IBM® Sterling Connect:Express® for z/OS®

Sysplex Supervision Implementation Guide

Version 4.3

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Before using this information and the product it supports, read the information in Notices, on page 47.

CXZOSPLX430

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Chapter 1

Using the Sysplex Option

The Sysplex option uses the XCF services of z/OS in support of either a *sysplex* or a *parallel sysplex* environment. IBM defines a sysplex environment as a group of z/OS images that work together, and a parallel sysplex environment as a sysplex that includes a *coupling facility*.

The Sysplex option allows, on the one hand, the distribution of a Sterling Connect:Express monitor's services in a sysplex while making it accessible to all z/OS images, and on the other hand the grouping of several monitors executing on different z/OS images, while granting to a supervisor the role of managing shared resources.

This functionality integrates with the Sterling Connect:Express architecture through XCF handlers that handle the interface between the different monitors via the XCF services of z/OS.

Three monitor profiles can be defined: one supervisor, multiple managers, multiple servers per manager, and multiple servers for the supervisor. Each component can be associated with a standby that can take over in case of failure of the primary one.

The manager/server or supervisor/server association permits installation of the subsystem interface of a monitor for multiple sysplex members: This functionality has existed since version 4.1.

The association of a standby with a component (supervisor, manager, or server) allows for the more efficient management of problems: This functionality has existed also since version 4.1.

Setting up a supervisor allows for sharing of resources between multiple managers: the role of the supervisor is to manage partners and files resources, and waiting requests (internal requests placed on hold, or external requests that have been interrupted).

Before configuring the monitor group, you must first define the topology of subsystems to set up, knowing that the group will be defined uniquely by the list of subsystems participating in transfer operations, which can include the supervisor.

One subsystem should play the role of supervisor — on one z/OS image.
One or several subsystems can play the role of manager — spread across multiple z/OS images.
The supervisor may optionally participate in transfer operations (supervisor transfer option).
The journal function may optionally be centralized at the supervisor level.
Operations control can be centralized by the manager/server association on one dedicated z/OS image.
A standby can be launched on the same z/OS image as the primary, or on another z/OS image.
The supervisor assigns a range of request numbers to each monitor that participates in operations.

Concepts

Once this topology is defined, you can configure the JCL and CXPLEX file for each component. The following general rules apply:

✓ Each JCL contains a DD CXPLEX card and a DD SYSPRTX card.
✓ Each manager must be declared in the supervisor's CXPLEX file, even if the supervisor doesn't launch it during initialization.
✓ Each subsystem is associated with an appropriate SYSIN fle.
✓ The SYSPAR, SYSFIC, SYSTCP, SYSSNA, SYSX25 files should be common to all the group's subsystems.
✓ The parameters in SYSIN are processed only if they apply: for example, the SYSIN of a subsystem is used equally by the manager as by the server, even if the server doesn't use its APM and ANM resources.

The following table summarizes the configuration elements:

Component	Subcomponent	File	Description
Supervisor	Primary	JCL	<u>Required.</u> The EXEC PARM defines the kind of start, the PLEX mode, use of extended recovery (launch of a standby) and the XCF group name.
		CXPLEX	<u>Required.</u> This file defines the transfer option, managers, possible servers and possible standby.
	Server	JCL	<u>Optional.</u> The EXEC PARM defines the type of start, the PLEX mode, use of extended recovery (launch of a standby) and the XCF group name as defined by the supervisor. Most files are DUMMY with the exception of recovery files such as SYSCHK and SYSRCY. This JCL can be launched by the operator or the supervisor, as defined in the supervisor's CXPLEX file.
		CXPLEX	<u>Optional.</u> This file defines a possible standby.
	Standby	JCL	<u>Optional.</u> The standby's JCL, identical to that of the primary supervisor, should not include preliminary steps such as

Component	Subcomponent	File	Description
			those that control the journal and checkpoint. This JCL is run by the primary supervisor and should be declared in the supervisor's CXPLEX file.
		CXPLEX	<u>Required.</u> Same CXPLEX file as the supervisor.
Manager	Primary	JCL	<u>Required.</u> The EXEC PARM defines the type of start, the PLEX mode, use of extended recovery (launch of a standby), and the XCF group name defined by the supervisor. This JCL can be run by the operator or the supervisor, as defined in the supervisor's CXPLEX file.
		CXPLEX	<u>Required.</u> This file defines the journal option, possible servers and possible standby.
	Server	JCL	<u>Optional.</u> The EXEC PARM defines the type of start, the PLEX mode, use of extended recovery (launch of a standby), and the XCF group name defined by the supervisor. Most files are DUMMY with the exception of recovery files such as SYSCHK and SYSRCY. This JCL can be run by the operator or the supervisor, as defined in the supervisor's CXPLEX file.
		CXPLEX	<u>Optional.</u> This file defines a possible standby.
	Standby	JCL	<u>Optional.</u> The standby's JCL, identical to that of the primary supervisor, should not include preliminary steps such as those that control the journal and checkpoint. This JCL is run by the primary supervisor and should be declared in the manager's CXPLEX file.
		CXPLEX	<u>Required.</u> Same CXPLEX file as the manager.
Server	Primary	JCL	<u>Required</u> The EXEC PARM defines the type of start, the PLEX mode, use of extended recovery (launch of a standby), and the XCF group name as defined by the supervisor. Most files are DUMMY with the exception of recovery files such as SYSCHK and SYSRCY. This JCL can be run by the operator or the master monitor, as defined in the master monitor's CXPLEX file.
		CXPLEX	<u>Required.</u> This file defines a possible standby.
	Standby	JCL	<u>Optional.</u> The JCL of the standby is identical to that of the primary. This JCL is run by the primary and should be declared in the server's CXPLEX file.
		CXPLEX	<u>Required</u> This is the same CXPLEX file as the server.

EXEC Card Parameters

All components use the following execution parameters:

Field	Value	Description	Type
RUN	COLD	The monitor is cold started.	Req.
	HOT	The monitor is warm started.	
		Important Note: All major changes to the group organization in the CXPLEX configuration file should be followed by a cold start.	
PLEX	NO	Default value: monitor is launched in 'STAND ALONE' mode.	Req.
	YES	The CXPLEX file is processed; no manager is initialized.	
	SUP	Reserved for the supervisor: the CXPLEX file is processed; the managers are initialized.	
XCFGROUP	1 – 8 char.	XCF group name common to all group components.	Option.
		This name should be unique in the SYSPLEX. Names beginning with letters A to I or beginning with SYS are reserved.	
XRF	NO	Default value: the standby function is inactive, even if defined in the CXPLEX file.	Option.
	YES	The standby function is active if defined in the CXPLEX file.	
REQ	1 – 8 num.	This parameter is taken into account in a cold start: it indicates the initial request number.	Option.

These parameters can be sent in the course of automated starts via start command, and they should be able to be passed at startup:

```
TOMV4    PROC ..,RUN=H,SSN=&SSN,PLEX=NO,XRF=NO,XCFGROUP=$TOMB$,REQ=5000005,...
. . .
TOMV4    EXEC PGM=P1B2P000,REGION=0M,TIME=1440,DPRTY=(15,15),
         PARM='RUN=&RUN,SSN=&SSN,PLEX=&PLEX,XRF=&XRF,XCFGROUP=&XCFGROUP',REQ=&REQ
. .
```

See in what follows, for each component, how these parameters are processed.

CXPLEX File

Each component reads its CXPLEX file if the parameter PLEX on the EXEC card is other than 'NO'. The Sysplex parameters are listed in the SYSPRTX file. The Sysplex configuration parameters do not apply to every component, as shown in the Type column in the table below.

Field	Values	Description	Type
MGRTYP	SUP MAN YES NO	Supervisor Manager under supervision Independent manager Server	Required, first parameter, for All
XCFTIM	2 numeric chars	Value, in minutes, of the time-out for XCF communications. The default value is 3 minutes.	Optional for All
XFRTYP	 NO YES HOLD	Supervisor transfer option: The supervisor accepts no transfer request (default value). The supervisor participates fully in transfer operations. The supervisor accepts only HOLD requests.	Optional Supervisor
JNLSUP	 NO YES	Journal centralization option. For manager: NO - The manager doesn't send its journal to the supervisor (default value) YES - The manager sends its journal to the supervisor. For supervisor: NO – The supervisor doesn't write a journal record, but transmits on exit. YES – The supervisor activates the full journal function.	Optional for supervisor and manager
MANAGR	4 fields (1, 2), 3, 4	Definition of manager to start at initialization: Example: `MANAGR=(SYSB,£TOMMGR1),SSN=TOM1,H` 1.Host system (optional) , local by default 2.Procedure name (required) 3.SSN Identification =TOMx: subsystem name 4.Type of start: Hold = start by operator. By default the supervisor starts the manager. **Important note**: A manager cannot start without having been defined in the configuration of its supervisor.	At least 1 Supervisor
SERVER	2 fields (1, 2)	Definition for the server to start at initialization. The server must be launched on a different system, because it has the same subsystem name as the master. Example : `SERVER=(SYSB,£TOMSRVP)` 1. Host system (required) 2. Procedure name (required) A server can be started without having been defined in the configuration of its master monitor (supervisor or manager).	Optional for supervisor and manager
XRFPRC	2 fields (1, 2)	Definition of standby: This card is processed only if XRF=YES. If XRF=YES and if this card is absent, the function is deactivated. Example : `XRFPRC=(SYSB,£TOMMGR1)` 1. Host system (optional) , local by default 2. Procedure name (required)	Optional for all

See in what follows, for each component, how these parameters are processed.

Supervisor Configuration

The supervisor records the group composition and its own participation in transfer operations. It determines the ranges of request numbers, for each monitor, and according to the order of declaration of managers in the configuration file (the supervisor being first in the list).

Any change in configuration relative to this organization requires a cold start of all monitors.

The supervisor transmits to the managers it launches the parameters RUN, PLEX=YES, XRF, and XCFGROUP.
The supervisor transmits to the servers it launches the parameters RUN, PLEX=YES, XRF, and XCFGROUP.
The supervisor transmits to its standby the parameters RUN=H, SSN, PLEX=YES, XRF=YES and XCFGROUP.

Supervisor JCL

The table below defines the parameters of the EXEC card from the point of view of the supervisor.

Field	Value	Description	Type
RUN	COLD HOT	This parameter is transmitted to the managers and servers launched by the supervisor. The standby is always warm-started. In the course of a cold start, the supervisor attempts to stop all managers that might still be active. The cold start of the supervisor doesn't prevent a warm start of a manager by the operator, except in certain cases where the configuration has been modified.	Req.
PLEX	SUP	The CXPLEX file is processed, the managers are started. In a cold start, all managers still active are stopped.	Req.
	YES	The CXPLEX file is processed, no manager is initialized, and in the case of a cold start, active managers are not stopped: this allows for the reinitialization of the supervisor only, for example after a local failure. The standby is always started with PLEX=YES.	
XCFGROUP	1 to 8 char.	The supervisor initializes the group. If a component is started by the operator, the values defined by its own JCL are taken into account: the XCFGROUP parameter must be equal to that of the supervisor and the PLEX parameter should equal YES.	Option.
XRF	NO	Default value: The standby function is inactive, even if it is defined in the CXPLEX file.	Option.
	YES	The standby function is active, if defined in the CXPLEX file. The supervisor launches its standby with the parameter RUN=H and the parameter PLEX=YES, because stopping the supervisor does not imply stopping of the managers. When the standby takes over, it is supposed to join the group in hot status, which group is still operational.	
REQ	1 to 8 num. char.	This parameter is taken into account in a cold start : it indicates the initial request number. The following message displays in the log: `TOM4355I STARTING REQUEST NUMBER AT 00666666` This number should fit within the range of requests allocated by the supervisor.	Option.

Supervisor CXPLEX File

The supervisor, as a manager, can launch servers and participate in file transfer operations, but it is possible to deactivate the transfer function of the supervisor or limit it to recording requests on hold.

The table below defines the parameters in the CXPLEX file from the point of view of the supervisor.

Field	Values	Description	Type
MGRTYP	SUP	Supervisor	Required, first parameter
XCFTIM	2 num.char.	Value, in minutes, of the time-out for XCF communication. The default value is 3 minutes.	Optional
XFRTYP		Supervisor transfer option:	Optional for supervisor
	NO	The supervisor accepts no transfer request (default value): network and transfer resources are inactive.	
	YES	The supervisor participates fully in transfer operations: it initializes APM, AFM et ANM procedures. The supervisor is included in the manager's list for calculation of numeric ranges of requests.	
	HOLD	The supervisor accepts only HOLD requests: network and transfer resources are inactive. The supervisor is included in the manager's list for calculation of numeric ranges of requests.	
JNLSUP		Journal centralization option.	Optional for supervisor and manager
	NO	NO – The supervisor doesn't write a journal record, but transmits on exit.	
	YES	YES – The supervisor activates the full journal function.	
MANAGR	4 fields (1,2), 3,4	Definition of manager to start at initialization: Example: MANAGR=(SYSB,£TOMMGR1),SSN=TOM1,H 1. Host system (optional) , local by default 2. Procedure name (required) 3. SSN Identification =TOMx: subsystem name 4. Type of start: Hold = start by operator. By default the supervisor starts the manager. **Important note**: A manager cannot be started without having been defined in the configuration of its supervisor.	At least 1 supervisor
SERVER	2 fields (1,2)	Definition for the server to start at initialization. The server must be launched on a different system, because it has the same subsystem name as the master. Example : SERVER=(SYSB,£TOMSRVP) 1. Host system (required) 2. Procedure name (required) A server can be started without having been defined in the configuration of its master monitor (supervisor or manager).	Optional for supervisor and manager
XRFPRC	2 fields (1,2)	Definition of standby: This card is processed only if XRF=YES. If XRF=YES and if this card is absent, the function is deactivated. Example : XRFPRC=(SYSB,£TOMMGR1) 1. Host system (required) 2. Procedure name (required)	Optional for all

The maximum number of managers is 32: They should all be declared in the CXPLEX file.

The maximum number of servers is equal to 32: they don't need to be declared in the CXPLEX file.

Identification of XCF Members

Each group member, in initializing with respect to the XCF environment, identifies itself uniquely by three elements: the group, its member name, and the system on which it executes.

If the group name is XCFGROUP=GROUPP, the subsystem which identifies itself as TOMx, the z/OS image SYSA, the identifier of the XCF member depends on the type of component:

Type of component	XCF Identifier	Standby Identifier
Supervisor	GROUPP $**SP**TOMx$ $$SYSA$$	GROUPP àSPTOMx$ $$SYSA$$
Manager	GROUPP $**M**GTOMx$ $$SYSA$$	GROUPP àSPTOMx$ $$SYSA$$
Server	GROUPP $**SV**TOMx$ $$SYSA$$	GROUPP àSPTOMx$ $$SYSA$$

In the configurations used in the examples below, you might have the following XCF members:

Supervisor TOMP	GROUPP $**SP**TOMP$ $$SYSA$$	GROUPP àSPTOMP$ $$SYSA$$
Server TOMP launched	GROUPP $**SV**TOMP$ $$SYSB$$	
Server TOMP	GROUPP $**SV**TOMP$ $$SYSC$$	
Server TOMP	GROUPP $**SV**TOMP$ $$SYSD$$	
Manager 1	GROUPP $**M**GTOM1$ $$SYSB$$	
Server 1	GROUPP $**SV**TOM1$ $$SYSA$$	
Manager 2	GROUPP $**M**GTOM2$ $$SYSC$$	
Server 2	GROUPP $**SV**TOM2$ $$SYSA$$	
Manager S	GROUPP $**M**GTOMS$ $$SYSD$$	
Server S	GROUPP $**SV**TOMS$ $$SYSA$$	

The examples that follow show, particularly, when a change in organization requires a cold start of the group.

The examples presuppose that the supervisor is started on the SYSA system and that it is the subsystem TOM**P**.

Example 1.

```
MGRTYP=SUP      MANDATORY        SUP-MAN-YES-OR NO:
*
XCFTIM=03       OPTIONNAL        MINUTES, XCF TIMER
XFRTYP=NO       OPTIONNAL        YES-NO(DEFAULT)
*
MANAGR=(SYSB,£TOMMGR1),SSN=TOM1
MANAGR=(SYSC,£TOMMGR2),SSN=TOM2
MANAGR=(SYSD,£TOMMGRS),SSN=TOMS
*
SERVER=(SYSB,£TOMSRVP)
*
XRFPRC=(,£TOMSTBY)
```

Note: Consider that the group is identified by the list '*-12S*' (without supervisor).

The supervisor does not participate in transfer operations, and it should automatically launch managers identified by the subsystems TOM1, TOM2 and TOMS.
The supervisor will start its server on system SYSB, and its standby on system SYSA, if the parameter XRF of the EXEC is equal to 'YES'.

In this example, the request ranges are:

TOMP (Supervisor): no requests
TOM1 : from 00000001 to 33333333
TOM2 : from 33333334 to 66666666
TOMS : from 66666667 to 99999999

Moving to example 2 does not require a cold start.

Example 2.

```
MGRTYP=SUP      MANDATORY        SUP-MAN-YES-OR NO:
*
XCFTIM=03       OPTIONNAL        MINUTES, XCF TIMER
XFRTYP=NO       OPTIONNAL        YES-NO(DEFAULT)
*
MANAGR=(SYSB,£TOMMGR1),SSN=TOM1
MANAGR=(SYSB,£TOMMGR2),SSN=TOM2
MANAGR=(SYSB,£TOMMGRS),SSN=TOMS,H
*
SERVER=(SYSB,£TOMSRVP)
```

Note: Consider that the group is identified by '*-12S*' (without supervisor).

The supervisor does not participate in transfer operations, it should automatically launch managers identified by the subsystems TOM1 or TOM2, and TOMS should be started by the operator.
In this example the supervisor does not start its standby server, even if the XRF parameter of the EXEC equals 'YES'.

In this example, the request ranges will be:

TOMP (Supervisor) : no requests
TOM1 : from 00000001 to 33333333
TOM2 : from 33333334 to 66666666
TOMS : from 66666667 to 99999999

Moving to example 3 requires a cold start of all monitors, because the organization is modified.

Example 3.

```
MGRTYP=SUP      MANDATORY        SUP-MAN-YES-OR NO:
*
XCFTIM=03       OPTIONNAL        MINUTES, XCF TIMER
XFRTYP=YES      OPTIONNAL        YES-NO(DEFAULT)
*
MANAGR=(SYSB,£TOMMGR1),SSN=TOM1
MANAGR=(SYSB,£TOMMGR2),SSN=TOM2
MANAGR=(SYSB,£TOMMGRS),SSN=TOMS,H
*
SERVER=(SYSB,£TOMSRVP)
```

Note: Consider that the group is identified by '*P12S*' (with supervisor).

The supervisor participates in transfer operations and it should automatically launch managers identified by the subsystems TOM1 and TOM2. It is expected that TOMS will be started by the operator.
In this example the supervisor does not start its standby server, even if the XRF parameter of the EXEC equals 'YES'.

In this example, the request ranges will be:

TOMP (Supervisor) : from 00000001 to 25000002.
TOM1 : from 25000003 to 50000001
TOM2 : from 50000002 to 75000000
TOMS : from 75000001 to 99999999

As the request ranges have changed with the new organization, each monitor should be reinitialized.

Configuration of a manager

A manager can be configured to be either under the control of a supervisor or independent. It can either be launched by a supervisor or launched by an operator.

Note: The manager is activated by the first contact with the supervisor. As long as this exchange does not take place, monitor status remains inactive and the activate command is rejected. Once contact is established, the supervisor can be stopped and restarted without manager interruption: it will then function autonomously until it returns to the supervisor.

The manager transmits to the servers it starts the parameters RUN, SSN, PLEX, XRF and XCFGROUP.
The manager transmits to its standby the parameters RUN=H, SSN, PLEX=YES, XRF=YES and XCFGROUP.

Manager JCL

If the manager is started by the operator, the values defined by its own JCL are taken into account: the parameter XCFGROUP must be equal to that of the supervisor and the PLEX parameter should be equal to YES. The XRF parameter is independent, because the function is unique to each component. The RUN parameter can be independent except in the case of a major change in group organization in the CXPLEX configuration file: in this case the range of request numbers may have changed, and this necessitates a reinitialization of all the group's monitors.

If XRF=YES, the manager starts its standby with the RUN=H parameter. The stopping of the manager implies stopping of its servers. When the standby takes the relay, it warm-starts the group of servers.

The table below describes the parameters of the EXEC card from the point of view of the manager.

Field	Value	Description	Type
RUN	COLD	This parameter is transmitted to servers launched by the manager.	Req.
	HOT	The standby is always cold-started.	
PLEX	YES	The CXPLEX file is processed and the declared servers are started.	Req.
XCFGROUP	1 to 8 char.	The XCFGROUP parameter must be equal to that of the supervisor the PLEX parameter should be equal to YES.	Option.
XRF	NO	Default value: the standby function is inactive, even if it is defined in the CXPLEX file.	Option.
	YES	The standby function is active, if it is so defined in the CXPLEX file. The manager starts its standby, with the parameter RUN=H, because, whenever the standby takes the relay, it is assumed to rejoin the group which is always operational.	
REQ	1 to 8 num.	This parameter is taken into account in a cold-start: It indicates the initial request number. The following message displays in the log: `TOM4355I STARTING REQUEST NUMBER AT 00666666` This number should fit with the defined range of requests.	Option.

CXPLEX Manager File

The manager can start servers and send its registration journal to the supervisor. According to the execution parameter XRF, it can start the standby defined in its configuration.

The table below describes the parameters in the CXPLEX file from the point of view of the manager.

Field	Value	Description	Type
MGRTYP	MAN YES	Supervised manager Independent manager	Required, first parameter
XCFTIM	2 car. num.	Value, in minutes, of the time-out for XCF communications. The default value is 3 minutes.	Optional
JNLSUP	 NO YES	Journal centralization option for the manager: NO – The manager doesn't send its journal to the supervisor (default value) YES – The manager sends its journal to the supervisor.	Optional
SERVER	2 fields (1,2)	Definition of a server to launch at initialization. The server must start on a different system, because it has the same subsystem name as the master. Example : `SERVER=(SYSB,£TOMMGR1)` 1. Host system (required) 2. Procedure name (required) A server can be started without having been defined in its monitor master's configuration (supervisor or manager)	Optional
XRFPRC	2 fields (1,2)	Definition of the standby: this card is processed only if XRF=YES. If XRF=YES and this card is absent, the function is deactivated. Example: `XRFPRC=(,£TOMSTB1)` 1. Host system (optional) , local by default 2. Procedure name (required)	Optional

The maximum number of servers is equal to 32: they don't need to be declared in the CXPLEX file.

Configuring a Server

A server executes always under control of a manager (or supervisor). It can either be started by its monitor master or by an operator. The server transmits to its standby the parameters RUN=H, SSN, PLEX=YES, XRF=YES and XCFGROUP.

Server JCL

If the server is started by the operator, the values defined by its own JCL are taken into account: the parameters XCFGROUP and SSN must be equal to those of the manager, and the PLEX parameter must be equal to YES. The XRF parameter is independent, because its function is particular to each component.

The server is by necessity started on a different system than that of the monitor master, because it has the same subsystem name. If XRF=YES, the server starts its standby, with the parameter RUN=H. Stopping the server is only the concern of itself and its standby.

The table below describes the EXEC card parameters from the point of view of the server.

Field	Value	Description	Type

RUN	COLD HOT	A warm start permits processing of the SYSRCY file (requests made in the absence of the server.) The standby is always warm-started.	Req.
PLEX	YES	The CXPLEX file is processed.	Req.
XCFGROUP	1 to 8 char.	The XCFGROUP parameter must be equal to that of the supervisor and the PLEX parameter must equal to YES.	Option.
XRF	NO	Default value: the standby function is inactive, even if defined in the CXPLEX file.	Option.
	YES	The standby function is active if it is defined in the CXPLEX file. The server starts its standby with the RUN=H parameter because, when the standby takes over, it is supposed to join the group which is still operational.	

Server CXPLEX File

According to the execution parameter XRF, the server can start the standby defined in its configuration.

The table below describes the parameters of the CXPLEX file from the point of view of the server.

Field	Value	Description	Type
MGRTYP	NO	Server	Required, first parameter
XCFTIM	2 car. num.	Value, in minutes, of the time-out for XCF communications; the default value is 3 minutes.	Optionnel

XRFPRC	2 fields (1,2)	Definition of the standby: this card is processed only if XRF=YES.
		If XRF=YES and if this card is absent, the function is deactivated.
		Example : XRFPRC=(SYSB,£TOMSRV1)
		   1. Host system (optional), local by default
		   2. Procedure name (required)
			Optionnel

Processing Transfer Checkpoint Files

Transfer checkpoint files are allocated in the APM. A checkpoint file is created for each request if a transfer restart may occur (if the file is large enough and synchronization is active). Its physical name is calculated according to the model given by the card DD CHKMODEL in the APM's JCL.

Calculation of name of the checkpoint file, already based on the APM number of one monitor, should also be done based on subsystem name within supervision scope.

Unsupervised:
For monitor APMs, use the syntax CHKMODEL = 'root'.&SSN.AP&AP..CHKMODEL. Then, CHKMODEL = SYS1.TOM4AP01.CHKMODEL in the APM 01 of TOM4 and the request checkpoint number 00000001 will have the name: SYS1.TOM4CHKP.A00000001, independently of the TOM4 APM in which it executes.

In the Sysplex configuration:
For monitor APMs, use the syntax CHKMODEL = 'root'.MN&SSN..AP&AP..CHKMODEL. Then CHKMODEL = SYS1.MNTOM4.AP01.CHKMODEL in APM 01 of TOM4, and request checkpoint number 00000001 will have the name: SYS1.MNPLEX.CHKP.A00000001 independent of both the monitor and the APM.

According to type, (supervisor, manager, server), each component processes all or a limited number of MVS commands. On the other hand, certain MVS commands passed to the supervisor are transmitted to the managers.

- A server processes only stop commands as well as $LOAD$.
- A manager that is under the control of a supervisor, (MGRTYP=MAN) rejects the commands linked to the configuration of partners and files.
- A manager that is running by itself (MGRTYP=YES), accepts the commands linked to the configuration of partners and files.
- If the supervisor does not execute transfers (XFRTYP=NO or HOLD), it does not process commands linked to ANM and APM resources.

Next paragraph defines commands that are specfic to Sysplex componants

Specific Commands

The following commands can be passed to the supervisor.

Action	Command and Description
Stop an entire group	/F TOMSUP,SHUTDOWN or +SHUTDOWN The supervisor routes the command /P TOMMAN to each active manager. The supervisor, as well as all managers and servers, stops.
Stop a manager	/F TOMSUP,SHUTDOWN=TOMS or +SHUTDOWN=TOMS The supervisor routes the command /P TOMSJOB to the manager corresponding to the TOMS subsystem, if active. This manager and its servers stops.
Stop all managers	/F TOMSUP,SHUTDOWN=ALL or +SHUTDOWN=ALL The supervisor routes the command /P TOMMAN to all active managers. These managers and their servers stop.
Start a group	/F TOMSUP,LAUNCH or +LAUNCH The supervisor routes the command /S TOMMAN for each inactive manager.
Start a manager	/F TOMSUP,LAUNCH=TOMS or +LAUNCH=TOMS The supervisor routes the command /S TOMSJOB if the manager corresponding to the TOMS subsystem is inactive.
Activate the table of requests on hold	/F TOMSUP,HCT=E or +HCT=E The supervisor enables the shared table of requests on hold.
Deactivate the table of requests on hold	/F TOMSUP,HCT=H or +HCT=H The supervisor disables the shared table of requests on hold.
Activate/Deactivate the Partners table for an entire group	/F TOMSUP,PCT=E / H The supervisor enables/disables the Partners table and transmits the command to all managers.
Activate/Deactivate the Files table for an entire group	/F TOMSUP,FCT=E / H The supervisor enables/disables the Partners table and transmits the command to all managers.
Activate/Deactivate a Partner for the whole group	/F TOMSUP,EP=*Partner* / HP=*Partner* The supervisor enables/disables the Partner *Partner* and transmits the command to all managers.
Activate/Deactivate a File for the whole group	/F TOMSUP,EF=*File* / HF=*File* The supervisor enables/disables the File *File* and transmits the command to all managers.

The following command can be passed to the supervisor and a manager.

Action	Command and Description
Start the server	/F TOMJOB,SERVER=E or +SERVER=E
	The supervisor/manager starts the server if it has been configured in its CXPLEX file.

Note : Activation or deactivation of Partners and Files can be managed locally for each component, supervisor, or manager, via the TSO/ISPF interface or the API. Only the commands to the supervisor described below allow activation / deactivation for an entire group simultaneously. See the section *Managing Partners and Files.*

Transmitting Commands to Managers

The supervisor is charged with managing tables of partners and files, directories, and associated files (SYSTCP, SYSX25, SYSSNA, …). All use of this information is under its control. Consequently, all commands concerning these resources are transmitted to all active managers. A manager under control of a supervisor rejects these commands as invalid. An independent manager continues to process them.

The supervisor transmits the following commands, via MVS, to active managers:

- ✓ STOP
- ✓ START
- ✓ ACF=£List
- ✓ REF SYSX25
- ✓ REF SYSSNA
- ✓ REF SYSTCP

The supervisor transmits the commands E/HP=*Partner* and E/HF=*File,* via XCF, to active managers.

Note: Requests via the ISPF interface for activation and deactivation of partners or files, or of the Partners table or Files table, are processed locally by the monitor, supervisor or manager.

Each monitor, manager or supervisor, loads directories into memory, in its Partners table (PCT) and Files table (FCT). Only the supervisor is authorized to update the directories.

It is preferable also to manage at the supervisor level the files of alternate addresses and lists of partners associated with directories.

It is possible, using MVS commands, to activate or deactivate the Partners or Files resources of all managers from the supervisor, but each monitor remains autonomous insofar as activation and deactivation of its local tables is concerned.

The supervisor controls a partner's number of sessions: the number of sessions (total, inbound, and outbound) defined for a partner applies to all managers.

Managing Directories

Directories of files and partners, as well as the extensions SYSX25, SYSSNA, SYSTCP, are common to all members of groups.

Sharing Directories

In the initialization phase, each member reads the directories and initializes the internal tables PCT, FCT et ACT. The supervisor, when it connects to a manager, makes sure that the manager's configuration files (SYSPAR, SYSFIL, SYSSNA, SYSX25 et SYSTCP) are the same (error message 359E).

The update of symbolic files, of partners, and of HTTP rights absolutely must be done via the supervisor, which transmits all updates to active managers. The update of files SYSX25, SYSSNA and SYSTCP is less critical but, if it is done through the supervisor, the MVS refresh command is transmitted to active managers by Sysplex routing, which ensures total coherence of the configuration.

Update through TSO or the program P0B2DIR of partners, files, and HTTP rights should be executed with the REFRESH=YES option. This option guarantees that the update is rejected if the subsystem is a manager (TRC=2168). This results from the fact that REFRESH=YES, which causes the update of VSAM files and internal tables PCT, FCT and ACT, sends a control call to the subsystem. Using the option REFRESH=NO, which allows update of the VSAM files only, risks causing a disconnect between manager and supervisor. For example, if a partner has been added only to the VSAM file, starting a new manager will create in its PCT table a partner that does not exist in the supervisor's PCT.

The supervisor centralizes the update of directories of files and partners: it repeats all updates across all active managers. It is advisable to always use the REFRESH option to perform updates in order not to modify a directory without updating memory, generally and simultaneously, by the supervisor. If a directory were modified without REFRESH, the risk would be run of starting a manager with a Partners or Files table that differs from that of the supervisor.

In the absence of a supervisor, no update can be made on Partners or Files: the autonomous managers keep their PCT and FCT tables as is.

Associated Configuration Files

The alternate address files SYSX25, SYSSNA and SYSTCP are associated with the Partners directory. The files containing the list of partners are associated with the Files directory.

Update of these files is done by editor, directly or via the TSO/ISPF interface. All modifications should be followed by a refresh command, which causes them to be updated in memory. It is enough to pass the refresh command to the supervisor: it will be repeated for all active managers.

Example: /F jobsup,ACF=£LIST

Managing Activity

The supervisor keeps track of all active sessions for a partner. It's possible to activate or deactivate the PCT, the FCT, a partner, or a file, from the supervisor to all active managers.

Session Control

The number of active sessions is tracked locally by each manager and globally at the supervisor level. Absent a supervisor, managers, to the extent they are autonomous, account locally for sessions. Whenever the supervisor is restarted, control returns to it, but only for new sessions.

As a rule, a monitor rejects any update to memory of a partner or file if a transfer request is recorded on the object. The update is done on the VSAM directory, but, so it can be recorded in memory, the update must be redone after the applicable requests have been purged.

If a request on an object is active, the supervisor globally rejects the update in memory (VSAM message: OK – TABLE : KO). If a request is recorded by a manager but not active, for example interrupted, the supervisor effects the update locally and transmits it to all active managers, but signals any rejection by a manager (UPDATE message: OK – PLEX : KO).

Activating / Deactivating

Activating or deactivating partners and files can be managed locally for each component, manager or supervisor, via the TSO/ISPF interface or the API. Only the supervisor commands described below allow activation/deactivation of the whole group simultaneously.

Action	Command and Description
Activate/Deactivate Partners table for the whole group	/F TOMSUP,PCT=E / H The supervisor enables or disables the Partners table and transmits the command to all managers.
Activate/Deactivate the Files table for the whole group	/F TOMSUP,FCT=E / H The supervisor enables or disables the Files table and transmits the command to all managers.
Activate/Deactivate a partner for the whole group	/F TOMSUP,EP=*Partner* / HP=*Partner* The supervisor enables or disables the Partner *Partner* and transmits the command to all managers.
Activate/Deactivate a file for the whole group	/F TOMSUP,EF=*File* / HF=*File* The supervisor enables or disables the file *File* and transmits the command to all managers.

Journal Function

The journal function can be centralized in whole or in part: the recovery of information is set up independently on each manager, and its activation at the supervisor level can be total or partial. The parameter JNLSUP in the CXPLEX file of each component permits this setup.

Each manager, including the supervisor, locally executes its function journal in all cases.

A manager, including the supervisor, sends the journal record to all its servers: each server activates an exit locally.

If a manager is configured with the option JNLSUP=NO, it sends its journal record to all its servers. If a manager is configured JNLSUP=YES, it sends its journal record to the supervisor as well as to all its servers.

If the supervisor is configured with the option JNLSUP=YES, it writes all journal records received from its managers and transmits them to the exit locally as well as to all its servers. If the supervisor is configured JNLSUP=NO, it transmits all journal records received from managers to all its servers.

Monitoring Sysplex Activity

The main menu indicates option 2.7 SYSPLEX to display the Sysplex table, and option 2.8 GLOBAL for support of multiple monitors.

```
BB                          MAIN MENU
 OPTION ===>


                    XXXXXXX           XX     XX
                    XXXXXXXX    XX     XX   XX
                    XX          XX      XX XX
                    XX                   XXX
                    XX          XX      XX XX
                    XXXXXXXX    XX     XX    XX
                     XXXXXX            XX     XX


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 _ 0    INIT        _ 2   MONITOR      _ 3   UTILITIES       _ 4    REQUEST
                    _ 2.1 MANAGEMENT   _ 3.1 INIT PARAMETERS _ 4.1  NORMAL
 _ 1    DIRECTORIES _ 2.2 LOG          _ 3.2 DUMP TABLES     _ 4.2  MEMBER
 _ 1.1  PARTNERS    _ 2.3 JOURNAL      _ 3.3 UPDATE TABLES   _ 4.3  SYSOUT
 _ 1.2  FILES       _ 2.4 ACTIVITY     _ 3.4 UPDATE SYSEVT   _ 4.4  INDEX
 _ 1.3  FTP RIGHTS  _ 2.5 APL          _ 3.5 UPDATE SYSSNA   _ 4.5  AD HOC
                    _ 2.6 EXTRACT      _ 3.6 UPDATE SYSX25   _ 4.6  LIST
 _ 9    OPTIONS     _ 2.7 SYSPLEX      _ 3.7 UPDATE SYSJCL
 _ M    MAINTENANCE _ 2.8 GLOBAL       _ 3.8 UPDATE SYSTCP
```

As for all options, it is possible to access these screens directly by typing "=2.7" or "=2.8" in the Option field.

The Operations Control screen displays the status of Sysplex components. The command 'S' allows for display of the list of shared requests.

```
TOM4300      OPERATIONS CONTROL    ID=          MODE= *
 OPTION ===> !

           ^ F (ID)       - FILES.        B  - BYPASS.      PSR0008
             P (ID)       - PARTNERS      C  - COUPLING.    07/02/28
             R (ID)       - REQUESTS....  S  - SHARED.      03:37
             N            - NETWORK.      G  - GLOBAL.      CSGA
             T            - TRANSFERS.    Z  - ACTIVITY.    CSGPLEX
             */-/A/H/I/U  - 'mode'.

       MONITOR   ===> TOM8 / CSGA  ACTIVE   GLOBAL    SUPERVISOR
       EXIT UEXJNL : L1B2PAEX      ENABLED

  ----------- S DISPLAY DETAILS, E ENABLE, H DISABLE
  V
  _   1078    FILES      - RESOURCE   : ENABLED
  _   592     PARTNERS   - RESOURCE   : ENABLED
  _   1       REQUESTS   - RESOURCE   : ENABLED      IN USE AT - %
  _   -       SHARED     - RESOURCE   : ENABLED
  _           NETWORK    - SEE DETAIL : ENABLED
  _           TRANSFERS  - SEE DETAIL, EFFECTORS USED/ALLOC. : -  /  32
              SSL        - RESOURCE   : ENABLED
            X EXIT, -PF3- END, -ENTER- CONTINUE, -PF10/11- SCROLL
```

Component Status

STANDALONE SUPERVISOR MANAGER	Configuration without Sysplex.
MANAGER WAITING	The supervisor is not initialized ; the manager is INACTIVE.
MANAGER STANDALONE	The supervisor has stopped; the manager continues in standalone mode.

A manager can be started before the supervisor, by the supervisor, or after the supervisor.

If started by the supervisor, the manager comes up in the status INACTIVE—MANAGER WAITING. All activation commands by the operator are rejected. This means that a manager cannot begin to function as such until it has established contact with the supervisor.

Whenever the supervisor stops, for whatever reason, the manager transitions to MANAGER STANDALONE status. It retains its current ACTIVE or INACTIVE status and continues to function (as active or inactive).

RCT Status (Eligible Request)

RCT represents the total of shared and eligible requests. The number of requests displayed for the RCT value corresponds to the sum of requests eligible for local processing.

If the supervisor is not participating in transfers (XFRTYP=NO or XFRTYP=HOLD), the request table is inactive, and the number of requests displayed for the RCT value is always null. The number displayed for HCT corresponds to the number of requests registered in RCT.

If the supervisor is participating in transfers (XFRTYP=YES), the request table is active, and all HCT requests are eligible: The number of RCT requests displayed comprises the total of requests registered in RCT. The number displayed for HCT corresponds to the number of shared requests among the total registered in RCT.

The percentage of use of RCT applies to all requests registered in the RCT, eligible or not. The command 'R' or selecting the resource allows for display of the list of eligible requests.

Whenever a manager starts, its RCT can only be active if it knows the range of requests assigned to it: this leads to its RCT being activated by the supervisor if it is cold-started: all activation commands by the operator will be rejected as long as contact has not been established. In this situation, therefore, no request can be registered until contact has been established with the supervisor.

If launched hot, because the range of requests is known, its RCT is active from startup, new requests can be registered, even before the manager itself is active.

Status of the HCT (Shared Requests)

The HCT represents total shared requests: the HCT is normally set to ENABLED in the supervisor only. Normally it is set to SUPERVISOR in a manager. It can change to ENABLED in the manager if the supervisor stops. The number of requests displayed for HCT corresponds to the number of requests shared or capable of being shared.

The command S or its selection at the resource allows for display of the list of shared requests. It is possible to activate or deactivate the resource at the supervisor only.

Normally, only the supervisor has a non-null number of HCT requests. In case of failure of the supervisor, the manager holds HCT requests locally: this number is then provisionally not null. Whenever the supervisor is restarted, such requests capable of being shared are transferred to the supervisor and the number at the manager zeroed out.

Displaying partner requests

The list of partners (PCT) permits the display of requests (RCT or HCT) for a partner. Option 'R' in the selection area displays the list of eligible requests (RCT). Option 'S' in the selection zone displays shared requests (HCT).

```
TOM4300      PARTNERS 1/4    F=    ID= GFIPSR3  MODE= *           Row 1 of 1
 OPTION ===> !                                              PAGE -> PAGE

 TOM8         -< 'COMMANDS'   -PF3- RETURN   -PF7/8/10/11- SCROLL
 CSGA
 -------------< R/S/F LISTS    D DIRECTORY    E ENABLE    H DISABLE
 !
 ! PARTNER    STATUS     PROTOCOL / TABLE  LINK       TYPE   REST.  EFF.     MODE
 V           1          2         3      4          5      6      7        8
 _ GFIPSR3    ENABLED    PESIT-D   32     MIXED      IXS    NO     001/256  I
 *** END OF LIST
```

Displaying File Requests

The list of files (FCT) allows for display of file transfers (TCT): option 'R' in the selection area displays the list of eligible transfers. Option 'S' in the selection area displays shared transfers.

```
TOM4300      FILES 1/3      F=    ID= FICTST   MODE= *           Row 1 of 1
 OPTION ===> !                                              PAGE -> PAGE

 TOM8         -< 'COMMANDS'   -PF3- RETURN   -PF7/8/10/11- SCROLL
 CSGA
 -------------< R/S LISTS   D DIRECTORY  E ENABLE   H DISABLE
 !
 ! FILE      STATUS     TRANSMITTER (EXT.)  <->   RECEIVER (EXT.)      MODE
 V           1          2         3      4   5        6          7
 _ FICTST    ENABLED    $$ALL$$   -      *   $$ALL$$  -          -
 *** END OF LIST
```

Displaying the Sysplex Table

The SYSPLEX table contains the list of components known to the monitor queried. The supervisor registers all members in its table—managers, servers, standbys—whereas the manager registers only the supervisor and its own servers.

Note: When you send a query via a server, the query is routed to the master (manager or supervisor), and the master's table is displayed.*.*

Supervisor Sysplex Table

The supervisor table shows all managers in the configuration, whether they be active or otherwise, servers started (ACTIVE)—TOM8 in the example—or which have already been started (INACTIVE), TOM7 in the example, as well as standbys—TOM2 in the example.

It is possible to start or stop one manager or all:
The command 'SH' on the supervisor line begins the stopping of all active managers by sending the MVS command '/F jobtom,SHUTDOWN=ALL'.
The command 'LN' on the supervisor line begins activation of inactive managers by sending the MVS command '/F jobtom,LAUNCH'.
The command 'SH' on an active manager line begins the stopping of that manager by sending the MVS command '/F jobtom,SHUTDOWN=TOMx'.
The command 'LN' on an inactive manager line begins activation of that manager by sending the MVS command '/F jobtom,LAUNCH=TOMx'.

```
TOM4300      SYSPLEX         F=                              Row 1 of 12
 OPTION ===> !                                               PAGE -> PAGE

 TOM4         ^-< 'COMMANDS'    -PF3- END      -PF7/PF8- SCROLL
 CSGA    SUPERVISOR
 --------------< LN LAUNCH    SH SHUTDOWN
 !
 !   TYPE      STATUS    SSYS     REQUESTS        PROC      SYST MAXS STANDBY   SYST
 V             1         2        3               4         5    6    7         8
 __ *SUPER*  ACTIVE    TOM4   00000001/16666669 PSRTOM4M CSGA  12
 __ MANAGER  INACTIVE  TOM1   16666670/33333335 PSRTOM1M CSGB  -
 __ MANAGER  ACTIVE    TOM8   33333336/50000001 PSRTOM8M CSGA  06
 __ MANAGER  ACTIVE    TOM2   50000002/66666667 PSRTOM2M CSGA  06   PSRTOM2M CSGA
 __ MANAGER  INACTIVE  TOM7   66666668/83333333 PSRTOM7M CSGB  06
 __ MANAGER  ACTIVE    TOM5   83333334/99999999 PSRTOM5M CSGB  06
 __ MANAGER  STANDBY   TOM2   -                 -        CSGA  -    -         -
 __ SERVER   ACTIVE    TOM4   -                 PSRTOM4S CSGB  -
 __ SERVER   ACTIVE    TOM8   -                 PSRTOM8S CSGB  -
 __ SERVER   ACTIVE    TOM2   -                 PSRTOM2S CSGB  -
 __ SERVER   ACTIVE    TOM5   -                 PSRTOM5S CSGA  -
 __ SERVER   INACTIVE  TOM7   -                 PSRTOM7S CSGA  -
 *** END OF LIST
```

Manager Sysplex Table

A manager's table shows the supervisor and servers started (ACTIVE), as in the example, or which have already been launched (INACTIVE).

```
TOM4300     SYSPLEX         F=                              Row 1 of 3
 OPTION ===> !                                            PAGE -> PAGE

 TOM8       ^-< 'COMMANDS'    -PF3- END      -PF7/PF8- SCROLL
 CSGA   MANAGER
 --------------< LN LAUNCH    SH SHUTDOWN
 !
 !  TYPE     STATUS   SSYS     REQUESTS      PROC      SYST MAXS STANDBY   SYST
 V           1        2        3             4         5    6    7         8
 __  *SUPER*  ACTIVE   TOM4  00000001/16666669 PSRTOM4M CSGA  12
 __  MANAGER  ACTIVE   TOM8  33333336/50000001 PSRTOM8M CSGA  06
 __  SERVER   ACTIVE   TOM8  -                 PSRTOM8S CSGB  -
 *** END OF LIST
```

Display Options for the Sysplex Table

As with most list screens in the product, it is possible to sort the displayed table and filter or mask certain fields.

Each column is identified by a number, from 0 (default sort) to 8, and the entry 'SORT *n*' in the Option field permits sorting on the corresponding column. The functions MASK and FILTER allow you to isolate lines.

For example:

'SORT 2 A' sorts components by subsystem in ascending order.
'SORT 2 D' sorts components by subsystem in descending order.
'SORT' reestablishes the default sort.

```
TOM4300     SYSPLEX          F=                        SORT DONE              !
 OPTION ===> !                                              PAGE -> PAGE

 TOM4        ^-< 'COMMANDS'    -PF3- END      -PF7/PF8- SCROLL
 CSGA    SUPERVISOR
 --------------< LN LAUNCH    SH SHUTDOWN
 !
 ! TYPE      STATUS    SSYS      REQUESTS        PROC     SYST MAXS STANDBY   SYST
 V          1         2    3                     4        5    6   7          8
 __ MANAGER  ACTIVE    TOM1 16666670/33333335 PSRTOM1M CSGB  06
 __ SERVER   ACTIVE    TOM1 -                  PSRTOM1S CSGA  -
 __ MANAGER  ACTIVE    TOM2 50000002/66666667 PSRTOM2M CSGA  06
 __ SERVER   ACTIVE    TOM2 -                  PSRTOM2S CSGB  -
 __ *SUPER*  ACTIVE    TOM4 00000001/16666669 PSRTOM4M CSGA  12
 __ SERVER   ACTIVE    TOM4 -                  PSRTOM4S CSGB  -
 __ MANAGER  ACTIVE    TOM5 83333334/99999999 PSRTOM5M CSGB  06
 __ SERVER   ACTIVE    TOM5 -                  PSRTOM5S CSGA  -
 __ MANAGER  ACTIVE    TOM7 66666668/83333333 PSRTOM7M CSGB  06
 __ SERVER   ACTIVE    TOM7 -                  PSRTOM7S CSGA  -
 __ MANAGER  ACTIVE    TOM8 33333336/50000001 PSRTOM8M CSGA  06
 __ SERVER   ACTIVE    TOM8 -                  PSRTOM8S CSGB  -
 *** END OF LIST
```

The function MASK works only on the first column:

'M M' allows for the display of managers only.
'M ' reestablishes display of the whole list.

```
TOM4300     SYSPLEX          F=                           Row 2 of 12
 OPTION ===> !                                              PAGE -> PAGE

 TOM4        ^-< 'COMMANDS'    -PF3- END      -PF7/PF8- SCROLL
 CSGA    SUPERVISOR
 --------------< LN LAUNCH    SH SHUTDOWN
 !
 ! TYPE      STATUS    SSYS      REQUESTS        PROC     SYST MAXS STANDBY   SYST
 V M*        1         2    3                     4        5    6   7          8
 __ MANAGER  ACTIVE    TOM1 16666670/33333335 PSRTOM1M CSGB  06
 __ MANAGER  ACTIVE    TOM8 33333336/50000001 PSRTOM8M CSGA  06
 __ MANAGER  ACTIVE    TOM2 50000002/66666667 PSRTOM2M CSGA  06
 __ MANAGER  ACTIVE    TOM7 66666668/83333333 PSRTOM7M CSGB  06
 __ MANAGER  ACTIVE    TOM5 83333334/99999999 PSRTOM5M CSGB  06
 *** END OF LIST
```

'FILTER 2 EQ TOM1' displays only the components of the TOM1 subsystem.
'FILTER 1 EQ A*' displays only active components.
'FILTER' redisplays the entire table.

```
TOM4300      SYSPLEX          F= 2                      FILTER DONE           !
 OPTION ===> !                                                  PAGE -> PAGE
 FILTER 2 EQ TOM1
 TOM4        ^-< 'COMMANDS'    -PF3- END       -PF7/PF8- SCROLL
 CSGA   SUPERVISOR
 -------------< LN LAUNCH    SH SHUTDOWN
 !
 !  TYPE      STATUS   SSYS     REQUESTS        PROC      SYST MAXS STANDBY  SYST
 V           1        2        3               4         5    6   7         8
 __ MANAGER   ACTIVE   TOM1  16666670/33333335 PSRTOM1M CSGB  06
 __ SERVER    ACTIVE   TOM1  -                 PSRTOM1S CSGA  -
 *** END OF LIST
```

Global Display of Monitors

You can access the global display of monitors on two pages via option 2.8 on the main menu, or by typing option 'G' on the general support screen (2.1 SUPPORT): these screens display activity for six monitors. The subsystem name, once initialized, remains in the ISPF profile.

This display is only possible for monitors for which the subsystem is locally present.

The PF11 key scrolls the screen to the right. PF10 scrolls the screen to the left.

```
TOM4300     OPERATIONS CONTROL 1/2
 OPTION ===>

 ----------- D DETAILS  F FILES  P PARTNERS  R REQUESTS  N NETWORK  T TRANSFERS
 !           B BYPASS   Z ACTIVITY      S SHARED REQUESTS     PF10-PF11 SCROLL
 V
 _ SUPERVISOR          => TOM4 / CSGA  ACTIVE          NET    : ENABLED
   1078     FILES     : ENABLED       EFFECTORS U./A. : -    / 16
   592      PARTNERS  : ENABLED       JOURNAL: L1B2PAEX ENABLED
   -        REQUESTS  : ENABLED       - %    -         SHARED  : ENABLED


 _ MANAGER             => TOM2 / CSGA  ACTIVE          NET    : 2ERROR(S)
   1078     FILES     : ENABLED       EFFECTORS U./A. : -    / 16
   592      PARTNERS  : ENABLED       JOURNAL: L1B2PDIX ENABLED
   1        REQUESTS  : ENABLED       - %    -         SHARED  : SUPERVISOR


 _ MANAGER             => TOM8 / CSGA  ACTIVE          NET    : ENABLED
   1078     FILES     : ENABLED       EFFECTORS U./A. : -    / 16
   592      PARTNERS  : ENABLED       JOURNAL: L1B2PDIX ENABLED       CENTRAL
   1        REQUESTS  : ENABLED       - %    -         SHARED  : SUPERVISOR
```

```
TOM4300     OPERATIONS CONTROL 2/2
 OPTION ===>

----------- D DETAILS  F FILES  P PARTNERS  R REQUESTS  N NETWORK  T TRANSFERS
 !           B BYPASS   Z ACTIVITY      S SHARED REQUESTS    PF10-PF11 SCROLL
 V
 _ MANAGER           => TOM5 / CSGB  ACTIVE        NET   : 2ERROR(S)
   1078    FILES    : ENABLED        EFFECTORS U./A. : -   / 32
   592     PARTNERS : ENABLED        JOURNAL: L1B2PAEX ENABLED      CENTRAL
   -       REQUESTS : ENABLED     -  %    -          SHARED  : SUPERVISOR


 _ MANAGER           => TOM1 / CSGB  ACTIVE        NET   : 2ERROR(S)
   1078    FILES    : ENABLED        EFFECTORS U./A. : -   / 16
   592     PARTNERS : ENABLED        JOURNAL: L1B2PAEX ENABLED      CENTRAL
   -       REQUESTS : ENABLED     -  %    -          SHARED  : SUPERVISOR


 _ MANAGER           => TOM7 / CSGB  ACTIVE        NET   : 2ERROR(S)
   1078    FILES    : ENABLED        EFFECTORS U./A. : -   / 16
   592     PARTNERS : ENABLED        JOURNAL: -        DISABLED
   -       REQUESTS : ENABLED     -  %    -          SHARED  : SUPERVISOR
```

Extracting Events

Option 2.6, EXTRACT, allows you to extract all of part of the information relative to one or more files, one or more partners, and one or more requests.

```
TOM4300     EVENT EXTRACT                        NAMES INITIALIZED    !
 OPTION ===> !

 4XX/TEST

 MONITOR   ===> TOM4 / CSGA  ACTIVE    GLOBAL    PSRTOM4M  SUPERVISOR
                 RACFCN= S       ADHOCN= Y      UPRFCT= Y
----------- S SELECTION
 V
 __ FILES TABLE              ENABLED
 __ PARTNERS TABLE           ENABLED
 __ REQUESTS TABLE           ENABLED
 __ SHARED REQUESTS TABLE    ENABLED
 __ JOURNAL                  L1B2PAEX            ENABLED
 __ TOM LOG                  SYSOUT

   FILE      ===> FIC*
   PARTNER   ===> PARIS     UNKNOWN              ?
   REQUEST   ===> *

   LOCAL DSN  ===> PSR*
   REMOTE DSN ===>

           X EXIT, -PF3- END, -ENTER- GO ON
```

Using the API

Functions linked to tables XCT and HCT are processed by the application programming interface (API), and by the P1GFISM1 operations control utility of the « Exploitation Package » option.

Program L0B2Z20

This program processes the status of new global resources HCT and XCT, as well as valid functions for the new tables.

Global Information D0B2ZEXH – D0COBEXH

Display of HCT status, number of HCT posts, of member type Plex:

D0B2ZEXH DSECT=NO,OPTION=ONE,TYPE=G,LABEL=NO

```
         05 ZONG-DISP-GLOBAL.
            10 D0B2ZEXG-EXHSSN PIC X(4) VALUE 'TOM2'.
            10 D0B2ZEXG-EXHFUNC PIC X VALUE 'D'.
            10 D0B2ZEXG-EXHTYPE PIC X VALUE 'G'.
            10 D0B2ZEXG-EXHID PIC X(8) VALUE ' '.
            10 D0B2ZEXG-EXHOPT PIC X VALUE ' '.
            10 D0B2ZEXG-EXHPRTY PIC X VALUE ' '.
            10 D0B2ZEXG-EXHRTCF PIC 9 VALUE ZERO.
            10 D0B2ZEXG-EXHRSCF PIC 999 VALUE ZERO.
            10 D0B2ZEXG-EXHEMSG PIC X(80) VALUE BLANK.
            10 D0B2ZEXG-EXHBUFFL COMP PIC 9(8) VALUE ZERO.
         *
            10 D0B2ZEXG-TOMMONS PIC X(12).
            10 D0B2ZEXG-TOMFCTC PIC X(8).
            10 D0B2ZEXG-TOMFCTS PIC X(12).
            10 D0B2ZEXG-TOMPCTC PIC X(8).
            10 D0B2ZEXG-TOMPCTS PIC X(12).
            10 D0B2ZEXG-TOMRCTC PIC X(8).
            10 D0B2ZEXG-TOMRCTS PIC X(12).
            10 D0B2ZEXG-TOMEFFM PIC X(8).
            10 D0B2ZEXG-TOMEFFU PIC X(8).
            10 D0B2ZEXG-TOMEXIT PIC X(8).
            10 D0B2ZEXG-TOMEXST PIC X(12).
            10 D0B2ZEXG-TOMRPRC PIC X(1).
            10 D0B2ZEXG-TOMSSLS PIC X(1).
            10 D0B2ZEXG-TOMNETS PIC X(1).
         *                                 HCT POSTS NUMBER
```

```
            10 D0B2ZEXG-TOMHCTC PIC X(8).
*                                    HCT STATUS
            10 D0B2ZEXG-TOMHCTS PIC X(12).
*                                    TYPE OF MEMEBER
            10 D0B2ZEXG-TOMXTYP PIC X(1).
*    -  :STANDALONE
*    - P:SUPER
*    - M:MANAGER, W:MANAGER WAITING, A: STANDALONE
*    - S:SERVER
```

HCT Processing

Display of HCT: demand type is 'S'; the result is identical to the display of RCT.

D0B2ZEXH DSECT=YES,OPTION=ALL,TYPE=S,LABEL=NO,BUFL=YES

```
            05 ZONR-DISP-RCT.
               10 D0B2ZEXR-EXHSSN PIC X(4) VALUE 'TOM2'.
               10 D0B2ZEXR-EXHFUNC PIC X VALUE 'D'.
               10 D0B2ZEXR-EXHTYPE PIC X VALUE 'S'.
               10 D0B2ZEXR-EXHID PIC X(8) VALUE '00000000'.
               10 D0B2ZEXR-EXHOPT PIC X VALUE ' '.
               10 D0B2ZEXR-EXHPRTY PIC X VALUE ' '.
               10 D0B2ZEXR-EXHRTCF PIC 9 VALUE ZERO.
               10 D0B2ZEXR-EXHRSCF PIC 999 VALUE ZERO.
               10 D0B2ZEXR-EXHEMSG PIC X(80) VALUE BLANK.
               10 D0B2ZEXR-EXHBUFFL COMP PIC 9(8) VALUE 4096.
                  15 D0B2ZEXR-EXHXRET COMP PIC 9(8) VALUE ZERO.
                  15 D0B2ZEXR-EXHXNUM COMP PIC 9(8) VALUE ZERO.
                  15 POST-REQ OCCURS 130.
                     20 D0B2ZEXR-EXRREQNB PIC 9(8).
                     20 D0B2ZEXR-EXRCLASS PIC X.
                     20 D0B2ZEXR-EXRIPRTY PIC X.
                     20 D0B2ZEXR-EXRRSTA1 PIC X.
                     20 D0B2ZEXR-EXRRSTA2 PIC X.
                     20 D0B2ZEXR-EXRPARID PIC X(8).
                     20 D0B2ZEXR-EXRTPART PIC X.
                     20 D0B2ZEXR-EXRUSRID PIC X(8).
                     20 D0B2ZEXR-EXRRTYPE PIC X.
                     20 D0B2ZEXR-EXREXRNB PIC X(8).
                     20 D0B2ZEXR-EXRLNKFL PIC X.
                     20 D0B2ZEXR-EXRSTEPN PIC X.
                     20 D0B2ZEXR-EXRAPMNB PIC 9(1).
                     20 D0B2ZEXR-EXREFFNB PIC 9(1).
                     20 D0B2ZEXR-EXRRETCN PIC 9(1).
                     20 D0B2ZEXR-EXRCMPCC PIC X(12).
                     20 D0B2ZEXR-EXRUSTYP PIC X.
                     20 D0B2ZEXR-EXRFILL1 PIC X(14).
```

Display of a TCT associated with the HCT: demand type is 'W'; the result is identical to display of the TCT.

D0B2ZEXH DSECT=YES,OPTION=ALL,TYPE=W,LABEL=NO,BUFL=YES

```
05 ZONT-DISP-TCT.
   10 D0B2ZEXT-EXHSSN PIC X(4) VALUE 'TOM2'.
   10 D0B2ZEXT-EXHFUNC PIC X VALUE 'D'.
   10 D0B2ZEXT-EXHTYPE PIC X VALUE W'.
   10 D0B2ZEXT-EXHID PIC X(8) VALUE '25200001'.
   10 D0B2ZEXT-EXHOPT PIC X VALUE ' '.
   10 D0B2ZEXT-EXHPRTY PIC X VALUE ' '.
   10 D0B2ZEXT-EXHRTCF PIC 9 VALUE ZERO.
   10 D0B2ZEXT-EXHRSCF PIC 999 VALUE ZERO.
   10 D0B2ZEXT-EXHEMSG PIC X(80) VALUE BLANK.
   10 D0B2ZEXT-EXHBUFFL COMP PIC S9(8) VALUE 280.
   10 D0B2ZEXT-EXTREQNB PIC X(8).
   10 D0B2ZEXT-EXTDDNAM PIC X(8).
   10 D0B2ZEXT-EXTPARID PIC X(8).
   10 D0B2ZEXT-EXTDSNAM PIC X(44).
   10 D0B2ZEXT-EXTMEMBR PIC X(8).
   10 D0B2ZEXT-EXTFTYPR PIC X(2).
   10 D0B2ZEXT-EXTALRUL PIC X(1).
   10 D0B2ZEXT-EXTTRTYP PIC X(1).
```

…

HCT activation / deactivation:

D0B2ZEXH DSECT=NO,OPTION=ONE,TYPE=,LABEL=NO

```
05 D0B2ZEXH-EXHENTRY.
   10 EXHSSN PIC X(4) VALUE 'TOM2'.
   10 EXHFUNC PIC X VALUE 'E'.                E/H
   10 EXHTYPE PIC X VALUE 'S'.
   10 EXHREQN PIC X(8) VALUE '00000000'.
   10 EXHOPT PIC X VALUE ' '.
   10 EXHPRTY PIC X VALUE ' '.
   10 EXHRTCF PIC 9 VALUE ZERO.
   10 EXHRSCF PIC 999 VALUE ZERO.
   10 EXHEMSG PIC X(80) VALUE BLANK.
```

XCT Processing

Only the display function applies to XCT.

Display of XCT:

D0B2ZEXH DSECT=YES,OPTION=ALL,TYPE=X,LABEL=NO,BUFL=YES

```
              05 ZONT-DISP-XCT.
                 10 D0B2ZEXX-EXHSSN PIC X(4) VALUE 'TOM2'.
                 10 D0B2ZEXX-EXHFUNC PIC X VALUE 'D'.
                 10 D0B2ZEXX-EXHTYPE PIC X VALUE W'.
                 10 D0B2ZEXX-EXHID PIC X(8) VALUE '00000000'.
                 10 D0B2ZEXX-EXHOPT PIC X VALUE ' '.
                 10 D0B2ZEXX-EXHPRTY PIC X VALUE ' '.
                 10 D0B2ZEXX-EXHRTCF PIC 9 VALUE ZERO.
                 10 D0B2ZEXX-EXHRSCF PIC 999 VALUE ZERO.
                 10 D0B2ZEXX-EXHEMSG PIC X(80) VALUE BLANK.
                 10 D0B2ZEXX-EXHBUFFL COMP PIC S9(8) VALUE 280.
              05 D0B2ZEXX-EXXENTRY.
              *                MEMBER TYPE (S/M/A)    :
                 10 D0B2ZEXX-EXXMTYPE PIC X(1).
              *                MEMBER STATE (A/I/W/S) :
                 10 D0B2ZEXX-EXXSTATS PIC X(1).
              *                SUB SYSTEM NAME        :
                 10 D0B2ZEXX-EXXSSNAM PIC X(4).
              *                PLEX MEMBER NAME       :
                 10 D0B2ZEXX-EXXMEMNM PIC X(16).
              *                FIRST REQUEST NUMBER   :
                 10 D0B2ZEXX-EXXREQF  PIC X(8).
              *                LAST  REQUEST NUMBER   :
                 10 D0B2ZEXX-EXXREQL  PIC X(8).
              *                REQUEST NUMBER RANGE   :
                 10 D0B2ZEXX-EXXREQR  PIC X(8).
              *                JOB NAME               :
                 10 D0B2ZEXX-EXXJOBNM PIC X(8).
              *                SYS NAME               :
                 10 D0B2ZEXX-EXXSYSNM PIC X(4).
              *                MAXIMUM ASSOCIATED SERVERS :
                 10 D0B2ZEXX-EXXMAXS  PIC X(2).
              *                STANDBY JOB NAME       :
                 10 D0B2ZEXX-EXXJOBSB PIC X(8).
              *                STANDBY SYS NAME       :
                 10 D0B2ZEXX-EXXSYSSB PIC X(4).
```

The P1GFISM1 utility integrates the controls linked to Sysplex resources, based on the following rules.

Monitor Control

For a manager the situation is abnormal if it is waiting – ERROR. In this case it is also inactive.
For a manager the situation is abnormal if it is standalone – WARNING.

Whenever the supervisor is not in charge of transfers, the state of RCT resources Network and Transfer is normally inactive or unused.

HCT Control

For a supervisor, the situation is abnormal if the HCT is inactive – WARNING.
For a manager the situation is abnormal if the HCT is not empty – WARNING.

HCT requests are controlled in the same manner as RCT requests. If the monitor is in charge of transfers, the RCT scanning suffices, whereas for a supervisor not in charge of transfers, only the HCT is scanned.

XCT Control

For the supervisor, any inactive manager is signaled – WARNING.
For a manager, the utility signals whether the supervisor is inactive – WARNING.

Message Examples

```
02.37.00 JOB85704   +TOM8SM1 NOTICE   P1GFISM1 STARTED        420       V4R5 09/01/06
02.37.00 JOB85704   +TOM8SM1 WARNING MANAGER   STANDALONE
02.37.00 JOB85704   +TOM8SM1 WARNING HCT       COUNT          3
02.37.00 JOB85704   +TOM8SM1 WARNING FILE      DISABLED       F1
02.37.01 JOB85704   +TOM8SM1 WARNING PARTNER   DISABLED       X3X99999
02.37.01 JOB85704   +TOM8SM1 WARNING SUPERVISOR TOM4
02.37.01 JOB85704   +TOM8SM1 SCANNED 00000001 / 00000001 MCH
02.37.01 JOB85704   +TOM8SM1 SCANNED 00001075           FILE(S)
02.37.01 JOB85704   +TOM8SM1 SCANNED 00000590           PARTNER(S)
02.37.01 JOB85704   +TOM8SM1 SCANNED 00000003           REQUEST(S)  RQ%000
02.37.01 JOB85704   +TOM8SM1 SCANNED 00000000           HCT.REQ(S)
02.37.01 JOB85704   +TOM8SM1 SCANNED 00000003           XCT'(S)
02.37.01 JOB85704   +TOM8SM1 SCANNED 00000000 / 00000016 EFF
02.37.01 JOB85704   +TOM8SM1 NOTICE   00000120 SECONDS   TIMER02.20.52
```

Return Codes and Error Messages

TRC Error Messages

2166 – Transfer resources deactivated
2167 – Only requests on hold
2168 – Partner / file update is not allowed
2200 – Supervisor inactive (the manager cannot foward a request to the HCT, for example)
2201 – XCF error (at the time of an HCT transfer by the manager)

Fxxx – This series of codes is equivalent to the 2xxx series, but it signifies a rejection by the supervisor. For example, if a retry request is transmitted to the supervisor and if no corresponding context is found, the supervisor rejects with the code TRC=F043. The same request rejected by an independent monitor would be TRC=2043.

Error Messages

The extension of Sysplex functions causes new messages to appear in the SYSMSG file of TOM.

Example of messages displayed in the SYSMSG file upon supervisor initialization: The supervisor launches a standby and three managers among five defined in its configuration. It does not participate in transfer operations.

```
        TOM4135I EXTERNAL APPLICATION TABLE CREATED
        L1B2P042I EVENT TABLE CREATED
        TOM4015I COMMUNICATION WITH OPERATOR OPENED
        RO CSGA,S PSRTOM4M,RUN=H,PLEX=Y,XRF=Y,XCFGROUP=$PSRT04$,4
        TOM4283I START STANDBY   PSRTOM4M CSGA
        RO CSGA,S PSRTOM8M,RUN=H,PLEX=Y,XRF=Y,XCFGROUP=$PSRT04$TOM4
        TOM4284E START MANAGER   PSRTOM8M CSGA
        RO CSGA,S PSRTOM2M,RUN=H,PLEX=Y,XRF=Y,XCFGROUP=$PSRT04$TOM4
        TOM4284E START MANAGER   PSRTOM2M CSGA
        RO CSGB,S PSRTOM7M,RUN=H,PLEX=Y,XRF=Y,XCFGROUP=$PSRT04$TOM4
        TOM4284E START MANAGER   PSRTOM7M CSGB
        TOM4016I TOM (SUPERVISOR)  INITIALIZED V420-PTF0-0
        TOM4264I TOM LAST UPDATE DATE-TIME : 060515-0849
        TOM4319I FILE TRANSFER FUNCTIONS ARE INACTIVE
        TOM4272I MEMBER  $MGTOM7$ $$CSGB$$ CONNECTED
        TOM4317I REQUEST NUMBERS FROM 60000002 TO 80000000
        TOM4272I MEMBER  $MGTOM8$ $$CSGA$$ CONNECTED
        TOM4317I REQUEST NUMBERS FROM 20000004 TO 40000002
        TOM4272I MEMBER  $MGTOM2$ $$CSGA$$ CONNECTED
        TOM4317I REQUEST NUMBERS FROM 40000003 TO 60000001
```

Example of messages displayed in the SYSLOG file in the course of exchanges of requests between manager and supervisor.

USR0008 sends a request on hold to manager TOM2, for PARTNER. TOM2 transmits the request to supervisor TOM4. The request is returned to TOM2 when PARTNER makes the reception request. A second reception request by PARTNER is rejected with TRC=F054.

```
Manager TOM2

REQUEST 50000003 F1DEL    PARTNER           SRC=0000 TRC=0000  PRC=0000
REQUEST 50000003 <- USR0008(H) FORWARDED TO SUPERVISOR $SPTOM4$$$CSGA$$ ACCEPTED  RC=0 TRC=0000

REQUEST 50000004 COMMUNICATION OPENED (I) WITH PARTNER  (I,010.020.129.002
REQUEST 50000003 <- USR0008  (H) RECEIVED FROM SUPERVISOR $SPTOM4$$$CSGA$$
REQUEST 50000003 F1DEL    PARTNER           SRC=0000 TRC=0000  PRC=0000
REQUEST 50000003 F1DEL    TRANSFER ACCEPTED
REQUEST 50000003 F1DEL    TRANSFER STARTED PSR$REC.PS.F080.MEGA
. . .

REQUEST 50000008 COMMUNICATION OPENED (I) WITH PARTNER  (I,010.020.129.002   )
REQUEST 50000008 F1DEL    PARTNER           SRC=0000 TRC=F054  PRC=2205


Supervisor TOM4

REQUEST 50000003 <- USR0008 (H) RECEIVED FROM MANAGER   $MGTOM2$$$CSGA$$ ACCEPTED RC=0 TRC=0000
REQUEST 50000003 <- USR0008 (H) FORWARDED TO  MANAGER   $MGTOM2$$$CSGA$$ ACCEPTED RC=0 TRC=0000
. . .

REQUEST 50000008 <- PARTNER (I) RECEIVED FROM MANAGER   $MGTOM2$$$CSGA$$ ERR.INQ. RC=8 TRC=F054
```

SYSMSG File

Error messages from SYSMSG file give information relative to monitor use functions.

Code	Description
DTSM271I	COMMUNICATION OPENED WITH MANAGER $MGTOM1
	Explanation : Communication is established with manager TOM1.
	System Action : Subsystem TOM1 is accessible locally.
	User Action : Use the services of TOM1.
DTSM272I	MEMBER $MGTOM1$ $$SYSB$$ CONNECTED
	Explanation : Manager TOM1, which executes on the z/OS SYSB image, has joined the group.
	System Action : Manager TOM1 is activated; message 317 has been sent.
	User Action : None.
DTSM274I	MEMBER $MGTOM1$ TERMINATED
	Explanation : Membre $MGTOM1$ has quit the group.
	System Action : None.
	User Action : Check reasons why the component stopped.

Code	Description
DTSM278I	STANDBY ACKNOWLEDGES RECOVERY COMMAND Explanation: The standby has been notified of the failure of the primary. System Action: The standby has taken over and is hot-starting. User Action: Analyze reasons for the failure of the primary.
DTSM279I	STANDBY ACKNOWLEDGES STOP COMMAND Explanation : The primary has terminated normally and requested the stopping of its standby. System Action : The standby is stopping. User Action : None.
DTSM282I	START SERVER TOMSRV1 SYSB Explanation : The supervisor or a manager has launched procedure TOMSRV1 on the z/OS SYSB image according to its configuration SERVER=(SYSB,TOMSRV1). System Action : The server initializes and joins the group. User Action : None.
DTSM283I	START STANDBY TOMSTBY SYSA Explanation : the component has launched its standby TOMSTBY on the z/OS SYSA image according to its configuration - XRFPRC=(SYSA,TOMSTBY). System Action : The standby has put itself on hold. User Action : None.
DTSM284E	START MANAGER TOMJOB1 SYSB Explanation : The supervisor has launched procedure TOMJOB1 on z/OS SYSB image according to its configuration - MANAGR=(SYSB,TOMJOB1),SSN=TOM1. System Action : The manager is initializing and joining the group. User Action : None.
DTSM285E	START MEMBER TOMJOB1 SYSB FAILED Explanation : The supervisor or a manager did not successfully start, on the z/OS SYSB image, the member for which the start command is TOMJOB1. System Action : None. User Action : Analyze the messages in the log system, and contact Support.
DTSM286E	START STANDBY TOMSTBY SYSA FAILED Explanation : The supervisor or a manager did not succeed in starting, on the z/OS SYSA image, for which the standby start command is TOMSTBY System Action : None. User Action : Analyze the messages in the log system, and contact Support.
DTSM287I	SEND COMMAND TO TOMJOB1 SYSB Explanation : The supervisor transmitted an MVS command to the manager TOMJOB1, which executed on the z/OS SYSB image. System Action : The command was routed to SYSB system and was passed to procedure TOMJOB1. User Action : None.
DTSM288E	$SPTOMX$ REJECTED, SSN CHANGED TOMP->TOMX Explanation : The manager was contacted by a supervisor different from that with which it was been working immediately before the problem. System Action : The supervisor is rejected (Abend 00C of the supervisor). User Action : Check the configuration..
DTSM289E	UNKNOWN MANAGER JOINING $MGTOMX$ $$SYSB$$ Explanation : The supervisor has been contacted by a manager undeclared in its CXPLEX configuration. System Action : The manager was rejected (abend 00C of the manager). User Action : Review the configuration.

Code	Description
DTSM290E	SUPERVISOR ALREADY UP: $SPTOMX$ ABENDED Explanation : A monitor joined as supervisor although the group is already under a supervisor's control. System Action : the second supervisor is rejected (Abend 00C of the supervisor). User Action : Check the configuration.
DTSM315I	TOM ACKNOWLEDGES SHUTDOWN COMMAND Explanation : The supervisor received a SHUTDOWN command either general or for a specific subsystem. System Action : The supervisor stops all active managers, then stops itself, or stops the specified manager if active. User Action : None.
DTSM316W	MANAGER TOM1 IS NOT ACTIVE Explanation : The supervisor received a SHUTDOWN=TOM1 command and manager TOM1 is inactive or unknown. System Action : The supervisor rejects the command. User Action : Check the command passed, or the status of subsystem TOM1.
DTSM317I	REQUEST NUMBERS FROM 00000001 TO 33333333 Explanation : This message is displayed at the end of initialization of a manager, after message 326, or at the end of initialization of a supervisor after message 264 or 320, if it participates in transfer operations. The message also displays at the supervisor each time a manager connects (message 272). The component concerned manages the request numbers included between the two displayed values. System Action : Each component manages its range of request numbers. User Action : None.
DTSM318E	NO MANAGERS DEFINED FOR THIS SUPERVISOR Explanation : In the course of initialization, the supervisor finds no MANAGR= card in its CXPLEX file. System Action : The supervisor initialization is interrupted. User Action : Check the configuration, correct, and restart.
DTSM319I	FILE TRANSFER FUNCTIONS ARE INACTIVE Explanation : The XFRTYP parameter of the supervisor has the value 'NO'. System Action : Network (ANM) and protocol (APM et AFM) resources are inactive. The supervisor rejects all local transfer requests. User Action : None.
DTSM320I	ONLY HOLD REQUESTS ARE SUPPORTED Explanation : The XFRTYP parameter of the supervisor has the value HOLD. System Action : The supervisor accepts only local requests of type HOLD, and places them in the HCT. User Action : None.
DTSM321E	???????? IXCQUERY ERROR RC/RS=????/???? Explanation : An XCF error was produced upon connection to the XCF group. System Action : The procedure is interrupted. User Action : Contact Support.
DTSM322E	???????? IXCJOIN ERROR RC/RS=????/???? Explanation : An XCF error was produced upon connection to the XCF group. System Action : The procedure is interrupted. User Action : Contact Support.
DTSM323E	???????? IXCLEAVE ERROR RC/RS=????/???? Explanation : An XCF error was produced upon connection to the XCF group. System Action : The procedure continues until termination. User Action : Call Support.

Code	Description
DTSM324I	GROUPP SUPERVISOR STANDBY INITIATED Explanation : The supervisor's standby of group GROUPP is initialized. System Action : The standby awaits a failure of the supervisor to take over. User Action : None.
DTSM325I	GROUPP/àSVTOMP$ STANDBY INITIATED Explanation : The standby of the $SVTOMP$ member attached to group GROUPP is ready to take over in case of failure of its primary server. System Action : The standby awaits a failure of the primary server to take over. User Action : None.
DTSM326I	COMMUNICATION OPENED WITH SUPER $SPTOMP$ Explanation : Communication is established with supervisor TOMP. System Action : The manager is activated. User Action : None.
DTSM327W	COMMUNICATION CLOSED WITH SUPER $SPTOMP$ Explanation : The supervisor TOMP has stopped. System Action : The manager changes to standalone mode. User Action : Reestablish supervision.
DTSM328I	SUPERVISOR $SPTOMP$ IS UP: INIT. STOPPED Explanation : The supervisor has detected that another supervisor is already connected to the group. System Action : The second supervisor stops. User Action : Check the group configuration.
DTSM329E	JOIN FAILED WITH $MGTOM1$ - DTSM288E Explanation : Manager $MGTOM1$ refused a start of session with the supervisor. The reason is specified by the error message number, DTSM288E, in this example. System Action : The component that joined the group stops ; that which was already connected continues. User Action : Check the group configuration; cold-start the component or group.
DTSM330I	PAUSE MEMBER JOBTOM1 SYSB Explanation : The supervisor was requested to stop a manager, for which the procedure JOBTOM1 is executing on the z/OS SYSB image. System Action : The MVS command PAUSE is routed to the z/OS SYSB image. User Action : None.
DTSM331W	LOST CONTACT WITH GROUPP SUPERVISOR Explanation : The XCF communication timed-out in the course of an exchange between a manager and the supervisor of group GROUPP. System Action : The request is abandoned, the manager continues in standalone mode. User Action : Check supervisor status, analyze time of response, and contact Support.
DTSM332E	GROUPP MEMBER LOST: $MGTOM1$$$SYSB$$ Explanation : In group GROUPP, the XCF communication timed-out in the course of an exchange with member $MGTOM1$. System Action : The supervisor or manager excludes member $MGTOM1$. User Action : Check component status, analyze the time of response, and contact Support.
DTSM333E	LOST CONTACT WITH $MGTOM1$ MANAGER Explanation : The XCF communication timed-out in the course of an exchange between a server and its manager $MGTOM1$. System Action : The server stops. User Action : Check component status, analyze the time of response, and contact Support..

Code	Description
DTSM335I	REQUEST ABENDED ON TARGET Explanation : An XCF task abended. System Action : The component remains active. User Action : Check component status and contact Support..
DTSM342I	NO EMPTY REQUEST QUEUE FOUND Explanation : An XCF handler was unable to fulfill an external request because its control blocks were all occupied. System Action : The request is rejected. User Action : Contact Support.
DTSM343I	CANNOT FIND MEMBER D1B2PXCT Explanation : An XCF handler was unable to fulfill an external request because its control blocks were all occupied. System Action : The request is rejected. User Action : Contact Support.
DTSM350E	SUPERVISOR XCT ENTRY NOT FOUND Explanation : A manager did not find the supervisor definition in its control blocks. System Action : The manager rejects the request. User Action : Contact Support.
DTSM351E	$SPTOMP$ REJECTED, REQUEST RANGE CHANGED Explanation : The manager was contacted by a supervisor which submitted a range of request numbers different from the current range. System Action : The manager stops. User Action : Check the supervisor configuration.
DTSM352E	HOT RESTART: CXPLEX CONFIG CHANGED Explanation : The supervisor has been warm-started when a group configuration changed. System Action : Message 011 is sent and the procedure stops. User Action : Cold-start the supervisor or reestablish the previous configuration.
DTSM354E	15000000 INVALID INIT REQUEST NUMBER Explanation : The monitor (manager or supervisor) was started with the REQ=15000000 execution parameter, and this value is not compatible with the range of requests set for this component. System Action : The component does not initialize. User Action : Modify the execution parameter REQ=.
DTSM355I	STARTING REQUEST NUMBER AT 01500000 Explanation : The monitor (manager or supervisor) was started with the execution parameter REQ=01500000. System Action : The numbering of requests will start with this value. User Action : None.
DTSM356W	MANAGER TOMP IS ACTIVE Explanation : The operator sent the command LAUNCH=TOMP, but TOMP is already active. System Action : The command is ignored. User Action : Check the reason why this command was sent.
DTSM357W	MANAGER TOMP IS UNKNOWN Explanation : The operator sent the command LAUNCH=TOMP, but TOMP is not defined in the supervisor's CXPLEX file. System Action : The command is ignored. User Action : Check the reason why this command was sent.

Code	Description
DTSM358W	DTSM358W PCT UPDATE REJECTED BY $MGTOM2$ TRC=2030 Explanation : The partner update attempted by the supervisor was rejected by manager TOM2. System Action : The update was recorded by the supervisor but not by the manager. User Action : Check the TRC code and update again.
DTSM359E	INVALID CONFIGURATION FILES Explanation : During initialization, the manager detected that its files are different from those of the supervisor. System Action : The manager stops. User Action : Check the files SYSFIL, SYSPAR, SYSSNA, SYSX25 and SYSTCP.

SYSLOG File

SYSLOG error messages give information relative to transfer operations.

Message	Notes
`REQUEST 50000003 <- USR0008 (H) FORWARDED TO` `SUPERVISOR $SPTOM4$$$CSGA$$ ACCEPTED  RC=0 TRC=0000`	The manager sent the supervisor request number 50000003 from user USR0008 to be written to HCT. The request is a transmission on hold (H).

`REQUEST 50000003 <- USR0008 (H) FORWARDED TO`
`SUPERVISOR $SPTOM4$$$CSGA$$ REJECTED  RC=8 TRC=2200`
`REQUEST 50000003 F1DEL    PARTNER           SRC=0000`
`TRC=0000  PRC=0000`
`REQUEST 50000003 <- USR0008   ACCEPTED   (H)`
	Le manager sent the supervisor request number 50000003 from user USR0008 to write to HCT, but the supervisor is not active (TRC=2200). The request is written locally. It will be sent to the supervisor once it becomes active.

`REQUEST 50000003 <- PARTNER (R) FORWARDED TO` `SUPERVISOR $SPTOM4$$$CSGA$$ ACCEPTED  RC=0 TRC=0000`	The manager sent the supervisor request number 50000003 from partner PARTNER to be written to HCT. The request is an interrupted transfer (R).
`REQUEST 50000003 <- USR0008 (H) RECEIVED FROM` `MANAGER   $MGTOM2$$$CSGA$$ ACCEPTED RC=0 TRC=0000`	The supervisor received from the manager request number 50000003 from user USR0008 to be written to HCT. The request is a transmission on hold (H).
`REQUEST 50000003 <- PARTNER (R) RECEIVED FROM` `MANAGER   $MGTOM2$$$CSGA$$ ACCEPTED RC=0 TRC=0000`	The supervisor received from the manager request number 50000003 from partner PARTNER to be written to HCT. The request is an interrupted transfer (R).
`REQUEST 50000003 <- USR0008 (H) FORWARDED TO` `MANAGER   $MGTOM2$$$CSGA$$ ACCEPTED RC=0 TRC=0000`	The supervisor received from the manager a reception request and the hold request number 50000003 from user USR0008 has been selected in the HCT.
`REQUEST 50000003 <- USR0008 (H) RECEIVED FROM` `SUPERVISOR $SPTOM4$$$CSGA$$ ACCEPTED  RC=0 TRC=0000`	The manager sent the supervisor a reception inquiry and the request on hold number 50000003 from user USR0008 has been selected in the HCT.
`REQUEST 50000003 <- PARTNER (R) RECEIVED FROM` `SUPERVISOR $SPTOM4$$$CSGA$$ ACCEPTED  RC=0 TRC=0000`	The manager sent the supervisor a retry request and the interrupted request number 50000003 from partner PARTNER has been selected in the HCT.
`REQUEST 50000008 <- PARTNER (I) RECEIVED FROM` `MANAGER   $MGTOM2$$$CSGA$$ ERR.INQ. RC=8 TRC=F054`	The supervisor received a reception inquiry (I) by the partner PARTNER, request number 50000008, and the supervisor did not find a request on

Message	Notes
	hold HCT TRC=F054.
`REQUEST 50000008 <- PARTNER (R) RECEIVED FROM` `MANAGER   $MGTOM2$$$CSGA$$ ERR.INQ. RC=8 TRC=F043`	The supervisor received from the manager a retry request (R) by partner PARTNER, request number 50000008, and the supervisor did not find an interrupted request in HCT TRC=F043.
`REQUEST 50000003 <- PARTNER (R) FORWARDED TO` `MANAGER   $MGTOM2$$$CSGA$$ ACCEPTED RC=0 TRC=0000`	The supervisor received from the manager a retry request, and the interrupted request number 50000003 from partner PARTNER has been selected in the HCT.

Running Traces

In case of a problem, it is possible to activate debugging traces on Sysplex functions. The traces should be sent to Support for analysis.

Examples of JCL provided indicate DD cards to activate in the JCL components.

```
//*XRFTRACE DD   SYSOUT=*  Trace XRF - serveur, manager, superviseur
//*CXPLJOI  DD   SYSOUT=*  Trace join - serveur, manager, superviseur
//*CXPLACT  DD   SYSOUT=*  Trace action - serveur, manager, superviseur
//*CXPLERR  DD   SYSOUT=*  Trace erreur  - serveur, manager, superviseur
//*CXPLREQ  DD   SYSOUT=*  Trace reqlocal - serveur, manager, superviseur
//*CXPLR01  DD   SYSOUT=*  Trace reqremote - serveur, manager, superviseur
//*CXPLR02  DD   SYSOUT=*  Trace reqremote - manager, superviseur
//*CXPLR03  DD   SYSOUT=*  Trace reqremote - manager, superviseur
//*CXPLR04  DD   SYSOUT=*  Trace reqremote - manager, superviseur
//*CXPLR05  DD   SYSOUT=*  Trace reqremote - manager, superviseur
//*CXPLR06  DD   SYSOUT=*  Trace reqremote - manager, superviseur
//*CXPLR07  DD   SYSOUT=*  Trace reqremote - manager, superviseur
//*CXPLR08  DD   SYSOUT=*  Trace reqremote - manager, superviseur
//*CXPLR09  DD   SYSOUT=*  Trace reqremote - manager, superviseur
 //*CXPLR10  DD   SYSOUT=*  Trace reqremote - manager, superviseur
```

Each SYSPRINT file traces the XCF activity on one of the active queue. A server only processes the first six files, the managers and supervisor use as many CXPLR0i files as connected servers and managers. XRFTRACE is used by the standby.

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