TIBCO Substation ES™

Operations and Administration

Software Release 2.6
February 2010

Important Information

Contents

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Preface

This manual describes operations and administration of the TIBCO Substation ES product.

Topics

Changes from the Previous Release of this Guide

This section itemizes the major changes from the previous release of this guide.

Reorganization of Operational Content

The section on CICS configuration settings was moved to *TIBCO Substation ES Configuration and Resources*, where it was renamed Chapter 2, Configuring Additional Interfaces.

New Content

The following have been added:

- New and revised control parameters for the Generic Sender or Listener utility. For details, see Generic Sender or Listener Utility on page 33.
- The following new keywords were added for the SHOW display command: IMS-BUFFERS, IMS-CONNAME, IMS-CONNECT and IMS-STATS. For details, see SHOW on page 8.
- A new keyword, OTMA, was added for the SET control command. For details, see SET on page 20.

Related Documentation

This section lists documentation resources you may find useful.

TIBCO Substation ES Documentation

The following documents form the Substation ES documentation set:

- *TIBCO Substation ES Concepts*: Read this manual for an overview of Substation ES.
- *TIBCO Substation ES Installation*: Read this manual for instructions on site preparation and installation.
- *TIBCO Substation ES Operations and Administration*: Read this manual for details on operations and administrative tasks.
- *TIBCO Substation ES Configuration and Resources*: Read this manual for instructions on configuring communications and data conversions, and descriptions of the sample programs.
- *TIBCO Substation ES Messages and Codes*: Use this manual as a reference to error and information messages and codes.
- *TIBCO Substation ES Release Notes*: Read this document for information about new features, deprecated features, and open and closed issues.

Other TIBCO Product Documentation

You can find it useful to read the documentation for the following TIBCO products:

- TIBCO Rendezvous™ and TIBCO Enterprise Message Service™ software: These are TIBCO Software's real-time transport layers that are used by the Substation ES software.
- *TIBCO Rendezvous for z/OS Installation and Configuration* Read this manual for instructions on installing and operating TIBCO Rendezvous on IBM z/OS systems.
- *TIBCO Rendezvous for z/OS COBOL Reference* and *TIBCO Rendezvous C Reference* Read these manuals for instructions on the TIBCO Rendezvous for z/OS COBOL and C APIs.
- *TIBCO Enterprise Message Service User's Guide* Read this manual for instructions on TIBCO EMS functionality.
- *TIBCO Enterprise Message Service C & COBOL API Reference* Read this manual for instructions on the TIBCO EMS C and COBOL APIs.

Third Party Documentation

You may also find the following IBM documents useful:

Table 1 Related Documents

Publication Title
IBM CICS External Interfaces Guide
IBM CICS System Definition Guide
IBM CICS Transaction Server for z/OS CICS RACF Security Guide
IBM IMS/ESA Administration Guide: System
IBM IMS/ESA Customization Guide
IBM IMS/ESA Installation Volume 1: Installation and Verification
IBM IMS/ESA Installation Volume 2: System Definition and Tailoring
IBM ISPF Dialog Developers Guide and Reference
IBM RACF User's Guide
IBM SecureWay Security Server RACF Security Administration Guide

You can find many of the IBM documents in these CD-ROM sets:

- *Online Library Omnibus Edition MVS Collection*
- *Online Library Omnibus Edition z/OS Collection*

How to Contact TIBCO Support

For comments or problems with this manual or the software it addresses, please contact TIBCO Support as follows.

- For an overview of TIBCO Support, and information about getting started with TIBCO Support, visit this site:

  http://www.tibco.com/services/support

- If you already have a valid maintenance or support contract, visit this site:

  https://support.tibco.com

  Entry to this site requires a user name and password. If you do not have a user name, you can request one.

Chapter 1 Operational Commands

This chapter describes the Substation ES operational commands.

Topics

Console Interface

Substation ES operational commands are entered using the Substation ES Console Interface (or remotely from applications). Commands that are received, and resultant outputs, are logged to the Substation ES log medium. If commands must be echoed upon the master console, you can set the appropriate value for the `CONSOLE-MSG` keyword in the Substation ES `SXSSITxx` member.

Remote applications can issue all commands except the following:

- Commands to terminate Substation ES
- Commands to start or stop any of the Substation ES Interfaces

From a remote location, you can send commands from a user application or the Generic Listener or Sender Utility supplied with Substation ES.

Console Interfaces

The z/OS console can check on the status of components and interfaces that are operating in the Substation ES region. For example, you can identify pending requests and manage them from this console.

Substation ES provides support for two console interface methods:

- MVS Command Interface
- Write to Operator with Reply (WTOR)

You select the preferred method by specifying the desired type in the `CONSOLE-TYPE` keyword in the Substation ES `SXSSITxx` member parameter.

MVS Command Interface

The MVS Command Interface is the default command interface for Substation ES. Commands are entered on the console by specifying a modify command. An active Substation ES can be shut down normally via a stop command. Refer to the MVS System Commands for the syntax and usage of these commands.

Examples:

F < [jobname.]identifier >,HELP (List the available commands & keywords)

P < [jobname.]identifier > (Stop an active Substation)

Write to Operator with Reply (WTOR)

Write to Operate with Reply is an alternate console interface traditionally used in MVS systems. Operational commands intended for Substation ES are entered via a MVS console terminal by replying to the outstanding operator's message reply number of Substation ES.

Example:

*012 SXS2600I TIB/SS Console Interface - Awaiting Command Request

12HELP,SHOW (List the keywords available for the SHOW command)

Operational Commands Overview

This section provides an overview of the Substation ES operational commands (also referred to as *console commands*). These commands allow you to perform the following:

- Show resource usages, statistics, counters, etc.
- Connect or disconnect Substation ES Interfaces to back-end systems
- Terminate Substation ES or its interfaces
- Initialize data configuration items, such as recipes and triggers during run-time
- Update a subset of the System Initialization Parameters during run-time

Commands received from the Console Interface are logged, and outputs resulting from the commands are written to the log output medium and the console terminal. The commands are divided into the following categories:

- Display Commands
- Update Commands
- Initialization Commands
- Control Commands

All commands (except control commands) can be submitted though batch jobs SXJGENSL or SXRGENSL, or from a remote user application. Control commands must be entered on the MVS console.

Command Format

The syntax and terminology used is as follows:

```
command,keyword1,[keyword2 / keyword3 / ...] [# comments]
```

A comment can be added at the end of a command, preceded by a space and a number sign (#).

The first word is the command, and is followed by one or more keywords, all separated by commas (the `HELP`, `SHUT` and `TERM` commands are exceptions).

Some keywords specify a value with the keyword, as in the following examples:

```
RECIPE=<recipe_name>
INTF=<interface_ID>
```

Command and Keyword Abbreviations

Some commands and keywords have an abbreviated form. In the command descriptions in this chapter, abbreviations are noted using a vertical bar. The following shows a command and its abbreviation:

DISCONNECT|DISCONN

You can use either DISCONNECT or DISCONN to specify this command. Similarly, the following shows a keyword and its abbreviation:

LISTENERS|LSNS

You can use either LISTENERS or LSNS to specify this keyword.

Sample Output

In addition to showing typical usage, some command descriptions provide an example of the output. Sample output is contained within blue lines, as shown below:

```
SXS2601I Console Command Entered 'SHOW ACT,LISTENERS'
SXT5586I The following listeners are active:
SXT5585I Intf:IIXFR, Dest:tibss.ivp.20.request
SXT5585I Intf:IIXFR, Dest:tibss.ivp.20.reply
SXT5585I Intf:IIXFR, Dest:tibss.admin.sxs
```

Command Summary

Below is a summary listing of all Substation ES console commands by category. When multiple keywords are listed in square brackets, one keyword within the brackets must be specified with the command.

Display

```
HELP, [sub-command]
```

```
SHOW, [ACTIVE|ACT,LISTENERS|LSNS,[INTF=<intf-id>] /
       ACTIVE|ACT,RECIPE|RID,[INTF=<intf-id>] /
       ACTIVE|ACT,TRIGGER|TID,[INTF=<intf-id>]]
```

```
SHOW, ALL
```

```
SHOW, COUNTERS
```

```
SHOW, DISABLED|DIS,[RECIPE|RID|TRIGGER|TID],[INTF=<intf-id]
```

```
SHOW, ESB|TPORT
```

```
SHOW, INTF
```

```
SHOW, [IMS-BUFFERS /
       IMS-STATS /
       IMS-CONNECT /
       IMS-CONNAME]
```

```
SHOW, [LOGSTATS /
       LOGSTATS,ALL /
       LOGSTATS,DETAIL]
```

```
SHOW, LTAVERS
```

```
SHOW, QUE
```

```
SHOW, [TRCSTATS /
       TRCSTATS,ALL /
       TRCSTATS,DETAIL]
```

```
SHOW, UOW
```

Update

```
DISABLE, [RECIPE|RID=<name>,[INTF=<intf-id>] /
          TRIGGER|TID=<name>,[INTF=<intf-id>]]
```

```
ENABLE,  [RECIPE|RID=<name>,[INTF=<intf-id>] /
          TRIGGER|TID=<name>,[INTF=<intf-id>]]
```

```
RECOVER, RECIPE|RID=<name>,[INTF=<intf-id>]
```

```
REFRESH, [RECIPE|RID=<name>,[INTF=<intf-id>] /
          TRIGGER|TID=<name>,[INTF=<intf-id>] /
          COUNTERS]
```

Initialization

```
CONNECT,    [INTF=<intf-id> /
             APPLID=<applid> /
             ESB|TPORT=<tport-id>,INTF=<intf-id>]
DISCONNECT,[INTF=<intf-id> /
             APPLID=<applid> /
             ESB|TPORT=<tport-id>,INTF=<intf-id>]
UNLOAD,     [RECIPE|RID=<name>,[INTF=<intf-id>] /
             TRIGGER|TID=<name>,[INTF=<intf-id>]]
```

Control

```
SET,   LOGDEST=<value>
SET,   LOGLVL=<value>
SET,   LOGFWRITE=<value>
SET,   [SSHOT /
        SSHOT,DETAIL /
        SSHOT,ENTRY]
SET,   TRACE-ENTRY=CONFIG,DETAIL
SET,   TRCDEST=<value>
SET,   [TRCLVL=<value> /
        TRCLVL=<value>,OTMA]
SET,   TRCFWRITE=<value>
SHUT
SWITCH
TERM
```

Display Commands

The section describes the display commands.

HELP

HELP lists all the available commands. If the appropriate value in the Substation ES SIP is set for the CONSOLE-MSG, the command and the result are echoed on the Master Console display.

HELP is also available for an individual command, such as SHOW, SET, etc. When a command is specified with HELP, a list of the keywords associated with the command appears.

HELP
HELP,SET

SHOW

SHOW is used to inquire into Substation ES statistics, usage and other useful information. The typical use of this command is shown below.

SHOW,ACTIVE|ACT,LISTENERS|LSNS,[INTF=<intf-id>]

This command shows all active listeners in Substation ES. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'SHOW ACT,LISTENERS'
SXT5586I The following listeners are active:
SXT5585I Intf:IIXFR, Dest:tibss.ivp.20.request
SXT5585I Intf:IIXFR, Dest:tibss.ivp.20.reply
SXT5585I Intf:IIXFR, Dest:tibss.admin.sxs
```

SHOW,ACTIVE|ACT,RECIPE|RID,[INTF=<intf-id>]

This command shows all active recipes in Substation ES. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'SHOW ACT,RECIPE'
SXT5588I The following recipes are active:
SXT5587I Intf:IIXFR, Since Date:2004/11/09 Time:10:35:42.3321
```

```
         RID:SXC-RR-REPLY
SXT5587I Intf:IIXFR, Since Date:2004/11/09 Time:10:35:42.3335
         RID:SXC-RR-ANSWER
SXT5587I Intf:IIXFR, Since Date:2004/11/09 Time:10:35:42.3340
         RID:Substation-Admin
```

SHOW,ACTIVE|ACT,TRIGGER|TID,[INTF=<intf-id>]

This command shows all active triggers in Substation ES. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'SHOW ACT,TRIGGER'
SXT5590I The following triggers are active:
SXT5589I Intf:IIXFR, Since Date:2004/11/09 Time:10:35:42.3909
         TID:SXC-RR-REQUEST
SXT5589I Intf:IIXFR, Since Date:2004/11/09 Time:10:35:42.3912
         TID:SXC-IVP-TRIGGER
SXT5589I Intf:IIXFR, Since Date:2004/11/09 Time:10:35:42.4173
         TID:SXI-IVP-TRIGGER
```

In the example above, the “Since Date” and “Time” values display when a recipe or trigger was last loaded.

SHOW,ALL

This command is a combination of the SHOW,QUE and SHOW,UOW commands.

SHOW,ALL,LOCK

This command freezes the system and performs the combination of the SHOW,QUE and SHOW,UOW commands.

Specifying the **LOCK** keyword provides an absolute, accurate view of the request, but must be used with discretion, as all internal queues and statistical tables are locked. This keyword causes the Substation ES region to suspend operations, until the request is complete.

SHOW, COUNTERS

In Substation ES, counters are synonymous with running totals. Substation ES gathers information from all Substation ES interfaces that support counters. Counters differ by interface type because of their disparate processing requirements.

```
SXS2601I Console Command Entered 'SHOW COUNTERS'
SXS0950I Substation (ES) Interface Information
SXS0960I # Intf Id:IIXFR Type:XFR     Vers:2.3.0
SXS0965I - RID:Substation-Admin - Used:1 Errors:0
SXS0965I - RID:SXC-IVP-C-DPL - Used:1 Errors:0
SXS0965I - RID:SXC-IVP-COB-DPL - Used:1 Errors:0
SXS0965I - RID:SXC-IVP-COB-DPL-START-PGM - Used:1 Errors:0
SXS0965I - RID:SXC-IVP-COB-DPL-START-TRAN - Used:1 Errors:0
SXS0965I - RID:SXC-IVP-DPL-WRITE-TDQ - Used:1 Errors:0
SXS0965I - RID:SXC-IVP-DPL-WRITE-TSQ - Used:1 Errors:0
SXS0965I - RID:SXC-IVP-COB-DPL-COMPLEX - Used:1 Errors:0
SXS0965I - TID:SXC-IVP-TRIGGER - Used:3 Errors:0
SXS0962I No counter information recorded for Intf:SSMASTER
SXS0960I # Intf Id:IADMIN Type:ADMIN   Vers:2.3.0
SXS0961I - Operational Commands          :1
SXS0960I # Intf Id:IICICS Type:CICS    Vers:2.3.0
SXS0961I - Trigger Entries Received      :3
SXS0961I - Requests processed, DPL       :3
SXS0961I - Requests processed, DPL/XCTL  :1
SXS0961I - Requests processed, DPL/Tran  :1
SXS0961I - Requests processed, DPL/TDQ   :1
SXS0961I - Requests processed, DPL/TSQ   :1
```

SHOW, DISABLED|DIS, [RECIPE|RID|TRIGGER|TID], [INTF=<intf-id]

This command shows all disabled recipes and triggers. The optional keyword `INTF=<intf-id>` specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'SHOW DISABLED'
SXT5593I The following recipes/triggers are disabled
SXT5594I Intf:IIXFR,Disabled Date:2004/11/09 Time:10:42:00.8670
         RID:SXC-RR-REPLY, Rsn: by Request
```

SHOW, ESB|TPORT

This command shows status information of all transports (ESB) within the current Substation ES.

```
SXS2601I Console Command Entered 'SHOW,TPORT'
SXT5669I Transport EMS-Server-FT used 0, state=Unused,
         process-err=
SXT5669I Transport EMS-Server used 22, state=Active, process-err=
SXT5670I Transports active 1, in-error 0, unused 1, disabled 0
```

SHOW, IMS-BUFFERS

The IMS commands show information about an IMS interface(s) active within the current Substation ES. This command shows information about OTMA buffers currently in use.

SHOW, IMS-STATS

The IMS commands show information about an IMS interface(s) active within the current Substation ES. This command shows information about the OTMA interface.

SHOW, IMS-CONNECT

The IMS commands show information about an IMS interface(s) active within the current Substation ES. This command shows the IMS connection status.

SHOW, IMS-CONNAME

The IMS commands show information about an IMS interface(s) active within the current Substation ES. This command shows EMS XCF connection information.

SHOW, INTF

This command shows information about all interfaces.

SHOW, LOGSTATS

This command shows information about the current active log disk file.

SHOW,LOGSTATS,ALL

This command shows information about all currently active log disk files.

SHOW,LOGSTATS,DETAIL

This command shows statistical information about each active log disk file.

SHOW,LTAVERS

This command shows version information for LTA agents.

SHOW,QUE

This command shows each interface's internal queue values.

```
SXS2601I Console Command Entered 'SHOW QUE'
SXS0850I -  Intf: TIBSS01 UoW Que statistics request
SXS0851I -  Currently in use Entries  - 0
SXS0851I -  Max Entries in Wait HiWM  - 0
SXS0851I -  Internal Next Stored Idx  - 1
SXS0851I -  Internal Next Strip Idx   - 1
SXS0850I -  Intf:  IADMIN UoW Que statistics request
SXS0851I -  Currently in use Entries  - 0
SXS0851I -  Max Entries in Wait HiWM  - 0
SXS0851I -  Internal Next Stored Idx  - 0
SXS0851I -  Internal Next Strip Idx   - 0
SXS0850I -  Intf:   IIXFR UoW Que statistics request
SXS0851I -  Currently in use Entries  - 0
SXS0851I -  Max Entries in Wait HiWM  - 0
SXS0851I -  Internal Next Stored Idx  - 0
SXS0851I -  Internal Next Strip Idx   - 0
SXS0850I -  Intf:  IICICS UoW Que statistics request
SXS0851I -  Currently in use Entries  - 0
SXS0851I -  Max Entries in Wait HiWM  - 0
SXS0851I -  Internal Next Stored Idx  - 0
SXS0851I -  Internal Next Strip Idx   - 0
```

SHOW,QUE,LOCK

This command freezes the system and performs the `SHOW,QUE` command. See the `SHOW,ALL,LOCK` command for an explanation of the `LOCK` keyword.

SHOW, TRCSTATS

This command shows information about the current active trace disk file.

SHOW, TRCSTATS, ALL

This command shows information about all active trace disk files.

SHOW, TRCSTATS, DETAIL

This command shows statistical information about each active trace disk file.

SHOW, UOW

This command shows information on Substation ES UOW processing statistics.

```
SXS2601I Console Command Entered 'SHOW UOW'
SXS0800I -  UoW List Statistics request
SXS0800I -  UoW Total Allocations    - 0
SXS0800I -  UoW List Hi Water Mark   - 0
SXS0800I -  UoW Currently Active     - 0
SXS0800I -  UoW List Size (entries)  - 200
SXS0800I -  UoW List Size (bytes)    - 3256
SXS0800I -  Max Allocated Entries    - 80
SXS0800I -  Uow Incremental Amount   - 20
SXS0800I -  UoW Lock Status          - 0
SXS0800I -  UoW Stress Status        - 0
SXS0800I -  UoW Stress Restart Level - 150
SXS0800I -  UoW Stress Slow Level    - 160
SXS0800I -  UoW Stress Stop Level    - 179
```

Update Commands

The section describes the update commands.

DISABLE

DISABLE instructs the Substation ES Transformer to stop an individual recipe or trigger. When disabled, no processing can be performed against a recipe or trigger.

DISABLE, RECIPE|RID=<name>,[INTF=<intf-id>]

This command disables an active Substation ES recipe. The RECIPE keyword specifies the name of the recipe to disable. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'DISABLE RID='SXC-IVP-C-DPL''
SXT5838I The following recipe/trigger is disabled Intf:IIXFR,
         RID:SXC-IVP-C-DPL
```

DISABLE, TRIGGER|TID=<name>,[INTF=<intf-id>]

This command disables an active Substation ES trigger. The TRIGGER keyword specifies the name of the trigger to disable. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'DISABLE TID='SXC-IVP-TRIGGER''
SXT5838I The following recipe/trigger is disabled Intf:IIXFR,
         TID:SXC-IVP-TRIGGER
```

ENABLE

ENABLE instructs the Substation ES Transformer to start a recipe or trigger.

ENABLE,RECIPE|RID=<name>,[INTF=<intf-id>]

This command enables a Substation ES recipe that is disabled. The RECIPE keyword specifies the name of the recipe to enable. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'ENABLE RECIPE='SXC-IVP-C-DPL''
SXT5838I The following recipe/trigger is enabled Intf:IIXFR,
         RID:SXC-IVP-C-DPL
```

ENABLE,TRIGGER|TID=<name>,[INTF=<intf-id>]

This command enables a Substation ES trigger that is disabled. The TRIGGER keyword specifies the name of the trigger to enable. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'ENABLE TID='SXC-RR-REQUEST''
SXT5838I The following recipe/trigger is enabled Intf:IIXFR,
         TID:SXC-RR-REQUEST
```

RECOVER

RECOVER instructs the EMS server to redeliver all undelivered messages that reside in the EMS queue. The Substation ES recipe definition contains the queue name from which the redelivered messages originates.

Undelivered messages are the result of previous, unsuccessful processing when the Substation ES service mode is guaranteed always (GA). The RECOVER command is the only non-disruptive method to recover undelivered messages.

RECOVER, RECIPE|RID=<name>,[INTF=<intf-id>]

The RECIPE keyword identifies the name of the EMS queue that is recovered. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

This command instantiates the tibems_Session Recover API call.

REFRESH|REFR

REFRESH|REFR instructs the Substation ES Transformer to load a new copy of a recipe or trigger in-flight. The old recipe or trigger is deactivated and unloaded when the new copy is loaded and activated.

If the recipe or trigger was not loaded during Substation ES initialization, this command can be used to load and activate the recipe or trigger. When the command is successfully completed, message number SXT5811I is written to the log and trace files.

The REFRESH command is also used to refresh current counters for all the active interfaces.

REFRESH|REFR, RECIPE|RID=<name>,[INTF=<intf-id>]

This command loads a recipe as described above. The RECIPE keyword specifies the name of the recipe to refresh. The optional keyword INTF=<intf-id> specifies that the recipe is to be refreshed using the specified Transformer interface Id.

```
SXS2601I Console Command Entered 'REFRESH RID='SXC-RR-REPLY''
SXT5811I Recipe SXC-RR-REPLY refreshed - still for
         tibss.ivp.20.request
```

REFRESH|REFR, TRIGGER|TID=<name>,[INTF=<intf-id>]

This command loads a trigger as described above. The TRIGGER keyword specifies the name of the trigger to refresh. The optional keyword INTF=<intf-id> specifies that the trigger is to be refreshed using the specified Transformer interface Id.

```
SXS2601I Console Command Entered 'REFRESH TRIGGER=SXC-IVP-TRIGGER'
SXT5487I Trigger SXC-IVP-TRIGGER refreshed
```

REFRESH|REFR, COUNTERS

This command refreshes the Substation ES counters.

Initialization Commands

The section describes the initialization commands.

CONNECT | CONN

CONNECT|CONN instructs Substation ES to connect to a specified transport, CICS region, or IMS region.

CONNECT|CONN, INTF=<intf-id>

This command is used to reconnect the specified Substation ES CICS or IMS Interface to its CICS or IMS region. The keyword INTF=<intf-id> specifies the interface that must be the ID used in the Substation ES CICS or IMS SIP member.

CONNECT|CONN, APPLID=<applid>

This command is used to reconnect all Substation ES CICS or IMS interfaces identified at Substation ES startup to the CICS or IMS region with the corresponding APPLID. The keyword APPLID=<applid> specifies the CICS or IMS region.

CONNECT|CONN, ESB|TPORT=<tport-id>,INTF=<intf-id>

This command is used to reconnect a Substation ES transport to an EMS server or a RV daemon. The command usually is used after a manual disconnect for a messaging transport. The ESB keyword identifies the transport Id specified in the Substation ES startup configuration. The INTF=<intf-id> keyword specifies that the transport be connected only using the specified Transformer interface.

DISCONNECT | DISCONN

DISCONNECT instructs Substation ES to disconnect from a specified transport, CICS region, or IMS region.

DISCONNECT|DISCONN, INTF=<intf-id>

This command disconnects the specified Substation ES CICS interface from a CICS region. The keyword INTF=<intf-id> specifies the interface.

DISCONNECT|DISCONN, APPLID=<applid>

This command disconnects all Substation ES CICS or IMS interfaces that use the same APPLID for a CICS or IMS region within a Substation ES region. The keyword APPLID=<applid> identifies the CICS or IMS region.

A CICS Interface is defined in a Substation ES SIP member. The INTF or APPLID specified on the control command must match that defined for a CICS Interface. The Substation ES CICS SIP members are located in the *<USERHLQ>.CNTL* dataset.

When you use the CONN or DISCONN commands with the APPLID keyword, the command affects all currently active Substations that have been configured to communicate with this CICS region.

DISCONNECT|DISCONN, ESB|TPORT=<tport-id>,INTF=<intf-id>

This command is used to disconnect a Substation ES transport from an EMS server or a RV daemon. The transport does not automatically reconnect after this command is issued (a manual connect transport command must be issued).

The ESB keyword identifies the transport Id specified in the Substation ES startup configuration. The INTF=<intf-id> keyword specifies that the transport be disconnected only from the specified Transformer interface.

UNLOAD | UNL

UNLOAD instructs the Substation ES Transformer to unload a recipe or trigger.

UNLOAD|UNL, RECIPE|RID=<name>,[INTF=<intf-id>]

This command is used to unload a recipe from the Substation ES run-time configuration. The RECIPE keyword specifies the name of the recipe to unload. The optional keyword INTF=<intf-id> specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'UNLOAD RID='SXC-IVP-C-DPL''
SXT5825I Unload Recipe SXC-IVP-C-DPL successful
```

UNLOAD|UNL, TRIGGER|TID=<name>,[INTF=<intf-id>]

This command is used to unload a trigger from the Substation ES run-time configuration. The `TRIGGER` keyword specifies the name of the trigger to unload. The optional keyword `INTF=<intf-id>` specifies a Transformer interface Id.

```
SXS2601I Console Command Entered 'UNLOAD TID='SXC-RR-REQUEST''
SXT5825I Unload Trigger SXC-RR-REQUEST successful
```

Control Commands

The section describes the control commands that must be entered on the MVS console.

SET

SET is used to change various entities. For information on values used in these commands, see the chapter *TIBCO Substation ES Parameters* in *TIBCO Substation ES Installation and Administration*.

SET, LOGDEST=<value>

This command changes the destination for Substation ES log information. Valid values: D(isk) or P(rint).

SET, LOGLVL=<value>

This command changes the level of information recorded to the log file. Valid values: 1 through 5.

SET, LOGFWRITE=<value>

This command changes the number of seconds of the Force Write for LTA Log Agent. Valid values: 1 through 5.

SET, SSHOT

This command initiates a snapshot and ends only when the preset value has been reached. The output is directed to SYSPRINT of the Substation task. It provides a summary of statistics of key interactions within the Substation for the specified number of UoWs.

```
Elapsed      Start Time                 End Time
4.997445     2008/03/26-11:54:17.742439 2008/03/26-11:54:22.739884

#:1000   Minimum   Maximum   Total        Average Recorded
UoW      0.002990  0.036007     4.637820  0.004637
BES      0.001441  0.027182     2.278445  0.002278
WRK-In   0.000023  0.001935     0.101735  0.000101
WRK-Out  0.000808  0.022377     1.290829  0.001290
ESB      0.000000  0.000000     0.000000  0.000000
```

SET, SSHOT,DETAIL

This command initiates a snapshot and ends only when the preset value has been reached. The output is directed to SYSPRINT of the Substation task. It provides a summary of statistics of key interactions within the Substation for the specified number of UoWs, as well as statistics for each UoW.

It measures the duration of a UoW, the duration of a transaction call in CICS within the UoW, the duration of an EMS call for that UoW, and the time to allocate a UoW when a request was received.

```
Elapsed      Start Time                 End Time
16.166103    2008/03/29-15:44:28.191172 2008/03/29-15:44:44.357275

#:1000   Minimum   Maximum   Total        Average Recorded
UoW      0.023369  0.503595   194.623214  0.194623
BES      0.007174  0.450786   164.750438  0.164750
WRK-In   0.000013  0.034431     0.497021  0.000497
WRK-Out  0.003321  0.077685     9.077637  0.009077
ESB      0.002446  0.075679     5.707911  0.005707

Entry# UoW       Start                      End
#00000 1998987041 2008/03/29-15:44:28.191172 2008/03/29-15:44:28.402554
 00000   UoW:0.211382 BES:0.205756 ReqB:0.005378 ESB:0.004002
#00001 418627837 2008/03/29-15:44:28.207054 2008/03/29-15:44:28.413057
 00001   UoW:0.206003 BES:0.192627 ReqB:0.012935 ESB:0.009628
```

SET, SSHOT,ENTRY

This command initiates a snapshot and ends only when the preset value has been reached. The output is directed to SYSPRINT of the Substation task. It provides a summary of statistics of key interactions within the Substation for the specified number of UoWs, as well as detailed statistics for each UoW.

```
Elapsed      Start Time                 End Time
16.924783    2008/03/29-15:59:07.846085 2008/03/29-15:59:24.770868

#:1000   Minimum   Maximum   Total        Average Recorded
UoW      0.020000  0.531226   203.060447  0.203060
BES      0.005930  0.521352   175.132541  0.175132
WRK-In   0.000016  0.008004     0.383973  0.000383
WRK-Out  0.003364  0.085766     8.129159  0.008129
ESB      0.002431  0.076503     5.214009  0.005214
```

```
Entry# UoW       Start                       End
#00000 1218811218 2008/03/29-15:59:07.846085 2008/03/29-15:59:08.030790
            TRG WRK 15:59:08.019095 15:59:08.019355   Dur:0.000260
                BES 15:59:07.846086 15:59:08.019095   Dur:0.173009
         TRG-Out WRK 15:59:08.019419 15:59:08.027033   Dur:0.007614
                ESB 15:59:08.021915 15:59:08.026729   Dur:0.004814
 00000  Complete UoW:0.184705
#00001 663466177 2008/03/29-15:59:07.847841 2008/03/29-15:59:08.051230
            TRG WRK 15:59:08.043346 15:59:08.043412   Dur:0.000066
                BES 15:59:07.847841 15:59:08.043346   Dur:0.195505
         TRG-Out WRK 15:59:08.043542 15:59:08.051173   Dur:0.007631
                ESB 15:59:08.047732 15:59:08.050923   Dur:0.003191
01      Complete UoW:0.203389
```

SET,TRACE-ENTRY=CONFIG,DETAIL

This command sets a TRACE-ENTRY for the Substation ES Transformer.

SET,TRCDEST=<value>

This command changes the destination for Substation ES trace information. Valid values: D(isk) or P(rint).

SET,TRCLVL=<value>

This command changes the level of information recorded to the trace file. Valid values: 1 through 5.

SET,TRCLVL=<value>,OTMA

This command changes the level of information recorded from the OTMA modules of the IMS interface only to the trace file. Valid values: 1 through 5.

SET,TRCFWRITE=<value>

This command changes the number of seconds of the Force Write for LTA Trace Agent.

SHUT

SHUT causes an active Substation ES to terminate in an orderly manner. All input is stopped, and all active requests within the Substation ES are allowed to complete before the final termination request is sent to all active Substation ES interfaces.

SWITCH

SWITCH instructs the appropriate LTA Log Agent or LTA Trace Agent to continue recording events on the next available disk file. If there are no available disks, an error is recorded to the log file and processing continues. The command can only be used when the recording medium is set to disk (this is set on the Substation ES SSP member).

```
SWITCH,LOGFILE
SWITCH,TRCFILE
```

TERM

TERM causes an active Substation ES to terminate in an orderly manner. Termination proceeds as if a SHUT command has been issued. However, if the Substation ES tasks do not appear to be terminating, the Substation ES master task attempts to cancel all active tasks within each Substation ES interface.

Use of this command is not recommended, as in-flight messages can be lost due to cancellation of active tasks.

Chapter 2 Substation ES Operations

This chapter describes Substation ES operational functions.

Topics

Writing Substation ES Messages to SYSLOG

Substation ES provides the option to write messages to SYSLOG. This gives you the ability to trap and automate setup on selected Substation ES messages.

For example, if you want Substation ES to send messages SXT5636, SXT5639 and SXT5673 to SYSLOG, perform the following:

1. Create a member in the data set <*USERHLQ*>.MSGS(SXT56).
2. Add the following statements to the member SXT56.

```
SXT5636  OPT=SYSLOG
SXT5639  OPT=SYSLOG
SXT5673  OPT=SYSLOG
```

The member name must be the first five characters of the message code. For example, if the messages are SXT5847 and SXT5846, then the member name is SXT58.

LOG2-SYSLOG Parameter

An alternative way to write all Substation ES messages of a particular severity or higher to SYSLOG is by setting the LOG2-SYSLOG parameter in the System Startup Parameters (SSP) member. This parameter determines the severity of Substation ES log messages routed to the z/OS SYSLOG. It provides an automation tool with the ability to pick up and react to error messages that are produced by Substation ES. Valid values for this parameter are shown below:

0 – prints all log entries.

4 – prints all messages that are warnings or a greater severity.

8 – prints all messages of that severity and higher, or those that are suffixed with "E/C/F" and written to **0** – prints all log entries.

20 – prints nothing additional to the z/OS SYSLOG.

Rendezvous Request–ReplyTimer Utility

The Request–Reply Timer Utility records the time a request is delivered and the elapsed time until a reply is received for the same message. This utility provides the following functions:

- Measure elapsed time from when a request was received until a reply is delivered.
- Summarizes multiple Request or Reply timings for the transmission interval.
- Optionally prints timing information for each Request or Reply event captured.

To capture timing of the Request or Reply sequence, a field named in the conversational message is identified. The value of this field must be constant during the conversation. For the timer utility to capture multiple Request or Reply conversations, the value of the field identified in the message must be unique for each request. A message sequence number can normally be used for this purpose.

The Timer utility was originally used for CICS outbound Request or Reply conversations and can be used for bi-directional conversations. For CICS outbound requests, the Substation ES envelope field is used to identify conversations. The timer utility understands the content of the envelope and can reveal detailed information about the request when using the utility for this purpose.

Rendezvous INBOX communication is not supported.

JCL Sample (SXRTMER)

The sample JCL stream can be found in:

Data Set: `<USERHLQ>.JCL`

Member: `SXRTMER`

Before you use this utility, you must specify the correct RV transport parameters. .

Review and select the appropriate Request–Reply Timer Control Parameters from Table 3.

Rendezvous Request–Reply Timer Utility Operational Commands

The Timer Utility has a z/OS Console interface that is used to assist in the control of its execution and allow for continuous processing.

The following table describes the console commands that can be used to control Request–Reply Timer Utility execution.

Table 2 Request–Reply Timer Console Commands

Console Command	Description
`SHUT/TERM`	Terminates the execution of Request–Reply Timer Utility.
`REFRESH`	Prints all the current totals and statistics, and resets or clears counters and storage for the next capture interval.
`PRTLVL=#`	Change the current print level to value specified by #. Valid values are 0 to 5.

Examples:

- `F <timer job name>,SHUT`

  or

  `P <timer job name>`
- `F <timer job name>,PRTLVL=3`

Rendezvous Request–Reply Timer Utility Control Parameters

Table 3 Request–Reply Timer Control Parameters

Parameter	Description
`request-subject`	The name of the subject on which the timer utility listens for requests in order to capture the time and information about the request.
`reply-subject`	The name of the subject on which the timer utility listens for the reply. This allows the timer utility to match the request information to the reply and compute the elapsed the time the conversation took place. Up to 3 reply-subject names can be specified for a request subject.
`field-name`	The name used for the context value that the request or reply match is performed upon.

Table 3 Request–Reply Timer Control Parameters

Parameter	Description
`field-type`	The field type associated with the field-name used as the context field Request or Reply conversation. Valid types are: • `STR` • `OPA` • `U32 or I32` • `CE` – Substation ES CICS envelope When `CE` is used to identify the field-type, the `field-name` and `field-length` need not be specified. If CE is specified, the timer utility identifies the envelope originating from CICS.
`field-length`	The length of the field associated with the context field-name specified. Normally `field-length` is only specified when the `field-type` is defined as a string or opaque. Valid range: 1 to 36 bytes. Default: 20 bytes.
`print-ex-rtt`	This keyword will only print entries that exceed the round trip time specified for its value. Normally quite a few entries can be printed when sniffing the messages. The use of this parameter reduces the amount printed if you are only looking for round trip messages that exceed a specific time value. The time value is in seconds and up to 1 thousandth of a second. For example, 1.25, .123 or 0.035.
`prtlvl`	The amount of information printed level during the Timer Utility execution. If a high throughput of requests is to be processed, it is recommended that you specify a level of 2 or less. When the field-type is `CE` and you choose to view the contents of the envelope, set `prtlvl` to 3. Valid values: 0 to 5. Default: 0.

Control Statement Examples

Sample User Application to Substation ES Conversation

```
request-subject       my-request-subject
reply-subject         my-reply-subject
field-name            sequence-number
field-type            U32
```

Sample CICS Initiated Request or Reply conversation

```
request-subject       my-request-subject
reply-subject         my-reply-subject
field-type            CE
prtlvl                3
print-ex-rtt          0.055
```

Timer Utility Printed Explanations

- All dates are in the format CCYY-MM-DD
- All time value represented in a thousandth of a second.

CICS Initiated Request or Reply

When the field-type is CE, the print level is set to 3, and the timer utility is used to time a CICS initiated request or reply conversation, the following fields are displayed:

```
SXG8645I CICS Send Time :2003/09/09 -- 11:17:06.504 -Task#:565
Idx:0
SXG8642I Req Time, Reply Time :11:17:06.824, 11:17:06.863
SXG8652I Round Trip Time :0.039 (sec.ths)
```

CICS Envelope Field Descriptions

CICS Send Time Represents the time stamp of the Substation ES CICS SXCREQR routine receiving the request from the user application in the CICS region.

Task# The task number of the user CICS application that issued the request.

Idx# The internal storage array allocation that the Substation ES CICS Request or Reply facility used to hold the context or envelope.

Req Time Represents the time Timer Utility received the request message

Reply Time Represents the time the Timer Utility received the reply message

Round Trip Time Represents the elapsed time the external application took to produce the reply. This includes the time it took the network to deliver the message to and from the external application.

Normal Request or Reply

```
sequence-number :2147483647 Reqst Idx:0
sequence-number :2147483647 Reply Idx:0
SXG8642I Req Time, Reply Time :14:42:50.012, 14:42:50.086
SXG8652I Round Trip Time :0.074 (sec.ths)
```

The first two lines represent the context field-name and value of the field that the Request–Reply Timer Utility used.

REFRESH Command output

```
SXG8110I z/OS Console Command:REFRESH
SXG8014I Current time is - 12:44:57.560
SXG8655I Interval Started :2003/09/09 -- 12:43:01.566
SXG8656I Interval Ended :2003/09/09 -- 12:44:42.076
SXG8659I Interval Elapsed Time :100.510 (secs.ths)
SXG8650I Hi Water Mark :1
SXG8651I No of Interval Events :2
SXG8653I Round Trip Time (Avg) :0.041 (sec.ths)
SXG8654I Messages per Second :0.020 (sec.ths)
SXG8658I Refresh completed. All entries cleared
```

For explanation of the output above, refer to the *TIBCO Substation ES Messages and Codes*.

Print Output Levels

Table 4 Print Output Levels

Print Level	Messages
0	No normal runtime messages. Summary report.
1	No normal runtime messages. Start and end timestamps summary message. Summary report.
2	Round trip runtime messages. Start and end timestamps summary message. Summary report.

Table 4 Print Output Levels

Print Level	Messages
3	Runtime messages: Round trip time Request time Response time Start and end timestamps summary message. Summary report.
4	Runtime messages: Round trip time Request time Response time Slot data on request message Matching field name Matching Data Slot number Start and end timestamps summary message. Summary report.
5	Runtime messages: Round trip time Request time Response time Slot data on request message Matching field name Matching Data Slot number Slot data on request message - hex dump Reply data - hex dump Start and end timestamps summary message. Summary report.

Generic Sender or Listener Utility

The TIBCO Substation ES Generic Sender or Listener utility provides general basic messaging support to and from Substation ES. It enables users to do the following:

- To submit Substation ES operational or console commands from a remote application.
- To submit IMS operator commands from a remote location via Substation ES to the IMS back-end system and receive the returned output.
- To submit basic Rendezvous messages to other Rendezvous clients.

Substation ES accepts operational commands from user applications; the generic Sender or Listener utility is one such application. The Substation ES Administrative Interface accepts and processes the commands sent from external applications via TIBCO Rendezvous messages.

IMS commands can also be sent via messages to Substation ES. Substation ES in turn sends the commands to the IMS Interface and to the IMS back-end system. User applications must pass the correct user ID and/or password for the IMS operational commands to be executed successfully.

For Substation ES to accept operational or administrative commands from messages, a recipe with the correct Method of Invocation (MOI) and back-end system must be specified. The following sample recipes:

- `Substation-Admin` for Substation ES
- `Substation-Admin-IMS Commands` for IMS command processing

are supplied during the installation process.

Supported Data Types

The data types supported by the utility are listed below. These data types are part of the `FLD` control parameter entered in the `SYSIN` DD name file.

Table 5 Generic Sender or Listener Utility Field Types

Data Type	Description
I32	32-bit signed integer
U32	32-bit unsigned integer
STR	Character string. 80 bytes is the maximum size supported. String value must be enclosed in double quotes.

Rendezvous Generic Sender or Listener

The SXR3GEN program can be found in <USERHLQ>.LOAD. The JCL sample can be found in:

Data Set: <USERHLQ>.JCL

Member: SXRGENSL

Before you use this utility, you must specify the TIBCO Rendezvous transport parameters.

Example:

```
//SET IVPNETW='-network 127.0.0.1 -service 7555'
//SXRGEN EXEC PGM=SXR3GEN,PARM='&IVPNETW'
```

SYSIN Parameters

The commands or messages sent by the utility are determined by the keywords and operands specified in the SYSIN DD name file. Valid control parameters are described in Table 6.

Table 6 Rendezvous Generic Sender or Listener Control Parameters

Keyword	Operand	Description
DEBUG | DBG	OFF | ON	Enables debug facility messages. Should be left to default (OFF) unless TIBCO Support requires the output.
DEST-RECV	<subject name>	Subject name to receive message reply. Overrides DEST-RECV-DEFAULT.
DEST-RECV-DEFAULT	<subject name>	Default subject name when DEST-RECV is not specified; default = "tibss.admin.sxs.reply".
DEST-SEND	<subject name>	Subject name to which messages are sent. Overrides DEST-SEND-DEFAULT.
DEST-SEND-DEFAULT	<subject name>	Default subject name when DEST-SEND is not specified; default = "tibss.admin.sxs.request".
END		Denotes the end of the message being defined.

Table 6 Rendezvous Generic Sender or Listener Control Parameters

Keyword	Operand	Description
FLD	<type>, <name>, <value>	Defines a field for the message, where: <type> = I32, U32, or STR. (see Supported Data Types) <name> = name of the mapped field. <value> = the data to be associated with the field. The message can contain multiple fields.
PSWD	<password>	The password for the User ID previously specified and authorized to execute this command or process. Security Interface dependent. For the tibss-password system field; default = blank.
PUBLISH-ONLY		Only sends messages, does not wait or receive any messages (specify a DEST-RECV parameter so the published message has a reply to field).
REPEAT	<number>	Number of times to send this message; default = 1.
TIMEOUT	<number>	Time (seconds) to wait for the response message; default = 5.
UFLD-PFX	<prefix>	Prefix for all Substation ES system field names; default = tibss-. We recommend that you do not change this value for IVP runs.
USER	<userid>	The RACF or back-end User ID for the user who is authorized to execute this command or process. Security Interface dependent. For the tibss-userid system field; default = blank.
WAIT	<timevalue>	Time (seconds) to wait between message or command sends; default = 0. This is the time to delay between each message group (END statement).
WAIT-ON-REPEAT	<timevalue>	Time (seconds) to wait between sends to the server for a repeated message; default = 0. For a group of messages, this is the delay time between repeat of that message group.
*	<text>	Comment.

Examples

Issuing Substation ES commands

Refresh a recipe, wait for five seconds, disconnect the CICS interface from the CICS region, wait for ten seconds. Repeat reconnect of the Substation ES CICS Interface to the CICS region three times, and wait for 2 seconds between each occurrence.

```
USER TIBCO
PSWD password
DEST-SEND-DEFAULT tibss.admin.sxs.request
FLD STR,SXS-COMMAND,"REFR,RID=Admin-Recipe"
WAIT 5
END
DEST-SEND-DEFAULT tibss.admin.sxs.request
FLD STR,SXS-COMMAND,"DISCONN,INTF=IICICS"
WAIT 10
END
REPEAT 3
WAIT-ON-REPEAT 2
DEST-SEND-DEFAULT tibss.admin.sxs.request
FLD STR,SXS-COMMAND,"CONN,INTF=IICICS"
END
/*
```

Issuing IMS operational commands

Display the IMS OTMA status:

```
USER TIBCO
PSWD password
DBG OFF
DEST-SEND tibss.admin.sxi*Issue IMS authorised command*
FLD STR,SXS-COMMAND,"/DIS OTMA"
END
/*
```

Send a simple message to a listening application:

```
DEST-SEND tibss.test.msg
FLD STR,F1-String, "General custom message"
FLD U32,Field-U32-Name,1234
END
/*
```

EMS Generic Sender or Listener

The SXJ3GEN program can be found in <USERHLQ>.LOAD. The JCL sample can be found in:

Data Set: <USERHLQ>.JCL

Member: SXJGENSL

Before you use this utility, you must specify the TIBCO EMS transport parameters.

Example:

```
//SET TIBESB='/-server tcp://your-EMS-Server-URL:7222'
//SXJGEN EXEC PGM=SXJ3GEN,PARM='&TIBESB'
```

SYSIN Parameters

The commands or messages sent by the utility are determined by the keywords and operands specified in the SYSIN DD name file. Valid control parameters are described in Table 7.

Table 7 EMS Generic Sender or Listener Control Parameters

Keyword	Operand	Description
DEBUG | DBG	OFF | ON	Enables debug facility messages. Should be left to default (OFF) unless TIBCO Support requires the output.
DEST-RECV	<destination name>	Topic or queue to receive message reply. Overrides DEST-RECV-DEFAULT.
DEST-RECV-DEFAULT	<destination name>	Default topic or queue when DEST-RECV is not specified; default = "tibss.admin.sxs.reply".
DEST-SEND	<destination name>	Topic or queue to which messages are sent. Overrides DEST-SEND-DEFAULT.
DEST-SEND-DEFAULT	<destination name>	Default topic or queue when DEST-SEND is not specified; default = "tibss.admin.sxs.request".
DEST-TYPE	TOPIC | QUEUE	Type of destination to be used. Overrides DEST-TYPE-DEFAULT.
DEST-TYPE-DEFAULT	TOPIC | QUEUE	Default destination type when DEST-TYPE is not specified; default = QUEUE.

Table 7 EMS Generic Sender or Listener Control Parameters

Keyword	Operand	Description
END		Denotes the end of the message being defined.
EMS-USER	<name>	The user ID to connect to the EMS server.
EMS-PSWD	<password>	The password to connect to the EMS server.
FLD	<type>, <name>, <value>	Defines a field for the message, where: <type> = I32, U32, or STR. (see Supported Data Types) <name> = name of the mapped field. <value> = the data to be associated with the field. The message can contain multiple fields.
PSWD	<password>	The password for the User ID previously specified and authorized to execute this command or process. Security Interface dependent. For the tibss-password system field; default = blank.
PUBLISH-ONLY		Only sends messages, does not wait or receive any messages (specify a DEST-RECV parameter so the published message has a reply to field).
REPEAT	<number>	Number of times to send this message; default = 1.
TIMEOUT	<number>	Time (seconds) to wait for the response message; default = 5.
UFLD-PFX	<prefix>	Prefix for all Substation ES system field names; default = tibss-. We recommend that you do not change this value for IVP runs.
USER	<userid>	The RACF or back-end User ID for the user who is authorized to execute this command or process. Security Interface dependent. For the tibss-userid system field; default = blank.
WAIT	<timevalue>	Time (seconds) to wait between message or command sends; default = 0.
WAIT-ON-REPEAT	<timevalue>	Time (seconds) to wait between sends to the server for a repeated message; default = 0.

Table 7 EMS Generic Sender or Listener Control Parameters

Keyword	Operand	Description
*	<text>	Comment.

Example

Refresh a recipe, wait for 3 seconds, and send a request or reply message:

```
DBG 0
USER VERNON
PSWD password
DEST-SEND      tibss.admin.sxs
DEST-RECV      tibss.admin.reply
FLD STR,SXS-COMMAND,"REFR,RID=SXC-IVP-C-DPL"
WAIT 3
END
DEST-SEND      tibss.ivp.SXC.C.01.REQUEST
DEST-RECV      tibss.ivp.SXC.C.01.REPLY
FLD STR,IVP-ID,"SXCIV01 "
FLD STR,IVP-DESCR,"Substation ES - EMS test CICS C"
FLD STR, IVP-SUBJ-SFX," "
FLD I32,IVP-START-LILSECS,0
REPEAT 1,IVP-BTCH-SEQ-NO
END
/*
```

Generic Error Listener Utility

The Substation ES Generic Error Listener Utility is used to receive and print Application Notification messages published by Substation ES. The sources SXJ3IELS and SXRIELS are provided and can be found under the <USERHLQ>.C data set.

Functions

- Receives and prints Substation ES data transformation notification messages
- Receives and prints Substation ES operational and execution notification messages.

The utility listens to subjects or destination names that are supplied by the user on the `SYSIN` DD Name. The name should correspond to the subject name specified on the recipe or trigger definition panel in the `Error Subject` field.

When an error or user notification is delivered during execution, a message is written to the subject defined in the `Error Subject` field. These message should be processed by a user's application, but this utility can be used as an alternate method that can listen to the subjects and print the associated notifications forwarded by Substation ES.

For more information, refer to **Application Notifications** on page 232.

JCL Sample

The sample JCL can be found in:

Data Set:	`<USERHLQ>.JCL`
Member:	`SXRRIELS (Rendezvous)` `SXJRIELS (EMS)`

Before you use this utility, you must specify the TIBCO Rendezvous or EMS transport parameters.

Review and select the appropriate Generic Error Listener Utility Control Parameters from Table 8.

SYSIN Parameters

The messages the utility listens to are determined by the keywords and operands specified in the SYSIN DD name file

Table 8 Generic Sender or Listener Utility Control Parameters

Keyword	Operand	Description
SUBJECT	{tibss.error.ivp.>}	Rendezvous only. The error subject names
DESTINATION / QUEUE / TOPIC		EMS only. The destination that an error message is published to when a Transformer conversion or BES encounters errors.
PSWD		EMS only. Password associated with the User Id if a special identification is to be used in the session.
UFLD-PFX	{tibss-}	The prefix of the Substation ES system field name for the processing status. We recommend that you do not change this value for IVP runs.
USER		EMS only. User supplied Id if a special identification is to be used in the session.

Control Parameters Examples

Rendezvous

```
subject       my-error-subject
subject       my-errors.>
subject       substation.test.errors.*.subject
```

EMS

```
queue             my-error-output
destination       my-errors.substation (defaults to topic)
topic             substation.test.errors (topic only)
```

Exceptional Cases

This section describes some exceptional cases that you should be aware when using Substation ES.

Rounding Problem

In Substation ES Transformer, when you are doing an outbound conversion from Float to Integer with less than 6 implied decimals and the value is large enough, the outbound conversion always loses 1 at the last digit. This is a known IBM rounding problem.

For example:

The input value -327.67, in the buffer it is -.32766992E 03, after conversion to I32 with 2 implied decimals, it becomes -32766.

Non-Matching Subjects

For an inbound process, if the Substation ES Transformer cannot find a matched invoked Subject, the requesting messages are ignored.

The user (outside OS390) could check through the daemon HTTP interface on the subjects to which Substation ES is currently listening. Alternatively, the OS390 user could check the current Substation ES listening subjects in the Substation ES parameters log file `TIBLPARM`.

Buffer Size Issue

Substation ES Transformer provides one buffer definition that can be used for multiple conversion rules. Therefore the automatic calculation of the maximum buffer size ignores the fields at the end of the buffer that did not map to message fields.

STRING Data in Buffer Fields

When using data type `STRING` for a buffer field, you must add one extra byte at the end for the `STRING` null terminator in the buffer field definition. Otherwise, truncation occurs, and the last character of the `STRING` data is lost.

Substation ES Trigger Queue Name

When you have selected a queue name for triggers, and have used it for Substation ES CICS Interfaces, the name can't be changed dynamically or by simply recycling Substation ES. You must define the new queue name to CICS, change the name in the member containing the Substation ES CICS SIP, and recycle Substation ES and the CICS regions.

Chapter 3 CICS Operations

This chapter describes how to use CICS operational functions.

Topics

Substation ES CICS Region Resources

This section describes Substation ES CICS resources that are defined at installation and used by the Substation ES during execution. Substation ES CICS IVP resources are defined in Appendix A, Sample IVP Resources, of *TIBCO Substation ES Configuration and Resources*.

Connections

Connections are defined as EXCI and are used to enable communication between the Substation ES region and Substation ES CICS servers and resources.

Connection	Description
SXCA	Admin sever connection
SXCD	DPL Server and application program connection
SXCT	Trigger server connection. Used for requests initiating from within the CICS region

Tasks

Substation ES region invokes tasks through an EXCI connection. These tasks are used to communicate with Substation ES CICS servers or task definitions that are used internally in the CICS region to invoke Substation ES CICS servers or programs.

Task	Description
SXEX	CICS mirror transactions used by Substation ES region to invoke programs that use CICS extended storage. (Can be set on recipe definition)
SXBX	CICS mirror transaction used by Substation ES region to invoke programs that utilize DSA Storage below 16Mb. Typically used for older CICS programs that are non-reentrant. (Can be set on recipe definition)
SXTH	Substation ES CICS online help task, showing Substation ES queue usages, error messages and trigger, and request or reply information.

Task	Description
SXTE	Substation ES CICS region write error message to queue task. (internal)
SXPT	Substation ES CICS region reliable trigger event post task. (internal)
SXPG	Substation ES CICS region guaranteed trigger event post task. (internal)
SXTD	Substation ES CICS sample program that displays the records on the Dead Message Queue, with the ability to delete and resend records.
SXTO	Substation ES CICS initiated request or reply timeout task. (internal)
SXTS	Invokes the Substation ES CICS startup program. Used when the PLT entries have not yet been installed.
SXTV	Used to verify and display HVT Queues.

Programs

Substation ES region programs are invoked by tasks or linked to from other programs in the CICS region. CICS programs are normally used internally, with the exception of the SXCREQR program, that is called by user applications when using the CICS initiated request or reply process.

Program	Description
Administrative	
SXCOSRVA	Substation ES Administration server. Called under the following conditions: • When Substation ES is started to perform a sanity check • During trigger processing • At CICS shutdown • At Substation ES termination
SXCOSTRT	Substation ES startup program. Initiated by CICS at startup. Must be defined to the CICS PLT startup routines.

Program	Description
SXCOSHUT	Substation ES shutdown program. Initiated by CICS at shutdown. Must be defined to the CICS PLT shutdown routines.
SXCOHELP	Substation ES CICS program that provides help and displays information about Substation ES error messages and status information. Refer to the Chapter 2, Substation ES Operations, page 25.
SXCOERR	Substation ES CICS program that writes Substations CICS region errors to an error queue file (internal).
Server	
SXCOSRVD	Substation ES DPL server. Called when a user must write to a queue, initiate a CICS task with data or invoke a program passing it a user's data in DFHCOMMAREA.
SXCOSRVG	Substation ES DPL server. Called when a user must invoke a program, passing it a data area greater than 32Kb, using Containers, a Storage Pointer, or TSQ.
SXCOSRVT	Substation ES Trigger server. It is activated when a trigger record or a CICS initiated request is to be processed by Substation ES.
Request / Reply	
SXCREQR	Substation ES CICS initiated request or reply requestor program. Linked to or from a user application to initiate a request and receive a user's response. Can receive a Substation ES defined non-zero return and reason code when an error occurs.
SXCREPLY	Substation ES CICS initiated request or reply program. Must be invoked by Substation ES when a reply is received from a request that had been initiated from CICS application. The reply program checks the context information for validity, ensures that the CICS task is still running and places the user's reply information in the awaiting user's program DFHCOMMAREA.

Program	Description
SXCRRTO	Substation ES CICS initiated request or reply timeout program. Monitors the timeout period of user programs that initiate a request from within CICS and issues a terminate request when the timeout value is exceeded.
IO Routine	
SXCQWRIT	Substation ES High Volume Trigger (HVT) routine. Called when a user must write trigger record to the HVT queues.
CICS	
SXCCABND	Substation ES CICS program that performs program abend detection within the CICS region. It uses SXCOABND to recover from a User Program Abend for large message support (internal).
SXCOABND	Substation ES CICS program that performs program abend handler within the CICS region. It is used to produce error messages for a User Program Abend and to clean up storage for large message support (internal).
SXCOEVPE	Substation ES CICS program that performs ECB posting of Substation ES error events within the CICS region (internal).
SXCOEVPO	Substation ES CICS program that performs ECB posting of Substation ES ordered events within the CICS region (internal).
SXCOEVPT	Substation ES CICS program that performs ECB posting of Substation ES events within the CICS region (internal).
SXCOEVPG	Substation ES CICS program that performs ECB posting of Substation ES guaranteed events within the CICS region (internal).
SXCCODMQ	Substation ES CICS sample program that displays the records on the Dead Message Queue, with the ability to delete and resend records.
SXC3VQUE	Substation ES CICS program to verify and display HVT Queues.

Queues

Substation ES uses TDQs for certain processing requirements.

Queue	Description
SXQG	Queue that holds guaranteed outbound trigger message records
SXQ0, SXQ1 through SXQ9	Queues that hold guaranteed outbound High Volume Triggers message records
SXQ$	Queue that holds guaranteed re-transmit trigger message records
SXQT	Queue that holds reliable outbound trigger message records
SXQW, SXQX, SXQY, SXQZ	Queues that hold reliable outbound High Volume Triggers message records
SXQ@	Queue that holds reliable re-transmit trigger message records
SXQE	Queue that contains Substation ES CICS online error messages
SXQD	Queue that holds outbound trigger records when the transformer could not find a conversion definition, or the trigger message was not published during processing.
SXQM	Queue that holds a mirror copy of the users trigger records, when the record has been processed by Substation ES.
SXQO	Queue that holds order delivery outbound trigger message records

CICS Triggers

Using High Volume Trigger (HVT)

You should consider using the CICS HVT functionality provided by Substation ES if you require any of the following features:

- When you expect a high volume of messages/queue records to be sent from CICS regions. The throughput consideration would be around 200 messages per second.
- When users require ordered delivery of information.
- When applications need to send more than 32K of information. Trigger data can exceed 32K.
- When using EMS as your transport and you require guaranteed message delivery for triggered information.
- Information to be sent can reside in DFHCOMMAREA, TSQ, storage or a container.

When using the Container or TSQ option of HVT, the process will work in a MRO environment (with proper MRO definitions). The storage pointer option will not work in a MRO environment.

To implement these enhancements, Substation ES provides the developer with a SXCQWRIT program that any CICS application can link to.

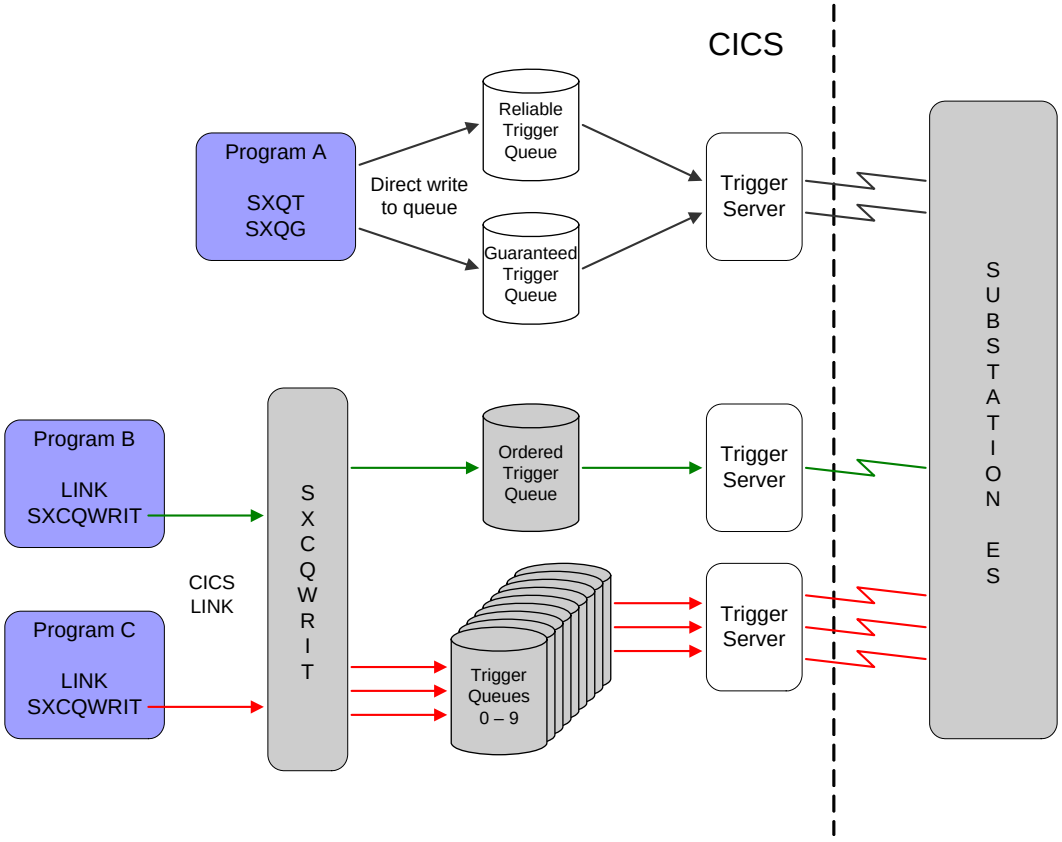
The previous methods of directly writing to the TDQ are still supported, but impose the same restrictions as previous versions of the product. All future enhancements will be made using the HVT concept. HVT is a major enhancement to enable Event Driven Architecture (EDA) for high volume trigger processing in CICS.

Usage Samples

There are C and COBOL samples that provide sample code on how to call and utilize HVT. These samples are fully functional programs that can assist you in testing and in understanding how the HVT operates.

- COBOL program SXCCI032.
  Associated copybook SXCCTDQW
  Transaction SXTF invokes this program
- C program SXC3I032
  Associated header file SXCHTDQW
  Transaction SXT6 invokes this program

Substation ES Trigger Flow



How HVT Works

As shown in the diagram above, you use standard CICS calls and facilities to utilize HVT.

- A user program sets fields in the copybook or structure to inform SXCQWRIT of what and where the information is that it should send. The fields to populate are normally the type of record, the data length and then the data, or an address of the data.
  - The data can also reside in a TSQ by just supplying a TSQ name (this can be made MRO capable).
  - The data can also be in a CICS container (this can be made MRO capable).
- The user program then calls SXCQWRIT via an a "EXEC CICS LINK"
- SXCQWRIT then adds this data to a TDQ known to Substation ES.

- Information passed back to the user program is a return code, a reason code and the TDQ name that it wrote to. The return code should always be checked upon return to the user program.

  Note: If the return code is non zero then the rollback field must be checked. If this indicator equals "Y" then the user must perform a rollback as partial records may have been to written to a TDQ and this would cause unpredictable results.

Ordered Message Delivery

If "Ordered" messages are sent, then data is written to TDQ "SXCO". There is only one of these TDQs and synchronization is applied so that the order of messages can be preserved. Specify the correct TDQ type in the parameters passed to the SXCQWRIT routine.

Configuration

By default there are always 2 guaranteed and 1 reliable queues that can be used even if Substation ES has not connected. You can configure the Substation ES startup to use more than the defaults and it all depends on the number of CICS applications writing to these queues. If you have a fairly high volume of guaranteed type messages to delivery or large volumes of data to process, then it is suggested to set the HVT-WORKERS parameter value to the maximum of 10.

Refer to *TIBCO Substation ES Installation* for additional information on Substation ES setup and configuration.

When a transaction links to SXCQWRIT the first time, it is allocated to one of the queues. All subsequent links to SXCQWRIT by that task will use the same allocated queue. A transaction can link to SXCQWRIT multiple times but there is no switching between queues for that transaction (task). If TDQ SXQ0 was selected on the first link to SXCQWRIT, then all further links to SXCQWRIT will use SXQ0. When another task first links to SXCQWRIT, it is allocated a different queue. Thus "CICS enqueues" due to tasks using the same TDQ is greatly reduced.

SXCQWRIT can handle data lengths and Container (CICS TS 3.1 and above) information consisting of sizes greater than 32K. Please remember that many large data records will occupy huge storage areas and can impact performance. Large records are broken up into multiple Transient Data Records before sending them to the Substation ES trigger server. User data located in Temporary Storage Queues are still limited to the CICS limitations of 32,767 which is the maximum for a signed halfword. Using containers since 3.1 is far more efficient.

Programs can combine both "Links to SXCQWRIT" and WRITEQ to SXQT or SXQG in them.

User Sample Code to Link to SXCQWRIT

Cobol

```
MOVE LOW-VALUES TO TDQW-TSQ-Name
SET TDQW-PDATA TO ADDRESS OF DATAAREA.
MOVE LENGTH OF DATAAREA TO TDQW-DATALEN.
MOVE {'R', 'G', 'O'} TO TDQW-TDQ-TYPE.
EXEC CICS LINK PROGRAM('SXCQWRIT')
               COMMAREA(SXCCTDQW)
               LENGTH(TDQW-Header-Len)
               RESP(DFHRESP1)
               RESP2(DFHRESP2)
END-EXEC.
IF TDQW-RETURN NOT = TDQW-NORMAL
  TAKE-ACTION.
```

C language

```
Short int sTDQW = sizeof(SXCHTDQWR);
SXCHTDQWR TDQW;

memset(&TDQW.Tsq_Name[0],0x00,16);
TDQW.pData = address of data;
TDQW.DataLen = length of data;
TDQW.Tdq_Type  = {'R', 'G', 'O'};
EXEC CICS LINK PROGRAM('SXCQWRIT')
                 COMMAREA(&TDQW)
                 LENGTH(sTDQW);
If (TDQW.Return != 0)
  Take_action;
```

SXCQWRIT Parameter List Details

1. TDQW-SERVICE PIC X(40)

   If this field is non-zero or non-blank, then it is the Trigger Service Name that will be used by Substation ES to process this message. The “Compare Text Contain in Buffer” area of the Trigger Definition is ignored when TDQW-SERVICE is specified.

2. TDQW-TSQ-Name PIC X(16)

   Field is the name of the Temporary Storage Queue where the data is located. If this field is non-zero or non-blank, then SXCQWRIT looks for the data in either CICS Temporary storage or a Container. When the data location is a TSQ, SXCQWRIT will send all records in the TSQ to Substation Trigger Server and then delete the TSQ.

3. TDQW-DATALEN PIC S9(8) COMP

   Field is the length of the data when using a data pointer, else it should be zero.

4. TDQW-PDATA POINTER

   Field is the pointer to the data or NULL (binary zeros).

5. TDQW-CONTAINER PIC S9(8) COMP.

   For TSQ data, the field TDQW-CONTAINER is set to zero or FALSE. For a Container name, field TDQW-CONTAINER is set to one or TRUE.

6. TDQW-TDQ-TYPE PIC X(1)

   Field is the type of Trigger data is to be sent to - valid entries are:

   — 'R' for Reliable

   — 'G' for Guaranteed

   — 'O' for Ordered

7. TDQW-RETURN PIC 9(8) COMP

   Field is the return status from SXCQWRIT

   — Zero means all is OK

   — Non-Zero means there was a problem

8. TDQW-REASON PIC 9(8) COMP

   Field is the Reason code from the error if TDQW-RETURN in non-zero else it is zero.

9. TDQW-RESP1 PIC 9(8) COMP

Field is the CICS Response code (eibresp) from an error if TDQW-REASON indicates a CICS Error else it is zero.

10. TDQW-RESP2 PIC 9(8) COMP

    Field is the CICS Response2 code (eibresp2) from an error if TDQW-REASON indicates a CICS Error else it is zero.

11. TDQW-ROLLBACK-SW PIC X(1)

    Field indicates if any successful TDQ writes were done. If 'Y' and an error had occurred, it is the user transaction's responsibility to issue a "EXEC CICS SYNCPOINT ROLLBACK" to remove the partial data from the Substation Trigger Queue. A 'N' indicates no data has been written to the Substation Trigger Queue.

12. TDQW-TDQ-NAME PIC X(4)

    This is a reserved field. On the first link to SXCQWRIT it should be LOW-VALUES (0x00). For all subsequent links to SXCQWRIT it should be left untouched. This field contains the CICS TDQ that the transaction is allocated.

13. All other areas are Reserved

HVT Trigger Transactions

Table 9 shows the command line parameters for sample HVT tasks.

Table 9 Summary of the SXTF / SXT6 Command Line Parameters

Command	Description
`SXTF/SXT6`	Sends one message via the HVT facility using IVP format.
`SXTF/SXT6,HELP/?`	List all the keywords for the available commands.
`SXTF/SXT6,<Type(G|R|O)>, <number_of_records>`	Sends multiple messages via the HVT facility in the message type indicated. Type: G – Guaranteed, R – Reliable, O – Ordered.
`SXTF/SXT6,<Type(G|R|O)>, <number_of_records>, <data_length(1 - 132000)>`	Sends multiple messages via the HVT facility in the message type indicated and record length indicated. Type: G – Guaranteed, R – Reliable, O – Ordered
`SXTF/SXT6,<Type(G|R|O)>, <number_of_records>, <data_length(1 - 132000)>, <service name>`	Sends multiple messages via the HVT facility in the message type indicated and record length indicated to the specified Service Name (the Trigger Identifier). Type: G – Guaranteed, R – Reliable, O – Ordered
`SXTF/SXT6,<Type(G|R|O)>, <number_of_records>, <data_length(1 - 132000)>, <service name>, <delay>`	Sends multiple messages via the HVT facility in the message type indicated and record length indicated to the specified Service Name (the Trigger Identifier), with a delay of <delay> seconds between calls to SXCQWRIT. Type: G – Guaranteed, R – Reliable, O – Ordered

The "messages sent" are eiher the default IVP messages or (if data_length is specified) a record of length <data_length> filled with "1--------10--------20------".

CICS 3270 Assistance Task

Substation ES provides a CICS 3270 Task that assists a user to view or perform the following tasks:

- Show details of a Substation ES CICS interface queue usage.
- Display a detailed version of Substation ES CICS error message record.
- Display connected or previously connected Substation ES Trigger and CICS initiated Request or Reply processes statistics.

Table 10 shows the command line parameters for task SXTH

Table 10 Summary of the SXTH Command Line Parameters

Command	Description
SXTH	Display a set of statistics summary for the Substation ES CICS interface queue resources.
SXTH,ALL	Display a set of statistics summary for the Substation ES CICS interface queue resources.
SXTH,DEF	Display the default information of the Substation ES CICS interface queue resources.
SXTH,ERR	Display the detail information about the first error record from the error queue.
SXTH,ERR,DELETE	Display the detail information about the first error record from the error queue and the record is deleted from the queue.
SXTH,ERR,PURGE	Deleted all records from the error queue.
SXTH,HELP/?	List all the keywords for the available commands.
SXTH,HVT	Display concurrent activity of the High Volume trigger queues.
SXTH,PTDQ,<TDQ Name>, <start record), <number of records>	Read TDQ records from the specified Transient Data Queue and produce a hex format printout of the queue record. Output is directed to CEEMSG of the CICS region.

Table 10 Summary of the SXTH Command Line Parameters

Command	Description
SXTH,PTSQ,<TSQ Name>, <start record>, <number of records>	Read TSQ records from the specified Temporary Storage Queue and produce a hex format printout of the queue record. Output is directed to CEEMSG of the CICS region.
SXTH,QUE	Display usage information about the default trigger queue.
SXTH,QUE,<TDQ Name>	Display queue usage information about the given TD queue name.
SXTH,TRG	Display the concurrent active statistics summary for the Triggers and CICS initiated Request or Reply processes

Sample Output for SXTH Commands

SXTH Command:

```
TDQueue Name:SXQD    - Records:0, Triggerlevel:0 (Dead Msg)
TDQueue Name:SXQE    - Records:0, Triggerlevel:1 (Error)
TDQueue Name:SXQG    - Records:0, Triggerlevel:1 (Guaranteed)
TDQueue Name:SXQO    - Records:0, Triggerlevel:1 (Ordered)
TDQueue Name:SXQT    - Records:0, Triggerlevel:1 (Reliable)
TDQueue Name:SXQW    - Records:0, Triggerlevel:0 (HVT Rel)
TDQueue Name:SXQX    - Records:0, Triggerlevel:0 (HVT Rel)
TDQueue Name:SXQ$    - Records:0, Triggerlevel:0 (ReXmit Gur)
TDQueue Name:SXQ@    - Records:0, Triggerlevel:0 (ReXmit Rel)
TDQueue Name:SXQ0    - Records:0, Triggerlevel:0 (HVT Gur)
TDQueue Name:SXQ1    - Records:0, Triggerlevel:0 (HVT Gur)
TDQueue Name:SXQ2    - Records:0, Triggerlevel:0 (HVT Gur)
TDQ Server:SXCOSRVT  - Res:0, Use:16, Status:ENABLED
```

SXTH,ERR Command:

```
Substation ES CICS Error TD Queue display
SS Error Date & Time      - 2004/12/01 -- 10:57:05.031
SS Internal Cmd:11        - CICS EIBFN value:X'E02'
SS Error RC    :8         - SS Error Reason :3482
CICS dfhresp1  :27        - CICS dfhresp2   :2
Program Name   :SXCOSRVD
CICS Resource  :SXCREPLY  - SS Resource     :SXCREPLY
```

SXTH,TRG Command:

```
Interface      - Status:Active, Id:SS-KR-2-6-IVPs-IICICS
Trigger(SXQ/G) - Status:Active, Busy:No  - (R) Status:Active, Busy:No
Trigger(HVT/G) - Status:Active, Ques:3   - (R) Status:Active, Ques:2
CICS Req/Reply - Status:Active, Busy:No  - (O) Status:Inact , Busy:No

R/R usage    - In Use:0, HWM (Curr,Max):0,1
```

SXTH,HVT Command:

```
HVT Activity - Inact/Posted/Act  Q-Name Offload
             - Status:Active  , Id:SXQ0 1-0-0
             - Status:Active  , Id:SXQ1 1-0-0
             - Status:Active  , Id:SXQ2 1-0-0
             - Status:Active  , Id:SXQ3 1-0-0
             - Status:Active  , Id:SXQ4 1-0-0
             - Status:Active  , Id:SXQ5 1-0-0
             - Status:Active  , Id:SXQ6 1-0-0
             - Status:Active  , Id:SXQ7 1-0-0
             - Status:Active  , Id:SXQ8 1-0-0
             - Status:Active  , Id:SXQ9 1-0-0
             - Status:Active  , Id:SXQW 1-0-0
             - Status:Active  , Id:SXQX 1-0-0
             - Status:Active  , Id:SXQY 1-0-0
             - Status:Active  , Id:SXQZ 1-0-0
TDQ Server:SXCOSRVT  - Res:1, Use:7692064, Status:ENABLED
```

CICS Trigger Queue Verification

This program reads HVT queues and verifies that the record headers are in proper sequence. Any errors cause printed error messages on the CICS CEELOG in the following form:

```
"Queue:<queue name> Record: <number> - Length Invalid -
Exp:<number> Got: <number>"
```

or

```
“Queue: <queue name> Record: <number> - Number Invalid - Exp:
<number> Got: <number>"
```

No data is changed or removed from the queues.

Table 11 Summary of the SXTV Command Line Parameters

Command	Description
SXTV,?	List all the keywords for the available commands.
SXTV,<queue name>, <number>	Displays the <number> record in the TDQ <queue name>.
SXTV,TESTHVT	Test all the HVT transient data queues for data integrity. “All queues tested - 0 errors found” means all HVT queues were tested and passed.

Sample Output for SXTV Commands

```
SXTV,SXQE,2
Record Number:2, Record size:144(0090)
00000000 0000  00000008 00000BF4 00000000 00000000  |.......4........|
00000016 0010  0A040000 00000032 49323BA9 95E05E35  |...........zn\;.|
00000032 0020  00000000 00000000 00000000 00000000  |................|
00000048 0030  00000000 E2E7C3D6 E2D9E5C1 E2E7C3D6  |....SXCOSRVASXCO|
00000064 0040  E2D9E5C1 00000000 00000000 00000000  |SRVA............|
00000080 0050  00000000 00000000 00000000 00000000  |................|
00000096 0060  00000000 00000000 00000000 00000000  |................|
00000112 0070  00000000 00000000 00000000 00000000  |................|
00000128 0080  00000000 00000000 00000000 00000000  |................|
```

CICS 3270 Dead Message Queue Task

Substation ES provides a CICS 3270 Task that assists a user to view or perform the following tasks:

- Display a detailed version of Substation ES CICS dead message record
- Delete a record from the dead message queue
- Resubmit a record group from the dead message queue to Substation ES via SXCQWRIT

If you resend it, records will only go to the HVT queues. The TRIG-HVT flag must be set to on for it to process them.

The source for this task can be found in <USERHLQ>.COB(SXCCODMQ).

Table 12 shows the command line parameters for task SXTD

Table 12 Summary of the SXTD Command Line Parameters

Command	Description
`SXTD`	Displays the first record on the Dead Message Queue.
`SXTD,HELP/?`	List all the keywords for the available commands.
`SXTD,#`	Displays Dead Message Queue Record # (where # is the record number).
`SXTD,DEL`	Deletes the first record off the Dead Message Queue.
`SXTD,PURGE`	Deletes all records off the Dead Message Queue.
`SXTD,RESEND`	Sends the first record group on the Dead Message Queue to SXCQWRIT for resending to Substation ES.
`SXTD,RESEND,ALL`	Sends all record group on the Dead Message Queue to SXCQWRIT for resending to Substation ES.

Sample Output for SXTD Commands

SXTD Command:

```
Date / Time :2007/01/22 -- 11:33:30.887
Record Type :R - Reliable Record Occurance: 1
Record Length : 58500 Queue Record Length:18304 EOD:No
Return Code :00004 Reason Code:44101 No Definition for Record
0000 0000 F1606060 60606060 60F1F060 60606060 *1--------10-----*
0016 0010 606060F2 F0606060 60606060 60F3F060 *---20--------30-*
0032 0020 60606060 606060F4 F0606060 60606060 *-------40-------*
0048 0030 60F5F060 60606060 606060F6 F0606060 *-50--------60---*
0064 0040 60606060 60F7F060 60606060 606060F8 *-----70--------8*
0080 0050 F0606060 60606060 60F9F060 60606060 *0--------90-----*
0096 0060 606060F1 F0F06060 60606060 60F1F1F0 *---100-------110*
0112 0070 60606060 606060F1 F2F06060 60606060 *-------120------*
0128 0080 60F1F3F0 60606060 606060F1 F4F06060 *-130-------140--*
0144 0090 60606060 60F1F5F0 60606060 606060F1 *-----150-------1*
0160 00A0 F6F06060 60606060 60F1F7F0 60606060 *60-------170----*
0176 00B0 606060F1 F8F06060 60606060 60F1F9F0 *---180-------190*
0192 00C0 60606060 606060F2 F0F06060 60606060 *-------200------*
0208 00D0 60F2F1F0 60606060 606060F2 F2F06060 *-210-------220--*
0224 00E0 60606060 60F2F3F0 60606060 606060F2 *-----230-------2*
CLEAR/PF3: end PF7: prev PF8: next Current DateTime: (01/22/07
21:05:46)
```

SXTH,DEL Command:

```
SXC3803I 1 Record Deleted from the Dead Queue
```

SXTH,PURGE Command:

```
SXC3803I All Records Deleted from the Dead Queue
```

SXTH,RESEND Command:

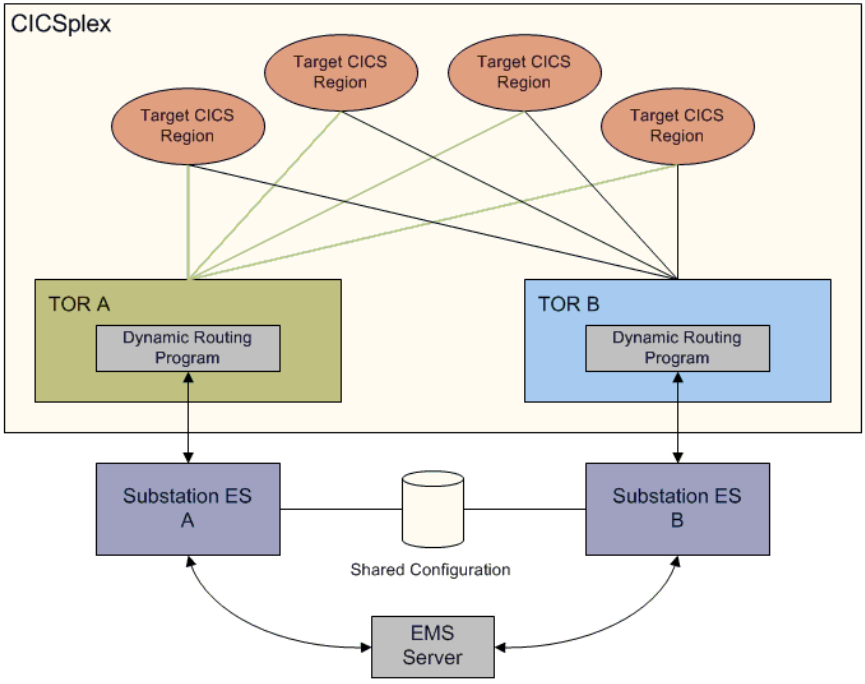
```
SXC3801I 7 Records Resent from the Dead Queue Interface
```

Substation ES in a CICSplex Environment

CICSPlex SM's Workload Manager (WLM) uses the dynamic routing program EYU9XLOP to route eligible work requests from a requesting region to a suitable target region selected at the time the transaction is initiated.

Substation ES, together with the EYU9XLOP routine, handles the dynamic routing of the following:

- Eligible EXEC CICS START requests that are not associated with a terminal.
- Dynamic program link (DPL) requests that are received using:
  - External CICS interface (EXCI) client programs.
  - Any function that issues an EXEC CICS LINK PROGRAM request.



Substation ES is configured to interface to a TOR or AOR region through EXCI. The CICSplex can use the EYU9XLOP dynamic routing program to route the transaction to the proper AOR in the CICSplex.

When the CICSplex is setup with the proper resources in each AOR, the CICSplex will direct the transaction to the proper AOR for execution, and return the Communications Area or Container to the originating CICS, which in turn returns the user data to Substation ES.

Methods of Invocation

The following table describes the constraints and usage of Substation ES Methods of Invocation in a CICSplex environment:

Recipe MOI Selection		Constraints and Usage
2	DPL (CommArea)	Can be used to route to AOR (dynamic or static). Limited to 32K data size for both input and output. Least overhead. Uses DFHCOMMAREA for input and output.
3	PGM (XTCL)	Cannot be used to route to AOR. Substation ES uses a CICS XCTL which in not routable. Issues a start transaction with DFHCOMMAREA.
4	Task (Start Task)	Can be used to route to AOR. Substation ES uses a CICS START that is routable. The TRANID is routed to the correct AOR via CICS TDQ definitions. The "Resource Name" is used as the Tran ID in the CICS Start command and the CommArea is used as the "FROM" Data. Limited to 32K data size for input.
5	TDQ Write	Can be used to route to AOR. The TDQ is routed to the correct AOR via CICS TDQ definitions. Issues a write to TDQ.

Recipe MOI Selection		Constraints and Usage
6	TSQ Write	Can be used to route to AOR. The TSQ is routed to the correct AOR via CICS TSQ definitions (TSMODEL). Limited the one 32K record in TSQ. Writes Temporary Queue Records, the location of the TSQ can be located in any AOR
9	DPL MRO	Can be used to route to AOR. Limited to 32K data size for both input and output. Substation ES server program issues a CICS LINK to "Resource Name" and the CommArea is used as the "FROM" Data. Uses DFHCOMMAREA for input and output.
10	Container	Can be used to route to AOR. Uses Containers for Input and Output so user data can be greater than 32K. Substation ES server program issues a CICS LINK to "Resource Name" and the Container is used for Data. The container's name and the program name are identical when using this method.
11	Storage Pointer	Cannot be used to route to AOR. The storage used is in the SOR, so AORs do not have visibility to that storage area. Uses "Storage Pointers" – this MOI cannot be routed.
12	DPL TSQ	Can be used to route to AOR. The TSQ is routed to the correct AOR via CICS TSQ definitions (TSMODEL). Data is segmented into multiple 32K records. Passes a Temporary Queue to user program; the location of the TSQ and user program can be located in any AOR

Invoking CICS Programs to Access DB2

Overview

You can write programs in COBOL, PLI, C, and Assembler to access DB2. For Substation ES to execute these programs, they must be able to take input and deliver output in one of following ways:

- COMMAREA input and output
- Container input and output
- Temporary Storage Queue name in COMMAREA input and output
- Storage pointer in COMMAREA input and output

COMMAREA

Data is presented to the program in the COMMAREA. Upon return from the program, the contents of the COMMAREA is considered the output of the program, and is sent back to Substation ES. The maximum input and output length of the COMMAREA is 32,000 characters.

Container

Data is presented to the program in a CICS Container whose name is the same as the program. The program returns its response in the same Container. If there is to be no response from the user program, then the program should delete the Container. Upon return from the program, the content of the Container will be returned to Substation ES (if no Container is found, then the response is “No Response”). A Container can be any length, and a container size is constrained only by the available user storage in the CICS address space.”

Temporary Storage Queue Name

Data is presented to the program in a CICS Temporary Storage Queue (TSQ). The eight (8) character TSQ name is in the COMMAREA. The program should read the TSQ to obtain input. Output from the program is placed in the same TSQ. Upon program return, the content of the TSQ is used by Substation ES as the response. If the TSQ is not found, then a NULL response is returned. The size of input and output data is only limited by TSQ constraints and storage to support the size of the TSQ.

Storage Pointer in COMMAREA

Data is presented to the program as a pointer to a storage area and length. These two fields are contained in the COMMAREA. The program can access the storage directly. Upon return from the user program, the content of the storage area is used by Substation ES as the response.

DB2 Access Considerations

The CICS region that Substation ES interfaces with is called the Substation Owning Region (SOR). An application running CICS region is called the Application-Owning Region (AOR).

The default transaction ID that Substation runs programs under is called SXEX.

The following are ways to define CICS programs to access DB2:

- The program executes in the SOR that can execute under the SXEX transaction ID.
- The program executes in the SOR and must execute under a transaction ID other than SXEX.
- The program executes in an AOR that can execute under the SXEX transaction ID.
- The program executes in an AOR and must execute under a transaction ID other than SXEX.

Each of these methods is described in subsequent sections.

Program Executes in the SOR and Executes under the SXEX Transaction ID

This is the typical Substation ES method of executing a CICS program. The recipe is defined similar to a normal recipe. On the Recipe Details panel, no value for **Mirror Tran** and **User Tran** is set to N.

Program Executes in the SOR and Executes Under a User's Transaction ID

There are two variations:

- The transaction ID to execute the program cannot point to program DFHMIRS.

  On the Recipe Details panel, **User Tran** is set to Y. The transaction will start as "CSMI" and then switch to the **Mirror Tran** field.

- The transaction ID to execute the program can point to program DFHMIRS

  The transaction is defined to execute DFHMIRS. On the Recipe Details panel, **Mirror Tran** is set to the transaction ID the program must run under and **User Tran** is set to N.

Program Executes in an AOR and Executes under the SXEX Transaction ID

The recipe is defined similar to a normal recipe. On the Recipe Details panel, no value for **Mirror Tran** and **User Tran** is set to N.

The SXEX transaction must be defined in the AOR similar to the SOR.

The program definition in the SOR must contain the "REMOTE ATTRIBUTES" to route the program execute to the proper AOR.

The program definition in the AOR must be setup correctly.

Program Executes in an AOR and Executes Under a Transaction ID other than SXEX

The recipe is defined similar to a normal recipe. On the Recipe Details panel, **Mirror Tran** specifies the transaction ID the program must run under and **User Tran** is set to N.

The **Mirror Tran** transaction must be defined in the SOR and the AOR with the program name of DFHMIRS.

The program definition in the SOR must contain the "REMOTE ATTRIBUTES" to route the program execute to the proper AOR.

The program definition in the AOR must be setup properly.

Using DB2Entry and DB2Tran for Programs that Access DB2

If a user CICS program requires the use of a DB2ENTRY, then one of the following must be done:

- DB2 program runs in SOR under SXEX.

  Define a DB2TRAN object in the SOR for SXEX.

- DB2 program runs in SOR under **Mirror Trans**.

  Define a DB2TRAN object in the SOR for the **Mirror Tran** transaction ID specified in the recipe.

- DB2 program runs in AOR under SXEX

  Define a DB2TRAN object in the AOR for SXEX.

- DB2 program runs in AOR under **Mirror Trans**.

  Define a DB2TRAN object in the AOR for the **Mirror Tran** transaction ID specified in the recipe.

Security Considerations

The "Userid" that the program executes under is the same as the parameter USERID defined in the CICS interface parameters member.

The "transaction ID" that the program executes under depends on the Substation ES recipe:

- Recipe does not specify **Mirror Tran**.

  The program will run under the Substation ES default transaction SXEX.

- Recipe specifies **Mirror Tran** and **User Tran** is set to `N`.

  The program will run under the **Mirror Tran**.

- Recipe specifies **Mirror Tran** and **User Tran** is set to `Y`.

  The program start under CSMI and will then run under the **Mirror Tran**.

The security system you are using must allow the program and transaction to execute. You may have to add or modify security definitions to allow proper program execution to occur.

CICS DB2 Transactions Detail Definition Scenarios

The following DB2 transaction definition scenarios are described in this section:

- The user DB2 program does not need a CICS DB2Tran definition and can run under transaction ID SXEX or Mirror Tran.
- The user DB2 program needs a CICS DB2Tran definition or cannot run under transaction ID SXEX or Mirror Tran, and does not need to be routed.
- The user DB2 program needs a CICS DB2Tran definition or cannot run under transaction ID SXEX, and needs to be routed.

DB2 program does not need a CICS DB2Tran definition and can run under transaction ID SXEX or Mirror Tran.

Define the recipe in Substation ES as you would any other CICS program.

DB2 program needs a CICS DB2Tran definition or cannot run under transaction ID SXEX or Mirror Tran, and does not need to be routed.

CICS Environment Considerations:

- Define the user DB2 program to CICS that uses CommArea, Container, or TSQ for input and output.
- Define the transaction ID to run the program for DB2Entry matching, if needed.
- Define DB2Entry, if needed.
- Define DB2Tran, if needed.
- Security considerations:
  - Allow CSMI to link to the user DB2 program.
  - Allow Userid in Substation ES to run CSMI, DFHMIRS, and the user DB2 program.
- IBM default definition considerations:
  - CSMI - IBM default definitions – determine if these are appropriate for your program's execution. If not, redefine and test them:

```
TASKDATALoc     : Below
TASKDATAKey     : User
DYnamic         : No
ROutable        : No
```

— DFHMIRS - IBM default definitions – determine if these are appropriate for your program's execution. If not, redefine and test them:

```
DAtalocation    : Below
DYnamic         : No
```

Substation ES Environment Considerations

- Define the message as you would with other recipes.
- Define the buffer as you would with other recipes.
- Define the conversion as you would with other recipes.
- Define the recipe:
  - — Define fields as you would with other recipes.
  - — For **Method of Invocation**, use: `2 DPL`, `10 Container`, `11 Storage`, or `12 DPL TSQ`.
  - — Set **Mirror Tran** to the transaction ID used in CICS Environment Considerations, if the user DB2 program needs to run under a transaction ID other than SXEX.

    The user DB2 program will initially start using transaction CSMI and program DFHMIRS. DFHMIRS will then change the transaction ID to the value you defined as the mirror transaction. This value is used for matching DB2TRAN entries, and thus the DB2Entry to be used for the DB2 program. The EIBTRANID is set to **Mirror Tran**, so the user DB2 program sees itself as running under the transaction ID of the **Mirror Tran** value.

DB2 program needs a CICS DB2Tran definition or cannot run under transaction ID SXEX, and needs to be routed.

CICS Environment Considerations

- Define the user DB2 program to CICS that uses CommArea, Container, or TSQ for input and output in the AOR.
- Define the transaction ID to run the program in the AOR with program name of DFHMIRS.
- Define DB2Entry, if needed in the AOR.
- Define DB2Tran, if needed in the AOR.
- Define the transaction ID to run the program in the CICS that interfaces to SOR with program name DFHMIRS, using REMOTE ATTRIBUTES to define how to route transaction to AOR.

Substation ES Environment Considerations

- Define the message as you would with other recipes.
- Define the buffer as you would with other recipes.
- Define the conversion as you would with other recipes.
- Define the recipe:
  - Define fields as you would with other recipes.
  - For **Method of Invocation**, use: `2 DPL`, `10 Container`, or `12 DPL TSQ` (if DPL TSQ is used, then remember to direct TSQ requests in the AOR to the SOR for IDs starting with "SXCT").
  - Set **Mirror Tran** to the transaction ID used in CICS Environment Considerations.
  - Set **User Tran** to 'N'.

Trigger and Recipe Performance

Trigger Processing

Substation ES triggers make heavy use of the CICS intrapartition file. The physical record size of DFHINTRA can have a big impact on the performance of Substation ES trigger and HVT processes.

- Standard Substation ES trigger size is limited by the record size of DFHINTRA.
- Substation ES HVT segments large messages into multi-TDQ records. The larger the DFHINTRA record size (maximum 32K), the less segmentation required. This will improve performance.
- Reliable triggers versus guaranteed triggers:
  - Reliable trigger messages do not use the RRS facility. If there is an error in delivering the message to the EMS server or Rendezvous endpoint, the message could be lost. Because of the reduced recovery, there is less overhead in processing a reliable message. HVT Reliable triggers that must be segmented (message will not fit in one TDQ buffer) will also use Temporary Storage (TSQ). For these types of messages, TSQ tuning may be required
  - Guaranteed trigger messages must use the RRS facility to ensure the delivery of the message to the EMS server. Use of Rendezvous does not support guaranteed delivery.
- Specifying TS = (,buffers, strings) parameter on the CICS SIT.
  - Monitor TSQ statistics regarding how resources are used.
  - A good starting point for TS is to set:

    ```
    buffers = 5 + (WORKERS in CICS definition) + (HVT-WORKERS)
    strings = (WORKERS in CICS definition) + (HVT-WORKERS)
    ```
- Specifying TD = (buffers, strings) parameter on the CICS SIT.
  - Monitor DFHINTRA statistics regarding how resources are used.
  - A good starting point for TD is to set:

    buffers = 5 + (WORKERS in CICS definition) + (HVT-WORKERS)

    strings = (WORKERS in CICS definition) + (HVT-WORKERS)
  - An example of CICS Transient Data Statistics. The highlighted numbers should always be zero for best performance.

```
Transient
Data
  Transient data reads. . . . . :   1,380,551
  Transient data writes . . . . . :   2,179,981
  Transient data formatting writes. . . . . :           0
  Control interval size . . . . . :      18,432
  Control intervals in the DFHINTRA dataset . :      94,320
  Peak control intervals used . . . . . :      94,320
  Times NOSPACE on DFHINTRA occurred. . . . . :          11
  Transient data strings. . . . . :           3
  Times Transient data string in use. . . . . :   3,560,530
  Peak Transient data strings in use. . . . . :           3
  Times string wait occurred. . . . . :   1,958,001
  Peak users waiting on string. . . . . :          12
  Transient data buffers. . . . . :          40
  Times Transient data buffer in use. . . . . :   7,379,700
  Peak Transient data buffers in use. . . . . :          15
  Peak buffers containing valID data. . . . . :          40
  Times buffer wait occurred. . . . . :           0
  Peak users waiting on buffer. . . . . :           0
```

Recipes (Request / Reply)

WORKERS – Specifies the number of concurrent CICS sessions that are started to service Substation ES requests. For CICS business applications, this is the maximum number of transactions that can be run in CICS concurrently. To increase concurrency, increase this number. You should consider that the number of workers you have will affect the value you specify on the CICS MAXTASK parameter.

CICS Security Settings

Defining CICS Transaction Security for Substation ES

To enforce security in the CICS region for a transaction being invoked from Substation ES, you can need to make the following changes.

General Changes

- Change the Substation ES CICS SXCD Connection definition setting the `Attachsec` parameter to `Identify`.
- Ensure that the following parameters in the CICS SIT are specified as follows:

  ```
  SEC=YES
  XTRAN=YES
  ```

Specific Changes

1. Copy the Substation ES CICS Resource transaction definition `SXEX` to `SXEU`.
2. Proceed to the Substation ES Transformer configuration panels:
   - Select the `Define Message Contents` panel and add a field **`tibss-userid`**. Define it as a field of type STR on the incoming application message.
   - Select the `Define Conversion Relationships` panels and set the `tibss-userid` field to `Trunc=Y` and `Reqd=Y`.

     This field does not need to be matched to a buffer-field as a `tibss-userid` field is passed in a system header to back-end systems.
3. Select the `Define Recipes` panel and change the Substation ES configuration recipe definition that requires a security check. Set the panel option of `"Mirror Tran"` to `SXEU`.
4. Refresh the recipe using a Substation ES administrative command.

RACF Definitions for CICS Security

This section describes the steps necessary to set up Substation ES security in the CICS environment. The steps described below assume that a minimal CICS security environment already exists in RACF. For additional information about setting up an initial CICS security environment, refer to the *CICS Transaction Server for z/OS CICS RACF Security Guide*.

If no RACF setup has ever been done for CICS security, you can set a minimal Substation ES for CICS security by issuing the following RACF commands:

Setting minimal Substation ES security with the following RACF commands is NOT an operational recommendation by either TIBCO Software Inc. or by IBM.

```
TSO SETROPTS GENERIC(TCICSTRN)
TSO RDEFINE TCICSTRN * UACC(READ)
TSO RDEFINE TCICSTRN SXEU UACC(NONE)
```

1. After setting security (or checking that security exists in RACF), choose the userid that is authorized to execute the most sensitive transactions.

The following examples assume that the chosen userid is `MAXCICS` and that the CICS started procedure is `CICSPROC`.

2. Set up the `STARTED` class or its equivalent to run Substation ES under userid `MAXCICS`:

```
TSO RDEFINE STARTED (CICSPROC.*) STDATA(USER(MAXCICS)
GROUP(CICSGRP) PRIVILEGED(NO) TRUSTED(NO) )
```

3. Issue the following commands:

```
TSO PERMIT SXEU CLASS(TCICSTRN) ACCESS(READ) GENERIC ID(MAXCICS)
```

4. After these steps have been taken, activate RACF class `TCICSTRN`:

```
TSO SETROPTS CLASSACT(TCICSTRN)
```

5. Additional profiles can be defined using `RDEFINE` to limit the authority for specific transactions as needed.

For additional guidance on setting up RACF, refer to the *SecureWay Security Server RACF Security Administrator's Guide*, *SecureWay Security Server RACF Command Language Reference*, and *CICS Transaction Server for z/OS CICS RACF Security Guide*. These manuals are supplied by IBM.

Operations Cookbook

The section provides details on select situations that you may encounter, and the operations to be performed to address these situations. The following terms are used in this section:

- **AOR** – Application Owning CICS Region.
- **SOR** – CICS Region to which Substation ES connects.
- **SXEX** – the standard mirror transaction ID under which Substation ES executes programs.

Run a CICS program using a transaction ID other than SXEX.

Method using MOI 2 (DPL) – Program *yyyyyyyy* using transid *xxxx*.

1. In the recipe set **Mirror Tran** to *xxxx*, **Program** to *yyyyyyyy*, **MOI** to 2, and **User Tran** to Y.
2. Define ProgramName *yyyyyyyy* in the SOR region.
3. Program *yyyyyyyy* will run in the SOR with the transaction ID *xxxx*.

Run a CICS program using SXEX on a CICS different from the one to which Substation ES connects.

Use MOI 2 (DPL) – Program *yyyyyyyy* using transid SXEX.

1. In the recipe, set **Trans** to blank, **Program** to *yyyyyyyy*, MOI to 2, and **User Tran** to N.
2. Define ProgramName *yyyyyyyy* in the AOR.
3. Define transaction SXEX in the AOR with the program of DFHMIR.
4. Define ProgramName *yyyyyyyy* in the SOR with RemoteSystem *zzzz* and RemoteName *yyyyyyyy* (TRANSID is ignored in this situation).
5. Program *yyyyyyyy* will run in the AOR with the transaction ID SXEX.

Run a CICS program using a transaction ID other than SXEX, on a CICS different from the one to which Substation ES connects.

Use MOI 9 (DPL MRO) – Program *yyyyyyyy* using transid *xxxx*.

1. In the recipe, set **Trans** to *xxxx*, **Program** to *yyyyyyyy*, **MOI** to 9, and **User Tran** to Y.
2. Define ProgramName *yyyyyyyy* in the AOR.
3. Define ProgramName *yyyyyyyy* in the SOR with RemoteSystem *zzzz* and RemoteName *yyyyyyyy* (TRANSID is ignored in this situation).
4. Program *yyyyyyyy* will run in the AOR with the transaction ID *xxxx*.

Run a CICS program using Containers, using a transaction ID other than SXEX, on a CICS different from the one to which Substation ES connects.

Use MOI 10 (DPL Container) – Program *yyyyyyyy* using transid *xxxx*.

1. In the recipe, set **Trans** to *xxxx*, **Program** to *yyyyyyyy*, **MOI** to 10, **User Tran** to Y.
2. Define ProgramName *yyyyyyyy* in the AOR.
3. Define ProgramName *yyyyyyyy* in the SOR with RemoteSystem *zzzz* and RemoteName *yyyyyyyy* (TRANSID is ignored in this situation).
4. Program *yyyyyyyy* will run in the AOR with the transaction ID *xxxx*.

Run a CICS program using Containers using SXEX, on a CICS different from the one to which Substation ES connects.

Use MOI 10 (DPL Container) – Program *yyyyyyyy* using transid SXEX.

1. In the recipe, set **Mirror Tran** to blank, **Program** to *yyyyyyyy*, **MOI** to 10, and **User Tran** to N.
2. Define ProgramName *yyyyyyyy* in the AOR.
3. Define ProgramName *yyyyyyyy* in the SOR with RemoteSystem *zzzz* and RemoteName *yyyyyyyy* (TRANSID is ignored in this situation).
4. Program *yyyyyyyy* will run in the AOR with the transaction ID SXEX.

Run a CICS program using a Storage Pointer, using a transaction ID other than SXEX, on a CICS different from the one to which Substation ES connects.

This cannot be done with Substation ES because a storage pointer is passed. Consider wrapping the business application program with a new application program that uses Containers to receive and send data.

Run a CICS program using a Storage Pointer, using SXEX, on a CICS different from the one to which Substation ES connects.

This cannot be done with Substation ES because a storage pointer is passed. Consider wrapping the business application program with a new application program that uses Containers to receive and send data.

Run a CICS program using TSQ, using a transaction ID other than SXEX, on a CICS different from the one to which Substation ES connects.

Use MOI 12 (DPL TSQ) – Program *yyyyyyyy* using transid *xxxx*.

1. In the recipe, set **Trans** to *xxxx*, **Program** to *yyyyyyyy*, **MOI** to 12, and **User Tran** to Y.
2. Define ProgramName *yyyyyyyy* in the AOR.
3. Define ProgramName *yyyyyyyy* in the SOR with RemoteSystem *zzzz* and RemoteName *yyyyyyyy* (TRANSID is ignored in this situation).
4. In the AOR, define TSQMODEL for SXCW+ sending the request to the SOR.
5. Program *yyyyyyyy* will run in the AOR with the transaction ID *xxxx*.

Run a CICS program using TSQ, using SXEX, on a CICS different from the one to which Substation ES connects.

Use MOI 12 (DPL TSQ) – Program *yyyyyyyy* using transid *xxxx*.

1. In the recipe, set **Trans** to blank, **Program** to *yyyyyyyy*, **MOI** to 12, and **User Tran** to N.
2. Define ProgramName *yyyyyyyy* in the AOR.
3. Define ProgramName *yyyyyyyy* in the SOR with RemoteSystem *zzzz* and RemoteName *yyyyyyyy* (TRANSID is ignored in this situation).
4. In the AOR, define TSQMODEL for SXCW+ sending the request to the SOR.
5. Program *yyyyyyyy* will run in the AOR with the transaction ID SXEX.

Chapter 4 IMS Operations

This chapter includes a general overview of the features and functionality of Substation ES.

Topics

IMS Security Settings

Overview

IMS provides the following optional RACF security checking in OTMA environments:

- **Client-bids** that determine whether OTMA clients can connect to IMS for the purpose of sending end user messages to IMS for processing.
- **IMS commands** entered by end users attached to OTMA clients.
- **IMS transactions** entered by end users attached to OTMA clients

The OTMA security level for an IMS system determines whether IMS calls RACF to perform authorization checking for the above activities. It should be noted, however, regardless of the OTMA security levels, IMS always invokes certain security exits if they exist. These include the Command Authorization Exit and the Security Reverification Exit. IMS invokes the Transaction Authorization Exit based on the following:

The OTMA security level specified for the IMS system. If the Transaction Authorization Exit has been included in the IMS system it is always invoked by IMS when the OTMA security level is NONE.

Whether RACF was invoked to perform transaction authorization processing and the RACF resulting return code. Other OTMA security levels, namely CHECK and FULL, result in IMS invoking RACF for transaction authorization processing.

If the Transaction Authorization Exit has been included in the IMS system it is invoked if and only if RACF does not deny authorization. In other words, if RACF grants a userid authorization to a transaction or if the transaction is not secured by RACF the exit routine is invoked, whereas if RACF denies authorization to the transaction the exit routine is not invoked.

By default, the OTMA security level in IMS is set to FULL (F).To override the default, specify a different value for OTAMSE. The valid values for the OTAMSE= parameters are:

- **N** (for None)
- **C** (for CHECK)
- **F** (the default, for FULL)
- **P** (for PROFILE)

OTMA Security Levels

There are four OTMA security levels:

- NONE
- CHECK
- FULL
- PROFILE

You must decide which **one** of the OTMA security levels best meets your installation's requirements.

The OTMA security level for an IMS system can be established by an IMS startup parameter specification, **OTMASE=**, in the DFSPBxxx member of the IMS procedure library or by the **/SECURE OTMA** command. By default, the OTMA security level in IMS is set to FULL (or F). To override the default, specify a different value for OTMASE.

The valid values for the **OTMASE=** parameter are:

- **N** (NONE)
- **C** (CHECK)
- **F** (FULL, the default)
- **P** (PROFILE)

The **/SECURE OTMA** command can be used to specify or to change the OTMA security level after IMS has been started. The OTMA security level can be changed by issuing one of the following keywords on the **/SECURE OTMA** command:

- **NONE**
- **CHECK**
- **FULL**
- **PROFILE**

Setting Up Security

The **OTMASE=** startup parameter specification and the **/SECURE OTMA** command do the same thing. Each establishes the OTMA security level for an IMS system. The **/SECURE OTMA** command is provided to allow you to override the OTMA security level set by the **OTMASE=** parameter specification used during IMS initialization. Use of the **/SECURE OTMA** command allows the OTMA security level to be changed without having to reinitialize IMS.

Although the **/SECURE OTMA** command overrides the value specified by **OTMASE=**, the OTMA security level specified on the **/SECURE OTMA** command is not maintained across an IMS restart. When IMS is restarted, the OTMA security level is established by either the

- value specified on the **OTMASE=** keyword

  or

- the default value, **OTMASE=F**

The default value **OTMASE=F** applies when

- the **OTMASE=** keyword is not coded in startup parameters

  or

- when the **OTMASE=** keyword is specified in the startup parameters without a value.

Table 13 describes how to set up each of the OTMA security levels.

Table 13 OTMA Security Levels

OTMA Security Level	Startup Parameter	IMS Command
NONE	OTMASE=N	/SEC OTMA NONE
	OTMASE=P + security flag value 'N'	/SEC OTMA PROFILE + security flag value 'N'
CHECK	OTMASE=C	/SEC OTMA CHECK
	OTMASE=P + security flag value 'N'	/SEC OTMA PROFILE +security flag value 'C'
FULL	OTMASE=C	/SEC OTMA FULL
	OTMASE=P + security flag value 'F'	/SEC OTMA PROFILE + security flag value 'F'
PROFILE	OTMASE=P	/SEC OTMA PROFILE

When PROFILE (or 'P') is used the security flag value in each message received through OTMA is checked to determine whether level of NONE, CHECK or FULL should be used for that message

OTMASE=N or /SECURE OTMA NONE

When the OTMA security level is **NONE**, RACF is **not** invoked by IMS. **OTMASE=N** and **/SECURE OTMA NONE** establish an IMS-wide security level. An IMS-wide level indicates that IMS takes the same action for each message received via OTMA. For an OTMA security level of **NONE**, this means that the IMS subsystem does not invoke RACF to perform:

- Client-bid security checking for client-bid messages received.
- IMS command authorization for command messages received via OTMA.
- IMS transaction authorization for initial input messages received via OTMA.

OTMASE=C or /SECURE OTMA CHECK

When the OTMA security level is **CHECK**, RACF **is** invoked by IMS/OTMA. Like the OTMA security level of NONE, **CHECK** (or **C**) is also an IMS-wide security level. An IMS-wide level means that IMS takes the same action for each message received via OTMA. When the OTMA security level is **CHECK**, IMS invokes RACF to perform all the following:

- Client-bid security checking for client-bid messages.
- Userid validation and ACEE creation for OTMA client applications and end user userids.
- IMS command authorization for command messages received via OTMA.
- IMS transaction authorization for transaction input messages received via OTMA.
- Authorization checking for subsequent IMS resources (such as transactions, databases, segments, fields, or other resources) requested during source transaction processing when the application issues a CHNG call, an AUTH call, and does a deferred conversational program-to-program message switch.

RACF Definitions for IMS Security

If RACF has not already been setup for IMS transactions and commands, a minimal setup must be established. The following steps are a guideline for achieving this minimal setup. In these examples, group IMSCMDS is assumed to have full authority to all IMS commands and transactions.

1. Define both IMS RACF classes as generic profile checking classes:

   ```
   TSO SETROPTS GENERIC(CIMS TIMS) GENCMD(CIMS TIMS)
   ```

2. Define a single, generic profile in both classes:

   ```
   TSO RDEFINE CIMS (*) OWNER(SYS1) UACC(NONE)
   ```

```
TSO RDEFINE TIMS (*) OWNER(SYS1) UACC(NONE)
```

3. When the profiles are defined, permit access to RACF group IMSCMDS:

```
TSO PERMIT * CLASS(CIMS) ACCESS(READ) GENERIC ID(IMSCMDS)
TSO PERMIT * CLASS(TIMS) ACCESS(READ) GENERIC ID(IMSCMDS)
```

4. After these steps have been taken, activate both classes:

   TSO SETROPTS CLASSACT(CIMS TIMS)

Additional profiles can be defined using RDEFINE to limit the authority for specific transactions or commands as needed. For additional guidance on setting up RACF, refer to the SecureWay Security Server RACF Security Administrator's Guide, SecureWay Security Server RACF Command Language Reference, and IMS/ESA Administration Guide: System supplied by IBM.

IMS OTMA Trigger Error Processing

When the Substation ES OTMA client interface receives a message from OTMA that causes an error condition, such as a buffer overflow (identified by message SXI4712E or SXI4703E), the following should be understood.

The buffer overflow occurs because either the SRB buffer size or the Substation ES communications buffer size is too small to accommodate the message. The Substation ES OTMA client returns a negative acknowledgement (NAK) to OTMA and issues an error message to the log. By returning a NAK, the message stays on the IMS OTMA queue at the top of the list, and will be processed again anytime a new trigger is written by an application in IMS.

The following are ways to resolve the situation:

- If the SRB buffer size causes the error (indicated by the SXI4712E message), then the `BUFFLEN-SRB` parameter can be changed to accommodate the size indicated in the message. If the communication buffer size causes the error, (indicated by the SXI4703E message), then the `BUFFLEN-TRANS` parameter can be changed to accommodate the size indicated in the message. To activate the changes, Substation ES must be re-cycled; doing so will enable it to handle the message with the increased size. There will be no loss of IMS queue buffers.
- Issue an IMS Dequeue command to empty the queue (all data in queue is lost). Substation ES does not have to be re-cycled.
- Use a business process to remove the first message on the queue that is giving giving the exception (the one message is lost). Substation ES does not have to be re-cycled.

Network Failures

When an ESB connection that relates to IMS is lost or broken, IMS trigger processing stops. When the ESB connection is re-established, trigger processing will be re-started. If there are trigger messages ready for delivery, they are currently not automatically re-sent. For Substation ES to process existing triggers in the queue, an additional trigger message needs to be sent, or am operational disconnect and reconnect from IMS must be done.

Exceptional Cases

This section describes some exceptional cases that you should be aware when using Substation ES.

IMS System Response and non-Reply Messages

When you are using IMS transaction method of invocation, and there is not an expected reply message, the TIBCO messaging application can be expecting to receive IMS system responses. To allow for this situation, the recipe must define the outbound conversion rule with a large enough buffer size to accommodate the IMS system responses. Alternatively, you can define an extra field and map it as a not-required field at the end of the inbound buffer.

Chapter 5 Logging, Tracing and Auditing

This chapter explains how to implement and interpret the Substation ES logging, tracing, and auditing agents.

Topics

Introduction

The Logging, Tracing and Auditing facilities are included in Substation ES to record events that occur during Substation ES execution. Although the events recorded are written to different output destinations, this guide commonly refers to the Logging, Tracing and Auditing facilities collectively as LTA Agents. The LTA agents are executed as sub-tasks within Substation ES.

The LTA Agents' main task is to provide users and administrators with a recording facility of accurate real-time information of events, audits, definitions and statistics produced by Substation ES.

Log Agent

Information recorded by the Log Agent is targeted for Substation ES users and administrators. Log entries provide information about Substation ES executed events, console interactions, statistics and messages. These messages can be informational, warnings or errors. All messages contained in the Log files are detailed in *TIBCO Substation ES Messages and Codes*. Log information can be routed to a disk file.

Trace Agent

Information recorded by the Trace Agent is targeted for TIBCO Support and development staff. The Trace file contains the same entries as the Log file with additional event detail, storage snaps, and function level tracing. None of the information written to the trace agent destination is expected to be documented or meaningful to users. Trace Information can be routed to a disk file.

Audit Agent

Information recorded by the Audit Agent is targeted for Substation ES users, security staff, and administrators. Audit entries provide information about:

- System Startup and System Initialization parameters used by Substation ES,
- Substation ES access and security validations and violations occurring during execution.

All messages contained in the Audit files are detailed in *TIBCO Substation ES Messages and Codes Guide*.

Audit message recording Agent has currently not been fully implemented and information can not be routed to a disk file.

Substation ES LTA Features

Destination

Information recorded by the LTA Agents can be routed as a formatted print file or to Disk file defined in Substation ES. Selection can be made by specifying the correct destination in the System Startup Parameters.

Formatting

When an Agent's destination is set to print (P), the information can be formatted in one of the following manners:

- Messages are written as a single line. Message entries that exceed 80 characters are truncated.
- Messages are written in full with additional identifying information, when available.
- Messages are written in full with all the detail information available to the Agent. This format is normally only used for tracing information.

Here's an example of a LTA message shown for all formats:

Format 1
```
12:54:11.4942 SXS2601I Console Command Entered 'SHOW INTF'
```

Format 2
```
12:54:11.4942 SXS2601I Console Command Entered 'SHOW INTF'
```

Format 3
```
009C 2002/02/01 12:54:11.4942 00000007 03000034 0 0
   ID5: Mod: 100  Line: 136  Function: Console_Replies
   SXS2601I Console Command Entered 'SHOW INTF'
```

Debug File

The Log and Trace LTA Agents have their own debug file where information is recorded in respect to the Agents execution. The amount of information recorded is determined by the value specified on the LOGDBLVL and TRCDBLVL keywords.

Do not change this value unless requested by a TIBCO representative. Information contained within this file is intended for TIBCO Support and development staff only.

Substation ES Disk Logging

The Substation ES Log and Trace Agents have the capability to write recorded information to disk files. If you choose to log information to disk files, some additional tasks must be performed before the files can be used and Substation ES is started.

For JES2 systems, do NOT enable the disk logging feature until after successful execution of the Installation Verification Programs (IVP) of Substation ES.

Features

LTA Disk files

Each LTA agent can have multiple disk files with a maximum of 5 per agent active in the Substation region. Disk files to be used by the LTA Agents should have a corresponding DD Name that must be specified on the `LOGDSK-DDN` or `TRCDSK-DDN` keywords.

LTA disk files must be defined and formatted before they can be used.

WARM or COLD options for LTA Disk files

Information recorded to disk files can be kept or overwritten across multiple restarts of Substation ES. This feature is available by specifying the appropriate value on the `LOGDSK-START` and `TRCDSK-START` keywords. The default is to retain information.

- The `COLD` option indicates that previously recorded information is overwritten. All disk files for the specified for a selected agent are reset to empty and existing information within these files cannot be accessed again. Information is *lost*.
- The `WARM` option indicates that when Substation ES is started, information recorded in previous executions is retained and new information is recorded following the most recent entry within the last used file. Information is retained.

Reusing LTA Disk files

The LTA agents can reuse currently full disk files without having to offload information. This feature is available by specifying the appropriate value on the `LOGDSK-WRAP` and `TRCDSK-WRAP` keywords. The keywords default value is `N` meaning *do not* reuse the disk file until the data is archived (offloaded) or reset.

- If Y is specified for the -WRAP keyword, it indicates that when all files for and Agent are full, the oldest information is overwritten. This option is recommended for trace files with a high volume of recorded information or useful when old information need not be kept or archived. Suggested value for testing and development environments.
- If N is specified for the -WRAP keyword, and a file is full, the Agent switches to the next available file. The file that is deemed full must be archived or the file reset if the file is to be reused.

If all files for an Agent are full, Substation ES suspends operations and try to reroute information to the formatted print file. If it can not reroute the recording information successfully, the applicable LTA agent is disabled. Avoid having LTA Agent files become full; archive the information from these files in a timely manner. Currently, there is NO automatic archiving available.

Information about the status of trace files on disk can be viewed by using the SHOW,TRCSTATS<,ALL> operator command.

LTA Disk file Search and Display facility

When Log and Trace information is written to disk files, recorded information can be viewed online by using Substation ES provided panels.

To access LTA display panels, execute the following:
TSO EX '<USERHLQ>.CLIST(SXGSSPNL)'

Select Option 2, LTA Search and Display Facility

File Selection Panel

```
---------------------------------- Log Viewer ---------------------------------
Command ===>

 ISPF Log:
    Project . . . . . _________
    Group . . . . . _____________________________________________
    Type  . . . . . _________

 Other VSAM Cluster Name:
    Cluster Name  . . 'TIBCO.SXS.LOG.DISKF1'


     Display Format ===> 1        (1, 2)
     Direction      ===> B        (F-Forward  B-Backward)
     Active Log?    ===> Y        (Y/N)
     Number to Read ===> 200      (Number to read initially)



                                                  VSAM  Debug ===> 0 (0 - 4)
                                                  Pgm   Debug ===> 0 (0 - 4)
 Enter END command to terminate.
```

Table 14 File Selection Panel

Field	Description
ISPF Log	Specify a log to view by either providing values for Project, Group and Type, or specifying a fully qualified cluster name in the field, Other VSAM Cluster Name. The value for field Other VSAM Cluster Name is used when non-blank.
Display Format	Format 1 is one recorded entry per line (truncated when necessary) Format 2 is a two-line display where the description is on the second line.
Direction	Forward or Backward. Backward starts with the most recently recorded entries and reads backward for the specified number of records, thus showing the most current activity.
Active Log	If Y, the log is treated as active (currently being updated by the Substation). When active, the index record is re-read for each screen refresh to obtain the most current records.
Number to Read	The number of recorded entries to display. If not specified, a default value of 200 is used.
VSAM Debug	Defines debugging levels for the VSAM access routines. Refrain from changing unless requested by TIBCO authorized personnel. Default is zero.
Pgm Debug	Defines debugging levels for the ISPF interface program. Refrain from changing unless requested by TIBCO authorized personnel. Default is zero.

LTA Multiple Entry Panel

```
Command ===>                                                  Scroll ==> CSR

Sel  Time         Type  Msg Id    RC  Rsn Message
- ------------ ---- -------- ---- ----
-------------------------------------
  17:28:41.6576  154 SXG2806I    0    0 Activated ~ Substation ES for IVP's
  17:28:41.6480  154 SXG2806I    0    0 Activated ~ Substation ES - CICS Inter
  17:28:41.6475  154 SXG2806I    0    0 Activated ~ Substation ES - Transforme
  17:28:41.6473  154 SXG2806I    0    0 Activated ~ Substation ES - Admin & Op
  17:28:41.6337  154 SXG1801I    0    0 Parameter Log closed
  17:28:41.5860  156 SXC3400I    0    0 CICSTS2G - Started CICS EXCI Session (
  17:28:41.5678  156 SXC3400I    0    0 CICSTS2G - Started CICS EXCI Session (
  17:28:41.5319  154 SXS1001I    0    0 Initialized ~ Substation ES for IVP's
  17:28:41.5311  154 SXG2801I    0    0 Initialized ~ Substation ES - CICS Int
  17:28:41.5252  154 SXC3001I    0    0 CICSTS2G - Connect IICICS to CICS Regi
  17:28:41.3869  154 SXC3000I    0    0 CICSTS2G - Connect IICICS to CICS Regi
  17:28:41.3175  154 SXG2800I    0    0 Starting ~ Substation ES - CICS Interf
  17:28:41.1610  154 SXG2801I    0    0 Initialized ~ Substation ES - Transfor
  17:28:40.9660    0 SXT5717I    0    0 Trace level 1, 10 work threads; Cfg:TI
  17:28:40.9651  154 SXG2800I    0    0 Starting ~ Substation ES - Transformer
  17:28:40.6973  154 SXG2801I    0    0 Initialized ~ Substation ES - Admin &
  17:28:40.3707  154 SXS1009I    0    0 Substation (ES) - Version 2.3.0
  17:28:39.9021  154 SXS1000I    0    0 Starting ~ TIBCO Substation (ES) for O
  17:28:39.9006  154 SXG1800I    0    0 Parameter Log Agent Starting - Logging
  17:28:39.8791  154 SXG1600I    0    0 Log Agent Starting - Logging to TIBLOG
```

Table 15 Multiple Entry Panel

Field	Description
Sel	If S is specified in the input column, a popup panel with all values related to the selected message is shown
Time	Time this message was recorded by the LTA Agent.
Type	Internal message type code.
Msg Id	Message identifier.
RC	Return code associated with the message.
Rsn	Reason code associated with the message.
Message	Initial part of the message description. The entire message is available when the popup panel is selected.

LTA Message Popup Panel

```
------------------------- Single Message Values --------------- Row 1 to 4 of 4
Command ===>

  Msg Id: SXS1000I            Union id: 0                 Stck: B724D4951AD33081
    Type: 154                     GRIN: 0                   RC: 0
    Date: 2002/02/05           Proc Id: 83886173       Reason: 0
    Time: 12:30:11.9549         Thread: 0

    Message-Dependent Values:
       Buffer length - 41
 ------------------------------------------------------------------------------
 |  No additional information
 |
 |  Message:
 |Starting TIBCO Substation (ES) for z/OS
 ****************************** Bottom of data ******************************
```

Table 16 LTA Message Popup Panel

Field	Description
Msg Id	Eight-character message identifier.
Type	Internal message type.
Date	The date this message was recorded by the LTA Agent.
Time	The time this message was recorded by the LTA Agent.
Union id	Representation of what message fields were recorded for this entry. Refer to *TIBCO Substation ES Messages and Codes* for a description.
GRIN	Internal Global Resource Identification Number.
Proc Id	Internal process identifier. Used to identify Task or sub-Task of Substation ES.
Thread	Identifies the thread of Substation ES that issued the message
Stck	Internal 64-bit Store Clock value that uniquely identifies this message.
RC	Return code associated with the message.
Reason	Reason code associated with the message.
Message	Complete message description. When necessary, multiple lines are used to display the message.

Substation ES LTA Disk File Setup

Defining the LTA Disk Files

JCL has been provided to define a default set of Substation Log and Trace files. Table 17 lists a recommended set of values used to define Substation ES Disk LTA data sets.

Table 17 Disk Files Default Values

IDCAMS Parameter	Log File Values	Trace File Values
NUMBERED	Yes	Yes
REUSE	Yes	Yes
SHR	(2,3)	(2,3)
RECSZ	(2400,2400)	(9200,9200)
RECORDS	(4000)	(3000)

The parameter NUMBERED must be specified as this designates that the file is a Relative Record data set.

The entries recorded in the LTA disk files are fixed length, therefore the average and the maximum record size on the RECSZ parameter must be equal. The minimum value to be specified for the average record size is 1048 bytes.

The value for the RECORDS parameter can be changed to suit a site's environment. The installation default creates two files each for the Log and Trace Agents.

Space usage for the default Log and Trace files is based on a 3390 model 3 drive, where the Log allocates 13 cylinders and the Trace File allocates 34 cylinders of disk storage.

When the WRAP parameter is not set on, be careful of changing the number of records to be less than the default value. Many entries are recorded and files become full very quickly when the number of records is set too low.

Initializing the LTA Agent's Disk Files

Before Substation ES can use newly defined the LTA Disk files, the files must be formatted by the Substation ES LTA Services Utility. The utility formats one file per execution. The LTA Services utility format routine creates control and summary information for internal use on the first record of each file. Additionally each record within the file is also formatted with specific header information. Sample JCL in member `SXGLINIT` has been provided to initialize the default Log and Trace disk data sets of Substation ES.

LTA Services Utility

The LTA Services Utility is provided to support Substation ES LTA Agents. This utility is a MVS batch program with the capability of formatting, archiving, copying, resetting, and printing using LTA disk files.

Features

Disk File Printing

The contents of LTA disk files can be reproduced in a formatted print file. Recorded information within the LTA disk files can first be archived then printed when required.

Copy information from the LTA Disk files

Information contained within the LTA disk file can be copied to a sequential data set. No change to the file's status indicator is performed. The copied information can be printed simultaneously.

Example Parameter:

`'-CY -F2'` (Copy and Print a LTA VSAM disk file)

Reset a LTA Disk file

The status of a LTA disk file can be reset and marked to empty without archiving the recorded information. This function should be used only when information is not to be retained.

Example Parameter:

`'-RY'` (Reset a LTA VSAM disk file)

Archiving the LTA Disk files

Information contained within the LTA disk file can be archived to a sequential data set. When archived, the file is marked as empty and can be reused by the LTA Agents. Archiving combines the copy and reset functions of the LTA services utility. Currently, there is NO automatic archiving available.

Example Parameter:

`'-IV -CY -RY'` (Archive from VSAM, Copy and Reset)

JCL Sample (SXGLINIT, SXGLUTIL)

A sample procedure and JCL have been provided to execute the LTA Services Utility. Listed is a description of each DD Name that is Utility specific.

```
//LTAINIT  PROC FILE=<USERHLQ>.LOG.DISKF1
//*
//LOGINIT  EXEC PGM=SXL3LOGS,REGION=0M,
//   PARM='-FX -IV -XY'
//STEPLIB   DD DISP=SHR,DSN=<USERHLQ>.LOAD
//SXLLOG1   DD DISP=SHR,DSN=&FILE
//TIBDEBUG  DD SYSOUT=*        DEBUG MESSAGES FROM VSAM ACCESS
//TIBPRINT  DD SYSOUT=*        FORMATTED OUTPUT
//SYSPRINT  DD SYSOUT=*
//SYSOUT    DD SYSOUT=*
//CEEDUMP   DD SYSOUT=*
//SYSUDUMP  DD SYSOUT=*
//SYSIN     DD DUMMY
//ARCHIVE   DD DISP=(,DELETE),DSN=&&ARCHIVE,UNIT=SYSDA,
//             SPACE=(TRK,(20,40)),
//             DCB=(RECFM=VB,LRECL=1048,BLKSIZE=18000)
// PEND
```

Table 18 Services Utility DDNames

Field	Description
SXLLOG1	Specifies LTA VSAM file for a Substation ES. Required for -IV operand.
SXLDEBUG	Used for Utility diagnostics.
SXLPRINT	Used when formatted printing is requested.
ARCHIVE	This DD Name must be supplied when the Copy or Archive keyword is specified. This is an output file that must have the following DCB information where RECFM=VB.

Control Parameters

The functions that the LTA Services Utility must perform are determined by the keywords and operands specified on the EXEC statement PARM parameter. Table 19 lists the supported values.

Table 19 Services Utility Control Parameters

Keyword	Operand	Description
-B	None	Backward. Access the log starting with the most current entry
-C	{N | Y, N}	Copy the records to the ARCHIVE DD Name. Default N.
-F	{1 | 1, 2, 3, X}	Format of the report. Specify X if no report is desired.
-G	{2 | 0 - 4}	Debug level for Log Services - 0 is no messages, 4 is many.
-H	0 - 4	Debug level for VSAM access. Same values as -G. Reset to zero if SXLDEBUG DD statement missing.
-I	{V | V, A}	Input to processing - VSAM(default) or Archive (print an archive file) If the input is Archive, the Copy and Reset Keywords cannot use the "Y" operand. The Backward keyword cannot also be specified.
-N	0-99999999	Number of records to read. Default is no limit.
-R	{N | Y, N}	Reset the VSAM cluster to empty. Does not rewrite the entire file; only resets the first two records. Default N.
-S	0-99999999	Number of records to skip. Default is none.
-X	{N | Y, N}	Create a log from a newly defined cluster. Must be done before other operations can be performed on the log. Default N. Must specify or default -FX -IV -RN -CN with -XY

Keyword Phrases for the LTA Services Utility

The following Keyword phrases combine operands to perform service utility common functions. These phrases are also specified on the EXEC statement PARM parameter. The following phrases are available.

Table 20 Services Utility Keyword Phrases

Keyword Phrase	Defaults to Operands	Description
TAIL	-B -N20	Print the last 20 records in the file.
PRINT	(none)	Same as allowing all defaults - Print the entire log file using FMT1.
FORMAT	-FX -IV -XY	Create a log file on a VSAM RRDS.
ARCHIVE	-FX -IV -CY -RY	Copy all the records in the log to the ARCHIVE DD and reset the log to empty. Do not print the records.

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