELAY UNLIMITED, the API connection will be in WAIT status until the PROCESS completes execution and is removed from the

TCQ. In the event of an error that causes that PROCESS to be placed into the HOLD queue, the API connection will remain in WAIT until manual action is taken for that held PROCESS.

When queued, time value, or MAXDELAY QUEUED, the API connection will be in WAIT until the PROCESS completes execution or is removed from the TCQ or the time interval expires. If the PROCESS executes longer than that specified time, or is placed into the HOLD queue the API will not get the complete or expected results. If 0 (zero) or MAXDELAY ZERO, the API connection will be in WAIT until the PROCESS completes execution and is removed from the TCQ. However, if an error occurs that would normally place the PROCESS into the HOLD queue, the MAXDELAY ZERO PROCESS is removed from the queue and the API is posted complete with an error. An API connection cannot be in WAIT forever with MAXDELAY UNLIMITED.

MAXDELAY Parm Options

The API applies the MAXDELAY restrictions depending on the MAXDELAY option requested, for example:

```
MAXDELAY = hh:mm:ss or QUEUED
```

If the process has not completed execution in the interval defined, the DGADBATC is terminated with an appropriate message and a non-zero return code, similar to current MAXDELAY processing, for example:

```
MAXDELAY = UNLIMITED or 0 (zero)
```

When the process completes, the results are reported to DMPRINT and the API proceeds to the next command in the SYSIN input. If the execution causes the process to be placed in the HOLD queue, notification will be reported to DMPRINT and the process will be deleted from the queue and the DGADBATC terminated with an appropriate message and non-zero return code, similar to the current MAXDELAY=0 processing.

Please note this is a change in behavior for MAXDELAY=UNLIMITED and that the process will be deleted similar to MAXDELAY=0.

Chapter 3. The Interactive User Interface (IUI)

Issue Sterling Connect:Direct commands using the IUI through two menus.

Menu	Description
The Primary Options Menu	Enables you to invoke screens where you can create and submit Processes, view statistics about your Processes, control your Processes in the Transmission Control Queue (TCQ), view your Sterling Connect:Direct environment, access the message file, sign on, swap nodes, and sign off Sterling Connect:Direct. This option is available to all users, and is described in this book.
The Administrative Options Menu	Enables the Sterling Connect:Direct product administrator to perform maintenance to the Type file, the Authorization file, and the network map and to perform functions such as selecting and flushing tasks, initializing traces, typing native commands, displaying storage utilization, requesting traces, and stopping Sterling Connect:Direct.

Note: You can also use the IBM® Sterling Connect:Direct Browser User Interface to perform some of the procedures in this chapter.

Primary Options Menu

The Primary Options Menu contains the Sterling Connect:Direct functions which are available to most users.

```
                        IBM Sterling Connect:Direct for z/OS
 CSG.PROD390                      PRIMARY OPTIONS MENU
 CMD ==>
  Connect:Direct SIGNON process completed.
 SELECT ONE OF THE FOLLOWING:
                                                            More:    +
   CF  - COPY A FILE                            ***********************
   SB  - SUBMIT A PREDEFINED PROCESS            *                     *
   DF  - DEFINE A PROCESS USING ISPF EDIT       * TODAY: 02.24.2011   *
   SS  - VIEW STATISTICS FOR A COMPLETED PROCESS * TIME:  09:04       *
   MB  - SUBMIT A BATCH TO Connect:Enterprise for z/OS *              *
   CP  - CHANGE CHARACTERISTICS OF A PROCESS    ***********************
   DP  - DELETE A NON-EXECUTING PROCESS
   FP  - FLUSH AN EXECUTING PROCESS
   SP  - VIEW DATA ABOUT AN EXECUTING PROCESS


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      │                                                          │
      └─────────────────────────────────────────────────────────┘
```

To request a function, type its option identifier on the command line (CMD==>) and press **Enter**. The following options enable you to create and submit Processes to the TCQ:

Option	Description
CF	Displays the main Copy File Menu where you can set up a COPY Process.

17

Option	Description
SB	Displays the Submit Process screen where you can submit a predefined Process.
DF	Displays the Process Definition Screen where you can define or update a Process using the ISPF edit function and then submit the Process.

See Building, Modifying, and Submitting Processes for more information.

The following option enables you to view statistics related to completed Processes:

Option	Description
SS	Displays the Select Statistics screen where you can examine the system statistics log records with search criteria applied and select the output to go to a file, table, or printer. See Process Results and Statistics for more information on the Select Statistics screen.

The following options enable you to delete, flush, view, suspend, and change Processes in the TCQ:

Option	Description
CP	Accesses the Change Process screen where you can change the priority and class of a Process and the status of the Process in the TCQ. See Modifying a Process in the TCQ with CHANGE PROCESS for more information on the Change Process screen.
DP	Displays the Delete Process screen where you remove a nonexecuting Process from the TCQ.
FP	Displays the Flush Process screen where you can remove an executing Process from the TCQ.
SP	Displays the Select Process screen where you view the status of Processes submitted (placed in the TCQ) for execution. See Controlling Processes with Commands for information.
PS	Displays the Suspend Process screen where you put an executing Process in the Hold TCQ. See Controlling Processes with Commands for information.

The following options enable you to view your Sterling Connect:Direct environment:

Option	Description
MSG	Displays the Message Maintenance screen where you can display Sterling Connect:Direct messages or print a summary or full report of the Sterling Connect:Direct message file. See Viewing and Printing Messages Using Different Criteria for more information on the Message Maintenance screen.
SD	Displays the Signon Defaults screen where you can examine and change your signon default values. See Signing On to Sterling Connect:Direct for z/OS for more information on the Signon Defaults screen.
NM	Displays the Select network map screen, where you choose for display or print the defined nodes from the network map file and translate TCP/IP host names and network addresses.

Option	Description
WHO	Displays the User Information screen, which indicates your user ID, user node, version, release, maintenance level of Sterling Connect:Direct and file information about your current session. See Signing On to Sterling Connect:Direct for z/OS for more information on viewing current sign on parameters.
AUTH	Displays the User Authorization screen. This screen displays commands you are authorized to use. See Displaying Your User Authorization for more information.

The following options enable you to sign on and swap among multiple sessions:

Option	Description
MS	Displays the Multiple Session Signon screen where you sign on to another DTF session. See page 46 for information.
SW	Displays the Swap/Display User Sessions screen where you view all the multiple sessions that you are signed on to and swap sessions. See Signing On to Multiple Sessions for more information on the Multiple Session Signon screen.

The following options display other menus:

Option	Description
SPF	Displays an ISPF/PDF session, one level beneath Sterling Connect:Direct panels. See Navigating the Interactive User Interface for information on branching to an ISPF/PDF session.
ADMIN	Displays the Connect:Direct Administrative Options Menu with command options used for administering the system.

Navigating the Interactive User Interface

You can move from screen to screen with branch commands and function keys.

Using Branch Commands

Branch commands enable you to navigate quickly to a specific screen without returning to the Menu. You can type the branch command on the command line at the top of the screen (CMD==>) or on any input line preceded by ==>. To execute the branch, type = followed by the ID of the screen you want to branch to and press **Enter**.

For example, to go to the Select Process (SP) screen, type **=SP** on the command line and press **Enter**.

Note: The equal sign (=) is not required before an option on the command line of the Signon screen or the Primary Options Menu.

The following table describes two additional branch commands that you can use.

Command	Description
=ADMIN.xx where xx is the screen ID	Enables you to move to an administrative screen from a primary screen. For example, to branch from the WHO screen (which is an option of the Primary Menu) to the INQ screen (which is an option of the Administrative Menu), type **=ADMIN.INQ** at the command line of the WHO screen.
SPF.x where x is the SPF option that you want to display	The SPF option on the Primary Options Menu branches to the ISPF/PDF session, one level beneath the Sterling Connect:Direct panels. If you want to bypass the ISPF/PDF menu, type the **SPF** command with a period and the option. For example, to use the BROWSE function within ISPF/PDF, type **SPF.1** on the command line. The SPF command is valid on each Sterling Connect:Direct screen command line.

Using the PF Keys

The PF keys listed in the following table are some of the programmed default definitions that you can use with Sterling Connect:Direct screens. The ISPF user-defined PF keys are supported.

Key	Result
PF1	Displays online field Help or long error message
PF3	Returns to the previous screen
PF4	Returns to the Primary Options Menu
PF7	Scrolls up
PF8	Scrolls down
PF10	Scrolls right
PF11	Scrolls left

Browsing the IUI Display

The TABLE or DISPLAY parameters which are options at the bottom of most Selection screens specify that the output of the selection command is stored in the Sterling Connect:Direct temporary file and then displayed upon successful completion of the command. The output is usually in tabular format. Use the commands, UP, RIGHT, or FIND, to browse the output. Press the **PF1** key to see extensive Help on how to browse the file.

Displaying Your User Authorization

Use the User Authorization screen to determine commands you are authorized to execute. To access the screen, select the **AUTH** option from the Primary Options Menu.

```
CSG.PROD390                USER AUTHORIZATION                          13:30
CMD ==>
          AUTH  COMMAND                        AUTH  COMMAND
          --------------------------           --------------------------
     1) YES - CHANGE PROCESS             15) YES - SELECT TASK
     2) YES - DELETE PROCESS             16) YES - SELECT TYPE
     3) YES - DELETE TYPE                17) YES - SELECT USER
     4) YES - DELETE USER                18) YES - SUBMIT PROCESS
     5) YES - FLUSH PROCESS              19) YES - SUBMIT WITHIN PROC
     6) YES - FLUSH TASK                 20) YES - SUSPEND PROCESS
     7) Y/Y - INSERT/UPDATE TYPE         21) YES - STAT COMMAND
     8) Y/Y - INSERT/UPDATE USER         22) YES - EVENT COMMAND
     9) YES - MODIFY (TRACE)             23) YES - VIEW PROCESS
    10) YES - STOP Connect:Direct        24) YES - PERFORM CRC OVERRIDES
    11) YES - UPDATE NETWORK MAP         25) NO  - CONFIRM DELETE
    12) YES - SELECT NETWORK MAP         26) NO  - CONFIRM DEL OFF
    13) YES - SELECT PROCESS             27) YES - SECURE+ ADMIN
    14) YES - SELECT STATISTICS          28) NO  - UPDATE INITPARM
```

YES or Y means you are authorized, NO or N means you are not authorized, and SUB means you are authorized only if you submitted the Process.

To branch to an authorized function, type the corresponding number on the command line.

Getting Help

Sterling Connect:Direct provides a Help facility which describes the parameters that you can type through the IUI.

Procedure

- Access the Help information by typing **HELP** on the command line and press **Enter** or pressing the **PF1** key.
- Press **Enter** to continue viewing the Help screens.
- When you have viewed the screens, you can either press **PF1** to continue to the tutorial or press **PF3** to return to the screen you branched from.

Operator Tables

The Operator Table is available only under the IUI. This display enables you to monitor and control Processes. It is accessed through the SELECT PROCESS command and provides a summary of PNODE Processes in the TCQ. See Viewing and Controlling a Process through the Operator Table for a description and samples of the Operator Table.

```
node.name                                                  Row 1 to 6 of 6
-----------------------------OPERATOR TABLE------------------
==> Q                                                    SCROLL ===>  PAGE
OPTION    PNAME         PNUMBER     SUBMITTER.NODE-- OTHER.NODE------ QUEUE
      SERVER      USERID
      -------------------------------------------------------------------------
          SEND100M      18          CD.NODE1         CD.STD45         EX  EX
                 USER01
          SEND50K       20          CD.NODE2         10.20.129.151    ¬P  EX
                 USER01
          COPYPAY       25          CD.NODE3         CD.STD44         ¬P  EX
                 USER01
          BKUPDSK1      2           CD.NODE4         10.20.129.141    ¬P  EX
                 USER01
          BENCH50       13,218      CD.NODE5         CD.STD45         ¬P  EX
                 USER01
          COPYCF        21          CD.NODE6         CD.STD45         HO  HI
****************************** Bottom of data ******************************
                 USER01
```

You can press **Enter** to refresh the display and monitor the progress of the
Processes displayed on the screen. The following table describes the commands
that you can issue from the Operator Table.

Command	Description
H	Hold
D	Delete
R	Release
P	Suspend
F	Flush
V	View Processes
S	Show Detail

Type the option you want in the OPTION column next to the name of the Process
as shown in the previous screen.

Note: The Executing Queue version of the Operator Table displays the executing
Processes only; therefore, the options available to it are limited to the Suspend (P)
and Show detail (S) only.

Messages

You may encounter two types of messages: ISPF/PDF and Sterling Connect:Direct
messages.

Message Type	Description
ISPF/PDF messages	Display at the top of the screen when the value you typed for a field does not pass the editor. You get this kind of message if, for example, you type an alphabetic character in a numeric field. Press **PF1** to see a longer explanation of the error or type **HELP** on the command line and press **Enter**.

Message Type	Description
Sterling Connect:Direct messages and sense codes	Contain a short and long text which explain an error you get when you submit your command. This type of error is indicated by a message ID with the format xxxxnnnx, for example, SVSL003I. You get this error, if, for example, you type an invalid Process name on a SELECT PROCESS command.
	Sterling Connect:Direct generates a sense code to indicate a connection error involving a netmap. The format for a sense code is SENSnnnn where nnnn is the four-digit number representing the sense code.

Message Example

In the following example, the user typed ABC for Process Number, a numeric field, resulting in the message PROCESS NUMBER in the upper right corner. Pressing **PF1** produces the longer message "ABC" IS INVALID...

```
node.name                     SELECT PROCESS                  PROCESS NUMBER
 CMD ==> O                                                              hh:mm
 "ABC" IS INVALID; MUST BE IN THE RANGE 0 - 199,999.
   CMD:  O ... OPERATOR TABLE  S ... OPERATOR TABLE/EXEC QUEUE STATUS
         P ... PRINT REPORT    D ... DISPLAY REPORT    V ... VIEW PROCESS
   QUEUE:           ==> _  (A-ALL,W-WAIT,E-EXECUTE,H-HOLD,T-TIMER)
   PROCESS NUMBERS:  ==> _____     ==> _____     ==> _____     ==> _____
   PROCESS NAMES:    ==> _____   ==> _____   ==> _____   ==> _____
   SERVER NAMES:     ==> _____   ==> _____   ==> _____   ==> _____
   STATUS:     (HO,HR,HI,HE,HC,HP,HS,RH,RA,WC,WX,WT,H,R,W)
                     ==> __         ==> __         ==> __         ==> __
   DESTINATION NODES:
                     ==> _____       ==> _____
                     ==> _____       ==> _____
   USER ID:       NODE ID:
     ==> _____
                 ==> _____
     ==> _____
                 ==> _____
   DO YOU WANT VALUES FOR THIS REQUEST TO BE CASE SENSITIVE? ==> NO
```

The following is an of the short text message that is displayed at the top of the screen.

```
No process(es) found matching the search criteria.
```

The long text provides a more detailed explanation of the message and can also include the system action and a suggested response. Press **PF1** to see the long explanation of the error or type **HELP** or **M** on the command line and press **Enter**. The following figure shows a sample message.

```
 node.name         Connect:Direct MESSAGE DISPLAY          hh:mm
 CMD ==>
  MSGID  ==> SVSL003I
  MODULE ==> DMVSOPEN
  Copy requested DISP=(,CATLG) to already cataloged dataset.
 The PROCESS COPY step requested a DISP=(,CATLG) on the TO
 clause of the COPY statement. The requested dataset already
 exists as a cataloged dataset.
 System Action. The PROCESS COPY step is terminated with a
               completion code of 8.
 Response: Either correct the COPY dataset or uncatalog the
           existing dataset and re-submit the PROCESS.
```

The Statistics Summary screen, an option of the SELECT STATISTICS command, also gives you the option of branching to the message screen associated with a failed Process. Type an **M** next to the Process name which failed (indicated by an *), and Sterling Connect:Direct displays the extended message.

Messages in a Sterling Connect:Direct/Plex Environment

In a Sterling Connect:Direct/Plex environment, messages can originate from any Sterling Connect:Direct Server or from the Sterling Connect:Direct Manager. The system administrator can define a 2-character message ID that identifies which Sterling Connect:Direct/Plex member originated the message. This message ID is displayed after the message number, as in the following example. The message ID is highlighted in bold in this example.

```
SVTM055I S1 SESSION (001) ESTABLISHED WITH       SNODE=SC.DUB.OS390
SVTM055I S1 SESSION (001) ESTABLISHED WITH       PNODE=SC.DUB.OS390
SVTM036I S1 PROCESS STARTED   MVS2MVST(      1) PNODE=SC.DUB.OS390
SVTM036I S1 PROCESS STARTED   MVSM2VST(      1) SNODE=SC.DUB.OS390
```

The system administrator defines the message ID using the CDPLEX.MSGID initialization parameter. For more information, see *Customizing Sterling Connect:Direct* in the *IBM Sterling Connect:Direct for z/OS Administration Guide* and search for .

Viewing and Printing Messages Using Different Criteria
About this task

You can use the Message Maintenance screen to view or print Sterling Connect:Direct Message Text. You can display messages by message ID if you need to look up an error message in your Process statistics, or if you have a batch job that failed.

Procedure
1. Type **DIR** at the COMMAND prompt at the bottom of the screen to display the directory of the module messages.
2. From the Primary Options Menu, select option **MSG**. The MSG command is available only through the IUI. The following sample screen is a combination of two panels to show the prefixes used in Sterling Connect:Direct messages:

```
Connect:Direct MESSAGE LOOKUP      2 Members processed
                                                   DATE => yyyy/mm/mm
ENTER OPTION ==> _                                 TIME => hh:mm
==============================================================================
                              OPTIONS
                            ===========
1 = DISPLAY MESSAGE TEXT BY MESSAGE ID
2 = DISPLAY LIST OF ENTRIES (OPTIONALLY BY MODULE)
   MODULE==> _____
3 = PRINT SUMMARY REPORT
4 = PRINT FULL REPORT
The following is the general basis for C:D messages:
    MAINFRAME: z/OS, VM, VSE, Security (ACF2, RACF, TSS), etc.
 MESSAGE                          MESSAGE
 PREFIX      Applies to:          PREFIX       Applies to:
 N xxx       CICS API failures    Q xxx        CICS API failures
 RACF xxxx   Security system MSGs S xxxxxxx    C:D Mainframe msgs
 SENS nnnn   NETMAP sense code    U nnnn       z/OS User ABEND code
 CSPx xxxx   Secure Plus          MBCS xxxx    Multi-Byte Character Set
                            NON-Mainframe
 MESSAGE                          MESSAGE
 PREFIX      Applies to:          PREFIX       Applies to:
 A xxxxxxx   i5/OS or OS/400      CCUP xxxx    Control Center
 EMSL xxxx   HP NonStop or Tandem FSLD xxxx    HP NonStop or Tandem
 IOXT xxxx   HP NonStop or Tandem J xxxxxxx    C:D for the Web
 L xxxxxxx   Windows, SI, or Select V xxxxxxx  OpenVMS
 X xxxxxxx   Linux, UNIX, or Stratus
```

3. Type **1** on the command line and press **Enter**. The Message Display Screen appears.

4. Type the message ID and press **Enter**. (To check a sense code, type SENSnnnn where nnnn is the four-digit number representing the sense code and press Enter.) The full text of the message (or sense code) is displayed. In the following example, the information associated with Message SCBI190I is shown.

```
Connect:Direct MESSAGE DISPLAY
                                                   DATE => yyyy.mm.dd
                                                   TIME => hh:mm

 MESSAGE ID==> SCBI190I
 MODULE    ==> DMCBSUBM
 ==============================================================================
 SHORT TEXT==> Process specified not in process library.
 LONG TEXT:
    LINE 1 ==> This message may be generated for the following reasons:
    LINE 2 ==>
    LINE 3 ==> 1) The member specified is not in the public process library
    LINE 4 ==>    or in the PDS specified in the 'DSN=' keyword.
    LINE 5 ==> 2) The process library has not been properly concatenated.
    LINE 6 ==>
    LINE 7 ==>
    LINE 8 ==>
    LINE 9 ==>
    LINE 10==> SYSTEM ACTION: Return to invoker with RC=8.
    LINE 11==>
    LINE 12==> RESPONSE: Verify the above is correct and resubmit process.
 COMMAND  ===> _____     ENTER 'DIR' TO DISPLAY THE DIRECTORY
```

Viewing a Message List

You can display a list of all Sterling Connect:Direct messages or a list of messages generated by a module.

Procedure

1. From the Primary Options Menu, select option **MSG**.

   Note: The MSG command is available only through the IUI.

2. Type **2** on the command line, specify a Module (optional), and press **Enter**. The Message Summary screen appears. (If you do not specify a module name, all messages are displayed.) In the sample below, the module, DMINIT2, was specified.

```
------------------Connect:Direct MESSAGE SUMMARY------------------ Row 1 of 31
CMD ==>                                                   SCROLL ===>  PAGE
  MSG ID   MODULE   MESSAGE
  CSPN010E DMINIT2  SIGNATURE.DSN.BASE Initialization Parameter Invalid
  CSPN011E DMINIT2  SIGNATURE.FILE.PAIRS Initialization Parameter Invalid
  CSPN012E DMINIT2  SIGNATURE.DSN.BASE and/or SIGNATURE.FILE.PAIRS missing
  CSPN013E DMINIT2  SECURE+ Interface Module not found
  CSPN116E DMINIT2  PARM FILE VALIDATION FAILURE
  CSPN117E DMINIT2  SECURE.DSN IS NOT A VSAM KSDS
  CSPN118E DMINIT2  SECURE+ INTERFACE MODULE NOT FOUND
  SCFS006I DMINIT2  AUTOLOG OF CMS SERVER FAILED
  SITA137E DMINIT2  POSIX Init Parm conflict.
  SITA169I DMINIT2  SECURE.DSN Data set not found.
  SITA170I DMINIT2  TRACE.BUFFER outside 0-999 range, TRACE.BUFFER=2 assumed.
  SITA185I DMINIT2  SITA185I (VSE) TCP.NAME VALUE OVERRIDEN BY SYSPARM.
  SITA190I DMINIT2  Secure+ Initialization failed, Secure No Override No
  SITA278I DMINIT2  All nodes are quiesced, QUIESCE=YES specified
  SITA338I DMINIT2  Asset Protection Failure.
  SITA339I DMINIT2  Number of licensed copies has been exceeded.
  SITA604I DMINIT2  Invalid option specified for SNA paramater.
  SITA607I DMINIT2  SNA=YES but no VTAM APPLID is available.
  SITA609I DMINIT2  VTAM services disabled.
  SITA610I DMINIT2  Both SNA and TCP are NO, can not continue.
  SITA641W DMINIT2  Level of PDSE.SHARING is not supported.
```

   Note: You must specify the "old" modules names used in versions prior to the 5.1 release of Sterling Connect:Direct for z/OS. For information, go to *IBM Sterling Connect:Direct for z/OS Release Notes* and search for *Upgrading to Sterling Connect:Direct for z/OS Version 5.1*.

3. Type an **S** next to the message ID for the full Message Display screen.

Printing Messages

You can print the Sterling Connect:Direct messages file in summary form or in detail, including the long form of the message text.

Procedure

1. From the Primary Options Menu, select option **MSG**.

   Note: The MSG command is available only through the IUI.

2. Do one of the following:
   - Type **3** on the command line for a summary report, and press **Enter**.
   - Type **4** on the command line for a detail report, and press **Enter**.

     Specify the sysout class for the message file print output and the ID for a remote printer. If you want your output to go to a preallocated data set instead, specify the name of the data set. You must enclose the data set name in single quotes and give it the following DCB attributes.

     `DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0`

Chapter 4. The Application Program Interface

The high-level application-program, DGADCHLA, handles communication between the Sterling Connect:Direct for z/OS API and any application program that provides Sterling Connect:Direct with command strings for batch processing. You can write an application program following the rules described in the following sections.

You can also process Sterling Connect:Direct command strings by using the DGADBATC batch interface program. For more information on using DGADBATC, refer to Sample Job Stream to Run the Batch Interface.

Both DGADCHLA and DGADBATC are in $CD.SDGALINK.

You can design user-written applications that have an interface to Sterling Connect:Direct. You can write the applications in any computer language, including PL/I, Assembler, and COBOL. The following samples are in the $CD.SDGASAMP library:

Application Name	Description
DGAXSAMP	Assembler language user-written application, called
DGAXPLIS	PL/I language user-written program, called
DGAXCOBS	COBOL language user-written program, called

Note: All API programs run in 31-bit mode and they must call DGADCHLA in 31-bit mode. You can either link your program as AMODE 31, or establish 31-bit addressability before calling DGADCHLA. See the sample program DGAXSAMP for an example of establishing 31-bit addressability and returning to 24-bit addressability after the call to DGADCHLA. Also execute DGADCHLA with a BASSM rather than a BALR. Macro GENCALL is provided in the sample library to perform a BASSM. See the sample program DGAXSAMP for an example.

DGADCHLA Program

The DGADCHLA program communicates with the API through a control block interface called the User Interface Control Block (UICB). DGADCHLA works in the following sequence:

1. DGADCHLA accepts Sterling Connect:Direct command strings from an application program and passes the strings to the API.
2. The user-written application requests DGADCHLA to perform output formatting routines after returning from the API. These formatting routines display information about the Sterling Connect:Direct command that just completed processing.
3. After execution of each command, DGADCHLA issues a return code reflecting the status of API communications.

Required Parameters for DGADCHLA

DGADCHLA requires Sterling Connect:Direct to pass three parameters on every invocation from an application program. The parameters, in order, are the following:

Parameter	Description
CMDLEN (first parameter)	Points to a variable-length character string (up to 4096 bytes) that contains the string length in the first halfword and the command text in the remainder of the string. Just as in DGADBATC, the first command string must be a SIGNON and the last command must be a SIGNOFF. The following figure shows the command string format.
UICB@ (second parameter)	Points to a fullword pointer of zeroes, which is filled in with the UICB address by DGADCHLA when DGADCHLA receives the SIGNON command from the application program. Information in the UICB can now be interrogated by the application program, if necessary. The UICB@ field is cleared and filled again with zeroes when DGADCHLA receives the SIGNOFF command.
OUTSPECS (third parameter)	Points to a 7-character string containing the output format specifications. The output is written to the file name defined by DMPRINT. Each specification is one character long. All output generated as a result of these specifications is routed to a DDNAME of DMPRINT. No output is created if the DDNAME is not present.

The following table describes the OUTSPECS output format specifications:

Field	Values	Meaning
1	Y	Displays the command string that executed.
	N	Does not display the command string that executed.
2	Y	Displays the API return code and message ID.
	N	Does not display the API return code and message ID.
3	S	Displays the short message text when a return code of zero comes from the API.
	L	Displays long message text when a return code of zero is received from the API.

Field	Values	Meaning
	N	Does not display message text when a return code of zero is received from the API.
4	S	Displays the short message text when a nonzero return code comes from the API.
	L	Displays long message text when a nonzero return code comes from the API.
	N	Does not display message text when a return code greater than zero comes from the API.
5	Y	Displays the data generated in the temporary file.
	N	Does not display the data generated in the temporary file.
6	Y	Displays the string that identifies UICB fields which the Extract feature returns information about.
	N	Does not display the string that identifies UICB fields which the Extract feature returns information about.
7	Y	Displays a dump of the area that received output from the Extract feature.
	N	Does not display a dump of the area that received output from the Extract feature.
8	Y	If parameter 9 is specified as N, this parameters prints output from a SELECT STATS command to DMPRINT when a MAXDELAY Process fails with a return code other than 52.

Field	Values	Meaning
9	Y	Enables monitoring of the MAXDELAY Restart Process. Produces informational messages about monitoring and about the submitted and monitored Process number. For more information about MAXDELAY restart, see *Using the MAXDELAY keyword parameter to synchronize submitted Processes*
	N	Allows the MAXDELAY Process to execute without restart. The DGADBATC step is suspended until the Process completes execution.
10

Applies to MAXDELAY Restart only. | Y | If parameter 9 is specified as Y, the MAXDELAY progress is processed on a status report to the DMPRINT DD using the Select Process command.

Note: Using this parameter may result in a large amount of data for DMPRINT DD. |
| | N | Suppresses the progress report. |
| 11

Applies to MAXDELAY and MAXDELAY Restart. | Y | Forces the DGADBATC step to terminate on the first return code of 8 or greater. |
| | N | Allows the DGADBATC step to continue to process the commands in SYSIN even after a non-zero return code. |

The following example shows the most common specifications for this parameter.

OUTSPECS DC C'YYSLYNNNNNN'

Positions 6 and 7 are not used by DGADCHLA unless the extract feature of DGADCHLA is used, as explained in the next section.

Extracting Return Codes

If you want the Return Code from the processed Sterling Connect:Direct command, you must use the extract feature. This feature enables you to extract certain UICB fields after Sterling Connect:Direct command execution.

To activate the optional extract feature, the program must pass the following additional parameters to DGADCHLA:

Note:

DGADCHLA specifies either the first three required parameters or all eight parameters which include these parameters related to return codes. If an incorrect number of parameters is passed, DGADCHLA issues an error message and assigns a return code of 20. Processing cannot occur during this time.

Parameter	Description
EXTSTRLN (fourth parameter)	The UICB extract string.The user-supplied application must set up an extract string identifying the UICB fields to extract. The string consists of a halfword length field containing the length of the extract string (excluding the itself halfword length field), followed by the first UICB field to extract, a space, the second UICB field to extract, a space, and so on. A sample extract string follows: You can only specify the UICB fields listed in the extract string. If you encounter an invalid keyword in the string, the extract routine terminates execution, and no more information is extracted. The application is informed of the error by means of the EXTRC, EXTMSG, and INVALKEY parameters. If field 6 of the OUTSPECS parameter is set to Y, the extract string is written to the file defined by DMPRINT.
EXTAREA (fifth parameter)	Where the UICB extracted information is placed. The application is responsible for ensuring that the area is large enough to accommodate the information requested by the extract string. If field 7 of OUTSPECS is set to Y, the extract string is written to the file defined by DMPRINT. The following shows how to calculate required storage for the extract area necessary for the extract string in the figure shown for the EXTSTRLN parameter.
EXTRC (sixth parameter)	A 4-byte binary field containing the extract feature return code.
EXTMSG (seventh parameter)	An 8-character field containing an 8-character message ID from the extract feature.
INVALKEY (eighth parameter)	An 8-character field containing an invalid extract string keyword. DGADCHLA relays the location of the extract string error to the application in this parameter. This field contains the invalid item in the extract string if EXTRC is nonzero.

The following table shows how to calculate required storage for the extract area necessary for the extract string in the figure shown for the EXTSTRLN parameter:

UICB Field	Data Definitions	Storage
UITMPDDN	Character length of 8	8 bytes
UIRTNCD	Fullword	4 bytes
UIPROC#	Fullword	4 bytes
UIMSGID	Character length of 8	8 bytes

UICB Fields

The following table shows the valid UICB fields. Specifying these fields in the EXTSTRLN parameter results in feedback in the extract area, defined by the EXTAREA parameter. Exact definitions are in the DGA$UICB macro found in

$CD.SDGAMAC. In the table, the Control Block Builder Syntax Error Work Areas have a value only when appropriate. For the Boolean Flags, output is Y (bit is on) or N (bit is off).

Name	Type	LN	Description
UIRCBLNG	halfword	2	The length of the control block
UIDESCR	character	16	UICB identifier
UITCA	address constant	4	Task Control Area
UIBRCB	address constant	4	Batch Region Control Block
UIDYNCB	address constant	4	Dynamic Allocation Control Block
UITPCB	address constant	4	Text Parser Control Block
UILEVEL	fullword	4	Modal level counter
UITMPDCB	address constant	4	Temporary file DCB
UIMSGCB	address constant	4	Message Control Block
UIUNODE	character	16	User node ID
UIUID	character	64	User ID
UIPSWD	character	64	Signon password
UINPSWD	character	64	New Signon password
UITMPVOL	character	6	Volume serial number of temporary file if not specified by user
UNTMPDDN	character	8	DDNAME used for temporary DSN
UIUSRTYP	character	1	User Type (operator, administrator, user)
UIAPPLID	character	8	VTAM logon ID
UIRTNCD	fullword	4	API return code
UIMSGID	character	8	API message ID
UILNODE	character	16	Name of node that is "local" to DTF
UILPP	halfword	2	Lines per page for printed output
UITMPLNG	halfword	2	Length of TSO temporary file name
UITMPDSN	character	44	TSO temporary file name
UIPUBLNG	halfword	2	Length of Process Library name
UIPUBDSN	character	44	Process Library name
UIMSGLNG	halfword	2	Length of message library name
UIMSGDSN	character	44	Message library name
UINETMAP	character	64	Network map file name
UIPROC#	fullword	4	Process number from submit
UIDSPLY	address constant	4	Address of SCDSPLY
UISTRING	address constant	4	Address of SCSTRING
***************	***********		Start of control block builder syntax error work area
UILABL#	halfword	2	Length of Sterling Connect:Direct label
UILABL	character	8	Sterling Connect:Direct label
UICMD1#	halfword	2	Length of first word in Sterling Connect:Direct command
UICMD1	character	8	First word in Sterling Connect:Direct command
UICMD2#	halfword	2	Length of second word in Sterling Connect:Direct command

Name	Type	LN	Description
UICMD2	character	8	Second word in Sterling Connect:Direct command
UIKLST#	halfword	2	Length of keyword that starts a list
UIKLST	character	8	Keyword that starts a list
UIKEYW#	fullword	4	Length of keyword in list before error
UIKEYW	character	8	Last keyword in list before an error
UIPARM#	halfword	2	Length of parameter associated with UIKEYW
UIPARM	character	8	Parameter in error associated with UIKEYW
UIERRM1#	halfword	2	Length of UIERRM1 string
UIERRM1	character	64	All of the above work areas resolved into a string
UIERRM2	character	64	Msg ID and text for parsing error
****************	***********		Start of boolean flags
UIERRON	character	1	Indicates message in UIERRM1
UIERRLAB	character	1	Indicates something in UILABL
UIERRCM1	character	1	Indicates something in UICMD1
UIERRCM2	character	1	Indicates something in UICMD2
UIERRSCP	character	1	Indicates parsing error
UIERRC1O	character	1	Indicates open delimiter after command keyword, for example, "IF ("
UIERRC2O	character	1	Indicates open delimiter after second command keyword
UIERRG	character	1	Indicates VTAM error msg in UIERRM1
UIERRLST	character	1	Indicates something in UIKLST
UIERRLOP	character	1	Indicates open delimiter after UIKLST
UIERRLCL	character	1	Indicates close delimiter after UIKLST
UIERRLEQ	character	1	Indicates equal sign after UIKLST
UIERRLCM	character	1	Indicates comma after UIKLST
UIERRLSP	character	1	Indicates space after UIKLST
UIERRKEY	character	1	Indicates something in UIKEYW
UIERRKOP	character	1	Indicates open delimiter after UIKEYW
UIERRKCL	character	1	Indicates close delimiter after UIKEYW
UIERRKEQ	character	1	Indicates equal sign after UIKEYW
UIERRKCM	character	1	Indicates comma after UIKEYW
UIERRKSP	character	1	Indicates space after UIKEYW
UIERRBPC	character	1	Indicates close delimiter before a parameter in a list
UIERRPRM	character	1	Indicates something in UIPARM
UIERRPOP	character	1	Indicates open delimiter after UIPARM
UIERRPCL	character	1	Indicates close delimiter after UIPARM
UIERRPEQ	character	1	Indicates equal sign after UIPARM
UIERRPCM	character	1	Indicates comma after UIPARM
UIERRPSP	character	1	Indicates space after UIPARM
UIF1SUBM	character	1	Indicates a submitted Process

Name	Type	LN	Description
UIGOTDSN	character	1	Indicates found temporary file name as Signon command parameter
UITFILE	character	1	Indicates data is generated into temporary file
UIEOF	character	1	Indicates reached EOF of Process file
UIMODAL	character	1	Indicates modal statement processed
UITFILEX	character	1	Reserved
UIMASTER	character	1	Indicates this UICB is master
UIRECON	character	1	Indicates a reconnect attempted
UIINACT	character	1	Indicates VTAM session for this UICB failed
UILOCAL	character	1	Indicates local node session
UIESF	character	1	Indicates ESF=YES on Signon command
UIZOPSWD	character	1	Indicates blank password on Signon
UIZNPSWD	character	1	Indicates blank new password on Signon
****************	************		END OF BOOLEAN FLAGS
UIRAT@	address constant	4	PTR to resource address table
UIDRLSE#	halfword	2	DTF release level
UIDPUF#	halfword	2	DTF PUF level
UIDPUT#	halfword	2	PUT tape number
UILINE#	halfword	2	Line number within Process in error
UIRLSE#	halfword	2	Current release, version and mod level
UIPUF#	halfword	2	Current PUF level
UI@MASTR	address constant	4	Master (user) UICB
UI@ACTIV	address constant	4	Currently active UICB
UI@FPTR	address constant	4	Next UICB
UI@BPTR	address constant	4	Previous UICB
UIALOTYP	character	8	Allocation type for temporary file
UIALOPRI	character	8	Allocation of prime space for temporary file
UIALOSEC	character	8	Allocation of secondary space for temporary file
UIALOUNI	character	8	Allocation unit for temporary file
UIALOVOL	character	8	Allocation of volume serial number for temporary file
UIFOLD	character	3	Fold to upper case if YES UIPRTALC
UIPRTALC	character	80	User-defined Sterling Connect:Direct print destination
UIPACCT#	halfword	2	Length of PNODE accounting data
UIPACCT	character	255	PNODE accounting data text
UISACCT#	halfword	2	Length of SNODE accounting data
UISACCT	character	255	SNODE accounting data text
UIGSCAPI (VM)	character	8	GCS API virtual machine identifier

DGADCHLA Return Codes

Return codes reflect the status of the DGADCHLA communications with the API. These codes only reflect whether DGADCHLA could process the request and pass the command to the DTF. They do not reflect the completion status of the command.

The following table defines each return code.

RC	Description
00000000	The command executed normally.
00000004	Signon to the master session failed, but the ESF environment is established.
00000008	A non-ESF command attempted in an ESF environment.
0000000C	A session is lost in a multiple session environment.
00000010	The master session is lost.
00000014	The master session signed off successfully.
00000018	The master session signon failed, and no ESF ability exists.
0000001C	A non-master signon failed.
00000020	DGADCHLA received an invalid number of input parameters.
00000024	The output specifications included an invalid parameter.
00000028	An invalid pointer to the UICB is passed to DGADCHLA.

For more information on master sessions and multiple session environments, refer to Signing On to Sterling Connect:Direct for z/OS.

Extract Fields for DGADCHLA Return Codes

The following extract fields apply to DGADCHLA return codes:

Field	Description
UIRTNCD	Lists return codes. UIRTNCD is set on completion of every command processed by the DTF.
UIMSGID	Lists message IDs. UIMSGID is set on completion of every command processed by the DTF.
UIPROC#	Identifies Process numbers. UIPROC# is set for every successful Submit command.

See UICB Fields for the complete list of UICB fields.

DGADCHLA Examples

The following examples show how required and optional parameters appear in sample programs. There is also a sample job stream for executing the program.

Required Parameters and Calling Sequences

The following example shows how the required parameters and calling sequences appear in a sample Assembler program:

```
******************************************************************
*    THE DATA DEFINITIONS ARE AS FOLLOWS:                        *
******************************************************************
CMDLEN     DS    H              LENGTH OF COMMAND STRING
CMD        DS    CL4096         COMMAND STRING
UICB@      DS    A              POINTER TO UICB
OUTSPECS   DC    C'YYSLYNN'     OUTPUT SPECIFICATIONS
******************************************************************
*                                                                *
*    THE DGADCHLA INVOCATION WOULD BE:                           *
*                                                                *
******************************************************************
CALL DGADCHLA,(CMDLEN,UICB@,OUTSPECS),VL
```

The following example shows how the required parameters and calling sequences
appear in a sample PL/I program:

```
******************************************************************
*    THE DATA DECLARATIONS ARE AS FOLLOWS:                       *
******************************************************************
DECLARE
CMD_PARM          FIXED BINARY (31)  BASED (R),
UICB_PARM         FIXED BINARY (31)  INITI (0'B'),
OUTSPEC_PARM      CHAR (7)  INIT ('YYSLYNN'),
CMD               CHAR (4096)  VARYING,
R                 POINTER;
******************************************************************
*                                                                *
*    THE DGADCHLA INVOCATION WOULD BE:                           *
*                                                                *
******************************************************************
R=ADDR(CMD) ;
CALL DGADCHLA(CMD_PARM, UICB_PARM, OUTSPEC_PARM);
```

Optional Parameters

The following example shows how the optional parameters look in a sample
Assembler program:

```
**********************************************************************
**      THE PARAMETERS WOULD BE DEFINED AS FOLLOWS:           **
**********************************************************************
CMDLEN    DS   H
CMD       DS   CL4096
UICB@     DS   A
OUTSPECS  DC   C'YYSLYYY'
EXTSTRLN  DC   H'32'
EXTSTR    DC   C'UITMPDDN UIESF UIPROC# UIMSGID'
EXTAREA   DS   0CL24    /*OUTPUT FROM THE UICB EXTRACT              */
EXTMPDDN  DS   CL8      /*VALUE OF UITMPDDN                         */
EXESF     DS   F        /*VALUE OF UIRTNCD                          */
EXPROC#   DS   XL4      /*VALUE OF UIPROC#                          */
EXMSGID   DS   CL8      /*VALUE OF UIMSGID                          */
EXTRC     DS   F
EXTMSG    DS   CL8
INVALKEY  DS   CL8
**********************************************************************
**     NOTE THAT THE EXTRACT STRING ITSELF IS 30 BYTES LONG,        *
**     BUT THE DUMP OF ITS EXTRACT WILL USE 31 BYTES.               *
**                                                                  *
**     INSIDE THE MAIN BODY OF THE PROGRAM, THE CALL TO             *
**     DGADCHLA WOULD LOOK LIKE:                                    *
**                                                                  *
**********************************************************************
CALL DGADCHLA,(CMDLEN,UICB@,OUTSPECS,EXTSTRLN,EXTAREA,              *
         EXTRC,EXTMSG,INVALKEY),VL
```

Sample Job Stream for Executing the Program

The following example shows a sample job stream that executes a Sterling Connect:Direct program that invokes DGADCHLA.

```
//jobname JOB (ACCT),'PGMR NAME',
//    NOTIFY=TSOUER,TIME=(1),
//    MSGCLASS=X,CLASS=A,PRTY=9,REGION=1024K
//JOBLIB      DD   DISP=SHR,DSN=$CD.SDGALINK
//CD          EXEC PGM=USERPROG
//DMPRINT     DD   SYSOUT=*
//DMNETMAP    DD   DISP=SHR,DSN=$CD.VSAM.NETMAP
//DMPUBLIB    DD   DISP=SHR,DSN=$CD.SDGAPROC
//DMMSGFIL    DD   DISP=SHR,DSN=$CD.VSAM.MESSAGE
//SYSUDUMP    DD   SYSOUT=*
//NDMCMDS     DD   SYSOUT=*
```

You must allocate several files using DD statements before executing a Sterling Connect:Direct application program that calls DGADCHLA.

The following table defines the DD statements in the sample job stream:

Statement	Definition
DMPRINT	All output from SELECT PROCESS, SELECT STATISTICS, SELECT TYPE, and SELECT USER commands is written to this DD. Also, output as a result of the OUTSPECS specification is written to DMPRINT. DMPRINT is optional, but often required.
DMNETMAP	This definition is the name of the network map file that contains the names of all the nodes that Sterling Connect:Direct communicates with. DMNETMAP is required if no NETMAP keyword is specified on the SIGNON command.

Statement	Definition
DMPUBLIB	This definition is a library containing Processes. It is required.
DMMSGFIL	This definition is the name of the Message file. It is required.
NDMCMDS	If allocated, all command strings are written to the current file. It is optional.

Chapter 5. Managing Sessions

Signing On to Sterling Connect:Direct for z/OS

The SIGNON command establishes your session with the DTF so that you can issue commands.

You can control access to the Sterling Connect:Direct system through the Sterling Connect:Direct Authorization Facility and security exits. For information on security control, go to the *IBM Sterling Connect:Direct for z/OS Administration Guide* and search for Implementing Security.

If you are using the Extended Submit Facility (ESF), you can submit the SIGNON command even though the DTF is inactive.

Timeout Problems

If you are logged off involuntarily while using Sterling Connect:Direct via TCP/IP, your problem may be related to the TCP/IP connection not being able to communicate with the DTF. If you see the message TCP/IP SEND error; Connection Lost, and press F1 to see the help for this message, the following text is displayed for message SVTC006I:

```
MSGID  ==> SVTC006I
MODULE ==> DMTSTSND
TCP/IP SEND error; Connection Lost
An error has been detected while sending a command via TCP/IP.
The TCP/IP connection has been lost.  A possible cause is
Connect:Direct has been shutdown and all TCP/IP connections
have been closed.
System Action: Normal processing can not continue.
Response: Logoff and attempt to signon again.
```

Although the TCP/IP protocol does not have a mechanism to send you a console message indicating that the client has been dropped and your session has timed out, you can determine if this has happened to you by looking in the statistics file for a signoff record with an SAFA019I error message that matches your user ID (be sure to enter Y in the CHANGE EXTENDED OPTS field on the SELECT STATISTICS panel and then enter SO as a record type on the next screen). For more information, go to the *IBM Sterling Connect:Direct for z/OS Administration Guide* and search for Signon and IUI/API Errors.

Sterling Connect:Direct provides an inactivity timer that is based on the number of minutes a user can remain inactive without communicating with the DTF. An administrator can specify this value using the TCP.API.TIMER global initialization parameter. Sterling Connect:Direct will only recognize changes made to the TIMEOUT parameter by an administrator. If you attempt to change this parameter and you are not an administrator, you will not be able to sign on. You can determine if this has happened to you by looking in the statistics file for a signon record with an SAFA020I error message that matches your user ID. For more information, go to the *IBM Sterling Connect:Direct for z/OS Administration Guide* and search for Signon and IUI/API Errors.

Note: The rationale behind the timeout feature is to do housekeeping to keep the number of hung sessions to a minimum and avoid the limit specifying the maximum number of users that can be signed on to Sterling Connect:Direct. Without the timeout feature, an administrator would have to recycle the DTF to allow TCP/API logons to reconnect once the MAXUSER limit was reached.

Using SIGNON through the IUI

To execute the SIGNON command through the IUI, perform the following steps:

Procedure

1. Select Sterling Connect:Direct from your ISPF/PDF Primary Option Menu. The Copyright and the Signon screen are displayed, unless SIGNON defaults are previously set.

```
CMD ==>
                 IBM Sterling Connect:Direct for z/OS
                         VERSION      : 05
                         RELEASE      : 001
                         MODIFICATION : 000
                         LEVEL        : 0000
       TODAY IS   : 2011/02/24 (2011.055 )         THE TIME IS: 09:01
                                                           More:     +
USER ID  => USER01
PASSWORD =>
NEW PASS =>
NODE NAME =>
TRANSPORT =>
COMMUNICATION ADDRESS =>(       ,                                    )
DESCRIPTION =>
TIMEOUT  =>
Licensed Materials - Property of IBM
5655-X01 Copyright IBM Corp. 2011
All Rights Reserved                                .
IBM is a Trademark of International Business Machines
```

The Signon screen indicates the version, release, modification, and Program Update Tape (PUT) levels of Sterling Connect:Direct.

2. Type your user ID and press **Enter**.

Depending upon your site configuration, you may also need to type in a password, a new password, node name, transport, communications address, and case sensitivity option before pressing **Enter**. These parameters are described in "SIGNON Command" on page 42, or press **PF1** for Help.

If you are using the Extended Submit Facility (ESF), the DTF does not need to be active to execute the SIGNON, SIGNOFF, and SUBMIT commands.

Note: If the Error requesting session, Sterling Connect:Direct may be inactive message is displayed, the Sterling Connect:Direct DTF is not started.

Results

If your signon is successful, the Primary Options Menu is displayed, unless you have updated your SIGNON defaults to execute an initial command.

Viewing Your Current Signon Parameters

You can view your signon default parameter settings.

Procedure

To see how your signon parameters defaults are currently set, select the **WHO** option from the Primary Options Menu. The following figure shows an example of the User Information display produced by the WHO option.

```
      Connect:Direct IUI USER INFORMATION                      hh:mm
 CMD ==>
    USER ID==> USER01
          USER NODE             ==>  node.name
          TRANSPORT PROTOCOL    ==>  NETMAP
          COMMUNICATION ADDRESS ==>  APPLID
          TEMPORARY DSN DDNAME  ==>  TMPDD
          TEMPORARY DSN VOLSER  ==>  TMPVSER
          DATA SETS:
          TEMPORARY DSN         ==>  CD.TEMP.DSN
          MESSAGE DSN           ==>  CD.MSG.VER01
          NETWORK MAP DSN       ==>  CD.NETMAP.VER01
          PUBLIC PROCESS DSN    ==>  CD.PUBLIB
          IUI VERSION           ==>  VV
          IUI RELEASE           ==>  RRR
          IUI MODIFICATION      ==>  MMM
          IUI PUT LEVEL         ==>  PPPP
```

Setting Up Signon Defaults

Use the Signon Defaults screen to set up signon default information.

Procedure

Select **SD** from the Primary Options Menu to access the Signon Defaults screen.

```
node.name                      SIGNON DEFAULTS                        hh:mm
 CMD==>
 CURRENT DEFAULTS:
 USER ID  ==>
 PASSWORD ==>
 TRANSPORT==>
 COMMUNICATION ADDRESS ==>(        ,                                    )
 DESCRIPTION ==>
 TIMEOUT     ==> YES
 TEMPORARY DATA SET NAME ==>
   ALLOCATION TYPE       ==>
   PRIMARY SPACE         ==>           UNIT TYPE ==>
   SECONDARY SPACE       ==>           VOL=SER   ==>
 EXTENDED SUBMIT FEATURE ==>
 UPPER CASE FOR PRINT    ==>
 PRINT FILE DESTINATION  ==>
 PNODE ACCOUNTING DATA   ==>
 SNODE ACCOUNTING DATA   ==>
 DO YOU WANT ALL COMMANDS FOR THIS SESSION TO BE CASE SENSITIVE? ==> NO
 INITIAL COMMAND         ==>
```

Note: Instead of users individually altering their signon defaults, the Sterling Connect:Direct administrator can define global signon defaults. With this method, users will not be responsible for increasing their allocation and can also avoid SB37 ABENDs. For more information, refer to *Global Signon Defaults* in the *IBM Sterling Connect:Direct for z/OS Administration Guide*.

The INITIAL COMMAND field enables you to bypass the Primary Options Menu and have a designated command screen display automatically at signon. For example, to have the User Information screen (WHO) display automatically at

signon, type **WHO** in the Initial Command field.

Command stacking is allowed. For example, type **ADMIN.ST** in the INITIAL COMMAND field to branch to the View Type Record (ST) option of the Administration Menu (ADMIN).

By typing your user ID and other information in the SIGNON Defaults panel, you can bypass the SIGNON panel.

SIGNON Command

The SIGNON command has the following format and associated parameters. The required parameters and keywords are in bold print. Default values for parameters and subparameters are underlined.

Label	Command	Parameters
(optional)	SIGNON	**NETMAP** = network map data set name
		CASE= Yes | No
		COMADDR= (Port number, IP address | alias name)
		ESF= Yes | No
		FOLD= Yes | No
		NODE= node name
		PACCT= 'pnode accounting data'
		PRINT= destination of printed output
		RECONNECT
		SACCT= 'snode accounting data'
		SPACE= (CYL | TRK | blk,([prim],[sec]))
		TMPDD= preallocated data set ddname
		TMPDSN= preallocated data set name
		TRANSPORT= SNA | TCP | NETmap
		UNIT= temporary dsn unit type
		USERID= (ID, pswd, newpswd)
		VOLSER= volume serial
		DESCRIPTION= '30-character string'
		TIMEOUT= Yes | No

Parameter Value	Description
NETMAP = network map data set name	Specifies the network map data set name, which is a 1-44 alphanumeric character string with the first character alphabetic. This parameter is required. Ask your administrator for information about completing this value. If you provide the DMNETMAP DD name in the job stream used with DMBATCH, you are not required to include this parameter with the SIGNON command. If you specify the data set name in both places, the network map data set name you specify on the SIGNON command takes precedence. For the IUI, the network map data set name is specified in the ISPF/PDF Primary Option Menu as a parameter of the DMISTART program. This data set name is established by your IBM Sterling Connect:Direct administrator at installation and is not indicated through the IUI SIGNON command screens.
CASE= Yes	<u>No</u>	The CASE parameter determines case sensitivity. It specifies whether parameters associated with accounting data, user ID, password, and data set name in the commands which follow the signon must be case sensitive. The default is No. This parameter is optional. You can override this designation on a command-by-command basis by adjusting the case sensitivity parameter on the individual command.
COMADDR= (Port number, IP address | alias name)	Specifies the communications address used in TCP/IP connections to the DTF. This parameter is specified only if the TRANSPORT parameter is set to TCP. The port number specifies the port number used for TCP/IP communications. This value is the value from the TCP.API.LISTEN initialization parameter of the DTF that you want to sign on to. The IP address/alias name specifies the IP address or alias name used for TCP/IP communications. If you use the COMADDR parameter, you must specify both the port number and IP address/alias name. If you use alias name or long domain name resolution, you do not need to supply the IP address in the COMADDR parameter or in the COMMUNICATIONS ADDRESS field during Sterling Connect:Direct SIGNON. The name resolution feature resolves a valid alias name or long domain name to the matching IP address. The maximum length of the IP address|alias name variable is 16 characters. If you want to use an LDNS (long domain name system) or an alias name greater than 16 characters, the name must be defined in the network map, and the TRANSPORT must be coded as NET. **Note:** Allocate the SYSTCPD DD to the TCPDATA file in both the Sterling Connect:Direct startup JCL and API session startup JCL when you request domain name resolution.

Parameter Value	Description
ESF= <u>Yes</u> | No	Specifies whether the Extended Submit Facility (ESF) is available for the current signon. This parameter is optional. The default value is Yes. The ESF enables you to submit Processes even if the DTF is not active. When signing on to a Sterling Connect:Direct DTF that is active, but with no VTAM APPLID available, the ESF enables signon to the DTF. When you submit the Process it is enabled and placed in the TCQ as soon as the ESF.WAIT time expires. ESF is available only for Processes submitted on the local node. You can only issue the Sterling Connect:Direct SIGNON, SUBMIT, and SIGNOFF commands using the ESF; all other Sterling Connect:Direct commands are rejected. **CAUTION:** **If you use the MAXDELAY PROCESS statement keyword, the message `SCBI221I MAXDELAY not supported for ESF submits`, is displayed when the DTF is down and the Process will not submit.**
FOLD= Yes | <u>No</u>	Determines printing upper case control. It specifies whether printed output, an option of the various SELECT commands, are all uppercase letters. The default value is No, specifying printed output of uppercase and lowercase letters. This parameter is optional.
NODE= node name	Specifies the name of the node (DTF) you sign on to. It is the name assigned to a node defined in the network map definitions. This parameter is optional.
PACCT= 'pnode accounting data'	Specifies the accounting data for the primary node (PNODE). The maximum length of the accounting data is 256 characters. If special characters, such as a space, are part of the accounting data, you must enclose the string in single quotation marks. Sterling Connect:Direct uses this data as a default for each Process unless you override it on the SUBMIT command, PROCESS statement, or SUBMIT statement. This parameter is optional.
PRINT= destination of printed output	Specifies an allocation string that determines the destination of the printed output that you request on the various SELECT commands. This parameter is optional. SYSOUT=A is the default value. An example follows.`'SYSOUT=C DEST=RMT1 FREE=CLOSE RETURN=(DD)'` You must include both `FREE=CLOSE` and `RETURN=(DD)` in the string for this specification. When using the IUI, if you do not specify a destination, Sterling Connect:Direct routes the output to the SYSOUT class specified in the initialization parameters (external to Sterling Connect:Direct) under the TSO user ID. If you modify the destination, you need to sign off Sterling Connect:Direct after updating the field in order for the new destination to be in effect.
RECONNECT	Specifies that you can reestablish your VTAM session without having to sign off and sign on again. You can lose a VTAM session due to a link or line failure. This parameter is optional. The USERID parameter is the only other parameter that you specify with the RECONNECT option.
SACCT= 'snode accounting data'	Specifies the accounting data for the secondary node (SNODE). This parameter is optional. The maximum length of the accounting data is 256 characters. If special characters, such as a space, are part of the accounting data, you must enclose the string in single quotation marks. Sterling Connect:Direct uses this data as a default for each Process unless you override it on the SUBMIT command, PROCESS statement, or SUBMIT statement.

Parameter Value	Description
SPACE= (CYL | TRK | blk,([prim],[sec]))	Specifies the temporary data set (TMPDSN) allocation type, primary space allocation, and secondary space allocation. This parameter is optional.
	The first subparameter is the allocation type. An allocation type of CYL specifies space allocation by cylinder. CYL is the default value. An allocation type of TRK specifies space allocation by track. An allocation type of blk specifies space allocation by the average block length of the data. Sterling Connect:Direct computes the number of tracks to allocate.
	The second subparameter, prim, specifies the primary allocation of storage. The default value is 1.
	The third subparameter, sec, specifies the secondary allocation of storage. The default value is 1.
TMPDD= preallocated data set ddname	Specifies the ddname of a user-supplied preallocated data set. The maximum length is an 8-character alphanumeric string. This parameter is optional. Do not use both the TMPDD and TMPDSN parameters at the same time in the SIGNON command.
TMPDSN= preallocated data set name	Specifies the name of a preallocated data set used to receive command results that are printed or displayed. The data set name is a 1-44 alphanumeric character string that must conform to z/OS standards for data set names. This parameter is optional, and when not specified, Sterling Connect:Direct builds a system temporary data set. It normally derives the name for the data set based on your TSO ID. In some cases, this derived data set name violates your facility naming convention. Use the Signon Defaults screen to override the data set name as needed.
	If you name a data set at signon time, preallocate it with the following attributes prior to signing on to Sterling Connect:Direct (4104 is the minimum BLKSIZE):
	`DSORG=PS LRECL=4100 RECFM=VBA BLKSIZE=4104`
	Do not use both the TMPDD and TMPDSN parameters at the same time in the SIGNON command.
TRANSPORT= SNA | TCP | NETmap	Defines the communications protocol to use for the session. This parameter is optional.
	The default value (NETmap) indicates that the protocol defined in the network map is used for the session.
	A value of SNA tells Sterling Connect:Direct to establish the session using SNA. You must define the node you are signing on to as an SNA node, or the SIGNON Process fails.
	A value of TCP tells Sterling Connect:Direct to establish a TCP/IP session. Sterling Connect:Direct uses the communications address specified in the COMADDR parameter (see page 62 for a description of the COMADDR parameter), if that parameter is specified as part of the SIGNON command. If the COMADDR parameter is not specified, Sterling Connect:Direct tries to establish the session using the communications address from the network map. If an invalid COMADDR parameter is supplied, Sterling Connect:Direct establishes an ESF API session.

Parameter Value	Description
UNIT= temporary dsn unit type	Specifies the temporary data set name (TMPDSN) unit type, which must be a 1-8 alphanumeric character string defining the unit type for data set allocation. This parameter is optional. If omitted, the operating system defined default for DASD is used by dynamic allocation.
USERID= (ID, pswd, newpswd)	Specifies your signon security information. This parameter is optional. **ID** specifies the security ID that Sterling Connect:Direct passes to a security exit. It can contain 1-64 characters of any kind, and is case-sensitive. **pswd** specifies the current security password. The security exit uses this parameter to validate the current security password. It contains 1-64 alphanumeric characters, and is case-sensitive. **newpswd** specifies the new security password. The security exit uses this parameter to change the current security password to the new security password. It contains 1-64 alphanumeric characters, and is case-sensitive. When you attempt a sign on to a remote node, the user ID and password information must correspond to security procedures at that remote node.
VOLSER= volume serial	Specifies the temporary data set name (TMPDSN) volume serial number, which must be a 1-8 character alphanumeric string defining the volume serial number for data set allocation. This parameter is optional.
DESCRIPTION= '30-character string'	Describes the API type that is logging on. It is displayed with the Select Task command. If Sterling Connect:Direct cannot determine the API type, the communication address is used. Defaults: DMCHLAPI, DMBATCH, ISPFIUI, CONSOLEUI, ICOUI, CICSUI, and Java Application Interface
TIMEOUT= Yes | No	Specifies whether the value specified for the TCP.API.TIMER global initialization parameter applies to this specific user. This parameter is optional. The system will only accept changes to this field made by an administrator and only for their own IUI session; all others will be governed by the initialization parameter. The default value is Yes. Do not use the TIMEOUT keyword in DMBATCH.

Using SIGNON through the Batch Interface
About this task

To use the SIGNON command from the batch interface, perform the following steps:

Procedure
1. Place the command in the DGADBATC job stream as described in Sample Job Stream to Run the Batch Interface.
2. Submit the job while is running. If you are using the Extended Submit Facility (ESF), the DTF does not need to be active for the SIGNON command to process. The following example shows a SIGNON command in which the user

specifies a pre-allocated temporary data set named MYUID1.TEMP.DSN which resides on SYSDA. The accounting data is specified for the PNODE and SNODE.

```
SIGNON    NETMAP=DALLAS.NETMAP  -
   USERID=(MYUID1,MYPSWD) -
   PACCT='JOB FOR SYSMAINT, DEPT.27, MARKETING' -
   SACCT='JOB FOR INVENTRY, DEPT.55, ACCOUNTING' -
   TMPDSN='MYUID1.TEMP.DSN' -
   UNIT=SYSDA
```

See Signing On to Sterling Connect:Direct for z/OS for additional examples of the SIGNON command in the batch interface.

Signing On to the API

The communication address used to establish a connection to Sterling Connect:Direct is determined by the TRANSPORT parameter defined in the SIGNON command. The default for the TRANSPORT parameter is NET (NETMAP) which means that the protocol defined in the NETMAP Adjacent node entry is used. For more information, see Adjacent Node Definition Examples.

Parameter Value	Description
TRANSPORT = NET	Default. When TRANSPORT is defined as NET, the sign on process retrieves the Adjacent node entry to determine if the TCPAPI parameter has been defined. If TCPAPI exists, then a TCP connection is attempted using the communication address defined. The communication port number is obtained from the TCPAPI parameter, and if the IP address exists in the TCPAPI parameter, it is also used. If the IP address does not exist in the TCPAPI parameter, it must be obtained from either the Adjacent node or the LDNS parameter. If the TCPAPI does not exist, the APPLID parameter is retrieved and SNA is used as the protocol.
TRANSPORT = SNA	When TRANSPORT is defined as SNA, the sign on process retrieves the Adjacent node entry to determine the APPLID parameter, and SNA is used as the protocol. If the APPLID parameter does not exist, then an ESF SIGNON is performed.
TRANSPORT = TCP	When the TRANSPORT is defined as TCP, the communication address must be specified on the SIGNON command. For more information, go to the *IBM Sterling Connect:Direct for z/OS Administration Guide* and search for Initializing Sterling Connect:Direct without SNA Support.

Adjacent Node Definition Examples

To only allow SNA API signons:

```
/* PNODE=SNODE WITH SNA API SIGNON ONLY */
   ADJACENT.NODE=(( CD.OS390.NODE,M1DEV93C) PARSESS=(53 2) -
   APPLIDS=(M1CDI701 M1CDI702 M1CDI703) -
   )
```

To only allow TCP API signons using an IPv4 address:

```
/* PNODE=SNODE WITH TCP API SIGNON ONLY USING IP ADDRESS */
   ADJACENT.NODE=(( CD.OS390.NODE,M1DEV93C) PARSESS=(53 2) -
   TCPAPI=(4198,111.222.333.444) -
   )
```

To only allow TCP API signons using an IPv6 address:

```
/* PNODE=SNODE WITH TCP API SIGNON ONLY USING IP ADDRESS */
   ADJACENT.NODE=(( CD.OS390.NODE,M1DEV93C) PARSESS=(53 2) -
   TCPAPI=(4198,1111:2222:3333:4444:5555:6666:7777:8888) -
   )
```

To only allow TCP API signons using the LDNS parameter:

```
/* PNODE=SNODE WITH TCP API SIGONON ONLY USING LDNS */
   ADJACENT.NODE=(( CD.OS390.NODE,M1DEV93C) PARSESS=(53 2) -
   TCPAPI=(4198,) -
   LDNS=long.domain.name -
   )
```

To allow both SNA and TCP API signons:

```
/* PNODE=SNODE WITH BOTH SNA AND TCP API SIGNON */
   ADJACENT.NODE=(( CD.OS390.NODE,M1DEV93C) PARSESS=(53 2) -
   TCPAPI=(4198,111.222.333.444) -
   APPLIDS=(M1CDI701 M1CDI702 M1CDI703) -
   )
or
/* PNODE=SNODE WITH BOTH SNA AND TCP API SIGNON */
   ADJACENT.NODE=(( CD.OS390.NODE,M1DEV93C) PARSESS=(53 2) -
   TCPAPI=(4198,) -
   LDNS=long.domain.name -
   APPLIDS=(M1CDI701 M1CDI702 M1CDI703) -
   )
```

Signing On to Multiple Sessions

Use the SIGNON command to sign on simultaneously to multiple sessions of the
DTF. The SIGNON command parameters which are valid for the multiple session
signon are a subset of the full SIGNON command parameters. For more
information, see Using SIGNON through the Batch Interface.

Master Session

The first successful SIGNON command establishes the master session. The master
session is the active session until another session is established. Each subsequent
signon becomes the active session unless sessions are swapped using the SWAP
NODE command.

Signing on to the master session and signing on to another node under the master
session requires two different signons. The parameters specified for the master
session signon dictate the environment for all sessions running under the master
session.

Non-Master Session

For a session other than master, you are limited to the following SIGNON
command parameters.

Label	Command	Parameters
(optional)	SIGNON	NODE= node name
		RECONNECT

Label	Command	Parameters
		USERID= (ID, pswd, newpswd)

See Using SIGNON through the Batch Interface for descriptions of these parameters.

SIGNOFF Sequence

Carefully control your SIGNOFF command sequence because if you sign off the master session, Sterling Connect:Direct signs off all other sessions. If you sign off a non-master session, Sterling Connect:Direct only signs off that session, and the master session immediately becomes the active session again, regardless of the order in which the sessions are established. See Sequencing the SIGNON, SWAP NODE, and SIGNOFF Commands for examples of the importance of the sequence of your SIGNOFF commands.

Switching Nodes

When you issue multiple signons, one node can perform one function and another node a different function. The SWAP NODE command enables you to swap from node to node. See Using SWAP NODE through the Batch Interface for the SWAP NODE command description and examples.

Using the Batch Interface for Multiple Session SIGNON

To use the multiple session SIGNON command through the batch interface, place your commands in the DGADBATC job stream and submit the job while Sterling Connect:Direct is running. If you have the Extended Submit Facility (ESF) available, the DTF does not need to be running to submit the job.

See the examples in Sequencing the SIGNON, SWAP NODE, and SIGNOFF Commands for job streams that issue SIGNON, SWAP NODE, and SIGNOFF commands and an explanation of the significance of the command sequence in the job stream.

Using the IUI Multiple Session SIGNON Command

To access the Multiple Session Signon screen, select **MS** from the Primary Options Menu.

```
node.name                                                      hh:mm
CMD ==>

                                                          yyyy.mm.dd
                                                          yyyy.ddd

                          MULTIPLE SESSION SIGNON
USER ID   ==> USER01
PASSWORD  ==>
NEW PASS  ==>
NODE NAME ==>
TRANSPORT ==> NET
COMMUNICATION ADDRESS ==>(        ,                                 )
DESCRIPTION ==>
RECONNECT ==> N   (Y OR N. TO THE *ACTIVE* NODE
                  AFTER A SESSION FAILURE)
 PNODE ACCOUNTING DATA   ==>
 SNODE ACCOUNTING DATA   ==>
 DO YOU WANT ALL COMMANDS FOR THIS SESSION TO BE CASE SENSITIVE? ==> NO
```

The Multiple Session Signon screen enables you to sign on to more than one node during a single ISPF/PDF session. The APPLIDS value in the network map

Adjacent Node definition determines the maximum number of sessions that Sterling Connect:Direct is allowed on one DTF. Each signon uses an additional VTAM APPLID.

See "SIGNON Command" on page 42 for field descriptions, or press the **PF1** key for Help.

Swap Node Command

The SWAP NODE command enables you to swap to another node when you are signed on to more than one node at a time. Use the SWAP NODE command to specify which node a command is issued to.

The SWAP NODE command has the following format and associated parameter:

Label	Command	Parameters
(optional)	**SWAP NODE**	**node name**

The only parameter for the SWAP NODE command is node name, which specifies which node to swap to in a multiple session environment. The node name is the name assigned to the LOCAL.NODE field defined in the network map definitions.

Using SWAP NODE through the IUI

You can use the Swap/Display User Sessions screen to swap to another node or delete (signoff) another node.

Procedure

1. Select option **SW** from the Primary Options Menu to access the SWAP/DISPLAY User Sessions screen. The screen displays all user sessions for this ISPF/PDF session.

```
---------------------SWAP/DISPLAY USER SESSIONS------- Row 1 to 2 of 2
==>                                                   SCROLL ===>  PAGE
  NODE               COMMUNICATION ID     CURRENT    STATUS
                     USERID
  --------------------------------------------------------------------
  node.name1                      applid0   *ACTIVE*   *MASTER* **LOCAL*
                     userid2
  node.name3                      applid1
                     userid1
**************************** Bottom of data *************************
```

2. Do one of the following:
   - To swap sessions, type **S** in the input field to the left of the node name and press **Enter**. ACTIVE is displayed next to the node name you just selected. To determine which node is currently signed on when this field is not displayed, look to the upper left corner of most panels for the display of the node name.
   - To delete or sign off a session, type **D** in the input field to the left of the node name and press **Enter**.

   Note: If you sign off the master session, the first node you signed on, all sessions are lost.

Using SWAP NODE through the Batch Interface

To use the SWAP NODE command from the batch interface:

Procedure

1. Place your commands in the DGADBATC job stream as described in Sample Job Stream to Run the Batch Interface.

2. Submit the job while Sterling Connect:Direct is running.

3. Verify your results.

   For example, the following command swaps you from your current active remote node with a user ID of JONES2 to the local node under the user ID of JONES1:

```
//SYSIN    DD *
   SIGNON  USERID = (JONES1) -
           NODE   = CD.LOCAL
   SIGNON  USERID = (JONES2) -
           NODE   = CD.REMOTE
   SWAP    NODE CD.LOCAL
   SELECT  NETMAP WHERE(NODE=CD.LOCAL)
   SIGNOFF
   SIGNOFF
/*
```

Sign Off Command

The SIGNOFF command terminates a connection to the DTF. If you are using the Extended Submit Facility (ESF), you can submit the SIGNOFF command even though the DTF is inactive.

The SIGNOFF command has the following format. No associated parameters are available.

Label	Command	Parameters
(optional)	SIGNOFF	

Using SIGNOFF Through the IUI

The following table identifies how to SIGNOFF from various locations of the IUI. You must press **Enter** after each SIGNOFF command.

SIGNOFF Command	Location
SIGNOFF	SIGNON screen or the Primary Options Menu
End	SIGNON screen or the Primary Options Menu
X	SIGNON screen or the Primary Options Menu
=SIGNOFF or =X	Command Line

When you sign off Sterling Connect:Direct, the system returns you to the ISPF menu.

Follow these rules when you sign off Sterling Connect:Direct:

- You must type a SIGNOFF command twice from the command line.

Note: The first SIGNOFF command returns you to the Primary Options menu and the second SIGNOFF command returns you to the ISPF menu.

- You only need to sign off once from the SIGNON screen or the Primary Options Menu.

Using SIGNOFF through the Batch Interface

To use the SIGNOFF command from the batch interface, perform the following steps:

Procedure

1. Place your commands in the DGADBATC job stream as described in "Sample job stream to run the batch interface" on page 10.

2. Submit the job while Sterling Connect:Direct is running. If you have the Extended Submit Facility (ESF) available, the DTF does not need to be running in order for the SIGNOFF command to function.

3. Verify your results.

   The following example shows a SIGNON command followed by a SIGNOFF command.

   ```
   SIGNON   USERID=(MYUID1,MYPSWD) NETMAP=NETMAP.NAME
   SIGNOFF
   ```

   See the examples in Sequencing the SIGNON, SWAP NODE, and SIGNOFF Commands for more examples of the SIGNOFF command used with the Multiple Session Signon feature and the SWAP command.

Sequencing the SIGNON, SWAP NODE, and SIGNOFF Commands

When you issue SIGNON, SWAP NODE, and SIGNOFF commands, the sequence in which you issue these commands is important, as shown in the following examples.

Example 1: Terminating Two Sessions with One SIGNOFF Command

The following example shows a DGADBATC SIGNON to two different nodes and the use of the SWAP NODE command. The SIGNOFF command in this example causes Sterling Connect:Direct to terminate both sessions, because the active session at signoff is the master session.

```
/* NETMAP = CD.NETMAP, BOSTON IS ACTIVE (MASTER) */
  SIGNON   USERID=(SAM) NODE=CD.BOSTON
/* SIGN ON TO JERSEY */
  SIGNON   USERID=(SAM) NODE=CD.JERSEY
/* SUBMIT COPY ON JERSEY */
  SUB  PROC=COPY1
/* SWAP TO BOSTON */
  SWAP NODE  CD.BOSTON
/* SUBMIT COPY ON BOSTON */
  SUB PROC=COPY1
/* SIGN OFF BOTH NODES (terminating master session)*/
  SIGNOFF
```

Example 2: Terminating a Master Session with the SIGNOFF Command

In the following example, the first SIGNOFF command terminates the CD.NEWYORK node because it is the last SIGNON command issued. The second SIGNOFF command terminates both the CD.JERSEY and CD.BOSTON nodes because the first SIGNOFF command made the master session the active session and signing off the master session signs off all other sessions.

```
/* NETMAP = CD.NETMAP, BOSTON IS ACTIVE (MASTER */
  SIGNON    USERID=(SAM) NODE=CD.BOSTON
/* SIGN ON TO JERSEY */
  SIGNON    USERID=(SAM) NODE=CD.JERSEY
/* SIGN ON TO NEWYORK */
  SIGNON    USERID=(SAM) NODE=CD.NEWYORK
/* BOSTON IS ACTIVE AFTER SIGNOFF TO CD.NEWYORK */
  SIGNOFF
/* SIGN OFF ALL SESSIONS (terminating master session) */
  SIGNOFF
```

Example 3: Terminating a Non-Master Session with the SIGNOFF Command

The following example illustrates that whenever a SIGNOFF command is issued to a non-master session, the master session automatically becomes active again regardless of the order in which the nodes are signed on.

If you try to swap to a node that is already active, the SWAP NODE command is ignored. The USERID (or any other user ID specified) must be a user record in the Sterling Connect:Direct authorization file or a valid ID for the security subsystem in use, to sign on to the node.

```
/* NETMAP = CD.NETMAP, BOSTON IS ACTIVE (MASTER)  */
  SIGNON     USERID=(SAM) NODE=CD.BOSTON
/* SIGN ON TO JERSEY */
  SIGNON     USERID=(SAM) NODE=CD.JERSEY
/* SIGN ON TO NEWYORK */
  SIGNON     USERID=(SAM) NODE=CD.NEWYORK
/* NEWYORK ACTIVE */
  SIGNOFF
/* SIGN ON TO JERSEY */
  SWAP NODE   CD.JERSEY
/* JERSEY ACTIVE */
  SIGNOFF
/* SIGN OFF ALL SESSIONS */
  SIGNOFF
```

Chapter 6. Building, Modifying, and Submitting Processes

You can construct and submit Processes for execution in several ways, depending upon the user interfaces available on your operating environment. These Sterling Connect:Direct user interfaces include:

- Interactive User Interface (IUI)
- Sterling Connect:Direct Browser User Interface
- IBM Sterling Connect:Direct File Agent
- Batch interface

  User-written programs issued through the Sterling Connect:Direct Application Program Interface (API)

For more information about monitoring and manipulating your submitted Processes, see Controlling Processes with Commands.

Note: The maximum size allowed for a Process is 1 MB.

You can also use the Sterling Connect:Direct Browser User Interface to perform some Sterling Connect:Direct for z/OS procedures.

The following steps describe how a Process executes:

1. You submit a Process.

   You create and submit a new Process or submit a predefined Process from a Sterling Connect:Direct Process library.

2. The parser checks the syntax of the Process.

3. The Process is queued for execution and the submit message is issued

   If the Process passes syntax checking, it is placed in a work queue based on Process parameters, such as priority, class, and start time.

   Sterling Connect:Direct work queues are referred to as the Transmission Control Queue (TCQ) or the Process queue. A Process can have one of the following queue states in the TCQ:

State	Description
EXECUTION	Indicates that the Process is executing.
WAIT	Indicates that the Process is waiting until a connection is established or available.
HOLD	Indicates that the Process is held on the queue until released by an operator or the SNODE connects with a request for held work.
TIMER	Indicates that the Process is submitted to execute at the user-specified time or date.

   You can manipulate any Process in the TCQ with various Sterling Connect:Direct commands that are described in the next chapter.

   A message indicating that the Process submitted successfully is returned when the Process is placed in the TCQ.

4. The Process is queued for execution and the submit message is issued.

   You can manipulate any Process in the TCQ with various Sterling Connect:Direct commands that are described in the next chapter.

A message indicating that the Process submitted successfully is returned when the Process is placed in the TCQ.

5. Sterling Connect:Direct finds an available connection and Process execution begins. The Process is selected for execution based on Process parameters and the availability of the remote node.

Process Routing

The RETAIN, HOLD, and STARTT parameters route Processes as described in the following table:

Parameters	Queue	Comments
None	Wait	Process remains on the Wait queue until Sterling Connect:Direct can start a session with the SNODE at which time it moves to the Execution queue.
RETAIN=INITIAL	Hold	Process automatically executes each time Sterling Connect:Direct is initialized with TCQ=WARM.
RETAIN=YES	Hold	A copy of the Process is kept in the Hold queue after it has executed. The Process does not execute again until it is released by a CHANGE PROCESS command.
HOLD=YES	Hold	Process remains in the Hold queue until someone releases the Process.
HOLD=CALL	Hold	Process is automatically moved from the Hold queue to the Wait queue when the SNODE contacts the node on which the Process resides.
STARTT	Timer	When the scheduled time and date arrive, the Process is put on the wait queue and is available for execution.

RETAIN=INITIAL is useful for Processes that contact other Sterling Connect:Direct nodes each time Sterling Connect:Direct completes initialization. This action causes any work queued on the remote node for the local node to begin. The DGAPHTBT sample Process allows you to test if Sterling Connect:Direct is running on a SNODE without actually running a Process on the node. For more information, go to the IBM Sterling Connect:Direct for z/OS Administration Guide, search for Maintaining the Network, and read the note on the DGAPHTBT Process.

You can use RETAIN=YES combined with STARTT to run a Process at a periodic interval. For example, RETAIN=YES and STARTT=(Tuesday, 3pm) starts the Process every Tuesday at 3 pm; RETAIN=YES and STARTT=(,12:00) starts the Process each day at noon.

The Timer queue is also used for session retry and file allocation retry based on Sterling Connect:Direct initialization parameters specified by a particular installation. When retry limits are exhausted, the Process is moved to the Hold queue with a WC (hold queue, waiting connection) status for session retry.

Note: For allocation failures to be requeued, you must set the REQUEUE initialization parameter to YES so that the Process is placed in the HO RA (HO = Held by Operator, RA = Held for Restart Due to Allocation Error) queue.

Process Queuing

When you submit a Process, Sterling Connect:Direct puts the Process in a logical queue based on the Process statement routing parameters on Process Routing.

Sterling Connect:Direct selects Processes in a first-in first-out manner for execution within Process class and priority as sessions are available. The following section describes in detail how Sterling Connect:Direct selects Processes for execution.

Process Selection

Sterling Connect:Direct uses the parallel sessions capability of VTAM so that multiple Processes can execute simultaneously between any two Sterling Connect:Direct nodes. Process selection for each parallel session is based on a class that the user specifies on a Process.

Note: Parallel sessions support requires you to specify PARSESS=YES in the VTAM application definition for both nodes. If two nodes have differing values for parallel sessions, transfers are limited by the maximum number of sessions in the ADJACENT.NODE definition on the node where the Process is submitted.

You define the maximum number of sessions between two nodes in the network map. Because each session has a corresponding class value, the maximum number of sessions and maximum number of classes are equal. Selection of a Process for execution in a given node is based on Process priority (the PRTY parameter of the Process statement) within session class. User-specified class values allow a Process to execute on the session having the matching class value or on sessions with higher class values. The default class is the value specified in the Sterling Connect:Direct network map.

When one Process completes, Sterling Connect:Direct selects another Process (if any) to run on the available session. Sterling Connect:Direct searches until it finds the first Process with a class eligible to execute on the available session.

A typical use for classes is to define critical Processes with low class values so that more sessions are available for their execution. You can specify higher class numbers for time-consuming Processes; this enables sessions with corresponding lower class numbers to become available more frequently.

Intelligent Session Retry

The Intelligent Session Retry feature provides the ability to manage session retries when a connection to a specific node is down so that all Processes are not retried at the same time. This feature makes the existing connection retry facility more efficient by reducing the extra processing overhead created when each Sterling Connect:Direct Process retries the connection independently.

When multiple Processes are submitted for a specific node that is down, the Processes all initially attempt to connect. When this fails, the first Process submitted to this node continues to retry until MAXRETRIES is exceeded. The other Processes to this node are moved to the Hold (HO) queue with a RH (held for retry) status and are not retried. When MAXRETRIES is exceeded for the first Process, it is moved to the Hold (HO) queue with a WC (waiting connection) status for session retry.

After the first Process is moved to HO WC status, it can be restarted by one of the following ways:

* You can manually release the Process causing it to be retried until a connection is made or MAXRETRIES is exceeded, when it will return to HO WC status

- Another Process is submitted to this same node, causing the Process in HO WC status to be retried until either a connection is made or MAXRETRIES is exceeded, returning it to HO WC status
- The SNODE initiates communication with the PNODE, causing the Process in the HO WC status to be released

When the first Process in HO WC status connects and is released, this causes the other Processes being held in HO RH status to be released serially. Therefore, only one Process going to an inactive node will retry until the connection is made resulting in less overhead, since multiple Processes going to the same node are not all attempting to retry at the same time. This also reduces the number of statistic records which would be produced for multiple retries.
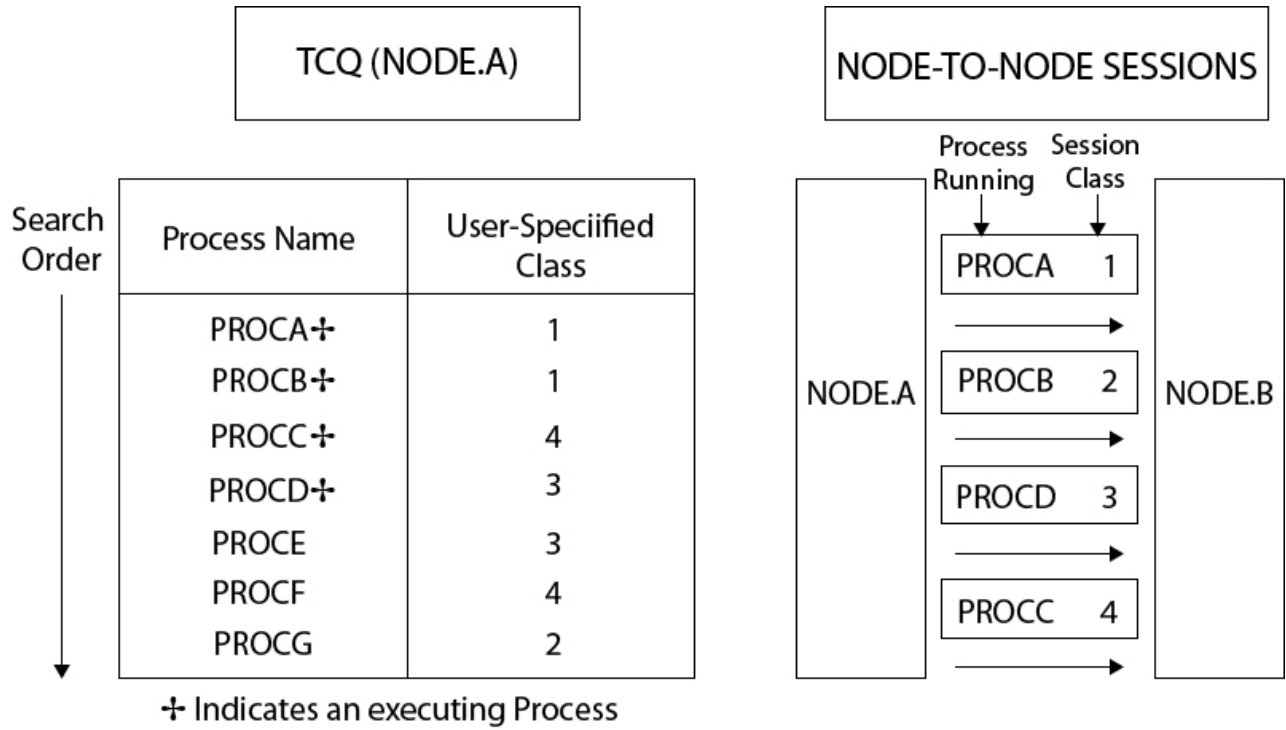
Note: The node name used by the Intelligent Retry feature is the specific name used for the SNODE parameter. This means that if the SNODE is known by more than one node name or TCPNAME value, only those in the queue waiting with that value will be recognized for release.

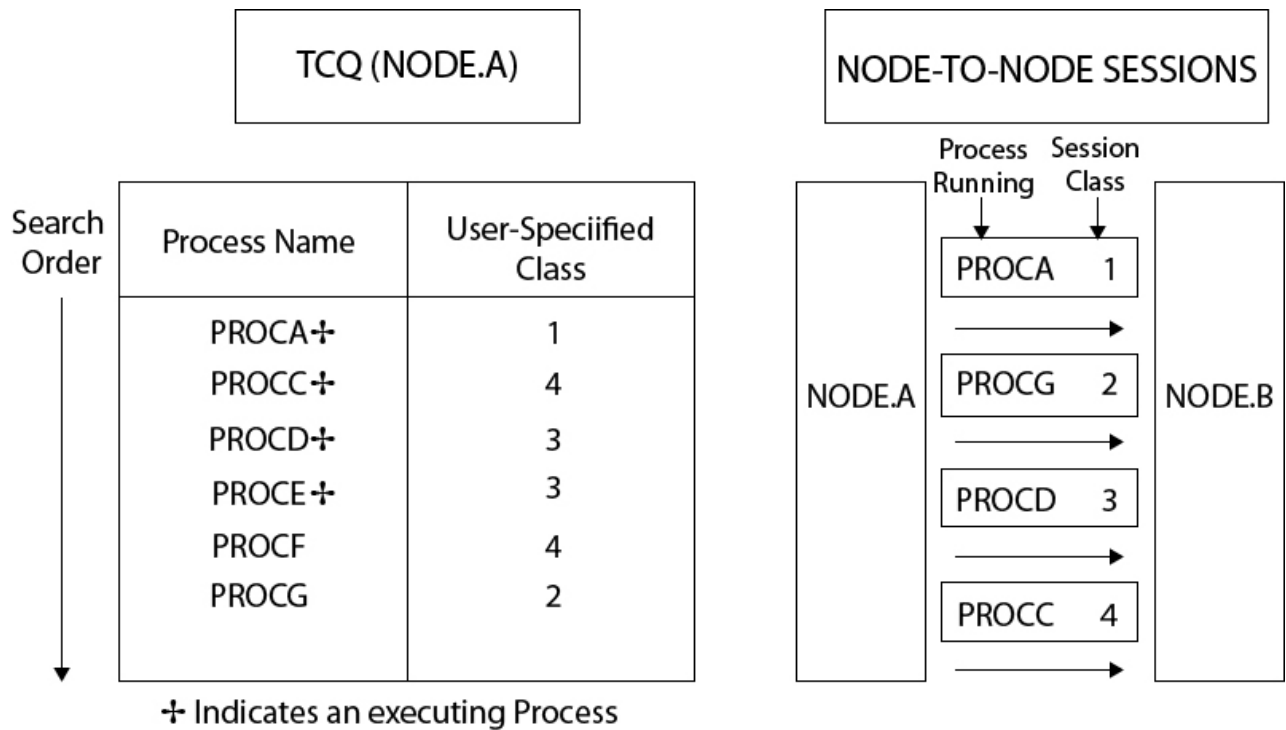## Process Execution Example

In the following example, Sterling Connect:Direct is running. Seven Processes are submitted to the TCQ on NODE.A to execute on NODE.B. All of the submitted Processes are ready to run. In addition, all Processes have a user-specified class value and the same priority. (Class determines which session Sterling Connect:Direct selects to run. Class values allow a Process to execute on a session with a matching class value or on sessions with higher class values.)

This site configuration enables up to four sessions to run between NODE.A and NODE.B. Each session between NODE.A and NODE.B has its own unique class number. Sterling Connect:Direct executes in the following order:

1. NODE.A simultaneously starts four sessions, as in the following figure. Processes are displayed in the same order they appear in the queue. Because the user-specified class of PROCA and PROCB is 1, they can run on the class 2, 3, or 4 sessions, if needed.

TCQ (NODE.A)

Search Order (arrow pointing down)

Process Name	User-Speciified Class
PROCA✛	1
PROCB✛	1
PROCC✛	4
PROCD✛	3
PROCE	3
PROCF	4
PROCG	2

✛ Indicates an executing Process

NODE-TO-NODE SESSIONS

NODE.A ⟷ NODE.B

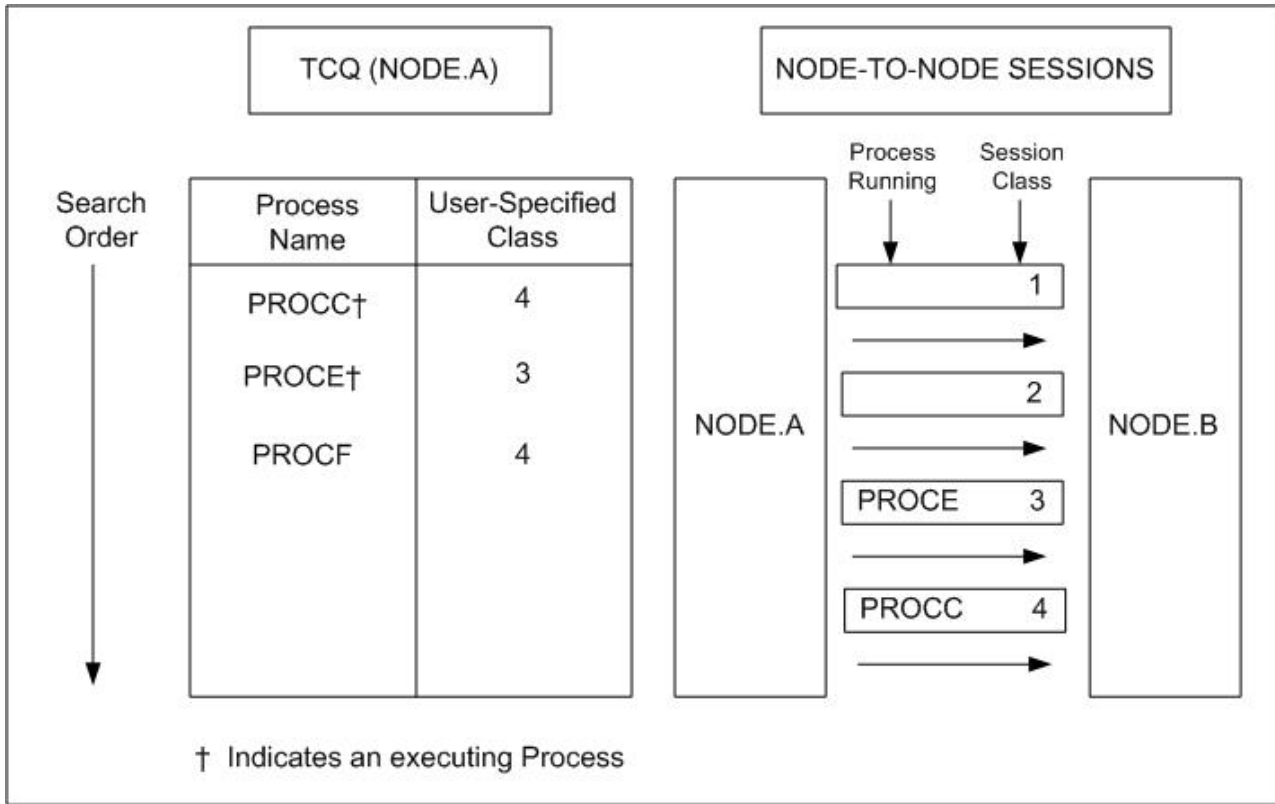| Process Running	Session Class
PROCA	1
PROCB	2
PROCD	3
PROCC	4

2. PROCB completes execution, making a session available. Sterling Connect:Direct looks through the TCQ for the first eligible Process for that session. PROCG is the next Process available to run on the class 2 session because all other Processes have a class value higher than 2.

TCQ (NODE.A)

Search Order (arrow pointing down)

Process Name	User-Speciified Class
PROCA✛	1
PROCC✛	4
PROCD✛	3
PROCE✛	3
PROCF	4
PROCG	2

✛ Indicates an executing Process

NODE-TO-NODE SESSIONS

NODE.A ⟷ NODE.B

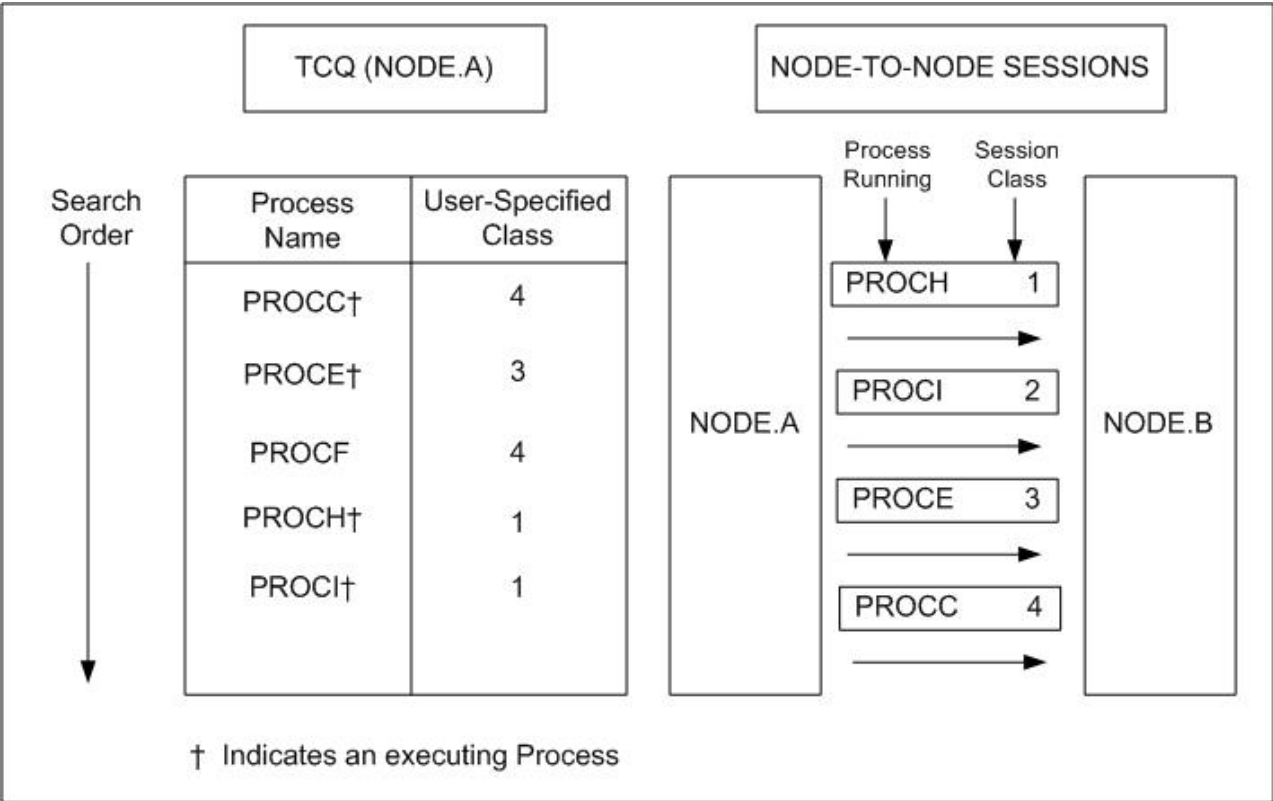| Process Running	Session Class
PROCA	1
PROCG	2
PROCD	3
PROCC	4

3. PROCA, PROCG, and PROCD complete execution. PROCE begins executing in the class 3 session and PROCC begins executing in the class 4 session. The class

1 and class 2 sessions cannot be used because the only Process remaining in the queue (PROCF) is class 4. PROCF must wait for an available class 4 session.

TCQ (NODE.A)

Search Order	Process Name	User-Specified Class
	PROCC†	4
	PROCE†	3
	PROCF	4

NODE-TO-NODE SESSIONS

Process Running Session Class

NODE.A

	1
	2
PROCE	3
PROCC	4

NODE.B

† Indicates an executing Process

4. PROCH and PROCI are submitted. PROCF continues to wait, because it can only run in a class 4 session.

```
TCQ (NODE.A)                          NODE-TO-NODE SESSIONS

                                      Process      Session
                                      Running      Class
Search    Process    User-Specified
Order     Name       Class                     PROCH      1
          PROCC†     4
                                      NODE.A    PROCI      2       NODE.B
          PROCE†     3
          PROCF      4                          PROCE      3
          PROCH†     1
          PROCI†     1                          PROCC      4

       † Indicates an executing Process
```

5. PROCE completes. PROCF is still waiting for PROCC to complete. If another Process is submitted for class 1, 2, or 3, it can use the available class 3 session.
.
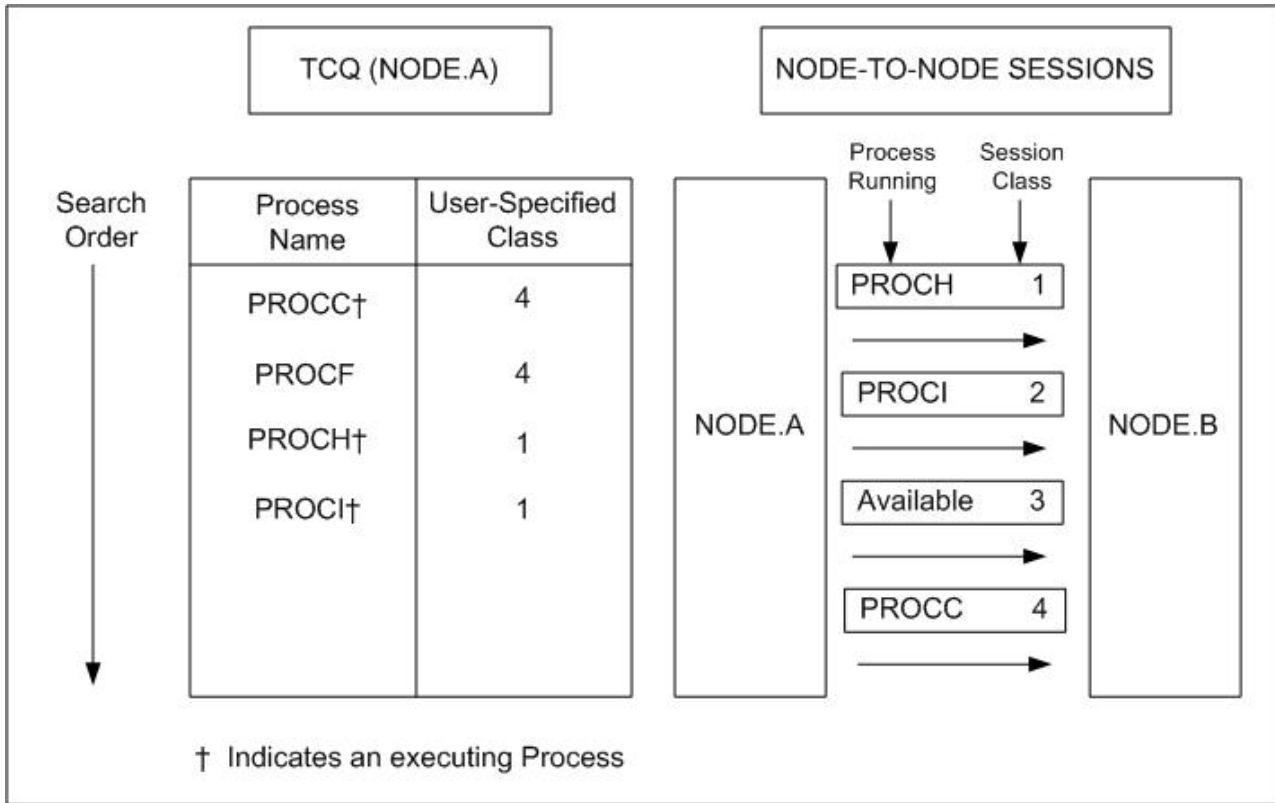
Process Management in a Sterling Connect:Direct/Plex

In a Sterling Connect:Direct/Plex, the Sterling Connect:Direct Manager uses a set of Process management rules to schedule Processes to Sterling Connect:Direct Servers. These rules are applied in the following order:

1. The Sterling Connect:Direct Manager first checks if the remote node is running a Sterling Connect:Direct release that supports multiple servers. If the remote node does not support multiple servers, the Sterling Connect:Direct Manager schedules all Processes to the Sterling Connect:Direct Server that is already running a Process with this node, and Process management does not occur. If the node supports multiple servers, the Sterling Connect:Direct Manager continues with the Process management rules that follow.

2. The Sterling Connect:Direct Manager determines which Sterling Connect:Direct Servers on the remote node can run the Process, based on the PLEXCLASS of the Sterling Connect:Direct Server and the Process, and the current transport support in the Sterling Connect:Direct Server.

3. The Sterling Connect:Direct Manager then determines which Sterling Connect:Direct Server from step 2 has the lowest workload. The current Process workload of each Sterling Connect:Direct Server is determined by dividing the number of active Processes on the server by its MAXPROCESS initialization parameter value.

4. If two or more Sterling Connect:Direct Servers have the lowest workload, the Process is sent to the Sterling Connect:Direct Server that has the earliest last scheduled time (the time of day that the Sterling Connect:Direct Server Process is scheduled).
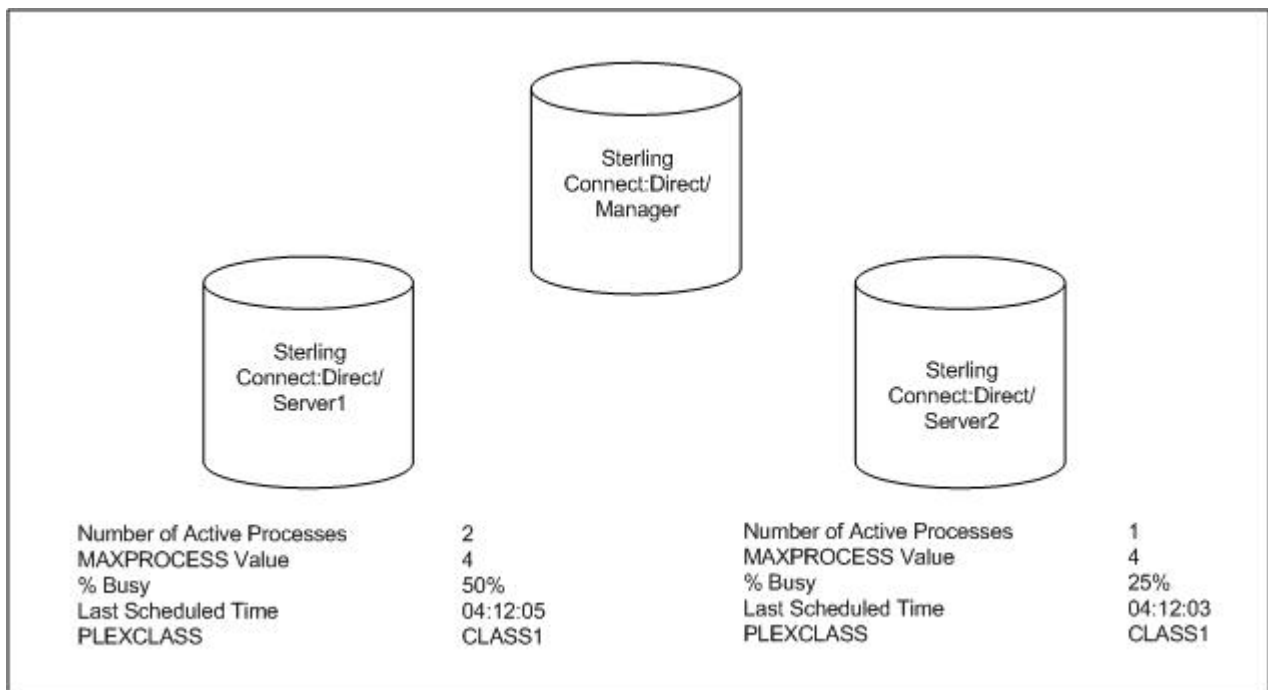
Note: If a Sterling Connect:Direct/Plex communicates with an external Sterling Connect:Direct system, the external system must send work to the Sterling Connect:Direct Manager to balance Process workloads in the Sterling Connect:Direct/Plex. If an external Sterling Connect:Direct system communicates directly with a Sterling Connect:Direct Server, work from the external system is not distributed using Process management; the Sterling Connect:Direct Server simply does the requested work. However, the Sterling Connect:Direct Server still informs the Sterling Connect:Direct Manager that it is processing work, so the Sterling Connect:Direct Manager can continue to correctly balance Process workload in the Sterling Connect:Direct/Plex.

Also, to perform workload balancing with an external Sterling Connect:Direct system when the Sterling Connect:Direct/Plex is the SNODE, the external system must be a Sterling Connect:Direct version that supports the Sterling Connect:Direct/Plex environment. You do not have to configure the external system as a Sterling Connect:Direct/Plex. Configure it to communicate directly with the Sterling Connect:Direct Manager.

Example: Process Management Steps

Following is an example of the steps in Process management.

1. A Sterling Connect:Direct/Plex consists of a Sterling Connect:Direct Manager and two Sterling Connect:Direct Servers. Both Sterling Connect:Direct Servers can process the same PLEXCLASS (CLASS1).

Number of Active Processes	2
MAXPROCESS Value	4
% Busy	50%
Last Scheduled Time	04:12:05
PLEXCLASS	CLASS1

|	
Number of Active Processes	1
MAXPROCESS Value	4
% Busy	25%
Last Scheduled Time	04:12:03
PLEXCLASS	CLASS1

2. The Sterling Connect:Direct Manager receives a new Process. After determining that both Sterling Connect:Direct Servers support the PLEXCLASS required to run the Process, the Sterling Connect:Direct Manager determines which Sterling Connect:Direct Server has the lowest workload.

   In this case, SERVER2 has the lowest workload; it has one active Process out of a maximum of four. The Sterling Connect:Direct Manager routes the Process to SERVER2, and the last scheduled time of SERVER2 is updated to the current time.
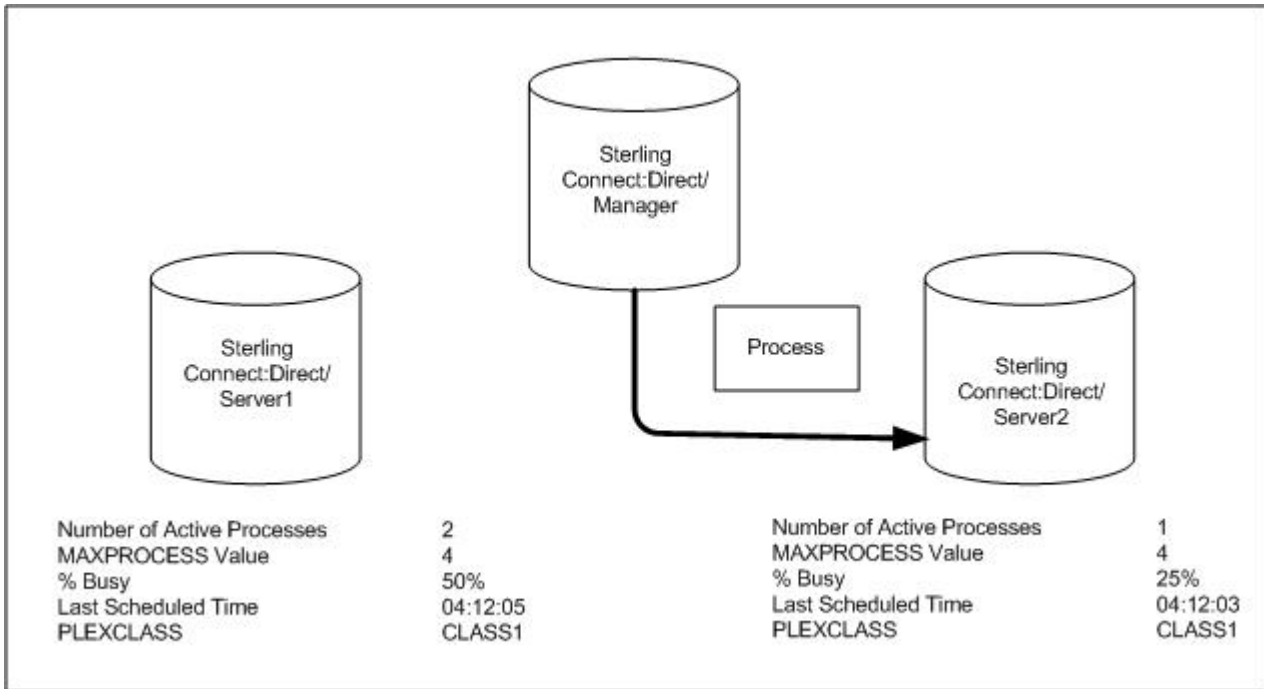
3. The Sterling Connect:Direct Manager has another Process to schedule. SERVER1 and SERVER2 have the same workload. However, the last Process is scheduled to SERVER2, so the Sterling Connect:Direct Manager routes the new Process to SERVER1.
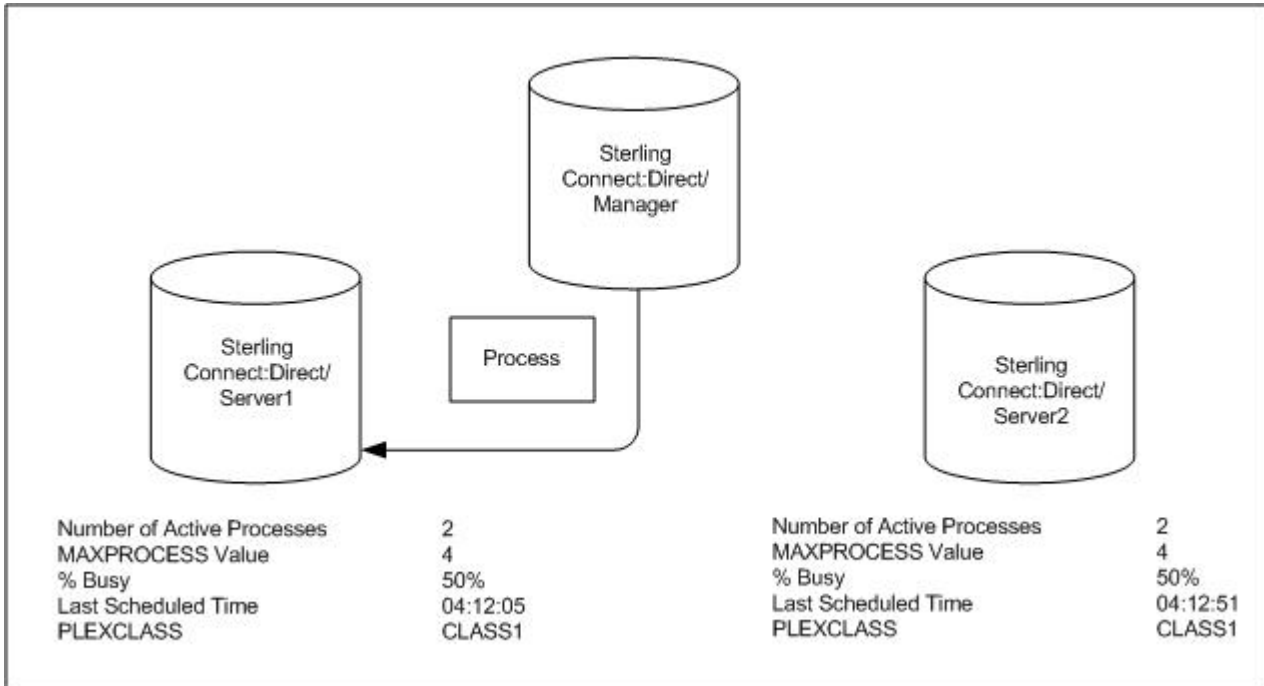
SUBMIT Command

The SUBMIT command enables you to submit a Process to the TCQ for execution. Parameters you specify on the SUBMIT command override any corresponding parameters specified in the Process itself.

Note: If you are using the Extended Submit Facility (ESF), you can use the SUBMIT command to submit Processes to the TCQ, even if the DTF is inactive.

The SUBMIT command has the following format. The Label is optional.

```
Label   SUBmit   Parameters and Subparameters
```

The SUBMIT command has the following parameters. The required parameters and keywords are in bold print. Default values for parameters and subparameters are underlined.

Label	Command	Parameters
(optional)	SUBmit	**PROC= member** **or** **DSN= dsn | dsn(member)**CASE= Yes | No CLASS= n DEBUG= trace settings for this Process HOLD= Yes | No | Call MAXDELAY= [unlimited | queued | 0 | hh:mm:ss] NEWNAME= newname NOTIFY= %USER | user PACCT= 'pnode accounting data' PLEXCLASS= (pnode class, snode class) PNODE= primary node name PNODEID= (ID, pswd, newpswd) PRTY= n REQUEUE= Yes | No RETAIN= Yes | No | Initial SACCT= 'snode accounting data' SNODE= secondary node name | TCPNAME=tcpvalue;port SNODEID= (ID, pswd, newpswd) &symbolic 1= variable string 1 &symbolic 2= variable string 2 ...=... &symbolic N= variable string N

The following tables describes SUBMIT command parameters:

Parameter	Description
PROC = member	Specifies the Process Library member name. This name is the member of the PUBLIB which contains the Process you are submitting. The member name is a 1-8 character alphanumeric string, with the first character alphabetic. This parameter is required if the Process resides in the Sterling Connect:Direct PUBLIB. The Sterling Connect:Direct PUBLIB PDS is specified by the DMPUBLIB ddname allocated to the TSO session or specified in the batch job stream.
DSN = dsn | dsn (member)	Specifies the data set name or the name of the member of a PDS that contains the Process if the Process is not in the Sterling Connect:Direct PUBLIB. This parameter is required if the Process does not reside in the Sterling Connect:Direct PUBLIB. **dsn** is the data set name of a sequential file that contains the Process. **dsn(member)** specifies the PDS name and member name (in parentheses) that contains the Process. Specify either PROC or DSN; do not specify both.

Parameter	Description
CASE = Yes | No	Specifies whether parameters associated with accounting data, user ID, password, and data set name in the command and in the Process are to be case sensitive. This parameter is optional.
CLASS = n	Determines the node-to-node session on which a Process can execute. See your Sterling Connect:Direct administrator for which class to specify. The range is 1-255. This parameter is optional.
DEBUG= trace	Specifies the 8-position trace setting for this Process. This parameter enables you to specify a part trace for a particular Process. For more information see Debug Settings in the *IBM Sterling Connect:Direct for z/OS Administration Guide*.
HOLD = No | Yes | Call	Specifies whether or not the Processes are placed in the hold queue. This parameter is optional. **No** specifies that Sterling Connect:Direct does not place the Process in the hold queue, but places it in the WAIT for execution queue (EX). **HOLD=NO** is the default. **Yes** specifies that the Process remains in the hold queue until either a CHANGE PROCESS command releases the Process or a DELETE PROCESS command deletes the Process. When HOLD=YES and you specify a value for the STARTT parameter, Sterling Connect:Direct places the Process submitted in the hold queue. **Note:** When RETAIN=Y, Sterling Connect:Direct ignores the HOLD parameter. **Call** specifies that Sterling Connect:Direct is to place the Process in the hold queue until a session is established with the specified SNODE. This session is established by either another Process starting on the PNODE destined for the same SNODE or the SNODE contacting the PNODE. For example, a Process submitted with HOLD=NO establishes a session and causes execution of any Processes residing on the SNODE destined for this node that are submitted with HOLD=CALL. **Note:** To support dial-up connections from Sterling Connect:Direct for Microsoft Windows platforms and release Processes serially, define the SNODE using a TCP/IP address of 0.0.0.0 (a null IP address). You may let the port number default since it will be resolved at connection time. Processes submitted to such nodes will default to HOLD=CALL status and can only be released by a NULL or ENABLE process from Sterling Connect:Direct for Microsoft Windows. Releasing Processes to such nodes will immediately cause them to return to HOLD=CALL status without executing because the connection cannot be resolved. Processes initiated by such nodes will execute normally, but will not release the HOLD=CALL Processes. Checkpoint restart is supported for such nodes.

Parameter	Description
MAXDELAY = [unlimited | queued | 0 | hh:mm:ss]	Indicates that the submit command waits until the submitted Process completes execution or the specified time interval expires. This parameter is optional. Do not use MAXDELAY for a submit within a Process—use only in SUBMIT commands. **Note:** If the Process does not complete within the time interval specified by queued or hh:mm:ss, the API returns SSPA006I, RC=4 and DGADBATC terminates with RC=48 (x'30'). **unlimited** specifies that the submit command waits until the Process completes execution. This is the default when no parameters are specified. **queued** specifies that the submit command waits until the Process completes or 30 minutes, whichever occurs first. **0** specifies that the submit command attempts to start a session for the submitted Process to execute on immediately. If Sterling Connect:Direct cannot establish a session, after all retries are exhausted, the Process is flushed and the submit command fails with the error SVTM118I RC=52(x'34'). **Note:** If Sterling Connect:Direct cannot establish a session after all retries are exhausted due to all available sessions on the remote node being in use, that is, when session attempts fail with error SVTM080I SESSION (nnn) REJECTED pname (pnum) SNODE=remote.node, the Process is flushed and the submit command fails with the error SVTM118I RC=12(x'0C'). MAXDELAY=0 Processes will not use the intelligent retry feature. When a transfer to a remote node times out and retries, subsequent transfers to the same remote node will also time out and retry rather than being added to the wait queue. **hh:mm:ss** specifies that the submit command waits for an interval no longer than the specified hours, minutes, and seconds or until the Process completes, whichever occurs first. **Note:** If you specify **MAXDELAY** without the equal sign (**=**) and with no parameter, MAXDELAY is set to 00:00:00 and the submit command attempts to start a session for the submitted Process to execute on immediately.
NEWNAME = newname	Specifies the new name of the Process. The default is the label on the Process statement. This parameter is optional.
NOTIFY = %USER | user ID	Specifies the user ID to receive Process completion messages. This parameter is optional. **%USER** specifies that the user who submitted the Process receives the completion messages, if the Sterling Connect:Direct user ID that the user is currently logged on with is the same as the TSO user ID. If the Sterling Connect:Direct user ID is different from the TSO user ID, the TSO user is not notified but the ID to which Sterling Connect:Direct is logged on will be notified. **user ID** specifies the TSO user ID that receives Process completion messages. **Note:** The NOTIFY capability is not supported across z/OS images in the sysplex environment. Sterling Connect:Direct cannot send Process completion messages across z/OS images in a sysplex.

Parameter	Description
PACCT = 'pnode accounting data'	Accounting data for the PNODE. The maximum length of the accounting data is 256 characters. If special characters are part of the accounting data, you must enclose the string in single quotation marks. This parameter is optional.
	This data overrides any accounting data specified on the SIGNON command and any accounting data specified in the Process statement of the submitted Process.
PLEXCLASS = (pnode class, snode class)	Specifies the class that directs the Process to only certain servers in a Sterling Connect:Direct/Plex. This parameter is only used in a Sterling Connect:Direct/Plex and is optional.
	You can designate each server in a Sterling Connect:Direct/Plex to support only certain PLEXCLASSes through the CDPLEX.PLEXCLASSES initialization parameter. You can then limit Processes to only those servers by specifying the PLEXCLASS in the Process definition.
	The pnode class controls which Sterling Connect:Direct Server runs the Process. The snode class controls what other node is used with the Process. The pnode class and snode class are each 1-8 characters long. An asterisk (*) indicates that the Process runs on any server with an asterisk designated in the CDPLEX.PLEXCLASSES initialization parameter. If you do not specify a PLEXCLASS, the network map is checked for a default PLEXCLASS. If the network map does not specify a default PLEXCLASS, then an asterisk is used as the default.
	If a Process must run on a specific Sterling Connect:Direct Server, specify the Sterling Connect:Direct Server name in this field. The Process only runs on that server.
PNODE = primary node name	Specifies the primary node of the Process. This parameter is optional.
	primary node name is a 1-16 alphanumeric character name defined in the network map. You can express the name in alphanumerics or nationals (@#$) with embedded periods.
	The node to which you submit the Process is always the PNODE. You do not need to specify this parameter. It defaults to the name of the node submitting the Process. PNODE is for documentation purposes only.
PNODEID = (ID, pswd, newpswd)	Specifies security user IDs and security passwords at the PNODE. This parameter is optional. ID specifies the security ID that Sterling Connect:Direct passes to a security exit for validations on the PNODE side of the Process. The range is 1-64 alphanumeric characters.
	pswd specifies the current security password. The security exit uses this parameter to validate the current security password on the PNODE side of the Process. It can contain 1-64 alphanumeric characters.
	newpswd specifies the new security password. The security exit uses this parameter to change the current security password to the new security password. The range is 1-64 alphanumeric characters.

Parameter	Description
PRTY = n	Specifies the Process priority in the Transmission Control Queue. High numbers indicate high priorities; low numbers indicate low priorities. Sterling Connect:Direct uses this priority only for Process selection; it does not affect the priority during transmission. The default is defined during your installation. The range is from 0-15. This parameter is optional.
REQUEUE = Yes | No	Specifies whether Sterling Connect:Direct requeues a COPY step if an ABEND occurs during processing. This parameter is optional. **Yes** places the requeued Process in the HOLD queue with a status of HELD IN ERROR (HE). You can then take corrective action and restart the Process at the step that failed. Note that you must explicitly release the Process from the HOLD queue when the status is HELD IN ERROR (HE). **No** specifies the failing copy step is not requeued if it fails with an ABEND (such as X37). The remaining steps in the Process are allowed to execute. The default is NO. The value REQUEUE=No is forced in the case of a submit containing the MAXDELAY parameter.
RETAIN = Yes | No | Initial	Specifies whether or not Sterling Connect:Direct keeps a copy of the Process in the HOLD queue after the Process has executed. This parameter is optional. **Yes** keeps a copy of this Process in the HOLD queue after the Process executes. The copy of the Process does not execute until you release it through a CHANGE Process command. If you specify RETAIN=YES, Sterling Connect:Direct automatically holds the Process until you release it, unless you include the STARTT parameter in your Process. Use RETAIN in conjunction with STARTT to cause a Process to run repeatedly at a given time each day. **No** specifies that Sterling Connect:Direct is to delete the Process after execution. The default value for RETAIN is NO. The value RETAIN=No is forced in the case of a submit containing the MAXDELAY parameter. **Initial** specifies that Sterling Connect:Direct is to execute the Process every time Sterling Connect:Direct is initialized. **Note:** Do not code the STARTT parameter with the RETAIN=I parameter.
SACCT = 'snode accounting data'	Specifies the accounting data for the SNODE. The maximum length of the accounting data is 256 characters. If you include special characters with the accounting data, you must enclose the string in single quotation marks. This parameter is optional. This data overrides any accounting data specified on the SIGNON command and any accounting data specified in the Process statement.

Parameter	Description
SNODE = secondary node | SNODE=TCPNAME | UDT33NAM = tcpvalue;port	Specifies the secondary node used in this Process. This parameter is optional. **secondary node name** is a 1-16 alphanumeric name that is defined in the network map. The following characters are allowed: A-Z, 0-9, !, @, #, $, %, &, {, }, +, -, ^ Sterling Connect:Direct for z/OS does not accept the following characters for the SNODE: (,) =, \, ", ', <, >, |, || Use SNODE=TCPNAME|UDT33NAM =tcpvalue to specify TCP/IP or UDT connections that are not defined in the network map. **tcpvalue** can be a DNS name up to 255 characters or a 15-character IPv4 or 39-character IPv6 TCP/IP address. **port** is the TCP/IP port number. It can be up to 5 characters long. **Note:** If the TCPNAME keyword is used and the port is not specified, the TCP.IP.DEFAULT entry is used if the NODE is not defined in the Netmap.
SNODEID = (ID, pswd, newpswd)	Specifies security user IDs and security passwords at the SNODE. **ID** specifies the security ID that Sterling Connect:Direct passes to a security exit for validation on the SNODE side of the Process. It can contain 1-64 alphanumeric characters. **pswd** specifies the current security password. The security exit uses this parameter to validate the current security password on the SNODE side of the Process. It can contain 1-64 alphanumeric characters. In the case where the SNODE can Process a PassTicket password, the PNODE generates a PassTicket when only a SNODE user ID override is specified. The actual generation is contingent upon the information shared in the PNODE Authorization File and the option that generates the stage 2 security exit. The *IBM Sterling Connect:Direct for z/OS Administration Guide* contains details for the Authorization File and stage 2 security exit characteristics. **newpswd** specifies the new security password. The security exit uses this parameter to change the current security password to the new security password. The range is 1-64 alphanumeric characters.

Parameter	Description
STARTT = ([date │ day] [,hh:mm:ssXM])	Specifies that Sterling Connect:Direct not execute the Process until a specified date or time. The date, day, and time are positional parameters. If you do not specify the date or day, place a comma before the time. This parameter is optional.
	Note: Do not code STARTT with RETAIN=INITIAL.
	date specifies the date to execute the Process. You can specify the day (dd), month (mm), and year (yy for 2-digit year and yyyy for 4-digit year). You can use periods or backslashes (/) to separate the components of a date value. You can omit the separators only for transfers between mainframe nodes. Use separators to guarantee transfers between all platforms.
	You can use the following date formats, according to which date order is specified in the DATEFORM initialization parameter:
	• DATEFORM=MDY specifies the date format as mm/dd/yy, mm/dd/yyyy, mm.dd.yy, or mm.dd.yyyy
	• DATEFORM=DMY specifies the date format as dd/mm/yy, dd/mm/yyyy, dd.mm.yy, or dd.mm.yyyy
	• DATEFORM=YMD specifies the date format as yy/mm/dd, yyyy/mm/dd, yy.mm.dd, or yyyy.mm.dd
	• DATEFORM=YDM specifies the date format as yy/dd/mm, yyyy/dd/mm, yy.dd.mm, or yyyy.dd.mm
	Valid Julian dates formats are yyddd, yyyyddd, yy/ddd, yyyy/ddd, yy.ddd, or yyyy.ddd
	If you specify a date without a time, the time defaults to 00:00.
	If RETAIN=YES, you cannot specify a date in the STARTT parameter.

Parameter	Description
STARTT = ([date | day] [,hh:mm:ssXM]) (continued)	**day** specifies the day of the week that Sterling Connect:Direct is to release the Process for execution. Valid names are MOnday, TUesday, WEdnesday, THursday, FRiday, SAturday, and SUnday. You can also specify TODAY, which releases the Process for execution today, or TOMORROW, which releases the Process for execution the next day.
	If you specify the day of the week with RETAIN=YES, the Process executes the same day every week.
	If you specify a day without a time, the time defaults to 00:00. A time of 00:00 means that if you submit a Process on Monday, with Monday as the only STARTT parameter, the Process does not run until the following Monday.
	hh:mm:ssXM indicates the time of day in hours (hh), minutes (mm), and seconds (ss) that Sterling Connect:Direct is to release the Process. You can set XM to AM or PM, or you can omit it if you are using a 24-hour clock. You need not specify minutes and seconds.
	You can express the time of day using the 24-hour clock or the 12-hour clock. If you do not use AM and PM, Sterling Connect:Direct assumes the 24-hour clock. If you use the 12-hour clock, you can express 01:00:00 hours as 1:00A, and 13:00 hours as 1PM. If you use the 24-hour clock, valid times are 00:00-24:00.
	You can also specify NOON, which releases the Process for execution at noon, or MIDNIGHT, which releases the Process for execution at midnight.
	If you code hh:mm:ssXM with RETAIN=YES, Sterling Connect:Direct schedules the Process for execution the same time every day.
	Note: When you specify both HOLD=YES and a STARTT value, the HOLD specification takes precedence. Sterling Connect:Direct places a Process submitted with HOLD=YES on the hold queue even if you specify a start time.
&symbolic 1 = variable string 1 &symbolic 2 = variable string 2... &symbolic N = variable string N	Specifies the default value substituted for the symbolic parameter in the Process. If you use a symbolic in the SUBMIT command, it overrides any default values you specify in the Process statement.
	Specify a null value by immediately following the equal sign with a comma. You must enclose a symbolic parameter containing special characters in single quotation marks.
	You can set an ampersand (&) symbolic parameter to another single ampersand symbolic parameter that is resolved during the first Process submission. Do not use identical symbolic names. The maximum variable string length is 256 characters.

SUBMIT Command Examples

Use these examples to help you gain a basic understanding of how you can use the SUBMIT command.

Process Example

The following example shows the syntax for a Process named PAYROLL.

```
SUBMIT PROC=PAYROLL -
 HOLD=Y  RETAIN=Y -
 PACCT='1959, DEPT 27' -
 SACCT='1962, DEPT 24' -
 CASE=YES
```

In this example, the SUBMIT command was used to:
- Place the Process (named PAYROLL) in the HOLD queue.
- Retain a copy after it is released for execution.
- Create case sensitivity for fields associated with accounting data, user ID, password, and data set name in the SUBMIT command and in the PAYROLL Process.

Symbolic Substitution Example

In the following example, Sterling Connect:Direct resolves the symbolic &DSN in the Process COPYSEQ upon submission:

```
SUBMIT PROC=COPYSEQ  -
 SNODE=CHICAGO, &DSN=MYFILE
```

Submitting Processes through the Batch Interface
About this task

To submit a Process through the batch interface, perform these steps:

Procedure
1. Place your SUBMIT command in the DGADBATC job stream as described in Introduction to the Batch Interface.
2. Submit the job while Sterling Connect:Direct is running.

   Note: If the Extended Submit Facility (ESF) is available, the DTF does not need to be running to execute your command.
3. Verify your results.

Submitting Processes through the IUI

The Interactive User Interface (IUI) enables you to create, edit, and submit Processes using the SB, DF, and CF options available on the PRIMARY OPTIONS MENU.

IUI Submit Options

The SB, DF, and CF options available from the IUI enable you to perform the following submit options for Processes:

Option	Description
SB	Enables you to submit Processes from the Sterling Connect:Direct PUBLIB or a library you specify on the screen. You can also override certain parameters in the existing Process.

Option	Description
DF	Enables you to edit, create, and submit Processes residing in the Sterling Connect:Direct PUBLIB or a library you specify on the screen. You edit or create a Process using the ISPF editor.
CF	Enables you to dynamically build a COPY Process through fill-in-the-blank panels and submit it.

Validating Processes from the SB, DF, and CF IUI Options

From any of the IUI SUBMIT screens available through the SB, DF, and CF options, you can validate the Process syntax without submitting the Process, or you can submit the Process, which includes verifying the syntax, as explained in the following table:

Operation	Related Parameter or Command	Result
Validate Process syntax	• Enable VALIDATE ONLY parameter • Issue SUBV command	• The Process is displayed in the VIEW PROCESS screen. • If the Process is valid, the message Submit Process for validation command was successful is displayed. • If the Process is invalid, a message identifies the problems in the Process. You can press **PF1** for information to troubleshoot the problem. • You can press **PF3** to return to the primary SB, DF, or CF screen.
Submit Process and validate syntax	• Issue SUBMIT or SUB command	• If the Process is valid, it is executed and a Process number is displayed for reference. • If the Process is invalid, a message describes the problem. You can press **PF1** for information to troubleshoot the syntax errors.

Using the SB IUI Option to Submit a Predefined Process

About this task

The Interactive User Interface (IUI) enables you to submit predefined Processes using the SB option, which is available from the PRIMARY OPTIONS MENU (see Primary Options Menu). You can submit a Process from the Sterling Connect:Direct PUBLIB or a library you specify and override certain parameters in the existing Process.

To submit a predefined Process from the Sterling Connect:Direct IUI:

Procedure

1. Select option **SB** from the Primary Options Menu to display the SUBMIT PROCESS screen.

```
If you enable the SECURITY OVERRIDE parameter, type the security override
information in the Sterling Conect:Direct
SECURITY OVERRIDE screen.
 node.name                 Connect:Direct SECURITY OVERRIDE        TIME: hh:mm
 CMD==>
 PRIMARY NODE:
  SECURITY ID: _____
  PASSWORD   :
 SECONDARY NODE:
  SECURITY ID: _____
  PASSWORD   :
```

2. Type the name of the Process to submit.
3. Take one of the following actions:
   - To submit the Process, press **Enter**.
   - To define additional parameters, continue with step 4.
4. Type any additional parameters of your SUBMIT command and press **Enter**.

   For SUBMIT parameter descriptions not included in the following table, press
   PF1 or see SUBMIT Command.

Field	Description
TRANSPORT	Specifies the method of transport to use for the file transfer.
	NETMAP—Causes Sterling Connect:Direct to search in the network map for the sending and receiving nodes. If you type a Transport of NETMAP, the SNODE keyword remains SNODE=secondary node.
	TCP—Indicates that the NODE NAME field contains an alias name or an IP address. Sterling Connect:Direct does not look in the network map for node information. If you type TCP in the Transport field, the SNODE keyword becomes SNODE=TCPNAME=tcpvalue.
	UDT33—Indicates that the NODE NAME field contains an alias name or an IP address. Sterling Connect:Direct does not look in the network map for node information. If you type UDT33 in the Transport field, the SNODE keyword becomes SNODE=UDT33NAM=udtvalue.
	DNS—Enables you to enter a domain name up to 255 bytes.
SECURITY OVERRIDE	Enables you to override security information such as password and user ID for the primary and secondary node.
	Yes = Enable security overrride.
	No = Do not override security information.
VALIDATE ONLY	Enables you to validate the Process syntax without submitting the Process.
	Yes = Validate without submitting the Process.
	No = Do not validate without submitting the Process.
CASE SENSITIVITY	Specifies whether parameters associated with accounting data, user ID, password, and data set name in the Submit Process are to be case sensitive. The default is **NO**, which does not allow mixed case.

5. If you enable the SECURITY OVERRIDE parameter, type the security override
   information in the Sterling Connect:Direct SECURITY OVERRIDE screen.

```
If you enable the SECURITY OVERRIDE parameter, type the security override
information in the Sterling Connect:Direct
SECURITY OVERRIDE screen.
 node.name              Connect:Direct SECURITY OVERRIDE        TIME: hh:mm
 CMD==>
 PRIMARY NODE:
  SECURITY ID: _____
  PASSWORD   :
 SECONDARY NODE:
  SECURITY ID: _____
  PASSWORD   :
```

6. Press **Enter** to perform one of the following actions:
   - Submit the Process. See the table in Operation for the possible results.
   - View the results of the validate-only operation in the VIEW PROCESS panel, if you enabled the VALIDATE ONLY parameter. See the table in Operation for the possible results.

   CAUTION:
   Press PF3 to exit the screen from which you submitted the Process. Each time you press Enter, the Process is submitted.

7. If you performed the validate-only operation, press **PF3** to return to the SUBMIT PROCESS screen.

Using the DF IUI Option to Create, Edit, and Submit Processes

The Interactive User Interface (IUI) enables you to modify, create, and submit Processes using the DF option, which is available on the PRIMARY OPTIONS MENU. Using the DF option, you can:

- Modify a Process
- Create a new Process
- Submit a Process
- Copy statement models to create a Process

The Sterling Connect:Direct Public Process Library (PUBLIB) contains Process statement models that you can use as templates for creating Sterling Connect:Direct Processes. The DF option enables you to copy Process statement models, edit them for your environment using the ISPF editor, and. submit Processes residing in the Sterling Connect:Direct PUBLIB or in a library you specify.

CAUTION:
Do not edit a sample member directly. Keep the source as is, edit a new name, and then copy the member into the new one. Save as a new name. The SDGAPROC Process library contains alias names that if edited and saved will break the aliases.

The PUBLIB contains commented files and uncommented files. File names of commented files are preceded by the at sign (@); file names with the pound sign (#) prefix do not include comments.

See Validating Processes from the SB, DF, and CF IUI Options for details about how to validate the syntax of a Process with and without submitting it.

Modifying and Submitting a Process Using the DF IUI Option

About this task

To modify a Process using the ISPF editor and submit the Process to the DTF:

Procedure

1. Choose option **DF** from the Primary Options Menu to display the Connect:Direct PROCESS DEFINITION screen.
2. Type the member name of the Process.
3. Verify the library location and press **Enter**.

   The PROCESS LIBRARY NAME field is required. If the member is located in the Sterling Connect:Direct PUBLIB, type the library name that is displayed in the PUBLIC PROCESS LIB field in the PROCESS LIBRARY NAME field.
4. After Sterling Connect:Direct displays the Process in ISPF edit mode, make the desired changes.
5. Press **PF3** to return to the PROCESS DEFINITION screen.
6. Specify case sensitivity. Case sensitivity applies to the SUBMIT command and the Process.
7. Take one of the following actions:
   - To validate the Process without submitting it, type **SUBV** and refer to the table in "Validating Processes from the SB, DF, and CF IUI Options" on page 74 for information on the results.
   - To submit the Process, type **SUBMIT** (or **SUB**) on the command line and press **Enter**.

Creating and Submitting a New Process Using the DF IUI Option

About this task

To create and submit a new Process:

Procedure

1. Choose option **DF** from the Primary Options Menu to display the Connect:Direct PROCESS DEFINITION screen.
2. Type the member name of the new Process.
3. Specify the name of the library where you want to save the new Process and press **Enter**.

   The member location can be your private Process library (PROCESS LIBRARY NAME) or the Sterling Connect:Direct PUBLIC PROCESS LIBRARY.
4. After Sterling Connect:Direct displays an ISPF editor screen, type your new Process.
5. Press **PF3** to save the Process in the PROCESS LIBRARY you specified and return to the PROCESS DEFINITION SCREEN.
6. To validate the Process without submitting it, type **SUBV** on the command line and press **Enter**. See the table in "Validating Processes from the SB, DF, and CF IUI Options" on page 74 for information about the results.
7. Specify case sensitivity. Case sensitivity applies to the SUBMIT command and the Process.

8. To submit the Process, type **SUBMIT** (or **SUB**) in the command line and press **Enter**.

Submitting a Process Using the DF IUI Option

About this task

To submit a Process to the DTF:

Procedure
1. Choose option **DF** from the Primary Options Menu to display the Connect:Direct PROCESS DEFINITION screen.
2. Type **SUBMIT** (or SUB) on the command line.
3. Type the member name of the Process.
4. Verify that the library name that contains the member you want to submit is displayed in the PROCESS LIBRARY NAME field. If the member is located in the Sterling Connect:Direct PUBLIB, type the library name that is displayed in the PUBLIC PROCESS LIB field in the PROCESS LIBRARY NAME field.
5. Specify case sensitivity. Case sensitivity applies to the SUBMIT command and the Process.
6. Press **Enter**. See the table in "Validating Processes from the SB, DF, and CF IUI Options" on page 74 for information about the results.

Using Statement Models to Create a Process
About this task

To copy a Process statement model to a new PDS member:

Procedure
1. Choose option **DF** from the Primary Options Menu to view the Sterling Connect:Direct PROCESS DEFINITION screen.
2. Type the name of the new PDS member.

   Note: The PUBLIC PROCESS LIB displays the partitioned data set (PDS) allocated by the signon CLIST or the TSO logon procedure.
3. Type the PROCESS LIBRARY NAME and press **Enter**.
4. Type **COPY** on the command line at the top of the blank member and press **Enter.**
5. When the ISPF Edit/View-Copy screen is displayed, type the member name of the PROCESS statement model you want to copy in the DATA SET NAME field and press **Enter**.

   For example, to create your Process, first copy the PROCESS statement. Specify @PROCESS to use commented models from the PUBLIB, or #PROCESS to use uncommented models in your Process.
6. To add a statement model, type **a** in the first column of the last line of the new member and press **Enter**.
7. Repeat steps 4 through 6 to copy additional statement models into the member following the PROCESS statement.
8. Edit the statement model or models for your environment according to the following guidelines:
   • Replace underscores with the appropriate parameter values.

- Provide an appropriate Process name in the PROCESS statement.
- Delete all lines that are not applicable.
- Continuation marks are necessary on all but the last line of each statement model.
- You can delete comment lines. They are optional.

9. Press **PF3** to save the changes and return to the Sterling Connect:Direct PROCESS DEFINITION screen.

10. Take one of the following actions:
- To validate the Process without submitting it, type **SUBV** and press **Enter**. See the table in Operation for information about the results.
- To submit the Process, type **SUBMIT** on the command line and press **Enter**. See the table in Operation for information about the results

Using the CF IUI Option to Generate a COPY Process

The CF option of the Interactive User Interface (IUI) enables you to dynamically generate a COPY Process through fill-in-the-blank panels and submit it.

CAUTION:
The Process generated through this option is a one-time only Process and and there are no facilities to save the Process.

The COPY FILE Menu of the CF option displays a series of screens that collect information to generate a SUBMIT PROCESS command. Sterling Connect:Direct submits the predefined Process, COPYCF, with the appropriate command parameters and variable substitutions based on your input. You can use four screens to create the COPYCF Process:

Screen Name	Description
COPY FILE Menu	Collects information for the SUBMIT COMMAND parameters, PNODE/SNODE information, data compression, and checkpoint information.
Security Override Menu	Collects information about user ID, password, and accounting data. This optional panel is displayed only if you request it on the first panel.
SENDING FILE Menu	Collects information for the Process variables for the sending file.
RECEIVING FILE Menu	Collects the information for the Process variables for the receiving file.

The following diagram illustrates the relationship of these four screens.
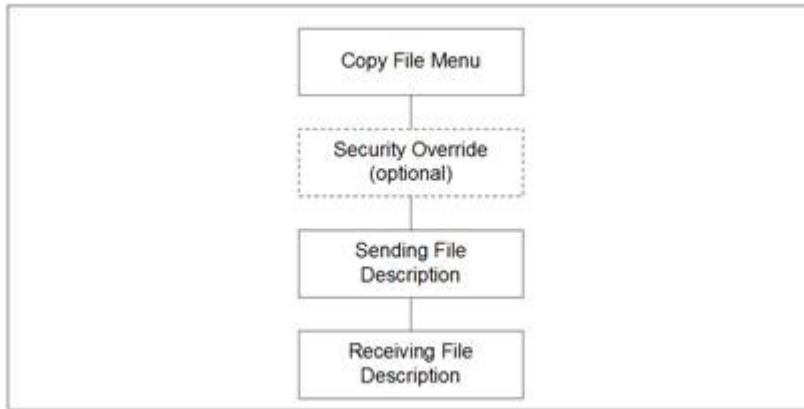
See Validating Processes from the SB, DF, and CF IUI Options for details about how to validate the syntax of a Process with and without submitting it.

Generating a COPY Process

About this task

To generate a COPY Process:

Procedure

1. Select the **CF** option from the Primary Options Menu to display the COPY FILE Menu.

```
node.name              Connect:Direct COPY FILE MENU                 TIME: hh:mm
CMD ==>
SENDING   ENVIRONMENT: ZOS_____          TRANSPORT: NETMAP
NODE NAME: CD.NODE1_____
RECEIVING ENVIRONMENT: ZOS_____
NODE NAME: CD.NODE2_____
PROCESS NAME: COPYCF__
CLASS:         ___      (NUMERIC)                VALIDATE ONLY ==>  N
HOLD:          N        (Y, N, OR C-CALL)
NOTIFY USER:   %USER_____
PRIORITY:      __       (RANGE: 0 TO 15)
REQUEUE:       N        (Y OR N)
RETAIN ON TCQ: N        (Y, N, OR I-INITIAL)
START DATE:    _____  TIME: _____
CHECKPOINT:    _____   (BYTE INTERVAL - NK|NM)
DEBUG:         _____   (HEXADECIMAL)
PLEXCLASS:     _____ _____  (PNODE SNODE)
COMPRESS:      N____     (Y, N, X-EXTENDED, X'XX', OR C'C')
EXT COMPRESSION LEVEL: _  WINDOW: __   MEMORY: _
OVERRIDE SECURITY: N     (Y OR N)
DO YOU WANT VALUES FOR THIS COPY TO BE CASE SENSITIVE? ==> NO___
```

2. If necessary, rename the COPYCF Process by typing a name in the **PROCESS NAME** field.

3. For descriptions of SUBMIT parameters not included in the following table, press **PF1** or see SUBMIT Command.

Parameter Name	Description
SENDING ENVIRONMENT	Specifies the operating system or platform from which the file is transmitted. The values you place in the Sending Environment and Node Name fields determine which Sending File screen is displayed.

Parameter Name	Description
NODE NAME	Specifies the name of the Sterling Connect:Direct node from which the file is transmitted.
TRANSPORT	Specifies the method of TRANSPORT Sterling Connect:Direct uses for the file transfer.

NETMAP—Causes Sterling Connect:Direct to look in the network map for the sending and receiving nodes. If you type a Transport of NETMAP, the SNODE keyword remains SNODE=secondary node.

TCP—Indicates that the NODE NAME field contains an alias name or an IP address. Sterling Connect:Direct does not look in the network map for node information.

UDT33—Indicates that the NODE NAME field contains an alias name or an IP address. Sterling Connect:Direct does not look in the network map for node information. If you type UDT33 in the Transport field, the SNODE keyword becomes SNODE=UDT33NAM=udtvalue.

DNS—Enables you to enter a domain name up to 255 bytes
Note: If you type TCP or DNS in the Transport field, the SNODE keyword becomes SNODE=TCPNAME=tcpvalue. |
RECEIVING ENVIRONMENT	Specifies the operating system or platform to which the file is transmitted. The values you place in the Receiving Environment and Node Name fields determine which Receiving File screen is displayed.
NODE NAME	Specifies the name of the node to which the file is transmitted.
PROCESS NAME	(optional) Specifies the name to be used under which the Process will be submitted. If you do not type a Process name, Sterling Connect:Direct provides the default name COPYCF.
VALIDATE ONLY	Enables you to validate the Process without submitting it.

YES = Validate the Process, but do not submit it.

NO = Do not validate before the Process is submitted. |
| CHECKPOINT | (optional) Specifies the byte interval for checkpoint support, which enables restart of interrupted transmissions at the last valid transmission point, avoiding the need to restart transmission from the beginning.

K denotes thousands; M denotes millions. A checkpoint value of zero stops automatic checkpointing. |
| COMPRESS | (optional) Specifies whether and how the data being transmitted should be compressed.

Y – Uses compression with X'40' (blank) as the PRIMEchar.

N – Does not use compression.

X – Uses Extended compression.

X'xx' – Uses compression with the specified 'xx' hex vale.

C'c' – Uses compression with the specified 'cc' character value.
Note: Compression is CPU-intensive, and its effectiveness is data dependent. It should only be used if its benefits are known. |

Parameter Name	Description
EXT COMPRESSION LEVEL	**Note:** The effects of changing the default values for the extended compression parameters (level, window, and memory) are not always predictable and can significantly increase CPU utilization. Before changing the default values, see Improving Performance in the *IBM Sterling Connect:Direct for z/OS Administration Guide*. (optional) Specifies the value from 1–9 indicating the degree of compression to use. The default is **1**, which usually provides sufficient compression.
WINDOW	(optional) Specifies the value from 8–15 indicating the size of the compression buffer to use. The default of **13** equals 32 KB.
MEMORY	(optional) Specifies the value from 1–9 indicating the amount of memory used to maintain the compression state. The default of **4** equals 8 KB.
OVERRIDE SECURITY	Enables you to change security information for the sending and receiving nodes. YES = Enable NO = Disable
CASE SENSITIVITY	(optional) Specifies the case sensitivity not only to the SUBMIT command, but to the COPY Process itself. Sterling Connect:Direct provides for mixed case user input because some platforms allow it. The default is **NO**, which does not allow mixed case.

4. To override security information, type **Y** in the OVERRIDE SECURITY field.

```
node.name                   Connect:Direct SECURITY OVERRIDE           TIME: hh:mm
CMD ==>
SENDING   ENVIRONMENT: ZOS              TRANSPORT: TCP
 NODE NAME:   CD.NODE1
 SECURITY ID:  _____
 PASSWORD   :
 ACCOUNTING DATA:  _____
RECEIVING ENVIRONMENT: ZOS
 NODE NAME:   CD.NODE2
 SECURITY ID:  _____
 PASSWORD   :
 ACCOUNTING DATA:  _____
```

5. In the SECURITY OVERRIDE screen:
   a. Specify the security information for the node whose security you want to override and press **Enter**. This procedure assumes that you modify security information for both nodes.
   b. Press **PF1** for a description of each field.

      Note: For a complete description of the valid parameters of a COPY Statement and examples to help you fill in both the SENDING FILE and RECEIVING FILE screens, see the Connect:Direct Process Language help.

6. When the SENDING FILE screen for the environment and node name you specified is displayed, type appropriate values and press **Enter**.

   Note: If the data set name does not follow z/OS naming conventions, enclose the data set in single quotation marks. An HFS file must begin with a slash (/) and can contain up to 251 bytes.

```
node.name           COPYFILE - SENDING FILE (z/OS or OS/390)      TIME: hh:mm
 CMD ==>
 NODE NAME: CD.NODE2
 SENDING DSNAME:    _____
 _____
 _____
 _____
 UNIT PARAMETER:  ( _____ )
 LABEL PARAMETER: ( _____ )
 VOLUME SERIAL(S):( _____ )
         RETAIN: _  (Y OR N)
 DCB PARAMETER:    ( _____ )
 TYPE KEY:          _____         MSVGP NAME:  _____
 SYSOPTS:  _____
 (PDS ONLY:)         REPLACE: Y (Y OR N)   ALIAS: Y (Y OR N)
 SELECTION CRITERIA: ( _____ )
                     ( _____ )
 EXCLUSION CRITERIA: ( _____ )
                     ( _____ )
```

7. When the RECEIVING FILE screen for the environment and node name you
   specified is displayed, type appropriate values and press **Enter**.

   Note: If the data set name does not follow z/OS naming conventions, enclose
   the data set in single quotation marks. An HFS file must begin with a slash (/)
   and can contain up to 251 bytes.

```
node.name           COPYFILE - RECEIVING FILE (z/OS or OS/390)    TIME: hh:mm
 CMD ==>
 NODE NAME: Q1A.ZOS.V4600
 RECEIVING DSNAME:  _____
 _____
 _____
 _____
 DISPOSITION:     ( NEW , CATLG_ , _____ )
 UNIT PARAMETER:  ( _____ )
 VOLUME SERIAL(S):( _____ )  )
       RETAIN: _  (Y OR N)   COUNT: ___ (1-255)
 DCB PARAMETER:    ( _____ )
 LABEL PARAMETER: ( _____ )
 SPACE:           ( _____ )
 TYPE KEY:          _____         MSVGP NAME:  _____
 SYSOPTS:  _____
 SMS: DATA CLASS: _____    STORAGE CLASS: _____   MGMT CLASS: _____
      AVERAGE RECORDS: _       DSNTYPE    : _____
      VSAM ORGANIZATION: ____ KEY LENGTH: ___   KEY OFFSET: _____
      LIKE DSNAME:     _____
      SECURITY MODEL:  _____
      GENERIC MODEL:   ___  (YES OR NO)
```

8. Press **Enter**.
   - If you enabled the Validate Only parameter, a VIEW PROCESS screen with
     your Process is displayed. See the table in Operation for information on the
     results.
   - If you did not select the Validate Only option, the Process is executed. See
     the table in "Validating Processes from the SB, DF, and CF IUI Options" on
     page 74 for information on the results.

   CAUTION:
   **Press PF3 to back out of each screen until the Primary Options Menu is
   displayed. Each time you press Enter, the Process is submitted.**

Chapter 7. Controlling Processes in the TCQ

Controlling Processes with Commands

Sterling Connect:Direct Processes consist of statements with parameters that provide instructions for copying files, running jobs and programs, and altering the sequence of Process step execution. Use the Process Control commands to manipulate these Processes while they are in the TCQ.

Note: You can also use the Sterling Connect:Direct Browser User Interface to perform some Sterling Connect:Direct for z/OS procedures.

Setting Selection Criteria

The Process control commands have common parameters and IUI screen layouts. All Process control commands allow you to select Processes by Process name, number, and submitter. (Some allow additional criteria.) The WHERE parameter groups the selection arguments, enabling you to make common changes or selections. The command applies to all Processes which match the criteria. For example, if you indicate a Process name PROCA with no further qualification, all Processes named PROCA are affected by the command.

When you specify two or more WHERE subparameters, you further qualify the selection so that all conditions must be satisfied. In this way, you can adequately qualify your selection if you have non-unique Process names or numbers. For example, if you specify in your selection criteria a Process name of PROCA and Process number of 16, the Process number of PROCA must be 16 for the command to apply.

If you specify multiple Processes by using the list option on the subparameter, the position of the arguments in the list is significant. Elements in each list must correspond by position. For example, PNAME=(PROCA, PROCB), PNUM=(16,17) requires that PROCA be Process number 16 and PROCB be Process number 17 for the command to apply.

On the screens, you can type a list of Process names, numbers, and submitters (user ID and node ID) to obtain the same results that the WHERE parameter list provides in batch. Sterling Connect:Direct builds the appropriate command from the screen. Sterling Connect:Direct accesses the corresponding Process names and numbers and submitters (user ID and node) from left to right to construct the list form of this command.

Modifying a Process in the TCQ with CHANGE PROCESS

Use the CHANGE PROCESS command to modify the parameters of a Process when the Process is in the TCQ in a nonexecuting state. Release a held Process or restart a failed Process with this command. (You can also release a held Process through the Operator Table and Selected Process screens by typing an R next to the Process Name.)

CHANGE PROCESS Command Format

The CHANGE PROCESS command has the following format and associated parameters. Required parameters and keywords are in bold print.

Label	Command	Parameters

(optional)	CHange PROCESS	WHERE (NODE= node name | (list)
		PNAME= name | (list)
		PNUMber= number | (list)
		SUBmitter= (node name, user ID)|(list)
		)
		CASE= Yes | No
		CLASS= n
		DEBUG= trace bits
		DEST= destination node
		HOLD= Yes | No | Call
		NETMAP.REFRESH
		PLEXCLASS=(pnode class, snode class)
		PRTY= n
		RELEASE
		RESTART= [NO |
		   FIRST = volume sequence number |
		   FIRST = SER = volume serial number |
		   LAST = volume sequence number |
		   LAST = SER = volume serial number |
		     VOLCNT = n]
		RETAIN= Yes | No | Initial
		STARTT= ([date|day] [,hh:mm:ssXM])

The following table describes the parameters for the CHANGE PROCESS command:

Parameter	Description
WHERE (NODE = node name | (list) PNAME = name | (list) PNUMber = number | (list) SUBmitter = (node name, user ID) | (list))	Specifies which Process(es) to change. Name multiple Processes in the command using the selection criteria method described on "Setting Selection Criteria" on page 85 if you have to make similar changes to many Processes. This parameter is required. The selection subparameters are optional; however, you must specify at least one of NODE, PNAME, PNUMBER, or SUBMITTER. These subparameters are special in that they identify which Processes are selected for the change activity defined by the other parameters.
NODE = node name | (list)	Specifies the snode or a list of snodes where the Processes to be changed are running. If you specify a list of snodes, enclose them in parentheses separate each snode with a comma. You can use this subparameter with the HOLD parameter to put all Processes on a node on hold if the node is unavailable, or if problems exist with the node. You can restart all Processes later using the RESTART parameter with the NODE= subparameter.
PNAME = name | (list)	Specifies the name of the Process to be changed or a list of Process names enclosed in parentheses and separated by commas. This parameter is optional.
PNUMber = number | (list)	Specifies the number of the Process to be changed or a list of Process numbers enclosed in parentheses and separated by commas. The range is 1-99999.
SUBmitter = (node name, user ID) | (list)	Specifies the node name and user ID of the user that submitted the Process to be changed. Specify a list of SUBmitter IDs by enclosing the IDs in parentheses and separating them by commas.

Parameter	Description
CASE = Yes | No	Specifies whether parameters associated with accounting data, user ID, password, and data set name are case sensitive. The designation refers only to the command, not to the Process itself. See Indicating Case Sensitivity for a general overview of case sensitivity. This parameter is optional.
CLASS = n	Determines the node-to-node session on which a Process executes. Consult your Sterling Connect:Direct administrator for instructions concerning which class to specify. The range is 1-255. This parameter is optional.
DEBUG= trace settings for this Process	Specifies the 8-position trace setting for this Process. This parameter enables you to specify a trace for only this Process. The table on Building, Modifying, and Submitting Processes lists acceptable trace values. This parameter is optional. **Note:** This option can generate a large amount of output and should be used with caution.
DEST = destination node	Specifies a new destination node. This parameter changes the node that this Process communicates with. This parameter is optional.
HOLD = Yes | No | Call	Specifies whether or not the Process is placed in the hold queue. This parameter is optional. **Yes** specifies that the Process remains in the hold queue until one of the following events occurs: • CHANGE PROCESS releases the Process • DELETE PROCESS deletes the Process When you specify both HOLD=YES and a STARTT value, the HOLD specification takes precedence. Therefore, Sterling Connect:Direct places a Process submitted with HOLD=YES on the hold queue even if you specified a start time. No specifies that Sterling Connect:Direct does not place the Process in the hold queue, but places it in the WAIT for execution queue (EX). HOLD=NO is the default. **Call** specifies that Sterling Connect:Direct is to place the Process in the hold queue until a session is established with the specified SNODE. This session could be established by either another Process starting on the PNODE destined for the same SNODE or the SNODE contacting the PNODE. For example, a Process submitted HOLD=NO establishes a session and causes execution of any Processes residing on the SNODE destined for this node that are submitted with HOLD=CALL. **Note:** Sterling Connect:Direct ignores the HOLD parameter if RETAIN=Y.
NETMAP.REFRESH	Refreshes the network map for Processes waiting execution in the Wait queue, after an UPDATE NETMAP command is issued for this node. (For a description of the UPDATE NETMAP command, see the *IBM Sterling Connect:Direct for z/OS Administration Guide* and search on Maintaining the Network Map. This parameter is optional. Do not use the NETMAP.REFRESH parameter if the network map protocol is changed (for example, changing a node from LU0 to LU6.2). If you change the protocol for a particular node, you must delete and resubmit all waiting Processes for that node.

Parameter	Description
PLEXCLASS = (pnode class, snode class)	Specifies the class that directs the Process to only certain servers in a Sterling Connect:Direct/Plex. This parameter does not apply to a Sterling Connect:Direct Stand-alone Server. This parameter is optional. You can designate each server in a Sterling Connect:Direct/Plex to support only certain PLEXCLASSes through the CDPLEX.PLEXCLASSES initialization parameter. You can then limit Processes to only those servers by specifying the PLEXCLASS in the Process definition. The pnode class controls which Sterling Connect:Direct Server runs the Process. The snode class controls what other node is used with the Process. The pnode class and snode class are each 1-8 characters long. An asterisk (*) indicates that the Process runs on any server with an asterisk designated in the CDPLEX.PLEXCLASSES initialization parameter. If you do not specify a PLEXCLASS, the network map is checked for a default PLEXCLASS. If the network map does not specify a default PLEXCLASS, then an asterisk is used as the default. If a Process must run on a specific Sterling Connect:Direct Server, specify the Sterling Connect:Direct Server name in this field. The Process only runs on that server.
PRTY = n	Specifies the Process priority in the Transmission Control Queue. High numbers indicate high priorities; low numbers indicate low priorities. Sterling Connect:Direct uses this priority only for Process selection; it does not affect the priority during transmission. The default is set by the PRTYDEF global initialization parameter. The range is from 0-15. This parameter is valid for LU0 only. This parameter is optional.
RELEASE	Releases the Process for execution from the queue where it is currently residing. Either specify RELEASE or omit it. Releases or RELEASE=no is not valid. This parameter is optional.

Parameter	Description
RESTART = [NO | FIRST = volume sequence number | FIRST=SER=volume serial number | LAST = volume sequence number | LAST = SER = volume serial number | VOLCNT = n]	Specifies the conditions for restarting an interrupted Process. Use the CHANGE PROCESS command to cause Sterling Connect:Direct to restart a data transmission at the last checkpoint position taken before the interruption or at a previous checkpoint position. Sterling Connect:Direct restarts the copy step at the position you specify. This parameter is optional. **NO** specifies that the copy step restarts at the beginning of the transmission. **FIRST=volume sequence number** specifies that the copy step restarts at the beginning of the volume designated by the volume sequence number. **FIRST=SER=volume serial number** specifies that the copy step restarts at the beginning of the volume serial given. **LAST=volume sequence number** specifies that the copy step restarts at the end of the volume designated by the volume sequence number. LAST specifies that the copy step restarts at the last block on the volume if the output is disk or the last checkpoint on the volume if the output is tape. **LAST=SER=volume serial number** specifies that the copy step restarts at the end of the volume serial given. LAST specifies that the copy step restarts at the last block on the volume if the output is disk or the last checkpoint on the volume if the output is tape. **VOLCNT=n** specifies that the volume count on the interrupted copy step is changed to the value specified. You can use this parameter to increase the number of output volumes if the copy step is interrupted because the volume count of that step is too small.
RETAIN = Yes | No | Initial	Specifies whether or not Sterling Connect:Direct keeps a copy of the Process in the HOLD queue after the Process has executed. This parameter is optional. **Yes** keeps a copy of this Process in the HOLD queue after the Process executes. The copy of the Process does not execute until you release it through a CHANGE Process command. If RETAIN=YES is specified, Sterling Connect:Direct automatically holds the Process until you release it, unless you include the STARTT parameter in your Process. Use RETAIN in conjunction with STARTT to cause a Process to run repeatedly at a given interval. No specifies that Sterling Connect:Direct is to delete the Process after execution. The default value for RETAIN is NO. **Initial** specifies that Sterling Connect:Direct is to execute the Process every time Sterling Connect:Direct is initialized. Do not code the STARTT parameter with the RETAIN=I parameter.
STARTT = ([date | day] [,hh:mm:ssXM])	Specifies that the Process not execute until a specified date or time. See "SUBMIT Command" on page 64 for a complete explanation of the STARTT parameter. This parameter is optional. When changing the **date, day, or hh:mm:ssXM**, you must respecify even the values that do not change. You cannot specify TODAY or TOMORROW for the **day** subparameter.

Note: Processes with a QUEUE or STATUS of PR cannot be changed with the CHANGE PROCESS command.

CHANGE PROCESS Command Examples

The following CHANGE PROCESS command places the Processes named PAYROLL and BILLING in the hold queue:

```
CH PROC  WHERE ( -
    PNAME=(PAYROLL, BILLING)) -
    HOLD=Y
```

In the following example, the Process named PAYROLL is changed so that the new destination node is DALLAS1 and the Process executes every Friday:

```
CH PROC  WHERE (PNAME=PAYROLL) -
    DEST=DALLAS1 -
    RETAIN=Y -
    STARTT=(FR)
```

In the following example, the Process called PAYROLL with the Process number of 60584 has the RETAIN status changed so that the Process is deleted after execution:

```
CH PROC  WHERE (PNUM=60584, PNAME=PAYROLL) -
    RELEASE -
    RETAIN=N
```

Issuing CHANGE PROCESS through the Batch Interface
About this task

To use the CHANGE PROCESS command from the Batch Interface:

Procedure
1. Place commands in the DGADBATC job stream as described in Sample Job Stream to Run the Batch Interface.
2. Submit the job while Sterling Connect:Direct is running.

   A report similar to the following is displayed:

```
====================================================================
                    CHANGE PROCESS
====================================================================
PROCNAME PROCNUM_ SUBMITTER_NODE__ SNODE.NAME_____ MESSAGE_____
USERID_____
--------------------------------------------------------------------
DMNOTEST 271      node.name        node.name        DEST CHANGED
USER01
--------------------------------------------------------------------
```

3. Check this report to verify your results.

Issuing CHANGE PROCESS through the IUI

About this task

Use the CHANGE PROCESS screen to change a Process and its parameters. To issue the CHANGE PROCESS command from the Sterling Connect:Direct IUI, perform the following steps:

Procedure

1. Select option CP from the Primary Options Menu to display the CHANGE PROCESS screen.

```
node.name                   CHANGE PROCESS                        hh:mm
CMD ==>
PROCESS NUMBERS: ==> _____     ==> _____     ==> _____     ==> _____
PROCESS NAMES:   ==> _____   ==> _____   ==> _____   ==> _____
NODES            ==> _____     ==> _____   ==> _____
USER IDS:        USER NODES:
    ==> _____
            ==> _____
    ==> _____
            ==> _____
    ==> _____
            ==> _____
PLEXCLASS            ==> _____  _____   (PNODE SNODE)
DESTINATION NODE    ==> _____    DEBUG ==> _____
PRIORITY            ==> __             (0 TO 15)
CLASS               ==> ___
HOLD PROCESS        ==> _              ('Y'-YES, 'N'-NO, 'C'-CALL)
RELEASE PROCESS     ==> _              ('Y'-YES, 'N'-NO')
RETAIN PROCESS      ==> _              ('Y'-YES, 'N'-NO, 'I'-INIT)
REFRESH FROM NETMAP ==> _              ('Y'-YES, 'N'-NO')
SCHED. START    DATE ==> _____      TIME ==>_____
RESTART ALTERATIONS ==> _____
DO YOU WANT THE VALUES OF THIS REQUEST TO BE CASE SENSITIVE? ==>  NO
```

Sterling Connect:Direct selects the corresponding Process names and numbers and submitters (user ID and node) from left to right to construct the list form of this command. This list fully qualifies your search criteria.

2. Type at least one of the parameters or a combination of parameters as described in the CHANGE PROCESS command syntax section on Modifying a Process in the TCQ with CHANGE PROCESS or press the **PF1** key for Help.

Sterling Connect:Direct changes the parameters for the Processes that match the search criteria. The case sensitivity designation refers only to the command parameters on the screen, not to the parameters of the Process itself.

Suspending, Flushing, and Deleting Processes

The SUSPEND PROCESS, FLUSH PROCESS, and DELETE PROCESS commands have similar formats and parameters. The following table describes each command:

Process	Description
SUSPEND PROCESS	Terminates execution and puts an executing Process in the Hold queue. Sterling Connect:Direct places the Process in HOLD status. You can restart the Process through the RELEASE parameter of the CHANGE PROCESS command, or by using the R option on the Operator Table screen or the Selected Process screen.

Process	Description
FLUSH PROCESS	Terminates an executing Process. Note that if you specify RETAIN=YES, the flushed Process remains in the TCQ for execution at the next scheduled time. If you specify RETAIN=NO, Sterling Connect:Direct removes the Process from the TCQ, and you must resubmit it if you want it to execute.
DELETE PROCESS	Enables you to specify a nonexecuting Process and remove it from the TCQ. **Note:** FLUSH PROCESS stops an executing Process.

If you do not specify FORCE for the FLUSH or SUSPEND command, an indicator notifies the program executing on behalf of the Process that a FLUSH or SUSPEND command was issued for the Process. If that program is not in control (for example, if it is waiting on a request outside of Sterling Connect:Direct code to complete), then it does not see the FLUSH or SUSPEND indicator and the Process is not flushed or suspended; otherwise, the program looks for the FLUSH or SUSPEND indicator and takes the appropriate action.

When you specify FORCE, the action taken depends on the STATE and SUBSTATE of the Process for which you issued the FORCE FLUSH or FORCE SUSPEND. Determine the STATE and SUBSTATE of the Process by doing a SELECT PROCESS or SELECT TASK command.

Note: For a Process in a VTAM I/O STATE and a SUBSTATE of SEND or RECEIVE, the FLUSH or SUSPEND command is implemented whether you specify FORCE or not. That is not true for the other states.

SUSPEND, FLUSH, or DELETE PROCESS Command Format

The SUSPEND PROCESS, FLUSH PROCESS, and DELETE PROCESS commands have the following format and associated parameters. Required parameters and keywords are in bold print.

Label	Command	Parameters

(optional)	**FLUSH PROCess |**
	DELETE PROCess |
	SUSPEND PROCess
		WHERE (
		PNAME= name | (list)
		PNUMber= number | (list)
		    SUBmitter= (node name, user ID)|(list)
		    FORCE
		      )
		Note: The FORCE parameter is not valid for DELETE PROCESS.

		CASE = Yes | No

The following table describes the parameters:

Parameter	Description
WHERE (PNAME = name | (list) PNUMber = number | (list) SUBmitter = (nodeid, user ID) | (list) FORCE)	Specifies which Process to suspend, delete, or flush. Name multiple Processes in the command using the search criteria method described on "Setting Selection Criteria" on page 85. **WHERE** is the only required parameter for the SUSPEND PROCESS, DELETE PROCESS, and FLUSH PROCESS commands. Its subparameters are optional. However you must specify at least one of the PNAME, PNUMBER, and SUBMITTER subparameters. **PNAME = name | (list)** specifies the name of the Process or a list of Process names enclosed in parentheses and separated by commas. **PNUMber = number | (list)** specifies the number of the Process selected or a list of Process numbers enclosed in parentheses and separated by commas. The range is 1-99999. **SUBmitter = (nodeid, user ID) | (list)** specifies the nodeid and user ID of the user that submitted the Process. Specify a list of SUBmitter IDs by enclosing the IDs in parentheses and separating them by commas. **FORCE** enables you to suspend or flush a Process waiting for unavailable resources. If the initial suspend or flush fails, retry the command with FORCE. **Note:** FORCE parameter is not valid for DELETE PROCESS. If FORCE is specified for a Process executing on an LU6.2 session, it can terminate the session immediately, and Sterling Connect:Direct does not exchange the Process statistics between nodes.
CASE = Yes | No	Specifies whether parameters associated with accounting data, user ID, password, and data set name are case sensitive. The designation refers only to the command, not the Process itself. This parameter is optional.

Note: Processes with a QUEUE or STATUS of PR cannot be flushed or suspended with the FLUSH or SUSPEND PROCESS command.

SUSPEND, FLUSH, and DELETE Command Examples

Examples of the SUSPEND, DELETE, and FLUSH commands are shown in the following:

SUSPEND Process

The following command suspends any executing Process with a submitter node ID of DALLAS and a submitter user ID of SMITH:

```
SUSPEND PROC  WHERE (SUB=(DALLAS, SMITH))
```

The following command suspends the Process named PAYROLL, which is Process number 514 and the Process named COPY100, which is Process number 575.

```
SUS PROC WHERE ( -
 PNAME=(PAYROLL,COPY100), -
 PNUM=(514,575))
```

FLUSH Process

The following command flushes executing Processes submitted by SMITH at the node DALLAS:

```
FLUSH PROC  WHERE (SUB=(DALLAS, SMITH))
```

The following command flushes the Process named PAYROLL which has Process
number of 514 and the Process named COPY100 which has the Process number of
575:

```
FLUSH PROC  WHERE ( -
 PNAME=(PAYROLL,COPY100), -
 PNUM=(514,575))
```

DELETE Process

The following command deletes Processes with the number 60584:

```
DEL PROC  WHERE (PNUM=60584)
```

The following command deletes all Processes submitted by CHUCK at the node
DALLAS.MVS:

```
DEL PROC  WHERE (SUB=(DALLAS.MVS, CHUCK))
```

The following command deletes all Processes in the PR queue. When specifying
QUEUE= PR, no other selection criteria are allowed.

```
DELETE PROCESS WHERE (QUEUE=PR)
```

Issuing the SUSPEND PROCESS, DELETE PROCESS, or FLUSH PROCESS Commands through the Batch Interface
About this task

To use the SUSPEND PROCESS, DELETE PROCESS, or FLUSH PROCESS
commands from the Batch Interface, perform the following steps:

Procedure
1. Place commands in the DGADBATC job stream as described in "Sample job
   stream to run the batch interface" on page 10.
2. Submit the job while Sterling Connect:Direct is running.
3. Verify the results.

Issuing the SUSPEND PROCESS, DELETE PROCESS, or FLUSH PROCESS Commands through the IUI
About this task

To issue commands through the IUI:

Procedure

1. Access the function that you want as described in the following table.

Function	Access Method
Suspend an executing Process	Select option **PS** from the Primary Options Menu. Type **SUS** at the Primary Options Menu command prompt Type a **P** next to the Process Name on the Operator Table, the Operator Table - Executing Queue, or the Selected Process screens.
Delete a nonexecuting Process	Select option **DP** from the Primary Options Menu. Type a **D** next to the Process Name on the Operator Table or the Selected Process screens.
Flush a Process	Select option **FP** from the Primary Options Menu. • Type an **F** next to the Process Name on the Selected Process screen.

The following screen shows an example of the Suspend an Executing Process screen. The Delete A Nonexecuting Process screen and the Flush Process screen are similar except that the FORCE option is not on the Delete A Nonexecuting Process screen.

```
 node.name                SUSPEND AN EXECUTING PROCESS                    hh:mm
 CMD ==>
      PROCESS NUMBERS:
          ==> _____      ==> _____      ==> _____      ==> _____
          ==> _____      ==> _____      ==> _____      ==> _____
       PROCESS NAMES:
          ==> _____    ==> _____    ==> _____    ==> _____
          ==> _____    ==> _____    ==> _____    ==> _____
       FORCE: ('Y'-YES, 'N'-NO) FORCE SUSPENDING A PROCESS ON AN LU 6.2 SESSION
          ==> _                 MAY TERMINATE THE SESSION IMMEDIATELY WITHOUT
                                STATISTICS OF THE PROCESS BEING EXCHANGED
       USER IDS:          USER NODES:
          ==> _____
                         ==> _____
          ==> _____
                         ==> _____
          ==> _____
                         ==> _____
 DO YOU WANT THE VALUES OF THIS REQUEST TO BE CASE SENSITIVE? ==> NO
```

Sterling Connect:Direct builds the SUSPEND PROCESS command from this screen, and selects the corresponding Process names and numbers and submitters (user ID and node) from left to right to construct the list form of this command. This list fully qualifies your search criteria.

2. Type at least one of the parameters or a combination of parameters as described in the SUSPEND PROCESS command syntax section in Suspending, Flushing, and Deleting Processes, or press the **PF1** key for Help. Sterling Connect:Direct suspends the Processes which match your search criteria.

   Note: Case sensitivity designation refers only to the command parameters on screen, not to the parameters of the Process.

3. To minimize the risk of deleting, suspending, or flushing a Process accidentally, you may be required to confirm a Process request before it is executed. If you are required to confirm delete, flush, and suspend commands, a panel similar to the following screen is displayed. Do one of the following:

- To confirm the operation, type Y on the command line. Sterling Connect:Direct performs the function and returns to the previous screen.
- To return to the previous screen without performing the function, press **PF3**. To change the Process numbers, select this option before executing the command.

```
DMDELCN2                                                 DATE: YYYY/MM/DD
                    Connect:Direct Confirm Delete Command        TIME: HH:MM
CMD ==>
You have requested the following process(es) be deleted, are you sure this is
what you want to do?
 Reply Yes, No or CANCEL or Press PF3 to Cancel the Request
 Process Numbers   ==> 123          ==>           ==>
                   ==>              ==>           ==>
 Process Names     ==>              ==>           ==>
                   ==>              ==>           ==>
 USER IDS:  USER NODES:
   ==>
             ==>
   ==>
             ==>
   ==>
             ==>
   ==
             ==>
   __  Do not display this Confirm Delete prompt again.
```

Note: If you see the option, Do not display this Confirm Delete prompt again, you can type an X next to this option to turn off the Confirm prompt so that it will not display again during the current session.

Examining Processes in the TCQ

Use SELECT PROCESS to look over Processes in the TCQ. You can specify the search criteria and the form in which the information is presented (file, printout, table, or screen display).

Note: Use the SELECT STATISTICS command to determine the outcome of a completed Process.

SELECT PROCESS Command Format

The SELECT PROCESS command has the following format and parameters. The required parameters and keywords are in bold print. Default values are underlined.

Note: The syntax and parameters for the VIEW PROCESS command are identical.

Label	Command	Parameters

(optional)	**SELect PROCess**
	
	or
	
	View PROCess
		WHERE (
		  DEST= node | (list)
		  PNAME= name | (list)
		  PNUMber= number | (list)
		  QUEUE= All | queue name
		  SERVER= server name
		  STATUS= Process status | (list)
		  SUBmitter= (node name, user ID)|(list) **)**
		CASE= Yes | No
		FILE | PRint | TABle

The following table describes the parameters.

Parameter	Description

WHERE
  (DEST = node | (list)
   PNAME = name | (list)
   PNUMber = number | (list)
   QUEUE = All | Exec | Hold | Timer
     | Wait
   STATUS = Process status | (list)
   SERVER = server name | (list)
   SERVER = server name | (list)
   SUBmitter = (node name, user
     ID) | (list))
	Specifies which Processes to select. Name multiple Processes in the command using the search criteria method described on "Setting Selection Criteria" on page 85. The subparameters PNAME, PNUMber, and SUBmitter are optional, but you must specify at least one.
	
	WHERE is the only required parameter for the SELECT PROCESS command. Not all its subparameters are required.
	
	DEST = node | (list) specifies the destination node name of the Process you are selecting or a list of destinations enclosed in parentheses and separated by commas.
	
	PNAME = name | (list) specifies the name of the Process or a list of Process names enclosed in parentheses and separating by commas.

Parameter	Description
	**PNUMber = number	(list)** specifies the number of the Process you are selecting or a list of Process numbers enclosed in parentheses and separated by commas. The range is 1-99999. **QUEUE = All	queue name** specifies Process selection based on the TCQ. Values are: All specifies selection of a Process from all queues. This value is the default. queue name can be one of the following: E = Executing queue H = Hold queue PR = Retain queue T = Timer queue W = Wait queue **SERVER = server name	(list)** selects Processes on the specified Sterling Connect:Direct Servers. The server name is a 1-8 character name assigned to each server in a Sterling Connect:Direct/Plex through the CDPLEX.SERVER initialization parameter. **STATUS = Process status	(list)** specifies Process selection by status value or a list of status values in parentheses separated by commas. Values include: H = All Held Processes HC = Held for Call HE = Held for Error HI = Held Initially HO = Held by Operator HP = Held due to Process error HR = Held Retain HS = Held for Suspension PR = Retained after Execution R = All Restart Processes RA = Held for Restart due to Allocation error RH = Restart Held (may be due to the Intelligent Retry feature) W = All Waiting Processes (including Retry) WC = Wait for Connection WT = Waiting for Transport WX = Waiting for Sterling Connect:Direct Server **SUBmitter = (node name, user ID)	(list)** specifies the nodeid and user ID of the user that submitted the Process. Specify a list of SUBmitter IDs by enclosing the IDs in parentheses and separating them by commas.
CASE = Yes	No	Specifies whether parameters associated with accounting data, user ID, password, and data set name are case sensitive. The designation refers only to the command, not the Process itself. See Indicating Case Sensitivity for a general overview of case sensitivity. This parameter is optional.
FILE	PRint	<u>TABle</u>	Specifies the form in which the information is presented. TABLE is the default. See Indicating Output Destination for detailed information about the output format produced by each of the these parameters. This parameter is optional.

SELECT PROCESS Command Example

The following command searches for all Processes submitted by SMITH at the node CD.DALLAS.

```
SEL PROC  WHERE (SUB=(CD.DALLAS, SMITH))
```

Issuing SELECT PROCESS through the Batch Interface

About this task

To use the SELECT PROCESS command from the Batch Interface, perform the following steps:

Procedure

1. Place commands in the DGADBATC job stream as described in "Sample job stream to run the batch interface" on page 10.
2. Submit the job while Sterling Connect:Direct is running.
3. Verify your results.

Issuing SELECT PROCESS through the IUI

About this task

Use the Select Process screen to specify the Processes that you want to display and how you want them displayed. To issue the SELECT PROCESS command in the Sterling Connect:Direct IUI, perform the following steps:

Procedure

1. Select option SP from the Primary Options Menu to display the Select Process screen.

```
node.name                      SELECT PROCESS
CMD ==> O                                                      hh:mm
  CMD:   O ... OPERATOR TABLE  S ... OPERATOR TABLE/EXEC QUEUE STATUS
         P ... PRINT REPORT    D ... DISPLAY REPORT    V ... VIEW PROCESS
  QUEUE:            ==> _  (A-ALL,W-WAIT,E-EXECUTE,H-HOLD,T-TIMER,P-PR)
  PROCESS NUMBERS:  ==> _____    ==> _____    ==> _____    ==> _____
  PROCESS NAMES:    ==> _____  ==> _____  ==> _____  ==> _____
  SERVER NAMES:     ==> _____  ==> _____  ==> _____  ==> _____
  STATUS:    (HO,HR,HI,HE,HC,HP,HS,PR,RH,RA,WC,WX,WT,H,R,W)
             ==> __         ==> __         ==> __         ==> __
  DESTINATION NODES:
             ==> _____    ==> _____
             ==> _____    ==> _____
  USER ID:       NODE ID:
    ==> _____
             ==> _____
    ==> _____
             ==> _____
  DO YOU WANT VALUES FOR THIS REQUEST TO BE CASE SENSITIVE? ==> NO
```

2. To select the Processes, specify the parameters to use as search criteria. These parameters are described in SELECT PROCESS Command Format.

   Note: The case sensitivity designation refers only to the command parameters on the screen, not to the parameters of the Process itself.

3. To select the destination for your output, type the letter representing one of the following output options on the command line:
   - O accesses the Operator Table and creates a one line summary of each selected PNODE Process. For more information, see Viewing and Controlling a Process through the Operator Table.

- S builds an Operator Table consisting only of Processes that are currently executing. The table shows how much data is transmitted for a COPY step. For more information, see Accessing Execution Queue Status on the Operator Table.
- V displays the content of the matching Processes within the TCQ. For more information, see Viewing the Content of Processes Matching Your Search Criteria.
- P prints a report of the selected Processes.
- D displays a report, similar to the following figure.

```
BROWSE -- temporary file name                 ----- LINE 00000000 COL 001 080
 COMMAND ===>                                              SCROLL ===> PAGE
****************************** TOP OF DATA ******************************
==========================================================
                   SELECT PROCESS
==========================================================
 Prc Name   => PDEXCLUD           Queue    => EXEC
 Prc Num    => 4                  Status   => EX
 Prc Debug  => 00003021
 Subnode    => SC.MVS.USERID      Time     =>
 Other Node => SC.MVS.USERID      Date     =>
 Server     => SERVER1            Day      =>
 Userid     => USERID
 Prty       => 10    Retain => N  Ret proc => NONE
 Class      => 2                  State    => FILE I/O
 Step Name  => EXCLUDE            Xmit St  =>
 FUNCTION   => COPY               MEMBER   => V2SPEC
 Sent: Blks => 371 Recs => 0 RU's => 1,075
_____
 Prc Name   => PDEXCLUD           Queue    => EXEC
 Prc Num    => 4                  Status   =>  PR.CNTL
```

Viewing and Controlling a Process through the Operator Table
About this task

The Operator Table displays the PNODE Processes which satisfied your selection criteria; it does not display information about Processes submitted from another node.

Procedure

1. After you type **O** on the command line of the Select Process screen, the Operator Table/Executing Queue screen is displayed.

   The first two characters of the QUEUE indicate the queue, the second two characters indicate the status value. The OTHER.NODE is the name of the nonsubmitting node in the session.

2. Type an option in the OPTION column next to the Process name (PNAME) and press **Enter**. The following table describes each option.

Option	Description
H	Place a nonexecuting Process on the Hold queue.
D	Delete a nonexecuting Process from the queue. For more information, see Issuing the SUSPEND PROCESS, DELETE PROCESS, or FLUSH PROCESS Commands through the IUI .
R	Release a held Process.
P	Suspend a Process from the executing queue. For more information, see Issuing CHANGE PROCESS through the IUI .

Option	Description
S	Select a Process for detailed display. For more information, see Viewing and Controlling a Process through the Selected Process Screen .
V	View a Process in the executing queue. For more information, see Viewing the Content of Processes Matching Your Search Criteria .

> **Note:** When you release a Process which contains RETAIN=YES, it is copied and assigned a new Process number.

3. If you are required to confirm a delete or suspend Process request before it is executed, respond to the Confirm Command prompt.

> **Note:** If message ID SOPA006I is displayed on the Operator Table screen next to the Process name under the OPTION column, it indicates that the Process can no longer be found. The Process was probably in execute status when another function was selected, and the screen was not refreshed. Screens are not automatically refreshed. Press **Enter** to refresh the screen.

4. To view any message text, type **END** to leave the Operator Table and return to the Select Process screen. Then type **M** on the command line, and press **Enter**.

Accessing Execution Queue Status on the Operator Table Procedure

1. After you type **S** at the command line of the Select Process screen, the Operator Table/Executing Queue displays Processes that are currently executing. The Operator Table/ Executing Queue screen shows how much data is transmitted by the COPY step, including:
   - Blocks for block-mode transmissions
   - Records for record-mode transmissions
   - RUs (request/response units)
   - I/O bytes
   - VTAM bytes
   - The compression factor

   The following figure is a sample of the screen and shows that two Processes are executing.

```
node.name                                            Row 1 to 2 of 2
----------------------OPERATOR TABLE/EXECUTING QUEUE-----------
==> Q                                             SCROLL ===>  PAGE
OPTION    PNAME         PNUMBER    SUBMITTER.NODE-- OTHER.NODE------ QUEUE
    SERVER    USERID
-------------------------------------------------------------------------------
        BENCHRC        272        Q1A.ZOS.V4600    Q1A.ZOS.V4600    ¬P  EX
    S3        USER01
        Blks      => 6         Recs => 0              RUs  => 173
        I/O bytes  => 177,138              Compression
        VTAM bytes => 177,152                    Factor => 0.0%
        BENCHRC        272        Q1A.ZOS.V4600    Q1A.ZOS.V4600    EX  EX
    S3        USER01
        Blks      => 7         Recs => 0              RUs  => 174
        I/O bytes  => 195,440              Compression
        VTAM bytes => 178,176                    Factor => 8.8%
****************************** Bottom of data ******************************
```

2. Type an option in the OPTION column next to the Process name (PNAME) and press **Enter**. The following table describes each option.

Option	Description
P	Suspend a Process in the executing queue.
S	Select a Process for detailed display. For more information, see Viewing and Controlling a Process through the Selected Process Screen .

Viewing and Controlling a Process through the Selected Process Screen
About this task

To view and control a Process through the Selected Process Screen:

Procedure

1. From the Operator Table, type **S** in the OPTION column next to the name of the Process to display the Selected Process screen. This screen displays details about the Process that you selected from the Operator Table. The following figure is a sample of the screen which displays all available information about the particular Process you selected from the Operator Table.

```
node.name                   SELECTED PROCESS                        hh:mm
CMD ==> Select process command was successful.
Process Name    => COPYCF     Number   => 1              Step  => COPYSTEP
Other Node      => SC.IRV.TEST1        DEBUG => 00003001  Status =>EX
Commid          => M3QRC763                               Queue =>EXEC
Function        => COPY       Sub State => SEND           State =>VTAM I/O
Server          => SVTSERV1   PLEXCLASS => (          )
Submitter  => SC.IRV.TEST1                       SENDING SIDE
Userid     => TEST1
Scheduled Time =>          Date     =>              Day    =>
Queueing Prty  => 10       Class    => 3            Retain => NO
Submitted Class=> NONE      Max Class => NONE        Sess.ID=> PNODE
Session restrt => 0         Dyn rstrt => 0           RouteID=>
Last Msgid     =>          Last RC  => 00000000      RetProc=>
Secure=> UN-AUTHENTICATED   Signature => N  Encryption=> NONE
Sending File   => CDTEST1.TESTFILE.THRICE.V10
Receiving File => TEST1.TESTFL.THRICE
Volume seq no. => 1        Volser   => USER01       TTRN   => 00030200
Blks           => 8        Recs     => 2,486        RUs    => 198
I/O bytes      => 223,360                           Member =>
VTAM bytes     => 202,752               Compression Factor => 9.2%
```

2. Type any of the following Process control commands at the command line, and press **Enter.** The following table describes each option:

Command	Description
P	Suspend the currently executing Process
D	Delete a nonexecuting Process
H	Place a nonexecuting Process in the HOLD queue
R	Release a nonexecuting Process
Enter	Monitor the currently executing Process execution
C	Change Other Node, Queueing Priority, Scheduled Time, Scheduled Day, and Retain Status in a nonexecuting Process

3. To change parameters, move the cursor to the appropriate field on the screen, make the changes that you want, and press **Enter**.

4. If you are required to confirm a Process request, respond to the Confirm Delete/Suspend Command prompt.
5. If the Process completes execution while the Selected Process screen is displayed, press **Enter** to return to the Operator Table screen.

Viewing the Content of Processes Matching Your Search Criteria
About this task

To view the content of Processes matching your search criteria:

Procedure

To view output on the VIEW PROCESS screen, do one of the following:
- Type a V on the command line on the Select Process screen after specifying the parameters to use as search criteria. These parameters are described in SELECT PROCESS Command Format. Also, for more information, see Issuing SELECT PROCESS through the IUI.
- Type V in the OPTION column next to the Process name on the Operator Table/Executing Queue screen. (The PNODE Processes which satisfied your selection criteria on the Select Process screen are displayed on the Operator Table/Executing Queue screen.) See Viewing and Controlling a Process through the Selected Process Screen.

The following shows the sample output of the VIEW PROCESS command:

```
============================================================
                    VIEW PROCESS
          PROCESS NAME: TOEND    PROCESS NUMBER: 1
============================================================
TOEND    PROCESS SNODE=CD.NODE                              -
                 PNODE=CD.NODE                              -
                 HOLD=YES                                   -
                 RETAIN=NO                                  -
                 CLASS=1                                    -
                 PRTY=2
STEP01   COPY FROM                                          -
          (SNODE                                            -
           DSN='USER01.JCL.LIB'                             -
           DISP=(SHR)                                       -
          )                                                 -
              TO                                            -
          (PNODE                                            -
           DSN='USER01.JCL.LIBX6'                           -
```

Chapter 8. Process Queuing and Recovery

Sterling Connect:Direct stores submitted Processes in the Transmission Control Queue (TCQ). The TCQ controls Process execution. It consists of two inter-dependent VSAM Relative Record Data Sets (RRDS), and an in-memory queue which controls access. The two data sets are the TCQ and the TCX, which is a space map for the TCQ.

Logical Queues

The TCQ has the following logical queues:

- Wait
- Execution
- Hold
- Timer
- Process Retention

Access the queues and manipulate Processes using the following Sterling Connect:Direct commands:

- CHANGE PROCESS
- DELETE PROCESS
- FLUSH PROCESS
- SELECT PROCESS
- SUSPEND PROCESS

Refer to Controlling Processes with Commands, for more information the on each of these Sterling Connect:Direct commands.

Queuing Parameters

The RETAIN, HOLD, and STARTT parameters queue Processes as described in following table.

Parameters	Queue	Comments
None	Wait	Process remains on the Wait queue until Sterling Connect:Direct can start a session with the SNODE. The Process then moves to the Execution queue.
RETAIN=INITIAL	Hold	Process automatically executes each time Sterling Connect:Direct is initialized with TCQ=WARM. This setting is useful for Processes that contact other Sterling Connect:Direct nodes each time Sterling Connect:Direct completes initialization. This action causes any work queued on the remote node for the local node to begin.

Parameters	Queue	Comments
RETAIN=YES	Hold	A copy of the Process is kept in the Hold queue after it has executed. The Process does not execute again until it is released by a CHANGE PROCESS command. You can use RETAIN=YES, combined with STARTT, to run a Process at a periodic interval. For example, RETAIN=YES and STARTT=(Tuesday, 3pm) starts the Process every Tuesday at 3 pm; RETAIN=YES and STARTT=(,12:00) starts the Process each day at noon.
HOLD=YES	Hold	Process remains in the Hold queue until someone releases the Process.
HOLD=CALL	Hold	Process is automatically moved from the Hold queue to the Wait queue when the SNODE contacts the node on which the Process resides.
STARTT	Timer	When the scheduled time and date arrive, the Process is put on the wait queue and is available for execution. You can use RETAIN=YES, combined with STARTT, to run a Process at a periodic interval. For example, RETAIN=YES and STARTT=(Tuesday, 3pm) starts the Process every Tuesday at 3 pm; RETAIN=YES and STARTT=(,12:00) starts the Process each day at noon. You can also use the Timer queue for session retry and file allocation retry based on Sterling Connect:Direct initialization parameters specified by a particular installation. When you exhaust retry limits, the Process is moved to the Hold queue with an HE status.

When you submit a Process, Sterling Connect:Direct puts it in the appropriate logical queue based on Process statement routing parameters listed in the preceding table. See Process Execution Example for an illustration of how Sterling Connect:Direct executes a Process.

TCQ Status and State Values

The SELECT PROCESS command displays Sterling Connect:Direct status values, task state values, and transport state values. These are defined in the following table:

Value	Definition
Sterling Connect:Direct Status Value	Each Process on the TCQ has an associated Sterling Connect:Direct status value. This status value has a unique meaning determined by which queue the Process is in. The SELECT PROCESS command displays Sterling Connect:Direct status values.
Sterling Connect:Direct Task State Values	When a Process is in the Execution queue, the SELECT PROCESS command also displays a Sterling Connect:Direct task state value. The state values are provided for information purposes. You cannot modify or control them using Sterling Connect:Direct commands. The task state value shows the current state of the Process. Usually, Sterling Connect:Direct tasks are waiting for completion of a service such as File I/O, Sterling Connect:Direct locked resource, or VTAM I/O.

Value	Definition
Transport State Values	When a Process is on the Execution queue, the SELECT PROCESS command can also display a transport state value, depending on timing. The state values are provided for informational purposes. You cannot modify or control them using Sterling Connect:Direct commands. For example, if the Process is currently in a VTAM I/O state, the SELECT PROCESS output can show a further state value such as send or receive. While a Process is executing, the SELECT PROCESS command displays the number of file blocks or records and VTAM request/response units (RUs) sent or received. This display gives you an indication of the status of COPY statements on the Process.

Wait Queue

The following table shows the Sterling Connect:Direct status value for the Wait Queue:

Status Value	Explanation
WC	Waiting for Connection. This status is the initial queue status when a Process is submitted without HOLD or RETAIN specified. This status means the Process is ready to execute as soon as possible. Process is ready to run but other Processes are executing with the same SNODE, and no other sessions are available. This Process runs as soon as an eligible session is available. If you find a Process in this state, it is most likely for this reason. Processes are also in this state when Sterling Connect:Direct is quiesced.
WT	Waiting for transport. This status is the status of a Process when the transport protocol is not available. This Process runs as soon as the transport protocol is available.
WX	Waiting for server. This status is the status of a Process waiting for a Sterling Connect:Direct Server to become available. This Process runs as soon an eligible Sterling Connect:Direct Server is available. An eligible Sterling Connect:Direct Server is an active server that supports the Process PLEXCLASS and the transport protocol (SNA, TCP, UDT, or CTCA). The transport protocol must also be available on the server for it to be eligible.

The following table shows the applicable commands for the Wait Queue:

Command	Description
Change Process	Modifies Process attributes
Delete Process	Removes the Process from the queue
Select Process	Displays Process status and state

Execution Queue

The following table shows the Sterling Connect:Direct status values for the Execution Queue:

Status Value	Explanation
EX	Node is in Process control and executing the displayed Process.
WC (Waiting for Connection)	Process control is in negotiation while the two nodes determine which Process executes next, based on priority.

Status Value	Explanation
PR.CNTL	This node is not in Process control. This status occurs: (1) during Process negotiation where highest priority on either node runs next, or (2) when the current node is the SNODE during Process execution.
SS	Session with other node is being started.

The following table shows Sterling Connect:Direct task state values for Processes in the Execution Queue:

Task State	Explanation
DISPATCH	Task is waiting to dispatch
INACTIVE	Task can be dispatched but inactive
VTAM I/O	Task is waiting on VTAM request
P=SNODE	PNODE equals SNODE task
NETEX I/O	Waiting on NETEX I/O request
VSAM I/O	Waiting on VSAM I/O request
MISC	Miscellaneous I/O, such as a WTO
FILE I/O	Non-VSAM I/O
LOCK	Waiting for Sterling Connect:Direct locked resource
SUBTASK	Waiting on a subtask, such as open or close, allocation, security, or RUN TASK
RUNNING	Executing instructions
TCA SCAN	TCA scan
TIMER	Waiting for timer event
ATTACH	Waiting for attached tape drive
ALLOCATE	Waiting for allocation to complete
MOUNT	Waiting for tape mount
OPEN	Waiting for OPEN to complete

The following table shows the Subtask state values for the Execution Queue. The first characters of the subtask request state indicate the session protocol such as TCP or LU6.2.

Subtask State	Explanation
ADOPT V2	Performing Adopt
CALL V2	Performing Call
INIT V2	Performing Initialization
CLEANUP	Performing Cleanup
HANGUP	Performing Hangup
SEND V2	Performing Send
SEND RSP	Performing Send Response
SEND SIG	Performing Send Signal
RECV V2	Performing Receive
ANSWER V2	Performing Answer

Subtask State	Explanation
IOCTL V2	Performing I/O Control
GET BUF	Performing I/O Control Get Buffer
RDY RCV	Performing I/O Control Ready Receive

The following table shows the transport state values for the Execution Queue:

Transport State	Explanation
NO SESSION	No VTAM session
SESSION EST	Session with another node being established
NO REQUEST	No VTAM request outstanding
RECEIVE	Waiting on VTAM RECEIVE request
OPEN	Waiting on VTAM OPEN request
CLOSE	Waiting on VTAM CLOSE request
SETLOGON	Waiting on VTAM SETLOGON request
REQSESS	Waiting on a request session request
OPNDST	Waiting on an open destination request
CLSDST	Waiting on a close destination request
GENCB EXTLST	Waiting on a GENCB EXLIST
GENCB ACB	Waiting on a GENCB ACB
GENCB NIB	Waiting on a GENCB NIB
GENCB RPL	Waiting on a GENCB RPL
REJSESS	Waiting on a reject session request
SESSIONC	Waiting on a session cancel request
INQUIRE	Waiting on an inquire request
OPNSEC	Waiting on an open secondary request
RSHUTD	Waiting on a request shutdown request
SIMLOGON	Waiting on a simulate logon request
SND RESPONSE	Waiting on a send response request
WAIT FOR +DR	Waiting on a definite response request
VTAM I/O	Waiting on VTAM request
SEND	Waiting on VTAM send request
DACTSESS	waiting on LU6.2 deactivate session request
RCVFMH5	Waiting on LU6.2 receive FMH-5 request
REJECT	Waiting on LU6.2 reject conversation request
ACTSESS	Waiting on LU6.2 activate session request
ALLOC ALLOCD	Waiting on LU6.2 allocate conversation until available request

Transport State	Explanation
PRERECV	Waiting on LU6.2 prepare to receive request **Note:** In a Sterling Connect:Direct/Plex environment, the LU6.2 connection protocol does not enable the Sterling Connect:Direct Manager to redirect work to one of its servers. The remote node must address the server on which you want to run an LU6.2 Process. To do this, specify the node name and VTAM address of the Sterling Connect:Direct Server on which the Process is to run in the remote server's network map. Use the same CDPLEX.SERVER.NODE and CDPLEX.VTAM specified for the local initialization parameters for the Sterling Connect:Direct Server you are trying to address.
CNOS	Waiting on LU6.2 change number of session request
DELLOC	Waiting on LU6.2 deallocate conversation request
SEND CONFRMD	Waiting on LU6.2 send confirmation request
6.2 RECEIVE	Waiting on LU6.2 receive request
6.2 SEND	Waiting on LU6.2 send request
SEND ERROR	Waiting on LU6.2 send error request
DISPLAY	Waiting on LU6.2 display session limit request
DEFINE	Waiting on LU6.2 define session limits request
ALLOC IMMED	Waiting on LU6.2 allocate conversation immediately request

The following table shows the allocate state values for the Execution Queue:

Allocate State Value	Explanation
SVC99	Performing SVC99
CAT SEARCH1	CAMLST locate
READ VTOC	CAMLST search

The following shows the applicable command descriptions for the Execution Queue:

Applicable Command	Description
Flush Process	Terminates and deletes an executing Process
Select Process	Displays Process status and state
Suspend Process	Terminates and moves an executing Process on the hold queue

Hold Queue

The following table shows the Sterling Connect:Direct Status values for the Hold Queue:

Status Value	Explanation
HC (Held for Call)	Process is submitted with HOLD=CALL specified. A session started from either node causes Sterling Connect:Direct to place this Process on the wait queue in WC status, and eventually in the execution queue (EX) when the first Process finishes. **Note:** If the SNODE is defined with a null IP address, the Processes will be released serially. Refer to the HOLD parameter in SUBMIT Command for more information.
HE (Held in Error)	The Process was submitted and received an error unrelated to allocation or session errors. The Process is being checkpointed and REQUEUE=YES is specified. A common error that causes Sterling Connect:Direct to place the Process in HE status is an out of space condition (Sx37 ABEND).
HI (Held Initially)	Process is submitted with HOLD=YES specified.
HO (Held by Operator)	An exception response is sent from the other node during FMH exchanges at Process negotiation or step termination. It also occurs if an FMH is invalid or is sent out of sync, or if the remote node is not defined in the network map.
HP (Held due to Process Error)	An exception response is sent from the other node during EXIT exchanges at Process negotiation or step termination. HP also occurs if an EXIT is invalid, sent out of sync, or if the remote node is not defined in the Network map.
HR (Held Retain)	Process is submitted with RETAIN=YES specified or being held for Process retry (intelligent retry).
HS (Held for Suspension)	The operator issued a SUSPEND PROCess command. You can release the Process later. The Process will run (Held for Suspension) when Sterling Connect:Direct is recycled.
RA (Held for Restart Due to Allocation Error)	During Process execution, an allocation error occurred that matched those specified in the initialization parameters. This status enables the Process to restart after the allocation problem is resolved.
RH (Restart Held)	Either the Process is being held awaiting a connection to an inactive node by the Intelligent Session Retry feature (see Intelligent Session Retry) or a checkpointed Process is executing when an error such as a lost session or an I/O error occurred. This status enables the copy to restart when the session is reestablished.
WC (Wait For Connection)	Session establishment is attempted, including retries if specified, and failed. The current Process is put on the wait queue (and later EX Q) if a session with that node is established later. It also can be released.

The following table shows the applicable commands for the Hold Queue:

Applicable Command	Description
Change Process	Modifies Process attributes
Delete Process	Removes the Process from the queue
Select Process	Displays Process status and state

Timer Queue

The following table shows the Sterling Connect:Direct Status values for the Timer Queue:

Status Value	Explanation
RE (Retry)	The session with the SNODE is in the retry state. The number of and interval between retries is specified in the initialization parameters. The Process can be in retry status for session establishment or for an allocation error.
WC (Wait For Connection)	The Process is submitted with a start time or date (STARTT) that has not expired. When the STARTT is reached, the Process is put on the wait queue for scheduling to the EX Q.

The following table shows the applicable commands for the Timer Queue:

Applicable Command	Description
Change Process	Modifies Process attributes
Delete Process	Removes the Process from the queue
Select Process	Displays Process status and state

Process Recovery

Sterling Connect:Direct provides facilities to recover from most errors that occur during Process execution. Recovery from the point of failure is usually accomplished quickly. The following types of errors can occur during normal operation:

- Link failure terminates a session between Sterling Connect:Direct systems
- File I/O error occurs during Process execution
- Sterling Connect:Direct abends because of a hardware or other error
- TCQ Corruption

Sterling Connect:Direct provides the following facilities to address errors:

Facility	Description
Session establishment retry	When one or more Processes run with a node, Sterling Connect:Direct establishes a session with that node and begins execution. If Sterling Connect:Direct cannot start the session, Sterling Connect:Direct retries the session establishment. The initialization parameters, MAXRETRIES and WTRETRIES, determine the number of retries and the interval between retries. If Sterling Connect:Direct cannot establish a session after all retries are exhausted, the Process is placed in the Hold queue in the TCQ with a status of Waiting for Connection (WC). When a session is established with the other node, all other Processes are scanned and the highest priority Process is executed after the previous Process is finished.

Facility	Description
VTAM automatic session retry	If Process execution is interrupted because of a VTAM session failure, Sterling Connect:Direct automatically attempts to restart the session. This recovery facility uses the same parameter values as the session establishment retry facility. If Sterling Connect:Direct cannot establish the session, the Process that is executing and any other Processes that are ready to run with the other node are placed in the Hold queue with a status of Waiting for Connection (WC).
TCQ/TCX Repair Utility	When the TCQ becomes corrupt because of an outage or other circumstance, Sterling Connect:Direct may abend in production or during the next DTF initialization. The Sterling Connect:Direct administrator can use the TCQ/TCX repair utility to remove ambiguous or corrupt data and avoid having to cold start the DTF and reinitialize the TCQ, thus losing any Processes left in the TCQ.
Process step checkpoint	As a Process executes, Sterling Connect:Direct records which step is executing in the TCQ. If Process execution is interrupted for any reason, the Process is held in the TCQ. When the Process is available for execution again, Sterling Connect:Direct automatically begins execution at that step.
COPY statement checkpoint/ restart	For physical sequential files and partitioned data sets, Sterling Connect:Direct collects positioning checkpoint information at specified intervals as a COPY statement executes. Checkpoints are taken for each member that is transferred within a PDS, regardless of the checkpoint interval. If the copying procedure is interrupted for any reason, you can restart it at the last checkpoint position. **Note:** Whenever a Process step is interrupted and restarted, some data will be retransmitted. Statistics records for the Process step will reflect the actual bytes transferred, and not the size of the file. The COPY statement checkpoint/restart works in conjunction with step restart. The restart is automatic if Sterling Connect:Direct can reestablish a session based on the initialization parameter values for MAXRETRIES and WTRETRIES. See COPY Statement Checkpoint/Restart Facility for more information. The CHANGE PROCESS command can also invoke the checkpoint/restart facility. See Controlling Processes with Commands for instructions on how to use the CHANGE PROCESS command. **Note:** Checkpoint/restart is not supported for I/O exits at this time.

COPY Statement Checkpoint/Restart Facility

The checkpoint/restart facility includes the following elements:

- Initialization parameters
- Checkpoint/restart file
- Copy statement checkpoint parameters

Initialization Parameters

Sterling Connect:Direct uses the following initialization parameters with the COPY statement checkpoint/restart facility:

Parameter	Description
CKPT.MODE	Specifies whether the checkpoint function is performed when Sterling Connect:Direct is transferring a file in record mode or block mode. (Record mode transfer is used when reblocking of the output file is specified.) It also specifies whether the checkpoint function is performed for partitioned data sets and if so, what type. Automatic checkpointing of VSAM files is supported.

This parameter does not apply to TCP/IP and LU6.2 connections. With TCP/IP and LU6.2 connections, checkpointing is based on the checkpoint interval requested (regardless of the data set type or whether it is in block or record format) and on both nodes' ability to perform the checkpoint function. When both nodes agree to do checkpointing, the checkpoint interval is controlled by the sending node while checkpoint record filing is done on the receiving node. |
| CKPT | Specifies the default interval for checkpointing when it is not specified on the COPY statement.

You should specify the CKPT value as a multiple of the value specified for the V2.BUFSIZE initialization parameter. If you do not, performance can seriously deteriorate.

Note: Be aware of additional overhead associated with specifying too small a checkpoint interval, particularly when transferring large files. **Note:** For sequential files, try to avoid using a CKPT value less than:

$$BLKSIZE * NCP * 10$$

where NCP is the number of buffers for reading data from or writing data to a sequential data set using BSAM

For more information, search on Improving Performance in the IBM Sterling Connect:Direct for z/OS Administration Guide. |
| CKPT.DAYS | Specifies the amount of time that checkpoint records are kept if they are not deleted. Sterling Connect:Direct automatically deletes checkpoint records when a Process is restarted and runs to a successful completion. |
| CKPTDSN | Specifies the name of the checkpoint/restart file that holds checkpoint records during execution of the COPY statement. |

For detailed information about these parameters, search on Global Initialization Parameters in the IBM Sterling Connect:Direct for z/OS Administration Guide.

Checkpoint/Restart File

The Sterling Connect:Direct checkpoint/restart file contains positioning information for both files involved in executing a COPY statement. Sterling Connect:Direct maintains the checkpoint records throughout data transmission and deletes them when a transmission completes successfully.

Note: Checkpoints take place on the receiving end of a transfer. During restart, this information is exchanged with the sender so that appropriate positioning can take place.

A checkpoint record can be left in the Checkpoint file if an interrupted Process is deleted by the operator. Sterling Connect:Direct scans the checkpoint records during initialization and deletes records older than the value specified in the CKPT.DAYS initialization parameter.

COPY Statement Parameters

The CKPT and REQUEUE parameters of the COPY statement also control aspects of the Checkpoint/Restart facility. The following table describes these parameters.

COPY statement parameters

Parameter	Description
CKPT	Specifies the interval Sterling Connect:Direct uses to record checkpoint information. Sterling Connect:Direct uses this CKPT value, rounded to the nearest block, in determining how many bytes to transfer before taking a checkpoint. If you do not specify the Copy statement CKPT parameter, Sterling Connect:Direct uses the value specified in the CKPT initialization parameter. Specifying a value of CKPT=0K, or not specifying CKPT in the initialization parameters, disables checkpointing. Be aware of additional overhead associated with specifying too small a checkpoint interval, particularly when transferring large files.
REQUEUE	Indicates whether Sterling Connect:Direct requeues Processes that end due to an ABEND, such as an Sx37, or enables any subsequent steps to run to Process termination. This parameter is only effective if checkpointing is in use. See the Connect:Direct Process Language help for more information.

Checkpoint/Restart Examples for TCP/IP, UDT, or LU6.2 Transfers

The following examples describe how checkpoint/restart works for different transfer types.

TCP/IP, UDT, or LU6.2 Transfers

In the case of transfers using TCP/IP or UDT, Sterling Connect:Direct sends approximately 30 bytes of overhead after sending an amount of data equal to the checkpoint interval in effect. Therefore, if the file size is 3 million bytes and the checkpoint interval is 10k, then 30 bytes of overhead is sent 300 times, resulting in a total overhead of 9000 bytes.

Other Transfers

For other transfers (LU0 or transfers to MS-DOS), Sterling Connect:Direct sends an additional seven bytes per block or ten bytes per record of overhead during data transfer. Data is sent in record mode when reblocking is taking place during transfer (source and destination block sizes differ). When no reblocking is taking place, Sterling Connect:Direct sends in block mode.

When you enable checkpointing, Sterling Connect:Direct transfers positioning information in addition to the file. The positioning information enables Sterling Connect:Direct to reposition the file in the event of an interruption. The following examples show how to determine this overhead in number of bytes when using Checkpoint/Restart for non-TCP/IP transfers.

In the following table, Sterling Connect:Direct checkpoints the file in block mode and adds seven bytes to each block transmitted. This functionality adds only 2,100 bytes to the transmission of almost 6 million bytes.

File Attributes	Sending File	Receiving File
BLKSIZE	19,069	19,069
LRECL	0	0
DSORG	PS	PS
RECFM	U	U
FILE SIZE	300 blocks	300 blocks

In the following table, Sterling Connect:Direct checkpoints the file in record mode because the data is being reblocked. Sterling Connect:Direct adds 10 bytes to each record being transmitted. This functionality adds 150,000 bytes to the transmission, or 5 percent overall.

File Attributes	Sending File	Receiving File
BLKSIZE	5,000	2,000
LRECL	200	200
DSORG	PS	PS
RECFM	FB	FB
FILE SIZE	600 blocks	1,500 blocks

RUN TASK Checkpoint/Restart

Sterling Connect:Direct for z/OS also offers a checkpoint/restart feature with the RUN TASK Process statement.

If a RUN TASK program is executing on the SNODE and a session failure occurs, the PNODE recognizes the session failure and puts the Process in the Timer queue for retry. The SNODE, however, is still running the RUN TASK program and is not aware of the session failure until the program finishes. The checkpoint/restart feature for RUN TASK ensures that when the Process restarts on the PNODE, the RUN TASK program does not execute a second time on the SNODE.

RUN TASK Checkpoint Records

Sterling Connect:Direct always writes a checkpoint record on the node where the RUN TASK program executes. The initial checkpoint record is written upon entry to DGADRNT$, the module that handles the RUN TASK Process statement. Sterling Connect:Direct updates the checkpoint record before attaching the program that is to execute. When the RUN TASK program finishes, Sterling Connect:Direct updates the checkpoint record again.

RUN TASK Restart

If a RUN TASK Process step restarts, the node where the program executes attempts to find the checkpoint record in the checkpoint file. If the RUN TASK step is still executing, the Process that is running for the restart of the step waits for the RUN TASK program to finish the first task and then proceed to the next step of the Process.

At Process restart for a RUN TASK step, if the program is still executing, you see two Processes in the EX queue for the same Process step. The first Process is executing the program. The second Process is waiting for the first Process to complete. When the first Process completes, it determines that the session it was

running under is lost and posts the second Process. The second Process records how the RUN TASK step that is still executing ended, and proceeds to the next step in the Process.

Re-execution of the RUN TASK

The RUN TASK step does not execute again if it is determined at restart that the RUN TASK step ended because it finished before the PNODE restarted the Process. However, if the RUN TASK program did not complete and is not currently running, then the RESTART parameter determines the restart of the Process.

Also, if at restart, Sterling Connect:Direct cannot find the checkpoint record and the RUN TASK program is not executing, Sterling Connect:Direct is unable to determine what action to take for the restart. If Sterling Connect:Direct cannot determine what action to take for the restart, it uses the RESTART parameter. You can code the RESTART parameter on the RUN TASK step or in the initialization parameters.

Note: If you code the RESTART parameter on the RUN TASK step, it overrides the initialization parameter. When you code RESTART=YES, Sterling Connect:Direct executes the program again. When you code RESTART=NO, the Process skips the RUN TASK step.

Search on Global Initialization Parameters in the IBM Sterling Connect:Direct for z/OS Administration Guide for detailed information about the RUNTASK.RESTART initialization parameter.

Chapter 9. Process Results and Statistics

The SELECT STATISTICS command is used to retrieve statistics records. Use this command to see the results of a Process that has finished executing.

Note: The Sterling Connect:Direct Activity Reporting System (ARS) produces detailed statistics reports.

You can also use the Sterling Connect:Direct Browser User Interface to perform some Sterling Connect:Direct for z/OS procedures.

Statistics Log Records

Sterling Connect:Direct keeps a record of operations and activity in a Statistics Log file. This file contains the following record types:

Record Type	Provides Statistics About
Process Submit	The submitted Process
Member Copy	Transmission of a PDS member
Copy	How the COPY statement completed
Process Duration	How the Process completed
Run Job	A job submitted to the z/OS internal reader (JES)
Run Task	A program attached to the Process as a subtask
Submit within Process	A Process that is submitted within another Process
InterConnect Option Results	Processes created by the InterConnect Option

For a table of statistics record types, refer to Using Sterling Connect:Direct Exits

Statistics Records Content

The statistics records include the following information:
- In all records:
  - Record type or function
  - Date and Time of record logging
  - Process name and number
  - SMFID
  - User ID
  - Other node (secondary or primary) involved in the Process
  - Start and stop time of the function
  - Highest or final completion code and message
  - Step label name, if one is specified
- In the Member Copy record, the input and output member names
- In the Process Submit and Submit Within records, the submitted PDS DSN and member name
- In the Copy record:

- The number of records or blocks read from or written to the file, and whether the transfer was performed in block or record mode
- The number of I/O bytes that were read or written from disk or tape
- The number of VTAM bytes sent or received during the session, including Sterling Connect:Direct and VTAM control information
- The RUSIZE

  The size displayed is not the actual RUSIZE used by the transfer but rather the RUSIZE indicated by the LOGMODE. VTAM can negotiate for a smaller RUSIZE.
- The compression percentage

  This percentage is calculated by evaluating the number of VTAM bytes and the number of I/O bytes. If the number of VTAM bytes is less than or equal to the number of I/O bytes, a positive compression percentage is calculated as:

  ```
  Compression Percentage = (1 – {VTAM Bytes ³ I/O Bytes} ) x 100
  ```

  If the number of VTAM bytes is greater than the number of I/O bytes, a negative compression is calculated as:

  ```
  Compression Percentage = – (1 – {I/O Bytes ÷ VTAM Bytes} )x 100
  ```

  The compression percentage values displayed in the Copy Termination record differ depending on the file attributes specified. A negative compression percentage means that more bytes are sent than are read from the file. This includes Sterling Connect:Direct control information.

Elapsed Time Significance

Use the following table to interpret the elapsed time between the start and stop times for the different record types:

Record Type	Interpretation
For Copy Termination	The elapsed time includes file allocation on both nodes and the time required to mount a tape, when required.
For Run Task or Run Job	The elapsed time indicates the time it took to run the task or job before control returned to Sterling Connect:Direct.
For Submit within Process	The elapsed time indicates the time it took to submit the Process to the TCQ.
For an ESF Process Submit	The start time is when the submit was performed (the Process was added to the TCQ). The stop time is when the Process was first added to the Process queue.

InterConnect Option Records

The InterConnect Option (ICO) routes files from a Sterling Connect:Direct node to a Sterling Connect:Enterprise® node for distribution, distributes batches to a Direct node, and provides notification of success or failure of the Process. The InterConnect software copies the entire content of the SYSPRINT file of the Sterling Connect:Enterprise batch utility, STOUTL, into the Sterling Connect:Direct Statistics file.

This report from STOUTL is displayed as a block by Sterling Connect:Direct. The InterConnect Option software imposes a limit of 500 lines for the report. These reports are retrievable only through the SELECT STATISTICS command FILE option for batch, and the DISPLAY option for the IUI. Search on Offline Utilities in

the IBM Sterling Connect:Enterprise for z/OS User's Guide for samples of the output reports from the ADD and EXTRACT functions.

Additional statistics records related to the InterConnect Option are written to the statistics facility. For a list of those statistics records, search on Using Sterling Connect:Direct Exits in the IBM Sterling Connect:Direct for z/OS Administration Guide.

Note: If you specify a statistics exit in the initialization parameters, the LF and RO records are passed to the exit.

SELECT STATISTICS Command

Use the SELECT STATISTICS command to retrieve and examine statistic log records. You can select records based on certain conditions and indicate if you want the output displayed, printed, or saved in a file for later processing. See information about the FILE subparameter in Indicating Output Destination for how to save your output in a file for processing later.

SELECT STATISTICS Command Format

SELECT STATISTICS has the following format and parameters. The required parameters and keywords are in bold print. Default values for parameters and subparameters are underlined.

Label	Command	Parameters
(optional)	**SELect STATistics**	**WHERE (**CCODE = (condition,completion code EXCLUDE = (MEMber | MCR) | (WTO) | (NOTWTO) | (list) MSGID = ID | (list) PNAME = name | (list) PNUMber = number | (list) SERVER = server name STARTT = ([date|day][,hh:mm:ssXM]) STOPT = ([date | day][,hh:mm:ssXM]) USER = name | (list) SNODE = name | (list) TYPE = ID | (list) FNAME = dsname | (list) | * CASE = YES | NO ARCHDSN = dsname | (list)**)** FILE | PRint | TABle | SUMmary

The following table describes the SELECT STATISTICS command parameters:

Parameter	Description

WHERE
  CCODE = (condition,completion code
  EXCLUDE = (MEMber │ MCR)
    │ (WTO) │ (NOTWTO) │ (list)
    MSGID = ID │ (list)
  PNAME = name │ (list)
  PNUMber = number │ (list)
  SERVER = server name
  STARTT = ([date│day][,hh:mm:ssXM])
  STOPT = ([date │ day][,hh:mm:ssXM])
  USER = name │ (list) SNODE = name
   │ (list)
  TYPE = ID │ (list)
  FNAME = dsname │ (list) │ *
  CASE = YES │ NO │
  ARCHDSN = dsname │ (list))
	Specifies which statistics records to examine. This parameter is required. The subparameters, such as PNAME, PNUMBER, and STARTT, are optional, but you must include at least one subparameter.
	
	CCODE = (condition, completion code) specifies selection by completion code.
	
	condition specifies a relationship to the completion code given in the subsequent positional parameter.
	
	The options for specifying condition include:
	GT for greater than
	LT for less than
	EQ for equal to
	NE for not equal to
	GE for greater than or equal to
	LE for less than or equal to

Parameter	Description
	completion specifies a decimal value ranging from 1 to 2,147,483,647 to allow for all completion codes that the RUN TASK statement can pass. This last value represents a maximum 31-bit binary number.
	For example, if CCODE = (EQ,12) is specified, records that have a Comp Code of 0000000C are selected.
	For another example, if CCODE = (GT,0) is specified, you see statistics records in which the step completion code is greater than zero, as long as the records also meet other specified criteria.
	EXCLUDE = (MEMBer | MCR) | (WTO) | (NOTWTO) | (list) specifies to exclude certain statistics from selection. Specify a list of excluded options by enclosing them in parentheses and separating them by a space or a comma. To select all statistics, omit the EXCLUDE parameter from the SELECT STATISTICS command. The TYPE parameter overrides the EXCLUDE specifications.
	MEMBer | MCR specifies whether or not to exclude the PDS member copy record for PDS copies on the statistics report.
	WTO specifies that Sterling Connect:Direct write-to-operator (WTO) messages are excluded from the SELECT STATISTICS command. Dynamic allocation messages are represented as WTOs in the statistics file.
	NOTWTO specifies that only WTO records are displayed (exclude everything that is NOT a WTO record).
	MSGID = ID | (list) specifies selection by message ID. You can specify a list of message IDs by enclosing them in parentheses. You can use a generic specification in the MSGID parameter using an asterisk (*) at the end of the ID. For example, if you specify SCPA*, then MSGIDs with SCPA in the first four characters of the message ID are selected.
	PNAME = name | (list) specifies selection by Process name. You can specify a list of Processes by enclosing them in parentheses. You can use a generic specification in the PNAME parameter by using an asterisk (*) at the end of the name. For example, if you specify PNAME=TEST*, then records with TEST in the first four characters of the Process name field are selected regardless of the contents of the remaining characters. Records having TEST, TEST123, and TESTX all satisfy this selection criterion.
	PNUMber = number | (list) specifies selection by Process number. You can specify a list of Processes by enclosing them in parentheses. The range is 1–199999.
	SERVER = server name specifies the name of the Sterling Connect:Direct member where the statistics are generated. The server name is a 1–8 character name assigned to each Sterling Connect:Direct Server through the CDPLEX.SERVER initialization parameter. This parameter is required in a Sterling Connect:Direct/Plex.

Parameter	Description
	STARTT = ([date | day] [,hh:mm:ssXM]) specifies selection by designated starting date and time. The date or day and time are positional parameters. If you do not specify the date or day, precede the time with a comma.
	date specifies the date to execute the Process. You can specify the day (dd), month (mm), and year (yy for 2-digit year and yyyy for 4-digit year). You can use periods or backslashes (/) to separate the components of a date value. You can omit the separators only for transfers between mainframe nodes. Use separators to guarantee transfers between all platforms.You can use the following date formats, according to which date order is specified in the DATEFORM initialization parameter:
	• DATEFORM=MDY specifies the date format as mm/dd/yy, mm/dd/yyyy, mm.dd.yy, or mm.dd.yyyy
	• DATEFORM=DMY specifies the date format as dd/mm/yy, dd/mm/yyyy, dd.mm.yy, or dd.mm.yyyy
	• DATEFORM=YMD specifies the date format as yy/mm/dd, yyyy/mm/dd, yy.mm.dd, or yyyy.mm.dd
	• DATEFORM=YDM specifies the date format as yy/dd/mm, yyyy/dd/mm, yy.dd.mm, or yyyy.dd.mm
	Valid Julian dates formats are yyddd, yyyyddd, yy/ddd, yyyy/ddd, yy.ddd, or yyyy.ddd.
	If you do not specify the DATEFORM parameter, Sterling Connect:Direct for z/OS defaults to MDY date format.
	day specifies the day of the week to select. Valid names include MOnday, TUesday, WEdnesday, THursday, FRiday, SAturday, and SUnday. You can also specify YESTER to search for statistics records created yesterday or TODAY to
	hh:mm:ssXM indicates the time of day in hours (hh), minutes (mm), and seconds (ss) to select. Set XM to AM or PM. You can use the 24-hour clock or the 12-hour clock. If you use the 24-hour clock, valid times are 00:00-24:00. If you use the 12-hour clock, 1:00 hours are expressed as 1:00AM, and 13:00 hours are expressed as 1PM. If you use neither AM or PM, Sterling Connect:Direct assumes the 24-hour clock. You do not have to specify minutes and seconds.
	You can also specify NOON, which searches for the statistics records at noon, or MIDNIGHT, which searches for the statistics records at midnight. The time default is 00:00:00, the beginning of the day.
	If you specify time of day but not date, the output shows the first available entry in the statistics log for that time of day. Statistics from all later times and dates are output up to and including the stop time.
	If you do not specify the STARTT parameter, the search criterion consists of any time before the STOPT parameter.

Parameter	Description
	STOPT = ([date | day] [,hh:mm:ssXM]) Specifies a search for statistics records up to and including the designated date, day, and time positional parameters. If you do not specify the date or day, place a comma before the time.

The date and time formats are the same as the STARTT parameter. The time default is 24:00:00, the end of the day.

If you specify time of day but not date, all statistics through the most recent entry for that time of day are output.

If you do not specify the STOPT parameter, Sterling Connect:Direct selects statistics through the present time.

USER = name | (list) limits the selected statistics records to those that are written for users with the specified name. You can specify a list of names by enclosing them in parentheses. Use generic specifications by placing an asterisk (*) at the end of the name. For example, if you specify USER = SYS$*, then records with SYS$ in the first four characters of the USER field are selected regardless of the contents of the remaining characters. Records having SYSBOB, SYSADM, and SYS$0001 all satisfy this selection criterion. USER names can be up to 64 characters in length and can contain lowercase characters.

SNODE = name | (list) limits the selected statistics records to those that are written for Processes where the specified node name acted as SNODE. You can specify a list of names by enclosing them in parentheses. Use generic specifications by placing an asterisk (*) at the end of the name. For example, if you specify SNODE=DALLAS*, then records with DALLAS in the first six characters of the SNODE field are selected regardless of the contents of the remaining characters. Records having DALLAS.PROD, DALLAS.TEST, and DALLAS all satisfy this selection criterion. SNODE names can contain lowercase characters.

Note: When the statistics record shows NODE=S (SNODE), the PNODE and SNODE fields are switched in that Process' statistics record. For example, when a Run Task is submitted for SNODE processing, the RT statistics record created at the PNODE contains NODE=P and the PNODE and SNODE fields are as expected. For the same task, the RT statistics record created at the SNODE contains NODE=S and the PNODE and SNODE fields are reversed for that Process. |

Parameter	Description
	**TYPE = ID	(list)	*** specifies the statistics record types to select. Every statistics record Sterling Connect:Direct generates has an associated record-type identifier. Each identifier is two characters long and indicates the event or function that generated the record. The identifier also indicates the record format and contents. Use TYPE= * to view all record types. The TYPE subparameter specifies which record types to select, and overrides the EXCLUDE parameter. When you do not specify a TYPE, the record types selected are determined by the output option chosen, and can be affected by the EXCLUDE subparameter. When you specify the PRINT or TABLE output option, the types in the following table are selected. Specify FILE for the output option to select all available types. Use the EXCLUDE subparameter to exclude certain types that the output option included. For a list of statistics record type identifiers, search on Statistics Records in the IBM Sterling Connect:Direct for z/OS Administration Guide. FNAME=dsname	(list)	* limits the selected statistics records to those that contain the specified file name. The FNAME subparameter is meaningful for the following record types: CT Copy Termination RJ Run Job SD Start Sterling Connect:Direct SW Submit within Process The meaning of the file name within these records is unique for each record type. For example, the Run Job record contains the file name of the submitted JCL. Filenames can be up to 254 characters in length and can contain lowercase characters.
CASE=YES	NO	Specifies whether lowercase or mixed-case data is permitted for the USER, SNODE, and FNAME subparameters. The CASE subparameter overrides the global CASE option defined at signon for the purpose of the SELECT STATISTICS command. **YES** folds the data in USER, SNODE, and FNAME to uppercase regardless of the actual data specified. **NO** preserves the actual case typed for the USER, SNODE, and FNAME subparameters. The CASE defaults to the setting defined within the session defaults if nothing is specified.
ARCHDSN=dsname	(list)	Specifies that Sterling Connect:Direct is to search the archived statistics files named, instead of the statistics log currently in use by the DTF. Archived statistics files store old statistics data that is no longer active in the statistics log. See your system administrator for information about the availability of archived statistics at your site, and for the data set names you can specify with the ARCHDSN subparameter. See SELECT STATISTICS Command Format for information on archiving statistics.

Parameter	Description
FILE | PRint | TABle | SUMmary	Specifies the output format. Indicate only one. TABLE is the default. This parameter is optional.
	See Indicating Output Destination for an explanation of the output produced by the selection of the FILE, PRINT, and TABLE parameters. The SUMMARY parameter produces a 3-line summary per statistics record, similar to the example on Statistics Log Records.
	The reports from Sterling Connect:Enterprise are retrievable only through the FILE option for batch and the DISPLAY option for the IUI.

Using SELECT STATISTICS through the Batch Interface
About this task

To use the SELECT STATISTICS command from the Batch Interface, perform the following steps:

Procedure
1. Place commands in the DGADBATC job stream as described in "Sample job stream to run the batch interface" on page 10.
2. Submit the job while Sterling Connect:Direct is running.

SELECT STATISTICS Command Examples
The following command searches for statistics records based on start and stop date and time, and excludes write-to-operator statistics messages.

```
SEL STAT WHERE ( -
  EXCLUDE=(WTO) -
  STARTT=(11/24/2003,06:45:00) -
  STOPT=(11/25/2003,8AM) -
      )
```

The following command searches for statistics records based on start and stop date and time, and excludes write-to-operator and PDS member copy statistics records.

```
SEL STAT WHERE (-
              EXCLUDE=(WTO,MEMB) -
              STARTT=(11/21/2003,15:25:00) -
               STOPT=(11/25/2003,15:30:00) -
                )
```

The following command searches for statistics records based on Process name, and start and stop date and time. It excludes write-to-operator statistics messages.

```
SEL STAT WHERE ( -
              EXCLUDE=(WTO) -
              PNAME=BILLING  -
              STARTT=(12/28/2003,06:00)  -
              STOPT=(12/28/2003,23:00) -
              )
```

The following command searches for signon records for the user Mary.

```
SEL STAT WHERE (USER=MARY, TYPE=SI) TABLE
```

The following command searches are identical and both select only WTO records.

```
SEL STAT WHERE (TYPE=WO) TABLE
SEL STAT WHERE (EXCLUDE=(NOTWTO)) TABLE
```

The following command searches for statistics records based on Process start/stop date and time that ran on a Sterling Connect:Direct Server named SERVER1.

```
SEL STAT WHERE ( -
                SERVER=SERVER1 -
                STARTT=(12/28/2003,06:00) -
                STOPT=(12/28/2003,23:00) -
                )
```

The following command searches for Process submission records for Processes in which the SNODE is any node in Dallas, and prints the output. Assume that the site administrator indicates that the November statistics records are contained in a file pair whose key sequenced data set is named SYS.ARCH.STATS.M9611. For an explanation of statistics file pairs, search on Administering Statistics in the IBM Sterling Connect:Direct for z/OS Administration Guide.

```
SEL STAT WHERE ( -
                TYPE=(PS,SW) -
                SNODE=DALLAS* -
                ARCHDSN=SYS.ARCH.STATS.M9611 -
              ) PRINT
```

The following command searches for signon and signoff records that match today's date and the User ID SEAN.

```
SEL STAT WHERE ( -
                TYPE=(SI,SO) -
                USER=SEAN  -
                STARTT=(TODAY) -
                STOPT=(TODAY,24:00:00) -
                ) TABLE
```

The following command searches for the message ID SCMG010I and all message IDs that begin with SCPA.

```
SEL STAT WHERE ( -
                MSGID=(SCMG010I, SCPA*) -
                )
```

SELECT STATISTICS Sample Output

The following shows sample output from a SELECT STATISTICS command.

```
node.name                    SELECT STATISTICS                    mm.dd.yyyy
================================================================================
_____
Function      => PROCESS SUBMIT       Start Time => 15:21:11
Process Name => BENCHRC               Stop Time  => 15:21:11
Process Num  => 272                   Comp Code  => 00000000
                                      Comp Msg   => SSPA001I
Userid       => USER01
Primary      => node.name             Step Name  =>
Submitted DSN=> USER01.CD.PROCESS(SUB1)
_____
Function      => COPY                 Start Time => 15:21:11
Process Name => BENCHRC               Stop Time  => 15:21:12
Process Num  => 272                   Comp Code  => 00000000
                                      Comp Msg   => SCPA000I
Userid       => USER01
Primary      => node.name             Step Name  => STEP1
Server       => S3                    PLEXCLASS  => (                )
From ( Snode
 Dsn=CSDQA1.TESTFILE.BENCH.M1)
        recs => 0                      blks => 36
    I/O BYTES => 1,000,000
   VTAM BYTES => 1,000,072
     Cmpr Perc => 0.0%
     Digital Signature enabled = No
        VOL=SER=> SVUS06
To   ( Pnode
 Dsn=CSDQA1.FILETEST.BENCH01)
        recs => 0                      blks => 36
    I/O BYTES => 1,000,000
VTAM BYTES => 1,000,072
     Cmpr Perc => 0.0%
     Digital Signature enabled = No
     Merged Signature enabled  = No
     Merged Encryption enabled = No
        VOL=SER=> SVUS02
_____
Function      => Process Term         Start Time => 15:27:26
Process Name => BENCHRC               Stop Time  => 15:27:30
Process Num  => 277                   Comp Code  => 00000000
Server       => S2                    Comp Msg   => SVTM100I
Userid       => USER01
Secondary    => node.name
_____
```

The following figure illustrates the commands for archiving statistics for a single
day using the Batch Interface. These commands archive the statistics from the
previous day into the preallocated data set of the API referenced by the DD
DMTMPDSN.

```
SIGNON      USERID=(USERID,PASSWORD) TMPDD=DMTMPDSN  -
            NETMAP=HLQ.CD.NETMAP
SELECT STAT WHERE (STARTT=(YESTERDAY,00:00:00) -
                STOPT=(YESTERDAY,24:00:00))  FILE
SIGNOFF
```

Using SELECT STATISTICS through the IUI

You can use the Select Statistics screen to select, display, and print statistics
information from Sterling Connect:Direct activities.

About this task

To select, display, or print statistics information using the IUI:

Procedure

1. Select option **SS** from the Primary Options Menu to display the Select Statistics screen.

```
 node.name                      SELECT STATISTICS
 CMD ==> P
  Session not active. Only submits are allowed under ESF.        hh:mm
       CMD: S ... SUMMARY TABLE   D ... DISPLAY REPORT            yyyy.mm.dd
            P ... PRINT REPORT                                    yyyy.ddd
       PROCESS NUMBERS:
          ==> _____      ==> _____     ==> _____     ==> _____
       PROCESS NAMES:
          ==> _____     ==> _____    ==> _____   ==> _____
            START DATE    ==> TODAY_____    ( YYYY.MM.DD )
            START TIME    ==> _____     (HH:MM:SSXM)
            STOP DATE     ==> TODAY_____    ( YYYY.MM.DD )
            STOP TIME     ==> _____     (HH:MM:SSXM)
       CONDITION CODE:    ==> __ _____
       EXCLUDE ( MEMBER RECS ==> Y   WTO RECS ==> Y   ^WTO RECS ==> N )
       CHANGE EXTENDED OPTS: ==> N
```

2. To access the Select Statistics Extended Options screen, type Y in the CHANGE EXTENDED OPTS field. On the command line, type the command for the output format that you want. The following table describes each option:

Command	Description
D	Display the output on the screen.
P	Send the output to the printer.
F	View unformatted statistic records.
S	Display a two-line summary per statistics record on the screen. See the Statistics Summary figure on Statistics Summary.

> **Note:** The records from the InterConnect Option are only retrievable through the DISPLAY option.

The following table lists the statistics record types, their corresponding record type identifiers, and whether they display through the Display Report command, or the Change Extended Opts field of the Select Statistics screen.

Record ID	Description	Display Report	Change Extended Options
CE	Copy I/O Start	D	Y
CH	Change Process	D	Y
CI	Copy Step Start	D	Y
CS	Statistics Command		Y
CT	Copy Termination	D	Y
CX	Check Certificate Validity		Y
DC	Directory Commands	D	Y
DP	Delete Process	D	Y
DT	Select Task	D	Y

Record ID	Description	Display Report	Change Extended Options
DU	Delete User		Y
EI	Event Services Start Command		Y
ET	Event Services Stop Command		Y
EV	Event Services Command		Y
FA	IGWFAMS Message		Y
FI	Long File Name Record		Y
FP	Flush Process	D	Y
FS	Suspend Process		Y
FT	Flush Task		Y
GO	Process Modal - GOTO, ELSE, or EXIT Statement		Y
HW	High Concurrent Session Count		Y
IA	Inquire Statistics		Y
IB	Inquire Debug		Y
ID	Inquire STATDIR		Y
IF	Process Modal - IF Statement		Y
IP	Inquire Initialization parameters		Y
IT	Inquire SNMP Trap Table		Y
IU	Insert User		Y
IX	Inquire Sterling Connect:Direct/Plex		Y
JI	Run Job Start		Y
LF	ICO Log File Record		Y
M2	Multiple Copy Record	D	Y
MC	PDS Member Copy	D	Y
NL	Process modal - EIF or PEND statement	D	Y
NM	NETMAP Updated		Y
PE	Sterling Connect:Direct/Plex Error Record		Y
PI	PNODE Process Start	D	Y
PR	Performance Measurement Record	D	Y
PS	Process Submit	D	Y
PT	PNODE Process Termination	D	Y
PX	Sterling Connect:Direct/Plex Activity (Leave or Join Sterling Connect:Direct/Plex)		Y
QE	Queue Change to EXEC Queue	D	Y
QH	Queue Change to HOLD Queue	D	Y
QP	Queue Change to Process Retention Queue	D	Y
QT	Queue Change to TIMER Queue	D	Y
QW	Queue Change to WAIT Queue	D	Y
RE	ICO Report Record		Y
RF	Refresh/Update initialization parameters		Y

Record ID	Description	Display Report	Change Extended Options
RJ	Run Job		Y
RO	ICO Event Record		Y
RT	Run Task		Y
S2	Statistics Logging Statistics	D	Y
SB	Session Begin	D	Y
SC	Statistics Control Record	D	Y
SD	Start Sterling Connect:Direct	D	Y
SF	Statistics Format		Y
SI	Signon	D	Y
SN	Select Netmap		Y
SO	Signoff	D	Y
SP	Select Process	D	Y
SS	Select Statistics	D	Y
ST	Stop Sterling Connect:Direct	D	Y
SU	Select User		Y
SW	Submit within a Process		Y
SY	SYSOPTS	D	Y
TF	TCQ Threshold Full		Y
TI	Run Task Start		Y
TL	TCQ Threshold Low		Y
TP	Throughput Record Statistics		Y
TR	Trap Event Record	D	
TS	Suspend Task	D	Y
TW	TCQ Threshold Warning		Y
UM	Update Network map		Y
UU	Update User		Y
VP	View Process	D	Y
WO	WTO	D	Y
WS	Select Stat Command		Y
XO	Trace On/Off	D	Y
ZI	SNODE Process Start	D	Y
ZT	SNODE Process Terminated	D	Y

The following screen is displayed if you selected **Y** in the CHANGE EXTENDED OPTS field.

```
node.name           SELECT STATISTICS EXTENDED OPTIONS
CMD===> _____
                                                      hh:mm
                                                      yyyy.mm.dd
                                                      yyyy.ddd
     RECORD          ==>  __     ==>  __     ==>  __
     TYPES:          ==>  __     ==>  __     ==>  __
     SNODE NAME:     ==>  _____   MESSAGE ID:  ==> _____
     USER ID:
           ==>  _____
     FILENAME:
           ==>  _____
     SEARCH          ==>  _____
     ARCHIVED        ==>  _____
     DATASETS:       ==>  _____
     SERVER:         ==>  _____
     DO YOU WANT THE VALUES OF THIS REQUEST TO BE CASE SENSITIVE?  ==> N
```

See the SELECT STATISTICS parameters description on SELECT STATISTICS
Command for information on how to complete the fields, or press PF1 for
Help.

Statistics Summary

If you selected **S** to display a statistics summary, the following Statistics Summary
screen is displayed:

```
     ---------------------STATISTICS SUMMARY---------------          ROW 1 TO 3 OF 3
==>                                                                  SCROLL ===> PAGE
   FUNCTION   PNAME      PNUMBER        ----SUBMITTER NODE----OTHER.NODE-----
   USERID
   MSGID      RTNCD      END DATE/TIME     P|SNODE               SERVER
-------------------------------------------------------------------------------
 * RUN-TASK   TESTMBR2 5                   SC.MVS.QA5A           AS400.CDQA62
     RBELL1                                                      SERVER1
     ARTT003I 000000008 MM/DD/YY HH:MM:SS PNODE
 S  COPY      TESTMBR2 5                   SC.MVS.QA5A           AS400.CDQA62
     RBELL1                                                      SERVER2
     SCPA001I 000000000 MM/DD/YY HH:MM:SS PNODE
    SUB-CMD   TESTMBR2 5                   SC.MVS.QA5A           AS400.CDQA62
     RBELL1                                                      SERVER2
     SSPA001I 000000000 MM/DD/YY HH:MM:SS PNODE
```

The first and second lines of each entry identify a Process by function, Process
name and number, submitter node, other node, and user ID. The third line is the
message ID, return code, ending date and time of that Process, P|SNODE, and
Sterling Connect:Direct Server that the Process ran on. The P|SNODE field will
have either SNODE or PNODE depending on the record type as follows:

- Copy Term (CT) ------------ Node type of this record.
- Process Submit (PS) -------- Node it was submitted on (always PNODE).
- Process Term (PT) ---------- Node type of this record (always PNODE).
- Process Term (ZT) ---------- Node type of this record (always SNODE).
- Run Job (RJ) -------------- Node the job was submitted on.
- Run Task (RT) ------------- Node the task was run on.
- Submit within Process (SW) - Node the process was submitted on.

An asterisk (*) before the Process name indicates a nonzero return-code. You can type M next to the Process name to display a description of the message ID associated with the Process. Type S next to the Process name to show the statistics in detail, as in the following figure.

```
node.name          Connect:Direct (TM) MESSAGE DISPLAY              hh:mm
CMD ==>
 MSGID  ==> SVSL003I
 MODULE ==> DMVSOPEN
 Copy requested DISP=(,CATLG) to already cataloged dataset.
The PROCESS COPY step requested a DISP=(,CATLG) on the TO
clause of the COPY statement. The requested dataset already
exists as a cataloged dataset.
System Action. The PROCESS COPY step is terminated with a
              completion code of 8.
Response: Either correct the COPY dataset or uncatalog the
          existing dataset and re-submit the PROCESS.
```

Display Statistics

If you typed **D** to display the output on screen, it is formatted as shown in the following example.

Note: The statistics display function supports 133 character records and horizontal scrolling using the standard ISPF scrolling function keys.

```
==============================================================================
PLEX.JOE                        SELECT STATISTICS                  24.03.2003
==============================================================================
Function     => COPY                     Start Time   => 13:00:54
Process Name => PRCDATIM                 Stop Time    => 13:00:55
Process Num  => 13273                    Comp Code    => 00000000
                                         Comp Msg     => SCPA000I
Userid       => CBENN1
Secondary    => PLEX.TOM.TCP             Step Name    => STEP2
Other addr   => 10.20.129.38
Other port   => 02038
                                         V2 Buffer Size => 65,536
                              Negotiated V2 Buffer Size => 65,536
                                    TCP Buffer Size Used => 131,072
***** CHECKPOINTED; Interval = 1,000
 From ( Pnode
   Dsn=CBENN1.V44.PDS)
        recs => 0                    blks => 2
    I/O BYTES => 8,400
   VTAM BYTES => 2,183
    Cmpr Perc => 74.0%          CMPrlevel=1    WINdowsize=13      MEMlevel=4
    Digital Signature enabled = No
       VOL=SER=> USER19
To ( Snode
   Dsn=CBENN1.FTST.PRCDATIM.D1030325.T130042)
        recs => 0                    blks => 2
    I/O BYTES => 8,400
   VTAM BYTES => 2,183
    Cmpr Perc => 74.0%
    Digital Signature enabled = No
    Merged Signature enabled  = No
    Merged Encryption enabled = No
       VOL=SER=> USER11
```

The following figure illustrates how output to the system console and messages in response to console commands are formatted.

```
BROWSE -- SYS.USER01.NDMAPI                              ----- LINE 00000097 COL 001 080
COMMAND ===>                                                   SCROLL ===> CSR
_____
Function => RUN TASK (PNODE)                                   Start Time => 15:51:38
Process Name => HYTADD01                                       Stop Time => 15:51:39
Process Num => 261                                             Comp Code => 00000000
Server =>                                                      Comp Msg => SRTA000I
Userid => USER01
SECONDARY => USER01.MVS60.N2                                   STEP NAME => MBA$CREL

15:51:39 SVTM052I MBA$CRELRUN TASK HYTADD01( 261) SNODE=USER01.MVS60.N2 (0
15:51:39 SDAA004I - LOCATE MSG=NO TSODSN=NO DSN=IOVER1.CMCDIO.PROFILES(SUBADD0
15:51:39 SDAC006I (LOCATE) - R15=0000, R0=0000, Function completed successfully.
15:51:40 SDAA004I - ALLOC TSODSN=NO,DD=NDM00017,RETURN=(DSORG,DEVTYPE),D
15:51:40 SDAB005I - ERR=0000, INFO=0000, DYNAMIC ALLOCATION COMPLETED SUCCESSFUL
15:51:40 SDAA004I - LOCATE MSG=NO TSODSN=NO DSN= USER01.STOUTL.SYSIN.T632272
=====================================================================================
USER01.MVS60.N1 SELECT STATISTICS DATE : 10/24/2003
=====================================================================================
15:51:40 SDAC006I (LOCATE) - R15=0000, R0=0000, Function completed successfully.
15:51:40 SDAA004I - ALLOC TSODSN=NO,DD=NDM00018,RETURN=(DSORG,DEVTYPE),D
15:51:40 SDAB005I - ERR=0000, INFO=0000, DYNAMIC ALLOCATION COMPLETED SUCCESSFUL
15:51:41 SDAA004I - UNALLOC DD=NDM00017
15:51:41 SDAB005I - ERR=0000, INFO=0000, DYNAMIC ALLOCATION COMPLETED SUCCESSFUL
```

Note: In a Sterling Connect:Direct/Plex, all write-to-operator (WTO) records display the Sterling Connect:Direct Server name (or XCF.NAME for a Sterling Connect:Direct Manager) before the time.

SELECT MESSAGE Command

The SELECT MESSAGE command enables you to display message details using the message ID. The SELECT MESSAGE command has the following format and associated parameters. The required parameters and keywords are in bold print. Default values for parameters and subparameters are underlined

Label	Command	Parameter
(optional)		**SELect MeSsaGe WHERE (**ID|MSGID= message ID**)** [Short | Long]

The following table describes the SELECT MESSAGE command parameters

Parameter	Description
WHERE ID | MSGID = message ID	Specifies the 8-character message identification. You can specify a generic message ID.
[Short | Long]	Specifies to display the message text in short or long format. The short format is the default.

The following screens show examples of the SELECT MESSAGE command.

To use SELECT MESSAGE with a specific ID:

```
SELECT MSG WHERE (MSGID=SCPA0001) LONG
```

To use SELECT MESSAGE with a generic ID:

```
SELECT MESSAGE WHERE (MSGID=SCPA*)
```

Chapter 10. The Network Map

Retrieving Records from the Network Map File

Use the SELECT NETMAP command to retrieve records from the network map file for display or further processing. The network map file is maintained by your system administrator.

Issuing the SELECT NETMAP Command from the IUI
About this task

Use the Select network map screen to select a Network map record.

Procedure

1. Select option **NM** from the Primary Options Menu to display the Select Netmap or TCP Information screen.

```
node.name              SELECT NETMAP OR TCP INFORMATION              hh:mm
CMD ==>
NETMAP INFORMATION
NODE KEY(S): ==> _____        ==> _____
             ==> _____        ==> _____
             ==> _____        ==> _____
             ==> _____        ==> _____
TCP INFORMATION
ADDRESS:_____
NAME: _____
OUTPUT DESTINATION ==> DIS   (DIS-DISPLAY,PR-PRINT)
```

2. Type the selection criteria for the nodes you want to examine and press **Enter**. To select all nodes, you can simply press **Enter**.

   The following is an example of a network map showing two nodes: CD.PLX44 and CDSELECT.SCO.

```
BROWSE    SYS06097.T144239.RA000.USER01.NDMAPI.H02   Line 00000000 Col 001 080
 Command ===>                                              Scroll ===> PAGE
******************************* Top of Data **********************************
===========================================================
                  SELECT NETWORK MAP
===========================================================
Node Name   : CD.PLX44          VTAM Applid   : M1CDD97G
Max Parsess : 10                Def Ses Class : 1
Session Type: SNA               Environment   :
Node Status : INTERNAL, SEND, RECEIVE
ALT.COMM    : (ALT.DIR=BALANCE          -
              (ALT.ADDR=10.20.129.101,ALT.PORT=13641,
               ALT.TYPE=TCP   , ALT.USE.OUT=YES ))
CRC         : DEFAULT          Session Snode Max : 255
PlexClass   : (        ,          ) Use.Server.Node: No
_____
Node Name   : CDSELECT.SCO      TCP PORT      : 13640
TCP Address : 10.20.246.244
Max Parsess : 20                Def Ses Class : 2
Session Type: TCP               Environment   : UNIX
Source IP   : 10.20.201.2
Node Status : INTERNAL, SEND, RECEIVE
ALT.COMM    : (ALT.DIR=TOP             -
              (ALT.ADDR=MVSLPARA.CSG.STERCOMM.COM,
               ALT.PORT=01364,ALT.TYPE=TCP   ,
               SOURCEIP=10.20.202.22 ,
               ALT.USE.OUT=YES ))
CRC         : DEFAULT          Session Snode Max : 255
Contact     : Joe Dowe
Phone       : (xxx) xxx-xxxxx
Description : Connect:Direct for z/OS XXXX Node
```

You can make generic requests by using an asterisk. For example, type an asterisk (*) in the first node key field to select all nodes and **D*** to select only those nodes that begin with **D**. See SELECT NETMAP Command Format or press **PF1** for Help.

Note: The TCP information fields are for creating the SELECT TCPXLAT command described in the next section. Do not fill them in for the SELECT NETMAP command.

Issuing the SELECT NETMAP Command from the Batch Interface

Procedure

To use the SELECT NETMAP command from the Batch Interface, place your commands in the DGADBATC job stream and submit the job while Sterling Connect:Direct is running. The following command displays all network map entries for node names that begin with SAN.

```
SIGNON
 SEL NET WHERE (NODE=(SAN*))
 SIGNOFF
```

In the following example, the only node name in the network map which begins with SAN is the SANFRAN node. This report contains a long DNS record, which you can define in the Adjacent Node Definition in the network map. For more information on the Adjacent Node Definition, search on Maintaining the Network Map in the *IBM Sterling Connect:Direct for z/OS Administration Guide.*

```
================================================================================
                              SELECT NETWORK MAP
================================================================================
NODE NAME    : SANFRAN            VTAM APPLID   : M1A66789
MAX PARSESS : 10                  DEF SES CLASS : 1
SESSION TYPE: SNA                 ENVIRONMENT   : OS390
NODE STATUS : INTERNAL, SEND, RECEIVE
LONG DNS    : REGIONAL.MANAGER.OFFICE.IN.THE.SAN.FRANCIS
              CO.BAY.AREA.CALIFORNIA.USA
ALT.COMM    : (ALT.DIR=BALANCE         -
                (ALT.ADDR=M1A66790,ALT.TYPE=SNA  ,
                 ALT.USE.OUT=YES ))
CRC         : DEFAULT        SESSION SNODE MAX : 255
CONTACT     : JOE SMITH
PHONE       :  345-999-6999
DESCRIPTION : SANFRAN TO TOKYO NODES PATH,  SECONDARY P
              ATH TO OSAKA.
```

SELECT NETMAP Command Format

The SELECT NETMAP command uses the following format and parameters. The
required parameters are in bold print. Default values for parameters and
subparameters are underlined.

Label	Command	Parameters
(optional)	**SELect NETMAP**	**WHERE (NODE = (node**| **generic** |**(list)))**
		PRint | DISplay

The following table describes SELECT NETMAP parameters:

Parameter	Description
WHERE (NODE = (node | generic | (list))	Specifies which network map node definitions you want to examine. WHERE is the only required parameter for the SELECT NETMAP command.
	NODE=(node |**generic** | **(list))** specifies the network map node names that are selected. Specify a list of node names by enclosing them in parentheses and separating each by a comma or a blank.
	node specifies a node name. The node is a 1–16 character alphanumeric string, with the first character alphabetic.
	generic specifies a generic selection of node names. To specify node names generically, type a 1–7 character alphanumeric string, with the first character alphabetic, plus an asterisk (*). For instance, if your network includes node names PHOENIX, SANDIEGO, SANFRAN, and TUCSON, a specification of **SAN*** provides information about the SANDIEGO and SANFRAN nodes. If you type only an asterisk (*), Sterling Connect:Direct displays (or prints) all nodes that you are authorized to use.
PRint | <u>DISplay</u>	Indicates the output format. Indicate only one.

Translating TCP/IP Host Names to Network Addresses

Use the SELECT TCPXLAT command to translate TCP/IP host names to network
addresses and TCP/IP addresses to host names.

Issuing the SELECT TCPXLAT Command from the IUI

The Select NETMAP or TCP Information screen issues the SELECT TCPXLAT command or the SELECT NETMAP command depending on your request.

Procedure

1. Select option **NM** from the Primary Options Menu to display the Select Netmap or TCP Information screen. (See Issuing the SELECT NETMAP Command from the IUI to see a screen sample.)

2. Press **Tab** until you reach the TCP INFORMATION portion of the screen. See the parameter descriptions in SELECT TCPXLAT Command Format or press **PF1** for Help.

3. Do one of the following:
   - To translate a host address to a fully qualified host name, type the address in dot notation form in the ADDRESS field.
   - To translate a host name to a real TCP/IP address, type the host name in the NAME field. You can also type an alias name in this field if the host name is too long for the space provided.

   The following output is displayed:

```
xx.abc.node111              RESOLVED TCP NAME/ADDRESS                    14:56
CMD ==>
 TCP name/address translation successful.
     TCP ADDRESS : 111.222.333.444
     FULLY QUALIFIED TCP HOST NAME:
     qaoptsol.csg.stercomm.com
                            $$$$
```

Issuing the SELECT TCPXLAT Command with the Batch Interface

To use the SELECT TCPXLAT command from the Batch Interface, place your commands in the DGADBATC job stream and submit the job while Sterling Connect:Direct is running. Use the batch version of the SELECT TCPXLAT command to make multiple requests for resolution. The maximum number of requests is 10.

Procedure

To use the SELECT TCPXLAT command from the Batch Interface, place your commands in the DGADBATC job stream and submit the job while Sterling Connect:Direct is running. Use the batch version of the SELECT TCPXLAT command to make multiple requests for resolution. The maximum number of requests is 10.
The following command produces the TCP Name/Address Translation Report. The first two names listed in the TRTCPNAM parameter are aliases, the third is an actual host name.

```
SIGNON
  SEL TCPXLAT WHERE (TRTCPNAM=(NAME1, NAME2, tcpip.host.name3))
  SEL TCPXLAT WHERE (TRTCPADR=(123.456.78.999, 123.456.789.012))
SIGNOFF
```

The following report shows the resolution of name to address or address to name. REQUEST is what is typed in the command.

```
===============================================================================
                        TCP Name/Address Translation Report
===============================================================================
REQUEST                                : NAME1
Host Address                           : NNN.NNN.NN.NNN..
HOST NAME                              : tcpip.host.name1
REQUEST                                : NAME2
*** TCP Name/Address could not be resolved ***
REQUEST                                : tcpip.host.name3
Host Address                           : NNN.NNN.NN.NNN..
HOST NAME                              : tcpip.host.name3
===============================================================================
                        TCP Name/Address Translation Report
===============================================================================
REQUEST                                : 123.456.78.999
Host Address                           : 123.456.78.999,
HOST NAME                              : tcpip.host.name4
REQUEST                                : 123.456.789.012
Host Address                           : 123.456.789.012,
HOST NAME                              : tcpip.host.name5
```

SELECT TCPXLAT Command Format

The SELECT TCPXLAT command uses the following format and parameters. The required parameter is in bold print. Default values for parameters and subparameters are underlined.

Label	Command	Parameters
(optional)	**SELect TCPXLAT**	**WHERE** (TRTCPNAM = (tcpip.host.name | (list)) TRTCPADR = (tcp.net.adr | (list))) PRint | DISplay

The following table describes the SELECT TCPXLAT command parameters:

Parameter	Description
WHERE (TRTCPNAM = (tcpip.host.name | (list)) TRTCPADR = (tcp.net.adr | (list)))	Specifies which TCP host name or network address resolution you want to examine. This parameter is required. Provide one of the following subparameters: **TRTCPNAM = (tcpip.host.name | (list))** specifies a translation from host name or alias to a real address. Type this name in the standard format with each of the qualifiers being from 1 to 64 alphanumeric characters, with a maximum name length of 64 characters. Specify a list of names by enclosing them in parentheses and separating each by a comma or a blank. **TRTCPADR = (tcp.net.adr | (list))** specifies a translation from an IP address to the host name for that network. Type this address in the dotted format (nnn.nnn.nnn.nnn) with a maximum length of 15 characters including periods. Specify a list of addresses by enclosing them in parentheses and separating each by a comma or a blank.
PRint | DISplay	Specifies where output is directed. Indicate only one. When you submit this command through DGADBATC, use the PRINT parameter only.

Chapter 11. Utility Programs

Sterling Connect:Direct provides several utility programs and one I/O exit that facilitate your use of the software. You can perform the following functions using these programs and the exit:

- Notify the user of Process success or failure using DGADTIFY and DGADTFY2
- Dynamically allocate data sets using DGADTDYN
- Place job stream in a wait status for a specified period of time and set return codes indicating whether the batch step or RUN TASK completed successfully or failed by using the DGADWAIT program. You can use DGADWAIT with the MAXDELAY parameter in a submit command or PROCESS statement to synchronize Processes submitted through the batch interface.
- Dynamically invoke AMS (Access Method Services) to perform VSAM utility functions using DGADTAMS
- Resolve symbolic references using DGADTSUB and DGADGSUB
- Compress and decompress files stored in a ZLIB compressed format (DGASACMP)
- Determine how many concurrent sessions are running during a specific time period (DGADVITL)
- Interface with the IBM utility ADRDSSU, by using the Sterling Connect:Direct I/O exit, DGADSIOX. The ADRDSSU program enables you to copy SMS-compressed data without having to decompress the data and also provides support for copying wildcard-named files.
- Replace existing FTP sessions within z/OS job streams with Sterling Connect:Direct for z/OS Processes using Sterling Connect:Direct FTP+ for z/OS (CDFTP).

User Notification Programs

Sterling Connect:Direct provides sample programs that notify the console operator or IUI users about the success or failure of any Process step. The sample programs are supplied in source statement form in the Sterling Connect:Direct SDGASAMP library and in load module form in Sterling Connect:Direct SDGALINK. Use RUN TASK and MODAL statements with the sample programs to notify users.

The messages sent are standard TRANSFER SUCCESSFUL or TRANSFER FAILED status messages.

Operator Console Notify Program (DGADTIFY)

The operator console program, DGADTIFY, works with the RUN TASK statement to notify the console operator of the success or failure of Processes by means of Write to Operator (WTO) messages.

The program must have the following parameters passed to it:

Parameter	Description
CL4'GOOD' | CL4'FAIL'	The first positional parameter tells the program the correct message to output. Code the parameter as illustrated in the following example, including the single quotes.

Parameter	Description
file name	The second positional parameter is the name of the file that is being copied.

The following example shows a Sterling Connect:Direct for z/OS Process using the DGADTIFY program.

```
COPY1 PROCESS PNODE=CDA SNODE=CDB
STEP01    COPY -
            FROM ( -
              PNODE -
              DSN=FILE1 -
              DISP=SHR -
               ) -
            TO ( -
              SNODE -
              DSN=FILE2 -
              DISP=SHR  -
              )
STEP02    IF (STEP01=0) THEN
NOTIFYG     RUN TASK (PGM=DGADTIFY, -
                       PARM=(CL4'GOOD',FILE1)) PNODE
            ELSE
NOTIFYF     RUN TASK (PGM=DGADTIFY, -
                       PARM=(CL4'FAIL',FILE1)) PNODE
            EIF
```

The DGADTIFY program is attached on the PNODE. A parameter list containing the GOOD or FAIL message criteria and the FILE1 file name is passed to DGADTIFY. If the COPY statement is successful, the first RUN TASK step executes and you see the following message:

```
SNTB001I ** CONNECT:DIRECT SUCCESSFUL STEP COMPLETION **
FILE XFER BETWEEN - PLEX.JOE  AND - PLEX.TOM    SUCCESSFUL
REQUESTOR=CTENN1
DSN=CD.OUTPUT.data set
```

If the COPY statement is unsuccessful, the second RUN TASK step executes and you see the following messages:

```
SNTB002I ** Connect:Direct FAILED STEP COMPLETION **
******** Connect:Direct FILE TRANSFER FAILED  *********
******** Connect:Direct FILE TRANSFER FAILED  *********
FILE XFER BETWEEN - PLEX.JOE  AND - PLEX.TOM  FAILED
REQUESTOR=CTENN1
DSN=CD.OUTPUT.data set
******** Connect:Direct FILE TRANSFER FAILED  *********
******** Connect:Direct FILE TRANSFER FAILED  *********
```

User Notify Program (DGADTFY2)

Use the sample program, DGADTFY2, in conjunction with the RUN TASK statement to notify TSO users of various conditions. The program accepts a variable length parameter list to broadcast notification messages to users.

Note: The TSO user ID must be in the same z/OS image as the DTF where the DGADTFY2 RUN TASK is running.

The following table describes the parameters:

Parameter	Description
CL4'GOOD' | CL4'FAIL'	This first positional parameter indicates the success or failure of the Process step. Code the parameter as illustrated in the following example, including the single quotes.
file name	This second positional parameter is the name of the file that is being copied.
user ID | user ID list	The last parameter or list of parameters contains the TSO user IDs to notify. Separate the user IDs with a comma.

The following example demonstrates a Process using the DGADTFY2 program.

```
COPY   PROCESS   PNODE=CDA SNODE=CDB
STEP01COPY  -
        FROM (PNODE -
              DSN=FILE1  -
              DISP=SHR)  -
        TO (SNODE -
            DSN=FILE2 -
            DISP=RPL )
STEP02  IF (STEP01=0) THEN
NOTIFY1     RUN TASK -
            (PGM=DGADTFY2,PARM=(CL4'GOOD',FILE1,CDID1,CDID2))SNODE
        ELSE
NOTIFY2     RUN TASK -
            (PGM=DGADTFY2,PARM=(CL4'FAIL',FILE1,CDID1,CDID2))PNODE
EIF
```

A GOOD value is relayed to the TSO users CDID1 and CDID2 on CDB in the following message:

```
 SNTA001I **Connect:Direct FILE TRANSFER SUCCESSFUL**
          TRANSFER BETWEEN  - CDA   AND   - CDB
          DSN=FILE1
```

A FAIL value is relayed to the TSO users CDID1 and CDID2 on CDA in the following message.

```
SNTA002I ****Connect:Direct FILE TRANSFER FAILED****
          TRANSFER BETWEEN   -  CDA   AND   -  CDB
          DSN=FILE1
```

Dynamic Allocation Program (DGADTDYN)

The dynamic allocation program, DGADTDYN, performs several useful status checking and housekeeping functions in a Process. It is located in the Sterling Connect:Direct SDGALINK.

When multiple actions are contained in the parameters, the completion code returned is the highest completion code encountered.

DGADTDYN Parameters

The RUN TASK command invokes DGADTDYN with parameters that define allocation actions to execute. The following rules apply to the syntax of the parameters:

• Perform each allocation action with as many parameters as required.

- Separate each unique allocation action by a parameter containing a fullword of minus one (F'-1').
- A leading blank on the first parameter is not required; however, you must include a leading blank on all subsequent parameters. If you do not include a leading blank, the program issues an RC=30 and an SRTA005I message for the Process.
- Parameters must not extend past column 72, or they are not read.

The following table shows the available dynamic allocation functions:

Function	Description
ALLOC	Use the ALLOC function to allocate a file. The allocation request can contain most job stream DD statement options, including DCB options applicable to allocation. This function is the default.
UNALLOC	Use the UNALLOC function to unallocate a file.
CONCAT	Use the CONCAT function to concatenate two files.
DECONCAT	Use the DECONCAT function to perform dynamic deconcatenation.
LOCATE	Use the LOCATE function to locate cataloged data sets.

Note: You cannot access HFS files using DGADTDYN.

DGADTDYN Sample Program Uses
The following examples demonstrate how you can use the functions of the DGADTDYN program.

Example 1: Locate and Allocate a Data Set

The following example calls the program DGADTDYN using the LOCATE parameter to determine if a cataloged file exists.

If the file does not exist, the program issues a nonzero return code and makes a call to allocate the file through the ALLOC parameter.

```
PROC1 PROCESS SNODE=BOSTON
LOCATE    RUN TASK(PGM=DGADTDYN -
          PARM=(C'LOCATE DSN=XYZ.CUSTOMER.FILE'))SNODE
    IF (LOCATE NE 0) THEN
ALLOC     RUN TASK (PGM=DGADTDYN -
          PARM=(C'ALLOC', -
          C' DSN=XYZ.CUSTOMER.FILE', -
          C' DISP=(NEW,CATLG)', -
          C' VOL=SER=DCM009', -
          C' SPACE=(CYL,(1,1))', -
          C' DSNTYPE=EXTPREF', -
          C' DCB=(RECFM=FB,DSORG=PS,LRECL=80,BLKSIZE=3120)', -
          C' UNIT=3380'))SNODE
      EIF
```

Example 2: Delete and Uncatalog a Data Set

The following example deletes and uncatalogs a data set.

The first function, ALLOC, allocates the data set specifying a current status of OLD and a secondary (or normal step completion) disposition of DELETE, which deletes the data set.

The second function, UNALLOC, unallocates the data set. Because of the disposition (the data set is originally allocated with disposition DELETE), the data set is uncataloged.

Use the F'-1' as a separator between allocation functions.

```
PROC2 PROCESS SNODE=BOSTON
DELETE RUN TASK(PGM = DGADTDYN -
    PARM = (C'ALLOC DSN=XYZ.TEMP DISP=(OLD,DELETE)' -
            F'-1' -
            C'UNALLOC DSN=XYZ.TEMP'))
```

Example 3: Allocate and Concatenate Data Sets

The following example calls the program to allocate each data set through the ALLOC parameter. Then it calls DGADTDYN again to do the concatenation through the CONCAT parameter. The data set is concatenated under the first DDNAME in the CONCAT list.

```
RTDYNCON PROCESS SNODE=BOSTON
ALLOC1 RUN TASK (PGM=DGADTDYN -
   PARM=(C'ALLOC DSN=XYZ.TEMP DISP=SHR DD=OLD1'))  PNODE
ALLOC2 RUN TASK (PGM=DGADTDYN -
   PARM=(C'ALLOC DSN=XYZ.TEMP2 DISP=SHR DD=OLD2')) PNODE
CONCAT RUN TASK (PGM=DGADTDYN -
   PARM=(C'CONCAT DD=(OLD1,OLD2)'))  PNODE
```

Example 4: Deconcatenate and Unallocate Data Sets

The following example calls the program to deconcatenate by DDNAME using the DECONCAT parameter. Then it calls DGADTDYN again to unallocate each data set in the concatenation with the UNALLOC command.

```
RTDYNCON PROCESS SNODE=BOSTON
DECONCAT RUN TASK (PGM=DGADTDYN -
     PARM=(C'DECONCAT DD=(OLD1)')) PNODE
UNALLO1 RUN TASK (PGM=DGADTDYN -
     PARM=(C'UNALLOC DD=OLD1')) PNODE
UNALLO2 RUN TASK (PGM=DGADTDYN -
     PARM=(C'UNALLOC DD=OLD2'))  PNODE
```

Run Task Wait Program (DGADWAIT)

Use the DGADWAIT program as a batch step or a RUN TASK to place a job stream in a wait status for a specified period of time and set return codes indicating when the step or task completes. To synchronize Processes submitted through the batch interface, use DGADWAIT with the MAXDELAY parameter in a SUBMIT command or PROCESS statement. For more information, see Using the MAXDELAY Keyword Parameter to Synchronize Submitted Processes. This program is distributed via SDGASAMP and must be assembled and link-edited to the Sterling Connect:Direct load library.

The following table describes the positional parameters. If you execute DGADWAIT as a RUN TASK, enclose the parameters in quotes because of the embedded commas, for example, PARM=('1,2').

Parameter	Description
VALUE1	The first positional parameter indicates the time to wait. The default is 0 or you can use a comma to omit. For seconds, specify (S)xxxx. The maximum is 9999 seconds or about 2.7 hours. For minutes, specify Mxxx. The maximum is 999 minutes or about 16.6 hours. For hours, specify Hxx. The maximum is H99 or about 4.1 days. You can also specify 'ABEND' and then use the actual user ABEND code for the second positional parameter.
VALUE2	The second positional parameter specifies the return code to set. The default is **0**. The maximum is 4095. '-' causes a -1 value (if executed as a batch step, IBM displays the return code value as 4095).
VALUE3	The third positional parameter is only used to display diagnostics as WTO (write-to-operator) messages. Specify 'DIAG' or leave blank. Any other value is ignored.

The following examples show how to use DGADWAIT in a RUN TASK. In the first example, the program waits for one second, and then sets the return code to 2.

```
DGADWAIT PROCESS SNODE=NODE.NAME &PRM='1,2'
STEP01   RUN TASK (PGM=DGADWAIT PARM=(&PRM))
```

In this example, the program does not wait, but sets the return code to 8.

```
DGADWAIT PROCESS SNODE=NODE.NAME &PRM='0,8'
STEP01 RUN TASK (PGM=DGADWAIT PARM=(&PRM))
```

VSAM AMS Interface Program (DGADTAMS)

The VSAM AMS interface program, DGADTAMS, dynamically invokes AMS to perform VSAM utility functions. The program is located in the Sterling Connect:Direct SDGALINK.

The highest completion code encountered in any AMS action is returned.

DGADTAMS Parameters

DGADTAMS is invoked by the RUN TASK Process statement with the following parameters that define allocation and AMS actions to execute.

Parameter	Description
sysprint output parameters	The first positional parameter is special because it defines dynamic allocation parameters for the AMS SYSPRINT output. This parameter can allocate a spool file or a user file. The FREE and RETURN subparameters are required. **Note:** You must specify all of the sysprint output parameters on the same line. They cannot be on separate lines. The following example defines a CLASS A SYSOUT spool file. C'FREE=CLOSE, RETURN=(DD) SYSOUT=A'
control statement parameters	You can use any valid input to the VSAM AMS program as input to DGADTAMS, even multiple input parameters defining one or more AMS actions. You must begin all VSAM control statement parameters with a blank.

DGADTAMS Sample Program

The following figure shows a sample of DGADTAMS using the Define Cluster AMS function. The ASM SYSPRINT output is routed to the existing user file XYZ.OUTPUT.

```
VADC1 PROCESS SNODE=BOSTON
DEFINE RUN TASK (PGM=DGADTAMS,                              -
 PARM=(C'FREE=CLOSE,RETURN=(DD),DISP=OLD,DSN=XYZ.OUTPUT',  -
        C' DELETE(VSAM.PAY.CHECKS) CLUSTER', -
        C' DEFINE CLUSTER             -',-
        C' (NAME(VSAM.PAY.CHECKS)     -',-
        C' RECORDS(1)                 -',-
        C' VOLUMES(DCM009)            -',-
        C' OWNER(NDM)                 -',-
        C' NONINDEXED                 -',-
        C' RECORDSIZE(4089 4089)      -',-
        C' SHAREOPTIONS (2))          -',-
        C' DATA                       -',-
        C' (CONTROLINTERVALSIZE(4096)  -',-
        C' NAME(VSAM.PAY.CHECKS.DATA))  -',-
        C' CATALOG(USER.UCAT)')) SNODE
```

Symbolic Resolution Utilities (DGADTSUB and DGADGSUB)

The Sterling Connect:Direct utility programs, DGADTSUB and DGADGSUB, enable you to submit jobs to the internal reader, much like RUN JOB. DGADTSUB has the added capability of symbolic resolution into the job. The RUN TASK statement invokes DGADTSUB or DGADGSUB, which allows you to substitute variables in the parameter list.

The following table lists DGADTSUB and DGADGSUB parameters, and DGADGSUB variables:

Parameter	Description
JCL source	The first parameter is an allocation string to point to the job to submit. Code it without a ddname because DGADTSUB acquires one. Sterling Connect:Direct uses this value, along with the DISP parameter, to allocate the data set that contains the JCL.

Parameter	Description
Subsequent Parameters	Subsequent parameters define resolutions for symbols used in the JCL itself. For each parameter, the first position is the name of the symbol found in the JCL and the second position is the value used. Separate the first and second positions by an equal sign (=), one or more spaces, or a comma. The value is terminated by the end of the parameter string, or a comma or space not within a quoted string. A parameter can also contain only a symbol name, in which case the value to substitute into the job stream is a null string. **Note:** To pass lowercase data to the DGADTSUB program, use SYSOPTS in the RUN TASK statement.
Variables (for use with DGADGSUB)	%SRCDSN　　　　　The resolved 'FROM' data set name from the last COPY step executed in this Process %DSTDSN　　　　　The resolved 'TO' data set name from the last COPY step executed in this Process %PROCNAME　　　The name of this Process %PROCNUM　　　The number of this Process **Note:** To use %SRCDSN or %DSTDSN, the RUN TASK must be run on the PNODE. The values for the %SRCDSN and %DSTDSN variables are not available when the RUN TASK is run on the SNODE.

The following figure is an example of RUN TASK using the DGADTSUB program.

```
RUN TASK  (PGM=DGADTSUB -
           PARM=('DSN=dsname,DISP=SHR', -
           'JOB X21JOB', -
           'RPTNAME REPORT01', -
           'CLASS A', -
           'FILE X21.FILE' -
            )) PNODE
```

The job stream source that corresponds to this RUN TASK statement is displayed in the following figure. The values requiring substitution are presented in bold type.

```
//&JOB JOB (79502),&RPTNAME,PRTY=12,TIME=(1),CLASS=&CLASS,
// REGION=512K,MSGLEVEL=(1,1),MSGCLASS=X,NOTIFY=BSMITH1
//PRINT     EXEC PGM=IEBGENER
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD DUMMY,DCB=BLKSIZE=80
//SYSUT1    DD DISP=SHR,
//             DSN=&FILE
//SYSUT2    DD SYSOUT=&CLASS,DCB=(&FILE)
```

The following figure shows the resulting job stream after substitution has taken place. Sterling Connect:Direct replaces the variables that began with & with the assigned values in the DGADTSUB parameter list.

```
//X21JOB JOB (79502),REPORT01,PRTY=12,TIME=(1),CLASS=A,
// REGION=512K,MSGLEVEL=(1,1),MSGCLASS=X,NOTIFY=BSMITH1
//PRINT     EXEC PGM=IEBGENER
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD DUMMY,DCB=BLKSIZE=80
//SYSUT1    DD DISP=SHR,
//            DSN=X21.FILE
//SYSUT2    DD SYSOUT=A,DCB=(X21.FILE)
//*
```

Passing Variables Using DGADGSUB

You can use the DGADGSUB program, which substitutes variables in the parameter list and then calls the DGADTSUB program to process the parameter list further.

Note: DGADGSUB is not intended to concatenate variables, only to substitute them. Variable concatenation is handled by the parser at PROCESS submit time. DGADGSUB is intended to pass variables to JCL to be substituted into the job.

To do this, modify an existing RUN TASK statement that calls DGADTSUB to call DGADGSUB, and add the variables you want to use in the parameter list.

The following figure is an example of RUN TASK using the DGADGSUB program.

```
STEP01 RUN TASK(PGM=DGADGSUB -
       PARM=('DSN=DALLAS1.ZOS.SRCLIB(JCLTEST1),DISP=SHR', -
             'JOB &JOBNAME', -
             'SRC %SRCDSN', -
             'DST     %DSTDSN  ', -
             'PROCNAME %PROCNAME', -
             'PROCNUM %PROCNUM  ', -
             'DSN  DSNNAME')) PNODE
```

In this example, the following circumstances are in effect:
- The 'FROM' data set in the last COPY step before this RUN TASK is DALLAS1.FILE
- The 'TO' data set in the last COPY step before this RUN TASK is DALLAS1.TEST.GDG.G0006V00
- The name of the Process is 'TESTPR'
- The Process number is 29
- The &JOBNAME is XYZ

The DGADGSUB program makes the variable substitutions and calls the DGADTSUB program with the following parameters:

```
PARM=('DSN=DALLAS1.ZOS.SRCLIB(JCLTEST1),DISP=SHR', -
             'JOB XYZ', -
             'SRC DALLAS1.FILE', -
             'DST     DALLAS1.TEST.GDG.G0006V00  ', -
             'PROCNAME  TESTPR', -
             'PROCNUM 00029  ', -
             'DSN  DSNNAME'))
```

Wherever &JOB, &SRC, &DST, &PROCNAME, &PROCNUM, and &DSN are found in DALLAS1.ZOS.SRCLIB(JCLTEST1), the corresponding values are substituted. Once all the substitutions have been made, the resultant JCL is submitted to JES.

Using Symbolic Variables

It can also be useful to specify the values to substitute as symbols rather than their actual value. You can then use a single Process for multiple purposes.

The following figure is an example of DGADTSUB that symbolically substitutes values into a z/OS job being submitted to the internal reader. Sterling Connect:Direct supports any symbols that begin with an ampersand.

In the example, the second and subsequent parameters name the symbol, without the &, and value that the symbol becomes in the submitted job stream. Sterling Connect:Direct substitutes the value itself when the Process is submitted.

```
DGADTSUB PROC SNODE=CD.OS39040.N1 NOTIFY=USER01 -
       &CLASS=A &DEST=LOCAL &JOB=JOB1SB -
       &RPTNAME='''RPT NAME''' -
       &FILE=X21.FILE -
       &JCL=X21.CNTL(SUBSUB)
*
*
       RUN TASK (PGM=DGADTSUB -
          PARM=("DSN=dsname,DISP=SHR", -
          "FILE       &FILE", -
          "JOB        &JOB", -
          "CLASS      &CLASS", -
          "DEST       &DEST", -
          "RPTNAME    &RPTNAME", -
           )) PNODE
```

Sterling Connect:Direct Exits and DGADTSUB

If your Sterling Connect:Direct system uses any of the standard exits (Security, RUN JOB, or RUN TASK), DGADTSUB functions with any or all of them without further modification. Both a RUN TASK and a RUN JOB exit are invoked by DGADTSUB, and any processing that takes place is done when using DGADTSUB.

Error Output

DGADTSUB writes any internal error information to the data set specified on the CDESTAE DD statement. Always include this DD statement in the Sterling Connect:Direct startup job stream.

Return Codes

The following table describes the DGADTSUB return codes:

Return Code	Meanings
04	A job stream record is truncated after substitution. Symbolic substitution is performed on columns 1–71 of the JCL record. Truncation is indicated when substitution causes the data in columns 1–71 to expand beyond column 71. For non-JCL records, substitution is performed on columns 1–80. The most common cause of this error is sequence numbers in data statements.

08	An error occurred parsing the parameters or the job stream source.
	A symbol length is greater than 19.
	A symbol name is absent in the parameter string.
12	No parameters are passed.
	An I/O error occurred.
	An input data set allocation parameter is not found.
	The symbol table overflowed.
	A file open error occurred.
	An input record length is greater than 256.
	A member locate error occurred.

Batch Compression Utility (DGASACMP)

DGASACMP is a batch utility that compresses and stores files in ZLIB-compressed format. You can transfer these compressed files using a Sterling Connect:Direct Process and store them on the remote node as compressed data. A user can execute DGASACMP on the remote node to decompress the data and store it in the original format. These files cannot be decompressed using any other utility.

Note: You can also decompress files using a Sterling Connect:Direct Process. Refer to Automatic Decompression for more information.

DGASACMP supports physical sequential files (PS), KSDS, ESDS, and RRDS VSAM files. DGASACMP cannot allocate VSAM files as DISP=(NEW,CATLG), so you must pre-define the VSAM output file when decompressing a file that was originally VSAM.

DGASACMP does not support PDS (or PDSE) files as PDS, but you can use IEBCOPY to unload the PDS, then compress or decompress using DGASACMP.

DGASACMP Parameters

You can pass the following parameters to DGASACMP:

Parameter	Description
MODE= COMP | DECOMP	Specify COMP to compress an input file. Specify DECOMP to decompress a compressed file.
REPORT=NORMAL | DEBUG	Specify NORMAL to instruct DGASACMP to produce a summary statistics report. This value is the default. Specify DEBUG to instruct DGASACMP to produce a detailed statistics report.

ZLIB=(CMP=1 | n, WIN=13 | nn, MEM=4 | n)	These three parameters change the settings of the extended compression utility. CMP indicates the compression level. Valid values are 1–9. The default value is **1**. WIN indicates the window size. Valid values are 9–15. The default value is **13**. MEM indicates the memory. Valid values are 1–9. The default value is **4**. **Note:** Changing these values can significantly impact performance and CPU overhead. Before you change the default values, see Testing the Effects of Changing Values for Extended Compression Parameters .

DGASACMP Examples

The following sample JCL, found as member DGAXCMP in $CD.SDGASAMP, compresses a physical sequential (PS) file and stores it as compressed data.

```
//CDCMP    JOB (1004),'BATCH COMPRESS',CLASS=N,MSGCLASS=X,
//             COND=(1,LT),REGION=0M
//*
//* ZLIB COMPRESS A FILE IN BATCH
//*
//COMP     EXEC  PGM=DGASACMP,PARM='MODE=COMP'
//STEPLIB  DD    DISP=SHR,DSN=$CD.SDGALINK
//INPUT    DD    DISP=SHR,DSN=$CD.FILE1
//OUTPUT   DD    DSN=$CD.FILE1.COMP,DISP=(NEW,CATLG),
//               UNIT=SYSDA,SPACE=(TRK,(1500,300),RLSE),
//               DCB=(BLKSIZE=27920,RECFM=U,DSORG=PS)
//SYSOUT   DD    SYSOUT=*,DCB=(BLKSIZE=133)
//*
```

The following sample JCL, found as member DGAXDCMP in $CD.SDGASAMP, decompresses a compressed file and stores it in the original format.

```
//CDDECMP  JOB (1004),'BATCH COMPRESS',CLASS=N,MSGCLASS=X,
//             COND=(1,LT),REGION=0M
//*
//* ZLIB DE-COMPRESS A FILE IN BATCH
//*
//DECOMP   EXEC PGM=DGASACMP,PARM='MODE=DECOMP'
//STEPLIB  DD    DISP=SHR,DSN=$CD.SDGALINK
//INPUT    DD    DSN=$CD.FILE1.COMP,DISP=SHR
//OUTPUT   DD    DSN=$CD.FILE1.NEW,DISP=(NEW,CATLG),
//               UNIT=SYSDA,SPACE=(TRK,(1500,300),RLSE),
//               DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920)
//SYSOUT   DD    SYSOUT=*
//*
```

DGASACMP Output

The following screen shows sample output from DGASACMP.

```
SACO000I DGASACMP started, GMT =2001.275 19:39:25.00
SACO001I OS Parm: MODE=COMP,
SACO002I Options in effect: MODE=COMP   CMP= 1    WIN= 13   MEM= 4   REPORT=NORMAL
SACO003I ZLIB Version=1.2.3
SACO011I INPUT  DSORG=PS    RECFM=FB   RECSZ=    80   DSN=CD.TESTFILE.M1
SACO012I OUTPUT DSORG=PS    RECFM=U    RECSZ= 27,920  DSN=CD.TESTFILE.M1.COMP
SACO021I Total Records Read    =        12,500
SACO022I Total Records Written =             5
SACO023I Total Bytes  Read     =     1,000,000
SACO024I Total Bytes  Written  =       124,584
SACO031I Compression Percent   =            88%
SACO032I Compression Ratio     =         8.0:1
SACO033I TCB CPU Seconds       =         2.627
SACO034I Elapsed Seconds       =         4.103
SACO999I DGASACMP utility completed successfully
```

You can also invoke DGASACMP with the OUTPUT DD as DUMMY, indicating that the summary report is produced, but the output data is not stored. You must still provide the DCB attributes. The following screen shows an example.

```
//OUTPUT    DD DUMMY,
//             DCB=(BLKSIZE=27920,RECFM=U,DSORG=PS)
```

Testing the Effects of Changing Values for Extended Compression Parameters

Before you change the default values of the extended compression parameters when using the DGASACMP utility, search on Improving Performance in the IBM Sterling Connect:Direct for z/OS Administration Guide and review the benchmark figures showing different test results. You can also use this utility offline to determine the benefits of changing the default values in a test environment before actually using compression on live data in your production environment.

About this task

Although extended compression using ZLIB is available on a global basis using the ECZ initialization parameters and on a Process basis using the EXT parameters in the COPY statement, performing compression online consumes significant CPU resources. The DGASACMP utility produces a report (see the sample report in DGASACMP Output), which shows how much the data was read, written, compressed, and how long it took to compress. Another report is produced when you use DGASACMP to decompress data and restore it to its original format.

To use DGASACMP to test compression, follow this procedure:

Procedure
1. Prepare a file containing the typical type of data you transfer and the average amount of data involved in a transfer.
2. Transfer the file without using compression and record the time it takes for the transfer to complete.

3. To test the results of compressing and decompressing the file, run DGASACMP three times on the test file using the following settings. After each compression run, run DGASACMP to decompress the file. Keep the output reports for each test to compare results.
   - CMP=1,WIN=13,MEM=4 (the default settings)
   - CMP=1,WIN=1,MEM=14)
   - CMP=8,WIN=1,MEM=14)

4. To determine if it is worthwhile to use compression and what extended compression parameter values are most beneficial for your environment, examine the test results taking the following factors into consideration:
   - Amount of CPU and elapsed time it takes to compress and decompress the data
   - Amount of time it takes to send the data
   - Virtual memory space used to maintain the ZLIB internal control blocks
   - Virtual memory space used to allocate the compression window or history buffer
   - Type of data being sent, including its compressibility

Automatic Decompression

As an alternative to storing the data as compressed data on the remote node, you can decompress a file during Process execution. This functionality is available between z/OS and any other platform that supports ZLIB compression.

To perform automatic decompression, specify PRECOMP=YES in the SYSOPTS parameter in the FROM clause of the COPY statement. PRECOMP=YES indicates that the FROM data set is precompressed and instructs Sterling Connect:Direct to decompress the file as part of the Process. If you do not code SYSOPTS or set PRECOMP to NO, the file is sent in compressed format and the receiver must run DGASACMP with MODE=DECOMP.

Note: If you are decompressing a file using DGASACMP, you cannot allocate VSAM files as DISP=(NEW,CATLG). You must predefine the VSAM output file.

The following sample Process, found as member DGAPMPPS in $CD.SDGAPROC, instructs Sterling Connect:Direct to decompress a file that is compressed using DGASACMP.

Note: Refer to the $CD.SDGASAMP data set for more sample Processes.

```
CDCOMPPS PROCESS SNODE=CD.OS390
STEP1 COPY   FROM (DSN=$CD.FILE1.COMP    -
                 DISP=(SHR)              -
                 SYSOPTS='PRECOMP=YES'   -
                 PNODE)                  -
             TO (DSN=$CD.FILE1.NEW       -
                 DISP=(RPL)              -
                 SNODE)
```

Determine "High-Water Mark" for a Period (DGADVITL)

The program called DGADVITL reports how many concurrent sessions (Processes) are running during the time period specified. Below is a sample RUN TASK that executes as a PNODE=SNODE Process when submitted. This Process must be force flushed to discontinue. The MCS console displays the number of sessions that ran

during the specified period, and the time and date the high water mark was reached. These messages appear in the JESMSGLG segment of the Sterling Connect:Direct SYSOUT.

```
/***************************************************************/
/* RUN TASK FOR HIGH WATER PROCESS NUMBER; PNODE=SNODE */  /***************
*********************************************/
RTBB PROCESS SNODE=your.local.node
 STEP1 RUN TASK (PGM=DGADVITL,PARM=(C'60')) PNODE
```

The parameter, C, is the number of minutes desired in a measurement interval. The interval, 60, is an appropriate value to use. Since the Process that does the measuring runs as a PNODE=SNODE Process, the system adds a count of 2 to whatever the highest number of Processes that were running concurrently during a particular sample window. For example, if 6 other Processes were running simultaneously at a given time during the sample window, the value in the SVIT001I message will be '0008'. If no Processes were running during that sample time, the measuring Process is not counted, so the value in the SVIT001I message is '0000'.

The following example shows the output of the DGADVITL program:

```
SVIT001I SESSION HIGH WATER MARK OF: 0003 REACHED AT: 10:15:46 ON: 02000173
```

Note: Using the DGADVITL utility may not be required and Simultaneous Session Reporting (SSR) is the preferred application in most instances. Connect:Direct utilizes Simultaneous Session Reporting (SSR) to continually monitor sessions over the life of Connect:Direct and tracks the session high-water mark, generates an SMF133 record to document this value, and provides reports from the data. For CDPLEX, a DGADVITL Run Task must be running on each server in the CDPLEX to report that server's activity on the number of concurrent sessions reached during the specified period. For additional information about Simultaneous Session Reporting (SSR), see *Simultaneous Session Reporting* in the *System Administration Guide*.

ADRDSSU Interface Program (DGADSIOX I/O Exit)

The DGADSIOX I/O exit dynamically invokes the IBM ADRDSSU utility to enable you to copy:
- SMS-COMPRESSED data without first uncompressing the data
- Wildcard-named files

Running Traces for the DMDSSIOX I/O Exit

The DGADSIOX I/O exit automatically logs information to //ADRIOXLG each time the ADRDSSU program is invoked regardless of the DEBUG bit settings. However, to log additional tracing information, use the setting, DEBUG=00008000 or DEBUG=04008000 in the DEBUG DDNames in the Sterling Connect:Direct startup JCL to generate an I/O Buffer Trace or an I/O Buffer Trace combined with a separate trace per task. DGADSIOX I/O exit information logs to Rnnnnnnn while DSS exit information logs to Xnnnnnnn.

DGADSIOX I/O Exit Sample Processes

Three sample Processes are provided in the $CD.SDGAPROC library distributed with Sterling Connect:Direct that you can use to prepare a Process to execute the DGADSIOX I/O exit:

- DGAPIOX1, which copies the SMS-COMPRESSED data set, KSTIC1.SMSTEST.DMDSSU.COMP.OUTLIST, from the PNODE to a data set of the same name on the SNODE but renames the SNODE data set to MWATL1.SMSTEST.DMDSSU3.** as part of the execution of the ADRDSSU utility on the SNODE.
- DGAPIOX2, which is similar to the DGAPIOX1 process but uses symbolic substitution to name the input data set.
- DGAPWILD, which is set up to copy wildcard-named files

DGADSIOX I/O exit limitations and security considerations

Checkpoint/restart is not supported when using DGADSIOX I/O exit for the following reasons:

- I/O exits in general including do not support Checkpoint/restart
- The IBM ADRDSSU utility does not support Checkpoint/restart
- Control cards are allow for wild-carded input

In addition, the ADRDSSU utility does not support DUMP/RESTORE of z/OS UNIX System Services user files such as PATH='/u/kstic1/abc.txt'. However, ADRDSSU does support HFS files.

The DGADSIOX I/O Exit utility program invokes DFSMSdss to perform requested functions by calling the ADRDSSU utility via the cross-memory application interface, documented in DFSMSdss Storage Administration. This cross-memory interface causes a DFSMSdss server address space to start under the ASPACE name of DGADSIOX.

For HFS and ZFS type files, there are restrictions related to UNIX System Services that may result in failures or hangs without proper security. Please refer to DFSMSdss Storage Administration (Application programming interface, Cross-memory application interface restrictions) for a description of the restrictions and set up requirements related to HFS and ZFS files.

DGASCONV – Secure Parameter File Conversion Utility

When upgrading from a previous release of IBM Sterling Connect:Direct Secure Plus, the Secure Parameter and Secure Access files must be converted to the new file format. The SPAdmin tool cannot open a secure parameter file created in a previous release.

The DGASCONV utility performs the conversion by allocating a new secure parameter file and using the old secure parameter file as input. Due to the possibility of secure passwords with Strong Password Encryption (SPE) being enabled in the previous release, this utility also uses the DGADTQFX and IDCAMS to convert the TCQ/TCX, copy the NETMAP and copy the AUTH file.

Sample JCL, DGAJCONV, in the SDGAJCL data set should be tailored to your environment and executed to perform this conversion. Use the instructions within the DGAJCONV JCL to assist with this JCL tailoring.

The execution of DGAJCONV with produce a report in the output DD called REPORT. Use this report to determine the scope of the changes made by the utility and to make recommended manual updates to any action produced in the report.

You must also specify the new secure parameter file as SECURE.DSN within your initialization parameters. This utility produces a diagnostic trace to the DD called TRACEO, which is a comment in the sample JCL. If you do not want to execute the diagnostic trace, leave the DD as a comment.

Sterling Connect:Direct FTP+ for z/OS (CDFTP)

IBM Sterling Connect:Direct FTP+ for z/OS is a component of Sterling Connect:Direct for z/OS that provides a simple and dynamic migration path from unmanaged FTP sessions within z/OS job streams to a managed environment using Sterling Connect:Direct for z/OS with minimal change to the JCL.

Sterling Connect:Direct FTP+ for z/OS provides a simple, reliable, and secure way to transfer files between a Sterling Connect:Direct for z/OS installation at a central processing center and remote Sterling Connect:Direct sites. Sterling Connect:Direct FTP+ for z/OS runs as the client and supports Sterling Connect:Direct for z/OS, Sterling Connect:Direct for Microsoft Windows, and Sterling Connect:Direct for UNIX as the remote system.

Components of Sterling Connect:Direct FTP+

The major components of Sterling Connect:Direct FTP+ are:
- Sterling Connect:Direct FTP+ Manager—Starts as a job stream or started task just like a Sterling Connect:Direct/Plex Manager. It handles Sterling Connect:Direct FTP+ Clients and is only a PNODE. It cannot be contacted by a remote Sterling Connect:Direct to start a process, and it cannot be contacted by a non-Sterling Connect:Direct FTP+ Client. (The sample JCL, DGAXFTPJ, is in $CD.SDGASAMP.)

  The Sterling Connect:Direct FTP+ Manager enables the TCP API and can be contacted by the ISPF IUI, Sterling Control Center, the Sterling Connect:Direct Browser User Interface, and the Sterling Connect:Direct JAI.

- Sterling Connect:Direct FTP+ Client—Starts a special case of a Sterling Connect:Direct Server. It builds and submits a Process which is scheduled by the Sterling Connect:Direct FTP+ Manager back to the Sterling Connect:Direct FTP+ Client using the server name for the PLEXCLASS. It is only a PNODE and cannot be contacted by a remote Sterling Connect:Direct to start a Process. (The sample JCL, DGAXFCLI, is in $CD.SDGASAMP.)

- Sterling Connect:Direct FTP+ Plug-in—Provides support for FTP commands that Sterling Connect:Direct does not support, such as CWD (change working directory), MKDIR (make a directory), RMDIR (remove directory), DIR (obtain a directory listing of files), and DELETE and MDELETE (deleting files).

When the JCL is changed to use Sterling Connect:Direct FTP+ for z/OS instead of FTP, all of the supported FTP commands are interpreted into appropriate COPY or RUNTASK and COPY steps and executed within the Sterling Connect:Direct FTP+ Client started in the user's address space.

Security Considerations for Sterling Connect:Direct FTP+

The Sterling Connect:Direct files, Sterling Connect:Direct Secure Plus parameter file and Netmap, are accessed through the Sterling Connect:Direct FTP+ Manager under its authority. The only Sterling Connect:Direct file that is accessed through the Sterling Connect:Direct FTP+ Client is the Sterling Connect:Direct Message File. All file accesses on the local system will be performed under the authority of the job userid (normal MVS operation). All file accesses on the remote system will be

performed under the authority of the userid/password used for the SNODEID in
the Sterling Connect:Direct FTP+ for z/OS Process.

To use the Sterling Connect:Direct FTP+ Client to connect to a remote Sterling
Connect:Direct for z/OS system, the remote userid must have HFS file access on
the remote Sterling Connect:Direct for z/OS system if the temporary file written by
the plug-in on Sterling Connect:Direct for z/OS is an HFS file or if HFS files or
directories are to be accessed.

Configure Sterling Connect:Direct FTP+ for z/OS

Before you can use Sterling Connect:Direct FTP+, certain installation and
configuration tasks must be performed.

Complete the following tasks:
- "Install Sterling Connect:Direct FTP+ Plug-in"
- "Create CDFTP Procedure"
- "Create JCL to Start the Sterling Connect:Direct FTP+ Manager" on page 162
- "Update Netmap for Remote Nodes" on page 164
- "Start Sterling Connect:Direct FTP+ Manager" on page 164

Install Sterling Connect:Direct FTP+ Plug-in

The Sterling Connect:Direct FTP+ Plug-in must be installed on the Sterling
Connect:Direct nodes that Sterling Connect:Direct FTP+ for z/OS communicates
with. The Sterling Connect:Direct FTP+ Plug-in is already included in the Sterling
Connect:Direct for z/OS installation. If the remote node is a Sterling Connect:Direct
for UNIX or Sterling Connect:Direct for Microsoft Windows server, the Sterling
Connect:Direct FTP+ Plug-in must be deployed on the remote system. For Sterling
Connect:Direct FTP+ Plug-in installation instructions for Sterling Connect:Direct for
Microsoft Windows and Sterling Connect:Direct for UNIX, refer to the latest *IBM
Sterling Connect:Direct FTP+ 1.2 Release Notes*.

Note: Make a note of the fully-qualified installation directory of the plug-in
(unless the remote node is Sterling Connect:Direct for z/OS) and the fully qualified
name of the plug-in temporary file on the remote Sterling Connect:Direct server.
You need this information when you update the Netmap.

Create CDFTP Procedure

Build the CDFTP procedure and save it in your system's PROCLIB. The CDFTP
procedure is executed in your modified FTP JCL. The sample JCL, DGAXFTPP, is
in $CD.SDGASAMP.

The following is an example of a CDFTP procedure:

```
//CDFTP    PROC
//CDFTP    EXEC PGM=DMINIT,REGION=0M,
//  PARM='USER1.INIT.PARMLIB(GLOBINIT),CDFTP'
//STDENV DD DUMMY
//SYSTCPT  DD  DISP=(,DELETE),DSN=&&RES,
//          SPACE=(CYL,(1,1)),DCB=(DSORG=PS,RECFM=FB,
//          LRECL=80,BLKSIZE=24000),UNIT=SYSDA
//NETRC  DD DISP=SHR,DSN=USER1.OS390.SRCLIB(NETRC)
//SYSTCPD   DD DISP=SHR,DSN=SYS2.TCPIP.PARMS(TCPDATA2)
//STEPLIB DD DISP=SHR,DSN=USER1.CD5000.LOADLIB
//CDPLEX DD DISP=SHR,DSN=USER1.INIT.PARMLIB(SERVER)
//CDESTAE   DD SYSOUT=*
//ESTAE     DD SYSOUT=*
//NDMLOG    DD SYSOUT=*
```

In this example, the Global initialization parameters file, **GLOBINIT**, and local initial initialization parameters file, **SERVER**, contain normal initialization parameters for starting a Sterling Connect:Direct/Plex Server. If **CDPLEX.SERVER=** is specified in the local initialization parameters, it is ignored and the JES jobname is used as the server name. The specification of **CDFTP** as the first override parm after the specification of the location of the initialization parameters file identifies this DTF as a Sterling Connect:Direct FTP+ Client.

The SYSTCPT DD is required so that the Resolver will write its trace information into this file when a request to the Resolver, such as GETHOSTNAME, is issued. Sterling Connect:Direct FTP+ reads this trace information to get the resolved DATASETPREFIX from the Resolver to determine which FTP.DATA file to open and process.

A z/OS FTP client gets its configuration data from the FTP.DATA file and uses the following search order to find this file:
- DD card - //SYSFTPD
- Tsoprefix.FTP.DATA
- Tsoid.FTP.DATA
- /etc/ftp.data
- SYS1.TCPPARMS(FTPDATA)
- tcpip_hlq.FTP.DATA

Sterling Connect:Direct FTP+ Client will attempt to find the correct FTP.DATA file using the following search order:
- DD card - //SYSFTPD
- JobUserid.FTP.DATA
- /etc/ftp.data
- SYS1.TCPPARMS(FTPDATA)
- tcpip_hlq.FTP.DATA

Note: /etc/ftp.data must not be File Format NA or it will be ignored.

Note: tcpip_hlq is determined from DATASETPREFIX in the RESOLVER trace information written in the SYSTCPT DD. If DATASETPREFIX is not found, the default is "TCPIP".

If the FTP.DATA file is found, the following configuration parameters are honored by Sterling Connect:Direct FTP+ Client:

- PRIMARY—used for CDFTP.TEMPFILE allocation
- SECONDARY—used for CDFTP.TEMPFILE allocation
- SPACETYPE—used for CDFTP.TEMPFILE allocation
- KEYRING—used to override Sterling Connect:Direct Secure Plus keyring

  Note: The FTP.DATA file is used by both z/OS FTP and Sterling Connect:Direct FTP+. Use ;CDFTPKEYRING if Sterling Connect:Direct FTP+ should use a different keyring than z/OS FTP.
- ;CDFTPKEYRING ;—used for a Sterling Connect:Direct FTP+ specific override of Sterling Connect:Direct Secure Plus Keyring

  Note: Do not forget to put a semi-colon (;) in front of CDFTPKEYRING and a space followed by a semi-colon (;) at the end of CDFTPKEYRING, which makes this statement a comment to z/OS FTP, but will still be recognized by Sterling Connect:Direct FTP+ and processed.

  CDFTPKEYRING ;(or KEYRING if ;CDFTPKEYRING ; is not specified) will override the Sterling Connect:Direct Secure Plus specification of the keyring only if the Sterling Connect:Direct Secure Plus Parmfile was defined with a keyring. If the Sterling Connect:Direct Secure Plus Parmfile is defined to use a key database, the FTP.DATA specification is ignored with a message to OUTPUT. To explicitly specify to use the Sterling Connect:Direct Secure Plus Parmfile definitions (keyring or key database, and to avoid the message to OUTPUT), code: ;CDFTPKEYRING ;.
- SECURE_DATACONN—used as default for Sterling Connect:Direct Secure Plus transfers

The Sterling Connect:Direct FTP+ Client is a special case of a Sterling Connect:Direct/Plex Server in a Sterling Connect:Direct/Plex environment. The local initialization parameters file, **SERVER**, should specify:

```
CDPLEX.MANAGER=NO
```

For more information about global and local initialization parameters, see *Initialization Parameters* in the *IBM Sterling Connect:Direct for z/OS Administration Guide*.

Create JCL to Start the Sterling Connect:Direct FTP+ Manager

Create JCL to start the Sterling Connect:Direct FTP+ Manager. Refer to the following JCL as an example:

```
//CD$MGR   JOB (CDHOSTD),'FTPUSER',PRTY=12,TIME=1440,CLASS=Q,
// REGION=0M,MSGLEVEL=(1,1),MSGCLASS=X,NOTIFY=&SYSUID
/*JOBPARM LINES=999999
//************************************************************
//*                                                          *
//*        CONNECT:DIRECT (Connect:Direct for z/OS MANAGER)  *
//*                                                          *
//************************************************************
// SET PGM=DMINIT,P=,
//    E='STAT.INIT=COLD,TCQ=COLD'
//NDMITST  EXEC PGM=&PGM,REGION=0M,
// PARM='&P.USER1.INIT.PARMLIB(GLOBINIT),CDFTP,&E '
//CDPLEX    DD DISP=SHR,DSN=USER1.INIT.PARMLIB(CDFTPMGR)
//CDSVCDMP DD DUMMY
//STEPLIB   DD DSN=USER1.CD5000.LOADLIB,DISP=SHR
//DMPUBLIB  DD DSN=USER1.PROCESS.LIB,DISP=SHR
//ESTAE     DD SYSOUT=*
//CDESTAE   DD SYSOUT=*
//NDMLOG    DD SYSOUT=*
```

In this example, the JCL that starts the Sterling Connect:Direct FTP+ Manager is
similar to JCL that starts the Sterling Connect:Direct/Plex Manager. The initparm
override PARM **CDFTP** as the first override parm after the location of the global
initialization parameters makes this a Sterling Connect:Direct FTP+ Manager.

The following local and global initialization parameters are forced with no
message:
- TCP=OES
- SNA=NO
- CTCA=NO
- UDT=NO
- SECURITY=OFF (Sterling Connect:Direct FTP+ Client only. The Security
  parameter is allowed for the Sterling Connect:Direct FTP+ Manager)
- TCQ=COLD
- CONFIRM.COLD.START=NO
- TCP.FMH.TIMER=00:00:00
- TCP.RUNTASK.TIMER=00:00:00
- PROCESS.RETENTION=NO

If you specify any of the following Global Initialization Parameters, they are
ignored:
- TCP.LISTEN
- UDT33.LISTEN
- MAXPROCESS
- MAXPRIMARY
- MAXSECONDARY

The local initialization parameters file for the Sterling Connect:Direct FTP+
Manager, **CDFTPMGR**, should specify:
```
CDPLEX.MANAGER=YES
```

For more information about global and local initialization parameters, see
Initialization Parameters in the *IBM Sterling Connect:Direct for z/OS Administration
Guide.*

Update Netmap for Remote Nodes

Sterling Connect:Direct FTP+ for z/OS gets its configuration information about remote systems it connects to from the Sterling Connect:Direct Netmap.

Configure the following parameters in your Sterling Connect:Direct for z/OS Netmap for each remote system that Sterling Connect:Direct FTP+ for z/OS connects to:

- CDFTP.PLUGIN=<fully qualified installation directory of the Sterling Connect:Direct FTP+ Plug-in>

  This parameter is not required when the Netmap entry defines a z/OS system.

- CDFTP.TEMPFILE=<fully qualified name of the Sterling Connect:Direct FTP+ temporary file>

  The Sterling Connect:Direct FTP+ Plug-in creates a temporary file to store the results of a directory command RUNTASK operation.

Note: If no variables are used in the CDFTP.TEMPFILE, Sterling Connect:Direct FTP+ for z/OS appends the job userid and the ASID and CPUID to the CDFTP.TEMPFILE parameter as a further specification of uniqueness.

Several variables are available for substitution in the CDFTP.TEMPFILE specification. The following variables allow you to build an appropriate unique temporary file as a z/OS file:

- &userid;—The remote userid (lower case)
- &USERID;—The remote userid (upper case)
- &lusrid;—The local userid padded to eight characters with '$'
- &lcpuid;—The first eight bytes of the local CPUID with "C" overlaying the first byte
- &asid;—The four character Address Space ID prefixed with "AS"

  For example, you can specify **CDFTP.TEMPFILE=** with a variable ("&userid;"). Sterling Connect:Direct FTP+ for z/OS inserts the remote userid in place of the &userid;. In the following example, the userid specified in the script or NETRC file is **user1**.

  `CDFTP.TEMPFILE=/u/`**`&userid;`**`/cdftp/temp.file`

  CDFTP.TEMPFILE resolves to:

  `CDFTP.TEMPFILE=/u/`**`user1`**`/cdftp/temp.file`

  In the script or NETRC file, specify the userid in the case expected for the substitution.

Start Sterling Connect:Direct FTP+ Manager

Start the Sterling Connect:Direct FTP+ Manager as a job stream or started task the same way you start Sterling Connect:Direct/Plex Manager using the JCL created in the previous step.

The Sterling Connect:Direct FTP+ Manager must be running before the Sterling Connect:Direct FTP+ Client can successfully contact the Sterling Connect:Direct FTP+ Manager to perform its work.

For more information, see the *IBM Sterling Connect:Direct for z/OS Administration Guide*.

Modify FTP JCL

Use the following procedure to modify your FTP JCL to use Sterling Connect:Direct FTP+:

Procedure

1. Change **EXEC PGM=FTP** to **EXEC PROC=CDFTP**.
2. Change the INPUT and OUTPUT DD statements and other step statements to specify the procedure step name. For example, change **//INPUT** to **//CDFTP.INPUT** and change **//OUTPUT** to **//CDFTP.OUTPUT**.
3. Change the first statement in the INPUT data stream to specify the remote Sterling Connect:Direct node name instead of the machine name for the FTP server.

The following is an example of JCL that executes the CDFTP procedure:

```
//CD$FTPJC JOB (CDHOSTD),'-CDFTP+-',TIME=(1440),CLASS=Q,
// REGION=0M,MSGLEVEL=(1,1),MSGCLASS=X,NOTIFY=&SYSUID
/*JOBPARM LINES=999999
//LIBS JCLLIB ORDER=(USER1.OS390.SRCLIB)
//CDFTP EXEC PROC=CDFTP
//CDFTP.NETRC DD DISP=SHR,DSN=USER1.OS390.SRCLIB(NETRC)
//CDFTP.FTPTRACE DD SYSOUT=*
//CDFTP.OUTPUT DD SYSOUT=*
//CDFTP.INPUT DD *
MVSB (exit
ebcdic
cd /u/user3
delimit
mkdir cdftptestlib
cd cdftptestlib
lcd 'USER1.CDFTP.TESTLIB'
delimit
bin
site sbdataconn=(IBM-037,ISO8859-1)
locsite sbdataconn=(IBM-037,ISO8859-1)
put CDFTPJC1
ebcdic
put CDFTPJC1 CDFTPJC2
dir
ls
mdelete CDFTPJC*
cdup
rmdir cdftptestlib
close
quit
//
```

You must provide the following information in the JCL:

- Remote host—In this example, the hostname of the FTP server is changed to specify the Sterling Connect:Direct node name, **MVSB**, that is in the Netmap. If the DNS name or IP address used by FTP is the nodename in the Netmap, no change is required. However, duplicating the entry in the Netmap and giving it the IP address or the DNS name as the node name may cause Netmap checking problems. In this case, the script should be changed to use the Netmap entry node name.

  The remote host statement can also specify **(exit**, as shown in this example, or **(exit=nn** to specify that any error exits the script with a reason code (default is RC=8).

  The remote host statement can also specify **(secure=off|ssl|tls** to specify security options.

If both **exit** and **secure=** are specified; only one open parenthesis can be used. For example, **MVSB (exit 16 secure=off**.

- Remote userid and password—In this example, they are obtained from the NETRC file. If the remote userid and password are not specified in the NETRC file, they must be included in the FTP script after the remote host.

In the following sample excerpt of JCL that executes the CDFTP procedure, the remote host is **PROD.ZOS1**, the remote userid is **user1** and the password is **S1VX$25B**:

```
...
//CDFTP.INPUT DD *
PROD.ZOS1
user1 S1VX$25B
cd /u/daily
...
```

You do not specify the use of Sterling Connect:Direct Secure Plus in the JCL. It is determined by the initialization parameters and the Sterling Connect:Direct Secure Plus parameter file definitions for the node named in the script.

To simplify matching up statistics in the remote node with Sterling Connect:Direct FTP+ for z/OS, the PROCESS name is the jobname and the process number is the jobid. The jobname is also used for the Sterling Connect:Direct FTP+ Client server name when contacting the Sterling Connect:Direct FTP+ Manager.

Note: Only the JCL interface is implemented. The ISPF interface (option 6;FTP) is not supported.

New $CD.SDGAPARM and $CD.SDGASAMP Members

The Sterling Connect:Direct $CD.SDGAPARM and $CD.SDGASAMP contain Initialization Parameters, JCL, and other samples that you can use and modify in your Sterling Connect:Direct FTP+ environment.

Member	Description	Location
DGAIPGBL	Global Initialization Parameters	$CD.SDGAPARM
DGAIPMGR	Manager Local Parameters	$CD.SDGAPARM
DGAIPSVR	Server (FTP+ Client) Local Parameters	$CD.SDGAPARM
DGAXFTPJ	CD FTP+ Manager Startup JCL	$CD.SDGASAMP
DGAXFCLI	CD FTP+ Client JCL	$CD.SDGASAMP
DGAXFTPP	CDFTP PROC	$CD.SDGASAMP
DGAXNETC	Sample NETRC	$CD.SDGASAMP
DGAXFTPM	Sample NETMAP Entry	$CD.SDGASAMP

Supported FTP Commands

Sterling Connect:Direct FTP+ for z/OS separates the z/OS FTP commands into three categories:

- Commands completely supported
- Commands partially supported
- Commands accepted, but ignored.

All commands are case insensitive and can be abbreviated as specified in the z/OS FTP documentation.

Fully Supported FTP Commands

The following FTP commands are fully supported by Sterling Connect:Direct FTP+ for z/OS as described in the following:

Command	Description
APpend	Appends a data set on the local host to a file on the foreign host
BINary	Sets the transfer type to IMAGE
CD	Changes the working directory
CDUp	Changes to the parent of the current working directory
CLEar	Sets the protection level for data transfers to CLEAR
CLose	Disconnects from the foreign host
COMpress	Sets the data transfer mode to compressed mode
CWd	Changes the working directory (Synonymous with CD)
DELEte	Deletes a single file on the foreign host
DELImit	Displays the delimiter character between the file_name and file_type
DIr	Lists the directory entries for files on the foreign host **Note:** Format is from Sterling Connect:Direct for z/OS Plug-in
EBcdic	Sets the transfer type to EBCDIC
Get	Copies a file from the foreign host to your local host **Note:** "(REPLACE" supported
GLob	Toggles globbing (the expansion of metacharacters in file names) for the MDelete, MGet, and MPut subcommands
LCd	Changes the working directory on the local host
LPwd	Displays the name of the active working directory on the local host
LS	Lists the names of files on the foreign host
MDelete	Deletes multiple files on the foreign host
MGet	Copies multiple files from the foreign host to the local host **Note:** "(REPLACE" supported
MPut	Copies multiple files on the local host to the foreign host
PRIvate	Sets the protection level for data transfers to PRIVATE
PROtect CLEAR	PROTECT sets the protection level for data transfers on data connections. CLEAR sets SECURE=(ENC=N) in COPY steps.
PROtect PRIVATE	PROTECT sets the protection level for data transfers on data connections. PRIVATE sets SECURE=(ENC=Y) in COPY steps.
PUt	Copies a file on the local host to the foreign host
PWd	Displays the name of the active working directory on the foreign host
QUIt	Leaves the FTP command environment
REName	Renames a file on the foreign host
RMdir	Removes a directory
SENDSite	Enables or disables automatic transmission of the SIte subcommand **Note:** Used to determine whether to propagate DCB or use SITE/LOCSITE

Partially Supported FTP Commands

The following FTP commands are supported by Sterling Connect:Direct FTP+ with limitations described in the Notes:

Command	Description	Note
AScii	Sets the transfer type to ASCII	Treated as EBCDIC
BIG5	Sets the transfer type to BIG5. BIG is the minimum abbreviation for BIG5.	Only to set DBCS= table in Sterling Connect:Direct
HAngeul	Sets the transfer type to HANGEUL	Only to set DBCS= table in Sterling Connect:Direct
JIS78kj	Sets the transfer type to JIS78KJ	Only to set DBCS= table in Sterling Connect:Direct
JIS83kj	Sets the transfer type to JIS83KJ	Only to set DBCS= table in Sterling Connect:Direct
Ksc5601	Sets the transfer type to KSC5601	Only to set DBCS= table in Sterling Connect:Direct
LMkdir	Create a directory on the local host	"(LIKE" ignored
LOCSIte	Specifies information that is used by the local host to provide service specific to that host system	Ignores all but: • BLOCKS • BLKSIZE • BLOCKSIZE • CONDISP • CYLINDERS • DIRECTORY • LRECL • PRIMARY • RECFM • SECONDARY • TRACKS Errors out on: • TRUNCATE • WRAPRECORD
MKdir	Creates a directory on the foreign host	"(LIKE" ignored
MOde	Specifies the mode or data format of the transfer	MODE C honored as COMPRESS. All others ignored.
Open	Opens a connection to a foreign host	Port ignored
Pass	Supplies a password to the foreign host	No :userdata or account_information supported (ignored)
PROMpt	Toggles interactive prompting for MDelete, MGet, and MPut commands	Toggles prompt switch
PROXy	Executes an FTP subcommand on a secondary control connection	Treated as OPEN statement

Command	Description	Note
PROTect SAFE	Sets SECURE=(ENC=Y) in COPY step	Treated as PROTECT PRIVATE
QUOte	Sends an uninterpreted string of data	Interprets command locally
SAfe	Sets the protection level on data transfers to safe	Treated as PRIVATE. Sets SECURE=(ENC=Y) in the COPY step.
SChinese	Sets the transfer type to SCHINESE	Only to set DBCS= table in Sterling Connect:Direct
SIte	Sends information to the foreign host using site-specific commands	Ignores all but: • BLOCKS • BLKSIZE • BLOCKSIZE • CYLINDERS • DIRECTORY • FILETYPE JES • LRECL • PDSTYPE • PRIMARY • RECFM • TRACKS Errors out on: • TRUNCATE • WRAPRECORD
SUnique	Toggles the storage methods	NAME/NONAME not supported Used to set DISP=NEW or DISP=RPL for output file
TChinese	Sets the transfer type to TCHINESE	Only to set DBCS= table in Sterling Connect:Direct
TYpe	Specifies the transfer type	Ignores all but: • TYPE I = BINARY • TYPE A = ASCII • TYPE E = EBCDIC • TYPE B 2 = EUCKANJI • TYPE F = IBMKANJI • TYPE B 5 = HANGEUL • TYPE B 4 = JIS78KJ • TYPE B 3 = JIS83KJ • TYPE B 6 = KSC5601 • TYPE B 1 = SJISKANJI • TYPE B = SJISKANJI
User	Identifies you to a foreign host	No :userdata and account_information supported (ignored)

FTP Commands Accepted, But Ignored

The following commands are recognized, accepted, and ignored by Sterling Connect:Direct FTP+. These commands do not produce errors.

FTP commands that are not supported or recognized, are ignored with appropriate messages. However, if Sterling Connect:Direct FTP+ is in exit mode **(exit** or **exit=** specified in the remote host statement), these commands stop the script and terminate the step. This is how z/OS FTP behaves.

(LOC)SITE subcommands that are not supported or recognized are ignored and do not terminate the step, even in exit mode. The exceptions to this z/OS FTP behavior are the **(LOC)SITE WRAPRECORD** and **TRUNCATE** subcommands. If these subcommands are specified, they always terminate the script (**RC=8** when not in exit mode and with the user's return code when in exit mode).

- ?
- !
- ACCount
- BLock
- CCc
- CProtect
- DEBug
- DUMP
- EUCKANJI
- FEature
- FIle
- HElp
- Ibmkanji
- LANGuage
- LOCSTat
- NOop
- RECord
- REStart
- SENDPort
- SJiskanji
- SRestart
- STAtus
- STREam
- STRucture
- SYstem
- TSO
- UCs2
- Verbose

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