

Sterling Connect:Direct for z/OS



# Configuration Guide

*Version 5.1.1*



Sterling Connect:Direct for z/OS



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*Version 5.1.1*

**Note**

Before using this information and the product it supports, read the information in "Notices" on page 69.

This edition applies to version 5.1.1 of IBM Sterling Connect:Direct for z/OS and to all subsequent releases and modifications until otherwise indicated in new editions.

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## Chapter 1. Before You Install the Product

Installation is easier and more effective if you complete your planning before you begin.

Before you begin your installation:

1. Read the IBM® Sterling Connect:Direct® for z/OS® Release Notes for the latest product information.
2. Verify hardware and software requirements. Review Installation Requirements for hardware and software requirements.
3. Determine whether your system uses a Multi-Image Manager (MIM) or Global Resource Serialization (GRS) system. For more information, see Sterling Connect:Direct Enqueue Resource Management.

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### Installation Requirements

Sterling Connect:Direct for z/OS requires the following hardware and software:

- Authorized Library - Sterling Connect:Direct for z/OS must run from an APF-authorized library. If it is not authorized, you receive message SITA117I during initialization, and it terminates.
- Sterling Connect:Direct for z/OS VSAM space requirements - For information, see VSAM Files DASD Requirement and Description
- High-Level Assembler - High-Level Assembler is required to assemble the sample Sterling Connect:Direct for z/OS exits in the SDGASAMP dataset.
- SMP/E - You must have System Modification Program Extended (SMP/E) V3R5 or later for SMP/E installation. For instructions on the actual installation procedure, see the Program Directory for IBM Sterling Connect:Direct for z/OS.
- TSO with ISPF/PDF - You must have IBM Time Sharing Option (TSO) with ISPF version 6.0 or later.
- IBM z/OS operating system - IBM z/OS version 1.11 or later is required.
- SNA Network Requirements - Network support for Sterling Connect:Direct for z/OS requires both of the following: VTAM Communications Server and IBM Advanced Communications Functions for Network Control Program (NCP)
- Sterling Connect:Direct Spool Transfer - If you use the Spool Transfer feature for outbound spool transfers, you must have LRS (Levi, Ray, and Schoup, Inc.) VTAM Printer Support System (VPS) Release 6.2 or later and LRS VPS/CDI Option installed. No additional software is required for inbound transfers.
- The CICS Interface - If you use the CICS interface, you must have at least 200 tracks of 3390 disk space available and be using CICS/TS version 3.1 or later.

### VSAM Files DASD Requirement and Description

Use Sterling Connect:Direct VSAM files during testing, and migrate previous versions of the files as part of the product release implementation.

**Note:** If you use VSAM cache utilities, remove Sterling Connect:Direct VSAM files from their control or unpredictable results may occur.

Sterling Connect:Direct uses VSAM files to control and monitor execution. The following table describes the files and space requirements built during the configuration process. These values represent the minimum space requirement for each VSAM file.

dataset	DSORG	Approx. Install Supplied Size	Number of Entries	Approx. Minimum Size	Minimum Primary Entries	BLK SIZE (CI)
AUTH	KSDS	132 KB	100	88 KB	5	4096
CKPT	KSDS	600 KB	40	44 KB	5	4096
MSG	KSDS	3 MB	12000	3 MB	12000	4096
NETMAP	KSDS	88 KB	50	88 KB	2	4096
STATS archive directory <sup>1</sup>	ESDS	88 KB	500	88 KB	500	4096
STATS index1	KSDS	222 KB	5000	88 KB	750	4096
STATS index2 <sup>2</sup>	KSDS	222 KB	5000	88 KB	750	4096
STATS log1	ESDS	1.8 MB	6750	197 KB	1000	4096
STATS log2 <sup>2</sup>	ESDS	1.8 MB	6750	197 KB	1000	4096
TCQ	RRDS	200 KB	100	44 KB	21	1536
TCX	RRDS	44 KB	1	44 KB	1	1024
TYPE	KSDS	88 KB	20	88 KB	5	4096
CONFIG <sup>3</sup>	KSDS	44 KB	1	44 KB	1	2048
USRPROF <sup>3</sup>	KSDS	144 KB	1	144 KB	1	4096
EVENT <sup>3</sup>	KSDS	44 KB	1	44 KB	1	2048
TOTAL		8.6 MB		4.4 MB		

1. Optional dataset.
2. The default configuration for the Statistics facility uses two statistics file pairs, which requires four VSAM files. Refer to "Statistics Files" on page 4 below for details about the VSAM files.
3. Optional Sterling Connect:Direct-CICS IUI facility file.

### Authorization File (AUTH)

The Authorization file, a VSAM KSDS, can contain a record for each authorized Sterling Connect:Direct user. If you use the Sterling Connect:Direct Authorization Facility, calculate the size of your Authorization file requirements using the following formula:

$$\text{Number of Sterling Connect:Direct Users} \times 100 \text{ Bytes} = \text{Size of Authorization File}$$

If you are not using the Sterling Connect:Direct Authorization Facility, you still define an Authorization file.

### Checkpoint File (CKPT)

The Checkpoint file is a VSAM KSDS that contains checkpoint information generated by the DTF during execution of a copy operation. The Checkpoint file consists of variable length records, one per Process that has checkpointing specified. The average record length is 256 bytes. The equivalent of one cylinder of



space is allocated during the installation. The size of the Checkpoint file can be influenced by the number of days you retain checkpoint information according to the initialization parameter, CKPT.DAYS.

### **Sterling Connect:Direct Message File (MSG)**

The Message file, a VSAM key-sequenced dataset (KSDS), holds all messages, except ISPF panel-related messages, used by Sterling Connect:Direct. Each message record contains the issuing module name, short message text, and message explanation.

### **Network Map File (NETMAP)**

The network map file is a VSAM KSDS that contains network definition information, including the network names for the local node and other (adjacent) nodes in the network, the communication addresses for use by the API, and various control information used by Sterling Connect:Direct

To estimate the size of the network map, you must determine how many nodes are needed and the communications used for each node. This includes determining the node IDs for your network (including the local node name), all APPLIDs (SNA type), and all TCP/IP addresses (or DNS names) for the nodes.

The following chart defines the basic size of records for planning how large to make the network map:

<b>Record</b>	<b>Size (in bytes)</b>	<b>Description/Comments</b>
Control Records	250	Base records for NDM control
ADJACENT.NODE	124	Basic adjacent node information
ALT.COMM	32 + 59(n)	Alternate communications addresses. Each set adds 1 to "n".
LDNS	278	Holder of the DNS name for an ADJACENT.NODE
CONTACT/ COMMENTS	74 + x	1 per node definition and each segment (x) adds up to: Contact Name - 40, Phone - 40, Description - 255
IPv6	232	This record exists for an ADJACENT.NODE if the node is defined with any of the following items specified: <ul style="list-style-type: none"> <li>• IPv6 address for TCP/IP (or UDT)</li> <li>• the API record specifies an IPv6 record</li> <li>• SOURCEIP is specified.</li> </ul>
UDT	96	This record exists for an ADJACENT.NODE if the node is defined as UDT33.
TCP API	60	Used to specify the address for API
APPLIDs	40 + 8x	SNA APPLIDs for a node. Add 1 to x for each node ID specified
xNODE.LUS	28 + 8(x)	If either PNODE or SNODE.LUS is specified, add 1 to x for each node name specified.

For example, if the network map contains 25 nodes with API APPLIDs in each of the 25 nodes, it requires approximately the space illustrated in the following table.

<b>Netmap Definitions</b>	<b>Number</b>	<b>Size (in bytes)</b>
Control Records + Local node	3	362

Netmap Definitions	Number	Size (in bytes)
ADJACENT.NODE	25	3100
APPLIDs	25 nodes with 20 APPLIDs	5350
Total	53 records	8812

For those installations that make frequent updates to the network map, it is recommended that the allocation be done on a cylinder boundary and be at least one cylinder more than currently needed. CA/CI splits may take place as additions and updates are done.

### Statistics Directory of Archive Files

Allocate the STATS Archive Directory file if you plan to archive statistics records and maintain a directory of the archive files. Archiving is the process of copying statistics records from the Sterling Connect:Direct statistics files to other datasets for long-term storage.

Use the directory to track the dataset names of the archive files, and the date and time range of the statistics records the archive files contain. Each record in the directory contains information about a single archive file. Therefore, the value of the RECORDS parameter that defines the directory determines how many archive files can be represented in the directory. Sterling Connect:Direct for z/OS provides facilities for maintaining and displaying the directory through the INQUIRE STATDIR command.

### Statistics Files

The Statistics facility logs statistics to VSAM file pairs. Each file pair consists of the following:

- A VSAM entry-sequenced cluster
- A VSAM key-sequenced cluster

The default and minimum configuration uses two such file pairs, making four VSAM files. The maximum number of file pairs you can use is twenty. Specify the number of file pairs and the VSAM cluster names with the STAT.DSN.BASE and STAT.FILE.PAIRS initialization parameters.

The RECORDS parameter of the Access Methods Services DEFINE command for the ESDS cluster specifies the maximum number of records each file pair can contain. The maximum number of statistics records available is the sum of the values in the RECORDS parameters for all the statistics ESDS clusters. For example, if you determine that your system needs space for 15,000 statistics records, you can define three file pairs containing 5,000 records each, or two file pairs containing 7,500 records each.

**Note:** Sterling Connect:Direct does not support extended-format, extended-addressing ESDS Statistics datasets.

Within each file pair, Sterling Connect:Direct writes statistics records to the ESDS cluster. Sterling Connect:Direct uses the KSDS cluster to maintain index information about the records in the ESDS. Whenever either file of the pair becomes full, the entire pair is considered full, and the system initiates a switch to the next pair in the sequence. Because the file pair is full when one file fills to

capacity, it is important that you size the ESDS and KSDS in a file pair appropriately, relative to each other. Specifying appropriate file sizes reduces the waste of excessive space.

The frequency with which Sterling Connect:Direct writes records to the KSDS cluster of a file pair depends on usage patterns at each site. On average, Sterling Connect:Direct writes one KSDS record for every two statistics records written to the ESDS cluster. For best results, make the size of the KSDS cluster in records about 75 percent of the number of ESDS records.

The following table shows the default VSAM control interval sizes for the statistics files.

Component	Default Size
ESDS data	4096
KSDS data	4096
KSDS index	512

The values in the table are the optimal control interval sizes. The only Sterling Connect:Direct requirement is that the CI size of the ESDS data component must be a minimum of 2,048.

The default configuration provides space for 13,500 statistics records evenly divided between two file pairs. The minimum configuration provides space for 2,000 statistics records. The amount of activity in the Sterling Connect:Direct system determines how frequently the statistics file pair list wraps around. Estimate your activity rate and allocate enough space so that the system records several days of records before a wraparound occurs. After running Sterling Connect:Direct for several days, you may need to adjust the number or sizes of the statistics files to allocate the right amount of space.

### **Transmission Control Queue (TCQ) and Index (TCX)**

The Transmission Control Queue (TCQ) is a VSAM RRDS file that stores Processes that are:

- Executing
- Queued for execution
- Held for retries
- Held for future execution
- Retained for reporting

The TCX index (TCX) is also a VSAM RRDS file. It consists of a record that is a map for controlling the allocation of space in the TCQ.

The control interval (CI) size of the TCQ is from 1,536 to 30,720 bytes. Each Process defined in the TCQ occupies one or more CIs, depending on the number of statements within the Process. Because TCQ access characteristics prohibit secondary allocation, be sure to allocate enough space for the maximum number of potential Processes when you define the TCQ.

The TCX controls space use and access to the TCQ. The TCX average and maximum record sizes should be defined as the CISIZE - 7. To maximize the number of usable TCQ CIs, allocate a record size of 30,713 and a CI of 30,720 to

the TCX since it occupies only one track. Sterling Connect:Direct will use the number of CIs in the TCQ (rounded down to a multiple of 8) or 65536, whichever is smaller.

The largest TCQ that can be allocated and used is 2621 cylinders, on 3390 DASD device, with a CI size of 30,720 and a record size of 30,713. This size can accommodate 65,520 Processes in the queue if no single Process exceeds 30,713 bytes in its internal format.

The following formula shows the number of CIs that can be controlled:

$$\text{Maximum number of TCQ CIs} = ((\text{TCX Max Record Size} - 12) / 2) * 8$$

In the default TCX definition, the definition of the TCX CI Size is 1,024 bytes; maximum record size is 1,017. Substituting the default maximum record size of 1,017 bytes in the formula results in 4,016 TCQ CI records, as shown in the following calculation:

$$\text{Maximum number of TCQ CIs} = ((1,017 - 12) / 2) * 8 = 4,016$$

Using the default TCX definition, you can define the TCQ with up to 4,016 records, thereby allowing the TCQ to hold up to 4,016 Processes, depending on the number of statements in each Process. However, the default definition for the TCQ specifies 1,000 TCQ CIs but actually holds only about 500 simple one-step Processes).

**CAUTION:**

**Depending on your hardware configuration and load, it can take a long time to warm start Sterling Connect:Direct with thousands of Processes in the TCQ. In general, it takes about 1 minute for every 1000 Processes.**

**Note:** If you plan to use the Process retention feature, the size of the TCQ and TCX datasets should be increased, in addition to the factors you consider when determining space requirements for datasets.

**Enlarging the TCQ:**

To enlarge the TCQ:

**Procedure**

1. **AVERAGE PROCESS SIZE.** Determine the size of the average Process for your site. To do this, you need to know the type and average number of steps in your average Process. Use the following table to calculate the TCQ space needed for your average Process. Take the number of steps and multiply that by the number of bytes for the Process component, then add the number of bytes for a Process header (1,616). If you do not know what the average Process looks like, assume that the average Process contains five COPY steps:

Process Component	Number of Bytes
Process Header	1,616
COPY Step	1,024
RUN TASK	128
RUN JOB	176
GOTO Step	96
EXIT Step	96
IF Statement	208

For example, if the average Process contains five COPY steps, the space required would be  $1,616 + (5 * 1,024) = 6,736$  bytes.

**Note:** The largest Process can contain up to 1 MB and must fit within 43 TCQ records. A TCQ CISIZE of 24 KB is sufficient to hold the maximum size Process.

2. TCQ CISIZE. Calculate the appropriate TCQ CI size that should be defined for the average Process. The larger the TCQ CI size, the fewer I/O operations have to be done to read/write the TCQ entry. Ideally, the average Process should fit in a single TCQ entry, but if the average Process is greater than 30 KB, then select a TCQ CI size of 30 KB.
3. TCQ CIs PER PROCESS. Calculate the number of TCQ CIs required for a single Process. For example, if the average Process is 36 KB and you use a TCQ CI size of 30 KB, then each Process takes 2 TCQ CIs.
4. NUMBER OF PROCESSES. Calculate the number of Processes you expect to be in the TCQ at any one time, including Processes that are waiting for a connection or their turn to execute, Processes that are executing, Processes that have been held, and Processes that are going through retry. Double or triple this number, then multiply this number by the number of TCQ CIs required for each Process. For example, if you think that you'll have no more than 100 Processes in the queue at any one time, use 200 or 300 for the number and multiply it by the number of TCQ CIs required by each Process.
5. TCQ RECORDS. The result of this calculation is the number of records and CISIZE that should be defined in the TCQ VSAM definition. The average and maximum record size should be the CISIZE - 7.
6. TCX CISIZE. Now, make sure that the TCX definition will be able to map this number of TCQ entries. Take the number of records from Step 5, divide by 4, and add 12. Then, to obtain the average and maximum record size for the TCX VSAM definition, round this number up to the next valid CI Size (minus 7)

Assume that the average Process consists of 10 COPY steps, 10 IF statements and 10 RUN TASK statements and you want to allocate space to hold 1,000 of these Processes:

AVERAGE PROCESS SIZE:  $1,616 + (10 * 1,024) + (10 * 208) + (10 * 128) = 15,216$

TCQ CISIZE: 16,384 (good value that would hold a complete average Process)

TCQ CIs PER PROCESS: 1

NUMBER OF PROCESSES: 1,000

TCQ RECORDS: 1,000

TCX CISIZE: 512 (this would map up to  $((512 - 7 - 12) / 2 * 8) = 1,968$  TCQ RECORDS)

**Note:** If you change the TCX or TCQ definitions, you must COLD start the TCQ.

## Type File (TYPE)

The Type file is a VSAM KSDS that consists of records containing file attribute defaults for the destination file allocations specified in the Sterling Connect:Direct Copy statement. For information on the Type file contents, see *Maintaining the Type File* in the *IBM Sterling Connect:Direct for z/OS Administration Guide*.

## CICS Files

The following three files are optional Sterling Connect:Direct-CICS IUI facility Files:

- CICS Configuration File (CONFIG) - The Configuration file is used by the CICS UI facility of Sterling Connect:Direct-CICS only. It is a VSAM KSDS file. One file exists and is allocated for each CICS region. It is primed during Sterling Connect:Direct-CICS installation and updated online through Sterling Connect:Direct-CICS administrator functions. This file contains system parameters that control the Sterling Connect:Direct-CICS environment. It also contains information about the Sterling Connect:Direct nodes available to the Sterling Connect:Direct-CICS and their network map definitions. Installed with default dataset name \$CDVAM.CONFIG.
- CICS User Profile File (USRPROF) - The User Profile or Signon Defaults file is allocated to the CICS region. It is a VSAM KSDS file with the CICS Userid as key. It is updated using the signon defaults function and used to set up auto-signon to Sterling Connect:Direct Installed with default dataset name \$CDVAM.USRPROF
- CICS Event Restart File (EVENT) - The Event Restart file is used by the Event Services Support feature of Sterling Connect:Direct. One file exists for each CICS system and is allocated to the CICS region. It is updated by the Event Services Support function, and is used for restarting ESS. Installed with default dataset name \$CDVAM.EVENT

---

## Virtual Storage Requirements

Sterling Connect:Direct for z/OS executes with a REGION of 0 MB allocated for most environments. Using the default limits for the IEFUSI exit, Sterling Connect:Direct may have enough virtual storage both above and below the line to run many Processes concurrently. However, your results may vary depending on the data type, block sizes, compression, communication buffer sizes, and other factors. Sterling Connect:Direct storage requirements also depend on the initialization parameters that you specify and the type of Process work being performed. In some cases, you may need to increase the size of the REGION or storage limits.

**Note:** Sterling Connect:Direct for z/OS may use above-the-bar storage. The in-storage trace table defaults to 2 MB above the bar storage, and is controlled by the TRACE.BUFFER initialization parameter.

Specifying REGION=0M eliminates the need to determine the REGION needed, and does not use any more virtual storage than specifying just the needed amount.

The following initialization parameters affect storage allocation below and above the 16 MB line:

Parameters	Description
MAXBATCH (default 6)	These parameters determine the number of tasks that Sterling Connect:Direct supports. Storage is obtained during initialization and remains for the duration of the JOB or started task. For each task, approximately 2 KB is allocated above the line and 1 KB below the 16 MB line.
MAXUSER (default 6)	
MAXPRIMARY (default 6)	
MAXSECONDARY (default 6)	
MAXPROCESS (default 12)	

Parameters	Description
V2.BUFSIZE (default 4K, double the first parameter)	<p>The first positional parameter specifies the default maximum buffer size that Sterling Connect:Direct uses for LU6.2 and TCP/IP data transmission. The default is 4K. (K means thousands of bytes.) The second positional parameter is used to alter the TCP/IP send and receive buffer sizes within TCP/IP.</p> <p>In general terms, the second positional parameter should be at least the same and not less than the first parameter and should be big enough to handle the largest V2.BUFSIZE override from the netmap. A good common practice is to have the second parameter be a multiple of the first parameter and at least twice or more than the first parameter.</p>
TCP (default NO)	The TCP parameter affects the program storage required. This parameter allocates approximately 3280 KB above and 112 KB below the 16 MB line.
UDT (default NO)	The UDT parameter requires 4 MB above the line. Each concurrent UDT process requires an additional 50 MB above the line.
ALLOCATION.EXIT RUN.JOB.EXIT RUN.TASK.EXIT SECURITY.EXIT STATISTICS.EXIT	These exits are loaded at initialization and reside below the 16 MB line. The default value for these parameters is no exit. Samples are provided and described in the <i>IBM Sterling Connect:Direct for z/OS Administration Guide</i> .
STAT.QUEUE.ELEMENTS (default 100)	Stat queue elements are 2 KB each and allocated above the 16 MB line.
MAXSTGIO (default 1M,1M)	This parameter limits the amount of I/O buffers for each COPY. The I/O buffers are allocated above the 16 MB line.

The following example shows reasonable settings for these initialization parameters:

```

MAXBATCH=26
MAXUSER=26
MAXPRIMARY=50
MAXSECONDARY=50
MAXPROCESS=100
MAXSTGIO=(1M,1M)
V2.BUFSIZE=32K
TCP=0ES
ALLOCATION.EXIT=exitname
SECURITY.EXIT=exitname
STATISTICS.EXIT=exitname
STAT.QUEUE.ELEMENTS=999
TRACE.BUFFER = 2 (default)

```

## Storage Requirements in a Sterling Connect:Direct Plex Environment

In a Sterling Connect:Direct Plex environment, additional storage is allocated based on the number of servers that the Sterling Connect:Direct Manager can support. The maximum number of servers that a Sterling Connect:Direct manager can support is 32. The Sterling Connect:Direct Manager allocates approximately 510K above the 16 MB line for each server, regardless of whether the server is active or not.

**Note:** Prior to Version 5.1.0, Sterling Connect:Direct required an AP Key file (also known as an asset protection key, license management key, or license key) and in this file, the maximum number of servers the Sterling Connect:Direct Manager could support was specified. With Version 5.1.0, the Sterling Connect:Direct Manager allocated storage to support and manage 32 servers, which is not needed for most environments resulting in inefficient usage of storage space. With Version 5.1.1, the CDPLEX.MAXSERVER global initialization parameter will control the maximum number of servers with the default being 4. If you have more than 4 servers in your environment, you must specify the number needed or you will receive an error. For more information, see “Condition: Server Initialization Error (SXTA101I) with ABEND U1024” on page 59 and the information on the CDPLEX.MAXSERVER parameter in the *IBM Sterling Connect:Direct for z/OS Administration Guide*.

To calculate the amount of virtual storage above the line allocated for the queue holding the statistics records, the Sterling Connect:Direct/Plex Manager multiplies the value for the STAT.QUEUE.ELEMENTS global initialization parameter by the maximum number of servers. If the resultant calculation is less than 5000, 5000 is used. If it is greater than 10000, 10000 is used. Each element takes 2048 bytes of storage.

Check the REGION parameter on the job card and specify REGION=0M.

---

## Preparing TCP/IP Configuration (Optional)

Read this section if you are using TCP/IP support. Sterling Connect:Direct supports IBM TCP/IP, Open Edition Sockets Interface, which you specify by using the OES value for the TCP initialization parameter. See Global Initialization Parameters. Review the NETMAP.CHECK parameter to determine if your site performs network map checking on TCP/IP nodes.

### TCP/IP Support

The following procedures relate to the implementation of TCP/IP only:

- The HLQ.PROFILE.TCPIP dataset contains system operation and configuration information for the TCP/IP address space. The PORT statement reserves a port for a given user ID and identifies the protocol to be used on that port. It is not required that you reserve a port number for Sterling Connect:Direct.
- To verify that a connection between nodes can be established, use the TCP/IP PING command. The PING command sends an echo request to a foreign host to determine if the computer is accessible.
- To verify that a connection exists to the remote Sterling Connect:Direct, issue the following command:

```
TELNET ip-address,port-number
```



## IBM Dynamic Virtual IP Address (Dynamic VIPA) Support

IBM SecureWay Communications Server provides for dynamic virtual IP addresses (dynamic VIPA). This feature enables you to define a TCP/IP stack so that a TCP/IP address is dynamic and exists only when the application that defines it is active. Following is an example:

```
:
VIPADynamic
    VIPARange    DEFINE    address_mask    network_prefix
ENDVIPADynamic
:
```

**Note:** Refer to IBM documentation for options and definitions.

To use Dynamic VIPA for Sterling Connect:Direct, define a unique VIPA for each Sterling Connect:Direct instance. An instance of Sterling Connect:Direct is an “application” per the IBM SecureWay Communications documentation. When that instance is active, it defines the VIPA address, and when it terminates, it deactivates the VIPA address.

For Sterling Connect:Direct Extended Recovery, define VIPA requirements the same way, but you must define the dynamic VIPA range in each TCP/IP stack. Each Sterling Connect:Direct node must have a unique VIPA, meaning that in a Sterling Connect:Direct/Plex environment, the manager and each server must have a unique VIPA to bind to. For HOT recovery, the standby server may have the same VIPA as the primary. The standby will not use the VIPA until it becomes the active server. In this way, it does not violate the VIPA rules as defined by IBM SecureWay Communications documentation.

## Implementing TCP Stack Affinity

Sterling Connect:Direct for z/OS supports TCP/IP connectivity through multiple TCP/IP stacks and does not set stack affinity to any particular TCP/IP stack. You might want to run multiple TCP/IP stacks on the same system to provide network isolation for one or more of your applications. Establishing TCP/IP stack affinity binds all TCP/IP socket communications to that stack, which in turn allocates the proper host domain name resolution configuration datasets to Sterling Connect:Direct. These datasets enable host name lookups to have the desired results.

If TCP/IP stack affinity is required, you must specify the stack using one of the following methods:

- Define the IP addresses and ports specified in the TCP.LISTEN initialization parameter to a particular TCP/IP stack using CINET
- Add the following step to the Sterling Connect:Direct started task JCL before executing the DMINIT initialization module:

```
STEP 0    EXECUTE PGM=BPXTCAFF,PARTM=TCP_Stack_Name
```

---

## Security Planning

Sterling Connect:Direct supports signon security checking through its own Authorization Facility and through security exits interfacing with CA-ACF2 and CA-TOP SECRET by Computer Associates International, Inc., and Resource Access Control Facility (RACF) by IBM. Any of these packages can control access to

Sterling Connect:Direct functions. Read *Implementing Security in the IBM Sterling Connect:Direct for z/OS Administration Guide*.

If your system has z/OS UNIX System Services and RACF Program Control turned on, every JOBLIB/STEPLIB/LINKLIB DSN in the Sterling Connect:Direct startup must be in the appropriate RACF Program Control list for HFS support to work correctly. If not, z/OS UNIX System Services considers the address space “dirty,” and setting thread-level security (which HFS support uses) fails with 0000008B xxxx02AF. Sterling Connect:Direct initialization fails with the message SITA997L.

---

## Planning for Parallel Sessions and Process Recovery

Sterling Connect:Direct uses the parallel sessions capability of VTAM to allow multiple Processes to execute simultaneously between any two Sterling Connect:Direct nodes. Review *Building, Modifying, and Submitting Processes* in the *IBM Sterling Connect:Direct for z/OS User Guide* for more information on how to plan for parallel sessions.

Sterling Connect:Direct provides facilities to recover from most errors that occur during Process execution. Recovery from the point of failure usually can be accomplished quickly. During the installation, you are asked to establish values for various parameters that affect Process recovery and checkpoint/restart. Review *Process Recovery and Checkpoint/Restart* in the *IBM Sterling Connect:Direct for z/OS User Guide*.

---

## Planning the Network Map

The network map identifies the local Sterling Connect:Direct node and the nodes where it can communicate. It consists of a local node entry and one or more adjacent node entries. Each entry identifies the communications name and protocol associated with a Sterling Connect:Direct node. A sample network map source can be found in member DGAXNTMP in the \$CD.SDGACNTL library. This member should be tailored for and used as input to the network map load utility, DGADNTLD. This utility creates the VSAM form of the network map. It is invoked by the job DGAJLOAD in the \$CD.SDGAJCL library.

### New Installations

1. Gather the information you will need to create your local and adjacent node entries.
2. To build a minimal netmap file with a local node and an initialization parameters file which uses all the default settings, follow the instructions in *Building a Test Sterling Connect:Direct and Sterling Connect:Direct Secure Plus Configuration* (optional).
3. After completing the configuration process, update the network map to include other adjacent nodes in the network.

### Existing Installations

To upgrade to a later version while retaining an existing netmap and Sterling Connect:Direct Secure Plus Parameters and Access files, see *IBM Sterling Connect:Direct for z/OS Release Notes*.

---

## Planning for Disaster Recovery Testing

When you back up a Sterling Connect:Direct system for business continuity testing (also known as "disaster recovery testing or DR testing"), you create a snapshot of the DTF files at one point in time. If the DTF is running when the backup is taken, the captured files may not be in a synchronized known state.

To ensure that you perform a backup at a synchronized point in time to provide a "clean" starting point for the DTF, it is recommended that you put Sterling Connect:Direct in a quiesced, or non-running state when you perform DR backups. Therefore, it is strongly recommended that you set the TCQ global initialization parameter to COLD when you start the DTF at the DR site.

If you do not know at what stage the backup was taken, you may have to deal with the following issues in a recovery situation:

- The TCQ and TCX datasets will probably be out of sync with each other, which will cause a failure when you start Sterling Connect:Direct at a disaster recovery site. The DTF may terminate during initialization.
- If you need the contents of the TCQ to continue, run the DGADTQFX utility before you attempt to start the DTF (see *Managing the Transmission Control Queue* in the *IBM Sterling Connect:Direct for z/OS Administration Guide* for details). Because the system may not be in a known synchronized state, it is recommended that you set the TCQ initialization parameter to WARM and the QUIESCE initialization parameter to YES. Then you can delete Processes that have already executed before putting the DTF in the "Run" state.
- The NETMAP could also be corrupted if it was dynamically updated when the NETMAP was backed up. If you experience this with your system, unload the NETMAP, delete and redefine it, and then load it from the unloaded source.

---

## Planning for Sterling Connect:Direct File Agent

Sterling Connect:Direct File Agent must be installed in a directory of the z/OS UNIX System Services component and configured to communicate with the Sterling Connect:Direct server. Use a PC for terminal emulation when you are ready to create a configuration file using Sterling Connect:Direct File Agent. Sterling Connect:Direct File Agent uses mount points, which are HFS/zFS files requiring at least 20 cylinders of available space. See *IBM Sterling Connect:Direct for z/OS Release Notes* for software requirements for Sterling Connect:Direct File Agent.

---

## Traces in Startup JCL

When a problem occurs while Sterling Connect:Direct is running, you can use a variety of traces to gather information to diagnose the problem and record events as they happen. Based on the trace specified, the Sterling Connect:Direct trace output is directed to various ddnames. For more information on traces, see *Isolating Problems*.

Sterling Connect:Direct provides the following DD statements in the DGAJCONN JCL member as the basic set of DDs to run your system including three automatic traces:

DDNAME	Function
STEPLIB	Sterling Connect:Direct SDGALINK

<b>DDNAME</b>	<b>Function</b>
DMPUBLIB	Sterling Connect:Direct Process library
USRINFO	Standard display from User exits
NDMLOG	Automatic trace to list all initialization parameters read from the INITPARM dataset including obsolete parameters, which are indicated by SITA995I messages, and all modules, along with the last date on which they were modified, and related fix numbers.
ESTAE	Automatic trace to capture I/O errors, VTAM connection errors, ABEND control blocks, open and close errors, TCQ/TCX errors on adds and updates, and Statistics File write errors.
RPLERRCK	Automatic trace to capture VTAM and TCP/IP send and receive errors.
CDESTAE	Supplemental ESTAE Output
CEEOUT	Language Environment Messages
CDDMSG	Language Environment Messages

---

## Chapter 2. Configuring Sterling Connect:Direct for z/OS

---

### Define the Sterling Connect:Direct VSAM Files

Edit and customize the following members in the \$CD.SDGACNTL dataset for your environment.

#### Procedure

1. Edit and customize the following members in the \$CD.SDGACNTL dataset for your environment:
  - DGACVDEF – IDCAMS Define of the Sterling Connect:Direct VSAM files
  - DGACVDEL – IDCAMS Delete of the Sterling Connect:Direct VSAM files
  - DGACNDEF – IDCAMS Delete/Define of the Sterling Connect:Direct Network Map
  - DGACAUTH – IDCAMS Repr of the AUTH File
  - DGACMSGV – IDCAMS Repr of the MSG File
  - DGACTYPE – IDCAMS Repr of the TYPE File
2. Edit, customize, and submit member DGAJVSAM in the \$CD.SDGAJCL dataset. This job defines all Sterling Connect:Direct VSAM files, and loads the MSG, TYPE and AUTH files.

---

### Define VTAM Resources

Using the samples in dataset \$CD.SDGACNTL and VTAM definitions, define the VTAM resources appropriate for your environment.

---

### Building a Test Sterling Connect:Direct and Sterling Connect:Direct Secure Plus Configuration (optional)

Sterling Connect:Direct provides a series of menus that let you customize the installation. Both panel-level and field-level help are available by pressing the PF1 key. Panel-level help identifies required fields and provides general information requested on a panel. To see help for a specific field in a separate pop-up window, place the cursor on an individual field and press the PF1 key.

#### About this task

The three installation panels are:

- The IBM Sterling Connect:Direct for z/OS Installation Main Menu, which collects information about how you want to customize your installation, builds a basic test configuration, and gives you the choice to continue with one or both of the following installation panels:
  - The IBM Sterling Connect:Direct for z/OS Configuration Menu displays information to build a default test configuration you can use as a preliminary version of the network map for testing. After the configuration process is complete, update the network map to include other adjacent nodes in the network. For more information on network maps, see *Maintaining the Network Map*. This step generates a JCL member (DGAJNETL) that you will run to build a minimal netmap file with a local node and an initialization parameters file which uses all the default settings.

- The IBM Sterling Connect:Direct for z/OS Secure Plus Configuration Menu displays information to build a default Sterling Connect:Direct Secure Plus configuration. This optional step generates a JCL member (DGAJBLDS) that you will run to create a Sterling Connect:Direct Secure Plus parameters file and an Access file.

**Note:** This procedure is intended for new users to assist them in building a test Sterling Connect:Direct configuration and a test Sterling Connect:Direct Secure Plus configuration—it is not for existing customers who already have netmaps populated with node information and Sterling Connect:Direct Secure Plus parameter and access files.

To display the installation panels:

### Procedure

1. Request the TSO COMMAND Option (Option 6) from the ISPF Primary Option Menu and type the following:

```
=== > EXEC '$CD.SDGAISPC(DGA#CFG2)' '$CD'
```

2. When the following IBM Sterling Connect:Direct for z/OS Installation Main Menu is displayed, enter information in the Permanent DASD Volume Serial No. field. In addition to the test Sterling Connect:Direct configuration, to create a Sterling Connect:Direct Secure Plus configuration, type Y next to the Do you wish to configure the Secure Plus feature prompt. Press Enter.

```

          IBM Sterling Connect:Direct for z/OS          DATE-2011/03/04
-----          Installation Main Menu          -----          TIME-13:55
CMD ==>
C:D System High Level Qualifier ..... MWATL1.ZTEST _____
Permanent DASD Device Type ..... SYSDA____
Permanent DASD Volume Serial No. ....
Temporary DASD Device Type ..... SYSDA____
Do you wish to configure a Test Connect:Direct... Y (One of these must be Y)
Do you wish to configure the Secure Plus feature. N
Job Card Information .
==> //CDINST JOB (CD-INSTALL),'CD INSTALL',CLASS=0,_____
==> //          MSGCLASS=X,REGION=0M_____
==> //*_____
==> //*_____
Press ENTER to continue, PF1 for Help, PF3 to Terminate the Install

```

**Note:** If both configuration prompts are set to N, you will receive the ISPF message, Invalid value.

3. When the following IBM Sterling Connect:Direct for z/OS Configuration Menu is displayed, enter information in the Local Node Name field to identify this node in the netmap (1–16 characters beginning with an alphacharacter).

Depending on your protocol, enter the following information:

- For TCP, specify either the TCP IP Address or Hostname field (supports IPV4, IPV6 as well as a Hostname).
- For SNA, specify the VTAM SNA APPLID and API APPLID fields.

Press **Enter** to continue.

```

          IBM Sterling Connect:Direct for z/OS          DATE=2011/03/04
          ----- Configuration Menu -----          TIME=13:55
CMD ==>
Connect:Direct configuration Information:
Local Node Name ..... _____ .
SNA (Yes or No) ..... N_____ .
VTAM SNA APPLID ..... _____ .
VTAM SNA API APPLID ..... _____ .
TCP (Yes or No) ..... Y_____ .
TCP IP Address or Hostname ... _____ .
TCP Port Number ..... _____ .
TCP API Port Number ..... _____ .
Press ENTER to continue, PF1 for Help, PF3 to return

```

If you enabled the feature to create a test Sterling Connect:Direct Secure Plus configuration, the following panel is displayed:

```

          IBM Sterling Connect:Direct for z/OS          DATE=2011/03/04
          ----- Secure Plus Configuration Menu ----- TIME=13:55
CMD ==>
Connect:Direct Secure Plus Configuration Information:
Parameter File HLQ..... DALLAS.ZTEST_____ .
Access File HLQ..... DALLAS.ZTEST_____ .
VSAM Files Catalog Name..... _____ .
VSAM Files Volser .....DFTVOL1_____ .
Local Node Name ..... CD.ZOS.NODE_____ .
Press ENTER to continue, PF1 for Help, PF3 to return

```

4. Press **Enter** to accept all the defaults.
5. When the IBM Sterling Connect:Direct for z/OS JCL Generation Menu is displayed, press **Enter** to generate the JCL.  
The JCL that is generated depends on the options selected. If both the configure a Test Connect:Direct and configure the Secure Plus features are set to Y, the following JCL members are generated in the resultant SDGAJCL dataset:
  - DGAJBLDS-JCL to build Sterling Connect:Direct Secure Plus
  - DGAJNETL-JCL to build Netmap
  - DGAJTST-Test Sterling Connect:Direct JCL
6. To build the test netmap, run the DGAJNETL job.  
Once the job has run successfully, specify the NETDSN system file initialization parameter in the DGAJPARM member in \$CD.SDGACNTL. as the DSN created via the DGAJNETL job. This parameter specifies the file name of the Sterling Connect:Direct VSAM network map file.
7. To build the test Sterling Connect:Direct Secure Plus configuration, run the DGAJBLDS job.  
Once the DGAJBLDS job has run successfully, add the initialization parameter, SECURE.DSN=\$CD.PARMPFILE, to the DGAJPARM member in \$CD.SDGACNTL.

---

## Building the Initialization Parameter File

New releases of Sterling Connect:Direct often implement new initialization parameters. In addition, initialization parameters frequently become obsolete. Sterling Connect:Direct detects parameters, which should be retired, and issues messages to NDMLOG. If you receive a return code of 4 when you stop Sterling Connect:Direct, review the NDMLOG for a list of obsolete parameters. You must remove obsolete parameters to eliminate SITA995I messages.

## About this task

Sterling Connect:Direct processes initialization parameters during startup to specify alternate values for various parameters. The Sterling Connect:Direct initialization module processes the file that contains these parameters.

**Note:** In addition to modifying initialization parameter files directly, use IBM Sterling Control Center to manage these parameters for a Sterling Connect:Direct stand-alone server or the global and local initialization parameters for a Sterling Connect:Direct/Plex.

You can create backup copies of the global and local initialization parameter files to use in an emergency situation if Sterling Connect:Direct cannot successfully initialize after initparm updates have been applied.

You must define all initialization parameters that specify the Sterling Connect:Direct VSAM file names except the optional \$CD.STAT.ARCH.DIR parameter. Failure to take this step results in unpredictable behavior.

To specify your initialization parameters:

### Procedure

1. Modify the parameters as required.

Find sample initialization parameters in the DGAIN01 member of the \$CD.SDGAPARM. Observe the following required or suggested values:

- For initial installation and testing, specify SECURITY.EXIT=OFF in member DGAIN01. When Sterling Connect:Direct security exits are installed, change the SECURITY.EXIT installation keyword. This change prevents any problems with user definitions until the basic installation is verified.
- If you are using TCP/IP connectivity, you must specify TCP=OES. Also specify valid values for the TCP.LISTEN parameter.
- The UPPER.CASE initialization parameter controls what case initialization console messages are displayed in. The default is UPPER.CASE=NO, which means that all console messages are displayed in upper and lower case. If you want to display all console messages in upper case, you must specify UPPER.CASE=YES (this parameter can be modified as an override parameter in the DGADINIT execute statement in the Sterling Connect:Direct startup job stream as well).
- If you generated the Test Configuration and successfully executed the DGAJNETL, then specify the NETDSN system file initialization parameter as the DSN created via the DGAJNETL job.
- If you generated a Sterling Connect:Direct Secure Plus Parmfile, specify the SECURE.DSN global initialization parameter as the DSN created via the DGAJBLDS JOB.

**Note:** You can initialize Sterling Connect:Direct if SNA support is not available. See Configuring Sterling Connect:Direct without SNA Support.

2. Specify VSAM file names.

Specify all initialization parameters that indicate the Sterling Connect:Direct VSAM file names. Locate following file names in the member DGACVDEF of the \$CD.CNTL library:

- \$CD.AUTH
- \$CD.CKPT



- \$CD.MSG
  - \$CD.NETMAP
  - \$CD.STATS
  - \$CD.TYPE
3. Override the parameters during startup.
- Override parameters during startup by specifying the parameter and its value in the PARM keyword of the EXEC statement in the startup JCL. See Start Sterling Connect:Direct for sample JCL that shows an override for the UPPER.CASE=NO initialization parameter.

**Note:** If you are upgrading and have user exits in your Sterling Connect:Direct installation, you must reassemble and link-edit those exits. For more information on user exits, see Using Sterling Connect:Direct Exits in the IBM Sterling Connect:Direct for z/OS Administration Guide.

## Install the ISPF UI Using Screen Prompts

For best results, install the ISPF UI using screen prompts. You can also install the ISPF UI using the LIBDEF service. To install the ISPF UI using screen prompts:

### Procedure

1. Take one of the following actions:
  - Build a CLIST to bring up the ISPF/DTF Primary Option Menu.

For a quick way to gain access to Sterling Connect:Direct, build a CLIST that allocates Sterling Connect:Direct files and brings up an ISPF/PDF Primary Option Menu with Sterling Connect:Direct on it. The following sample shows a CLIST that brings up the ISPF/PDF Primary Option Menu. The libraries with the high-level qualifier of \$CD are required for Sterling Connect:Direct.

```

CONTROL NOMSG
      FREE FILE (SYSPROC          -
                ISPLLIB          -
                ISPLLIB          -
                ISPLLIB          -
                ISPLLIB          -
                ISPLLIB          -
                ISPLLIB          -
                DMPUBLIB         -
                DMMSGFIL)
CONTROL MSG
ALLOC F(SYSPROC) DA('SYS1.CLIST'  -
                   '$CD.SDGAISPC') SHR
ALLOC F(ISPLLIB) DA('$CD.SDGAPENU' -
                   'SYS1.ISFPLIB' -
                   'SYS1.ISRPLIB' -
                   'SYS1.ISPPLIB' -
                   'SYS1.ICQPLIB') SHR
ALLOC F(ISPLLIB) DA('$CD.SDGAMENU' -
                   'SYS1.ISRMLIB' -
                   'SYS1.ICQMLIB' -
                   'SYS1.ISPMLIB') SHR
ALLOC F(ISPLLIB) DA('$CD.SDGalINK' -
                   'SYS1.ISRLOAD' -
                   'SYS1.ISPLOAD') SHR
ALLOC F(ISPSLIB) DA('$CD.SDGAseNU') SHR
ALLOC F(DMPUBLIB) DA('$CD.SDGAPROC') SHR
ALLOC F(DMMSGFIL) DA('$CD.MSG') SHR
PDF

```

- Integrate Sterling Connect:Direct for TSO use.

Modify the LOGON PROC used to sign on to TSO to integrate Sterling Connect:Direct for TSO use by including the Sterling Connect:Direct libraries. The bold lines in the following sample are inserted for Sterling Connect:Direct. The TSO user must also have access to the ISPF/PDF modules ISPLINK and ISPEXEC.

```
//TSO PROC
//*
//IEFPROC EXEC PGM=IKJEFT01,DYNAMBR=25,
// PARM="PROFILE MODE WTPMSG MSGID"
//STEPLIB DD DSN=$CD.SDGALINK,DISP=SHR
//*
//SYSPROC DD DSN=$CD.SDGAISPC,DISP=SHR
// DD DSN=SYS1.CLIST,DISP=SHR
// DD DSN=USER.CLIST,DISP=SHR
//SYSHelp DD DSN=SYS1.HELP,DISP=SHR
//SYSUADS DD DSN=SYS1.UADS,DISP=SHR
//SYSLBC DD DSN=SYS1.BROADCAST,DISP=SHR
//SYSPRINT DD TERM=TS,SYSOUT=A
//SYSTEM DD TERM=TS,SYSOUT=A
//SYSTSPRT DD TERM=TS,SYSOUT=A
//SYSIN DD TERM=TS,SYSOUT=A
//SYSTSIN DD DDNAME=IEFRDER
//IEFRDER DD TERM=TS,SYSOUT=A
//ISPLLIB DD DSN=$CD.SDGALINK,DISP=SHR
// DD DSN=SYS1.ISRLOAD,DISP=SHR
// DD DSN=SYS1.ISPLOAD,DISP=SHR
//ISPLLIB DD DSN=$CD.SDGAPENU,DISP=SHR
// DD DSN=SYS1.ISRPLIB,DISP=SHR
// DD DSN=SYS1.ISPLLIB,DISP=SHR
//ISPLLIB DD DSN=$CD.SDGMENU,DISP=SHR
// DD DSN=SYS1.ISRMLIB,DISP=SHR
// DD DSN=SYS1.ISPMLIB,DISP=SHR
//ISPLLIB DD DSN=$CD.SDGASENU,DISP=SHR
// DD DSN=SYS1.ISRSLIB,DISP=SHR
// DD DSN=SYS1.ISPLLIB,DISP=SHR
//ISPTABL DD DSN=USR.ISPTABL,DISP=SHR /* USER SPECIFIED */
//ISPTLIB DD DSN=USR.ISPTABL,DISP=SHR /* USER SPECIFIED */
// DD DSN=SYS1.ISRTLIB,DISP=SHR
// DD DSN=SYS1.ISPTLIB,DISP=SHR
//ISPPROF DD DSN=USR.ISPPROF,DISP=SHR /* USER SPECIFIED */
//DMPUBLIB DD DSN=$CD.SDGAPROC,DISP=SHR
//DMMSGFIL DD DSN=$CD.MSG,DISP=SHR
```

2. Modify the ISPF/PDF Primary Option Menu for the local IUI (changes are in bold), as follows:

- For option M, change the file name \$CD.MSG to reflect the Message file name specified in the DGACVDEF member of the \$CD.SDGACNTL library to display messages in the Sterling Connect:Direct Message file.
- For option N, change the file name \$CD.NETMAP to reflect the name of the VSAM file that contains the Sterling Connect:Direct network map for starting the local IUI.

The sample shows a modified ISPF/PDF Primary Option Menu.

```

%-----ISPF/PDF PRIMARY OPTION MENU-----
%OPTION ==>_ZCMD                                     +
%
%
%                                +USERID   - &ZUSER
% 0+SPF PARMS      - Specify ...      +TIME    - &ZTIME
% 1+BROWSE         - Display ...       +DATE    - &ZDATE
% 2+EDIT           - Create ...        +JULIAN  - &ZJDATE
% 3+UTILITIES     - Perform ...       +TERMINAL - &ZTERM
% 4+FOREGROUND    - Compile,...       +PF KEYS - &ZKEYS
% 5+BACKGROUND    - Compile, Assemble, or Link Edit
% 6+COMMAND        - Enter TSO command or CLIST
% 7+SUPPORT        - Test dialog or convert menu/message fmts
% M+C:D-MSGS      - Display Sterling Connect:Direct messages
% N+C:D           - Sterling Connect:Direct
% X+EXIT          - Terminate ISPF using List/Log defaults
%
%
%
)INIT
    .HELP=TTUTOR
    &ZHTOP=TTUTOR
    &ZHINDEX=TINDEX
)PROC
    &ZSEL=TRANS( TRUNC (&OPT, '.')
    0, 'PANEL(ISPOPT)'
    1, 'PGM(ISPBRO)'
    2, 'PGM(ISPEDIT)'
    3, 'PANEL(ISPUTIL)'
    4, 'PANEL(ISPFORA)'
    5, 'PANEL(ISPJOB)'
    6, 'PGM(ISPTSO)'
    7, 'PANEL(ISPQTAC) NEWPOOL'
    M, 'PGM(DGADGDSP) PARM($CD.MSG)'
    N, 'PGM(DGADISTR) PARM($CD.NETMAP) NEWAPPL(CD)'
    X, 'EXIT'
)END

```

### 3. Define VSAM alias (optional).

In installations with many users, VSAM user catalogs often isolate application files from z/OS system files. If the Sterling Connect:Direct VSAM files are cataloged in a VSAM user catalog, that user catalog must have a VSAM ALIAS defined in the VSAM Master Catalog so that local IU users can find the necessary files. Sterling Connect:Direct files, such as the network map and Message file, must be accessed by the IUI that runs in the user's TSO region.

## Start Sterling Connect:Direct

### About this task

The \$CD.SDGAJCL(DGAJCONN) member contains the sample startup job stream to run the Sterling Connect:Direct DTF as a batch job. It can run as a batch job or as a started task.

**Note:** If you generated the Test Configuration JOB, DGAJNETL, use that JOB instead of the DGAJCONN JOB or modify the DGAJCONN JOB to perform the same as DGAJNETL.

If you use Program Access to datasets (PADS) functionality in your security system, include all datasets in the Sterling Connect:Direct JCL STEPLIB DD concatenation in your Program Control List (PCL). See Implementing Security in the IBM Sterling Connect:Direct for z/OS Administration Guide for more information.

To start Sterling Connect:Direct:

### Procedure

1. Execute Sterling Connect:Direct from an authorized library. The installation makes the DTF load module (DGADINIT) APF-authorized with AC(1).
2. Submit the startup job stream. While Sterling Connect:Direct for z/OS is initializing, a series of messages display the sequence of events during initialization. If an initialization error occurs, note the last message issued. The problem most likely occurred during the step indicated by the last message or on the step indicated by the next message that should have been issued. For more information on specific error messages, see Chapter 6, "Initialization Errors," on page 57

Following is an example of messages you may see. The specific startup messages generated when you start Sterling Connect:Direct for z/OS depend on the following factors:

- What communication protocols are used in your system
- Whether Sterling Connect:Direct Secure Plus is part of your system and the version
- Whether any initialization parameters are being overridden in the startup JCL
- Whether any certificates have expired or will soon expire

**Note:** The SITA460I and SITA462I messages related to the Strong Password Encryption (SPE) feature are displayed even if no encryption is possible. To determine if this feature is in effect, go to the Secure+ Create/Update Panel - SPE Parameters panel where SPE is enabled.

```

SITA001I IBM Sterling Connect:Direct for z/OS initialization has begun.
SITA002I Connect:Direct parameter file allocated and open.
SITA022I Loading Connect:Direct modules.
SITA601I The TCP server modules are loaded.
SITA067I MESSAGE file is open.
SITA628I SNMP Trap Agent Initialization Complete.
SITA023I Initializing Connect:Direct storage.
SITA024I Building the TCA chain.
SITA026I Creating the system tasks (master and timer).
SITA025I Building the ECB address list.
SITA027I Building the DDN table.
SITA069I NETWORK MAP file is open.
SITA028I SECURE+ Initialization complete
SITA029I Statistics facility being initiated.
SITA996I STATS COLD Start being performed.
SITA998I Acquiring storage for STAT.QUEUE.ELEMENTS.
SSTL026I Statistics File Pair 01 is now active.
SSTL019I Statistics facility successfully initialized
SITA068I AUTHORIZATION file is open.
SITA460I Strong Password Encryption Initiated; JWHITE.CD.AUTH
SITA462I Strong Password Encryption Completed; JWHITE.CD.AUTH
SITA134I TYPE DEFAULTS file is open.
SITA074I CHECKPOINT file is open.
SITA030I PCQ/TCQ being built.
SITA400I Enqueuing TCX from NETMAP for ESF processing.
SITA996I TCQ COLD Start being performed.
SITA460I Strong Password Encryption Initiated; JWHITE.CD1.TCQ
SITA462I Strong Password Encryption Completed; JWHITE.CD1.TCQ
SITA401I Dequeuing TCX from NETMAP for ESF processing.
SITA034I VTAM services being initiated APPLID = M1DEVW0.
SVTJ019I SNA Support is Now Available.
SITA035I Error recovery (ESTAEX) environment being initiated.
SITA977I Product Registration was Successful
SITA899I Connect:Direct Node : SC.DUB.JWHITE
SITA036I Connect:Direct 5.01.01 PUT Level 0000 Initialization Complete.
SITA165I Secure+ SSL initialization complete.
STC0109I TCP/IP Server Subtask Attached
STC0110I TCP/IP Interface Initializing
STC0140I TCP/IP IPV6 Support Initializing
STCA102I TCP/IP API Issuing BIND Call for address 4198;0.0.0.0
STCA103I TCP/IP API Issuing LISTEN Call: 4198;0.0.0.0
STC0102I TCP/IP Issuing BIND Call for address 4199;0.0.0.0
STC0103I TCP/IP Issuing LISTEN Call: 4199;0.0.0.0
STC0111I TCP/IP Interface Initializing Complete
STCP104I TCP Support is Available.
CSPA601E ERROR Cert: RSA Secure Server CA expired on: 01/07/2010-23:59:59
CSPA601E ERROR Cert: VeriSign Class 1 Individual Subscriber-Persona Not
CSPA601E Validated expired on: 05/12/2008-23:59:59

```

The IEC161I, 062-086, or 056-084 messages can also display at OPEN of the VSAM files. These messages indicate that the files were not closed properly the last time Sterling Connect:Direct was brought down. These are normal VSAM verification messages.

### 3. Log on to TSO again.

After the TSO IUI is installed, log on to TSO again so that your new logon procedure or signon CLIST is in effect. You can then sign on to Sterling Connect:Direct through the IUI, Operator Interface, or Batch Interface.

**Note:** You can initialize Sterling Connect:Direct if SNA support is not available. See Configuring Sterling Connect:Direct without SNA Support.

---

## Signing On to Sterling Connect:Direct

You can sign on to Sterling Connect:Direct through the IUI, the Operator, or the Batch interface. For sign-on instructions for the Batch interface, refer to the *IBM Sterling Connect:Direct for z/OS User Guide*.

### Signing On through the IUI Interface

Select the Sterling Connect:Direct option by means of the ISPF/PDF Primary Option Menu. Sign on to Sterling Connect:Direct using one of the following methods:

#### Procedure

- If the Sterling Connect:Direct Authorization Facility is in effect, use the user ID SUPERUSR and the password supplied for the superuser in the network map local node definition.
- If you specified SECURITY=OFF in the initialization parameters, you can use any 1–8 character alphanumeric value for the Sterling Connect:Direct user ID and password.
- If you are running with a Sterling Connect:Direct security exit, use a user ID and password that meet your security requirements.
- For an SNA environment, you must specify SNA=YES and define enough APPLIDS to handle both the IUI and Operator Interface sessions in the Netmap ADJACENT.NODE for LOCAL.NODE. For additional information on the IUI and procedures to automate the Signon process, refer to the IBM Sterling Connect:Direct for z/OS User Guide.

### Signing On through the Operator Interface

When you use the Operator Interface, the operator is automatically signed on to Sterling Connect:Direct when the first command or CLIST is issued. You must specify the MCS.SIGNON and MCS.CLIST initialization parameters in the appropriate initialization parameter file.

---

## Customizing the Product

After you verify the installation, you may want to customize files, screens, and Processes. The following list guides you to additional instructions for customizing your installation:

#### Procedure

1. Fully define all nodes to the network map file. For information on how to update the network map file, see *Maintaining the Network Map*.
2. Set up the Sterling Connect:Direct/Plex environment, if applicable.
3. Select the appropriate step to set up security:
  - If you use the Sterling Connect:Direct Authorization Facility, add users to the User Authorization file.
  - If you use external security software such as RACF, ACF2, or TOP SECRET, see *Implementing Security* for more information.
4. Add types to the Type file. See *Maintaining the Type File* to add records to the Type file.
5. Customize the Messages file. See *Customizing Sterling Connect:Direct* in *IBM Sterling Connect:Direct for z/OS Administration Guide*.
6. Customize the SUBMIT screen.

7. Customize the sample Processes. Information on Sterling Connect:Direct Processes is available in the *IBM Sterling Connect:Direct for z/OS Process Language Reference Guide* and *IBM Sterling Connect:Direct for z/OS User Guide*.





---

## Chapter 3. VTAM Definitions

Before starting Sterling Connect:Direct, the VTAM application definitions must be active, the mode table entries must be completed, and the cross-domain resources must be active. This section explains how to set up VTAM definitions for Sterling Connect:Direct.

The following VTAM definitions may be required for each node. The member name of each definition is listed in parentheses. The sample definitions are in the file \$CD.SDGACNTL.

- VTAM definitions for Sterling Connect:Direct DTF (DGACAPPL)
- VTAM definitions for IUI or batch interface (DGACIAPP)
- Mode table used with Sterling Connect:Direct (DGACMODT)
- Cross-domain resource manager node (DGACCDRM)
- Cross-domain resource definition for other nodes (DGACCDRS)
- VTAM definition for PNODE=SNODE, also known as loop-back, processing (DGACAPPL)

If you are setting up VTAM definitions for mainframe-to-PC-only connections, disregard the information about multiple z/OS, VM, or VSE sites within the Sterling Connect:Direct network and VTAM cross-domain definitions.

**Note:** If you went through the installation process and generated the network map, refer to the member DGAJNET0 in \$CD.SDGACNTL for network map definitions that use the VTAM definitions.

---

### Defining APPLID of Local DTF

Define the APPLID of the local Sterling Connect:Direct DTF. A sample definition for the APPLID of the local DTF follows.

**Note:** In the example below, ACBNAME and the label names are representations. You need to change them to represent your own installation.

This example is located in the member DGACAPPL of \$CD.SDGACNTL.

CDAPP4 APPL	ACBNAME=CDAPP4, VTAM APPLICATION ID	X
	APPC=YES, ENABLE TO RUN LU6.2 SESSIONS	X
	AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VPACE),	X
	EAS=n, APPROXIMATE # OF CONCURRENT SESS	X
	MODETAB=CDMTAB, MODE TABLE NAME	X
	SONSCIP=NO, NO UNBIND IN SCIP EXIT	X
	SRBEXIT=NO, NO SRB PROCESSING	X
	VPACING=n, RECEIVE PACING	X
	DLOGMOD=CDLOGM, MODE TABLE ENTRY	X
	PARSESS=YES, PARALLEL SESSIONS CAN BE USED	X
	DSESLIM=n, # OF CONCURRENT LU6.2 SESSIONS	X
	DMINWNL=n, # OF LOCAL CONTENTION WINNERS	X
	DMINWNR=n, # OF REMOTE CONTENTION WINNERS	X
	AUTOSES=n, # OF AUTOMATIC LU6.2 SESSIONS	X
	DDRAINL=ALLOW, ALLOW CNOS TO DRAIN SESSIONS	X
	DRESPL=ALLOW, DEF RESPONSIBILITY FOR LOCAL CNOS	X
	LMDENT=n, SIZE OF HASH TABLE	X
	VTAMFRR=NO	

Optimal settings are:

- When using Sterling Connect:Direct Extended Recovery, change CDAPP4 to CDAPP\* to make the APPL dynamic. This change enables the Sterling Connect:Direct extended recovery standby to monitor the active Sterling Connect:Direct image from a different z/OS image and to take over for that active Sterling Connect:Direct image if it fails. This setting applies to both stand-alone servers and Sterling Connect:Direct/Plex environments
- APPC=YES enables LU6.2 support and is required.
- EAS represents the approximate number of concurrent sessions that this APPL has with all other APPLs (Sterling Connect:Direct adjacent nodes and interactive users). The default value is 509. Change the value to one that is realistic for your environment.
- MODETAB must point to the mode table that contains entries for LU0, LU6.2, and SNA Service Manager mode (SNASVCMG). See Define Logmode Table Entries for the definition of the mode table.
- Set VPACING to the number of RUs that this DTF receives before being obligated to send a pacing response. For best results, use a minimum value of 7. Larger values increase throughput when receiving data from another DTF.  
Do not specify a value of 0, or omit this parameter, which causes no pacing and can lead to a VTAM buffer shortage.  
DLOGMOD (the default log mode) must refer to an LU0 logmode entry to ensure compatibility with prior releases of Sterling Connect:Direct. The LU6.2 logmode name is extracted from the network map.
- PARSESS=YES parameter is required.
- Set DSESLIM to the sum of the values specified in DMINWNL and DMINWNR so that DSESLIM is equal to or greater than the largest PARSESS max value in the network map.
- Set DMINWNL to a value that is no larger than one-half the value of DSESLIM.
- Set DMINWNR to a value that is no larger than one-half the value of DSESLIM.
- Set AUTOSES to 1 if this DTF is used in a mixed environment of sending and receiving files. Set AUTOSES to 0 if this DTF is used primarily to receive files.

**Note:** Use this DTF to send files if you set AUTOSES to 0.

- DDRAINL=ALLOW enables Change Number of Sessions (CNOS) to drain sessions.
- DRESPL=ALLOW enables the application program to accept responsibility for deactivating sessions.
- LMDENT specifies the number of entries to be used for this application program's hash table of remote LUs. The default value is 19.

---

## APPLID for IUI and Batch Sessions

Define APPLID for IUI and batch session definition.

**Note:** Add ENCR=NONE to VTAM APPLs used for IUI sessions to avoid signon problems.

The following example shows three VTAM application definitions for the Sterling Connect:Direct IUI. These application IDs must match those specified in the Sterling Connect:Direct network map. The examples are located in member DGACIAPP of \$CD.SDGACNTL.

NAI01	APPL	ACBNAME=NAI01, DLOGMOD=CDLOGM, MODETAB=CDMTAB ENCR=NONE	X X
*			
NAI02	APPL	ACBNAME=NAI02, DLOGMOD=CDLOGM, MODETAB=CDMTAB ENCR=NONE	X X
*			
NAI03	APPL	ACBNAME=NAI03, DLOGMOD=CDLOGM, MODETAB=CDMTAB ENCR=NONE	X X

## Defining APPLID for Loop-Back Processing

If you perform PNODE=SNODE (loop-back) processing, define the APPLID to use for the processing.

The following figure shows an additional Sterling Connect:Direct DTF APPL (CDAPP2) defined to VTAM that enables you to perform loop-back processing. This multiple definition is required because with PNODE=SNODE processing the communications name (APPLID) for the adjacent node defined in the network map must be different than the communications name (APPLID) for the local node in the network map. This example is located in member DGACAPPL of \$CD.SDGACNTL.

CDAPP2	APPL	ACBNAME=CDAPP2, AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VPACE), EAS=n, MODETAB=CDMTAB, SONSCIP=NO, SRBEXIT=NO, VPACING=7, DLOGMOD=CDLOGM, PARSESS=YES, VTAMFRR=NO	VTAM APPLICATION ID APPROXIMATE # CONCURRENT SESS MODE TABLE NAME NO UNBIND IN SCIP EXIT NO SRB PROCESSING RECEIVE PACING OF 7 MODE TABLE ENTRY PARALLEL SESSIONS CAN BE USED	X X X X X X X X
--------	------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------

## Defining Logmode Table Entries

Define the logmode table entries used with each APPLID. This step is required if you communicate with a node defined to VTAM as a PU TYPE 4 node.

The following sections provide examples from the mode table used with Sterling Connect:Direct. The examples are located in member DGACMODT.

You can use the optional name (CDMTAB) as an assembler CSECT name for the mode table. You can assemble the table separately from other mode tables or you can insert the Sterling Connect:Direct entry into an existing mode table.

**Note:** Modify COS, PACING, and RUSIZE values only.

## z/OS Nodes

Use the following entry with other Sterling Connect:Direct for z/OS nodes.

**Note:** If you are using the Sterling Connect:Direct Secure Plus for SNA connections, you must use LU6.2.

CDLOGM	MODEENT LOGMODE=CDLOGM,	ENTRY NAME	X
	TYPE=1,	NON-NEGOTIABLE BIND	X
	FMPROF=X'04',	FUNCTION MGMT. PROFILE 4	X
	TSPROF=X'04',	TRANS SERVICE PROFILE 4	X
	PRIPROT=X'B3',	PRIMARY PROTOCOL	X
	SECPROT=X'B3',	SECONDARY PROTOCOL	X
	COMPROT=X'6080',	COMMON PROTOCOL	X
	PSNDPAC=X'06'	PRIMARY SEND PACING	X
	SRVPAC=X'06'	SECONDARY SEND PACING	X
	RUSIZES=X'8989',	4K MAX RU SIZE FOR PRI AND SEC	X
	PSERVIC=X'000000000000000000000000'		

## OpenVMS and HP NonStop (Tandem) Nodes

Use the following entry with OpenVMS and HP NonStop (Tandem) nodes.

CDVMS	MODEENT LOGMODE=CDVMS,		X
	TYPE=1,		X
	FMPROF=X'04',		X
	TSPROF=X'04',		X
	PRIPROT=X'B1',		X
	SECPROT=X'B1',		X
	COMPROT=X'7080',		X
	SRCVPAC=X'04',	SRCVPAC,SSNDPAC, AND PSNDPAC	X
	SSNDPAC=X'04',	VALUES CAN BE TUNED	X
	PSNDPAC=X'04',		X
	RUSIZES=X'8989',	4K SEND AND RECV RUSIZE	X
	PSERVIC=X'000000000000000000000000'		

## i5/OS SNUF (LU0) Nodes

Use the following entry with i5/OS SNUF (LU0) nodes.

SNUF4K	MODEENT LOGMODE=SNUF2K,		X
	COS=NJE,		X
	FMPROF=X'04',		X
	TSPROF=X'04',		X
	PRIPROT=X'B1',		X
	SECPROT=X'B1',		X
	COMPROT=X'7080',		X
	SRCVPAC=X'07',	SRCVPAC,SSNDPAC, AND PSNDPAC	X
	SSNDPAC=X'07',	VALUES CAN BE TUNED	X
	PSNDPAC=X'07',		X
	RUSIZES=X'8888',	2K SEND AND RECV RUSIZE	X
	PSERVIC=X'000000000000000000000000'		

## LU6.2 Nodes

Use the following entry with LU6.2 independent nodes.

CD624K	MODEENT LOGMODE=CD624K,	X
	TYPE=1,	X
	COS=NJE,	X
	FMPROF=X'13',	X
	TSPROF=X'07',	X
	PRIPROT=X'B0',	X
	SECPROT=X'B0',	X
	COMPROT=X'D0B1',	X
	PSNDPAC=X'04',	X
	SRVCPAC=X'04',	X
	SSNDPAC=X'04',	X
	RUSIZES=X'8989', 4K SEND AND RECV RUSIZE	X
	PSERVIC=X'06020000000000000000000300'	X

Use the following entry with LU6.2 dependent nodes.

CD624K	MODEENT LOGMODE=CD624K,	X
	TYPE=1,	X
	COS=NJE,	X
	FMPROF=X'13',	X
	TSPROF=X'07',	X
	PRIPROT=X'B0',	X
	SECPROT=X'B0',	X
	COMPROT=X'50B1',	X
	RUSIZES=X'8989', 4K SEND AND RECV RUSIZE	X
	PSERVIC=X'060200000000000000000002C00'	X

## LU6.2 SNA Services Manager

LU6.2 requires the following SNA Services Manager mode table entry definition. This LOGMODE is for VTAM use. You must make this definition in the Mode Table, but do not specify it as the LOGMODE in the network map.

SNASVCMG	MODEENT LOGMODE=SNASVCMG,	X
	TYPE=1,	X
	COS=NJE,	X
	FMPROF=X'13',	X
	TSPROF=X'07',	X
	PRIPROT=X'B0',	X
	SECPROT=X'B0',	X
	COMPROT=X'D0B1',	X
	RUSIZES=X'8585', 256 SEND AND RECV RUSIZE	X
	PSERVIC=X'06020000000000000000000300'	X

## Cross-Domain Resource Manager Minor Nodes

Define the cross-domain resource manager nodes. Following are the Sterling Connect:Direct Cross-Domain Resource Manager node definitions. The sample is located in member DGACCDRM.

CDRMA	VBUILD TYPE=CDRM
AAAA	CDRM SUBAREA=20,ELEMENT=1,ISTATUS=ACTIVE
BBBB	CDRM SUBAREA=30,ELEMENT=1,ISTATUS=ACTIVE
CCCC	CDRM SUBAREA=40,ELEMENT=1,ISTATUS=ACTIVE

Each CDCDRM entry defines another VTAM domain or equivalent with which this domain communicate, in the domain in which this Sterling Connect:Direct is being defined.

## Defining Cross-Domain Resources

Define the cross-domain resources. The following figure shows a Sterling Connect:Direct Cross-Domain Resource (CDRSC) definition. The sample is located in member DGACCDRS. Each CDRSC entry defines an applications (another Sterling Connect:Direct) in another domain.

```
CDRSCNA  VBUILD TYPE=CDRSC
CDAPP2   CDRSC CDRM=BBBB
CDAPP3   CDRSC CDRM=CCCC
```

Sterling Connect:Direct does not use the Unformatted Systems Services (USS) table; however, if you define a USS table for the LUs to be used with AS/400 communication devices, or with OpenVMS or Tandem logical units, you cannot include a MSG10 definition in the table.

## Defining APPLIDS for Multiple DTFs

One VTAM APPL is required for each Sterling Connect:Direct DTF, along with an optional APPL for PNODE=SNODE processing. If the configuration consists of two or more DTFs, or if a Sterling Connect:Direct/Plex is configured, multiple VTAM APPLs must be defined.

When defining APPLs for multiple DTFs or a Sterling Connect:Direct/Plex, the APPLs can all reside in the same application major node (VBUILD TYPE=APPL) in SYS1.VTAMLST if necessary.

## Defining Network or Domain Names

The VTAM APPL definitions for Sterling Connect:Direct nodes are in the supplied examples (in \$CD.SDGACNTL) with the name field value (column 1) equal to the ACBNAME value. However, these names may be different. See Network or Domain Name in Cross-Domain Network for an example of VTAM and network map Cross Domain definitions and the rules that govern the definitions.

---

## VTAM and NCP Parameters

This step explains how to set up VTAM and NCP parameters for Sterling Connect:Direct operation. You must perform the following evaluations to prepare for Sterling Connect:Direct operation:

- Determine correct RU size for SNA sessions.  
The VTAM RUSIZES parameter is located in the VTAM MODEENT macro. It specifies the transmission buffer size and can affect Sterling Connect:Direct operation. See Selecting RU Size for SNA Sessions that follows.
- Determine the effect of NCP parameters.  
Several parameters located in the NCP macros used during NCP generation (GEN) can also affect Sterling Connect:Direct operation. See Effects of NCP Parameters.

## Selecting RU Size for SNA Sessions

The request/response unit (RU) size for Sterling Connect:Direct is specified in the VTAM RUSIZES parameter in the VTAM log mode table. The following example shows a mode table entry with a secondary and primary logical unit RU size of 1,024 bytes.

CDLOGM	MODEENT	LOGMODE=CDLOGM, RUSIZES=X'8787'	X
--------	---------	------------------------------------	---

When selecting an RU size for Sterling Connect:Direct, it is important to know how RU size relates to the NCP MAXDATA parameter.

The NCP MAXDATA value is specified in the NCP physical unit (PU) macro definition. It specifies, in bytes, the maximum amount of data that the NCP can receive from the PU at one time. This amount includes the transmission header and the request/response header, totaling 29 bytes for Sterling Connect:Direct.

For example, if the Sterling Connect:Direct VTAM log mode table entry specifies 4,096 bytes, the NCP MAXDATA value must be at least 4,125 bytes for Sterling Connect:Direct to function correctly. In other words, the NCP MAXDATA value must be at least 29 bytes larger than the RU size specified in the Sterling Connect:Direct VTAM log mode table.

- The minimum RU size value for Sterling Connect:Direct API-to-DTF transmissions is 512 bytes. The maximum RU size value is 64 KB bytes. For best results, use a value of 7 KB.

**Note:** For locally attached non-SNA 3270 connections, specify RUSIZES =X'87C7'.

### Understanding RU Sizing

The following table shows how to find the appropriate value to specify for the RUSIZES parameter. For the formula RUSIZES=X'abab', the first ab pair applies to the secondary logical unit (SLU). The second ab pair applies to the primary logical unit (PLU). The table shows the values for a and b. The number of bytes is found where the a column and the b column intersect in the table.

For example, the bold a and b numbers in the table indicate how it is used to determine the RUSIZES=87F8 for SNA connections. Because the primary LU is able to receive 3,840 bytes, the secondary LU can send 3,840 bytes at a time (the intersection of F and 8). The primary LU can send 1,024 bytes at a time because the secondary LU is able to receive 1,024 bytes (the intersection of 8 and 7).

	a							
b	8	9	<b>A(10)</b>	<b>B(11)</b>	<b>C(12)</b>	<b>D(13)</b>	<b>E(14)</b>	<b>F(15)</b>
0	8	9	10	11	12	13	14	15
1	16	18	20	22	24	26	28	30
2	32	36	40	44	48	52	56	60
3	64	72	80	88	96	104	112	120
4	128	144	160	176	192	208	224	240
5	256	288	320	352	384	416	448	480
6	512	576	640	704	768	832	896	960
7	1,024	1,152	1,280	1,408	1,536	1,664	1,792	1,920

	a							
b	8	9	A(10)	B(11)	C(12)	D(13)	E(14)	F(15)
8	2,048	2,304	2,560	2,816	3,072	3,328	3,584	3,840
9	4,096	4,608	5,120	5,632	6,144	6,656	7,168	7,680
A(10)	8,192	9,216	10,240	11,264	12,288	13,312	14,336	15,360
B(11)	16,384	18,432	20,480	22,528	24,576	26,624	28,672	30,720
C(12)	32,768	36,864	40,960	45,056	49,152	53,248	57,344	61,440
D(13)	65,536	73,728	81,920	90,112	98,304	106,496	114,688	122,880
E(14)	131,072	147,456	163,840	180,224	196,608	212,992	229,376	245,760
F(15)	262,144	294,912	327,680	360,448	393,216	425,984	458,752	491,520

The table is derived from the following calculations:

The RUSIZE of ab means RUSIZE equals  $a \times (2^{**}b)$ . The b of each ab pair is used as an exponent of base two. The resulting value is multiplied by a to get the RUSIZE for that logical unit.

Using the same example, RUSIZES=87F8, the SLU and PLU values are determined as follows.

if RUSIZES=X'87F8' then

the SLU RUSIZE is 87

which indicates  $8 \times 2^{**7} = 8 \times 128 = 1024$  (8 times 2 to the 7th power)

the PLU RUSIZE is F8

which indicates  $F \times 2^{**8} = 15 \times 2^{**8} = 15 \times 256 = 3840$  (15 times 2 to the 8th power)

## Effects of NCP Parameters

Review the following NCP parameters carefully during the installation:

- BFRS in the BUILD GEN macro that defines the size of NCP buffers
- BFRPAD in the HOST GEN macro that defines the number of pad characters inserted by NCP
- MAXBUF RU in the HOST GEN macro that defines the number of buffers the access method (VTAM) allocates to receive data from the NCP
- UNITSZ in the HOST (VTAM) GEN macro that defines the size of access method buffers used for data transfer from NCP to Sterling Connect:Direct
- TRANSFR in the LINE or BUILD GEN macro that defines the number of NCP buffers corresponding to the maximum amount of data NCP can receive from another NCP

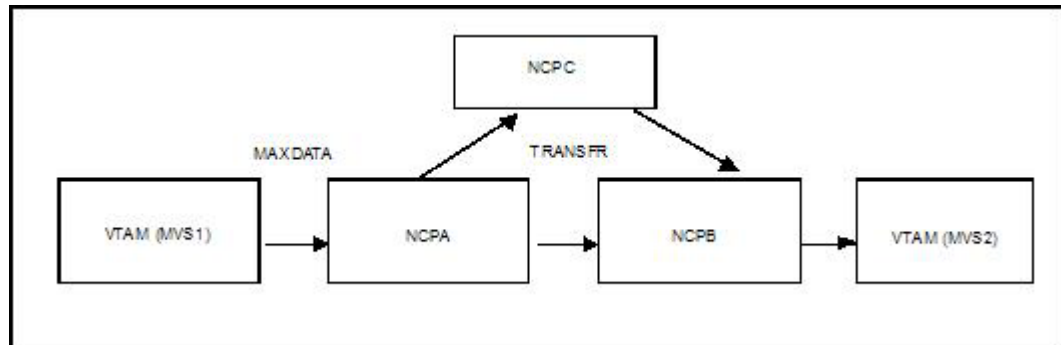
MAXDATA in the PU unit GEN macro that defines the maximum path information (PIU) size

The following figure illustrates the relationship between these VTAM and NCP parameters. When data is passed from MVS1 to NCPA, the MAXDATA parameter determines the amount of data that NCPA can receive in one segment of a path information unit (PIU).



Between NCPA, NCPB, and NCP, if you do not specify the TRANSFR parameter on the LINE statement, VTAM searches the BUILD statement. If you do not define TRANSFR on either statement, the default is taken. See the VTAM Customization manual.

When NCPB passes data to MVS2, the MAXBUFRU times the UNITSZ determines the amount of data that can be passed to MVS2. The data cannot exceed the size in bytes of the VTAM IOBUF buffer pool allocation parameters.



### Calculating Minimum Value of NCP TRANSFR

To calculate the minimum value of an NCP TRANSFR, define each NCP-to-NCP connection to accommodate the maximum RU size defined for a Sterling Connect:Direct DTF-to-DTF session. This value is controlled by the NCP TRANSFR parameter of each NCP LINE macro defining an NCP-to-NCP link. The following is a summary of the calculations required to determine the NCP TRANSFR value:

#### Procedure

1. Determine the maximum amount of data to be received on this line definition. For Sterling Connect:Direct, this amount is the RU size plus 29 bytes for the request/response headers.
2. Add 24 bytes to this value for required NCP overhead (BFRPAD).
3. Divide the sum by the NCP buffer size (BFRS).
4. Round the result to the next highest integer. This integer is the minimum value that you can specify for TRANSFR that corresponds to the specified RU size.

### Changing the TRANSFR Parameter

If you change the TRANSFR parameter in one NCP in a network, all other NCPs in that network require the same change. If you cannot easily change the NCP TRANSFR parameter, use the following reverse process to calculate the maximum RU size for use by Sterling Connect:Direct:

#### Procedure

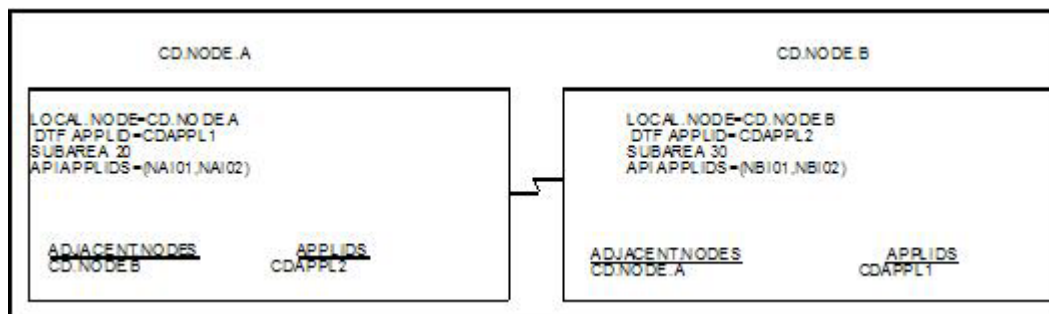
1. Multiply the NCP TRANSFR parameter by the NCP BFRS value. The result is the maximum amount of data that NCP can receive.
2. Subtract 24 bytes for required NCP overhead (BFRPAD).
3. Subtract 29 bytes for the request/response header.
4. Find the next lowest RU size value in the table on Understanding RU Sizing. This value is the largest RU that you can specify for use by Sterling Connect:Direct.

The amount of data VTAM can receive from the NCP is determined by the product of MAXBUFRU times UNITSZ. This value must be less than or equal

to the amount specified on the IOBUF buffer pool allocation parameters in the ATCSTRxx start options list of VTAMLST.

## VTAM Definitions for Full Networking Sterling Connect:Direct

Following is a sample Sterling Connect:Direct network with SNA connections.



The VTAM definitions in this section are based on this LU0 example.

**Note:** Do not make the node name the same as the VTAM APPLID.

### Node A Definitions

Following is the DTF APPL definition for CD.NODE.A:

```

CDAPPL1 APPL ACBNAME=CDAPPL1, X
AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VPACE), X
EAS=20, APPROXIMATE # CONCURRENT SESS X
MODETAB=CDMTAB, MODE TABLE NAME X
SONSCIP=NO, NO UNBIND IN SCIP EXIT X
SRBEXIT=NO, NO SRB PROCESSING X
VPACING=7, RECEIVE PACING OF 7 X
DLOGMOD=CDLOGM, MODE TABLE ENTRY X
PARSESS=YES, PARALLEL SESSIONS CAN BE USED X
VTAMFRR=NO

```

The following are the APPL definitions for the API for CD.NODE.A.

```

NAI01 APPL ACBNAME=NAI01, X
DLOGMOD=CDLOGM, X
MODETAB=CDMTAB
ENCR=NONE
*
NAI02 APPL ACBNAME=NAI02, X
DLOGMOD=CDLOGM, X
MODETAB=CDMTAB
ENCR=NONE

```

The following is the Cross-Domain Manager definition for CD.NODE.A.

```

CDRMA VBUILD TYPE=CDRM
SA30 CDRM SUBAREA=30,ELEMENT=1,ISTATUS=ACTIVE
SA20 CDRM SUBAREA=20,ELEMENT=1,ISTATUS=ACTIVE

```

The following is the Cross-Domain definition for CD.NODE.A.

```
CDRSCA VBUILD TYPE=CDRSC
CDAPPL2 CDRSC CDRM=SA30
```

The following is the network map definition for CD.NODE.A.

```
LOCAL.NODE=((CD.NODE.A CDAPPL1 ,, $PW) -
TCQ=(TCX.FILE TCQ.FILE))
* PNODE=SNODE DEFINITION *
ADJACENT.NODE=((CD.NODE.A CDAPPL2) -
PARSESS=(12 2) -
APPLIDS=(NAI01,NAI02))
* SNA CONNECTIONS *
ADJACENT.NODE=((CD.NODE.B CDAPPL) -
PARSESS=(6 3) -
APPLIDS=(NAI01,NAI02))
```

## Node B Definitions

Following is the DTF APPL definition for CD.NODE.B:

```
CDAPP2 APPL ACBNAME=CDAPP2, X
AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VSPACE), X
EAS=20, APPROXIMATE # CONCURRENT SESS X
MODETAB=CDMTAB, MODE TABLE NAME X
SONSCIP=NO, NO UNBIND IN SCIP EXIT X
SRBEXIT=NO, NO SRB PROCESSING X
VPACING=7, RECEIVE PACING OF 7 X
DLOGMOD=CDLOGM, MODE TABLE ENTRY X
PARSESS=YES, PARALLEL SESSIONS CAN BE USED X
VTAMFRR=NO
```

The following are the APPL definitions for the API for CD.NODE.B.

```
NBI01 APPL ACBNAME=NBI01, X
DLOGMOD=CDLOGM, X
MODETAB=CDMTAB
*
NBI02 APPL ACBNAME=NBI02, X
DLOGMOD=CDLOGM, X
MODETAB=CDMTAB
```

The following is the Cross-Domain Manager definition for CD.NODE.B.

```
CDRMB VBUILD TYPE=CDRM
SA30 CDRM SUBAREA=30,ELEMENT=1,ISTATUS=ACTIVE
SA20 CDRM SUBAREA=20,ELEMENT=1,ISTATUS=ACTIVE
```

The following is the Cross-Domain definition for CD.NODE.B.

```
CDRSCA VBUILD TYPE=CDRSC
CDAPPL1 CDRSC CDRM=SA20
```

The following is the network map definition for CD.NODE.B.

```

LOCAL.NODE=((CD.NODE.B  CDAPPL2 ,, $PW)           -
TCQ=(TCX.FILE  TCQ.FILE))
* PNODE=SNODE DEFINITION *
ADJACENT.NODE=((CD.NODE.B  CDAPPL2B)           -
APPLIDS=(NBI01,NBI02))
* SNA CONNECTIONS *
ADJACENT.NODE=((CD.NODE.A  CDAPPL1)           -
APPLIDS=(NBI01,NBI02))

```

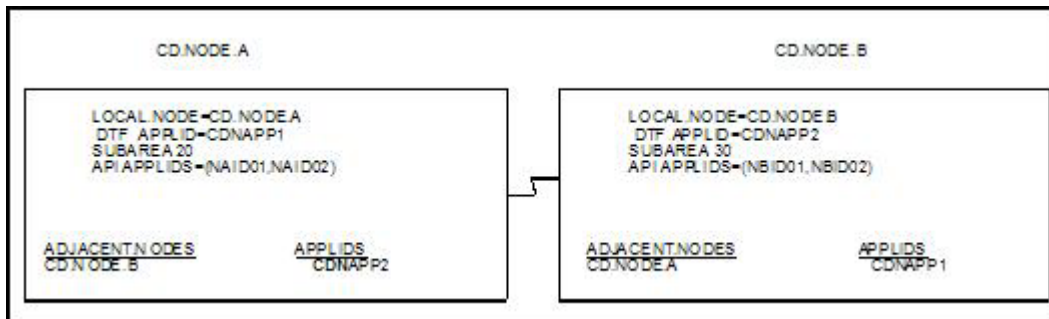
## Network or Domain Name in Cross-Domain Network

The VTAM APPL definitions for Sterling Connect:Direct nodes are in the supplied examples (in \$CD.SDGACNTL) with the name field value (column 1) equal to the ACBNAME value. However, these names may be different. If they are different, the network name value contained in the name field must be unique within the network, and the value in the ACBNAME field must be unique within the domain.

If the names are different, follow these rules when defining the network map:

- The name specified for the local node's DTF APPLID must be the domain name.
- The name specified for adjacent nodes' DTF APPLIDS must be the network name.
- The names specified in the API APPLIDS keyword of the adjacent node must be the domain names.

The following sample illustrates definitions for two nodes with unique network and domain names:



The VTAM definitions in this section are based on this example.

In the following VTAM definition examples, domain names contain a D as part of their name and network names contain an N.

## SNA Node A

Following is the DTF APPL definition for CD.NODE.A:

```
CDNAPP1 APPL ACBNAME=CDDAPP1,
AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VPACE), X
EAS=20, APPROXIMATE # CONCURRENT SESS X
MODETAB=CDMTAB, MODE TABLE NAME X
SONSCIP=NO, NO UNBIND IN SCIP EXIT X
SRBEXIT=NO, NO SRB PROCESSING X
VPACING=7, RECEIVE PACING OF 7 X
DLOGMOD=CDLOGM, MODE TABLE ENTRY X
PARSESS=YES, PARALLEL SESSIONS CAN BE USED X
VTAMFRR=NO
```

The following are the APPL definitions for the API for CD.NODE.A.

```
NAN01 APPL ACBNAME=NAID01, X
DLOGMOD=NDMLOGM, X
MODETAB=NDMTAB
ENCR=NONE
*
NAN02 APPL ACBNAME=NAID02, X
DLOGMOD=CDLOGM, X
MODETAB=CDMTAB
ENCR=NONE
```

Following is the Cross-Domain Manager definition for CD.NODE.A:

```
CDRMA VBUILD TYPE=CDRM
SA30 CDRM SUBAREA=30,ELEMENT=1,ISTATUS=ACTIVE
SA20 CDRM SUBAREA=20,ELEMENT=1,ISTATUS=ACTIVE
```

Following is the Cross-Domain definition for CD.NODE.A:

```
CDRSCA VBUILD TYPE=CDRSC
CDNAPP2 CDRSC CDRM=SA30
```

Following is the network map definition for CD.NODE.A:

```
LOCAL.NODE=((CD.NODE.A CDNAPP1 ,, $PW) -
TCQ=(CD.NODEA.TCX CD.NODEA.TCQ))
*
ADJACENT.NODE=((CD.NODE.A CDNAPP1) -
APPLIDS=(NAID01,NAID02))
*
ADJACENT.NODE=((CD.NODE.B CDNAPP2) -
APPLIDS=(NBID01,NBID02))
```

## SNA Node B

Following is the DTF APPL definition for CD.NODE.B:

```
CDNAPP2 APPL ACBNAME=CDDAPP2,
  AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VPACE),
  EAS=20, APPROXIMATE # CONCURRENT SESS           X
  MODETAB=CDMTAB, MODE TABLE NAME                X
  SONSCIP=NO, NO UNBIND IN SCIP EXIT              X
  SRBEXIT=NO, NO SRB PROCESSING                   X
  VPACING=7, RECEIVE PACING OF 7                  X
  DLOGMOD=CDLOGM, MODE TABLE ENTRY               X
  PARSESS=YES, PARALLEL SESSIONS CAN BE USED     X
  VTAMFRR=NO
```

Following are the APPL definitions for the API for CD.NODE.B:

```
NBN01 APPL ACBNAME=NBID01,
  DLOGMOD=CDLOGM,
  MODETAB=CDMTAB
NBN02 APPL ACBNAME=NBID02,
  DLOGMOD=CDLOGM,
  MODETAB=CDMTAB
```

Following is the Cross-Domain Manager definition for CD.NODE.B:

```
CDRMB VBUILD TYPE=CDRM
SA30 CDRM SUBAREA=30,ELEMENT=1,ISTATUS=ACTIVE
SA20 CDRM SUBAREA=20,ELEMENT=1,ISTATUS=ACTIVE
```

Following is the Cross-Domain definition for CD.NODE.B:

```
CDRSCA VBUILD TYPE=CDRSC
CDNAPP1 CDRSC CDRM=SA20
```

Following is the network map definition for CD.NODE.B:

```
LOCAL.NODE=((CD.NODE.B  CDNAPP2 ,, $PW)
  TCQ=(CD.NODEB.TCX CD.NODEB.TCQ))
*
*
ADJACENT.NODE=((CD.NODE.B  CDNAPP2)
  APPLIDS=(NBID01,NBID02))
*
*
ADJACENT.NODE=((CD.NODE.A  CDNAPP1)
  APPLIDS=(NAID01,NAID02))
```

---

## Chapter 4. Optional Configuration Tasks

---

### Customizing the Product

After you verify the installation, you may want to customize files, screens, and Processes. The following list guides you to additional instructions for customizing your installation:

1. Fully define all nodes to the network map file. For information on how to update the network map file, see *Maintaining the Network Map*.
2. Set up the Sterling Connect:Direct/Plex environment, if applicable.
3. Select the appropriate step to set up security:
  - If you use the Sterling Connect:Direct Authorization Facility, add users to the User Authorization file.
  - If you use external security software such as RACF, ACF2, or TOP SECRET, see *Implementing Security* for more information.
4. Add types to the Type file. See *Maintaining the Type File* in *IBM Sterling Connect:Direct for z/OS Administration Guide* to add records to the Type file.
5. Customize the Messages file. See *Customizing Sterling Connect:Direct* in *IBM Sterling Connect:Direct for z/OS Administration Guide*.
6. Customize the SUBMIT screen.
7. Customize the sample Processes. Information on Sterling Connect:Direct Processes is available in the *IBM Sterling Connect:Direct for z/OS Process Language Reference Guide*.

### Installing Sterling Connect:Direct File Agent

#### About this task

Before you install Sterling Connect:Direct File Agent, review the requirements in *Planning for Sterling Connect:Direct File Agent*. After you customize Sterling Connect:Direct File Agent, see the Sterling Connect:Direct File Agent Help for configuration instructions.

**Note:** You must download and store the Sterling Connect:Direct File Agent code in the HFS directory prior to executing the DGA#FINS CLIST. This HFS directory path is required as menu input in the DGA#FINS CLIST.

Access to HFS files is controlled by z/OS UNIX System Services, which enables or denies access based on UNIX permission rules. The installer and users of Sterling Connect:Direct File Agent must have the appropriate permissions.

To install Sterling Connect:Direct File Agent:

#### Procedure

1. To download the Java version of the Sterling Connect:Direct File Agent component, log on to Customer Center and navigate to IBM Sterling Connect:Direct Product Updates/Downloads. After you have downloaded and saved the .zip file to your PC, decompress it to get the JAR file.
2. Upload the FAInstall.jar to an HFS directory using FTP in binary mode.
3. Execute the installer from a standard OMVS prompt or TELNET session into a UNIX ISHELL environment and enter `java -jar FAInstall.jar`.

**CAUTION:**

The installer requires a region of at least 210 MB. If your region is less than the minimum, make arrangements to define a larger region.

4. Follow the prompts to install Sterling Connect:Direct File Agent.
5. After installing Sterling Connect:Direct File Agent, execute the DGA#FINS CLIST to build the appropriate JCL to configure and execute Sterling Connect:Direct File Agent in a z/OS environment.

## Customizing Sterling Connect:Direct File Agent

To customize Sterling Connect:Direct File Agent:

### Procedure

1. From the TSO COMMAND option of ISPF/PDF, execute the DGA#FINS CLIST, where \$CD is the high-level qualifier used to install Sterling Connect:Direct for z/OS files, as in the following example.

```
=== > EXEC '$CD.SDGAISPC(DGA#FINS)' '$CD'
```

During the installation process, you will create and name a Sterling Connect:Direct File Agent JCL dataset . All installation variables are saved in this JCL. The following table describes these installation variables:

Field	Description
Configuration job	Name of the job that starts the Sterling Connect:Direct File Agent Configuration Interface.
Execution job	Name of the job that start Sterling Connect:Direct File Agent.
Shutdown job	Name of the job that shuts down Sterling Connect:Direct File Agent.
File Agent home	Full path of the directory where Sterling Connect:Direct File Agent is installed.
X11 Display variable	X11 display variable used to connect to the X11 GUI server. The Sterling Connect:Direct File Agent Configuration Interface displays on the monitor that matches this display variable. You can specify the netowrk ID of the terminal that you want to use for the Sterling Connect:Direct File Agent Configuration Interface. <b>Note:</b> If you want to display the Sterling Connect:Direct File Agent Configuration Interface on a Windows computer, you can specify the first node of the Full Computer Name. To obtain this information, right-click on My Computer, click Properties., and then click the Network Identification tab. The Full Computer Name is displayed.
Job card information	JCL used for the job card.

You can edit the Sterling Connect:Direct File Agent JCL dataset with ISPF to change an installation variable.

The Connect:Direct File Agent Installation Main Menu is displayed after all elements have been unloaded.



```

Connect:Direct File Agent v.rr.mm
Installation Main Menu
More: +
TIME-hh:mm
DATE-yyyy/mm/dd

CMD ==>

This panel can be scrolled up and down to view the entire
set of fields to be entered

Press ENTER to continue, PF5 to Terminate the JCL Generation

File Agent jcl dataset...
Member name for
Configuration job.... CDFACONF
Execution job..... CDFAEEXEC
Shutdown job..... CDFASHUT
Unix path for
File Agent home..... _____
..... _____
..... _____
..... _____
X11 DISPLAY variable..... _____
Job Card Information..... //CDFA JOB (CDFA),'XX FILE AGENT',
..... // *
..... // *

```

2. To create the DGA#FINS JCL used to install Sterling Connect:Direct File Agent in the \$CD.SDGAJCL dataset, specify the fields and press **Enter**.
3. When the Connect:Direct File Agent JCL Generation Main Menu is displayed, press **Enter** to generate the File Agent JCL.

```

Connect:Direct File Agent v.rr.mm
JCL Generation Main Menu
TIME-hh:mm TIME-hh:mm
DATE-yyyy/mm/dd

CMD ==>

Connect:Direct File Agent JCL Generation Complete, RC=0

Name          Description
-----
CDFA          The job to build the File Agent jobs

Review and submit member CDFA to finish the JCL generation.
CDFACONF, CDFAEEXEC, and CDFASHUT will be created by job CDFA

Press ENTER to continue

```

- After the JCL has been generated, the following panel lists the jobs created.
4. To install Sterling Connect:Direct File Agent in the appropriate HFS directory, execute the CDFA JCL member, which generates the CDFACONF, CDFAEEXEC, and CDFASHUT JCL members. The CDFACONF, CDFAEEXEC, and CDFASHUT job names are based on the JCL member names you entered in the Connect:Direct File Agent Installation Main Menu panel. The CDFA job name is taken from the job card information entered during the installation.

**Note:** The CDFACONF, CDFAEEXEC, and CDFASHUT job names are based on the JCL member names you entered in the Connect:Direct File Agent

Installation Main Menu panel. The CDFA job name is taken from the job card information entered during the installation.

5. Open an X11 window, and then run the CDFACONF job to execute the Sterling Connect:Direct File Agent GUI. This job copies files from the mainframe library into the UNIX (HFS) directory.

## Configuring Sterling Connect:Direct File Agent

Configure Sterling Connect:Direct File Agent using the configuration interface. The *IBM Sterling Connect:Direct File Agent Configuration Guide* describes how Sterling Connect:Direct File Agent works and contains sample configuration scenarios.

### Before you begin

Before you implement Sterling Connect:Direct File Agent in a production environment, use the Sterling Connect:Direct File Agent Help to set up and verify the basic operation. The Sterling Connect:Direct File Agent Help contains the same information as the *IBM Sterling Connect:Direct File Agent Configuration Guide*.

Sterling Connect:Direct File Agent is designed to run unattended. After you verify Sterling Connect:Direct File Agent operation and configuration, start it by running the CDFAEXEC job. Sterling Connect:Direct File Agent begins scanning the watch directory containing the directories and partitioned datasets you specify in the configuration file. When a file arrives in a watch directory, Sterling Connect:Direct File Agent either submits the default Process to Sterling Connect:Direct or performs the actions specified by the rules for the file.

## Backing Out the Sterling Connect:Direct File Agent Installation

It is not necessary to back out the Sterling Connect:Direct File Agent installation—if required, execute the DGA#FINS CLIST again.

---

## Customizing the Spool Transfer Feature

Ignore this procedure if your site does not use the Spool Transfer feature or if you are sending output to the JES reader from Sterling Connect:Direct. For outbound transfers where you will be distributing print files from the JES Spool to Sterling Connect:Direct, you must customize the Spool Transfer feature.

**Note:** For information on Spool Transfer, see *IBM Sterling Connect:Direct for z/OS Facilities Guide*.

Customizing the Spool Transfer feature consists of the following tasks:

1. Assemble DGASVPSA.
2. Customize VPS/CDI Option.
3. Restart VPS.
4. Customize the sample Processes.

**Note:** The Spool Transfer feature requires that you install VTAM Printer Support (VPS) and that you include the optional code in VPS that enables it to interface with Sterling Connect:Direct.

## Assembling DGASVPSA

Edit and modify the member DGAXAVPS in dataset \$CD.SDGASAMP to assemble and link the DGASVPSA module in the \$CD.SDGALINK dataset.

## Before you begin

**Note:** The DGASVPSA module must be reassembled and linked when you upgrade VPS.

---

## Customizing VPS/CDI

Following are the requirements for the VPS to CDI program (VPSSCDI). Add or modify the following library members. Refer to VPS documentation for explanations and requirements.

### VPS.CNTL

This VPS library contains the following library members and parameters supported by Sterling Connect:Direct:

Member	Description
VPSSTART	Contains the VPS system initialization parameters. The following keyword must be added to activate the VPSSCDI program. KEYCDI activates the VPSSCDI program.
MLISTMEM	This member contains the VPS printer activation member inclusion list. Add Sterling Connect:Direct printers to this member.
VPSxxxx	These members contain the VPS printer initialization parameters.

The following table describes the keywords for a Sterling Connect:Direct printer definition:

Keyword	Description
DDSNPFX	Required. Specifies the high-level qualifier VPS uses when creating the Sterling Connect:Direct staged dataset. The default is VPS.
DEVTYPE=V.CDI	Required. Defines a printer as a Sterling Connect:Direct printer.
CDNETMAP	Specifies the Sterling Connect:Direct network map dataset name. The default is to use the DMNETMAP DD statement specified in VPS startup.
CDPLIB	Defines the Sterling Connect:Direct process library dataset name. The default is to use the DMPUBLIB DD statement specified in VPS startup.
CDPMBR	Specifies the process member name to submit. The default is the printer name with the class appended.
CDSNODE	Defines the SNODE to be passed to the Process. The default is to use the SNODE defined in the Process.
DSPACE	Specifies the amount of DASD space to be allocated to the DASD dataset.
DUNIT	Specifies the unit type of the device on which the DASD is to be allocated.
DVOLUME	Specifies the volume on which the DASD is to be allocated.

### VPS/CDI Interface Program

Assemble and link-edit module VPSSCDI into VPS LINKLIB using the sample JCL provided by LRS, and the Sterling Connect:Direct macros provided in the SDGASAMP and SDGAMAC libraries.

## VPS/CDI Startup Procedure

Add the following Sterling Connect:Direct DD statements to the VPS startup procedure:

DD Statement	Description
DMMSGFIL	Required. Sterling Connect:Direct message file.
SYSUT1	Required. DD UNIT=VIO, SPACE=(TRK,(2,1)).
DMPUBLIB	Required. Sterling Connect:Direct Process library.
STEPLIB	Sterling Connect:Direct LINKLIB.
DMNETMAP	Sterling Connect:Direct default network map.

## Restarting VPS

After making changes to the VPS startup procedure, restart VPS to bring in the changes.

## Customizing Sample Processes

Customize the sample Processes according to your environment. Information on Sterling Connect:Direct Processes is available at .

Information on Sterling Connect:Direct Processes is available at the Connect:Direct Process Language help.

---

## About Installing ISPF IUI Using the LIBDEF Service

Using the LIBDEF service to install ISPF IUI provides flexibility by:

- Allowing you to define ISPF libraries for an application after ISPF is already active.
- Having definitions in effect only for the duration of that application and only for users who invoke that application.
- Not requiring application libraries to be allocated in either the TSO logon proc JCL, through the TSO ALLOCATE command from a CLIST, or any other method.

Sterling Connect:Direct currently supports the following LIBDEFs:

- ISPF panels (ISPLLIB)
- Messages (ISPMLIB)
- Skeletons (ISPSLIB)
- Tables (ISPTLIB and ISPTABL)

Sterling Connect:Direct does not support LIBDEFs for load modules (ISPLLIB) because of the method in which some programs are loaded. In addition, ISPF does not support LIBDEFs for SYSPROC. Include the Sterling Connect:Direct load library in the link list to nullify this restriction.

In installations with many users, VSAM user catalogs isolate application files from z/OS system files. If the Sterling Connect:Direct VSAM files are cataloged in a VSAM user catalog, that catalog must have a VSAM ALIAS defined in the VSAM Master Catalog so that local IUI users can find the necessary files. Sterling Connect:Direct files, such as the network map and Message file, must be accessed by the IUI that runs in the user's TSO region.

Use one of the following methods to implement LIBDEFs for ISPMLIB, ISPLLIB, and ISPSLIB. You can remove allocations for these libraries from the CLIST

described in Method 1 and from the logon proc allocations described in Method 2. However, keep allocations for SYSPROC and ISPLLIB.

## Method 1: Setting Up as Separate Menu Items

Set up the Sterling Connect:Direct Message function and the IUI as separate menu options on a panel (usually the Primary ISPF menu panel - ISR@PRIM). When selected, each option invokes a CLIST instead of a Sterling Connect:Direct program.

### About this task

To set up the message function and IUI as separate menu options:

### Procedure

1. Create and modify the following members from \$CD.SDGASAMP in the appropriate ISPF library:

- The Primary panel: \$CD.SDGASAMP(DGA@ZPRI). Following is a sample:

```
)PROC
&ZSEL = TRANS (TRUNC (&ZCMD, '.'))
  0, '.....'
  1, '.....'
M,'CMD(%CDMSG)' /* The CLIST name is prefixed with the % if */
C,'CMD(%CDIUI)' /* the library it is in is known to be in */
                  /* the SYSPROC concatenation at this time. */
```

- The DGAXMSG CLIST: \$CD.SDGASAMP(DGAXMSG). Following is a sample:

```
PROC 0
ISPEXEC LIBDEF ISPLLIB DATASET ID('$CD.SDGAPENU')
ISPEXEC LIBDEF ISPLMLIB DATASET ID('$CD.SDGAMENU')
ISPEXEC LIBDEF ISPSLIB DATASET ID('$CD.SDGASENU')
ISPEXEC SELECT PGM(DGADGDSP) PARM($CD.MSG) NEWAPPL(CD) -
              PASSLIB
ISPEXEC LIBDEF ISPLLIB
ISPEXEC LIBDEF ISPLMLIB
ISPEXEC LIBDEF ISPSLIB
EXIT
```

- The DGAXIUI CLIST: \$CD.SDGASAMP(DGA#IUI). Following is a sample:

```
PROC 0
CONTROL NOMSG
FREE F(DMPUBLIB,DMMSGFIL)
CONTROL MSG
ALLOC F(DMPUBLIB) DA('$CD.PROCESS') SHR
ALLOC F(DMMSGFIL) DA('$CD.MSG') SHR
ISPEXEC LIBDEF ISPLLIB DATASET ID('$CD.SDGAPENU')
ISPEXEC LIBDEF ISPLMLIB DATASET ID('$CD.SDGAMENU')
ISPEXEC LIBDEF ISPSLIB DATASET ID('$CD.SDGASENU')
ISPEXEC SELECT PGM(DGADISTR) PARM('$CD.NETMAP') "NEWAPPL(CD) -
              PASSLIB
ISPEXEC LIBDEF ISPLLIB
ISPEXEC LIBDEF ISPLMLIB
ISPEXEC LIBDEF ISPSLIB
FREE F(DMPUBLIB,DMMSGFIL)
EXIT
```

2. Define VSAM alias (optional).

In installations with many users, VSAM user catalogs often isolate application files from z/OS system files. If the Sterling Connect:Direct VSAM files are cataloged in a VSAM user catalog, that user catalog must have a VSAM ALIAS defined in the VSAM Master Catalog so that local IUI users can find the necessary files. Sterling Connect:Direct files, such as the network map and Message file, must be accessed by the IUI that runs in the user's TSO region.

## Method 2: Setting Up as Separate Panel Options

This method enables you to set up a Sterling Connect:Direct CLIST that performs the following:

- Establishes an environment for Sterling Connect:Direct, including defining the libraries
- Invokes a panel for the two Sterling Connect:Direct applications

To set up the CLIST as separate panel options:

1. Create and modify the following members from \$CD.SDGASAMP to the appropriate ISPF library and make the required modifications.

The Primary panel: \$CD.SDGASAMP(DGA@XPRI). Following is a sample:

```
)PROC
&ZSEL = TRANS (TRUNC (&ZCMD, '.'))
      0, '.....'
      1, '.....'
CD, 'CMD(%CDIUI2)'
```

The DGA#IUI2 CLIST: \$CD.SDGASAMP(DGA#IUI2). Following is a sample:

```
PROC 0
CONTROL NOMSG
FREE F(DMPUBLIB,DMMSGFIL)
CONTROL MSG
ISPEXEC LIBDEF ISPPLIB DATASET ID('$CD.SDGAPENU')
ISPEXEC LIBDEF ISPMLIB DATASET ID('$CD.SDGAMENU')
ISPEXEC LIBDEF ISPSLIB DATASET ID('$CD.SDGAENU')
ALLOC F(DMPUBLIB) DA('$CD.PROCESS') SHR
ALLOC F(DMMSGFIL) DA('$CD.MSG') SHR
ISPEXEC SELECT PANEL(DGA@SPRI) NEWAPPL(CD) -
      PASSLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPMLIB
ISPEXEC LIBDEF ISPSLIB
FREE F(DMPUBLIB,DMMSGFIL)
EXIT
```

The DGA@SPRI panel, \$CD.DGASAMP(DGA@SPRI). Following is a sample:

```
)PROC
&ZSEL = TRANS (TRUNC (&ZCMD, '.'))
      M, 'PGM(DGADGDSP) PARM($CD.MSG) '
      C, 'PGM(DGADISTR) PARM($CD.NETMAP) '
```

2. Define VSAM alias (optional).

In installations with many users, VSAM user catalogs often isolate application files from z/OS system files. If the Sterling Connect:Direct VSAM files are cataloged in a VSAM user catalog, that user catalog must have a VSAM ALIAS defined in the VSAM Master Catalog so that local IUI users can find the necessary files. Sterling Connect:Direct files, such as the network map and Message file, must be accessed by the IUI that runs in the user's TSO region.

---

## HP OpenView for SNMP Traps Customization

Network Management applications do not recognize or display the traps without the Sterling Connect:Direct trap configuration file and Management Information Block (MIB). Use the information to customize and load these files for HP OpenView Network Management.

### Importing the Sterling Connect:Direct Trap Configuration File

Perform this step if you are using SNMP Trap agent to communicate with the HP OpenView Network Node Manager.

#### Procedure

1. Transfer the Sterling Connect:Direct for z/OS configuration file, \$CD.SDGAMIB, to the HP UNIX workstation where HP OpenView is installed. This is a text file. Transfer it as CDtrap.conf.
2. Use the HP OpenView process, xnmevents, to load CDtrap.conf into the trapd.conf for HP OpenView (usually in the \$OV\_DB directory).

**Note:** Refer to the HP OpenView documentation for correct syntax for the xnmevents process.

### Import the Sterling Connect:Direct MIB

Perform this step if you are using SNMP Trap agent to communicate with the HP OpenView Network Node Manager.

#### Procedure

1. Transfer the Sterling Connect:Direct for z/OS MIB, \$CD.SDGAMIB(DGAZMIB), to the workstation where HP OpenView is installed. This is a text file. Transfer it as DGAZMIB.mib.
2. Use the HP OpenView process, xnmloadmib, to load the Sterling Connect:Direct for z/OS MIB into the MIB database (usually in the \$OV\_DB directory).

**Note:** Refer to the HP OpenView documentation for correct syntax for the xnmloadmib process.

---

## NetView for SNMP Customization

Network Management applications do not recognize or display the traps without the Sterling Connect:Direct trap configuration file and Management Information Block (MIB). Use the information to customize and load these files for the IBM® Tivoli® Netview application.

### Customizing Tivoli NetView with the Tivoli Enterprise Console

Perform the following tasks to customize Tivoli NetView using the Tivoli Enterprise Console. Refer to the appropriate Tivoli NetView documentation for the proper command syntax.

#### Importing the Sterling Connect:Direct Trap Configuration File

Transfer and execute the CDTrap\_NetView.sh script to add the Sterling Connect:Direct for z/OS trap in to the trapd.conf file.

1. Transfer the file, \$CD.SDGATRP(DGAZTRAP), to the appropriate computer. This is a text file. Transfer it as CDTrap\_NetView.sh.
2. Run the CDTrap\_NetView.sh script to add the traps to the trapd.conf file.

## Importing the Sterling Connect:Direct MIB

To import the product MIB:

1. Transfer the product MIB, \$CD.SDGAMIB(DGAZMIB), to the appropriate machine. This is a text file. Transfer it as SDGAMIB.mib.
2. Use the UNIX process, xnmloadmib, to load the Sterling Connect:Direct for z/OS MIB into the MIB database.

## Setting Up Tivoli NetView Rules

Set up a rule using nvrEdit that forwards the Sterling Connect:Direct trap messages to the Tivoli Enterprise Console. A sample rules file is provided in \$CD.SDGATRP(DGAZIVRS) that can be transferred as a text file to CDTrap\_Tivoli.rs.

## Processing the Boroc File

1. Transfer the \$CD.SDGATRP(DGATOROC) file to the appropriate machine in the appropriate directory (usually TEC\_CLASSES). This is a text file. Transfer it as CDTrap\_Tivoli.boroc.
2. Compile the rules using the wcomprules process.
3. Load the rulebase using the wloadrb process.
4. Recycle the TEC event server, wstopesvr and wstartesvr.

## Customizing Tivoli NetView without the Tivoli Enterprise Console

Use the following information to customize Tivoli Netview for SNMP traps without the Tivoli Enterprise Console.

### Importing the Sterling Connect:Direct Trap Configuration File

Transfer and execute the CDTrap\_NetView.sh script to add the Sterling Connect:Direct for z/OS trap in to the trapd.conf file.

1. Transfer the file, \$CD.SDGATRP(DGAZTRAP), to the appropriate computer. This is a text file. Transfer it as CDTrap\_NetView.sh.
2. Run the CDTrap\_NetView.sh script to add the traps to the trapd.conf file.

### Importing the Sterling Connect:Direct MIB

To import the product MIB:

1. Transfer the product MIB, \$CD.SDGAMIB(DGAZMIB), to the appropriate machine. This is a text file. Transfer it as SDGAMIB.mib.
2. Use the UNIX process, xnmloadmib, to load the Sterling Connect:Direct for z/OS MIB into the MIB database.

## Disabling SNMP Traps

Sterling Connect:Direct for z/OS provides support for an SNMP agent to send SNMP traps to alert a network manager of certain events. An event is any Sterling Connect:Direct message that is written to the console using SCWTO or DMWTO.



Each event is triggered by the Sterling Connect:Direct message ID and the trap text (short message text of that Sterling Connect:Direct message). The Sterling Connect:Direct events generated are defined by category and type.

### Procedure

1. Edit the member DGAXSNMP in the \$CD.DGASAMP dataset and disable any SNMP trap that you do not want Sterling Connect:Direct to trigger.
2. Specify the SNMP.DSN initialization parameter to have the SNMP traps specified in Step 1 disabled at initialization.

**Note:** Refer to the *IBM Sterling Connect:Direct for z/OS Administration Guide* for a description of each SNMP trap.

---

## Configuring Sterling Connect:Direct without SNA Support

### About this task

To configure Sterling Connect:Direct without SNA support:

### Procedure

1. Define the following initialization parameters, which allow Sterling Connect:Direct to function in a TCP-only environment:

- SNA=NO
- TCP=OES
- TCP.LISTEN=((addr , port) , (addrn , portn))
- TCP.API.LISTEN=((addr , port) , (addrn , portn))
- MAXUSER=nnn

See Global Initializaton Parameters for detailed information on these parameters.

When SNA=NO, you must specify the TCP parameters, and define a TCP port to accept API signons and commands. The MAXUSER parameter controls the number of concurrent API signons. The following screen shows an example:

```
SNA=NO
TCP=OES
TCP.LISTEN=(199.1.1.2,4199)
TCP.API.LISTEN=(199.1.1.2,4198)
MAXUSERS=10
```

This sample configuration allows Sterling Connect:Direct to initialize without SNA, support only TCP connections, and authorize up to 10 concurrent API signons using TCP/IP.

2. Define the network map entries. See *Maintaining the Network Map* for information.

Define LOCAL node with the second positional parameter as NO-VTAM. The LOCAL node definition is used to define the SNA ACBNAME that Sterling Connect:Direct opens in an SNA environment. When you specify NO-VTAM, Sterling Connect:Direct does not attempt to open the VTAM ACB. See the example below.

Define the PNODE=SNODE adjacent node entry as TCP and specify a TCPAPI parameter. The PNODE=SNODE adjacent node entry is required to enable API signons. This node definition enables Sterling Connect:Direct to run Processes

that loop back to this primary node and allows for API signon without the API specifying the transport protocol. Use the LDNS parameter to assign the domain name or define the IP address within the adjacent node entry. The following screen shows an example:

```

LOCAL.NODE=(( CD.OS390 , NO-VTAM      , SUPERUSR) -
            TCQ=( CD.TCX      -
                  CD.TCQ) )
/*
/* Pnode=Snode Adjacent node entry          */
/* Allows for Pnode=Snode processes and     */
/* allows for API signons thru TCP/IP       */
/*                                          */
ADJACENT.NODE=(( CD.OS390, 4199, 10.20.200.2, TCP) -
               PARSESS=(53 2) -
               TCPAPI=(4198,10.20.200.2) )
Or
ADJACENT.NODE=(( CD.OS390, 4199, , TCP) -
               PARSESS=(53 2) -
               LDNS=long.domain.name -
               TCPAPI=(4198,) )

```

- From \$CD.SDGAJCL, execute DGAJLOAD, the network map installation job, to load the network map.

If Sterling Connect:Direct uses SNA, you can initialize Sterling Connect:Direct even if SNA is not available. This task is accomplished by setting the SNA= initialization parameter to YES.

If the SNA= initialization parameter is YES and you try to start Sterling Connect:Direct when SNA is not available, or if SNA becomes unavailable during a session, the system displays the following message:

```

VTAM or Connect:Direct inactive, Type CANCEL, CONTINUE, RETRY or NOVTAM

```

The following table describes each option:

Option	Description
Cancel	Sterling Connect:Direct does not initialize.
Continue	Sterling Connect:Direct continues initializing without SNA and keeps trying to establish the SNA session. Sterling Connect:Direct sends a message to the operator every 20 minutes indicating that it is trying to start the SNA session, until the session is established.  Any SNA Processes that are queued or submitted during this time period are placed in the Wait queue. These Processes can execute after the SNA session is established.
Retry	Sterling Connect:Direct tries to establish the SNA session before continuing initialization. After 20 attempts, it displays the "VTAM or Sterling Connect:Direct inactive" message again. You can again choose one of the options in this table.
NoVTAM	Sterling Connect:Direct continues initializing without SNA support and does not try to establish the SNA session. Any SNA Processes that are queued or submitted are placed in the Wait queue, where they remain until an SNA session is later established.

## Overriding Sterling Connect:Direct Default Language Environment Run-Time Options

Language Environment run-time options can be overridden in Sterling Connect:Direct by adding a CEEOPTS DD to the Sterling Connect:Direct startup JCL. This DD should point to a dataset or PDS member. The CEEOPTS dataset or PDS must be RECFM=F or FB. Output will be directed to the CEEOUT DD if it is present. If there is no CEEOUT DD, it will be dynamically allocated to SYSOUT.

For example, to see the Language Environment run-time options report, specify:

```
RPTOPTS(ON)
```

To see that report and the Language Environment storage report, specify:

```
RPTOPTS(ON) ,RPTSTG(ON)
```

These Language Environment reports are generated at Sterling Connect:Direct SHUTDOWN time, but only if the Language Environment enclave ends "normally." Thus, you will not see them if you cancel your Sterling Connect:Direct job. An example of the use of the Language Environment storage report would be to tune the HEAP and HEAPPOOLS runtime options so that Language Environment will more efficiently allocate storage resources to multiple concurrent COPY tasks.

**Note:** Tuning is a complex undertaking and should not be attempted unless a reasonable proficiency in the subject has been achieved. For further information on Language Environment, please refer to the section, Specifying Run-Time Options.

The following table lists the default settings of the Language Environment run-time options.

OPTION	DEFAULT VALUE
ABPERC	NONE
ABTERMENC	RETCODE
AIXBLD	OFF
ALL31	ON
ANYHEAP	1M, 4M, ANYWHERE, FREE
BELOWHEAP	32K, 32K, FREE
CBLOPTS	OFF
CBLPSHPOP	OFF
CBLQDA	OFF
CHECK	OFF
COUNTRY	US
DEBUG	OFF
DEPTHCONDLMT	10
ENVAR	'_CEE_ENVFILE=DD:ENVIRON'
ERRCOUNT	0
ERRUNIT	6

OPTION	DEFAULT VALUE
FILEHIST	OFF
HEAP	16M,16M, ANYWHERE, FREE, 4K, 4K
HEAPCHK	OFF, 1, 0
HEAPOOLS	ON, 48, 1, 88, 1, 416,1 , 1464, 1, 2200, 1, 9000, 1, 12496,1,1 6384, 1, 32768, 1, 34920, 1, 49256, 1, 64536, 28
INQPCOPN	ON
INTERRUPT	OFF
LIBSTACK	1K,1K, FREE
MSGFILE	CEEOUT, FBA,121, 0, NOENQ
MSGQ	15
NATLANG	ENU
NOAUTOTASK	null
NOTEST	ALL, *, PROMPT, INSPREF
NOUSRHDLR	"
OCSTATUS	ON
PC	OFF
PLITASKCOUNT	20
POSIX	ON
PROFILE	OFF, "
PRTUNIT	6
PUNUNIT	7
RDRUNIT	5
RECPAD	OFF
RPTOPTS	OFF
RPTSTG	OFF
RTEREUS	OFF
SIMVRD	OFF
STACK	128K, 128K, ANYWHERE, KEEP, 512K,128K
STORAGE	NONE, NONE, NONE, 8K
TERMTHDACT	UADUMP
THREADHEAP	4K, 4K, ANYWHERE, FREE
THREADSTACK	ON, 512K,128K, ANYWHERE, KEEP, 512K,128K
TRACE	OFF, 8192, DUMP, LE=3
TRAP	ON, NOSPIE
UPSI	00000000
VCTRSAVE	OFF
XPLINK	ON
XUFLOW	AUTO

## Chapter 5. Sterling Connect:Direct Enqueue Resource Management

This topic includes definitions of Sterling Connect:Direct resources for a Multi-Image Manager (MIM) or Global Resource Serialization (GRS) system.

Major (Qname)	Minor (Rname)	Scope	Description
NDMGDG	GDG Base DSName	SYSTEMS	Issued during allocation of a GDG dataset when GDGENQ=YES.
NDMNTMAP	APPLID	SYSTEMS	Issued while processing the APPLID record for a signon. When the APPLID is found and opened successfully, the DEQ is issued. This ENQ could be held for awhile depending on the number of signons and the number of APPLIDs in the list.
NDMUPDNM	Netmap DSName	SYSTEMS	Issued during signon while processing the Netmap. Also, issued while processing a Netmap update and held for the entire update. To lock out all API while the Netmap is being updated, NDMUPDNM could be held awhile depending on the parameters in the update file.
NDMTCX	TCQ index DSName (TCX)	SYSTEMS	Issued from several places to lock out all API and other TCQ updates.
TCXESF	TCQ index DSName (TCX)	SYSTEMS	Issued during initialization to lock all ESF updates. Released after initialization of the TCQ/TCX is complete. Also issued during an ESF submit. Serialize processing between ESF submits and initialization.

**Note:** MIM now handles the cleanup of its QCB control blocks and the use of SCOPE=ALL is no longer valid. Use one of the following parameters appropriate for your system:

- Code SCOPE=RESERVE if single system.
- Code SCOPE=SYSTEMS if using shared DASD (for example, SDF).
- Code SCOPE=SYSTEM if not using shared DASD.
- When in doubt, code SCOPE=SYSTEMS.



---

## Chapter 6. Initialization Errors

This topic describes the causes of common errors, such as inadequate storage or errors in the statistics log, that may occur when you initialize Sterling Connect:Direct for z/OS.

**Note:** For all initialization errors related to Strong Password Encryption, see *Troubleshooting Possible SPE Problems in the IBM Sterling Connect:Direct Secure Plus for z/OS Implementation Guide*.

For initialization warnings related to certificate validation checks, see *Troubleshooting in the IBM Sterling Connect:Direct Secure Plus for z/OS Implementation Guide*.

In addition to the initialization errors described in this topic, you may see different error messages in traces, which are also related to initialization:

- If you receive a return code of 16, initialization terminates and error messages appear in the JES log. The messages inform you if one or more of the initialization parameters cannot co-exist with any of the other parameters specified in the initialization parameters file. Sterling Connect:Direct initializes only when you remove the incorrect parameters.
- If you receive a return code of 4 when you stop Sterling Connect:Direct, be sure to review the NDMLOG for SITA995I messages indicating obsolete parameters. Once you remove the parameters, these messages no longer appear in the NDMLOG trace and Sterling Connect:Direct ends with a return code of 0. For more information on traces, see *Isolating Problems in the IBM Sterling Connect:Direct for z/OS Administration Guide*.
- If you receive a return code of 8A in the RPLERRCK trace when you start Sterling Connect:Direct and you have multiple TCP/IP stacks defined, the message, No such device or address (STCO999E), appears in the trace. If you have only one TCP/IP stack defined, this is normal and no cause for alarm. If you are in an environment where multiple TCP/IP stacks are defined, you will want to investigate the situation and make sure the correct TCP stack is specified.

---

### Overriding Sterling Connect:Direct Initialization Parameters

Initialization parameters are set up during installation. When an error occurs, it may be necessary to alter these initialization parameters. For example, refresh the TCQ if Processes are hanging and the queue becomes corrupted.

You can override individual initialization parameters by specifying the override on the EXEC statement in the startup job stream as shown in the following figure.

**Note:** In a Sterling Connect:Direct/Plex, only override initialization parameters allowed in the local initialization parameters file. Use the PARM= keyword in the EXEC statement at system startup.

In a Sterling Connect:Direct/Stand-alone Server environment, however, you can override global initialization parameters with the PARM= keyword in the EXEC statement.

In this example, the startup job is specifying a cold start of the Sterling Connect:Direct TCQ (TCQ=COLD), overriding the TCQ= value specified in the initialization parameters file.

```

//JOBNAME JOB (ACCT),NAME,CLASS=M,NOTIFY=TSOID,MSGCLASS=X,TIME=1440
//*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/** Sterling Connect:Direct */
/** THIS JOB STREAM WILL INVOKE THE CONNECT:DIRECT DTF. */
/** CHANGE $CD TO YOUR HIGH-LEVEL PREFIX FOR CONNECT:DIRECT. */
/** */
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
//*
//CDITST PROC CDPREF=,PARMMEM=
//CDITST EXEC PGM=DGADINIT,
//          PARM=('&CDPREF..PARMLIB(&PARMMEM)',
//          'TCQ=COLD'),
//          REGION=3000K
//SYSUDUMP DD SYSOUT=*
//STEPLIB DD DSN=&CDPREF..SDGALINK,
//          DISP=SHR
//DMPUBLIB DD DSN=&CDPREF..SDGAPROC,
//          DISP=SHR
//ESTAE DD SYSOUT=*
//RPLERRCK DD SYSOUT=*
//          PEND
//*
//CDITST EXEC DGAJNETL,CDPREF=$CD,PARMMEM=DGAINT01

```

## Initialization Errors

This section describes the causes of common errors associated with initializing Sterling Connect:Direct.

### Condition: Inadequate Storage

Sterling Connect:Direct does not initialize because of inadequate storage (GETMAIN or FREEMAIN request failed).

Error Messages					
SITA037I	SITA042I	SITA043I	SITA044I	SITA045I	SITA047I
SITA049I	SITA050I	SITA078I	SITA080I	SITA096I	SITA097I
SITA098I	SITA099I	SITA122I			

Use the following table to troubleshoot the storage problem.

Cause	Action	Data to Collect
Inadequate address space is allocated to the Sterling Connect:Direct DTF region.	Review the short and long text messages. Check the Sterling Connect:Direct startup job stream and the amount of storage allocated to the Sterling Connect:Direct region by checking the region parameter on the job card. Use REGION=0M or as advised by Customer Support.	<ul style="list-style-type: none"> <li>Sterling Connect:Direct error message</li> <li>Region/partition size</li> </ul>



## Condition: Server Initialization Error (SXTA101I) with ABEND U1024

The CDPLEX.MAXSERVER value has been exceeded by Server A.

Error	Cause	Action
ABEND U1024	The Sterling Connect:Direct/Plex Server A (where A is the name of a particular server in a Sterling Connect:Direct/Plex environment) has been rejected by the Sterling Connect:Direct Manager. Server A terminated with a User ABEND code of U1024.	Correct the CDPLEX.MAXSERVER global initialization parameter by increasing the value to cover the number of servers in the Sterling Connect:Direct/Plex environment, and restart the server.

## Condition: ABEND U0044

Use the following table to troubleshoot this abnormal end condition (ABEND).

Error	Cause	Action	Collect
ABEND U0044	GETMAIN failed	<ol style="list-style-type: none"> <li>1. JCL set REGION=0M</li> <li>2. Initialization parameters set MEMLIMIT=2M</li> <li>3. Initialization parameters set TRACE.BUFFER=0</li> </ol>	If there is still an issue after taking the recommended actions, collect the SVCDUMP and job log.

## Condition: Error While Allocating or Opening Initialization Parameters File

An error occurs while allocating or opening the initialization parameters file.

Error Messages					
SITA063I	SITA070I	SITA121I	SITA123I	SITA291I	SITA292I
SITA293I	SITA294I	SITA501I	SITA502I	SITA505I	

Cause	Action	Data to Collect
Sterling Connect:Direct initialization parameters file does not exist, or the parameter on the EXEC statement is specified incorrectly.	Review the short and long text messages. Look at the Sterling Connect:Direct startup JCL for the EXEC statement. Ensure that the specified initialization parameters dataset exists and is correct.	<ul style="list-style-type: none"> <li>• Sterling Connect:Direct startup JCL</li> <li>• DMGSCMAP STARTUP file</li> </ul>

## Condition: Initialization Parameter Errors

Sterling Connect:Direct does not initialize because of initialization parameter errors.

Error Messages					
SITA003I	SITA014I	SITA018I	SITA021I	SITA038I	SITA039I
SITA040I	SITA041I	SITA063I	SITA071I	SITA072I	SITA073I

Error Messages					
SITA079I	SITA082I	SITA083I	SITA084I	SITA085I	SITA086I
SITA087I	SITA088I	SITA089I	SITA091I	SITA092I	SITA093I
SITA094I	SITA095I	SITA104I	SITA105I	SITA106I	SITA148I
SITA201I	SITA202I	SITA213I	SITA214I	SITA215I	SITA216I
SITA217I	SITA220I	SITA221I	SITA222I	SITA223I	SITA224I
SITA225I	SITA226I	SITA227I	SITA228I	SITA230I	SITA231I
SITA232I	SITA233I	SITA234I	SITA242I	SITA250I	SITA251I
SITA252I	SITA253I	SITA254I	SITA260I	SITA261I	SITA262I
SITA263I	SITA270I	SITA271I	SITA272I	SITA273I	SITA280I
SITA281I	SITA282I	SITA283I	SITA285I	SITA286I	SITA287I
SITA300I	SITA506I	SITA507I	SITA508I	SITA509I	SITA510I
SITA511I	SITA512I	SITA513I	SITA514I	SITA515I	SITA516I
SITA517I	SITA518I	SITA540I			

Use the following table to troubleshoot the initialization parameters problem.

Cause	Action	Data to Collect
Syntax errors or errors in the values specified exist for one or more initialization parameters.	Review the short and long text messages. Note the messages that you see on the console during initialization to determine the reason for the error. Verify that any comments preceding parameters are followed by <code>* /</code> . Refer to the appropriate Sterling Connect:Direct installation guide for the valid parameter values. Correct the parameter in the initialization parameters file, and restart Sterling Connect:Direct.	<ul style="list-style-type: none"> <li>• Sterling Connect:Direct error message</li> <li>• Initialization parameters file</li> </ul>

### Condition: Sterling Connect:Direct VSAM File Error

Sterling Connect:Direct does not initialize because of an error with one of the Sterling Connect:Direct VSAM files: the message file, authorization file, type file, network map file, statistics file, checkpoint file, or TCQ file.

Error Messages					
SITA055I	SITA056I	SITA057I	SITA059I	SITA060I	SITA061I
SITA062I	SITA064I	SITA065I	SITA066I	SITA075I	SITA076I
SITA077I	SITA100I	SITA101I	SITA102I	SITA103I	SITA110I
SITA111I	SITA112I	SITA113I	SITA130I	SITA131I	SITA132I
SITA133I	SITA160I				

Use the following table to troubleshoot the Sterling Connect:Direct for z/OS VSAM file error.

Cause	Action	Data to Collect
An error occurred while opening the file, or VSAM encountered a physical or logical error. The VSAM file cannot be defined and loaded correctly, the name of the file might be specified incorrectly, or the file might be corrupted.	Review the short and long text messages. Verify that the name of the file is specified correctly in the initialization parameters file. Also, verify that the file is a correctly defined VSAM dataset and loaded. Refer to VSAM Files DASD Requirement and Description and Define the Sterling Connect:Direct VSAM Files .	<ul style="list-style-type: none"> <li>• Sterling Connect:Direct messages</li> <li>• Any messages issued by the VSAM AMS Interface Program (IDCAMS) when the Sterling Connect:Direct VSAM file was defined and loaded</li> </ul>

### Condition: VTAM Initialization Errors

Sterling Connect:Direct does not initialize because of errors with VTAM initialization.

Error Messages					
SITA004I	SITA005I	SITA048I	SITA051I	SITA052I	SITA053I
SITA054I	SITA090I	user ABEND U0075			

Use the following table to troubleshoot the VTAM initialization error.

Cause	Action	Data to Collect
The Sterling Connect:Direct DTF APPLID is defined incorrectly, the APPLID logmode table is incorrect or is not found, the DTF APPLID has a VTAM password associated with it, or the Sterling Connect:Direct DTF APPLID is not active.	Review the short and long text messages. Ensure that the DTF APPLID is active. Ensure that the APPLID specified in the LOCAL.NODE entry of the network map is correctly specified and is defined to VTAM. Check the ESTAE output for additional error information. If a VTAM password is associated with the Sterling Connect:Direct APPLID, remove it, and do not refer to it in the network map.	<ul style="list-style-type: none"> <li>• ESTAE output</li> <li>• Sterling Connect:Direct network map</li> <li>• APPLID definition</li> <li>• Logmode table entry</li> </ul>

### Condition: Invalid Security Environment (SITA997I)

Use the following table to troubleshoot the security environment error.

Cause	Action	Data to Collect
The thread-level security is not valid between Sterling Connect:Direct and z/OS UNIX System Services.	If your installation implemented Program Access to Datasets (PADS) functionality within your security system (such as RACF, TSS, ACF2), include the Sterling Connect:Direct datasets in your Program Control List (PCL).	<ul style="list-style-type: none"> <li>• SYSLOG from Sterling Connect:Direct startup</li> <li>• Security system profiles for the resources denied in the SYSLOG</li> </ul>

## Condition: Statistics Log Error

Sterling Connect:Direct does not initialize because of an error in the statistics log.

Error Messages					
SSTI004I	SSTI005I	SSTI006I	SSTI007I	SSTI008I	SSTI009I
SSTI010I	SSTI011I	SSTI012I	SSTI013I	SSTI014I	SSTI015I
SSTI016I	SSTI017I	SSTI018I	SSTI019I	SSTI020I	SSTI021I
SSTI022I					

SITA059I and user ABEND U0070 follow one of the previous error messages. The cause and necessary action to take depend on the SSTIxxxI message as explained in the following sections.

### SSTI004I

File pair ESDS dataset has invalid CI SIZE.

Cause	Action
The ESDS CI SIZE is less than 2048. The minimum acceptable CI SIZE for this dataset is 2048.	Review short and long text messages. Delete and redefine the file pair ESDS dataset and ensure a CI SIZE that is greater than or equal to 2048.

### SSTI005I

Invalid KSDS dataset type in file pair.

Cause	Action
Review both the short text and long text Sterling Connect:Direct messages. While verifying the dataset, it was found that the dataset type was not KSDS.	Verify that the statistics file pair KSDS dataset is correctly allocated. If no allocation is correct, delete and redefine the KSDS dataset.

### SSTI006I

Invalid KSDS dataset key length.

Cause	Action
The key length of the file pair KSDS dataset is invalid.	Review short and long text messages. Refer to the platform-specific Sterling Connect:Direct installation and administration guide for the correct length.

## SSTI007I

Invalid file pair KSDS dataset key offset.

Cause	Action
The key offset for the KSDS dataset is not 0.	Review short and long text Sterling Connect:Direct messages. Delete and redefine the KSDS with the correct key offset.

## SSTI008I

File pair has empty ESDS but non-empty KSDS.

Cause	Action
The ESDS dataset is empty, but the KSDS dataset has data in it. One possible reason is that the ESDS dataset was reset, but the KSDS was not.	Review both short and long text messages. The ESDS and KSDS datasets must both be empty or must both contain data. Either delete and redefine the KSDS dataset, restore the ESDS dataset, or specify STAT.INIT=COLD. Sterling Connect:Direct opens both datasets with RESET at initialization time.

## SSTI009I

File pair has empty KSDS but non-empty ESDS.

Cause	Action
The KSDS dataset is empty, but the ESDS dataset has data in it. One possible reason is that the KSDS dataset was reset, but the ESDS was not.	Review both short and long text messages. Both KSDS and ESDS datasets must be empty or contain data. Either delete and redefine the ESDS dataset, restore the KSDS dataset, run batch utility DMSTBKEY to rebuild the KSDS dataset, or specify STAT.INIT=COLD. Sterling Connect:Direct then opens both datasets with RESET at initialization time.

## SSTI010I

Error reading the file pair KSDS control record.

Cause	Action
While attempting to read the KSDS control record, an error code was returned.	Review both short and long text messages. Verify that the KSDS dataset is correctly defined. Register 15 contains the VSAM GET return code. To reuse the dataset, specify STAT.INIT=COLD in the initialization parameters and restart Sterling Connect:Direct.

## SSTI011I

KSDS control record ESDS name does not match.

Cause	Action
The KSDS control record contains the name of the matching or paired ESDS dataset. When the KSDS and ESDS dataset names are built by Sterling Connect:Direct at initialization time based on STAT.DSN.BASE, the ESDS dataset name that the system built did not match the ESDS dataset name in the KSDS control record.	Review both the short text and long text Sterling Connect:Direct messages. Do one of the following: <ul style="list-style-type: none"><li>• Run batch utility DMSTBKEY to rebuild the KSDS dataset control record.</li><li>• Delete and redefine both KSDS and ESDS datasets.</li><li>• Specify STAT.INIT=COLD (Sterling Connect:Direct opens all file pairs with RESET.).</li></ul>

## SSTI012I

KSDS control record ESDS CI SIZE do not match.

Cause	Action
The KSDS control record contains the CI SIZE of the matching or paired ESDS dataset. The CI SIZE from the KSDS control record is not equal to the CI SIZE of the paired ESDS dataset that is opened.	Review the short and long text messages. Verify that the statistics file pair is identified with the STAT.DSN.BASE and STAT.FILE.PAIRS initialization parameters. If the CI SIZE of the ESDS file has changed, you must run the DMSTBKEY batch utility to rebuild the information in the key-sequenced cluster.

## SSTI013I

Error reading the ESDS control record.

Cause	Action
While attempting to read the ESDS control record, an error code was returned.	Review both the short and long text messages. Verify that the ESDS dataset is correctly defined. Register 15 contains the VSAM GET return code. To reuse the dataset, specify STAT.INIT=COLD in the initialization parameters and restart Sterling Connect:Direct.

## SSTI014I

Invalid ESDS control record.

Cause	Action
Sterling Connect:Direct read the first record in the ESDS dataset; however, it was not the control record. Either the file is not a Sterling Connect:Direct statistics file, or the file was corrupted after being written.	Review both the short text and long text messages. Verify that the statistics file pair is correctly defined using the STAT.DSN.BASE and STAT.FILE.PAIRS initialization parameters. If the file was corrupted and it is the KSDS cluster of the pair, then the information can be rebuilt by running the DMSTBKEY batch utility for the file pair. If the file was corrupted and it is the ESDS cluster of the pair, then the statistics information in the file pair is lost. In this case, both files of the pair must be empty before Sterling Connect:Direct initializes successfully. Specify STAT.INIT=COLD in the initialization parameters to initialize successfully.

## SSTI015I

Invalid file pair sequence.

Cause	Action
The files that comprise the statistics file pair list are not arranged in chronological order. Sterling Connect:Direct requires that all non-empty statistics file pairs be ordered chronologically based on the date and time of the oldest data in each pair. <b>Note:</b>	Review the short and long text Sterling Connect:Direct messages. Verify that the statistics file pair list is correctly defined using the STAT.DSN.BASE and STAT.FILE.PAIRS initialization parameters. If the reason for the problem is not apparent, it might be necessary to archive or copy all ESDS file pairs to preserve the current statistics data. Then delete and redefine all statistics file pair clusters.

**Note:** Although Sterling Connect:Direct processes the statistics file pair list in a circular or wrap around method, the first file pair in the list does not always contain the oldest data.

Sterling Connect:Direct verifies the order using the following steps:

1. Sterling Connect:Direct locates the file pair containing the oldest data.
2. From that point, Sterling Connect:Direct examines each non-empty file pair in the list. If the oldest data is not located in the first file pair, when the search reaches the last file pair in the list, it wraps to the beginning of the list. Each successive non-empty file pair must have a later date than the previous pair.

Sterling Connect:Direct always maintains statistics records in strict chronological order. If the records are not in chronological order at initialization, Sterling Connect:Direct assumes that the list or the files are incorrectly altered since Sterling Connect:Direct last wrote them.

## SSTI016I

WARNING: KSDS of file pair may be too small.

Cause	Action
The size of the key-sequenced cluster of the file pair named is less than 10% of the size of the associated entry sequenced cluster. This condition can lead to premature filling of the key-sequenced cluster and wasted space in the entry-sequenced cluster.	Review the short and long text Sterling Connect:Direct messages. Examine the SSTS005I message issued when the file pair fills to determine the amount of the file Sterling Connect:Direct was able to use. Set the key-sequenced cluster to 15% of the size of the entry-sequenced cluster.

## SSTI017I

WARNING: KSDS of file pair may be too large.

Cause	Action
The size of the key-sequenced cluster of the file pair named is more than 30% of the size of the associated entry-sequenced cluster. This condition can lead to premature filling of the entry-sequenced cluster and wasted space in the key-sequenced cluster.	Review both the short text and long text Sterling Connect:Direct messages. Examine the SSTS005I message issued when the file pair fills to determine the amount of the file Sterling Connect:Direct was able to use. Set the key-sequenced cluster to 15% of the size of the entry-sequenced cluster.

## SSTI018I

File pair WHERE condition found.

Cause	Action
During statistics initialization, a warning may have been issued specifying the KSDS dataset is either too small or too large. This message contains the FILE PAIR where this situation occurred	None

## SSTI019I

No active file pair found.

Cause	Action
Statistics initialization could not determine which of the statistics file pairs was the active pair. The ESDS of each pair contains a status flag that indicates which pair is active. The active flag was not found in any of the ESDS clusters.	Review both the short text and long text Sterling Connect:Direct messages. Archive or copy all ESDS file pairs to preserve the current statistics data. Then delete and redefine all statistics file pair clusters.



## SSTI020I

More than one file pair active.

Cause	Action
For any given sequence of statistics file pairs, only one set can be active at a time. During Sterling Connect:Direct statistics initialization, more than one set was found to be active. This condition occurs when mixing old file pairs with current ones	Review both the short text and long text Sterling Connect:Direct messages. Empty the files by deleting and redefining the file pairs. None of the file pairs are active. Another alternative is to set STAT.INIT=COLD forcing Sterling Connect:Direct to open each set of file pairs with RESET at initialization time. If you are interested in retaining the data in the files, archive them first, then continue with one of the previous two methods.

## SSTI021I

More than one file pair is both not complete and not empty.

Cause	Action
The mixing of old file pair datasets with current file pairs can cause this result. Another cause is incorrect modification of file pairs between executions of Sterling Connect:Direct.	Review both the short text and long text Sterling Connect:Direct messages. Verify that the statistics file pair list is correctly defined using the STAT.DSN.BASE and STAT.FILE.PAIRS initialization parameters, and restart Sterling Connect:Direct. You can also use the STAT.INIT=COLD startup parameter.

## SSTI022I

Invalid ESDS dataset type in file pair.

Cause	Action
While verifying the ESDS dataset, it was determined that the dataset type was not ESDS	Review both the short text and long text Sterling Connect:Direct messages. Verify that the statistics file pair ESDS dataset is correctly allocated. If the dataset is not correctly allocated, delete and redefine the ESDS dataset.

## Condition: TCQ.THRESHOLD Parameter Error (SITA186I)

Use the following table to troubleshoot when the TCQ.THRESHOLD parameter has not been properly defined.

Cause	Action	Data to Collect
If you receive these messages during initialization, the TCQ.THRESHOLD parameter is not specified.	Specify the TCQ.THRESHOLD parameter as YES, NO, or a defined percentage value in the range 0-99.	None



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