

Connect:Direct[®] for z/OS

Installation Guide

Version 4.7

**Connect:Direct for z/OS Installation Guide
Version 4.7**

First Edition

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About Connect:Direct for z/OS

Connect:Direct is peer-to-peer file-based integration middleware optimized for assured delivery, high-volume and secure data exchange within and between enterprises. It is optimized for high performance and moves files containing any type of data across multiple platforms, disparate file systems, and disparate media.

Connect:Direct enables businesses to:

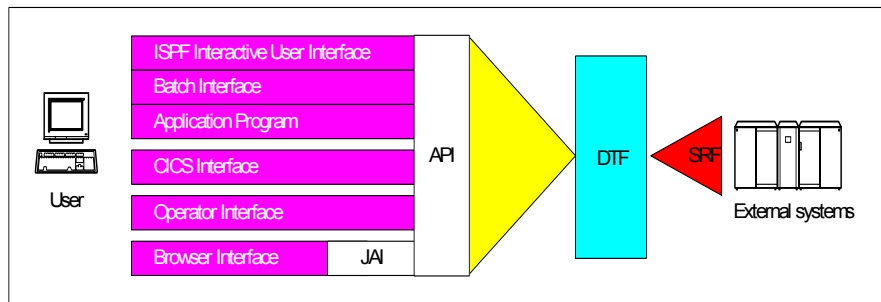
- ◆ Move large amounts of data internally and externally
- ◆ Share information with business partners
- ◆ Schedule business information-related application activities
- ◆ Automate data distribution
- ◆ Control and audit network activities
- ◆ Maintain network security
- ◆ Use one common command structure for information management with platform-specific interfaces

Connect:Direct for z/OS Components

The major components of Connect:Direct for z/OS are:

- ◆ Data Transmission Facility (DTF), which executes user commands and Processes
- ◆ Application Program Interface (API), which enables user interfaces to communicate with the DTF
- ◆ User interfaces, such as the Interactive User Interface (IUI), browser end user interface (EUI), the batch interface, and the CICS interface, which interacts between the user and the API.
- ◆ Sysplex Requester Facility (SRF), which enables external CPUs to access a DTF without requiring their own DTF. For more information on SRF, see Appendix E, *Implementing the Sysplex Requester Facility*.

The following illustration shows these components.



Note: SRFs are only required when the non-DTF system does not share DASD with the DTF system.

Connect:Direct for z/OS Configurations

Connect:Direct for z/OS can be used in either of the following configurations:

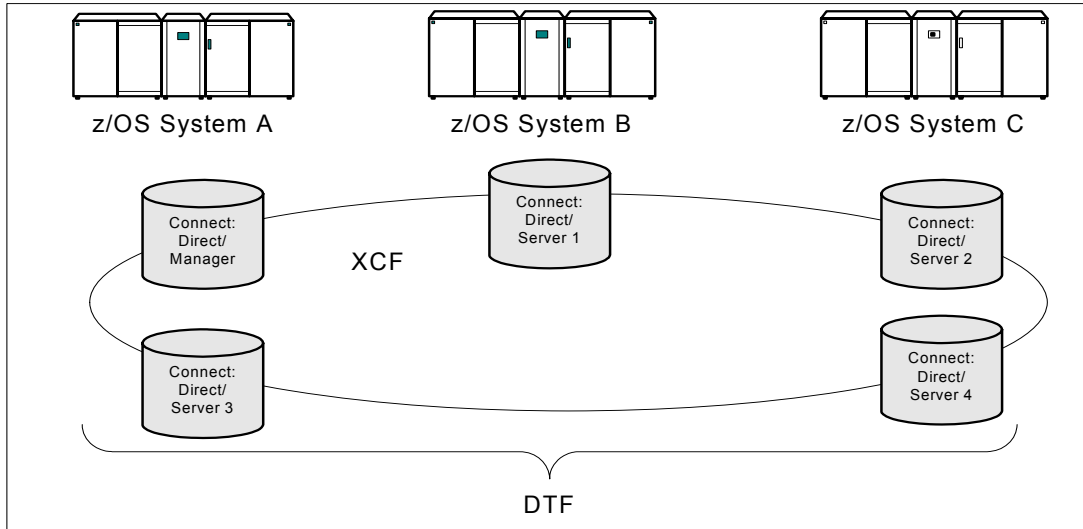
- ◆ Connect:Direct Stand-alone Server is a stand-alone Connect:Direct system operating in an IBM z/OS environment.
- ◆ Connect:Direct/Plex is a Connect:Direct system operating in an IBM z/OS sysplex or parallel sysplex environment. A Connect:Direct/Plex consists of:
 - ◆ Connect:Direct Manager, which manages the Connect:Direct/Plex. This includes handling:
 - Workload distribution and balancing
 - Processing queues
 - IUI, API, and SRF components
 - System-wide parameters
 - Network maps (netmaps)
 - Files that control user authorization, file attributes, and statistics logging
 - Secure+ parameters
 - ◆ One or more Connect:Direct Servers, which execute Processes assigned by the Connect:Direct Manager. Each Connect:Direct Server can be on a different z/OS system, or there can be multiple servers in one system. Individual servers can independently join or leave the Connect:Direct/Plex.

The Connect:Direct Manager and all Connect:Direct Servers form the DTF in a Connect:Direct/Plex environment.

A Process runs on any Connect:Direct Server in a Connect:Direct/Plex environment. You can balance workload dynamically among the Connect:Direct Servers. You can also direct Processes to specific servers (by specifying the PLEXCLASS keyword in the PROCESS

statement). For example, a Process that requires a tape drive can be directed to a Connect:Direct Server running on a computer with tape drives.

The Connect:Direct Manager communicates with the Connect:Direct Servers through the IBM z/OS Cross-System Coupling Facility (XCF), as in the following illustration.



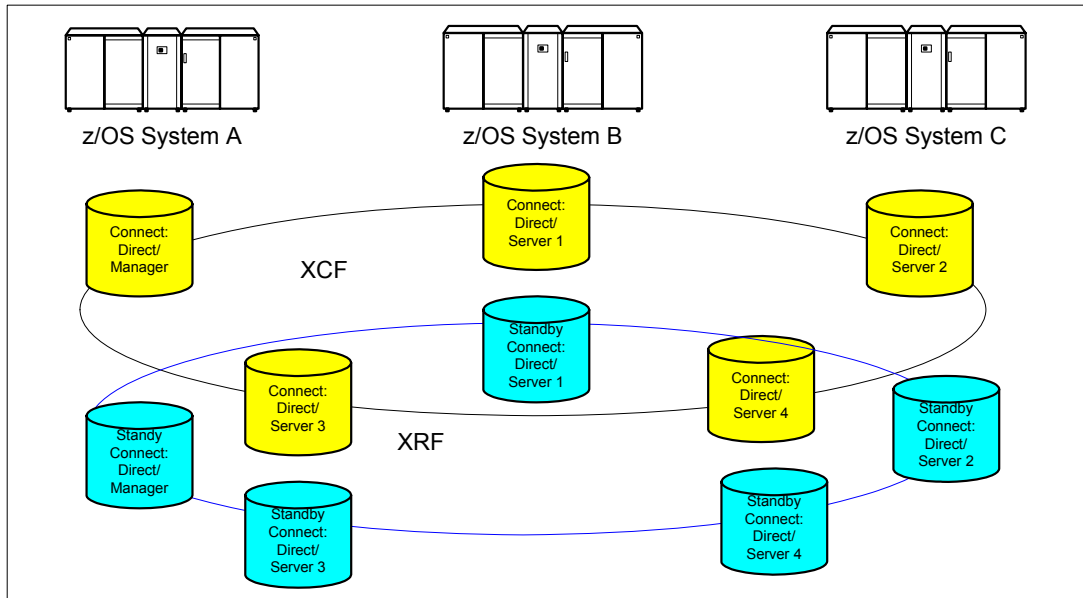
Connect:Direct/Plex operation is transparent; it appears as a single local node to other systems that communicate with it.

Note: For more information about XCF, see the IBM parallel sysplex documentation library. No additional XCF setup is required to use Connect:Direct/Plex.

Connect:Direct runs as a single system image in either the Connect:Direct Stand-alone Server or Connect:Direct/Plex environments. It starts as a single job. The Connect:Direct system shares parameters, the network map, and processing queues throughout the Connect:Direct system.

Both Connect:Direct Stand-alone Server and Connect:Direct/Plex can use the z/OS Extended Recovery Facility (XRF) to support extended recovery. If you use extended recovery in a Connect:Direct Stand-alone Server, a standby Connect:Direct system waits to assume the work of a failing system.

If you use extended recovery in a Connect:Direct/Plex environment, each active member has a standby member ready to assume work if the active member fails, as shown in the following illustration.



If you are using the dynamic VIPA resources, the standby managers or servers do not have to reside in the same z/OS system as the active manager or server they are backing up.

If you are not using the dynamic VIPA resources, the standby managers or servers must reside in the same z/OS system as the active manager or server they are backing up.

Automatically Processing Files from a Watched Directory

Connect:Direct File Agent is a feature of Connect:Direct which provides unattended file management. File Agent monitors *watched* directories to detect new files. When File Agent detects a new file, it either submits a default Process or evaluates the file using rules to override the default Process and to determine which Process to submit. You create rules to submit different Processes based on the following properties:

- ◆ Specific or partial file names
- ◆ File size
- ◆ System events

You create the Processes used by File Agent on Connect:Direct; you cannot create them using File Agent.

To achieve optimum performance, configure File Agent to communicate with the Connect:Direct node where it is installed. File Agent can be installed on UNIX, Windows, and z/OS operating systems. For information to help you plan how to implement File Agent, see the *Managing Files with Connect:Direct File Agent* chapter in your Connect:Direct administration guide or getting started guide. The Connect:Direct File Agent Help contains instructions for configuring File Agent.

Connect:Direct Secure+ Option

Connect:Direct Secure+ Option provides enhanced security for Connect:Direct and is customized for one of the following security protocols:

- ◆ Transport Layer Security (TLS)
- ◆ Security Sockets Layer (SSL)
- ◆ Station-to-Station (STS)

If you are using TLS or SSL, you can also use the Sterling External Authentication Server application to validate certificates that are passed during a session.

Connect:Direct for z/OS may be installed with or without IBM's SMP/E product. It is strongly recommended that the SMP/E install option be used.

Although Connect:Direct Secure+ Option is installed at the same time as the base Connect:Direct product, it must be purchased as a separate product. Contact your Sterling Commerce representative to learn more about Connect:Direct Secure+ Option.

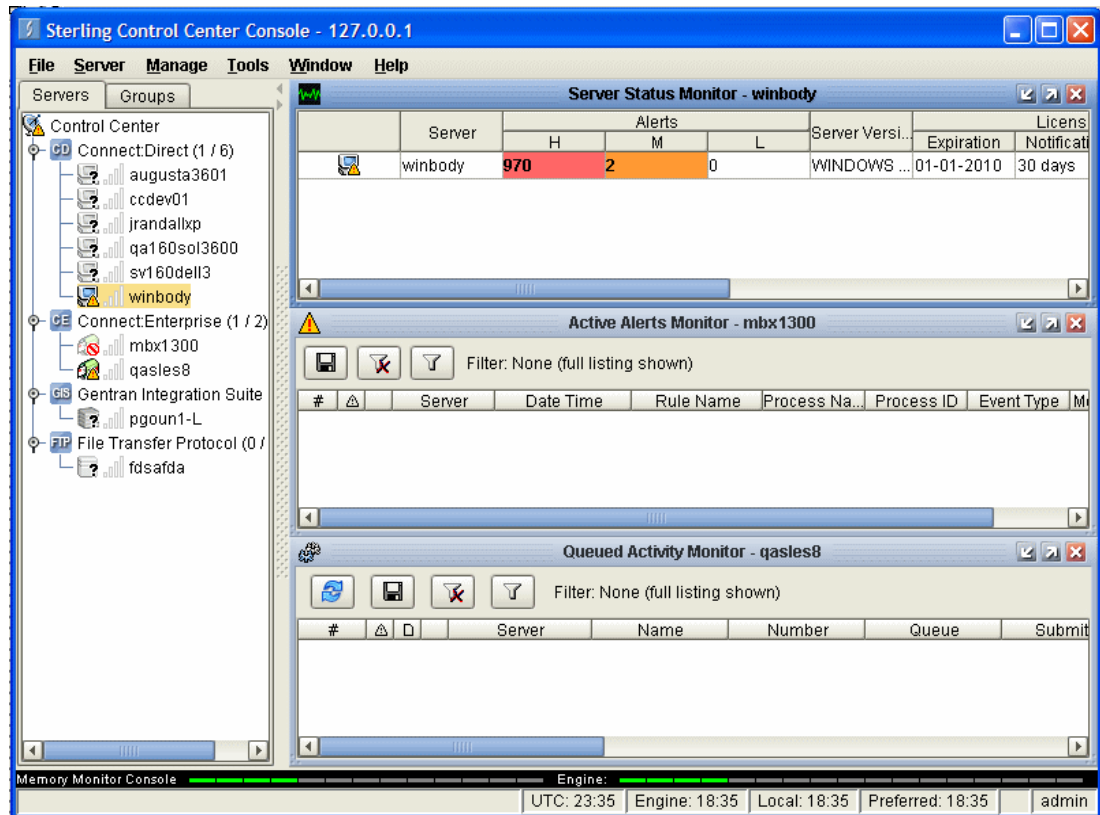
For a complete description of Connect:Direct Secure+ Option along with a discussion of security concepts, external authentication, and other considerations, see the *Connect:Direct Secure+ Option for z/OS Implementation Guide*. For the latest information on hardware and software requirements, installation, and other special considerations related to Connect:Direct for z/OS, see *Connect:Direct for z/OS Release Notes*.

Sterling Control Center

Sterling Control Center is a centralized management system that provides operations personnel with continuous enterprise-wide business activity monitoring capabilities for Connect:Direct for z/OS, UNIX, Windows, HP NonStop, Select, and OS/400 (iSeries) servers, Connect:Enterprise for UNIX and z/OS servers, file transfer protocol (FTP) servers, and Gentran Integration Suite (GIS) servers. Sterling Control Center enables you to:

- ◆ Manage multiple servers
 - ◆ Group individual servers into server groups for a single view of system-wide activity
 - ◆ View status and statistics on active or completed processing
 - ◆ Suspend, release, and control Connect:Direct Processes on z/OS, UNIX, Windows, Select, and HP NonStop platforms
 - ◆ Stop Connect:Direct servers on z/OS, Windows, HP NonStop, OS/400, and UNIX platforms
- ◆ Monitor service levels
 - ◆ View processing across Connect:Direct for z/OS, UNIX, Select, Windows, HP NonStop, and OS/400 (iSeries) servers, Connect:Enterprise for UNIX and z/OS servers, and FTP

and GIS servers within your network, and retrieve information about active and completed processing.



- ◆ Receive notification of data delivery events that occur or do not occur as scheduled
 - ◆ Define rules based on processing criteria that can generate an alert, send an e-mail notification, generate a Simple Network Management Protocol (SNMP) trap to an Enterprise Systems Manager (ESM), run a system command, or issue a Connect:Direct server command
 - ◆ Monitor for alerts, such as a server failure or late-starting Process
 - ◆ Create service level criteria (SLCs) that define processing schedules, monitor Processes, files within Processes, and file transfers for compliance with these schedules, and generate alerts when the schedules are not met
 - ◆ Analyze key operational metrics through reports to document and analyze processing activity
 - ◆ Create customized reports based on criteria you define
 - ◆ Identify additional Connect:Direct servers that may need to be monitored based on communications with a currently monitored server using the Guided Node Discovery feature
- Sterling Control Center enhances operational productivity and improves the quality of service by:
- ◆ Ensuring that critical processing windows are met
 - ◆ Reducing impact on downstream processing by verifying that expected processing occurs
 - ◆ Providing proactive notification for at-risk business processes

- ◆ Consolidating information for throughput analysis, capacity planning, post-processing operational or security audits, and workload analysis
- ◆ Reducing the risk of errors associated with manual system administration, including eliminating individual server logon to view activity, and the need to separately configure each server for error and exception notifications

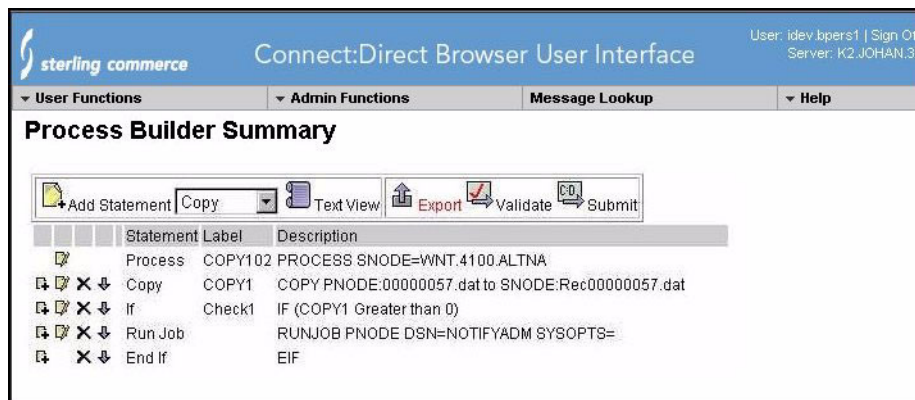
Sterling Control Center is available for purchase as a separate product. Contact your Sterling Commerce representative to learn more about Sterling Control Center.

Connect:Direct Browser User Interface

Connect:Direct Browser User Interface allows you to build, submit, and monitor Connect:Direct Processes from an Internet browser, such as Microsoft Internet Explorer.

You can also perform Connect:Direct system administration tasks, such as viewing and changing the network map or initialization parameters, from Connect:Direct Browser. The specific administration tasks that you can perform depend on the Connect:Direct platform that your browser is signed on to and your security level.

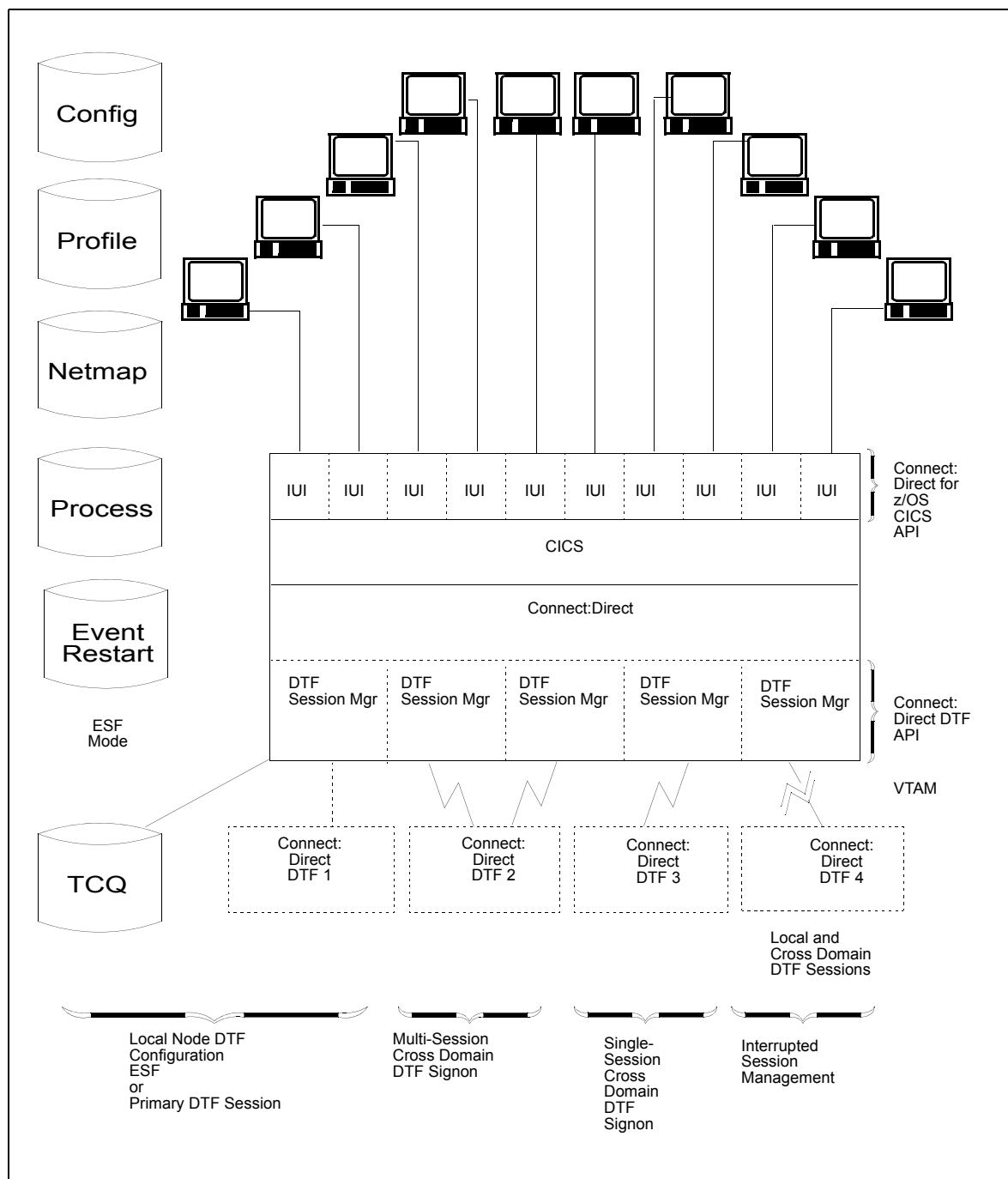
Connect:Direct Browser is distributed on CD-ROM with Connect:Direct for z/OS, Connect:Direct for Windows, Connect:Direct for UNIX, and Connect:Direct for HP NonStop. It can also be downloaded from the Sterling Commerce Web site. Connect:Direct Browser is installed on a Web server and can be accessed by administrators and users through a URL. The following example shows the page used to graphically build a Process:



To learn more about Connect:Direct Browser, see the documentation on the Connect:Direct Browser CD-ROM or available online from the Sterling Commerce Documentation Library.

CICS Interface Components

The Connect:Direct installation offers an optional selection to use the CICS interface. The following figure illustrates a CICS implementation. For more information about using CICS with Connect:Direct, see Chapter 6, *Tuning the CICS Interface* and the *Connect:Direct for z/OS CICS Administration and User's Guide*.



Connect:Direct for z/OS Documentation

See *Connect:Direct for z/OS Release Notes* for a complete list of the product documentation.

About This Guide

Connect:Direct for z/OS Installation Guide is for programmers and network operations staff who install, configure, and maintain the Connect:Direct for z/OS product.

This guide assumes knowledge of the z/OS operating system, including its applications, network, and environment. If you are not familiar with the z/OS operating system, refer to the z/OS library of manuals.

Task Overview

The following table directs you to the information required to perform the tasks documented in this guide:

Task	For More Information, See
Planning the installation including any necessary provisions for a Multi-Image Manager (MIM) or Global Resource Serialization (GRS) system	Chapter 2, <i>Planning the Installation</i> Appendix C, <i>Connect:Direct Enqueue Resource Management</i>
Planning and performing the basic steps of the installation procedure	Appendix A, <i>Installation Worksheets</i> Chapter 3, <i>Installing Connect:Direct for z/OS</i>
Troubleshooting any errors that occur during initialization. Use this appendix to look up a specific error message displayed when you started up Connect:Direct for z/OS.	Appendix D, <i>Initialization and License Key Errors</i>
Planning and performing optional installation tasks depending on the features of Connect:Direct for z/OS being implemented	Appendix A, <i>Installation Worksheets</i> Chapter 4, <i>Optional Installation Tasks</i>
Planning and setting up VTAM application definitions and NCP parameter definitions	Appendix B, <i>Sample VTAM Definitions</i> Chapter 5, <i>Preparing VTAM Definitions</i>
Adjusting the CICS interface to maximize the performance and usage of resources for the Connect:Direct for z/OS CICS interface	Chapter 6, <i>Tuning the CICS Interface</i>
Installing and Using the Sysplex Requester Facility.	Appendix E, <i>Implementing the Sysplex Requester Facility</i>

Planning the Installation

This chapter contains the information you need to plan your installation. Installation is easier and more effective if you complete your planning before you begin.

Connect:Direct supports data transfer over any of the following communications protocols:

- ◆ VTAM (LU0, LU6.2)
- ◆ TCP/IP (OES)
- ◆ Channel Transfer Interface (IBM CTCA)

Other facilities provide extensions to data transfer, Process management, system administration, and user interface features, including:

- ◆ Spool Transfer
- ◆ Operator Interface
- ◆ Event Services Support (ESS)
- ◆ Activity Reporting System (ARS)
- ◆ Customer Information Control System Transaction Server (CICS) interface
- ◆ File Agent

Configuration and use of these facilities is optional. For more information, see *Connect:Direct for z/OS Facilities Guide*.

Connect:Direct provides a variety of methods to diagnose problems and record events. You can set up certain mechanisms to turn on traces to help you isolate specific session-related problems and provide supporting data. See *Allocating Traces in Startup JCL* on page 36.

Before You Begin

Before you begin your installation, complete the following steps:

1. Obtain a license key (APKey) file (see *Install the License Key File* on page 53 for instructions on how to obtain a temporary or permanent license key).

Note: You cannot run Connect:Direct without an APKey file. It must be installed and available for Connect:Direct at initialization.

2. Read the *Connect:Direct for z/OS Release Notes* for the latest product information including:
 - ◆ Additional installation requirements
 - ◆ Product enhancements
 - ◆ Maintenance updates
 - ◆ Documentation changes

The information in this document can affect your installation procedures and definitions.

3. Verify your hardware and software requirements. Review *Installation Requirements* on page 18 for hardware and software requirements.
4. Determine your high-level qualifier. Connect:Direct uses the following high-level qualifiers during its installation:

Note: In this list, *v* indicates the version, *rr* indicates the release, and *mm* indicates the modification level to the release. For example, release 4.7.00 is 40700.

- ◆ The libraries that contain the files that perform the installation are prefixed with CD.NvrrmmA. Refer to *Distribution Libraries DASD Requirement and Description* on page 20 for more information.
 - ◆ The installation procedure prefixes the installed Connect:Direct libraries with a high-level qualifier (referred to as \$CD) that you specify during installation. See the *Connect:Direct for z/OS Release Notes* for the version, release, and maintenance level for the release you are installing.
 - ◆ Before you install, verify that you either have the latest maintenance tape for Connect:Direct for z/OS or download the latest maintenance by going to the Product Support section of the Sterling Commerce Web site at www.sterlingcommerce.com. You need a Support On Demand user name and password for access to the information and services provided on the Sterling Commerce Customer Support Web site. For more information, see the *Connect:Direct for z/OS Release Notes*.
5. Determine whether your system uses a Multi-Image Manager (MIM) or Global Resource Serialization (GRS) system. For more information, see Appendix C, *Connect:Direct Enqueue Resource Management*.
 6. Complete the worksheets in Appendix A, *Installation Worksheet*, that are relevant for all types of installations and those relevant for your specific environment.

Installation Requirements

Connect:Direct for z/OS requires the following hardware and software. For last-minute changes to the installation requirements, see *Connect:Direct for z/OS Release Notes*.

Note: Sterling Commerce does not provide assistance for versions of third-party products not supported by their vendors. To ensure optimal performance, you must be running the current version of all third-party software that interfaces with the Connect:Direct for z/OS application.

In addition, all third-party software must be for IBM z/OS version 1.7 or later.

◆ Authorized Library

Connect:Direct for z/OS must execute from an APF-authorized library. If Connect:Direct is not authorized, you receive message SITA117I during initialization, and Connect:Direct terminates.

◆ DASD

Adequate space must be available for all Connect:Direct distribution libraries. DASD space requirements and calculations are explained in *Planning DASD Requirements* on page 20.

◆ High-level Assembler

You must have High-level Assembler to assemble the sample Connect:Direct for z/OS exits in the SAMPLIB data set.

◆ SMP/E

You must have System Modification Program Extended (SMP/E) Release 5 or later for SMP/E installation. You must install Connect:Direct for z/OS into a new SMP/E CSI.

◆ Tape Drive or Cartridge Unit

The distribution tape contains the Connect:Direct distribution libraries and job streams necessary to install and run Connect:Direct. You must have a 3480 or 3490 cartridge unit to unload Connect:Direct distribution libraries.

Note: You can also download Connect:Direct for z/OS from the Electronic Software Distribution (ESD) Portal. Refer to the *Connect:Direct for z/OS Release Notes* for instructions.

◆ TSO with ISPF/PDF

You must have IBM Time Sharing Option (TSO) with ISPF version 5.6 or later.

◆ IBM z/OS operating system

You must have IBM z/OS version 1.7 or later.

◆ SNA Network Requirements

Network support for Connect:Direct for z/OS requires both of the following:

- ◆ VTAM Communications Server
- ◆ IBM Advanced Communications Functions for Network Control Program (NCP)

◆ Personal Computer

You need a personal computer to access the e-mails Sterling Commerce sends containing the temporary and permanent license key information. You must have a license key to run Connect:Direct for z/OS.

If you are using File Agent, you will need a PC when creating configuration files. See *Planning for File Agent* on page 36 for more information.

◆ **Connect:Direct Spool Transfer**

If you use the Spool Transfer feature for outbound spool transfers, you must have both of the following software products installed:

- ◆ LRS (Levi, Ray, and Schoup, Inc.) VTAM Printer Support System (VPS) Release 6.2 or later
- ◆ LRS VPS/CDI Option

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 2.3 or later.

Planning DASD Requirements

The following requirements are discussed in this section:

- ◆ DASD requirements for Connect:Direct distribution libraries, VSAM files, and SMP/E files
- ◆ Virtual storage requirements for the Data Transmission Facility (DTF) and the interactive user interface (IUI)

Distribution Libraries DASD Requirement and Description

This section describes the Connect:Direct distribution libraries, their attributes, and space allocation requirements and content.

Distribution Libraries Space Requirement

The following table describes the Connect:Direct for z/OS distribution libraries, their attributes, and space allocation requirements.

Data Set Name	DSORG	LRECL	BLK SIZE (CI)	RECFM	SPACE	DIR BLKS	Media Label
LKLIB	PO	0	6144	U	4000 BLKS	60	CD.NvvrmmA.LKLIB
TXLIB	PO	80	3120	FB	12000 BLKS	300	CD.NvvrmmA.TXLIB
DATA	PO	2048	23476	VB	400 BLKS	2	CD.NvvrmmA.DATA
CICS.LKLIB	PO	0	6144	U	340 BLKS	30	CD.NvvrmmA.CICS.LKLIB

Description of Distribution Files

The following table describes each Connect:Direct distribution file.

File	Description
LKLIB	Contains all Connect:Direct load modules.
TXLIB	Contains all Connect:Direct non-load modules, such as ISPLIB, ISPSLIB, ISPMLIB.
DATA	Contains all Connect:Direct data files such as MSGFILE, TYPE file, AUTH file, CDTRAP file
CICS.LKLIB	Contains all Connect:Direct CICS load modules.

Connect:Direct Libraries Space Requirement

The following table describes the Connect:Direct for z/OS libraries that are generated as part of the installation procedure, their attributes, and space allocation requirements.

Note: Where TRKS or CYLS are used, 3390 tracks/cylinders are assumed.

Data Set Name	DSORG	LRECL	BLK SIZE (CI)	RECFM	SPACE	DIR BLKS
APDSN	PS	1024	0 ¹	VB	5 TRKS	N/A
AUTH ²	VSAM	2048	4096 CI	KSDS	3 TRKS	N/A
MIBDATA	VB	256	0 ¹	PO	15 TRKS	10
CNTL ³	PO	80	3120	FB	315 BLKS	20
JCL	PO	80	3120	FB	315 BLKS	20
ISPCLIB ³	PO	80	3120	FB	20 CYLS	15
ISPMLIB ³	PO	80	3120	FB	90 BLKS	20
ISPLIB ³	PO	80	3120	FB	1100 BLKS	125
ISPSLIB ³	PO	80	3120	FB	20 BLKS	10
LINKLIB ³	PO	0	6144	U	3200 BLKS	75
MAPLIB ³	PO	80	23440	FB	100 BLKS	40

1 BLKSIZE=0 means that the system will determine the value.

2 Indicates the library is included for base installation only.

3 Indicates the installation procedure creates two copies: a *distribution* library and a *target* library for SMP/E installation.

Data Set Name	DSORG	LRECL	BLK SIZE (CI)	RECFM	SPACE	DIR BLKS
MSG ²	VSAM	880	4096 CI	KSDS	60 CYLS	N/A
MSGSRC ³	PO	80	0	FB	2 CYLS	50
OPLIST ³	PO	80	3120	FB	20 BLKS	10
PARMLIB ³	PO	80	3120	FB	40 BLKS	15
PROCESS ³	PO	80	3120	FB	100 BLKS	20
SAMPLIB ³	PO	80	3120	FB	6000 BLKS	80
TRPCONF ²	PS	256	3120	VB	15 TRKS	N/A
TYPE ²	VSAM	1930	4096 CI	KSDS	2 TRKS	N/A

- 1 BLKSIZE=0 means that the system will determine the value.
- 2 Indicates the library is included for base installation only.
- 3 Indicates the installation procedure creates two copies: a *distribution* library and a *target* library for SMP/E installation.

Description of Connect:Direct Files

The following table describes each Connect:Direct file.

File	Description
APDSN	Contains the license key file. You create this data set in <i>Install the License Key File</i> on page 53 using the temporary or permanent license key received from Sterling Commerce (see the <i>Connect:Direct for z/OS Release Notes</i> for instructions on how to obtain a key). You cannot run Connect:Direct for z/OS without an APKey file.
MIBDATA	Contains the Management Information Block (MIB) used by Sterling Commerce products for SNMP trap translations.
CNTL	Contains sample job streams to begin the installation and run DMBATCH and other Connect:Direct utilities. SMP/E control information is placed in this library after the ISPF installation dialogs are executed. Input to the network map build job stream and sample VTAM definitions are included in this library.
JCL	Contains job streams that are built by executing the installation command lists (CLISTs).
ISPCLIB	Contains the CLISTs used within the UI and the Connect:Direct File Agent installation CLIST.
ISPMLIB	Contains screen-related messages that are used with the ISPF screens.
ISPPLIB	Contains ISPF screens for the message display and UI facilities.
ISPSLIB	Contains the ISPF JCL skeleton.
LINKLIB	Contains Connect:Direct load modules. <i>This file must be an APF-authorized library.</i>

File	Description
MAPLIB	Contains the statistics record format maps and ARS reports.
MSG	Contains all Connect:Direct system messages.
MSGSRC	Contains source for message file updates supplied as part of maintenance.
OPLIST	Contains CLISTs that you can use for console commands.
PARMLIB	Contains sample initialization parameters available for first use of the product.
PROCESS	<p>Contains sample Connect:Direct Processes that you can modify by using the ISPF editor and a fill-in-the-blank approach. Member names beginning with @ include tutorial instructions and member names beginning with # do not.</p> <p>Note the following:</p> <p>Some sample Processes are used as models for the IUI SUBMIT panels. Modifying these samples can cause the IUI panels to work incorrectly.</p> <p>If you change the DCB information of a Process Library, the Process submit can fail. For example, if you submit a Process from a Process Library with a RECFM of VB, the Process submit fails with SCBI108I.</p>
SAMPLIB	<p>Contains samples of RUN TASK, RUN JOB, SIGNON, and Security Exits; sample SUBMIT and SIGNON panels that you can customize; macros to define Statistics Records and control blocks (DSECTS) used in the sample exits; samples of message source; and sample API programs written in 370 Assembler, COBOL, and PL/1. SAMPLIB also includes sample ESS exits and sample ESS CICS programs. <i>You must have Assembler H or later to assemble programs in SAMPLIB.</i></p> <p>The member README contains information on how to locate a list of SAMPLIB contents.</p>
TRPCONF	Contains the Connect:Direct SNMP configuration file for HP Dataview Network Management.
TYPE	Contains four data set types that you can use as models for other data set Type definitions. Use the SELECT TYPE command to view these definitions after installation is complete.

VSAM Files DASD Requirement and Description

It is recommended that you use newly defined Connect:Direct VSAM files during testing, and migrate previous versions of the files as part of the product release implementation. For upgrading considerations, refer to the *Connect:Direct for z/OS Release Notes*.

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

Connect:Direct uses VSAM files to control and monitor execution. The following table describes these files and their space requirements. The installation process creates the files using these space requirement values. These values represent the minimum space requirement for each VSAM file.

Data Set	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 ¹	ESDS	88 KB	500	88 KB	500	4096
STATS index1	KSDS	222 KB	5000	88 KB	750	4096
STATS index2 ²	KSDS	222 KB	5000	88 KB	750	4096
STATS log1	ESDS	1.8 MB	6750	197 KB	1000	4096
STATS log2 ²	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 ³	KSDS	44 KB	1	44 KB	1	2048
USRPROF ³	KSDS	144 KB	1	144 KB	1	4096
EVENT ³	KSDS	44 KB	1	44 KB	1	2048
TOTAL		8.6 MB (approx.)		4.4 MB (approx.)		

1 Optional data set.

2 The default configuration for the Statistics facility uses two statistics file pairs, which requires four VSAM files. Refer to *Statistics Files* on page 26 for details about the VSAM files.

3 Optional Connect:Direct-CICS IUI facility file.

A description of each VSAM file follows.

Authorization File (AUTH)

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

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

If you are *not* using the Connect:Direct Authorization Facility, you still must 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.

Connect:Direct Message File (MSG)

The Message file, a VSAM key-sequenced data set (KSDS), holds all messages, except ISPF panel-related messages, used by 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 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.

Please review *Maintaining the Network Map* in the *Connect:Direct for z/OS Administration Guide* when planning your network map. The following chart defines the basic size of records for planning how large to make the network map:

Record	Size (in bytes)	Description/Comments
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"> ◆ IPv6 address for TCP/IP ◆ the API record specifies an IPv6 record ◆ SOURCEIP is specified.
TCP API	60	Used to specify the address for API

Record	Size (in bytes)	Description/Comments
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.

Netmap Definitions	Number	Size (in bytes)
Control Records + Local node	3	362
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 Connect:Direct statistics files to other data sets for long-term storage. Refer to the *Archiving Statistics* section of the *Administering Statistics* chapter of the *Connect:Direct for z/OS Administration Guide* for details about archiving statistics.

Use the directory to track the data set 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. Connect:Direct for z/OS provides facilities for maintaining and displaying the directory through the INQUIRE STATDIR command.

Statistics Files

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

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

See the *Administering Statistics* chapter of the *Connect:Direct for z/OS Administration Guide* for a detailed discussion of the format and use of the file pairs.

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. In *Connect:Direct for z/OS Administration Guide*, see the *Optimizing the Statistics File* and *Changing the File Pair Configuration* sections in the *Administering Statistics* chapter.

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. Therefore, the maximum number of statistics records available at any given time 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: Connect:Direct does not support extended-format, extended-addressing ESDS Statistics data sets.

Within each file pair, Connect:Direct writes statistics records to the ESDS cluster. 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 Connect:Direct writes records to the KSDS cluster of a file pair depends on usage patterns at each site. On average, 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 previous table are the optimal control interval sizes. The only 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 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 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

The TCQ 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 must be from 1,536 to 30,720 bytes. Each Process that is 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. Connect:Direct uses the maximum record length of the TCX to determine the number of CIs that can be controlled in the TCQ, which defines the maximum usable size of the TCQ. The TCX CISIZE must be from 512 to 30720 bytes.

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).

Enlarging the TCQ

To enlarge the TCQ, complete the following 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

Process Component	Number of Bytes
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.** After you determine the size of the average Process, 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.** After you have determined the size of the average Process and the TCQ CI size, 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 multiple 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 TCS VSAM definition, round this number up to the next valid CI Size (minus 7).

Example

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 Connect:Direct Copy statement.

For information on the Type file contents, see the *Maintaining the Type File* chapter in the *Connect:Direct for z/OS Administration Guide*.

CICS Configuration File (CONFIG)

The Configuration file is used by the CICS IUI facility of Connect:Direct-CICS only. It is a VSAM KSDS file. One file exists and is allocated for each CICS region. It is primed during Connect:Direct-CICS installation and updated online through Connect:Direct-CICS administrator functions. This file contains system parameters that control the Connect:Direct-CICS environment. It also contains information about the Connect:Direct nodes available to the Connect:Direct-CICS and their network map definitions. Installed with default data set name \$CD.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 Connect:Direct. Installed with default data set name \$CD.USRPROF.

CICS Event Restart File (EVENT)

The Event Restart file is used by the Event Services Support feature of 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 data set name \$CD.EVENT.

SMP/E DASD Requirements

The following table lists the DASD files and their space requirements for an SMP/E installation of Connect:Direct.

Data Set	DSORG	LRECL	BLK SIZE (CI)	RECFM	SPACE Prim.	SPACE Sec.	DIR BLKS
SMPLTS	PO	0	6144	U	5 CYL	1 CYL	100
SMPMTS	PO	80	3120	FB	1 CYL	1 CYL	100
SMPPTS	PO	80	3120	FB	45 CYL	15 CYL	100
SMPSCDS	PO	80	3120	FB	5 CYL	1 CYL	100
SMPSTS	PO	80	3120	FB	1 CYL	1 CYL	100
CSI	VSAM	143 max	4096 (CI)	KSDS	3 CYL	2 CYL	N/A

Virtual Storage Requirements

Connect:Direct for z/OS executes with a REGION of 8192K allocated for most environments. Using the default limits for the IEFUSI exit, 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. 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: Connect:Direct for z/OS may make use of above the line storage. The in-storage trace table defaults to 2 MB of above the line storage, and is controlled by the TRACE.BUFFER initialization parameter.

Specifying REGION=0K 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 both below and above the 16 MB line:

Parameters	Description
MAXBATCH (default 6)	These parameters determine the number of tasks that 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 4096)	This is the communication buffer size for TCP and LU62 sessions. For each TCP or LU62 Process obtained at the time of Process execution, 2 times the V2 buffer size is allocated above the 16 MB line. For SNA LU0 Processes, the RU size defined in the LOGMODE is used as the communication buffer size and is allocated above the 16 MB line.
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.
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.
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.

Note: When default values are used for these parameters, Connect:Direct initialization allocates approximately 1832 KB below and 5420 KB above the line. As each API user logs on, approximately 12 KB of additional storage is allocated below the line and 60 KB above the line. For each Process, approximately 128 KB of additional storage is allocated below the line and 550 KB above the line, depending on the data type, block size of the data, and communication buffer sizes.

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=OES
ALLOCATION.EXIT=exitname
SECURITY.EXIT=exitname
STATISTICS.EXIT=exitname
STAT.QUEUE.ELEMENTS=999

```

With this configuration, you can expect Connect:Direct initialization to allocate approximately 2140 KB below and 10700 KB above the 16 MB line, when idle, and 1000 KB more above the line for each COPY step that is running.

Caution: Be careful when you define or change these initialization parameters. It is important not to over or under allocate storage.

Storage Requirements in a Connect:Direct Plex Environment

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

To calculate the amount of virtual storage above the line allocated for the queue holding the statistics records, the Connect:Direct/Plex Manager multiplies the value for the `STAT.QUEUE.ELEMENTS` global initialization parameter by the maximum number of servers specified in the license key. 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. Connect:Direct supports IBM TCP/IP, Open Edition Sockets Interface, which you specify by using the `OES` value for the TCP initialization parameter. See the *Global Initialization Parameters* appendix of the *Connect:Direct for z/OS Administration Guide*. Also make sure to review the `NETMAP.CHECK` parameter to determine if your site performs network map checking on TCP/IP nodes.

IBM TCP/IP Support

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

- ◆ The `HLQ.PROFILE.TCPIP` data set 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 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. See your IBM documentation for information on the format of this command.
- ◆ To verify that a connection exists to the remote 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.

Using this feature for Connect:Direct, define a TCP/IP address specifically for Connect:Direct. When Connect:Direct is active, it uses this IP address.

For Connect:Direct Extended Recovery, define VIPA requirements the same way, but you must define the dynamic VIPA range in each TCP/IP stack. Each Connect:Direct node must have a unique VIPA, meaning that in a Connect:Direct/Plex environment, the manager and each server must have a unique VIPA to bind to.

Planning for the Extended Submit Facility (ESF)

The Extended Submit Facility enables Processes to be submitted even if the Connect:Direct DTF or the communications path between the API and DTF is not active. ESF is not available for remote SRFs.

Using ESF on the Local SRF

The ESF is active because YES is the default parameter value for the ESF keyword on the Connect:Direct SIGNON command.

An *Authorization Required* error occurs if the logon ID where the API is running is not appropriately authorized when a Process is submitted through ESF. To prevent this error, do the following:

- ◆ If you submit Processes through ESF with CA-ACF2, ensure the logon ID is authorized through CA-ACF2 to update TCX and TCQ data sets.
- ◆ If you submit Processes through ESF with RACF, ensure the logon ID has control access authority for TCX and TCQ.

ESF Restriction for Remote SRFs

ESF is automatically disabled in remote SRFs. Because a remote SRF must be able to run without shared DASD, it submits Processes to the TCQ of the DTF to which it connects. Shared DASD is required for ESF; therefore, ESF is not available for remote SRFs.

Planning for Security

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

If your system has UNIX System Services and RACF Program Control is turned on, every JOBLIB/STEPLIB/LINKLIB DSN in the Connect:Direct startup must be in the appropriate RACF Program Control list for HFS support to work correctly. If not, UNIX System Services considers the address space “dirty,” and setting thread-level security (which HFS support uses) fails with 0000008B xxxx02AF. Connect:Direct initialization fails with the message SITA997I.

Planning for Parallel Sessions and Process Recovery

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

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 the *Process Recovery and Checkpoint/Restart* section in the *Selecting Processes* chapter of the *Connect:Direct for z/OS User's Guide*.

Planning the Network Map

The network map identifies the local Connect:Direct node and the nodes with which 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 Connect:Direct node. The source form of the network map is generated during the installation process and is input to the network map load utility, DMCNTMPL. This utility creates the VSAM form of the network map. It is invoked by the job JNETLOAD in the hlq.JCL library.

To prepare for the installation, fill in the Network Map worksheets beginning on page 103. Review the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for a description of the content of the network map and for sample entries.

Note: Before attempting to reload an existing network map, you must first DELETE and redefine it with IDCAMS.

Planning for File Agent

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

To prepare for the File Agent installation, fill in the *Worksheet for Installing File Agent* on page 114.

Allocating Traces in Startup JCL

When a problem occurs while 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 Connect:Direct trace output is directed to various ddnames. For more information on traces, see the chapter on isolating problems in *Connect:Direct for z/OS Administration Guide*.

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

DDNAME	Function
STEPLIB	Connect:Direct LINKLIB.
DMPUBLIB	Connect:Direct Process library
USRINFO	Standard display from User exits
NDMLOG	Automatic trace to list all initialization parameters read from the INITPARM data set 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.

DDNAME	Function
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.

The CONNECT JCL member is used in the installation step, *Start Connect:Direct* on page 60.

Installing Connect:Direct for z/OS

You run Connect:Direct job streams to install the product initially. These job streams are produced from ISPF/PDF skeletons that are filled in by executing an installation CLIST. This CLIST displays panels that enable you to customize the Connect:Direct installation for your requirements.

Connect:Direct for z/OS supports IBM System Modification Program Extended (SMP/E) and non-SMP/E installations. The SMP/E installation produces the best results.

Before you begin installing Connect:Direct for z/OS, read Chapter 2, *Planning the Installation*, and review the *Connect:Direct for z/OS Release Notes*.

These instructions detail how to perform a new installation. For information on upgrading a current installation of Connect:Direct for z/OS or OS/390, see the *Connect:Direct for z/OS Release Notes*.

Unload the Installation Libraries

To prepare for the installation, you need several libraries on DASD. These partitioned data sets (PDSs) contain the job streams used during the installation.

To unload the libraries:

1. Use the following JCL to copy the CDUNLD job from the CD.NvrrmmA.TXLIB file (where *v* indicates the version, *rr* indicates the release, and *mm* indicates the modification level of the release, for example, release 4.7.00 is 40700). This is the second file on the installation tape, where \$TAPE is the unit type for the installation tape and \$TVOL is the installation tape VOLSER (volume serial number) located on the external tape label.

```

//IEBCOPY JOB (ACCT), 'NAME', NOTIFY=USERID, CLASS=A
//COPY EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DSN=CD.NvrmmA.TXLIB,
// UNIT=$TAPE,
// VOL=SER=$TVOL,
// LABEL=(2,SL,,EXPDT=98000),
// DISP=(OLD,PASS)
//SYSUT2 DD DSN=pds.data-set.name,
// DISP=SHR
//SYSIN DD *
COPY INDD=SYSUT1,OUTDD=SYSUT2
S M=(CDUNLD)
/*
//

```

2. To avoid an additional tape mount, code the CDUNLD JCL to load all the installation data sets at once, as follows:

```

//CDUNLD JOB (XXXXXXXX), 'NAME', NOTIFY=USERID
/*
//CDUNLD PROC
//UNLDPDS EXEC PGM=IEBCOPY
//SYSIN DD DUMMY
//SYSPRINT DD SYSOUT=*
/*
//SYSUT1 DD DSN=CD.&FMID..&DSNM,
// UNIT=&TAPE,
// VOL=SER=&TVOL,
// LABEL=(&FILE,SL,,EXPDT=98000),
// DISP=(OLD,PASS)
/*
//SYSUT2 DD DSN=&SYSHLQ..&DSNM,
// UNIT=&DISK,
// VOL=SER=&DVOL,
// SPACE=(&BLK,(&SPACE,30,&DIR),RLSE),
// DCB=(RECFM=&FM,LRECL=&LR,BLKSIZE=&BLKSIZ,DSORG=PO),
// DISP=(,CATLG,DELETE)
// PEND
/*
//LKLIB EXEC CDUNLD,TAPE=$TAPE,TVOL=$TVOL,DISK=$DISK,DVOL=$DVOL,
// DSNM=LKLIB,FILE=1,FMID=N40700A,SPACE=4000,DIR=60,
// FM=U,LR=0,BLK=6144,BLKSIZ=6144,
// SYSHLQ=$CD
//TXLIB EXEC CDUNLD,TAPE=$TAPE,TVOL=$TVOL,DISK=$DISK,DVOL=$DVOL,
// DSNM=TXLIB,FILE=2,FMID=N40700A,SPACE=30,DIR=300,
// FM=FB,LR=80,BLK=CYL,BLKSIZ=0,
// SYSHLQ=$CD
//DATA EXEC CDUNLD,TAPE=$TAPE,TVOL=$TVOL,DISK=$DISK,DVOL=$DVOL,
// DSNM=DATA,FILE=3,FMID=N40700A,SPACE=400,DIR=2,
// FM=VB,LR=2048,BLK=23476,BLKSIZ=23476,
// SYSHLQ=$CD
//CLKLIB EXEC CDUNLD,TAPE=$TAPE,TVOL=$TVOL,DISK=$DISK,DVOL=$DVOL,
// DSNM=CICS.LKLIB,FILE=4,FMID=N40700A,SPACE=340,DIR=30,
// FM=U,LR=0,BLK=6144,BLKSIZ=6144,
// SYSHLQ=$CD
//

```


3. Update the CNUNLD job card to run for your system.
4. Modify the variables highlighted in bold in the CDUNLD job stream as follows:
 - ◆ Change ***\$CD*** to the high-level qualifier to be used throughout the installation for Connect:Direct files.
 - ◆ Change ***\$TAPE*** to the appropriate tape device type (for example, CART).
 - ◆ Change ***\$DISK*** to the appropriate DASD type (for example, SYSDA).
 - ◆ Change ***\$DVOL*** to the appropriate disk volume serial number.
 - ◆ Change ***\$TVOL*** to the volume serial number of the installation tape.
 - ◆ Change ***\$Nvrrmm*** to the release level identifier, where *v* indicates the version, *rr* indicates the release, and *mm* indicates the modification level of the release. For example, release 4.7.00 is 40700.
5. Submit the unload job.

The CDUNLD job downloads the following files, where *\$CD* is the high-level qualifier you designate:

\$CD.LKLIB
\$CD.TXLIB
\$CD.DATA
\$CD.CICS.LKLIB

See *Description of Distribution Files* on page 21 for a description of the contents.

Generate the Install JCL through ISPF/PDF

Refer to the information you recorded in the worksheets in Appendix A, *Installation Worksheets*, when you specify parameters on the installation panels displayed in this procedure.

Execute the Installation CLIST

From the TSO **COMMAND** option of ISPF/PDF (usually option 6), execute the CDINST CLIST as shown in the following example, where *\$CD* specifies the high-level qualifier you defined for Connect:Direct files.

```
=== > EXEC '$CD.TXLIB(CDINST)' '$CD'
```

The CDINST CLIST attempts to allocate the `$CD.CNTL` and `$CD.JCL` data sets. If these data sets already exist, then you must invoke the CDINST CLIST using the `RESTART` parameter. To access Help with the CDINST CLIST, invoke the CLIST as follows:

```
EXEC ` $CD.TXLIB(CDINST) ` ` ? `
```

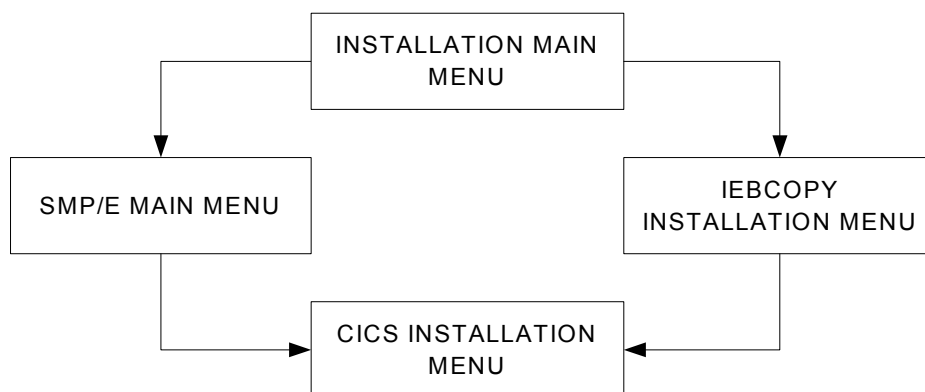
Note: The CDINST CLIST does not account for SMS-managed DASD; therefore, you must customize the generated JCL if you install onto SMS-managed DASD.

Complete the JCL Installation Menus

The CDINST CLIST displays a series of menus that let you customize the installation. The four installation panels are:

- ◆ The Connect:Direct Installation Main Menu collects information about how you want to customize your installation. You move to the appropriate installation menus based on how you specify your installation choices on this menu.
- ◆ The Connect:Direct SMP/E Main Menu displays information required to complete an SMP/E installation.
- ◆ The Connect:Direct IEBCOPY Installation menu displays the necessary information required to complete an IEBCOPY installation.
- ◆ The Connect:Direct CICS Feature Installation Main menu prompts you for the information required to complete the CICS installation. Additional CICS configuration panels guide you through your CICS installation.

The following diagram illustrates the relationship of the installation menus.



All menus include tutorials (PF1/HELP KEY) that explain the information requested on a panel and identify the required fields. When you have completed the installation panels, a list of installation JCL members created is displayed.

```

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

CMD ==>

C:D System High Level Qualifier ..... $CD_____
Permanent DASD Device Type ..... SYSDA___
Permanent DASD Volume Serial No. ....
Temporary DASD Device Type ..... SYSDA___

SMP/E Install (Y,N) ..... Y
Do you wish to install the CICS feature ..... Y

Job Card Information
==> //CDINST JOB (CD-INSTALL),'CD INSTALL',CLASS=0,_____
==> //          MSGCLASS=X,REGION=8192K_____
==> //*_____
==> //*_____
Press ENTER to continue, PF1 for Help, PF3 to Terminate the Install

```

1. When the Connect:Direct Installation Main Menu is displayed, use the information recorded in *Worksheet for All Installations* on page 100 to define the appropriate fields and press **Enter**. Individual field Help displays for all fields, except in the CICS-related panels. By placing the cursor on an individual field and pressing the PF1 key, Help for that specific field displays in a pop-up window.

The following example shows a field Help pop-up window displayed for the C:D System High Level Qualifier field on the Connect:Direct Main Installation Menu.

```

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

CMD ==>

C:D System High Level Qualifier ..... $CD_____
Permanent DASD Device +-----+
Permanent DASD Volume | C:D System High Level Qualifier Help |
Temporary DASD Device | |
SMP/E Install (Y,N) . | This is the HLQ that will be used for all |
Do you wish to instal | Connect:Direct datasets such as LINKLIB, PROCESS |
                       | and so on. A value is required in this field. |
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

```

Connect:Direct invokes the other installation menus based upon how you specify your installation selections on the Installation Main Menu.

2. Take one of the following actions:

- ◆ For a non-SMP/E installation, continue with step 3.
- ◆ For an SMP/E installation, refer to your completed *Worksheet for SMP/E Installation* on page 101 to define the parameters in the SMP/E Main Menu:
 - Define the appropriate fields using your high-level qualifier.
 - Specify a VSAM Volser.
 - Continue with step 4 on page 45.

```

                                Connect:Direct v.rr.mm          DATE-yyyy/mm/dd
-----
                                SMP/E Installation Menu ----- TIME-hh:mm

CMD ==>

SMP/E Dataset Information :
SMP/E Datasets HLQ ..... $CD_____

CSI Dataset Name ..... $CD.CSI_____

TARGET Zone Dataset Name ..... $CD.CSI_____
DIST Zone Dataset Name ..... $CD.CSI_____

CSSLIB Dataset Name ..... SYS1.CSSLIB_____
SCEELKED Dataset Name ..... CEE.SCEELKED_____

                                Press ENTER to continue, PF1 for Help, PF3 to return
    
```

```

                                Connect:Direct v.rr.mm          DATE-yyyy/mm/dd
-----
                                SMP/E Installation Menu ----- TIME-hh:mm

CMD ==>

Connect:Direct Dataset Information :
VSAM Files HLQ ..... $CD_____
VSAM Files Catalog Name..... _____
VSAM Files Volser ..... _____

                                Press ENTER to continue, PF1 for Help, PF3 to return
    
```

3. For a non-SMP/E installation, refer to your completed *Worksheet for Non-SMP/E Installation* on page 102 for the information to specify on the IEBCOPY screen.

```

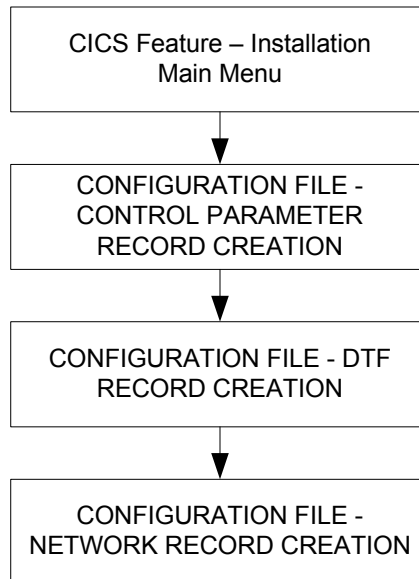
-----          Connect:Direct v.rr.mm -----  DATE-yyyy/mm/dd
-----          IEBCOPY Installation Menu-----  TIME-hh:mm

CMD ==>

Connect:Direct Dataset Information :
VSAM Files HLQ ..... $CD_____
VSAM Files Catalog Name..... _____
VSAM Files Volser ..... _____

Press ENTER to continue, PF3 to return to previous Menu,
or PF5 to terminate the Install
    
```

- ◆ Specify the appropriate fields using your high-level qualifier.
 - ◆ Specify a VSAM Volser.
4. Take one of the following actions:
- ◆ If you are not installing the CICS interface, go to step 9 on page 48.
 - ◆ To install the CICS feature, continue with step 5 to complete the series of CICS panels shown in the following figure:



You can also use the CICS Administration System later to modify the configuration information entered during the installation process. See the chapter on maintaining configuration information in *Connect:Direct for z/OS CICS Administration and User's Guide* for detailed information on the field descriptions for this series of CICS-related panels.

You can use the following **PF** keys on the CICS screens.

PF Key	Function
Enter	Continue with the installation.
PF3	Return to the previous menu.
PF5	Terminate the installation.

5. Define the appropriate fields in the Connect:Direct CICS Feature Installation Main Menu and press **Enter**.

```

-----          Connect:Direct CICS Feature          ----- DATE-yyyy/mm/dd
-----          Installation Main Menu              ----- TIME=hh:mm

CMD ==>

Enter the data set name for your CICS load library:
==> _____

Enter the data set name for your online CSD data set:
==> _____

Press ENTER to continue, PF3 to return to previous Menu,
or PF5 to terminate the Install

```

6. Define the appropriate fields in the CICS Feature CONFIGURATION FILE - CONTROL PARAMETER RECORD CREATION panel and press **Enter**.

```

-----          Connect:Direct CICS Feature          ----- DATE-yyyy/mm/dd
-----          CONFIGURATION FILE - CONTROL PARAMETER RECORD CREATION ----- TIME=hh:mm

CMD ==>
THIS PANEL IS USED TO GENERATE THE CONTROL.PARMS INFORMATION FOR USE
BY Connect:Direct CICS.
AUTO.SIGNON                Y                Y OR N
SIGNON.REENTRY             N                Y OR N
CONNECT:DIRECT.EQ.CICSID   Y                Y OR N
SKIP.SIGNON.PANEL         N                Y OR N
CICS.TRANSACTION.CODE (MONITOR)  CDM
CICS.TRANSACTION.CODE (STARTUP)  CDI
CICS.TRANSACTION.CODE (PRINT)    CDP
CICS.TRANSACTION.CODE (ESO)      CDE
CST.RETRY.INTERVAL         000500        HHMMSS
SESSION.RETRY.INTERVAL     0100          MMSS
ESF.RETRY.INTERVAL        001500        HHMMSS
WORK.RETRY.INTERVAL       0015          MMSS
MONITOR.INTERVAL          30            SS
INACTIVE.INTERVAL         003000        HHMMSS
MAX.SIGNON                 0100
MAX.TASKS                   02            01-99
STORAGE.SUBPOOL           127           002-127
MENU OPTIONS: CF Y SB Y SS Y SP Y SD Y SN Y MD Y          Y OR N

```


The Connect:Direct JCL Generation Menu is displayed.

```

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

CMD ==>

    The Connect:Direct JCL generation may take a moment to execute.

Press ENTER to begin the generate, PF1 for Help, PF3 to return
Type CAN to terminate
    
```

9. Press **Enter** to generate the JCL.

After Connect:Direct generates the JCL, a screen displays the jobnames and a description of each member created in the file, as shown in the following example. Your screen will look different depending on what components you installed.

10. Continue with one of the following procedures:

- ◆ *Execute the Installation JCL Using SMP/E on page 49*
- ◆ *Execute the Installation JCL for a Non-SMP/E Installation on page 50*

Note: The following example is a representation. Your content may vary, slightly.

```

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

CMD ==>
Connect:Direct JCL Generation Complete, RC=0

Jobname           Description
-----
CDALLOC           Allocation JCL Job Stream
CDSMPE            SMP/E RECEIVE and APPLY JCL Job Stream
CDACPT            SMP/E ACCEPT JCL Job Stream
CDBCKOUT          Installation Backout JCL Job Stream
JNETLOAD          Network Map Load JCL Job Stream
JNETDEF           Network Map VSAM File Definition JCL
JNETUNLD          Network Map Unload JCL Job Stream
CONNECT           Connect:Direct Startup JCL
CONNECTX          Connect:Direct Startup JCL - Verbose
DMBATX            Connect:Direct DMBATCH JCL

Press ENTER to continue
    
```

The following table lists the members that are generated in the \$CD.JCL file.

Member Use	Member Name	Content
All installations	CDALLOC	Job stream to allocate all system files.
	JNETLOAD	Job stream to load the network map.

Member Use	Member Name	Content
	JNETDEF	Job stream to define the VSAM network map file. (Note: This task is also done by the CDALLOC job.)
	JNETUNLD	Job stream to unload a network map file. This job is related to JNETLOAD and is used to generate a source file from the netmap VSAM file that you specify. You can use this source file to ensure that the new network map includes all the nodes that are in the current production network map.
	CDBCKOUT	Job stream to back out base Connect:Direct installation.
	CONNECT	Job stream to start Connect:Direct as a stand-alone server. See <i>Allocating Traces in Startup JCL</i> on page 36 for more information on the DD statements in this sample startup JCL jobstream.
	CONNECTX	Connect:Direct Startup JCL - Verbose Job stream to start Connect: Direct as a stand-alone server with all possible DD names allocated. See the chapter on isolating problems in <i>Connect:Direct for z/OS Administration Guide</i> for more information on the DD statements in this sample startup JCL jobstream.
	DMBATCH	Job stream to execute DMBATCH.
SMP/E installations only	CDSMPE	Job stream to perform RECEIVE and APPLY processing of Connect:Direct base.
	CDACPT	Job stream to perform ACCEPT processing for Connect:Direct base.
Non-SMP/E base installations only	CDIEBCPY	Job stream to install base Connect:Direct.

Execute the Installation JCL Using SMP/E

Connect:Direct can be installed using SMP/E. The SMP/E system modification (SYSMOD) on the Connect:Direct tape is *NvrrmmA*, where *v* is the version number, *rr* is the release number, and *mm* is the maintenance level of Connect:Direct for z/OS. The *NvrrmmA* SYSMOD contains all base Connect:Direct modules.

Note: The SMPINIT member contains the CSSLIB and SCEELKED data sets. The default name for the CSSLIB data set is SYS1.CSSLIB while the default name for the SCEELKED data set is CEE.SCEELKED. To change these default data set names, you must modify the SMPINIT member before running the installation job stream. If you did not override the data set names on the Installation Menu, you can change the SMPINIT member before running the installation JCL. In addition, you may need to supply VOLSER information or security updates to provide access for the installer.

To execute the installation using SMP/E, run two job streams from the \$CD.JCL library as follows:

1. Run the job CDALLOC to define all the system files that Connect:Direct uses.
This job stream invokes IDCAMS to delete existing Connect:Direct VSAM files and to define new files.
2. Run the installation job stream member CDSMPE to perform SMP/E processing and load the Connect:Direct VSAM files, except the network map file. The following steps summarize the processing specified in the job stream.

Note: The Connect:Direct data sets have a primary allocation that may not permit the SMP/E apply step to execute more than once. If you restart the install after the installation job stream has run, you must run CDBCKOUT and CDALLOC.

- a. Initializes SMP/E libraries.
- b. Performs SMP/E RECEIVE step of base installation.
- c. Performs SMP/E APPLY step of base installation.

The base product is installed. If you selected the CICS option, it is installed, also.

Note: If you receive a return code of 4 for any module *other than* those listed below, go to the Sterling Commerce Customer Support Web site at www.sterlingcommerce.com for contact information about how to obtain assistance.

DMCOPYRT	DMGCPCPY	DMGCPDBC	DMGCPMIS	DMGCPPDS	DMGCPRCV
DMGCPSND	DMSESMGR	DMGSMGR1	DMGSMGR2	DMGSMGR3	DMGSMGR4
D7SESMGR	DMGSMGR1	DMGSMGR2	D7GSMGR3	D7GSMGR4	DMXDRCNV
DMXDTBLS	DMXDMAIN				

- d. Loads the File Agent component.
- e. Loads the Connect:Direct VSAM Authorization file.
- f. Loads the Connect:Direct VSAM Type file.
- g. Loads the Connect:Direct VSAM Message file.
- h. Loads CICS Configuration file (optional).
- i. Loads CICS User Profile (optional).

Note: You must execute Connect:Direct from an authorized library. The installation makes the DTF load module (DMINIT) APF-authorized.

Execute the Installation JCL for a Non-SMP/E Installation

To execute the installation JCL for a non-SMP/E installation, run two job streams from the \$CD.JCL library as follows:

1. Run job CDALLOC to define all the system files used by Connect:Direct.

This job stream invokes IDCAMS to delete existing Connect:Direct VSAM files created during installation and to define new files.

2. Run the installation job member CDIEBCPY to perform the non-SMP/E installation from tape. The following steps summarize the processing in the CDIEBCPY job stream:

Note: The Connect:Direct data sets have a primary allocation that may not permit the IEBCOPY step to execute more than once. If you restart the install after the system has performed steps a-d , you must run CDBCKOUT and CDALLOC.

- a. Installs Connect:Direct elements into the proper libraries.
- b. Loads the Connect:Direct VSAM Authorization file.
- c. Loads the Connect:Direct VSAM Type file.
- d. Loads the Connect:Direct VSAM Message file.

Generate and Load the Network Map

The network map defines the local Connect:Direct node and adjacent nodes it communicates with and contains the logical names of the local and adjacent nodes used in Connect:Direct Processes. You can use the Connect:Direct Network Map Generation panels to generate a preliminary version of the network map for testing and then after the installation 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* in *Connect:Direct for z/OS Administration Guide*.

Note: The instructions in this chapter are for new installations only. This procedure would erase the contents of the NETMAP01 member for existing systems. To upgrade your system including the network map, see the *Connect:Direct for z/OS Release Notes*.

Appendix A, *Installation Worksheets*, contains worksheets you can fill out for adjacent node definitions for other connection protocols and environments not included in the series of Connect:Direct Network Map Generation panels. For more information on adjacent node entries in network maps, see *Maintaining the Network Map* in *Connect:Direct for z/OS Administration Guide*.

Note: If this is an installation without SNA support, go to *Configure Connect:Direct without SNA Support* on page 81 for further instructions.

To generate the network map and create member NETMAP01 in the \$CD.CNTL data set:

1. Type the following command to execute the CDNETMAP CLIST using information you provided on the installation panels.

```
=== > EXEC '$CD.TXLIB(CDNETMAP)' '$CD'
```

2. When the Connect:Direct Network Map Generation panels are displayed, define the local and adjacent node information as follows:
 - a. On the first panel, type the information for the local Connect:Direct node using the information in the completed *Worksheet for Netmap Local Node Definition* on page 103 and press **Enter**.
 - b. On the subsequent Connect:Direct Network Map Generation panels, type the information for the adjacent nodes using the following table as a guide:

Screen and Node Type	Related Worksheet
370 SNA LU0 Nodes	<i>Worksheet for Netmap Adjacent Node Definitions: SNA LU0 Nodes</i> on page 104
TCP/IP Adjacent Node Parameters	<i>Worksheet for Netmap Adjacent Node Definitions: z/OS TCP/IP Nodes</i> on page 105
Connect:Direct for OpenVMS Definitions (for entering LU pool information for VMS nodes)	<i>Worksheet for Netmap Adjacent Node Definitions: OpenVMS Nodes</i> on page 106
Connect:Direct for HP NonStop/Tandem SNA Nodes.	<i>Worksheet for Netmap Adjacent Node Definitions: HP NonStop (Tandem) SNA Nodes</i> on page 107
Connect:Direct for OS/400 SNUF Nodes	<i>Worksheet for Netmap Adjacent Node Definitions: OS/400 SNUF Nodes (LU0)</i> on page 108
Connect:Direct for OS/400 TCP/IP Nodes	<i>Worksheet for Netmap Adjacent Node Definitions: OS/400 TCP/IP Nodes</i> on page 110
Connect:Direct for OS/400 LU6.2 Nodes	<i>Worksheet for Netmap Adjacent Node Definitions: SNA LU6.2 Nodes</i> on page 111

3. Press **Enter** to save the network map source information in *\$CD.CNTL* as member NETMAP01.
4. From *\$CD.JCL*, execute JNETLOAD, the network map installation job, to load the network map. You may receive the following results:
 - ◆ If the JNETLOAD job returns the message IEC161I 072-053 NETMAP, NETMAP, this is normal and does not indicate a problem.
 - ◆ If JNETLOAD completes with errors, run JNETDEF to delete and define the file before rerunning JNETLOAD. The JNETLOAD job receives a return code of 20 if JNETDEF is not run.

Warning: If you are using a VSAM cache program, you must remove the Connect:Direct network map from its control. Otherwise, it rewrites the date/time stamp, and signons fail with SAFA013I or SCBA428I.

Install the License Key File

The license key file, named APKey, identifies the product features that are available at a site. If you purchase Connect:Direct Secure+ Option at the same time that you purchase Connect:Direct, you have already installed a key that activates the Secure+ Option component. If you purchase the Secure+ Option application separately from Connect:Direct, you receive a new license key, and you must copy the new key file information into the data set you created when you installed Connect:Direct for z/OS.

You cannot run Connect:Direct without the APKey file. It must be installed and available for Connect:Direct at initialization.

Request a License Key

When you purchase the Connect:Direct for z/OS application, you receive a temporary key file that enables operation of Connect:Direct for z/OS for a limited time. You must replace the temporary key with a permanent key to continue running Connect:Direct for z/OS.

The temporary and permanent key files are supplied as text files named *nnnnn.txt*, where *nnnnn* is a number assigned by Sterling Commerce. Each key file is sent to you as an attachment to an e-mail. The temporary and permanent license key file must be applied on the computer where Connect:Direct for z/OS is installed.

1. Do one of the following:

- ◆ Reply to the Sterling Commerce e-mail containing your temporary license key file and include the CPU ID of the computer where Connect:Direct for z/OS is installed.
 - a. To obtain the CPU ID of your system, type `D M=CPU` and press **Enter**.

Note: You must run this console command on each CPU containing LPARs licensed to run Connect:Direct for z/OS.

- b. Copy and paste the entire result into the e-mail reply sent to Sterling Commerce.
- ◆ Request the license key file from Support On Demand:
 - a. Log in to the Sterling Commerce Support On Demand Web site. If you do not have a Support On Demand user name and password, follow the instructions in *Connect:Direct for z/OS Release Notes*.
 - b. On the navigation bar on the left side of the page, under **Product Support**, click to expand the **Connect** options, and select **Key Request**. The Connect Product Key Request page is displayed.
 - c. Type the information in the required fields and click **Submit**.

You will receive the permanent license key file through e-mail in approximately 24 to 48 hours.

2. Make a copy of the original permanent license key file and keep it in a safe place.

Install the APKey File

1. Define a data set with the following attributes to hold the APKey file information.

```
DSORG=PS, RECFM=VB, LRECL=1024, BLKSIZE=0
```

2. Copy the APKey file information you received from Sterling Commerce into the data set.

Caution: Make sure no data in the text file containing the APKey file information is truncated when you copy it into the data set.

3. Save the data set. Record the data set name to define the APDSN initialization parameter when you complete the procedure *Set Initialization Parameter Values* on page 54.
4. Start Connect:Direct using the instructions in *Start Connect:Direct* on page 60.

Manage License Keys through Sterling Control Center

You can also use Sterling Control Center to import, view, update and delete existing license keys after the initial key is installed manually. Sterling Control Center License Management supports import of server licenses to a central license management repository and ad hoc distribution to the appropriate managed servers. For more information, see the documentation for Sterling Control Center.

Note: The Control Center administrator must have ADMDSN functional authority (full administrator authority) on the Connect:Direct server to push the new keys or make other changes to an existing license key. The administrator must also have an additional authorization flag turned on for the Update Asset Key command. For more information, see the chapters, *Implementing Security* and *Maintaining User Authorization* in *Connect:Direct for z/OS Administration Guide*.

If any errors related to license management occur, see Appendix D, *Initialization and License Key Errors*.

Set Initialization Parameter Values

Typically, new releases of Connect:Direct implement new initialization parameters. Refer to the *Connect:Direct for z/OS Release Notes* and the *Connect:Direct for z/OS Administration Guide* for information on new parameters.

In addition, occasionally initialization parameters become obsolete. Connect:Direct detects parameters, which should be retired, and issues messages to NDMLOG. If you receive a return code of 4 when you stop Connect:Direct, review the NDMLOG for these obsolete parameters. After you remove the obsolete parameters, you will no longer see SITA995I messages in the NDMLOG indicating the obsolete parameters.

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

See the initialization parameter appendices of the *Connect:Direct for z/OS Administration Guide* for a list of the Connect:Direct and VSAM initialization parameters with a description of the function, valid value, and default of each parameter.

Note: You must define all initialization parameters that specify the 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:

1. Modify the parameters as required.

Find sample initialization parameters in the CDINT01 member of the `$CD.PARMLIB`. Observe the following required or suggested values:

- ◆ For initial installation and testing, specify `SECURITY.EXIT=OFF` in member CDINT01. When 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 the type of TCP/IP support in the TCP initialization parameter. Also specify valid values for either the `TCP.NAME` and `TCP.PORTNUM` parameters, or the `TCP.LISTEN` parameter. These parameters are mutually exclusive.

Note: `TCP.NAME` and `TCP.PORTNUM` are soon-to-be obsolete. Consider migrating to `TCP.LISTEN` or `TCP.API.LISTEN` to define a single or multiple listening task.

- ◆ 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 provide `UPPER.CASE` as an override parameter on the DMINIT execute statement in the Connect:Direct startup job stream.
- ◆ Specify the name of the data set where the license key file is stored in the APDSN initialization parameter. (This is the data set you created in *Install the License Key File* on page 53.)

Note: You can initialize Connect:Direct if SNA support is not available. See *Configure Connect:Direct without SNA Support* on page 81.

2. Specify VSAM file names.

Specify all initialization parameters that indicate the Connect:Direct VSAM file names (see the section, *Connect:Direct System File Initialization Parameters*, in the global initialization

parameters appendix in the *Connect:Direct for z/OS Administration Guide*). You can find the following file names in the member CDVDEF of the \$CD.CNTL library:

- ◆ \$CD.AUTH
- ◆ \$CD.CKPT
- ◆ \$CD.MSG
- ◆ \$CD.NETMAP
- ◆ \$CD.STATS
- ◆ \$CD.TYPE

For a description of the content of these files, see *VSAM Files DASD Requirement and Description* on page 23.

3. Override the parameters during startup.

You can 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 Connect:Direct* on page 60 for sample JCL that shows an override for the UPPER.CASE=NO initialization parameter.

Install the ISPF IUI Using Screen Prompts

For best results, install the ISPF IUI using screen prompts. You can also install the ISPF IUI using the LIBDEF service (see *Install ISPF IUI Using the LIBDEF Service* on page 72.)

To install the ISPF IUI using screen prompts:

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 Connect:Direct, build a CLIST that allocates Connect:Direct files and brings up an ISPF/PDF Primary Option Menu with 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 Connect:Direct.


```

CONTROL NOMSG
      FREE FILE (SYSPROC
                ISPLLIB
                ISPPLIB
                ISPMLIB
                ISPSLIB
                ISPCLIB
                DMPUBLIB
                DMMSGFIL)
CONTROL MSG
ALLOC  F(SYSPROC)  DA('SYS1.CLIST'
                    '$CD.ISPCLIB') SHR
ALLOC  F(ISPPLIB)  DA('$CD.ISPPLIB'
                    'SYS1.ISFPLIB'
                    'SYS1.ISRPLIB'
                    'SYS1.ISPPLIB'
                    'SYS1.ICQPLIB') SHR
ALLOC  F(ISPMLIB)  DA('$CD.ISPMLIB'
                    'SYS1.ISRMLIB'
                    'SYS1.ICQMLIB'
                    'SYS1.ISPMLIB') SHR
ALLOC  F(ISPLLIB)  DA('$CD.LINKLIB'
                    'SYS1.ISRLOAD'
                    'SYS1.ISPLOAD') SHR
ALLOC  F(ISPSLIB)  DA('$CD.ISPSLIB') SHR
ALLOC  F(DMPUBLIB) DA('$CD.PROCESS') SHR
ALLOC  F(DMMSGFIL) DA('$CD.MSG') SHR
PDF

```

- ◆ Integrate Connect:Direct for TSO use.

Modify the LOGON PROC used to sign on to TSO to integrate Connect:Direct for TSO use by including the Connect:Direct libraries. The bold lines in the following sample are inserted for 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=$CD.LINKLIB,DISP=SHR
// *
//SYSPROC  DD    DSN=$CD.ISPCLIB,DISP=SHR
//          DD    DSN=SYS1.CLIST,DISP=SHR
//          DD    DSN=USER.CLIST,DISP=SHR
//SYSHLP   DD    DSN=SYS1.HELP,DISP=SHR
//SYSUADS  DD    DSN=SYS1.UADS,DISP=SHR
//SYSLEBC  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=$CD.LINKLIB,DISP=SHR
//          DD    DSN=SYS1.ISRLOAD,DISP=SHR
//          DD    DSN=SYS1.ISPLOAD,DISP=SHR
//ISPLLIB  DD    DSN=$CD.ISPPLIB,DISP=SHR
//          DD    DSN=SYS1.ISRPLIB,DISP=SHR
//          DD    DSN=SYS1.ISPPLIB,DISP=SHR
//ISPMLIB  DD    DSN=$CD.ISPMLIB,DISP=SHR
//          DD    DSN=SYS1.ISRMLIB,DISP=SHR
//          DD    DSN=SYS1.ISPMLIB,DISP=SHR
//ISPMLIB  DD    DSN=$CD.ISPSLIB,DISP=SHR
//          DD    DSN=SYS1.ISRSLIB,DISP=SHR
//          DD    DSN=SYS1.ISPSLIB,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=$CD.PROCESS,DISP=SHR
//DMMSGFIL DD    DSN=$CD.MSG,DISP=SHR

```

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

- ◆ For option **M**, change the file name ***\$CD.MSG*** to reflect the Message file name specified in the CDVDEF member of the *\$CD.CNTL* library to display messages in the Connect:Direct Message file.
- ◆ For option **N**, change the file name ***\$CD.NETMAP*** to reflect the name of the VSAM file that contains the 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 PARS - 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-MSG  - Display Connect:Direct messages
% N+C:D      - 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(DMMSGDSP) PARM($CD.MSG)'
      N, 'PGM(DMISTART) PARM($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 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. 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 Connect:Direct

The `$CD.JCL(CONNECT)` member contains the sample startup job stream to run the Connect:Direct DTF as a batch job. Connect:Direct can run as a batch job or as a started task.

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

To start Connect:Direct:

1. You must execute Connect:Direct from an authorized library. The installation makes the DTF load module (DMINIT) APF-authorized.
2. Submit the startup job stream. While Connect:Direct for z/OS is initializing, you see a series of messages that show 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. See Appendix D, *Initialization and License Key Errors*, for more information on specific error messages.

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

- ◆ What communication protocols are used in your system
- ◆ Whether Secure+ Option is part of your system and what version you are using
- ◆ Whether any initialization parameters are being overridden in the startup JCL

```

SITA001I Connect:Direct initialization has begun.
SITA002I Connect:Direct parameter file allocated and open.
SITA120I Keyword INITPARM Value Overridden: TCQ
SITA120I Keyword INITPARM Value Overridden: ESTAE
SITA120I Keyword INITPARM Value Overridden: DEBUG
SITA279I Some nodes quiesced, QUIESCE.NODE= specified
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.
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.
SITA134I TYPE DEFAULTS file is open.
SITA069I NETWORK MAP file is open.
SITA074I CHECKPOINT file is open.
SITA030I PCQ/TCQ being built.
SITA400I Enqueueing TCX from NETMAP for ESF processing.
SITA996I TCQ COLD Start being performed.
SITA401I Dequeueing TCX from NETMAP for ESF processing.
SITA034I VTAM services being initiated APPLID = M1DEVW0.
SVTJ019I SNA Support is Now Available.
SITA035I ABEND/ESTAE exit being initiated.
SITA036I Connect:Direct 4.07.00 PUT Level 0000 Initialization Complete.
STCO109I TCP/IP Server Subtask Attached
SNOI000I Operator Interface - initialized, MCS.CLIST open STCO110I TCP/IP
Interface Initializing
STCO102I TCP/IP Issuing BIND Call:      3801;0.0.0.0
STCO103I TCP/IP Issuing LISTEN Call:    3801;0.0.0.0
STCO102I TCP/IP Issuing BIND Call:    55998;0.0.0.0
STCO103I TCP/IP Issuing LISTEN Call:   55998;0.0.0.0
STCA102I TCP/IP API Issuing BIND Call:  3800;0.0.0.0
STCA103I TCP/IP API Issuing LISTEN Call: 3800;0.0.0.0
STCO111I TCP/IP Interface Initializing Complete
STCP104I TCP Support is Available.

```

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 the last time 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 Connect:Direct through the IUI, Operator Interface, or Batch Interface.

Note: You can initialize Connect:Direct if SNA support is not available. See *Configure Connect:Direct without SNA Support* on page 81.

Note: If the APKey fails when you start Connect:Direct, check the APKey file. Sometimes during translation (depending on the translation character set), full bars (|) are replaced by pipes (|). Replace any pipes with full bars.

Do not make any other changes to the APKey file. Other changes can result in the following message and render the APKey file invalid:

SITA338I ASSET PROTECTION FAILURE

Signing On to Connect:Direct

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

Signing On through the IUI Interface

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

- ◆ If the 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 Connect:Direct user ID and password.
- ◆ If you are running with a Connect:Direct security exit, use a user ID and password that meet your security requirements.

For additional information on the IUI and procedures to automate the Signon process, refer to the *Connect:Direct for z/OS User's Guide*.

Signing On through the Operator Interface

When you use the Operator Interface, the operator is automatically signed on to 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. For more information, see the *Connect:Direct for z/OS Facilities Guide*.

Verify the Installation

To verify the installation and to gain experience with Connect:Direct operation, run the sample Processes available in the library \$CD.PROCESS.

The Processes perform the following functions:

- ◆ Copy from a SAM file to a predefined file (PROC01)
- ◆ Copy to a new SAM file (PROC02)

- ◆ Copy to a SAM file on a secondary node and back to a SAM file on a primary node (PROC03)
- ◆ Execute a multistep Process using tape files (PROC04)
- ◆ Copy to a new SAM file using a tape file (PROC05)

To verify the installation:

1. Define the data sets used by the test Processes.

Run the job stream provided during installation in *\$CD.CNTL* member *SAMP1DEF* prior to running the first test process *PROC01*. This JCL stream defines the data set used by *PROC01*, copy from a SAM file to a predefined file. If this job is not run, *PROC01* fails with the *data set not found* error message.

2. Customize the test Processes.

Customize the node names, data set names, unit, and *VOLSER* as required in each test Process before submitting it. The comments section of each Process provides instructions.

If the IUI is installed, you can use the general purpose Process Definition screen (DF option) to modify any Process parameters used during Process submission.

Information on Connect:Direct Processes is available from the Connect:Direct Processes Web site at <http://www.sterlingcommerce.com/documentation/processes/processhome.html> and *Connect:Direct for z/OS User's Guide*.

3. Run the test Processes using the IUI, batch, or operator interface.

Perform SMP/E Accept Processing

After Connect:Direct is installed with SMP/E and verified, perform SMP/E Accept Processing to update the distribution libraries. Accepting the base product enables you to back out maintenance PTFs by SMP/E in case of unexpected results.

The member *CDACPT* in the *\$CD.JCL* library contains the job stream to perform the Accept Processing for the base Connect:Direct code.

Back Out and Restart the Installation

Connect:Direct provides you a back-out job stream in case errors occur during the installation. If you need to back out the Connect:Direct installation, run the *CDBCKOUT* member. This job stream deletes all VSAM and non-VSAM files created by *CDALLOC*.

The following methods apply to SMP/E and non-SMP/E installations.

Back Out the SMP/E and Non-SMP/E Installation

If you need to back out the Connect:Direct installation because of errors, run the CDBCKOUT member. This job stream deletes all VSAM and non-VSAM files created by CDALLOC. CDBCKOUT also deletes all libraries and SMP/E files, including the SMP/E CSI.

Restart the SMP/E and Non-MP/E Installation

You can use a standard z/OS JCL RESTART card to restart the job stream in case of failure.

Optional Installation Tasks

Some installation tasks are optional or depend on the features of Connect:Direct that you are using. See Chapter 4, *Optional Installation Procedures*, for the procedures to perform these tasks.

Optional Installation Tasks

Some installation tasks are optional or depend on the features you are using.

Clean Up Installation Files

After you have installed and verified your installation of Connect:Direct, you can delete the following files:

- ◆ \$CD.LKLIB
- ◆ \$CD.TXLIB
- ◆ \$CD.DATA
- ◆ \$CD.CICS.LKLIB

Customize After Installation

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* in *Connect:Direct for z/OS Administration Guide*.
2. Set up the Connect:Direct/Plex environment, if applicable. See *Configuring a Connect:Direct/Plex Environment* in *Connect:Direct for z/OS Administration Guide* for Connect:Direct/Plex setup information.
3. Depending on the type of security at your site, select the appropriate step to set up security:
 - ◆ If you use the Connect:Direct Authorization Facility, add users to the User Authorization file. See *Maintaining User Authorization* in *Connect:Direct for z/OS Administration Guide* for more information.

- ◆ If you use external security software such as RACF, ACF2, or TOP SECRET, see *Implementing Security in Connect:Direct for z/OS Administration Guide* for more information.
4. Add types to the Type file. See *Maintaining the Type File* chapter in *Connect:Direct for z/OS Administration Guide* to add records to the Type file.
 5. Customize the Messages file. See the *Customizing Connect:Direct* chapter of the *Connect:Direct for z/OS Administration Guide* for how to customize the Messages file.
 6. Customize the SUBMIT screen. See the *Customizing Connect:Direct* chapter of the *Connect:Direct for z/OS Administration Guide* for how to customize the SUBMIT screen.
 7. Customize the sample Processes. Information on Connect:Direct Processes is available from the Connect:Direct Processes Web site at <http://www.sterlingcommerce.com/documentation/processes/processhome.html> and *Connect:Direct for z/OS User's Guide*.

Customize the File Agent Feature

Before you install the File Agent feature, review the requirements in *Planning for File Agent* on page 36 and fill in the *Worksheet for Installing File Agent* on page 114. After you customize File Agent, see the Connect:Direct File Agent Help for configuration instructions.

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

To customize the File Agent feature:

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

```
=== > EXEC '$CD. ISPCLIB(CDFAINST)' '$CDFAINST'
```

You create and name a File Agent JCL data set during the installation process. 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 File Agent Configuration Interface.
Execution job	Name of the job that starts the File Agent.
Shutdown job	Name of the job that shuts down the File Agent.

Field	Description
Java UNIX path	Full path to the Java program.
File Agent home	Full path of the directory where the File Agent is installed.
X11 Display variable	<p>X11 display variable used to connect to the X11 GUI server. The File Agent Configuration Interface displays on the monitor that matches this display variable. You can specify the network ID of the terminal that you want to use for the File Agent Configuration Interface.</p> <p>Note: If you want to display the 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.</p>
Job card information	JCL used for the job card.

You can edit the File Agent JCL data set 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 Install

File Agent jcl dataset...
Member name for
  Configuration job.... FACFG
  Execution job..... FAEXEC
  Shutdown job..... FASHUT
Unix path for
  Java executable..... _____
  ..... _____
  ..... _____
  
```

2. To create the CDFAINST JCL used to install File Agent in the \$CD.JCL data set, specify the fields and press **Enter** to continue.

For field definitions, press **PF1**; to scroll the File Agent install panels, press **PF7** and **PF8**.

- 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-21:45
DATE-2003/12/27

CMD ==>

The Connect:Direct File Agent JCL generation may take a moment to execute.

Press ENTER to begin the generate, PF3 to return to previous Menu,
or PF5 to Terminate the Install

```

After the JCL has been generated, the following panel listing the jobs created is displayed.

```

Connect:Direct File Agent Installation JCL Created
TIME-hh:mm
DATE-yyyy/mm/dd

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

Jobname          Description
-----          -
FAPAX            The PAX file containing the File Agent jar files
INSTALL         The job to unload the PAX file into the File Agent directory

Review and submit member INSTALL to finish the installation.
CDFACONF, and CDFAEEXEC will be created by job INSTALL

Press ENTER to continue

```

Note: If you need to re-execute the CDFAINST CLIST, delete the members to prevent an error message.

- To install File Agent in the appropriate HFS directory, execute the *INSTALL* JCL member, which generates the *CDFACONF* and *CDFAEEXEC* JCL members.

Note: The *CDFACONF* and *CDFAEEXEC* job names are based on the JCL member names you entered in the File Agent Installation Main Menu panel. The *INSTALL* job name is taken from the job card information entered during the installation.

- Run the *CDFACONF* job to execute the File Agent GUI. This job copies files from the mainframe library into the UNIX (HFS) directory.

Configuring File Agent

You configure File Agent using the configuration interface. See *Managing Files with Connect:Direct File Agent* in *Connect:Direct for z/OS Administration Guide* for details on how File Agent works and sample configuration scenarios.

Before you implement File Agent in a production environment, follow the instructions in the File Agent Help to set up and verify the basic operation of File Agent. This step is critical to the success of your implementation. The File Agent Help is also available in PDF as *Connect:Direct File Agent Configuration Guide*.

Connect:Direct File Agent is designed to run unattended. After you have verified File Agent operation and configuration, you can execute File Agent by running the *CDFAEEXEC* job. File Agent begins scanning the watch directory containing the directories and partitioned data sets you specify in the configuration file. When a file arrives in a watch directory, Connect:Direct File Agent either submits the default Process to Connect:Direct or performs the actions specified by the rules for the file.

Back Out the File Agent Installation

To back out the File Agent installation:

1. From the File Agent JCL data set:
 - a. Remove the EXECUTE, CONFIGURE, and SHUTDOWN jobs.
 - b. Delete the FAPAX binary.
 - c. Delete the INSTALL job. You specified the name of the INSTALL job during the File Agent installation.
2. From the File Agent UNIX installation directory, delete the following files. You specified this directory during the File Agent installation.

- | | |
|-------------------|---------------------------|
| ◆ CDSdk.jar | ◆ FaHelp.jar |
| ◆ gnuGetopt.jar | ◆ fasat.jar |
| ◆ gnuRegexp.jar | ◆ sizeCheck |
| ◆ jhall.jar | ◆ gnu.regexp-1.1.4.tar.gz |
| ◆ libthemPoems.so | ◆ *.err |
| ◆ activation.jar | ◆ *.in |
| ◆ mail.jar | ◆ *.out |

- If you plan to reinstall Connect:Direct File Agent, you may want to save the following files:

File type	Description
*.ser	Configuration files
*.inc	Incomplete configuration files
.ckpt	Checkpoint files that are created when File Agent executes.

Customize the Spool Transfer Feature

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

Note: For more information on the Spool Transfer feature, see *Connect:Direct for z/OS Facilities Guide*.

Customizing the Spool Transfer feature consists of the following tasks:

- Assemble CDVPSAPI
- Customize VPS/CDI Option.
- Restart VPS.
- 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 Connect:Direct.

Assembling CDVPSAPI

Edit and modify the member *ASMVPS* in data set *\$CD.SAMPLIB* to assemble and link the CDVPSAPI module in the *\$CD.LINKLIB* data set.

Customizing VPS/CDI Option

This section summarizes the requirements for the VPS to CDI program (VPSSCDI). You must add or modify the following library members. Refer to your VPS documentation for detailed explanations and requirements.

VPS.CNTL

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

Member	Description
VPSSTART	This member 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 Connect:Direct printers to this member.
VPSxxxx	These members contain the VPS printer initialization parameters.

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

Keyword	Description
DDSNPFX	Required. Specifies the high-level qualifier VPS uses when creating the Connect:Direct staged data set. The default is VPS.
DEVTYPE=V.CDI	Required. Defines a printer as a Connect:Direct printer.
CDNETMAP	Specifies the Connect:Direct network map data set name. The default is to use the DMNETMAP DD statement specified in VPS startup.
CDPLIB	Defines the Connect:Direct process library data set 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 data set.
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 your VPS LINKLIB using the sample JCL provided by LRS, and the Connect:Direct macros provided in SAMPLIB from *Unload the Installation Libraries* on page 39.

VPS/CDI Startup Procedure

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

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

Restarting VPS

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

Customize Connect:Direct Sample Processes

Customize the sample Processes according to the needs of your environment. Information on Connect:Direct Processes is available from the Connect:Direct Processes Web site at <http://www.sterlingcommerce.com/documentation/processes/processhome.html>.

Install ISPF UI Using the LIBDEF Service

Using the LIBDEF service to install the ISPF UI 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.

Connect:Direct currently supports the following LIBDEFs:

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

Connect:Direct does not currently 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 Connect:Direct load library in the link list to nullify the effect of this restriction.

Use one of the following methods to implement LIBDEFs for the ISPMLIB, ISPPLIB, 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 the allocations for the ISPCLIB and LINKLIB.

Method 1: Setting Up as Separate Menu Items

Set up the Connect:Direct Message function and the Connect:Direct IUI as separate menu options on a panel (usually the Primary ISPF menu panel - ISR@PRIM). This method is similar to the procedure described in *Install the ISPF IUI Using Screen Prompts* on page 56. When selected, each option invokes a CLIST instead of a Connect:Direct program.

To use this method, perform the following.

1. Create and modify the following members from `$CD.SAMPLIB` in the appropriate ISPF library.
 - ◆ The Primary panel: `$CD.SAMPLIB(CDZPRIM)`. 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 CDMSG CLIST: `$CD.SAMPLIB(CDMSG)`. Following is a sample:

```
PROC 0
ISPEXEC LIBDEF ISPPLIB DATASET ID('$CD.ISPPLIB')
ISPEXEC LIBDEF ISPMLIB DATASET ID('$CD.ISPMLIB')
ISPEXEC LIBDEF ISPSLIB DATASET ID('$CD.ISPSLIB')
ISPEXEC SELECT PGM(DMMSGDSP) PARM($CD.MSG) NEWAPPL(CD) -
                PASSLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPMLIB
ISPEXEC LIBDEF ISPSLIB
EXIT
```

- ◆ The CDIUI CLIST: *\$CD.SAMPLIB(CDIUI)*. 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 ISPPLIB DATASET ID('$CD.ISPPLIB')
ISPEXEC LIBDEF ISPMLIB DATASET ID('$CD.ISPMLIB')
ISPEXEC LIBDEF ISPSLIB DATASET ID('$CD.ISPSLIB')
ISPEXEC SELECT PGM(DMISTART) PARM('$CD.NETMAP') "NEWAPPL(CD) -
                PASSLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPMLIB
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 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. 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 Connect:Direct CLIST that accomplishes the following:

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

Use the following procedure:

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

The Primary panel: *\$CD.SAMPLIB(CDXPRIM)*. Following is a sample:

```

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

```

The CDIUI2 CLIST: *\$CD.SAMPLIB(CDIUI2)*. Following is a sample:

```

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

```

The CD@PRIM panel, \$CD.SAMPLIB(CD@PRIM). Following is a sample:

```

) PROC
&ZSEL = TRANS (TRUNC (&ZCMD, '.'))
M, 'PGM(DMMSGDSP) PARM($CD.MSG)'
C, 'PGM(DMISTART) PARM($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 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. 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.

Customize the CICS Interface

You can ignore this step if your site does not use CICS.

Customizing the CICS interface consists of the following tasks:

- ◆ Customizing and Installing the Connect:Direct CICS Resource Definition Source
- ◆ Modifying Your CICS Startup
- ◆ Starting the Connect:Direct CICS Interface

Customizing and Installing the Connect:Direct CICS Resource Definition Source

All program, transaction, file, and associated definitions are provided in \$CD.CNTL(CICSCSD). CICSCSD contains Resource Definition source code, which you may need to customize to meet your site's needs.

To customize and install the Connect:Direct CICS resource definition source:

1. Review the source (CICSCSD). Use the GROUP and LIST names provided or change them in order to have unique names, if necessary.
2. Update the FILE definitions if any files have different High Level Qualifiers than what were specified in the ISPF panels.

For each Connect:Direct DTF that your CICS system will have an IUI with, you must have a File definition statement that points to the network map used by that Connect:Direct DTF. To tell the IUI what FILE definition CICS is using for the network map, the FILE name (DDName) must match the NETMAP DDName entered in the DTF NODE CONFIGURATION record for that Connect:Direct DTF.

3. (Optional step) If you want to initialize Connect:Direct during CICS startup or add Connect:Direct CICS interface shutdown to the CICS shutdown, review \$CD.SAMPLIB(NDCPLT). This member contains macro source and instructions for the CICS systems programmer to build or update PLTPI and PLTSD entries.

Note: To make the IUI available immediately upon CICS startup, you must use the LIST name in the SIP GRPLIST (keyword) parameter list.

4. Verify that the JOB and PARM information is correct in \$CD.JCL(CDCSDUP).
5. Shut down all CICS transaction servers.
6. Run the \$CD.JCL(CDCSDUP) job.

Note: If you need to back out of the Resource Definitions provided with Connect:Direct for z/OS, use the JCL in \$CD.JCL(CSCSDBK).

The RDO Groups provided in the CICSCSD source are described in the following table.

Group	Description
NDCDCT (Destination Control Table)	Required Source containing the definition of the extra-partition Connect:Direct command log destination (NDML), that is written as output to a data set or to the SYSOUT queue with the DD name NDMCLOG. Also contains source to define a Connect:Direct CICS printer and the definitions for the Event Services Support (ESS) Temporary Data Queue (TDQ).

Group	Description
NDCFCT (File Control Table)	<p>Contains the following definitions for Connect:Direct CICS files:</p> <ul style="list-style-type: none"> ◆ NDMCFG — Configuration file ◆ NDMUSER — User Profile ◆ NDMMMSG — Connect:Direct message file ◆ NETFINP — (Primary) Connect:Direct DTF's NETMAP file ◆ NDMEVNT — Event Services Restart file <p>Note: NDMTASK and DMPUBLIB are provided in JCL and cannot be defined to CICS using RDO.</p>
NDCLIST	Specifies the LIST entry to associate all Groups.
NDCPCT (Program Control Table)	<p>Defines transactions used by the Connect:Direct CICS interface.</p> <p>Note: You must reflect any changes to the following transactions in the CONFIGURATION FILE - CONTROL RECORD UPDATE screen.</p> <ul style="list-style-type: none"> ◆ CDM (Connect:Direct monitor) ◆ CDI (Connect:Direct-CICS interface) ◆ CDP (Connect:Direct-CICS printer) ◆ CDE transactions (Event Services Support program) <p>In addition, you must reflect changes to the CDP transaction in the printer destination definitions located in NDCDCT RDO group.</p>
NDCPPT (Processing Program Table)	Defines the MAPSETs DMQM01 through DMQM82, and DMQM98. In addition, defines PROGRAMS DMQ001 through DMQ084, DMQ247, DMQ248, and DMQ249.

Modifying Your CICS Startup

To modify your CICS startup:

1. Review the \$CD.SAMPLIB(CICSJCL) member for a list of DD statements and their purposes. Copy the applicable DD statements from CICSJCL to your CICS startup JCL (PROC or JOB).

Note: Any DD that is normally controlled by RDO should not be replicated in the JCL.

2. Modify any of the copied DD statements to use the correct High Level Qualifiers for data set names as needed.
3. For any additional customization that may be required, see the *Using the CICS API Option* chapter in *Connect:Direct for z/OS CICS Administration and User's Guide* and the *Using ESS with the CICS API* chapter in *Connect:Direct for z/OS Facilities Guide*.
4. Submit your CICS JCL for execution.

Starting the Connect:Direct for z/OS CICS Interface

Perform this task only if Connect:Direct CICS is not part of the Program Load Table (PLT) initialization.

After starting CICS, start the Connect:Direct CICS interface as follows:

1. Type the CDA transaction code, and press **Enter**.
2. Select option **I** from the PRIMARY MENU and press **Enter** to go to the INTERFACE screen.
3. From the INTERFACE screen, select option **A**, and press **Enter**. When the message INTERFACE HAS BEEN STARTED is displayed, press **Enter** to refresh the status information, and wait until ACTIVE is displayed in the INTERFACE STATUS field, and a transaction number is displayed in the MONITOR TASK NUMBER field.
4. Press **PF3** to return to the PRIMARY MENU, select option **N** on the PRIMARY MENU, and press **Enter** to go to the NODE STATUS screen.
5. On the NODE STATUS screen, for each node you want to activate, select the line command **A** in the field to the far left of each NODE STATUS line. When the date and time are displayed under the SESSION DATE/TIME heading, the node is activated.

Note: The node may already be active if the message SUPPRESS CONNECTION AT STARTUP = N is displayed on the DTF NODE screen during the installation procedures.

6. Press **PF3** several times to exit the CDA transaction, and then sign on to Connect:Direct using the CD transaction code.

Customize HP OpenView for SNMP Traps

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

Import the Connect:Direct Trap Configuration File

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

1. Transfer the Connect:Direct for z/OS configuration file, *\$CD.MIBDATA*, 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 Connect:Direct MIB

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

1. Transfer the Connect:Direct for z/OS MIB, $\$CD.SAMPLIB(CDMIB)$, to the workstation where HP OpenView is installed. This is a text file. Transfer it as CDMIB.mib.
2. Use the HP OpenView process, xnmloadmib, to load the 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.

Customize NetView for SNMP

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

Customize NetView with the Tivoli Enterprise Console (TEC)

Perform the following tasks if you are customizing NetView using the Tivoli Console.

Import the Connect:Direct Trap Configuration File

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

1. Transfer the Connect:Direct file, $\$CD.TRPCONF(CDNETV)$, to the appropriate machine. 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.

Import the Connect:Direct MIB

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

Set Up NetView Rules

Set up a rule using nvrEdit that forwards the Connect:Direct trap messages to the TEC. A sample rules file is provided in $\$CD.TRPCONF(CDTIVRS)$ that can be transferred as a text file to CDTrape_Tivoli.rs.

Process the Boroc File

1. Transfer the `$CD.TRPCONF(CDBOROC)` 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`.

Note: Refer to the appropriate NetView/Tivoli documentation for the proper command syntax.

Customize NetView without the TEC

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

Import the Connect:Direct Trap Configuration File

Transfer and execute the `CDTrap_NetView.sh` script to add the Connect:Direct for z/OS traps in to the `trapd.conf` file.

1. Transfer the Connect:Direct file, `$CD.TRPCONF(CDNETV)`, to the appropriate machine. 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.

Import the Connect:Direct MIB

1. Transfer the Connect:Direct for z/OS MIB, `$CD.MIBDATA`, to the appropriate machine. This is a text file. Transfer it as `CDMIB.mib`.
2. Use the UNIX process, `xnmloadmib`, to load the Connect:Direct for z/OS MIB into the MIB database.

Disable SNMP Traps

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 Connect:Direct message that is written to the console using `SCWTO` or `DMWTO`. Each event is triggered by the Connect:Direct message ID and the trap text (short message text of that Connect:Direct message). The Connect:Direct events generated are defined by category and type.

1. Edit the member `CDSNMP` in the `$CD.SAMPLIB` data set and disable any SNMP trap that you do not want 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 *Connect:Direct for z/OS Administration Guide* for a complete description of each SNMP trap.

Configure Connect:Direct without SNA Support

To configure and initialize Connect:Direct without SNA, you must define parameters so that Connect:Direct can function in a TCP-only environment. Complete the following steps to accomplish this.

1. Define the following initialization parameters. See Appendix A, *Global Initialization Parameters*, in *Connect:Direct for z/OS Administration Guide* for detailed information on these parameters.

```
SNA=NO
TCP=xxx
TCP.API.PORTNUM=nnnnn
TCP.PORTNUM=nnnnn
MAXUSER=nnn
```

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=(4199,199.1.1.2)
TCP.API.LISTEN=(4198,199.1.1.2)
MAXUSERS=10
```

This sample configuration allows 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* in *Connect:Direct for z/OS Administration Guide* for more information.

Define LOCAL node with the second positional parameter as NO-VTAM. The LOCAL node definition is used to define the SNA ACBNAME that Connect:Direct opens in an SNA environment. When you specify NO-VTAM, 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 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.JCL, execute JNETLOAD, the network map installation job, to load the network map.

If your Connect:Direct operation uses SNA, you can initialize 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 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	Connect:Direct does not initialize.
Continue	Connect:Direct continues initializing without SNA and keeps trying to establish the SNA session. 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	Connect:Direct tries to establish the SNA session <i>before</i> continuing initialization. After 20 attempts, Connect:Direct displays the "VTAM or Connect:Direct inactive" message again. You can again choose one of the options in this table.
NoVTAM	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.

Preparing VTAM Definitions

This chapter provides instructions on the following:

- ◆ Setting Up VTAM Definitions
- ◆ Preparing VTAM and NCP Parameters

Setting Up VTAM Definitions

Before starting 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 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.CNTL`.

- ◆ VTAM definitions for Connect:Direct DTF (CDAPPL)
- ◆ VTAM definitions for IUI or batch interface (CDIAPPL)
- ◆ Mode table used with Connect:Direct (CDMODET)
- ◆ Cross-domain resource manager node (CDCDRM)
- ◆ Cross-domain resource definition for other nodes (CDCDRSC)
- ◆ VTAM definition for PNODE=SNODE, also known as loop-back, processing (CDAPPL)

Refer to Appendix B, *Sample VTAM Definitions* for sample VTAM APPLID definitions.

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 Connect:Direct network and VTAM cross-domain definitions.

Note: If you went through the installation process and generated the network map by performing *Generate and Load the Network Map* on page 51, you can refer to the member NETMAP01 in `$CD.CNTL` for network map definitions that use the VTAM definitions defined in this section.

Defining local and remote Connect:Direct nodes is a multipart procedure as described in the following sections.

Defining APPLID of Local DTF

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

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

This example is located in the member CDAPPL of \$CD.CNTL.

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 Connect:Direct Extended Recovery, change CDAPP4 to CDAPP* to make the APPL dynamic. This change enables the Connect:Direct extended recovery standby to monitor the active Connect:Direct image from a different z/OS image and to take over for that active Connect:Direct image if it fails. This setting applies to both stand-alone servers and 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 (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 page 86 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 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 AUTOSSES to **1** if this DTF is used in a mixed environment of sending and receiving files. Set AUTOSSES to **0** if this DTF is used primarily to receive files.

Note: You can still use this DTF to send files if you have set AUTOSSES 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.

Defining APPLID for IUI and Batch Sessions

Define APPLID for IUI and batch session definition.

Note: You must add ENCR=NONE to VTAM APPLs that are to be used for IUI sessions to avoid signon problems.

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

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 be used for the processing. See the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for a discussion of the network map requirements.

The following figure shows an additional 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 CDAPPL of \$CD.CNTL.

CDAPP2	APPL	ACBNAME=CDAPP2,	VTAM APPLICATION ID	X
		AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VPACE),		X
		EAS=n,	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		

See the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for examples and content of the Connect:Direct network map.

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 Connect:Direct. The examples are located in member CDMODET.

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 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 Connect:Direct for z/OS nodes.

Note: If you are using the Secure+ Option 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
	PSEVIC=X'00000000000000000000000000000000'		

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
	PSEVIC=X'00000000000000000000000000000000'		

OS/400 SNUF (LU0) Nodes

Use the following entry with OS/400 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
	PSEVIC=X'00000000000000000000000000000000'		

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'06020000000000000000300'

```

Use the following entry with LU6.2 dependent nodes.

```

CD624Kd  MODEENT LOGMODE=CD624Kd,         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',                     X
        PSERVIC=X'060200000000000000002C00'

```

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'06020000000000000000300'

```

Defining Cross-Domain Resource Manager Minor Nodes

Define the cross-domain resource manager nodes. The following figure shows Connect:Direct Cross-Domain Resource Manager node definitions. The sample is located in member CDCDRM.

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 communicates. These entries are defined in the domain in which this Connect:Direct is being defined.

Defining Cross-Domain Resources

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

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

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

When defining APPLs for multiple DTFs or a 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 Connect:Direct nodes are in the supplied examples (in \$CD.CNTL) with the name field value (column 1) equal to the ACBNAME value. However, these names may be different. See page 117 for an example of VTAM and network map Cross Domain definitions and the rules that govern the definitions.

Preparing VTAM and NCP Parameters

This step explains how to set up VTAM and NCP parameters for Connect:Direct operation. You must perform the following evaluations to prepare for 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 Connect:Direct operation. See *Select RU Size for SNA Sessions* on page 90 that follows.

- ◆ Determine the effect of NCP parameters.
Several parameters that are located in the NCP macros used during NCP generation (GEN) can also affect Connect:Direct operation. See *Determining Effects of NCP Parameters* on page 92.

Select RU Size for SNA Sessions

The request/response unit (RU) size for 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,	X
	RUSIZES=X'8787'	

When selecting an RU size for 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 Connect:Direct.

For example, if the Connect:Direct VTAM log mode table entry specifies 4,096 bytes, the NCP MAXDATA value must be at least 4,125 bytes for 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 Connect:Direct VTAM log mode table.

- ◆ The minimum RU size value for Connect:Direct SRF-to-DTF transmissions is 256 bytes and the maximum is 64 KB bytes.
The RU size range differs for LU6.2 protocol, where the minimum is 512 bytes and the maximum is 30720 bytes.
- ◆ The minimum RU size value for 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**).

b	a							
	8	9	A(10)	B(11)	C(12)	D(13)	E(14)	F(15)
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
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

RU Sizes Calculation

The table is derived from the following calculations:

The RUSIZE of **ab** means RUSIZE equals **a x (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.

<p>if RUSIZES=X'87F8' then</p> <p>the SLU RUSIZE is 87 which indicates 8 x 2**7 = 8 x 128 = 1024 (8 times 2 to the 7th power)</p> <p>the PLU RUSIZE is F8 which indicates F x 2**8 = 15 x 2**8 = 15 x 256 = 3840 (15 times 2 to the 8th power)</p>

Determining Effects of NCP Parameters

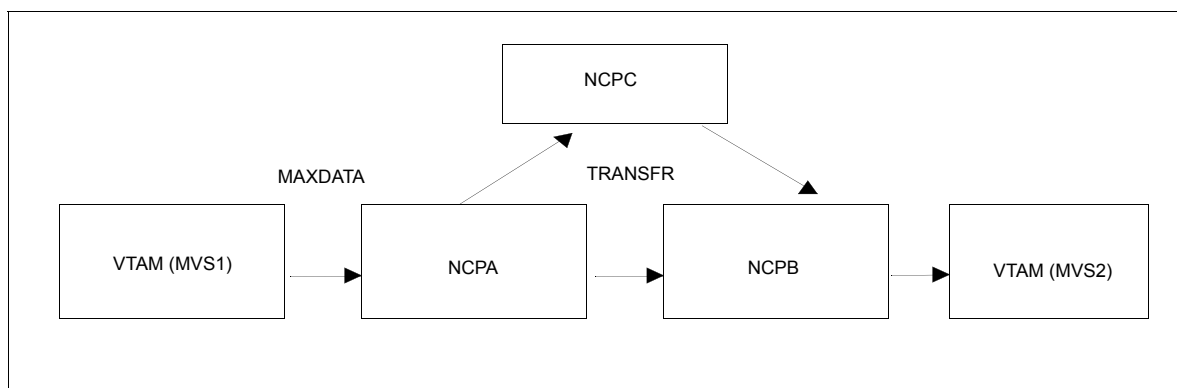
Review the following NCP parameters carefully during the Connect:Direct installation:

- ◆ 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 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 NCPC, 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 MAXBUF RU 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 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:

1. Determine the maximum amount of data to be received on this line definition. For 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 Connect:Direct:

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 page 91. This value is the largest RU that you can specify for use by 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.

Tuning the CICS Interface

After you have Connect:Direct for z/OS installed and functional, you can tune it to enhance the performance and usage of resources for the Connect:Direct CICS interface.

Actual resource usage by Connect:Direct varies according to the implemented configuration, including the number of DTF nodes that can be signed on to by the CICS interface, the number of subtasks defined per node, and other considerations, such as the types of commands executed.

You may want to tune your Connect:Direct system, based upon guidelines provided to assist you in estimating the impact of Connect:Direct for z/OS on your CICS online environment for the following:

- ◆ File I/O buffers
- ◆ Auxiliary or main temporary storage
- ◆ Transaction priorities and class assignments

For more information on using the Connect:Direct CICS interface, see *Connect:Direct for z/OS CICS Administration and User's Guide*.

File I/O Buffers

You can reduce file I/O buffers to correspondingly lighten the load on your virtual and real storage, but at the expense of increasing disk I/O activity. The configuration and user profile data sets are type VSAM and can participate in Local Shared Resource (LSR) buffer pools, designated for light-to-medium usage data sets.

Auxiliary or Main Temporary Storage

You can choose main or auxiliary temporary storage as a trade off between using more real storage (main) and increasing disk I/O activity (auxiliary). The CICS interface makes heavy use of temporary storage, especially during SELECT PROCESS and SELECT STATISTICS operations.

CICS Dynamic Storage Area (DSA) Usage

The CICS interface uses the CICS DSA as follows:

- ◆ Approximately 1 KB is used by the CICS Task Control global exit.
- ◆ Approximately 10–20 KB is used for transaction-related storage and temporary storage records by the CD and CDA transactions.

In addition, the SELECT PROCESS (SP) and SELECT STATISTICS (SS) functions are heavy users of CICS Temporary Storage. Results returned by these functions are written to Temporary Storage as a series of 300-byte records.

Parameters are provided on the DTF NODE configuration screen of the CDA transaction (OUTPUT RECORD LIMIT) and on the IUI.NODE statement of the Connect:Direct CICS Configuration Load program (TDLIMIT) to limit the amount of data returned by these commands.

Extended Storage Requirements

This section contains information about storage above and below the line.

Above-the-Line Storage

Non-CICS storage above the 16-megabyte line is used by the CICS interface as follows:

- ◆ Approximately 340 KB is used for Connect:Direct API programs.
- ◆ The CICS interface signon table, node table, and subtask tables are allocated above the line, with the total amount required calculated as follows.

$$36 + (18 * (T+W)) + (304 * S) + (224 * N) + (144 * T)$$

The following table describes the variables in the preceding example:

Variable	Description
T	The sum of the maximum subtask per node values or all nodes eligible to be signed on to by the CICS interface (MAXIMUM WORKER SUBTASKS on the DTF NODE configuration screen or VTAM.SSESSIONS on the IUI.NODE parameter of the CICS interface Configuration Load program).
W	The total number of entries in the WORK QUEUE for all DTF nodes.
S	The value of the MAX.SIGNON parameter of the Configuration Parameters screen or CONTROL.PARMS statement of the Configuration Load program.
N	The number of nodes eligible to be signed on to by the CICS interface (the number of DTF.NODE records defined in the CICS interface configuration file).

Transaction Priorities and Class Assignments

If you find that heavy usage of the CICS interface is causing resource shortages in CICS, you may want to consider imposing transaction class limits on the Connect:Direct transaction. You can impose class limits by first assigning a transaction class to the transaction, and then placing a limit on the number of transactions in that class. You may also want to assign the Connect:Direct transaction to a lower priority than those of other tasks in your system to increase system throughput.

Installation Worksheets

This appendix provides worksheets that correspond to the installation panels discussed in *Generate the Install JCL through ISPF/PDF* on page 41 and the panels related to generating a network map in *Generate and Load the Network Map* on page 51. Make copies of the network map worksheets if necessary. You may want to save the worksheets for later reference when you need to make changes to the network map.

Worksheet for All Installations

Record the information specified in the following worksheet to prepare for your installation.

Panel Field	Description
C:D System High-Level Qualifier (Required)	Data set High-Level Qualifier (HLQ) used for ALL Connect:Direct system data sets, VSAM data sets, and SMP/E data sets. You are given the option to change VSAM and SMP/E HLQ in the following panels.
Distribution Tape VOLSER (Required)	Tape volume and serial number information to be specified in CDUNLD JCL. VOLSER number of the tape shipped by Sterling Commerce.
Permanent DASD Device Type (Required)	The DASD device type for all permanent Connect:Direct system files, including VSAM. The default is SYSDA .
Permanent DASD Volume Serial No.	Fill in if you wish to allocate all Connect:Direct system files in a specific DASD volume.
Temporary DASD Device Type (Required)	The DASD device type for all temporary files used during installation. The default is SYSDA .
SMP/E Install (Y,N) (Required)	If set to Y, this flag instructs Connect:Direct to perform an SMP/E installation, or an IEBCOPY installation if set to N . The default is Y .
Job Card Information	<pre>//CDINST JOB (CD-INSTALL),'CD INSTALL',CLASS=O, // MSGCLASS=X,REGION=8192K___ //* _____ //* _____</pre> <p>These are the batch job cards used for all installation jobs. Using screens, Connect:Direct fills in a dummy job card for you to customize.</p>

Worksheet for SMP/E Installation

Record the information in the following worksheet to prepare for SMP/E installation.

Panel Field	Description
SMP/E Data Sets HLQ (Required)	Data set HLQ used for SMP/E data sets such as SMPPTS or SMPSTS. Its value is initially set to the same as the System HLQ.
CSI Data Set Name (Required)	System HLQ with CSI as the low level node name.
CSI Catalog Name	Catalog name used for the new SMP/E CSI. It defaults to blanks.
TARGET Zone Data Set Name (Required)	SMP/E data set name that contains target zone information. It is initially set to the same data set name as the CSI.
DIST Zone Data Set Name (Required)	SMP/E data set name that contains distribution zone information. It is initially set to the same data set name as the CSI.
CSSLIB Data Set Name (Required if changing the default)	Data set used during link-edit of Connect:Direct modules. You must define the CSSLIB DSNAM in the SMP/E CSI. If you are using a DSNAM other than the default SYS1.CSSLIB, modify the SMPINIT member before running the installation job stream.
SCEELKED Data Set Name (Required if changing the default)	Data set used during link-edit of Connect:Direct modules. You must define the SCEELEKED DSNAM in the SMP/E CSI. If you are using a DSNAM other than the default CEE.SCEELKED, modify the SMPINIT member before running the installation job stream.
VSAM Files HLQ (Required)	Data set HLQ used for all Connect:Direct VSAM files. This high level qualifier is set to the same value as the system high level qualifier.
VSAM Files Catalog Name	Catalog name used for VSAM file allocations. The default is blanks.
VSAM Files Volser (Required)	Volume used for VSAM file allocations. The default is the permanent DASD volume.

Worksheet for Non-SMP/E Installation

Record the information specified in the following worksheet to prepare for a non-SMP/E installation.

Panel Field	Description
VSAM Files HLQ (Required)	
	Data set HLQ used for all Connect:Direct VSAM files. This HLQ is set to the same value as the system high-level qualifier.
VSAM Files Catalog Name	
	Catalog name used for VSAM file allocations. The default is blanks.
VSAM Files Volser (Required)	
	Volume used for VSAM file allocations. The default is the permanent DASD volume.

Worksheet for Netmap Local Node Definition

The following entries define the local Connect:Direct node in the network map and an adjacent node entry for PNODE-SNODE processing to enable transfers from and to your local node. Refer to the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for information about the syntax and valid parameters and examples.

Note: Do not use the node names from the sample node. Do not make the node name the same as the VTAM APPLID.

Field	Description
Local Node (logical node) name	
Communications Name (VTAM APPLID)	
SUPERUSR password (optional)	
VTAM APPLIDS for IUI Sessions	You can define up to four interactive APPLIDs for the local Connect:Direct to be used for IUI and batch sessions. For an example, see <i>Defining APPLID for IUI and Batch Sessions</i> on page 85.
PNODE=SNODE VTAM APPLID	Specify the VTAM APPLID to be used when initiating transfers from your local node to your local node. An adjacent node entry is put in the network map whose node name is the same as your local node. For an example of PNODE=SNODE processing, see <i>Defining APPLID for Loop-Back Processing</i> on page 86.
Parallel Sessions Parameter: PARSESS=(max and default)	
	Specify the maximum number of concurrent parallel sessions that can be active for PNODE=SNODE transfers.
VSAM HLQ for the TCQ and TCX files	

Worksheet for Netmap Adjacent Node Definitions: SNA LU0 Nodes

Use this worksheet for adjacent node definitions for SNA LU0 nodes. Refer to the description of adjacent node syntax, parameters, and examples in the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide*. **See the worksheet on page 107 for Tandem SNA nodes. DO NOT use your local node as an adjacent node; Connect:Direct performs this task for you.**

Node	Name and Description
Adjacent Node Name	_____
Communications Name (VTAM APPLID)	_____
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Adjacent Node Name	_____
Communications Name (VTAM APPLID)	_____
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Adjacent Node Name	_____
Communications Name (VTAM APPLID)	_____
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Adjacent Node Name	_____
Communications Name (VTAM APPLID)	_____
Parallel Sessions Parameter: PARSESS=(max, default)	_____

Worksheet for Netmap Adjacent Node Definitions: z/OS TCP/IP Nodes

Use this worksheet for adjacent node definitions for TCP/IP nodes. No installation panel exists for this type of adjacent node definition. You can define these nodes after you complete the installation. Refer to the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for instructions, a description of adjacent node syntax, parameters, and examples.

Node	Definition
Adjacent Node Name	
Communications Name (TCP/IP Port Number)	
TCP/IP Address of the remote node	
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	
Operating Environment (ENVIRONMENT)	z/OS
Long Domain Name for remote node	
Adjacent Node Name	
Communications Name (TCP/IP Port Number)	
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	
Operating Environment (ENVIRONMENT)	z/OS

Worksheet for Netmap Adjacent Node Definitions: OpenVMS Nodes

Use this worksheet for Connect:Direct for OpenVMS node names and associated logical unit pools. Refer to the description of adjacent node definitions and examples in the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide*.

Node	Definition
Adjacent Node Name	
Parallel Sessions (PARSESS) Default Class	
PNODE LU Pool (PNODE.LUS)	
SNODE LU Pool (SNODE.LUS)	
Adjacent Node Name	
Parallel Sessions (PARSESS) Default Class	
PNODE LU Pool (PNODE.LUS)	
SNODE LU Pool (SNODE.LUS)	
Adjacent Node Name	
Parallel Sessions (PARSESS) Default Class	
PNODE LU Pool (PNODE.LUS)	
SNODE LU Pool (SNODE.LUS)	

Worksheet for Netmap Adjacent Node Definitions: HP NonStop (Tandem) SNA Nodes

Use this worksheet for Connect:Direct for Tandem Node Names and associated Logical Unit Pools. Refer to the description of adjacent node definitions and examples in the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide*.

Node	Definition
Adjacent Node Name	
Parallel Sessions (PARSESS) Default Class	
LU Pool (SNODE.LUS)	
Adjacent Node Name	
LU Pool (SNODE.LUS)	
Adjacent Node Name	
LU Pool (SNODE.LUS)	
Adjacent Node Name	
LU Pool (SNODE.LUS)	

Worksheet for Netmap Adjacent Node Definitions: OS/400 SNUF Nodes (LU0)

Include Connect:Direct for OS/400 node names and associated logical unit pools. Refer to the description of adjacent node definitions and examples in the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide*.

Node	Definition
Adjacent Node Name	
Remote Library Name	
Session Type	SNUF
Parallel Sessions Parameter: PARSESS=(max, default)	
LU Pool (SNODE.LUS)	
Adjacent Node Name	
Remote Library Name	
Session Type	SNUF
Parallel Sessions Parameter: PARSESS=(max, default)	
LU Pool (SNODE.LUS)	
Adjacent Node Name	
Remote Library Name	
Session Type	SNUF
Parallel Sessions Parameter: PARSESS=(max, default)	
LU Pool (SNODE.LUS)	

Worksheet for Netmap Adjacent Node Definitions: OS/400 LU6.2 Nodes

Include Connect:Direct for OS/400 node names and associated logical unit pools. Refer to the description of adjacent node definitions and examples in the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide*.

Node	Definition
Adjacent Node Name	
Communications Name (not on installation panel)	
Remote Library Name	
Session Type	LU62
Parallel Sessions Parameter: PARSESS=(max, default)	
Logmode Entry Name (LOGMODE) - Required	
Operating Environment (ENVIRONMENT) - Required	OS400
LU Pool (SNODE.LUS)	
Adjacent Node Name	
Communications Name (not on installation panel)	
Remote Library Name	
Session Type	LU62
Parallel Sessions Parameter: PARSESS=(max, default)	
Logmode Entry Name (LOGMODE) - Required	
Operating Environment (ENVIRONMENT) - Required	OS400
LU Pool (SNODE.LUS)	

Worksheet for Netmap Adjacent Node Definitions: OS/400 TCP/IP Nodes

Include Connect:Direct for OS/400 node names and associated TCP/IP and port numbers. Refer to the description of adjacent node definitions and examples in the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide*.

Node	Definition
Adjacent Node Name	
Communications Name (TCP/IP Port Number)	
TCP/IP Address of the remote node	
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	
Operating Environment (ENVIRONMENT)	OS400
Long Domain Name for remote node	
Adjacent Node Name	
Communications Name (TCP/IP Port Number)	
TCP/IP Address of the remote node	
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	
Operating Environment (ENVIRONMENT)	OS400
Long Domain Name for remote node	
Adjacent Node Name	
Communications Name (TCP/IP Port Number)	
TCP/IP Address of the remote node	
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	
Operating Environment (ENVIRONMENT)	OS400
Long Domain Name for remote node	

Worksheet for Netmap Adjacent Node Definitions: SNA LU6.2 Nodes

Use this worksheet for adjacent node definitions for SNA LU6.2 nodes. No installation panel exists for this type of adjacent node definition. You can define these nodes after you complete the installation. Refer to the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for instructions, a description of adjacent node definitions, and examples.

Node	Definition
Adjacent Node Name	
Communications Name (VTAM APPLID)	
Session Type	LU62
Parallel Sessions Parameter: PARSESS=(max, default)	
Logmode Entry Name (LOGMODE)	
Operating Environment (ENVIRONMENT)	
APPLIDS	
Adjacent Node Name	
Communications Name (VTAM APPLID)	
Session Type	LU62
Parallel Sessions Parameter: PARSESS=(max, default)	
Logmode Entry Name (LOGMODE)	
Operating Environment (ENVIRONMENT)	
APPLIDS	

Worksheet for Netmap Adjacent Node Definitions: UNIX LU6.2 Nodes

Use this worksheet for UNIX LU6.2 adjacent node information. No installation panel exists for this type of adjacent node definition. You can define these nodes after you complete the installation. Refer to the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for instructions, a description of adjacent node definitions, and examples.

Node	Definition
Adjacent Node Name	_____
Communications Name	_____
Session Type	LU62
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Logmode Entry Name (LOGMODE) - Required	_____
Operating Environment (ENVIRONMENT)	UNIX
Adjacent Node Name	_____
Communications Name	_____
Session Type	LU62
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Logmode Entry Name (LOGMODE) - Required	_____
Operating Environment (ENVIRONMENT)	UNIX
Adjacent Node Name	_____
Communications Name	_____
Session Type	LU62
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Logmode Entry Name (LOGMODE) - Required	_____
Operating Environment (ENVIRONMENT)	UNIX

Worksheet for Netmap Adjacent Node Definitions: UNIX or Windows TCP/IP Nodes

Use this worksheet for UNIX or Windows TCP/IP adjacent node information. No installation panel exists for this type of adjacent node definition. You can define these nodes after you complete the installation. Refer to the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for instructions, a description of adjacent node definitions, and examples.

Node	Definition
Adjacent Node Name	_____
Communications Name	_____
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Operating Environment Parameter: ENVIRONMENT	UNIX / Windows (choose one)
Adjacent Node Name	_____
Communications Name	_____
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Operating Environment Parameter: ENVIRONMENT	UNIX / Windows (choose one)
Adjacent Node Name	_____
Communications Name	_____
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Operating Environment Parameter: ENVIRONMENT	UNIX / Windows (choose one)
Adjacent Node Name	_____
Communications Name	_____
Session Type	TCP
Parallel Sessions Parameter: PARSESS=(max, default)	_____
Operating Environment Parameter: ENVIRONMENT	UNIX / Windows (choose one)

Worksheet for Installing File Agent

Use this worksheet to prepare for the File Agent installation.

Installation Item	Details
Configuration Job	The name of the job that starts the File Agent Configuration Interface.
Execution Job	The name of the job that starts the File Agent.
Shutdown Job	The name of the job that shuts down the File Agent.
Java UNIX path	The full path to the Java program.
File Agent home	The full path of the directory where you want to install the File Agent.
X11 Display Variable	<p>The X11 display variable used to connect to the X11 GUI server. The File Agent Configuration Interface displays on the monitor that matches this display variable. You can specify the network ID of the terminal that you want to use for the File Agent Configuration Interface.</p> <p>Note: If you want to display the 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.</p>
Job Card Information	<p>The JCL used for the job card.</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

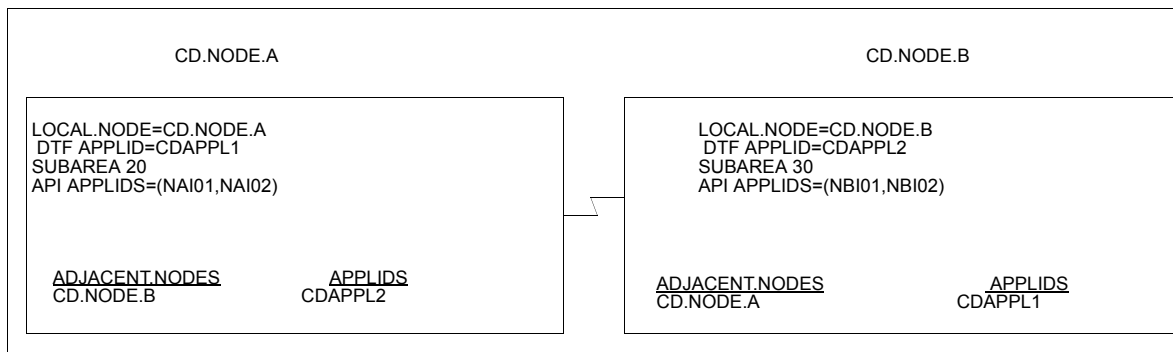
Sample VTAM Definitions

This appendix includes the following sample VTAM definitions to assist you in planning for the installation:

- ◆ VTAM definitions for a full networking Connect:Direct
- ◆ VTAM definitions for cross-domain network
- ◆ VTAM definitions for a mainframe-to-microcomputer connection

VTAM Definitions for Full Networking Connect:Direct

This section shows a sample 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

The 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
SA30CDRMSUBAREA=30,ELEMENT=1,ISTATUS=ACTIVE
SA20CDRMSUBAREA=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

The following is the DTF APPL definition for CD.NODE.B.

```

CDAPP2 APPL ACBNAME=CDAPP2,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.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

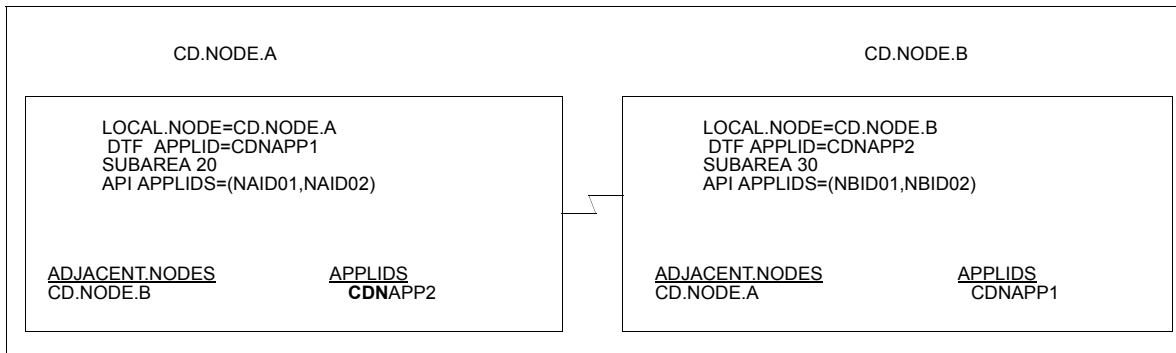
The VTAM APPL definitions for Connect:Direct nodes are in the supplied examples (in *\$CD.CNTL*) with the name field value (column 1) equal to the ACBNAME value. However, these names may be different. If they are different, the network name value contained in the name field

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

The following is the DTF APPL definition for CD.NODE.A.

```

CDNAPP1 APPL ACBNAME=CDDAPP1,
AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VPAGE), 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
    
```

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
CDNAPP2 CDRSC CDRM=SA30
    
```

The 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

The following is the DTF APPL definition for CD.NODE.B.

```

CDNAPP2 APPL ACBNAME=CDAPP2,
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
    
```

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

```

NBN01 APPL ACBNAME=NBID01,           X
      DLOGMOD=CDLOGM,                 X
      MODETAB=CDMTAB

NBN02 APPL ACBNAME=NBID02,           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
CDNAPP1 CDRSC CDRM=SA20
    
```

The 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) )
    
```


Connect:Direct Enqueue Resource Management

This appendix includes definitions of 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 data set 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.
-

Initialization and License Key Errors

This appendix describes the causes of common errors, such as inadequate storage or errors in the statistics log, that may occur when you initialize Connect:Direct for z/OS. License key verification also occurs at initialization and periodically throughout the day, and errors related to that verification are included in this appendix.

Note: In addition to the initialization errors described in this appendix, 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. Connect:Direct initializes only when you remove the incorrect parameters.
 - ◆ If you receive a return code of **4** when you stop Connect:Direct, be sure to review the NDMLOG for SITA995I messages indicating obsolete parameters, and for SITA988I and SITA989I messages indicating which parameters to migrate to a new parameter. Once you remove the parameters, these messages no longer appear in the NDMLOG trace and Connect:Direct ends with a return code of **0**. For more information on traces, see the chapter on isolating problems in *Connect:Direct for z/OS Administration Guide*.
 - ◆ If you receive a return code of **8A** in the RPLERRCK trace when you start 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 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 for Connect:Direct for z/OS by specifying the override on the EXEC statement in the startup job stream as shown in the following figure.

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

In a 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 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
//*
//* * * * *
//* Connect:Direct
//* THIS JOB STREAM WILL INVOKE THE CONNECT:DIRECT DTF.
//* CHANGE $CD TO YOUR HIGH-LEVEL PREFIX FOR CONNECT:DIRECT.
//*
//* * * * *
//*
//CDITST PROC CDPREF=,PARMMEM=
//CDITST EXEC PGM=DINIT,
// PARM=('&CDPREF..PARMLIB(&PARMMEM),',
// 'TCQ=COLD'),
// REGION=3000K
//SYSUDUMP DD SYSOUT=*
//STEPLIB DD DSN=&CDPREF..LINKLIB,
// DISP=SHR
//DMPUBLIB DD DSN=&CDPREF..PROCESS,
// DISP=SHR
//ESTAE DD SYSOUT=*
//RPLERRCK DD SYSOUT=*
// PEND
//*
//CDITST EXEC CDITST,CDPREF=$CD,PARMMEM=CDINT01
```

Initialization Errors

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

Condition: Mutually Exclusive Initialization Parameters

If your initialization parameters file contains parameters that cannot co-exist, initialization terminates with one or more of the following error messages.

```

SITA674E TCP.ADDR and TCP.LISTEN are Mutually Exclusive
SITA675E TCP.NAME and TCP.LISTEN are Mutually Exclusive
SITA676E TCP.PORTNUM and TCP.LISTEN are Mutually Exclusive
SITA677E CDPLEX.TCPIP and TCP.LISTEN are Mutually Exclusive
SITA678E CDPLEX.TCPNAME and TCP.LISTEN are Mutually Exclusive
SITA679E TCP.API.PORTNUM and TCP.LISTEN are Mutually Exclusive
SITA684E TCP.ADDR and TCP.API.LISTEN are Mutually Exclusive
SITA685E TCP.NAME and TCP.API.LISTEN are Mutually Exclusive
SITA686E TCP.PORTNUM and TCP.API.LISTEN are Mutually Exclusive
SITA687E CDPLEX.TCPIP and TCP.API.LISTEN are Mutually Exclusive
SITA688E CDPLEX.TCPNAME and TCP.API.LISTEN are Mutually Exclusive
SITA689E TCP.API.PORTNUM and TCP.API.LISTEN are Mutually Exclusive

```

Condition: Soon-to-be Obsolete Parameters

Use the following warning messages to assist you in determining migration to the correct parameter.

```

SITA988I The INITPARM above should be migrated to TCP.API.LISTEN
SITA989I The INITPARM above should be migrated to TCP.LISTEN

```

The following example shows soon-to-be obsolete initialization parameters from the NDMLOG. The messages indicate which parameters to use instead.

```

1  TAPEIO = BSAM
2  TCP = OES
3  TCP.NAME=LCTCPA
SITA989I The INITPARM above should be migrated to TCP.LISTEN
4  TCP.ADDR=ANYADDR
SITA989I The INITPARM above should be migrated to TCP.LISTEN
5  TCP.PORTNUM=4199
SITA989I The INITPARM above should be migrated to TCP.LISTEN
6  TCP.API.PORTNUM=4198
SITA988I The INITPARM above should be migrated to TCP.API.LISTEN

```

Condition: ABEND S0Cn

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

Error	Cause	Action	Collect
ABEND S0Cn	One or more NSSs (Named Saved Segments and Named Saved Systems) for VSAM, GCS, and VTAM overlap their page ranges.	Relocate VSAM, GCS, or VTAM segments as needed so that no overlaps exist among these NSSs.	<ul style="list-style-type: none"> ◆ NSS display To display NSS information, you must have a privilege class of E (systems programmer). Type the following command to display all NSSs. <li style="padding-left: 20px;">QUERY NSS ALL MAP Type the following command to display a single NSS. <li style="padding-left: 20px;">QUERY NSS NAME segment MAP

Condition: Inadequate Storage

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 Connect:Direct DTF region.	Review the short and long text messages. Check the Connect:Direct startup job stream and the amount of storage allocated to the 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"> ◆ Connect:Direct error message ◆ Region/partition size

Condition: Error While Allocating or Opening Initialization Parameters File

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

Error Messages

SITA063I	SITA070I	SITA121I	SITA123I	SITA291I	SITA292I
SITA293I	SITA294I	SITA501I	SITA502I	SITA505I	

Cause	Action	Data to Collect
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 Connect:Direct startup JCL for the EXEC statement. Ensure that the specified initialization parameters data set exists and is correct.	<ul style="list-style-type: none"> ◆ Connect:Direct startup JCL ◆ DMGSCMAP STARTUP file

Condition: Initialization Parameter Errors

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

Error Messages					
SITA003I	SITA014I	SITA018I	SITA021I	SITA038I	SITA039I
SITA040I	SITA041I	SITA063I	SITA071I	SITA072I	SITA073I
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 Connect:Direct initialization parameters.	Review the short and long text messages. Note the Connect:Direct messages that you see on the console during initialization. There is a message to indicate the reason for the error. Verify that any comments preceding parameters are followed by '*'. Refer to the appropriate Connect:Direct installation guide for the valid parameter values. Correct the parameter in the Connect:Direct initialization parameters file, and restart Connect:Direct.	<ul style="list-style-type: none"> ◆ Connect:Direct error message ◆ Initialization parameters file

Condition: Connect:Direct VSAM File Error

Connect:Direct does not initialize because of an error with one of the 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 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 data set and loaded as described in <i>Connect:Direct for z/OS Installation Guide</i> .	<ul style="list-style-type: none"> ◆ Connect:Direct messages ◆ Any messages issued by the VSAM AMS Interface Program (IDCAMS) when the Connect:Direct VSAM file was defined and loaded

Condition: VTAM Initialization Errors

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 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 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 Connect:Direct APPLID, remove it, and do not refer to it in the Connect:Direct network map.	<ul style="list-style-type: none"> ◆ ESTAE output ◆ Connect:Direct network map ◆ APPLID definition ◆ Logmode table entry

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 Connect:Direct and UNIX System Services.	If your installation implemented Program Access to Datasets (PADS) functionality within your security system (such as RACF, TSS, ACF2), include the Connect:Direct datasets in your Program Control List (PCL).	<ul style="list-style-type: none"> ◆ SYSLOG from Connect:Direct startup ◆ Security system profiles for the resources denied in teh SYSLOG

Condition: Statistics Log Error

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 SSTIxxxxI message as explained in the following sections.

SSTI004I

File pair ESDS data set has invalid CI SIZE.

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

SSTI005I

Invalid KSDS data set type in file pair.

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

SSTI006I

Invalid KSDS data set key length.

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

SSTI007I

Invalid file pair KSDS data set key offset.

Cause	Action
The key offset for the KSDS data set is not 0.	Review both the short text and long text 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 data set is empty, but the KSDS data set has data in it. One possible reason is that the ESDS data set was reset, but the KSDS was not.	Review both the short text and long text Connect:Direct messages. The ESDS and KSDS data sets must both be empty or must both contain data. Either delete and redefine the KSDS data set, restore the ESDS data set, or specify STAT.INIT=COLD. Connect:Direct opens both data sets with RESET at initialization time.

SSTI009I

File pair has empty KSDS but non-empty ESDS.

Cause	Action
The KSDS data set is empty, but the ESDS data set has data in it. One possible reason is that the KSDS data set was reset, but the ESDS was not.	Review both the short text and long text Connect:Direct messages. Both KSDS and ESDS data sets must be empty or contain data. Either delete and redefine the ESDS data set, restore the KSDS data set, run batch utility DMSTBKEY to rebuild the KSDS data set, or specify STAT.INIT=COLD. Connect:Direct then opens both data sets 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 the short text and long text Connect:Direct messages. Verify that the KSDS data set is correctly defined. Register 15 contains the VSAM GET return code. To reuse the data set, specify STAT.INIT=COLD in the Connect:Direct initialization parameters and restart Connect:Direct.

SSTI011I

KSDS control record ESDS name does not match.

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

SSTI012I

KSDS control record ESDS CI SIZE do not match.

Cause	Action
<p>The KSDS control record contains the CI SIZE of the matching or paired ESDS data set. The CI SIZE from the KSDS control record is not equal to the CI SIZE of the paired ESDS data set that is opened.</p>	<p>Review both the short text and long text Connect:Direct messages. Verify that the statistics file pair is correctly 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.</p>

SSTI013I

Error reading the ESDS control record.

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

SSTI014I

Invalid ESDS control record.

Cause	Action
Connect:Direct read the first record in the ESDS data set; however, it was not the control record. Either the file is not a Connect:Direct statistics file, or the file was corrupted after being written by Connect:Direct.	Review both the short text and long text Connect:Direct 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 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. 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.	Review both the short text and long text 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 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.

Connect:Direct verifies the order using the following steps:

1. Connect:Direct locates the file pair containing the oldest data.
2. From that point, 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.

Connect:Direct always maintains statistics records in strict chronological order. If the records are not in chronological order at initialization, Connect:Direct assumes that the list or the files are incorrectly altered since 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 both the short text and long text Connect:Direct messages. Examine the SSTS005I message issued when the file pair fills to determine the amount of the file 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 Connect:Direct messages. Examine the SSTS005I message issued when the file pair fills to determine the amount of the file 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 data set 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 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 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 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 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 data sets with current file pairs can cause this result. Another cause is incorrect modification of file pairs between executions of Connect:Direct.	Review both the short text and long text 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 Connect:Direct. You can also use the STAT.INIT=COLD startup parameter.

SSTI022I

Invalid ESDS data set type in file pair.

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

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

Condition: APDSN Not Specified

Connect:Direct initialization terminates with a message indicating the APDSN is not specified.

Error	Cause	Action	Collect
SITA3371	The required initialization parameter APDSN is not specified in the initialization parameter file.	Update your initialization parameter file with the APDSN parameter and specify the data set name of your license key (APKey) file. If you do not have a license key file, go to the Sterling Commerce Web site, select Key Request from the Customer Support pulldown list at the top of the Web page, then fill in and send the form to the Order Fulfillment department.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter ◆ APKey data set name

License Key Errors

This section describes the causes of common errors associated with license keys.

Condition: License Management Failure

Connect:Direct initialization terminates with a message indicating a License Management Failure.

Error	Cause	Action	Collect
SITA338I	A license management error occurred during initialization. Another license management message is issued with the details of the error.	View the other message issued, and take the appropriate action for that message.	◆ License key management message

Condition: Exceeded Number of Licensed Copies

Connect:Direct initialization terminates with a message indicating the number of licensed copies is exceeded.

Error	Cause	Action	Collect
SITA339I	The license management system determined that initialization of Connect:Direct exceeds the number of servers licensed by the APKey file named in the initialization parameter file.	View the APKey file to determine the number of servers that can be initialized. If this number needs to be increased, contact Sterling Commerce for a new APKey file that increases the number of servers.	◆ Number of servers from the APKey file ◆ Display of the APKey file

Condition: Storage Allocation Failure

Connect:Direct initialization terminates with a message indicating that storage allocation failed.

Errors	Cause	Action	Collect
SITA340I SITA341I SITA342I	The license management system was not able to allocate required storage and cannot continue.	Increase the storage size defined to the Connect:Direct region. Contact Sterling Commerce if the problem persists.	◆ Connect:Direct Initialization JCL

Condition: Initialization Continues After Number of Servers Exceeded Message

Connect:Direct initialization message indicating the number of servers was exceeded but the initialization continues.

Error	Cause	Action	Collect
SITA343I	The number of servers defined by the APKey file exceeds the maximum that Connect:Direct can manage. The number of servers is set to the maximum of 32 servers.	Contact Sterling Commerce for a corrected or new APKey file.	◆ Display of the APKey file

Condition: Refreshed APKEY File

Connect:Direct message indicating the APKEY file was refreshed.

Error	Cause	Action	Collect
SITA344I	A MODIFY INITPARM command was issued, and, as a result, the license management system has processed the APDSN specified in the initialization parameter file.	None	◆ None

Condition: Connect:Direct for z/OS Secure+ Option is not Allowed

Connect:Direct initialization terminates with a message indicating that Connect:Direct for z/OS Secure+ Option is not allowed.

Error	Cause	Action	Collect
SITA345I	The SECURE.DSN initialization parameter is specified, but the APKey file does not allow Secure+.	Correct your initialization parameter file or contact Sterling Commerce for an APKey that enables Secure+.	◆ Display of the APKey file

Condition: MAXPROCESS Restricted by License Management

Connect:Direct initialization message indicating that MAXPROCESS was restricted by the license management system.

Error	Cause	Action	Collect
SITA346I	The APKey file indicates that the copy of Connect:Direct being used is a limited-use license and is restricting the number of concurrent Processes.	Contact Sterling Commerce if this message is received in error.	<ul style="list-style-type: none"> ◆ Connect:Direct initialization messages ◆ Display of the APKey file

Condition: Invalid Keyword

Connect:Direct initialization terminates with a message indicating an invalid keyword.

Error	Cause	Action	Collect
SITA347I	The CONCURRENT-SESSIONS keyword in the APKey does not specify a valid value.	Contact Sterling Commerce for a corrected APKey file.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

Condition: Unauthorized Program Modifications

Connect:Direct initialization terminates with a message indicating unauthorized program modifications have occurred.

Error	Cause	Action	Collect
APSM000E	The license management system has determined that possible tampering of the license management system occurred.	Contact Sterling Commerce if you feel this message is issued incorrectly.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

Condition: APKey File not for This System

Connect:Direct initialization terminates with a message indicating the APKey file is not for this system.

Error	Cause	Action	Collect
APSM001E	The license management keyword identified in the text of the message is not valid for this Connect:Direct or is being executed on an unauthorized CPU. The APKey file was generated with a CPUID that has an LPAR indicator that is not 00.	Contact Sterling Commerce if you feel this message is issued incorrectly or for a corrected APKey file.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

Condition: APKey not Valid for a Specified Number of Days

Connect:Direct initialization terminates with a message indicating the APKey is not valid for a specified number of days.

Error	Cause	Action	Collect
APSM002E	The APKey file contains an ACTIVATION-DATE keyword, and this APKey file is not valid until that date.	Contact Sterling Commerce if you feel this message was issued in error.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

Condition: APKey Not Valid

Connect:Direct initialization terminates with a message indicating the APKey is not valid.

Error	Cause	Action	Collect
APSM008E	The digital signature in the APKey is not valid.	Contact Sterling Commerce for a corrected APKey file.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

Condition: APKey Expired

Connect:Direct initialization terminates with a message indicating the APKey has expired.

Error	Cause	Action	Collect
APSM009E	The license management system determined that the APKey is expired.	Contact Sterling Commerce for a new APKey file.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

Condition: APKey File Expired

Connect:Direct initialization warning message that the APKey file is expired.

Error	Cause	Action	Collect
APSM010E	The license management system has determined that the APKey is expired.	Contact Sterling Commerce if you feel this message was issued in error or to get a new APKey file.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

Condition: APKey File will Expire

Connect:Direct initialization warning message that the APKey file will expire.

Error	Cause	Action	Collect
APSM011E	The license management system has determined the APKey expires within 30 days. This message is issued three times a day starting 30 days before the expiration date specified in the APKey file.	Contact Sterling Commerce if you feel this message is issued incorrectly or to get a new APKey file.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

Condition: APKey File not Valid

Connect:Direct message indicating the APKey file is not valid.

Error	Cause	Action	Collect
APSM015E	While processing a refresh of the APKey file from a MODIFY INITPARMS command, the license management system determined the AP keyword or the APKey file is not valid. The previous AP settings are retained, but the APKey file is not refreshed. Connect:Direct continues to function.	Contact Sterling Commerce if you feel this message was issued in error.	<ul style="list-style-type: none"> ◆ Display of the Connect:Direct initialization parameter file ◆ Display of the APKey file

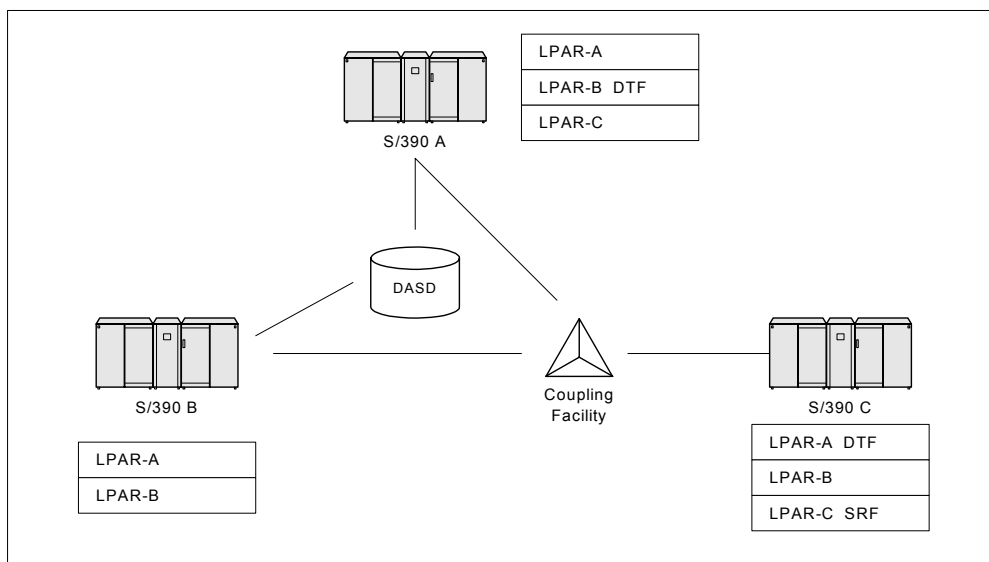
Condition: Initialization Used Emergency Key

Connect:Direct initialization warning message that indicates initialization used an emergency key.

Error	Cause	Action	Collect
APSM998I	The APKey file contains an EMERGENCY-KEY keyword. The emergency key expires within a very short time.	Contact Sterling Commerce if you feel this message was issued in error or if you need to get a new APKey file.	<ul style="list-style-type: none">◆ Display of the Connect:Direct initialization parameter file◆ Display of the APKey file

Implementing the Sysplex Requester Facility

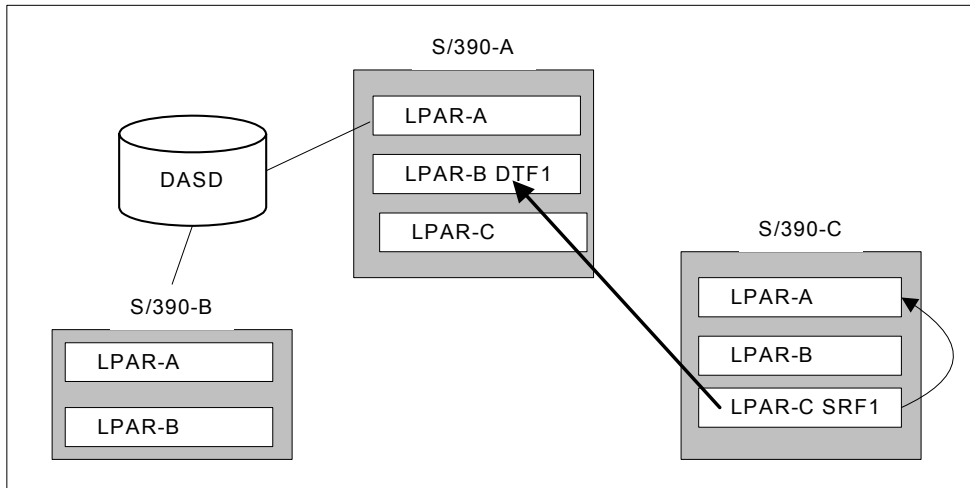
The SRF enables external CPUs to access a DTF without requiring their own DTF. The following diagram illustrates a Connect:Direct Sysplex Requester Facility configuration in a z/OS parallel sysplex.



Note the following:

- ◆ SRF is only needed on remote systems without a DTF installed.
- ◆ Shared DASD is not required to use SRF.
- ◆ Any SRF can connect to any DTF within the network if the DTF is licensed to accept SRF.
- ◆ Each DTF is licensed to accept a specific number of concurrent SRF connections.
- ◆ Any number of concurrent interactive or batch users or application programs can use a single SRF connection in a sysplex or parallel sysplex configuration.
- ◆ You can install the SRF on any machine or LPAR within the sysplex where a DTF is not installed.

The following figure shows how DTFs accept connections from any SRF.



In this example, each DTF is licensed to accept connections from a specific number of SRFs. For example, DTF1 can only accept two SRF connections at a time.

SRF operates nearly identically in Connect:Direct/Plex and Connect:Direct/Stand-alone Server environments. The only difference in a Connect:Direct/Plex occurs during signon; if the SRF tries to sign on to a Connect:Direct/Server, the signon is redirected to the Connect:Direct/Manager

General Guidelines for Using SRFs

The general guidelines for using SRFs are:

- ◆ Multi-session Signon (MS) is not available from an SRF connection.
- ◆ Each SRF requires the following Connect:Direct configuration:
 - ◆ SRF Netmap
 - ◆ Process Library
 - ◆ SAMPLIB
 - ◆ Message File
- ◆ Each SRF submits Processes to the Transmission Control Queue (TCQ) of the DTF to which it connects. Therefore, the Extended Submit Facility (ESF) is not available for SRFs.
- ◆ The SRF Netmap must have the definition of the default DTF as LOCAL.NODE and ADJACENT.NODE definitions for every DTF to which it connects, including the default.
- ◆ The Activity Reporting System (ARS) is not enabled for the SRF.
- ◆ An SRF uses the DATEFORM initialization parameter setting from the DTF to which it is connected as its Gregorian date display format.

Before You Begin

This section contains the information you need to plan your installation. Installation is easier and more effective if you complete your planning before you begin an installation.

Note: The Sysplex Requester Facility communicates with the Connect:Direct DTF using a VTAM LU0 or TCP/IP connection.

Before you plan your installation, complete the following steps:

1. Read the *Connect:Direct for z/OS Release Notes* document for the latest product information including:
 - ◆ Additional installation requirements
 - ◆ Maintenance updates
 - ◆ Documentation updates
 - ◆ Product compatibility
 - ◆ Hardware and software requirements

The information in this document can affect your installation procedures and definitions.

2. Verify your hardware and software requirements.
3. Determine your high-level qualifier. Connect:Direct uses the following high-level qualifiers during its installation:

Note: In the following list, *v* indicates the version, *rr* indicates the release, and *mm* indicates the maintenance level of the release.

- ◆ The libraries on the tape that contain the files that perform the installation are prefixed with *CD.NvrrmmA*.
- ◆ The Connect:Direct product distribution libraries on the tape are prefixed with a high-level qualifier, *CD.NvrrmmA.Fx*, where *Fx* is one of the following data set names:
 - LXLIB
 - TXLIB
 - DATA
- ◆ The installation procedure prefixes the installed Connect:Direct libraries with a high-level qualifier (referred to as *\$CD*) that you specify during installation, followed by an intermediate *SRF* qualifier and the descriptive part of the DSN.

Use the *Connect:Direct for z/OS Release Notes* for the version, release, and maintenance level for the release you are installing.

4. You may need to contact the Connect:Direct administrator where the DTF resides if you are going to synchronize the DTF and SRF network maps as described in *Planning the Network Map* on page 152.

Note: Review *General Guidelines for Using SRFs* on page 144 before you plan your SRF installation. The information in this section can affect your installation

Planning DASD Requirements

This section describes DASD requirements for SRF distribution libraries, VSAM files, SMP/E files, and the virtual storage requirements for the SRF.

Distribution Libraries DASD Requirements and Description

The following information describes the SRF distribution libraries, their attributes, space allocation requirements, and content.

Distribution Libraries Space Requirements

The following table describes the SRF distribution libraries, their attributes, and space allocation requirements.

Data Set Name	DSORG	LRECL	BLK SIZE (CI)	RECFM/ RECORG	SPACE	DIR BLKS
SRF.CNTL	PO	80	3120	FB	1000 BLKS	320
SRF.JCL	PO	80	3120	FB	1000 BLKS	40
SRF.LINKLIB (See Note 1.)	PO	0	6144	U	450 BLKS	25
SRF.SAMPLIB (See Note 1.)	PO	80	3120	FB	4700 BLKS	80
SRF.PROCESS (See Note 1.)	PO	80	3120	FB	100 BLKS	20
SRF.ISPMLIB (See Note 1.)	PO	80	3120	FB	90 BLKS	15
SRF.ISPPLIB (See Note 1.)	PO	80	3120	FB	1000 BLKS	100
SRF.ISPSLIB	PO	80	3120	FB	20 BLKS	15
SRF.ISPCLIB	PO	80	3120	FB	450 BLKS	15
SRF.MSG	VSAM	880	4096 CI	KSDS	60 CYLS	N/A

Note: Where TRKS or CYLS are used, 3380 tracks/cylinders are assumed.

- 1 The installation procedure creates two additional copies, a *distribution* library and a *target* library, for SMP/E installation.

Description of Distribution Files

A description of each SRF distribution file follows:

File	Description
SRF.CNTL	Contains sample job streams to begin the SRF install and run DMBATCH and other Connect:Direct utilities. SMP/E control information is placed in this library after you execute the ISPF installation dialogs. Input to the Network Map build job stream and sample VTAM definitions are included in this library.
SRF.JCL	Contains job streams that are built by executing the installation CLISTs.
SRF.LINKLIB	Contains SRF load modules.
SRF.SAMPLIB	<p>Contains samples of RUN TASK, RUN JOB, SIGNON, and Security Exits; sample SUBMIT and SIGNON panels that you can customize; macros to define Statistics Records and control blocks (DSECTS) used in the sample exits; samples of message source; and sample API programs written in 370 Assembler, COBOL, and PL/1. SRF.SAMPLIB also includes sample ESS exits and sample ESS CICS programs.</p> <p>The member README contains information on how to locate a list of SAMPLIB contents.</p> <p>Note: You must have Assembler H or the High-level Assembler to assemble programs in SAMPLIB.</p>
SRF.PROCESS	<p>Contains sample Connect:Direct Processes that you can modify by using the ISPF editor and a fill-in-the-blank approach. Member names beginning with @ include tutorial instructions and member names beginning with # do not.</p> <p>The COPYCF sample Process is a model for the SUBMIT panel. The SUBMIT panel does not work correctly if you modify the sample COPYCF Process.</p>
SRF.ISPMLIB	Contains screen-related messages used with the ISPF screens.
SRF.ISPPLIB	Contains ISPF screens for the message display and IUI facilities.
SRF.ISPSLIB	Contains the ISPF JCL skeleton.
SRF.ISPCLIB	Contains the CLIST used within the IUI.
SRF.MSG	Contains all Connect:Direct and SRF system messages.

VSAM Files DASD Requirement and Description

The Sysplex Requester Facility (SRF) uses VSAM files to enable communication with the DTF and execution of Processes. The following table describes these files and their space requirements. The installation process creates the files using these space requirement values. These values represent the minimum space requirement for each VSAM file.

Use the values in the *Minimum Primary Entries* column for testing purposes and the values in the *Number of Entries* column for production purposes.

Data Set	DSORG	Approx. Install Supplied Size	Number of Entries	Approx. Min. Size	Minimum Primary Entries	BLK SIZE (CI)
SRF.MSG	KSDS	3 MB	12,000	3 MB	12,000	4096
SRF.NETMAP	KSDS	88 KB	50	88 KB	2	4096
TOTAL		3.88 MB (approximate)		3.88 MB (approx.)		

A description of each VSAM file follows.

Connect:Direct SRF Message File (SRF.MSG)

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

Network Map File (SRF.NETMAP)

The Network Map is a VSAM KSDS that contains network definition information, including the network names for the default DTF and all other DTFs to which the SRF can connect, VTAM application identifiers (APPLIDs) for use by the API, and various control information used by Connect:Direct.

Note: If you are using a VSAM cache program, you must remove the SRF Network Map from its control. Otherwise, it rewrites the date/time stamp, and signons fail with SAFA013I or SCBA428I.

To estimate the size of the Network Map, you need the number of nodes in your network, including the local node, and the number of applids defined for each node.

For example, if a network map contains 25 nodes with API applids in each of the 25 nodes, it requires approximately the space represented in the following figure.

Network Map Header 1 Record 176 Bytes
Connect:Direct Control 1 Record 52 Bytes
Node records: 25 nodes X 59 bytes per node record 25 Record 1475 Bytes
API APPLIDs: 25 nodes X (32-byte control record size + (8-byte maximum length APPLID name X 20 API APPLID records per node)) 25 Record 4800 Bytes
Total 52 Record 6503 Bytes

Define the Network Map with sufficient space to allow for this amount of data. The amounts are approximations. Space requirements vary.

SMP/E DASD Requirements

The following table lists the DASD files and their space requirements for an SMP/E installation of Connect:Direct.

Data Set	DSORG	LRECL	BLK SIZE (CI)	RECFM	SPACE Prim.	SPACE Sec.	DIR BLKS
SMPLTS	PO	0	6144	U	1 CYL	1 CYL	100
SMPMTS	PO	80	3120	FB	1 CYL	1 CYL	100
SMPPTS	PO	80	3120	FB	1 CYL	1 CYL	100
SMPSCDS	PO	80	3120	FB	5 CYL	1 CYL	100
SMPSTS	PO	80	3120	FB	1 CYL	1 CYL	100
CSI	VSAM	143 max	4096 (CI)	KSDS	3 CYL	2 CYL	N/A

IUI Virtual Storage Requirement

This section tells you how to calculate virtual storage requirements for the IUI. The virtual storage requirements in this section are only estimates to help you determine the needs of your site.

Required resident modules	40 K
Dynamic virtual storage requirement	128 K
Dynamic load area (largest module)	42 K
Total per user	210 K

Preparing the VTAM Definitions for SRFs

You must provide VTAM definitions for the Connect:Direct SRF network. These include the following:

- ◆ API APPLIDs
- ◆ Single mode table entries
- ◆ Cross-domain definitions

Note: If the DTF is initialized with either the SNA=NO initialization parameter or the TCP.API.PORTNUM initialization parameter, then you can configure the SRF to use TCP. See *Configuring the SRF Using TCP/IP* on page 153 for more information.

VTAM Guidelines for the Sysplex Requester Facility

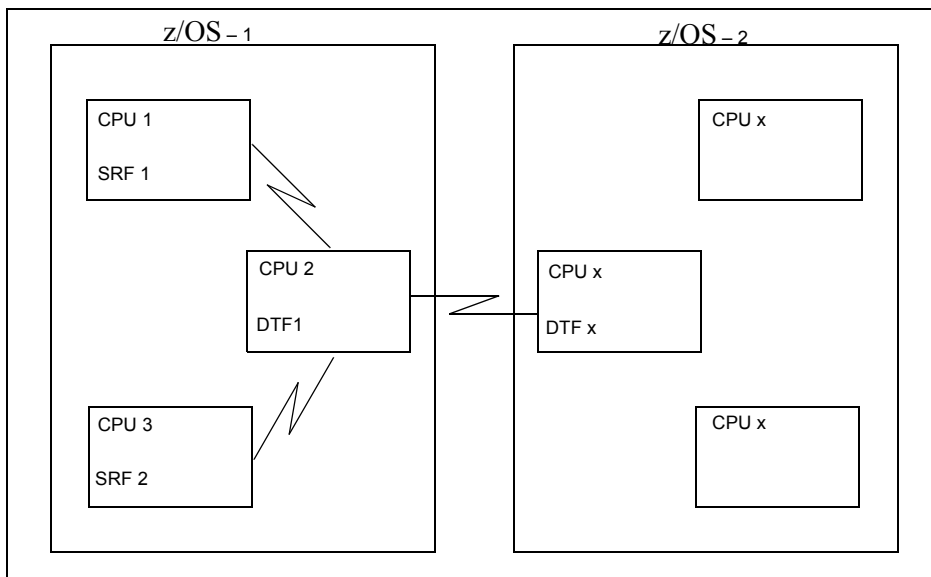
Before specifying the VTAM definitions for an SRF network, consider these guidelines:

- ◆ For correct SRF operation, the network name (label) and the domain name (ACBNAME) on each APPL definition must be unique.
- ◆ You must define the DTF APPLID as a Cross-Domain Resource (CDRSC) on the system where the SRF executes.
- ◆ Each installation of SRF must ensure that the domain names defined for the API APPLIDs match those names in the APPLID's keyword of the Network Map.

Creating VTAM Definitions for SRFs

The following figure shows a sample Connect:Direct network where SRFs are used among the sites defined. Site 1 contains three nodes:

- ◆ CPU1 contains SRF
- ◆ CPU2 contains the DTF base configuration
- ◆ CPU3 contains SRF



The following VTAM definition sample shows the VTAM definitions for the SRF 1 running on CPU1 for z/OS – 1.

```

SRF11 APPL ACBNAME=SRF1,           X
      DLOGMOD=CDLOGM,             X
      MODETAB=CDMTAB,            X
      VPACING=6
SRF12 APPL ACBNAME=SRF2,           X
      DLOGMOD=CDLOGM             X
      MODETAB=CDMTAB             X
      VPACING=6
SRF13 APPL ACBNAME=SRF3           X
      DLOGMOD=CDLOGM             X
      MODETAB=CDMTAB             X
      VPACING=6
    
```

The following VTAM definition sample shows the VTAM definitions for the SRF 3 running on CPU3 for z/OS – 1.

```

SRF31 APPL ACBNAME=SRF1,           X
      DLOGMOD=CDLOGM,             X
      MODETAB=CDMTAB,             X
      VPACING=6
SRF32 APPL ACBNAME=SRF2,           X
      DLOGMOD=CDLOGM,             X
      MODETAB=CDMTAB,             X
      VPACING=6
SRF33 APPL ACBNAME=SRF3,           X
      DLOGMOD=CDLOGM,             X
      MODETAB=CDMTAB,             X
      VPACING=6
    
```

Note: In the following SRF Network Map definition examples, M1CDD702 is the VTAM APPLID of the DTF on CPU2.

The SRF Network Map definitions for both SRF1 and SRF3 are defined as follows.

```

ADJACENT.NODE=(( CD.NODE.CPU2 M1CDD702)  -
PARSESS=(3 2) -
APPLIDS=(SRF1 SRF2 SRF3) )
    
```

Note: In a Connect:Direct/Plex environment, specify the VTAM APPLID of the Connect:Direct/Manager. The SRF signs on directly to the Connect:Direct/Manager. If SRF tries to sign on to a Connect:Direct/Server, it is redirected to the Connect:Direct/Manager.

An alternative method requires a unique APPLID definition with each CPU. The following VTAM definition sample shows the VTAM definitions for SRF 1 running on CPU1.

```

SRF11 APPL ACBNAME=SRF11           X
      DLOGMOD=CDLOGM,             X
      MODETAB=CDMTAB,             X
      VPACING=6
SRF12 APPL ACBNAME=SRF12,           X
      DLOGMOD=CDLOGM,             X
      MODETAB=CDMTAB,             X
      VPACING=6
SRF13 APPL ACBNAME=SRF13,           X
      DLOGMOD=CDLOGM,             X
      MODETAB=CDMTAB,             X
      VPACING=6
    
```

The following VTAM definition sample shows the VTAM definitions for SRF 3 running on CPU3.

SRF31 APPL ACBNAME=SRF31,	X
DLOGMOD=CDLOGM,	X
MODETAB=CDMTAB,	X
VPACING=6	
SRF32 APPL ACBNAME=SRF32,	X
DLOGMOD=CDLOGM,	X
MODETAB=CDMTAB,	X
VPACING=6	
SRF33 APPL ACBNAME=SRF33,	X
DLOGMOD=CDLOGM,	X
MODETAB=CDMTAB,	X
VPACING=6	

The SRF Network Map definitions for SRF1 are defined as follows.

ADJACENT.NODE=((CD.NODE.CPU2 M1CDD702)	-
PARSESS=(3 2)	-
APPLIDS=(SRF11 SRF12 SRF13))	

The SRF Network Map definitions for SRF3 are defined as follows.

ADJACENT.NODE=((CD.NODE.CPU2 M1CDD702)	-
PARSESS=(3 2)	-
APPLIDS=(SRF31 SRF32 SRF33))	

If this example represented a Connect:Direct/Plex configuration, the VTAM APPLIDs would be the Connect:Direct/Manager.

Planning for Security

The SRF supports sign-on security checking through the 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 Connect:Direct functions. Read the *Implementing Security* chapter in the *Connect:Direct z/OS Administration Guide*.

Planning the Network Map

The DTF and SRF Network Maps define the local and adjacent node names and their corresponding communications names, such as VTAM APPLIDs, for interactive users.

Understanding the DTF and SRF Network Maps

The source form of the DTF Network Map is generated during the installation of Connect:Direct z/OS. Sites using the SRF must install a separate SRF Network Map. The SRF netmap source is generated by a CLIST during the SRF installation process.

Guidelines for SRF Network Maps

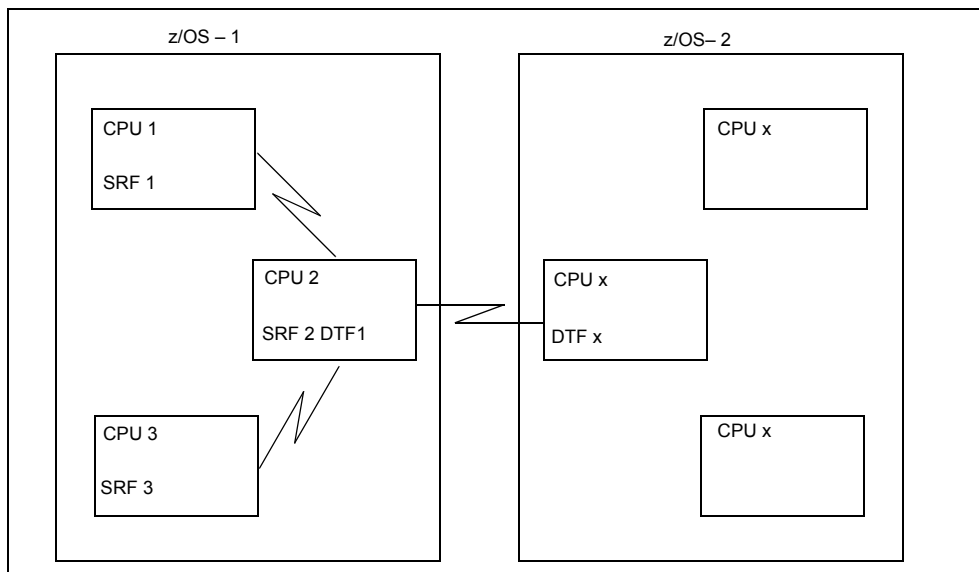
The SRF Netmap must have the definition of the default DTF as LOCAL.NODE and ADJACENT.NODE definitions for every DTF to which it can connect, including the default.

To prepare for the installation, review *Step 5—Planning the Network Map* on page 161 before filling in the worksheets in *Worksheet for Updating Network Map: Default DTF and Generated Adjacent Node Definitions* on page 174. Review the Maintaining the Network Map chapter of the *Connect:Direct for z/OS Administration Guide* for a description of the content of the Network Map and for sample entries.

Configuring the SRF Using TCP/IP

If you want SRF to use TCP/IP, you must define, in the Netmap ADJACENT.NODE, a TCPAPI record that identifies the IP address and port number as defined by the DTF's TCP.API.PORTNUM initialization parameter.

To illustrate this configuration, use the following example configuration again where z/OS-1 contains a DTF (on CPU2) with three SRFs (on CPU1, CPU2, and CPU3).



If CPU2 has an IP address of 1.1.1.1, and its DTF listens on TCP.API.PORTNUM 9999, then the ADJACENT.NODE for DTF1 is defined as follows.

```

LOCAL.NODE=( (CD.NODE.CPU2 , ) -
              TCQ=xxx -
              TCX=yyy )
ADJACENT.NODE=((CD.NODE.CPU2 , ) -
              PARSESS=(3 2) -
              TCPAPI=(9999 , 1.1.1.1) )

```

Because all three SRFs use this ADJACENT.NODE, they use the port and IP address defined in the TCPAPI parameter to sign onto DTF1.

Note: The APPLIDS parameter is not required in this example. Without this parameter, signing onto DTF1 using SNA is not possible. Also, the major VTAM APPLID on the ADJACENT.NODE entry is not required and can be left blank, as in this example.

No other requirement is needed for the SIGNON command under this configuration. However, you can use the TRANSPORT and COMADDR parameters of the SIGNON command to direct the signon to DTF1, instead of using the Netmap entry. Following is an example.

```

SIGNON USERID=(user1) NODE=CD.NODE.CPU2 -
        TRANSPORT=TCP COMADDR=( 9999 , 1.1.1.1)

```

Preparing the Installation Worksheets

During your installation, a CLIST generates a job stream to install the Sysplex Requester Facility (SRF) by displaying a series of panels for naming files, unit names for devices, volume serial numbers, and so on. You also define the Network Map with these panels.

Use the worksheets in *Installation Worksheets* on page 172 to gather the information required to respond to the questions on the panels. Observe the following when using the worksheets:

- ◆ Each panel name is listed on the worksheets.
- ◆ Parameters are grouped as they appear on the installation panels.
- ◆ Based upon the type of installation you are performing, you may or may not see all the panels. A notation is made next to each panel name on the worksheet indicating which installation type displays the panel.
- ◆ Each worksheet tells you where to look for additional information.
- ◆ Worksheets are provided for all types of Adjacent Node definitions. You define a basic Network Map during installation. You build the remainder of the Network Map after you verify the success of your SRF installation.

Installing the SRF

This chapter describes how to install the SRF.

You run Connect:Direct job streams to install the SRF. These job streams are produced from ISPF/PDF skeletons that are filled in by executing an installation CLIST. This CLIST displays panels that let you tailor the installation to your specific requirements.

In addition, the SRF installation supports IBM System Modification Program Extended (SMP/E) and nonSMP/E installations. For best results, use SMP/E installation.

Step 1—Complete the Pre-Installation Requirements

See *Before You Begin* on page 145, for information on pre-installation requirements.

Step 2—Unload Installation Libraries

To prepare for the installation, you need several libraries on DASD. These PDSs contain the following:

- ◆ Job streams used during the installation
- ◆ VTAM configurations

Use the following JCL to copy the CDRUNLD job from the CD.NvrrmmA.TXLIB file on the installation tape.

Note: CD.NvrrmmA.TXLIB is the second file in the following JCL.

```
//IEBCOPY JOB (ACCT),'NAME',NOTIFY=USERID, CLASS=A
//COPY EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DSN=CD.NvrrmmA.TXLIB,
// UNIT=$TAPE,
// VOL=SER=$TVOL,
// LABEL=(2,SL,,EXPDT=98000),
// DISP=(OLD,PASS)
//SYSUT2 DD DSN=pds.data-set.name,
// DISP=SHR
//SYSIN DD *
COPY INDD=SYSUT1,OUTDD=SYSUT2
S M=(CDRUNLD)
/*
//
```

An example of the CDRUNLD job follows:

```

//CDRUNLD JOB (XXXXXXXXX), 'NAME      ', NOTIFY=USERID
//*
//CDRUNLD  PROC
//UNLDPDS EXEC PGM=IEBCOPY
//SYSIN    DD DUMMY
//SYSPRINT DD SYSOUT=*
//*
//SYSUT1   DD DSN=CD.&FMIDS..&DSNM,
//          UNIT=&TAPE,
//          VOL=SER=&TVOL,
//          LABEL=( &FILE, SL,, , EXPDT=98000),
//          DISP=(OLD, PASS)
//*
//SYSUT2   DD DSN=&SYSHLQ..SRF.&DSNM,
//          UNIT=&DISK,
//          VOL=SER=&DVOL,
//          SPACE=( &BLK, ( &SPACE, 30, &DIR), RLSE),
//          DCB=(RECFM=&FM, LRECL=&LR, BLKSIZE=&BLK, DSORG=PO),
//          DISP=(, CATLG, DELETE)
//          PEND
//*
//*****//
//*                                           **//
//* EXECUTE THE PROC.                       **//
//*                                           **//
//*****//
//LKLIB   EXEC CDRUNLD, TAPE=$TAPE, TVOL=$TVOL, DISK=$DISK, DVOL=$DVOL,
//          DSNM=LKLIB, FILE=1, FMIDS=Nvr rmmA, SPACE=2800, DIR=60,
//          FM=U, LR=0, BLK=6144, SYSHLQ=$CD
//TXLIB   EXEC CDRUNLD, TAPE=$TAPE, TVOL=$TVOL, DISK=$DISK, DVOL=$DVOL,
//          DSNM=TXLIB, FILE=2, FMID=Nvr rmmA, SPACE=6500, DIR=300,
//          FM=FB, LR=80, BLK=3120, SYSHLQ=$CD
//DATA    EXEC CDRUNLD, TAPE=$TAPE, TVOL=$TVOL, DISK=$DISK, DVOL=$DVOL,
//          DSNM=DATA, FILE=3, FMID=Nvr rmmA, SPACE=300, DIR=2,
//          FM=VB, LR=2048, BLK=23476, SYSHLQ=$CD

```

1. Modify the variables in the CDRUNLD job stream as follows:
 - a. Change \$CD to the high-level qualifier to be used throughout the installation for Connect:Direct SRF files. All data set names are automatically generated with an intermediate qualifier of *SRF*.
 - b. Change \$TAPE to the appropriate tape device type (for example, CART).
 - c. Change \$DISK to the appropriate DASD type (for example, SYSDA).
 - d. Change \$DVOL to the appropriate disk volume serial number.
 - e. Change \$TVOL to the volume serial number of the installation tape.
2. Submit the unload job. The CDRUNLD job downloads the following files (where \$CD is the high-level qualifier you designate):
 - ◆ \$CD.LKLIB
 - ◆ \$CD.TXLIB
 - ◆ \$CD.DATA

See *Description of Distribution Files* on page 17 for a description of the content of these files.

Step 3—Generate Install JCL Through ISPF/PDF

Follow the instructions in each section to generate the JCL necessary to install the SRF. The CLIST generates panels that let you tailor the SRF installation to your specific requirements.

Execute the Installation CLIST

After you have executed the JCL in *Step 3—Generate Install JCL Through ISPF/PDF* on page 157 and downloaded the appropriate libraries, go to the TSO **COMMAND** option of ISPF/PDF (usually option 6) and execute the CDINSRF CLIST as in the following example:

```
=== > EXEC '$CD.TXLIB(CDINSRF)' '$CD'
```

Note: The CDINSRF CLIST does not account for SMS managed DASD; therefore, you must customize the generated JCL if you install onto SMS-managed DASD.

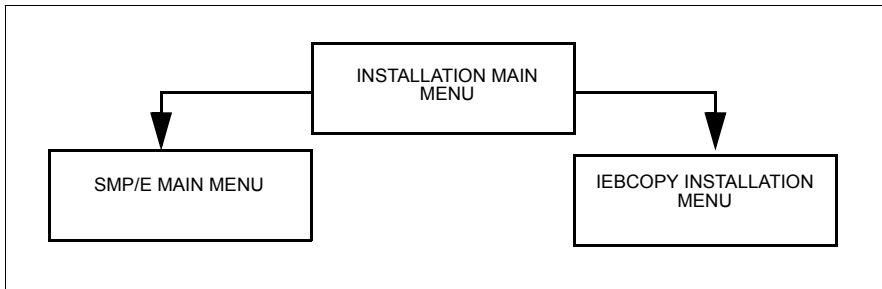
Complete the JCL Installation Menus

The CDINSRF CLIST displays a series of menus to guide you through the SRF installation. The menus correspond to the installation worksheets. A brief description of each install menu follows.

Note: The CDINSRF will use the \$CD high-level qualifier (HLQ) and append SRF to it making the HLQ as \$CD.SRF.

Menu	Description
Connect:Direct Sysplex Requester Facility Main Installation Menu	collects information about how you want to install the SRF. You move to the appropriate installation menus based on how you specify your installation choices on this menu.
Connect:Direct Sysplex Requester Facility SMP/E Main Menu	displays information required to complete an SMP/E installation of the SRF. This menu is displayed only if you select the SMP/E installation from the Connect:Direct Sysplex Requester Facility Main Installation Menu.
Connect:Direct Sysplex Requester Facility IEBCOPY Installation Menu	displays the necessary information required to complete an IEBCOPY installation of the SRF. This menu is displayed only if you select the IEBCOPY installation from the Connect:Direct Sysplex Requester Facility Main Installation Menu.

This diagram illustrates the relationship of the installation menus.



All menus include tutorials (PF1/HELP KEY) further explaining the information on a panel. When you have completed all necessary menus, the system displays a list of created jobs. Press the **Enter** key to exit from the installation panels.

Overview of Each JCL Installation Menu

The Connect:Direct Sysplex Requester Facility Main Installation Menu is the first panel to display after you execute the CDINSRF CLIST command.

```

---  Connect:Direct Sysplex Requester Facility v.rr.mm ---  DATE-yyyy/mm/dd
                    Main Installation Menu                    TIME-hh:mm

CMD ==>

Connect:Direct System High Level Qualifier ..... CD.OS390___
Permanent DASD Device Type ..... SYSDA_
Permanent DASD Volume Serial No. ....
Temporary DASD Device Type ..... SYSDA_

SMP/E Install (Y,N) ..... Y

Job Card Information
==> //JOBNAME   JOB (ACCOUNTING DATA)_____
==> //*_____
==> //*_____
==> //*_____

                    Press ENTER to continue, PF5 to Terminate the Install
  
```

Connect:Direct invokes the other installation menus based upon how you specify your installation selections on the Main Installation Menu.

If you specify **Y** in the *SMP/E Install (Y,N)* field, the next panel to display is the Connect:Direct Sysplex Requester Facility SMP/E Installation Main Menu.

```

--- Connect:Direct Sysplex Requester Facility ----- DATE-yyyy/mm/dd
      SMP/E Installation Main Menu                      TIME-hh:mm

CMD ==>

SMP/E Dataset Information :
SMP/E Datasets HLQ ..... CD.OS390.SRF

CSI Dataset Name ..... CD.OS390.SRF.CSI
CSI Dataset Volser ..... _____
CSI Catalog Name ..... _____

TARGET Zone Dataset Name ..... CD.OS390.SRF.TGT.CSI
DIST Zone Dataset Name ..... CD.OS390.SRF.DLB.CSI

Connect:Direct SRF Dataset Information :
VSAM Files HLQ ..... CD.OS390_____
VSAM Files Catalog Name..... _____
VSAM Files Volser ..... _____

      Press ENTER to continue, PF3 to return to previous Menu,
      PF4 to return to Main Menu or PF5 to terminate the Install

```

If you specify **N** in the *SMP/E Install (Y,N)* field, the Connect:Direct IEBCOPY Installation Menu is displayed.

```

---          Connect:Direct IEBCOPY Installation ----- DATE-yyyy/mm/dd
                                           TIME-hh:mm

CMD ==>

Connect:Direct SRF Dataset Information:
VSAM Files HLQ ..... CD.OS390
VSAM Files Catalog Name..... _____
VSAM Files Volser ..... _____

      Press ENTER to continue, PF3 to return to previous Menu,
      PF4 to return to Main Menu or PF5 to terminate the Install

```

Verify the Generated Members

After the install procedure generates the JCL, a final menu is displayed listing the members created in the file. Use the following table to verify the members generated in the *\$CD.SRF.JCL* file.

Member Use	Member Name	Content
All Installations	CDRALLOC	Job stream to allocate all system files.
	SNETLOAD	Job stream to load the Network Map.
	SNETDEF	Job stream to define the VSAM Network Map file. (Note: This is also done by the CDRALLOC job.)

Member Use	Member Name	Content
	SNETUNLD	Job stream to unload the Network Map.
	CDRBKOUT	Job stream to back out base SRF installation.
SMP/E Installations Only	CDRSMPE	Job stream to perform RECEIVE and APPLY processing of SRF base.
	CDRACPT	Job stream to perform ACCEPT processing for SRF base.
Non-SMP/E Base Installations Only	CDRIEBC	Job stream to install base SRF.

Step 4—Execute the SRF Install JCL

During this step, you execute the installation JCL that you created in the previous step.

- ◆ To perform an installation with SMP/E, go to *Step 4a—Install the SRF Using SMP/E* on page 160.
- ◆ To perform a non-SMPE installation, go to *Step 4b—Install the SRF Without SMP/E* on page 161.

Step 4a—Install the SRF Using SMP/E

You can install the Sysplex Requester Facility (SRF) using SMP/E. The SMP/E system modification (SYSMOD) on the base SRF tape is *NvrrmmA*, where *v* is the version number, *rr* is the release number, and *mm* is the maintenance level of Connect:Direct. The SYSMOD is packaged using the relative file technique. The *NvrrmmA* SYSMOD contains all base SRF modules.

The installation process consists of running the following two job streams from the *\$CD.SRF.JCL* library:

1. Run the job CDRALLOC to define the system files that the SRF uses.
Member CDRALLOC defines all the system files used by the SRF. This job stream invokes IDCAMS to delete existing SRF VSAM (NETMAP and MSG) files and to define new files.
2. Run the installation job, CDRSMPE, only after completing the previous step.
Member CDRSMPE is the installation job stream that performs SMP/E processing and loads the SRF VSAM files, except the Network Map file. The following describes the steps in the CDRSMPE job stream:
 - a. Initialize SMP/E libraries.
 - b. Perform SMP/E RECEIVE step of base.
 - c. Perform SMP/E APPLY step of base.
 - d. Build the SRF Message File.

Backing Out the Installation

A backout facility is included with the installation jobs. To back out the installation, run the CDRBKOUT member. CDRBKOUT deletes all libraries, including the SMP/E files.

Restart the Installation

Use a standard z/OS JCL RESTART card to restart the job stream in case of failure.

Step 4b—Install the SRF Without SMP/E

This installation process consists of running the following two job streams from the \$CD.SRF.JCL library:

1. Run job CDRALLOC to define the system files used by the SRF.

Member CDRALLOC defines all the system files used by the SRF. This job stream invokes IDCAMS to delete existing SRF VSAM files and to define new files.
2. Run the installation job, CDRIEBC.

Member CDRIEBC performs the nonSMP/E installation from tape. The installation does the following:

 - a. Copies libraries from tape to disk.
 - b. Builds the SRF VSAM Message File.

Back Out the Installation

A backout job stream is available in case errors occur during the installation process. If you need to back out the SRF installation, run the CDRBKOUT member. This job stream deletes all VSAM and nonVSAM files created by CDRALLOC.

Restart the Installation

Use a standard z/OS JCL RESTART card to restart the job stream in case of failure.

Step 5—Planning the Network Map

The Netmap for an SRF contains the following entries for every DTF with which it can communicate:

- ◆ LOCAL.NODE entry for the default DTF
- ◆ ADJACENT.NODE entry for each DTF to which this SRF can connect

The definitions are used when an IUI, a DMBATCH user, or a program API logs on to the DTF.

A SRF Netmap can contain similar, or perhaps identical, definitions to the DTFs to which the SRF logs onto. However, they are only used for logging on to a DTF. After an SRF logs on to a DTF, the SRF uses the DTF's Netmap definitions to establish sessions for the Processes.

SRF Netmap Requirements

You must include an ADJACENT.NODE entry in the SRF's Netmap for every DTF to which it can logon. In each entry, specify the following:

- ◆ The node name, which is how Connect:Direct references that DTF node
- ◆ The communications name, such as the VTAM APPLID, for that DTF node
- ◆ A valid PARSESS parameter value
- ◆ APPLIDS to logon to that DTF by individual IUI, batch, or program API users.

You must include one LOCAL.NODE definition. The local node and one of the adjacent nodes are the same. It is the default DTF to logon to if one is not specified during the logon process.

Review *Preparing the VTAM Definitions for SRFs* on page 149 for details and examples, and then fill in the worksheet in *Worksheet for Updating Network Map: Default DTF and Generated Adjacent Node Definitions* on page 174. Review the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for a description of the network map entries and their parameters.

Step 6—Creating and Loading the Network Map

The Network Map defines the local and adjacent node names and their corresponding communications names, such as VTAM APPLIDs, for interactive users.

Creating the Network Map

The source form of the SRF Network Map is generated by a CLIST and the completed source is then loaded to a VSAM file during the installation of Connect:Direct.

The SRF Netmap must have the definition of the default DTF as LOCAL.NODE and ADJACENT.NODE definitions for every DTF to which it can connect.

Review *Planning the Network Map* on page 152 for guidelines on how to synchronize the DTF and SRF Network Maps.

Loading the Network Map

This procedure creates a member, NETMAP01, in the \$CD.SRF.CNTL data set. Save any previous versions of NETMAP01 if you do not want to overwrite it.

Perform the following steps to generate the network map:

1. Execute the generation CLIST, CDRNETMP.

Execute the CDRNETMP CLIST to generate the network map source based on the information you provided on the installation panels. Type the following command to execute the CDRNETMP CLIST.

```
=== > EXEC '$CD.SRF.TXLIB(CDRNETMP)' '$CD'
```

After you execute the CDRNETMP CLIST, you may receive the message IKJ56247I FILE ISPFIL NOT FREED, IS NOT ALLOCATED. This message is normal and does not indicate a problem.

The network map source is placed in `$CD.SRF.CNTL` as member NETMAP01.

2. Execute the network map installation job, SNETLOAD from `$CD.SRF.JCL`.

When the network map definitions are correctly set, run the member SNETLOAD, to load the network map.

The SNETLOAD job may return the message IEC161I 072-053 NETMAP, NETMAP. This message is normal and does not indicate a problem with the job.

If SNETLOAD completes with errors, you must run SNETDEF to delete and define the file before rerunning SNETLOAD. The SNETLOAD job receives a return code of 20 if SNETDEF is not run.

Note: If you are using a VSAM cache program, you must remove the Connect:Direct network map from its control. Otherwise, it rewrites the date/time stamp, and signons fail with SAFA013I or SCBA428I.

Step 7—Install the ISPF IUI

The ISPF IUI provides a method of command entry through fill-in-the-blank screens.

Complete the following steps to install the IUI:

1. Build a CLIST to bring up the ISPF/SRF Primary Option Menu.

For a quick way to gain access to the SRF, build a CLIST that allocates SRF files and brings up an ISPF/PDF Primary Option Menu with SRF 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 Connect:Direct.

```

CONTROL NOMSG
      FREE FILE (SYSPROC          -
              ISPLLIB            -
              ISPPLIB            -
              ISPMLIB            -
              ISPSLIB            -
              DMPUBLIB           -
              DMMSGFIL)

CONTROL MSG
ALLOC F(SYSPROC) DA ('SYS1.CLIST') SHR
ALLOC F(ISPPLIB) DA ('$CD.SRF.ISPPLIB' -
      'SYS1.ISFPLIB' -
      'SYS1.ISRPLIB' -
      'SYS1.ISPPLIB' -
      'SYS1.ICQPLIB') SHR
ALLOC F(ISPMLIB) DA ('$CD.SRF.ISPMLIB' -
      'SYS1.ISRMLIB' -
      'SYS1.ICQLIB' -
      'SYS1.ISPMLIB') SHR
ALLOC F(ISPLLIB) DA ('$CD.SRF.LINKLIB' -
      'SYS1.ISRLOAD' -
      'SYS1.ISPLOAD') SHR
ALLOC F(ISPSLIB) DA ('$CD.SRF.ISPSLIB') SHR
ALLOC F(DMPUBLIB) DA ('$CD.SRF.PROCESS') SHR
ALLOC F(DMMSGFIL) DA ('$CD.SRF.MSG') SHR
PDF

```

2. Integrate the SRF for TSO use.

Modify the LOGON PROC that you use to sign on to TSO to integrate SRF for TSO use by including the SRF libraries.

The bold-faced lines in the following example are inserted for the SRF. You 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=$CD.SRF.LINKLIB,DISP=SHR
//*
//SYSPROC  DD DSN=SYS1.CLIST,DISP=SHR
//          DD DSN=USER.CLIST,DISP=SHR
//DD DSN=$CD.SRF.ISPCLIB,DISP=SHR
//SYSHELP  DD DSN=SYS1.HELP,DISP=SHR
//YSUADS   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=$CD.SRF.LINKLIB,DISP=SHR
//          DD DSN=SYS1.ISRLOAD,DISP=SHR
//          DD DSN=SYS1.ISPLOAD,DISP=SHR
////ISPPLIB DD DSN=$CD.SRF.ISPPLIB,DISP=SHR
//          DD DSN=SYS1.ISRPLIB,DISP=SHR
//          DD DSN=SYS1.ISPPLIB,DISP=SHR
////ISPMLIB DD DSN=$CD.SRF.ISPMLIB,DISP=SHR
//          DD DSN=SYS1.ISRMLIB,DISP=SHR
//          DD DSN=SYS1.ISPMLIB,DISP=SHR
////ISPSLIB DD DSN=$CD.SRF.ISPSLIB,DISP=SHR
//          DD DSN=SYS1.ISPSLIB,DISP=SHR
//ISPTABL  DD DSN=USR.ISPTABL,DISP=SHR
//ISPTLIB  DD DSN=USR.ISPTABL,DISP=SHR
//          DD DSN=SYS1.ISRTLIB,DISP=SHR
//          DD DSN=SYS1.ISPTLIB,DISP=SHR
//ISPPROF  DD DSN=USR.ISPPROF,DISP=SHR
////DMPUBLIB DD DSN=$CD.SRF.PROCESS,DISP=SHR
////DMSGFILL DD DSN=$CD.SRF.MSG,DISP=SHR

```

3. Modify the ISPF/PDF Primary Option Menu.

Make the following modifications to the standard ISPF/PDF Primary Option Menu for the local IUI (changes are bold-faced):

- ◆ The first option, **M**, enables you to display messages in the Connect:Direct Message File. Change the file name `$CD.SRF.MSG` to reflect the Message File name specified in the CDRVDEF member of the `$CD.SRF.CNTL` library.
- ◆ The second option, **N**, starts the local IUI. Change the file name `$CD.SRF.NETMAP` to reflect the name of the VSAM file that contains the SRF Network Map.

The sample that follows 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+BACKGROUND - 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 Connect:Direct messages
% N+C:D        - 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 (ISPEEDIT)'
%         3, 'PANEL (ISPUTIL)'
%         4, 'PANEL (ISPFORA)'
%         5, 'PANEL (ISPJOB)'
%         6, 'PGM (ISPTSO)'
%         7, 'PANEL (ISQTAC) NEWPOOL'
%         M, 'PGM (DMMSGDSP) PARM ($CD.SRF.MSG)'
%         N, 'PGM (DMISTART) PARM ($CD.SRF.NETMAP) NEWAPPL (CD)'
%         X, 'EXIT'
%
% ) END

```

4. When you define some of the ISPF libraries, using the LIBDEF service provides flexibility by:

- ◆ Allowing you to define ISPF libraries for an application after ISPF is 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.

If you are running ISPF release 4.1.0 and later, Connect:Direct for z/OS supports LIBDEFs for the following :

- ◆ ISPF panels (ISPLLIB)
- ◆ Messages (ISPMLIB)
- ◆ Skeletons (ISPSLIB)

Connect:Direct does not support LIBDEFs for load modules (ISPLLIB) because of how some programs are loaded. Also, ISPF does not support LIBDEFs for SYSPROC.

Including the Connect:Direct load library in the link list achieves benefits similar to those when using LIBDEF.

Use one of the following methods to implement LIBDEFs for the ISPMLIB, ISPLLIB, and ISPSLIB. You can remove allocations for these libraries from the CLIST as described in step 1 and from the logon proc allocations as described in step 2. However, keep the allocation for the LINKLIB.

Method 1— Set up the Connect:Direct Message function and the Connect:Direct IUI as separate menu options on a panel. This is usually the Primary ISPF menu panel - ISR@PRIM. This is similar to the procedure described in step 3. When selected, each option invokes a CLIST instead of a Connect:Direct program.

The following is a sample Primary panel:

```
) PROC

&ZSEL = TRANS (TRUNC (&ZCMD, '.'))
  0, '.....'
  1, '.....'
M, 'CMD(%CD4000M)' /* The CLIST name is prefixed with the % if */
C, 'CMD(%CD4000C)' /* the library it is in is known to be in */
/* the SYSPROC concatenation at this time. */
```

The following is a sample CDMSG CLIST that is provided in \$CD.SRF.SAMPLIB:

```
PROC 0
ISPEXEC LIBDEF ISPPLIB DATASET ID('HLQ.SRF.ISPPLIB')
ISPEXEC LIBDEF ISPMLIB DATASET ID('HLQ.SRF.ISPMLIB')
ISPEXEC LIBDEF ISPSLIB DATASET ID('HLQ.SRF.ISPSLIB')
ISPEXEC SELECT PGM(DMMSGDSP) PARM(HLQ.SRF.MSG) NEWAPPL(CD) -
PASSLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPMLIB
ISPEXEC LIBDEF ISPSLIB
EXIT
```

The following is a sample CDIUI CLIST provided in \$CD.SRF.SAMPLIB:

```
PROC 0
CONTROL NOMSG
FREE F(DMPUBLIB,DMMSGFIL)
CONTROL MSG
ALLOC F(DMPUBLIB) DA('HLQ.SRF.PROCESS') SHR
ALLOC F(DMMSGFIL) DA('HLQ.SRF.MSG') SHR
ISPEXEC LIBDEF ISPPLIB DATASET ID('HLQ.SRF.ISPPLIB')
ISPEXEC LIBDEF ISPMLIB DATASET ID('HLQ.SRF.ISPMLIB')
ISPEXEC LIBDEF ISPSLIB DATASET ID('HLQ.SRF.ISPSLIB')
ISPEXEC SELECT PGM(DMISTART) PARM(HLQ.SRF.NETMAP) NEWAPPL(CD) -
PASSLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPMLIB
ISPEXEC LIBDEF ISPSLIB
FREE F(DMPUBLIB,DMMSGFIL)
EXIT
```

Method 2 — Set up a Connect:Direct CLIST that does the following:

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

Selecting Messages or the IUI from that panel directly invokes the appropriate program.

The following is a sample Primary panel:

```
) PROC
&ZSEL = TRANS (TRUNC (&ZCMD, '.'))
0, '.....'
1, '.....'
CD, 'CMD(%CD4000)'
```

The following is a sample CDIUI2 CLIST provided in \$CD.SRF.SAMPLIB:

```
PROC 0
CONTROL NOMSG
FREE F (DMPUBLIB, DMMSGFIL)
CONTROL MSG
ISPEXEC LIBDEF ISPPLIB DATASET ID('HLQ.SRF.ISPPLIB')
ISPEXEC LIBDEF ISPMLIB DATASET ID('HLQ.SRF.ISPMLIB')
ISPEXEC LIBDEF ISPSLIB DATASET ID('HLQ.SRF.ISPSLIB')
ALLOC F (DMPUBLIB) DA ('HLQ.SRF.PROCESS') SHR
ALLOC F (DMMSGFIL) DA ('HLQ.SRF.MSG') SHR
ISPEXEC SELECT PANEL (CD@PRIM) NEWAPPL (CD) PASSLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPMLIB
ISPEXEC LIBDEF ISPSLIB
FREE F (DMPUBLIB, DMMSGFIL)
EXIT
```

The following is a sample CD@PRIM panel:

```
) PROC
&ZSEL = TRANS (TRUNC (&ZCMD, '.'))
M, 'PGM (DMMSGDSP) PARM (HLQ.SRF.MSG)'
C, 'PGM (DMISTART) PARM (HLQ.SRF.NETMAP)'
```

5. Define VSAM alias (optional).

In installations with large numbers of users, VSAM user catalogs often isolate application files from z/OS system files. If the SRF 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. SRF files, such as the Network Map and Message File, must be accessed by the IUI that runs in the user's TSO region.

Step 8—Signing On the Sysplex Requester Facility

This step provides sign-on instructions to Connect:Direct from the Sysplex Requester Facility (SRF).

Signing On Through the IUI

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

- ◆ If the Connect:Direct Authorization Facility is in effect, use the userid 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 Connect:Direct userid and password.
- ◆ If you are running with a Connect:Direct security exit, use a userid and password that meet your security requirements.

For additional information on the IUI and procedures to automate the sign-on process, refer to the *Connect:Direct for z/OS User's Guide*.

Note: To sign on to a DTF that is not the default, type the node name on the sign-on screen.

Signing On Through the Batch Interface

For instructions on using the batch interface, refer to the *Connect:Direct for z/OS User's Guide*.

Troubleshooting Signon Problems

Signon errors keep you from accessing Connect:Direct. IUI/API problems prevent you from successfully submitting a Process or executing a command. This section contains the most common signon problems you may encounter.

Condition: SRF Signon Failed

The signon failed with the message *SRF must signon to the LOCAL node only*.

Error	Cause	Action	Collect
SCBA501I	An SRF from a remote location attempted to logon to a node other than the defined local node in the SRF Network Map data set. This error only occurs within the Connect:Direct for z/OS Sysplex Requester Facility from a remote signon.	Review both the short text and long text Connect:Direct messages. Attempt the SIGNON command again by specifying the local node as the destination node.	<ul style="list-style-type: none"> ◆ Output from NDMCMDS ◆ Copy of the SRF Network Map

Condition: Remote Signon for SRF Failed

Signon failed with the message *Signon failed. The DTF may be down or inactive.*

Error	Cause	Action	Collect
SCBA502I	A SIGNON command was attempted for an SRF from a remote location while the DTF is down or initializing. ESF signon is not possible in this situation.	Review both the short text and long text Connect:Direct messages. Attempt the SIGNON command again after the DTF is fully initialized.	◆ None

Condition: SRF Signon Failed

Signon failed with the message *Signon failed. No more SRF signons available.*

Error	Cause	Action	Collect
SCBA503I	An SRF attempted to signon to Connect:Direct. This attempt exceeded the allowable number of concurrent SRFs.	Review both the short text and long text Connect:Direct messages. Attempt the SIGNON command again later. If this problem continues, contact Sterling Commerce to inquire about increasing the number of licensed SRFs.	◆ None

Condition: Multi-session Signon Failed for a Remote SRF

A multi-session signon attempt from a remote SRF failed.

Error	Cause	Action	Collect
SCIA002I	A multi-signon attempt was made from a remote SRF. Multi-session signons are not possible from a remote SRF.	Do not attempt a multi-signon from a remote SRF.	◆ None

Step 9—Verify Installation

To verify the installation and to gain experience with SRF operation, run the sample Processes available in the library `$CD.SRF.PROCESS`.

Perform the following steps for installation verification of the SRF:

1. Define the data sets used by the SRFPROC Process.

Run the job stream provided during the installation in \$CD.TXLIB member SAMP1DEF prior to running the test Process, SRFPROC. This JCL stream defines the data set used by SRFPROC, copy from a SAM file to a predefined file. If you do not run the job, SRFPROC fails with a data set not found condition.

2. Customize and submit Process, SRFPROC.

Customize the node names, data set names and VOLSER as required in the SRFPROC Process before submitting it. The comments section of the SRFPROC Process provides detailed instructions.

3. Use the Select Process command to display the SRFPROC Process in the queue.

4. Use the Change Process command to release SRFPROC and allow the Process to execute.

5. Use the Select Stats command to view the Statistics for the SRFPROC Processes.

Step 10—Perform SMP/E Accept Processing (Required for SMP/E)

After Connect:Direct is installed with SMP/E and verified, perform SMP/E Accept Processing to update the distribution libraries. Accepting the base product enables SMP/E to back out maintenance PTFs in case of unexpected results.

The member CDRACPT in the \$CD.SRF.JCL library contains the job stream to perform the Accept Processing for the base SRF code.

Step 11—Customize After Installation (Optional)

After you complete the installation and verify its success, you may want to customize files, screens, and Processes. Consult the following pages for instructions.

These steps are optional:

1. Customize the Messages file. See the *Customizing Connect:Direct* chapter of the *Connect:Direct for z/OS Administration Guide* for how to customize the Messages file.
2. Customize the SUBMIT screen. See the *Customizing Connect:Direct* chapter of the *Connect:Direct for z/OS Administration Guide* for how to customize the SUBMIT screen.
3. Customize the sample Processes. For instructions on creating and modifying Processes, see the Connect:Direct Processes Web site at <http://www.sterlingcommerce.com/Documentation/processes/processhome.html> and the *Connect:Direct for z/OS User's Guide*.

Step 12—Post-Installation Cleanup (Optional)

After you have successfully completed the installation and verification of Connect:Direct, delete or archive the following files that are no longer needed:

- ◆ \$CD.LKLIB
- ◆ \$CD.TXLIB
- ◆ \$CD.DATA

Installation Worksheets

The following worksheets that correspond to the installation panels and additional worksheets for the definition of the Network Map. Make copies of the Network Map worksheets if necessary. You may want to save the worksheets for later reference.

Worksheet for All Installations

Use the following worksheet to prepare for all installations.

Installed	Description
SRF System High Level Qualifier (Required)	The data set high level qualifier (HLQ) used for ALL SRF system data sets, VSAM data sets, and SMP/E data sets. You are given the option to change VSAM and SMP/E HLQ in the following panels
Permanent DASD Device Type (Required)	The DASD device type for all permanent SRF system files, including VSAM. The default is SYSDA .
Permanent DASD Volume Serial No.	Fill this field in if you want to allocate all Connect:Direct system files in a specific DASD volume.
Temporary DASD Device Type (Required)	The DASD device type for all temporary files used during installation. The default is SYSDA .
SMP/E Install (Y,N) (Required)	This flag instructs the dialogs to perform an SMP/E installation if set to Y , or an IEBCOPY installation if set to N . The default is Y .
Job Card Information	These are the batch job cards used for all installation jobs. The dialogs fill in a dummy job card for you to customize.

Worksheet for SMP/E Installation

Use the following worksheet to gather information for SMP/E installations.

Data	Name/Description
SMP/E Data Sets HLQ (Required)	The data set high level qualifier used for SMP/E data sets such as SMPPTS or SMPSTS. Its value is initially set to the same as the System HLQ.
CSI Data Set Name (Required)	The data set name used for the SMP/E CSI.
CSI Data Set Volser (Required)	The volume used for the new SMP/E CSI. It defaults to the same value as the permanent DASD volume.
CSI Catalog Name	The catalog name used for the new SMP/E CSI. It defaults to blanks.
TARGET Zone Data Set Name (Required)	The SMP/E data set name that contains target zone information.
DIST Zone Data Set Name (Required)	The SMP/E data set name that contains distribution zone information.
VSAM Files HLQ (Required)	The data set high level qualifier used for all SRF VSAM files. This high level qualifier is initially set to the same value as the system high level qualifier.
VSAM Files Catalog Name	The catalog name used for VSAM file allocations. The default is blanks.
VSAM Files Volser (Required)	The volume used for VSAM file allocations. The default is the permanent DASD volume.

Worksheet for Non-SMP/E Installation

If you are performing a non-SMP/E installation, you need to fill in this worksheet.

Data	Name/Description
VSAM Files HLQ (Required)	The data set high level qualifier used for all SRF VSAM files. This high level qualifier is initially set to the same value as the system high level qualifier.
VSAM Files Catalog Name	This is the catalog name used for VSAM file allocations. The default is blanks.
VSAM Files Volser (Required)	This is the volume used for VSAM file allocations. The default is the permanent DASD volume.

Worksheet for Updating Network Map: Default DTF and Generated Adjacent Node Definitions

The following entries define the node entries in the SRF Network Map. Reference the *Maintaining the Network Map* chapter of the *Connect:Direct for z/OS Administration Guide* for information about the syntax, valid parameters, and an example.

Node	Entry
Default DTF:	
Default DTF logical node name	
Communications Name (VTAM APPLID)	
SUPERUSR password (This does not apply to an SRF netmap. Leave this field blank.)	
VTAM APPLIDS for IUI and Batch Sessions (adjacent node definition):	

Node	Entry
	<p>The next entry defines the VTAM APPLIDS for the SRFs to be used for IUI and batch sessions. Reference the <i>Maintaining the Network Map</i> chapter of the <i>Connect:Direct for z/OS Administration Guide</i> for more information and an example.</p>
Interactive VTAM APPLIDS	<hr/> <hr/> <hr/> <hr/>
PNODE=SNODE Definitions (adjacent node definition for default DTF):	<hr/>
	<p>The following entries define the adjacent node definition for the default DTF.</p>
Communications Name (VTAM APPLID) for the Adjacent Node	<hr/> <p>(Refer to the <i>Maintaining the Network Map</i> chapter of the <i>Connect:Direct for z/OS Administration Guide</i> for more information and an example.)</p>
Parallel Sessions Parameter: PARSESS=(max, default)	<hr/> <p>See <i>Connect:Direct for z/OS Administration Guide</i> for more information.</p> <hr/>

Worksheet for Updating Network Map Adjacent Node Definitions: 370 SNA LU0

Use this worksheet for adjacent node definitions for 370 SNA LU0 nodes. Refer to the description of adjacent node syntax, parameters, and examples in *Maintaining the Network Map* in the *Connect:Direct for z/OS Administration Guide*. DO NOT enter your default node as an adjacent node; it is done for you.

Node	Definition
Adjacent Node Name Communications Name (VTAM APPLID) Parallel Sessions Parameter: PARSESS=(max, default)	<hr/> <hr/> <hr/>
Adjacent Node Name Communications Name (VTAM APPLID) Parallel Sessions Parameter: PARSESS=(max, default)	<hr/> <hr/> <hr/>
Adjacent Node Name Communications Name (VTAM APPLID) Parallel Sessions Parameter: PARSESS=(max, default)	<hr/> <hr/> <hr/>
Adjacent Node Name Communications Name (VTAM APPLID) Parallel Sessions Parameter: PARSESS=(max, default)	<hr/> <hr/> <hr/>

A

ABEND

A task that ends prematurely, or abnormally, due to an error that cannot be resolved by recovery facilities while the task is executing.

ACB

See *Access Method Control Block (ACB)*.

Access Method

A technique for moving data between main storage and input/output (I/O) devices.

Access Method Control Block (ACB)

A control block that links an application program to VSAM or VTAM.

Adapter

A hardware card that allows a device, such as a PC, to communicate with another device, such as a monitor, a printer, or other I/O device. See also Channel-to-Channel Adapter.

ADJACENT.NODE

An entry in the network map. Adjacent node entries define nodes in the network with which the local Connect:Direct may communicate. Each entry specifies a locally used Connect:Direct name, its associated network communications name, and session control parameters for these nodes.

API Pool

Identifies the APPLIDs to be used for API communication with the DTF.

Application Program Interface (API)

The Connect:Direct component that accepts commands from the Interactive User Interface (IUI), Batch Interface, the Operator Interface, or user-written program and places them in a format so that the user's request can be executed by the DTF. If there are errors, the API returns a message to the user. If there are no errors, the API sends the command to the DTF using a VTAM session.

APPLID

The name specified in the ACB macro that identifies the application program to VTAM. For Connect:Direct, these APPLIDs correspond to a DTF node name or an API APPLIDs.

Asynchronous Processes

Processes that occur without a regular or scheduled time relationship. Unexpected or unpredictable with respect to the instructions of the program or to time. Contrast with synchronous.

Attributes

Characteristics or properties that can be controlled, usually to obtain a required appearance; for example, the color of a line.

Authorization File

Connect:Direct file used to control access to Connect:Direct and identify commands that can be executed by user ID. This file can also be used in conjunction with security exit interfaces to support the secured point-of-entry feature.

B

Batch Interface

An interface where non-interactive programs are executed. The environment schedules their execution independently of their submitter. Connect:Direct users issue batch commands using DMBATCH, a Connect:Direct-supplied program.

Buffer

1. A portion of storage used to hold input or output data temporarily.
2. A routine or storage used to compensate for a difference in data rate or time of occurrence of events, when transferring data from one device to another.

Buffer Pool

A set of buffers that contains buffers of the same length.

C

Central Processing Unit (CPU)

The part of a computer that includes the circuits that control the interpretation and execution of instructions.

CF

See *Coupling Facility (CF)*.

Channel

1. A functional unit, controlled by a z/OS server that handles the transfer of data between processor storage and local peripheral equipment.
2. A path along which signals can be sent.
3. The portion of a storage medium that is accessible to a given reading or writing station.
4. In broadband transmission, a designation of a frequency band 6 MHz wide.

Channel-to-Channel (CTC)

Refers to the communication (transfer of data) between programs on opposite sides of a channel-to-channel adapter (CTCA). The CTCA for Connect:Direct for z/OS can be an ESCON CTC.

Channel-to-Channel Adapter (CTCA)

A hardware device that can be used to connect two channels on the same computing system or on different systems. The CTCA for Connect:Direct for z/OS can be an ESCON CTC.

Checkpoint/Restart

Eliminates the need to retransmit an entire file in the event of a transmission failure. A value in the COPY statement or CKPT initialization parameter specifies the checkpoint interval. If a copy procedure is interrupted, Connect:Direct will restart that copy at the last checkpoint.

CICS

See *Customer Information Control System (CICS)*.

Command Line Interface

Connect:Direct interface that allows users to submit Connect:Direct Processes and commands from their native command line environment.

Commands

An instruction that directs a control unit or device to perform an operation or a set of operations.

Connect:Direct users issue commands to initiate and monitor activity within the Connect:Direct system. Connect:Direct commands can be issued from the IUI, the operator console, a batch job, or a user application program.

Component

1. Hardware or software that is part of a functional unit.
2. A functional part of an operating system; for example, the scheduler or the Hold queue.

Compression

Storing data in a format that requires less space than usual. Data compression is particularly useful in communications because it enables devices to transmit the same amount of data in fewer bits. See also Variable Extended Compression.

Configuration

The arrangement of a computer system or network as defined by the nature, number, and main characteristics of its functional units. More specifically, the term configuration may refer to a hardware or software configuration. See also System Configuration.

Connect:Direct/Manager

The component of a Connect:Direct/Plex environment that handles the following functions:

- ◆ Interface connections
- ◆ Statistics file updates
- ◆ CKPT and TCQ/TCX file access
- ◆ TYPE file, AUTH file, NETMAP file, SECURE+ parameter file, and SECURE+ Digital Signature updates
- ◆ Workload balancing

Connect:Direct/Plex

A Connect:Direct system consisting of a Connect:Direct/Manager and one or more Connect:Direct/Servers in a system complex or parallel system complex.

Connect:Direct/Server

A Connect:Direct/Plex component that executes the Processes.

Connect:Direct/Stand-alone Server

A Connect:Direct system that is not part of a Connect:Direct/Plex.

Connectivity

A term used to describe the physical interconnections of multiple devices, computers, or networks employing similar or different technology and/or architecture together to accomplish effective communication between and among connected members. It involves data exchange and/or resource sharing.

Console

A logical device that is used for communication between the user and the system.

Coupling Facility (CF)

A special logical partition (LP) that provides high-speed caching, list processing, and locking functions in Parallel Sysplex.

CPU

See *Central Processing Unit (CPU)*.

Cross-System Coupling Facility (XCF)

A z/OS facility that allows multiple instances of the same application to communicate and share information with each other.

CTC

See *Channel-to-Channel (CTC)*.

CTCA

See *Channel-to-Channel Adapter (CTCA)*.

Customer Application

An application that does customer-specific processing.

Customer Information Control System (CICS)

An IBM-licensed program that enables transactions entered at remote terminals to be processed concurrently by user-written application programs. It includes facilities for building, using, and maintaining databases.

D

Daemon

A background task, process, or thread that intermittently awakens to perform some task or function and then returns to an idle state.

DASD

See *Direct Access Storage Device (DASD)*.

Database

1. A set of data, or a part or the whole of another set of data, that consists of at least one file and is sufficient for a given purpose or for a given data-processing system.
2. A collection of data fundamental to a system. See also Database Control (DBCTL), data entry database (DEDB), data sharing, and data sharing group.

Data Set

The major unit of data storage and retrieval, consisting of a collection of data in one of several prescribed arrangements and described by control information to which the system has access.

Data Sharing

In a Parallel Sysplex, the ability of concurrent subsystems or application programs to directly access and change the same data while maintaining data integrity.

Data Transmission Facility (DTF)

The nucleus component of Connect:Direct. The DTF controls information distribution to other Connect:Direct nodes in the network. Startup parameters that govern the overall activity of the DTF are defined within the initialization parameters.

In a Connect:Direct/Plex, the DTF consists of a Connect:Direct Manager and one or more Connect:Direct Servers.

Decipher

To convert enciphered data into clear data.

Decrypt

To convert encrypted data into clear data.

Default

Pertaining to an attribute, value, or option that is assumed when none is explicitly specified.

Direct Access Storage Device (DASD)

A physical device, such as an IBM 3390, in which data can be permanently stored and subsequently retrieved using licensed products like IMS and DB2, or using IBM supported access methods like VSAM in operating system environments like z/OS.

Directory

A list of files that are stored on a disk or diskette. A directory also contains information about the file, such as size and date of last change.

DTF

See *Data Transmission Facility (DTF)*.

Dynamic

Pertaining to an operation that occurs at the time it is needed rather than at a predetermined or fixed time.

E**Execution**

The process by which a computer carries out the instruction or instructions of a computer program.

Extended Submit Facility (ESF)

The facility that allows users to queue data transfer requests to a Connect:Direct node that is not active. This allows users to submit work to Connect:Direct, even if the Connect:Direct DTF is down.

F**File System**

The collection of files and file management structures on a physical or logical mass storage device such as a disk.

Format

1. A specified arrangement of things, such as characters, fields, and lines, usually used for displays, printouts, or files.
2. To arrange things such as characters, fields, and lines.

Function Management Header (FMH)

One or more headers, optionally present in the leading request units (RUs) of an RU chain, that allow one LU to (a) select a transaction program or device at the session partner and control the way in which the end-user data it sends is handled at the destination, (b) change the destination or the characteristics of the data during the session, and (c) transmit between session partners status or user information about the destination (for example, a program or device). Function management headers can be used with LU type 1, 4, and 6.2 protocols.

H

Hardware

The physical equipment as opposed to programs, procedures, rules, and associated documentation. Contrast with software.

Host (computer)

1. In a computer network, a computer that provides end users with services such as computation and databases and that usually performs network control functions.
2. The primary or controlling computer in a multiple-computer installation.

I

ICO

See *InterConnect Option (ICO)*.

Initialization

The preparation of a system, device, or program for operation. Connect:Direct initialization parameters specify alternate values for various parameters used during Connect:Direct start up.

Input/Output (I/O)

1. Pertaining to a device whose parts can perform an input process and an output process at the same time.
2. Pertaining to a functional unit or channel involved in an input process, output process, or both, concurrently or not, and to the data involved in such a process.

Interactive

Pertaining to a program or system that alternately accepts input and then responds. An interactive system is conversational; that is, a continuous dialog exists between user and system. Contrast with batch.

Interactive User Interface (IUI)

An ISPF screen and dialog component that allows users to define and submit Connect:Direct Processes as well as issue Connect:Direct commands that monitor and control administrative and operations activity. An IUI is also available for a CICS environment.

InterConnect Option (ICO)

A feature of Connect:Enterprise. This option provides an automatic, secure way to route application-produced distribution files from a Connect:Direct supported node to a Connect:Enterprise node for distribution, automatically distribute Connect:Enterprise batches to a Connect:Direct node upon arrival, and provide success or failure notification at each process step.

Interface

A shared boundary. An interface might be a hardware component to link two devices or it might be a portion of storage or registers accessed by two or more computer programs.

Interrupt

1. A suspension of a process, such as execution of a computer program caused by an external event, and performed in such a way that the process can be resumed.
2. In data communication, to take an action at a receiving station that causes the sending station to end a transmission.
3. To temporarily stop a process.

I/O

See *Input/Output (I/O)*.

I/O Service Units

A measure of individual data set I/O activity and JES spool reads and writes for all data sets associated with an address space.

IUI

See *Interactive User Interface (IUI)*.

J

Job Entry Subsystem (JES)

A system facility for spooling, job queuing, and managing job-related data.

L

LAN

See *Local Area Network (LAN)*.

Link

The combination of physical media, protocols, and programming that connects devices.

Load Module

A computer program in a form suitable for loading into storage for execution.

Local Area Network (LAN)

A data network located on the user's premises in which serial transmission is used for direct data communication among data stations. It services a facility without the use of common carrier facilities.

Local Cache

A buffer in local system storage that may contain copies of data entries in a CF cache structure.

LOCAL.NODE

An entry in the Network Map. The local node entry defines the logical Connect:Direct name of the local Connect:Direct DTF and its associated communications name. The local node entry also contains the name of the transmission queue and the SUPERUSR ID password, if specified.

Logical Connection

In a network, devices that can communicate or work with one another because they share the same protocol.

Logical Unit (LU)

In VTAM, the source and recipient of data transmissions. Data is transmitted from one logical unit (LU) to another LU. For example, a terminal can be an LU, or a CICS system can be an LU.

Logically Partitioned (LPAR) Mode

A CPC power-on reset mode that enables use of the PR/SM (Processor Resource/Systems Manager) feature and allows an operator to allocate CPC hardware resources (including CPs, central storage, expanded storage, and channel paths) among logical partitions.

LU

See *Logical Unit (LU)*.

M**Main Storage**

A logical entity that represents the program addressable portion of central storage. All user programs are executed in main storage.

Mainframe (z/OS server)

A large computer, in particular one to which other computers can be connected so that they can share facilities the z/OS server provides, for example, a z/OS computing system to which personal computers are attached so that they can upload and download programs and data.

Memory

The program-addressable storage from which instructions and other data can be loaded directly into registers for subsequent execution or processing.

Migration

Installing a new version or release of a program when an earlier version or release is already in place. See file migration.

Modal Statements

Statements (IF THEN, EIF, ELSE, EXIT, and GOTO) in Connect:Direct that allow you to alter the sequence of Connect:Direct Process execution based on completion of a previous Process step.

Module

A program unit that is discrete and identifiable with respect to compiling, combining with other units, and loading; for example, the input to or output from an assembler, compiler, linkage editor, or executive routine.

Multiprocessing

The simultaneous execution of two or more computer programs or sequences of instructions. See also Parallel Processing.

N

NCP

See *Network Control Program (NCP)*.

Netmap

See *Network Map*.

Network

A configuration of data processing devices and software connected for information interchange.

Network Control Program (NCP)

A program residing in a communication controller (for example, the IBM 3745 Communication Controller) that controls the operation of the communication controller.

Network Map

The VSAM file that identifies all valid Connect:Direct nodes and applids in the network. There is one Network Map (netmap) associated with each Connect:Direct node. There is one entry in that netmap for each of the other Connect:Direct nodes to which the local Connect:Direct node can initiate a session. The netmap entries also contain the rules or protocol to which the nodes will adhere when communicating.

Node

1. Any site in a network from which information distribution can be initiated.
2. In SNA, an endpoint of a link or junction common to two or more links in a network. Nodes can be distributed to Z/OS server processors, communication controllers, cluster controllers, or terminals. Nodes can vary in routing and other functional capabilities.

O

Offline

Not controlled directly by, or not communicating with, a computer. Contrast with online.

Online

Pertaining to equipment, devices, or data under the direct control of the processor. Contrast with offline.

Online Messages

The completion and error messages that are displayed online.

Operating System (OS)

The software that controls the execution of programs and that may provide services such as resource allocation, scheduling, input/output control, and data management. Although operating systems are predominantly software, partial hardware implementations are possible. Examples are z/OS, VSE/ESA, and VM/ESA.

Operator Interface

Allows Connect:Direct commands to be issued from the operator console. This interface also allows tailoring of Connect:Direct commands through a command list (CLIST) facility.

OS

See *Operating System (OS)*.

P

Parallel

1. Pertaining to a process in which all events occur within the same interval of time, each handled by a separate but similar functional unit; for example, the parallel transmission of the bits of a computer word along the lines of an internal bus.
2. Pertaining to the concurrent or simultaneous operation of two or more devices or to the concurrent performance of two or more activities in a single device.
3. Pertaining to the concurrent or simultaneous occurrence of two or more related activities in multiple devices or channels.
4. Pertaining to the simultaneity of two or more processes.

5. Pertaining to the simultaneous processing of the individual parts of a whole, such as the bits of a character and the characters of a word, using separate facilities for the various parts.

Parallel Processing

The simultaneous processing of units of work by many servers. The units of work can be either transactions or subdivisions of large units of work (batch).

Parallel Sessions

The capability of having two or more concurrently active sessions between the same set of two LUs. With parallel session support, Connect:Direct allows multiple, concurrent file transfers between two Connect:Direct nodes.

Parallel Sysplex

A sysplex with one or more coupling facilities.

Partitioned Data Set (PDS)

A data set in DASD storage that is divided into partitions, called members, each of which can contain a program, part of a program, or data.

Partitioned Data Set Extended (PDSE)

A data set organization that stores many different but related members. A PDSE contains an indexed directory and members that are similar to the directory and members of a partitioned data set (PDS) but offers architectural advantages that a PDS cannot. For example, space can be dynamically allocated and reclaimed using PDSEs, exploiting space more efficiently.

Primary Node (PNODE)

The Connect:Direct node on which the Process is being submitted. The primary node may also be referred to as the controlling or source node, but should not necessarily be interpreted as the sending node since PNODE can be the receiver. In every Process, there is one PNODE and one SNODE specified. The submitter of a Process is always the PNODE.

Process

A series of statements (which can be predefined and stored in a library) submitted through the API to initiate Connect:Direct activity, such as copying files, running jobs, and so on.

Process Statements

The statements that are used to build a Connect:Direct Process. They contain instructions for transferring files, running operating system jobs, executing programs, or submitting other Connect:Direct Processes. Process statements include COPY, RUN JOB, RUN TASK, SUBMIT, SYMBOL, and modals (conditional logic).

Processing Unit

The part of the system that does the processing, and contains processor storage.

Processor

A processing unit, capable of executing instructions when combined with main storage and channels.

Protocol

A specification of the format and relative timing of information exchanged between peer entities within a layer.

R**Record**

A set of data treated as a unit.

Recovery

To maintain or regain system operation after a failure occurs. Generally, to recover from a failure is to identify the failed hardware, to de-configure the failed hardware, and to continue or restart processing.

Remote Node

The Connect:Direct node that interacts with the local node during Process execution. The remote node is also referred to as the participating, receiving, target, destination, or secondary node (SNODE).

Resource Access Control Facility (RACF)

The facility that provides access control by identifying and verifying users to the system. RACF authorizes access to resources, logs unauthorized access attempts, and logs accesses to protected data sets.

Response Time

The amount of time it takes after a user presses the enter key at the terminal until the reply appears at the terminal.

Retry Interval

An installation parameter that specifies the interval, in minutes, that the retries mentioned in the Max Retries parameter will be performed.

Routing

The assignment of a path by which a transfer reaches its destination.

S

Secondary Node (SNODE)

The Connect:Direct node that interacts with the primary node (PNODE) during process execution. The secondary node (SNODE) can also be referred to as the participating, target, or destination node. Every Process has one PNODE and one SNODE.

Session

1. The entity through which a Connect:Direct PNODE initiates and executes one or more Processes to one or more SNODEs.
2. The entity through which a Connect:Direct SNODE receives one or more Processes.
3. In SNA, a logical connection between two network addressable units that can be activated, tailored to provide various protocols, and deactivated as requested.
4. The data transport connection resulting from a call or link between two devices.
5. The period of time during which a user of a node can communicate with an interactive system; usually it is the elapsed time between logon and logoff.
6. In network architecture, an association of facilities necessary for establishing, maintaining, and releasing connections for communication between stations.

Session Classes

The installation parameter that specifies the Process class groupings, priorities and number of Processes that can be concurrently executed on this Connect:Direct node.

Shared

Pertaining to the availability of a resource to more than one use at the same time.

SNA

See *Systems Network Architecture (SNA)*.

SNODE

See *Secondary Node (SNODE)*.

Standby Connect:Direct Manager

In an extended recovery environment, the backup Connect:Direct Manager that takes over work from the active Connect:Direct Manager when the active Connect:Direct Manager fails.

Standby Connect:Direct Server

In an extended recovery environment, the backup Connect:Direct Server that takes over work from the active Connect:Direct/Server when the active Connect:Direct Server fails.

Standby Connect:Direct System

In an extended recovery environment, the backup Connect:Direct system that takes over work from the active Connect:Direct system when the active system fails.

Statistics Facility

The Connect:Direct facility that records all Connect:Direct activities.

Statistics Files

A pair of VSAM data sets that hold Connect:Direct statistics records to document the history of a Connect:Direct Process.

Storage

A unit into which recorded data can be entered, in which it can be retained and processed, and from which it can be retrieved.

Subsystem

A secondary or subordinate system, or programming support, that is usually capable of operating independently of or asynchronously with a controlling system.

SYMBOL Statement

The Connect:Direct Process statement that allows you to build symbolic substitution values.

Symbolics

The parameters that allow one predefined Process to be used for multiple applications. For example, the file names for a COPY operation could be passed to the Process by the user submitting the Process.

Synchronous

1. Pertaining to two or more processes that depend on the occurrences of a specific event such as common timing signal.
2. Occurring with a regular or predictable timing relationship.

Sysplex

A set of z/OS systems communicating with each other through certain multisystem hardware components and software services to process workloads.

Sysplex Data Sharing

The ability of multiple z/OS subsystems to share data across multiple system images. Sysplex data sharing differs from two-way data sharing in that the latter allows sharing across only two system images.

System

In data processing, a collection of people, machines, and methods organized to accomplish a set of specific functions.

System Configuration

A process that specifies the devices and programs that form a particular data processing system.

Systems Network Architecture (SNA)

A network architecture designed to provide compatibility among a wide variety of hardware and software products so that they can be used to build complex networks. It defines protocols, standards, and message formats to which different hardware and software products must conform.

The SNA network consists of network addressable units (NAUs), boundary function components, and the path control network.

T

TCQ

See *Transmission Control Queue (TCQ)*.

TCP/IP

See *Transmission Control Protocol/Internet Protocol (TCP/IP)*.

TDQ

See *Transient Data Queue (TDQ)*.

Terminal

A device that is capable of sending and receiving information over a link; it is usually equipped with a keyboard and some kind of display, such as a screen or a printer.

Throughput

1. A measure of the amount of work performed by a computer system over a given period of time, for example, number of jobs per day.
2. A measure of the amount of information transmitted over a network in a given period of time.

Transient Data Queue (TDQ)

A CICS temporary storage queue in which event data is stored so that a client application can retrieve the information.

Transmission Control Protocol/Internet Protocol (TCP/IP)

A set of public domain networking protocol standards that specify the details of how computers communicate, as well as a set of conventions for interconnecting networks and routing traffic.

Transmission Control Queue (TCQ)

A VSAM relative record data set (RRDS) used to hold all Processes that have been submitted to Connect:Direct.

V

Version 1/Version 2 Flows

Version 1 and Version 2 Flows pertain to the internal Connect:Direct architecture and the way the Connect:Direct Function Management Header (FMH) protocol is performed between the source and destination nodes. V1 flows were the original architectural design of Connect:Direct when it was used for VTAM SNA LU0 mainframe-to-mainframe data transfers. As the Connect:Direct product has matured and TCP/IP and LU6.2 protocols were adopted, continued usage of the original V1 FMH protocols was no longer practical.

The Version 2 FMH protocol introduced in the early 1990's changed the structure of the FMH protocol from DSECT-mapped to keyword (XDR) fields. In addition, Version 2 Buffer Headers and a new more efficient method of Checkpointing were included. The flexibility of the Version 2 architecture has enabled several other Connect:Direct product enhancements to occur, such as support for ZLIB compression, Secure+ Encryption, and CRC checking.

SNA LU0 and SNUF LU0 (for the OS/400) still use Version 1 FMH protocols, whereas TCP/IP, SNA LU6.2, and CTCA use Version 2 FMH protocols.

Virtual Storage (VS)

The storage space regarded as addressable main storage by the user of a computer system in which virtual addresses are mapped into real addresses. Virtual storage size is limited by the address scheme of the computer system and the amount of auxiliary storage available, rather than the actual number of main storage locations.

Virtual Storage Access Method (VSAM)

An access method for direct or sequential processing of fixed and variable-length records on direct access devices. The records in a VSAM data set or file can be organized in logical sequence by a key field (key sequence), in the physical sequence in which they are written on the data set or file (entry-sequence), or by relative-record number.

Virtual Telecommunication Access Method (VTAM)

The program that provides for workstation and network control. It is the basis of a System Network Architecture (SNA) network. It supports SNA and certain non-SNA terminals. VTAM supports the concurrent execution of multiple telecommunications applications and controls communication among devices in both single processor and multiple processor networks.

W

Wide Area Network (WAN)

A network that provides communication services to a geographic area larger than that served by a local area network.

X

XCF

See *Cross-System Coupling Facility (XCF)*.

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