



**Dialogic® SS7 Protocols
ISTU/ISTR User Guide**

Document Reference U23SSS

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Revision History

Issue	Date	Description
1	08-Oct-01	Initial Issue
2	16-Jun-03	Naming changed to reference SPC14/SPCI2S and CPM8.
3	01-Oct-07	Remove reference to PCCS6 and CPM8, include non-circuit protocol configuration commands in config.txt. Add SS7HD configuration and support for SIGTRAN M2PA links

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1 Introduction

The two programs ISTU and ISTR are example applications usable with the Dialogic® IS-41 module. Together, these applications simulate the generation and acknowledgement of short messages between nodes in an IS41 system. This user guide describes the design, build and usage of these applications for developers.

The purpose of the two example applications is to show the IS-41 module in use. They are designed to offer a simple functionality while showing real examples of the interface to the IS-41 module. The applications are also useful to provide simple verification of system configuration and set-up.

This user guide is intended for users who choose to develop their own applications that will interface with and use the functionality provided by the IS41 module.

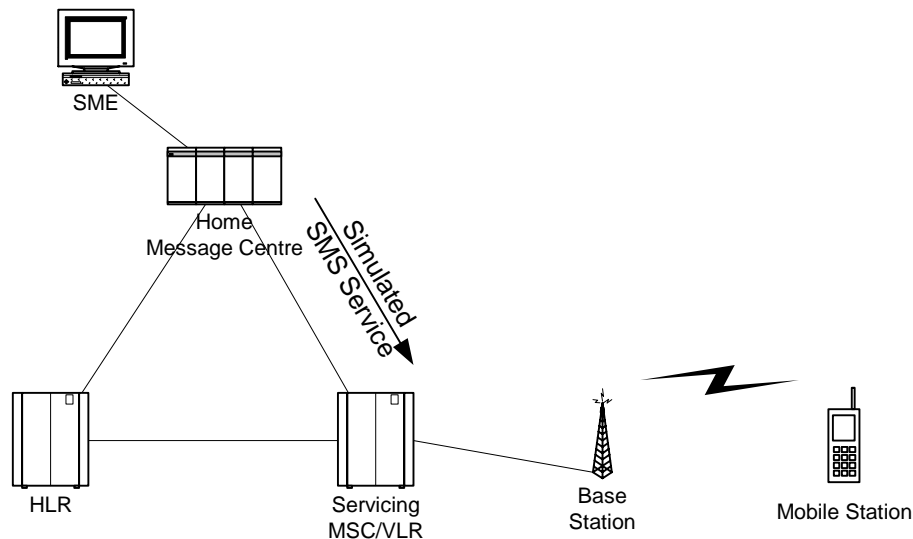


Figure 1. IS-41 Short Message Network Architecture

1.1 Software requirements

The ISTU and ISTR applications require the following software:

1. Dialogic® SS7 Development Package
2. Dialogic® User Part Development Package
3. For TDM-based configurations:
 - ss7.dc3 or ss7.dc4 codefile
 - Dialogic® MTP3, SCCP, TCAP and IS-41 host binaries, if required
4. For SIGTRAN-based configurations:
 - Dialogic® M2PA, MTP3, SCCP, TCAP and IS-41 host binaries, if required

Software can be downloaded from

<http://www.dialogic.com/support/helpweb/signaling/software3.htm>

2 Service Model

The service being simulated is a short message tele-service making use of the IS-41 short message point-to-point request and the corresponding response. The general IS-41 short message network architecture is shown in Figure 1 (page 5). The system running ISTU is simulating the Home Message Centre and will generate the short messages. ISTR runs on the simulated Servicing MSC and will respond to the short messages.

Figure 2 shows the two applications and the SS7 layers involved.

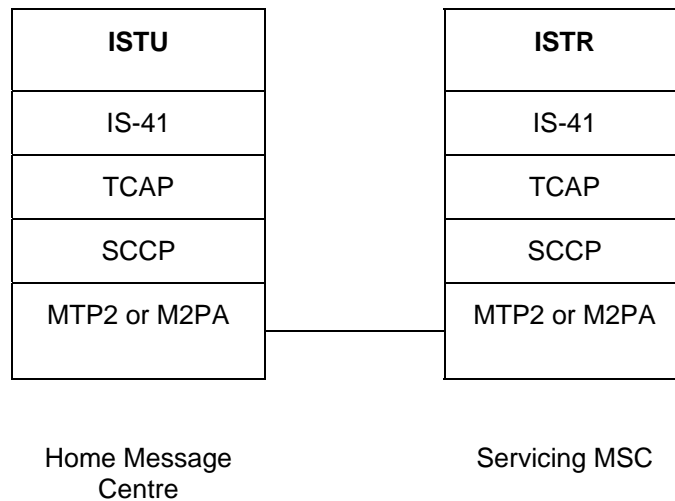


Figure 2. SS7 Layers

2.1 ISTU

ISTU is the Dialogic® IS41 Test Utility, which generates the short message dialogue to which ISTR responds. It first opens a dialogue to the remote node then sends the short message service request and finally waits for the result. Using command line options you may set the dialogue addresses, short message data fields and dialogue ids to be used. Further options allow the utility to send a single short message or multiple short messages. Full tracing of sent and received messages is also included.

2.2 ISTR

The ISTR utility responds to the ISTU generated short message requests and displays the short message data. It also allows the tracing of sent and received messages. As it replies to dialogues from the remote node it need not allocate dialogue ids itself as the Dialogic® IS-41 module will take that responsibility.

2.3 Message Sequence Chart

The following pages contain message sequence charts showing the flow for a single dialogue between ISTU and ISTR. Each chart shows the message flow between the application, IS-41, TCAP and SCCP. The programmer’s manual for each protocol module ([1], [2] and [3]) will show the meaning of each of the messages.

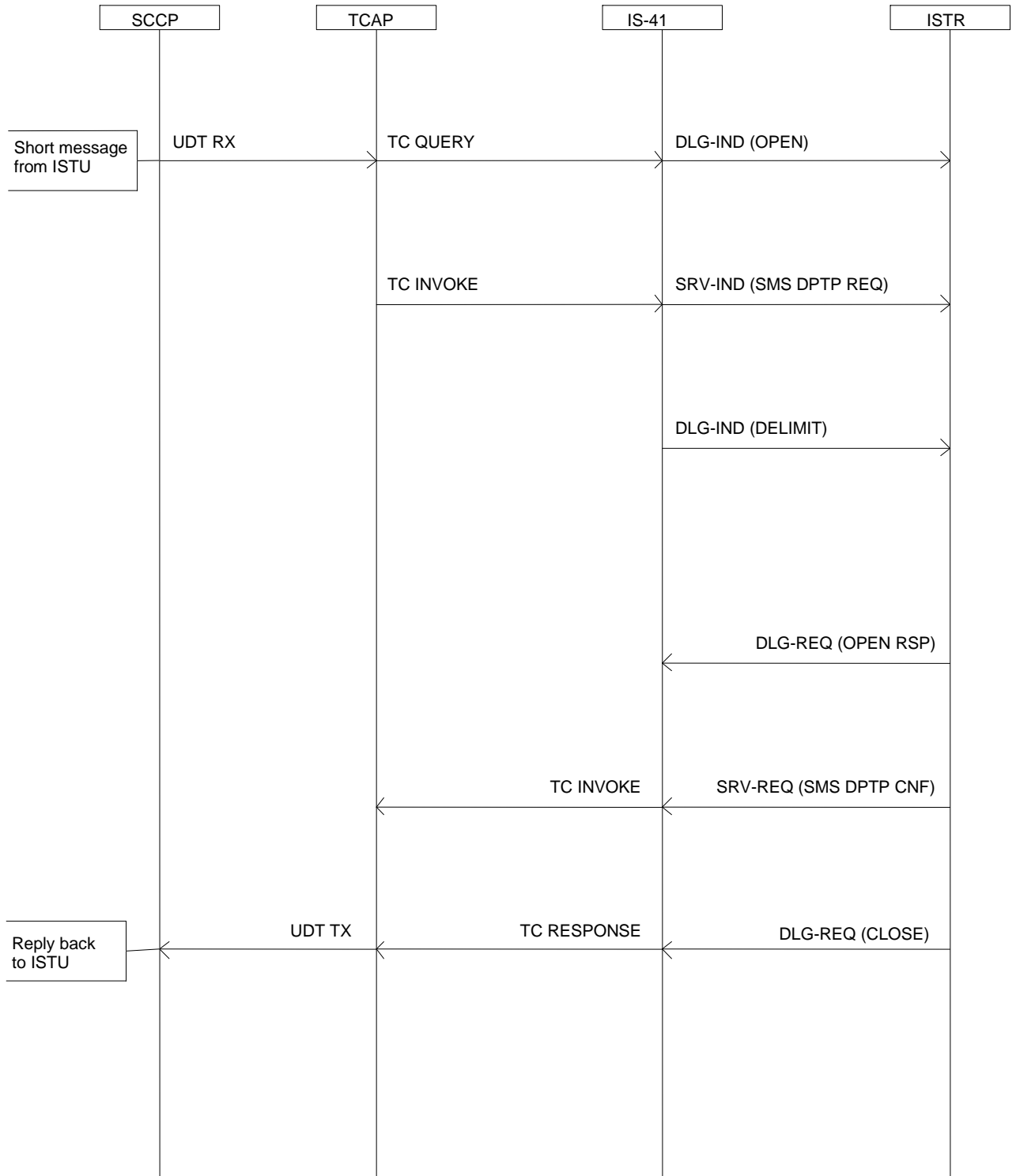


Figure 4. MSC single dialogue at ISTR node

2.4 Customizing the example applications

ISTU and ISTR are example code for development using the IS-41 module. As such, a number of simplifications and limitations are implemented.

ISTU does not try to prevent congestion on the link, so it is possible to generate more traffic than the links can handle. The lower levels of the stack provide some protection from the effect of link congestion, by simply discarding messages. Without changes, ISTU should be run at lower traffic loading levels.

ISTU does not provide support for segmentation of messages that are too long for the 'short' message service.

ISTR assumes the use of ISTU as the dialogue generating application and supports only the functionality required to reply to dialogues generated by it.

The developer should be aware of the limited nature of the example applications when making use of the source code for building their own application.

2.5 ISTU source code

The ISTU program can be found in the *Dialogic® User Part Development Package*. The following table describes the files that make up the ISTU application:

File	Notes
istu.h	Definitions of constants, macros and procedure prototypes
istu.c	Main control loop and processing functions
istumain.c	Console command line option support and initial start-up function.
istu_fmt.c	Functions used in the format and recovery of messages
istu_fmt.c	Functions used in the format and recovery of messages

2.6 ISTR source code

The ISTR program can be found in the *Dialogic® User Part Development Package*. The following table describes the files that make up the ISTR application:

File	Notes
istr.c	Definitions of constants, macros and procedure prototypes
istrmain.c	Console command line option support and initial start-up function.

3 Building the example applications

Example make-files for the following operating systems are provided and identified by a unique suffix:

Operating system	Suffix
Generic UNIX (Solaris, Linux)	.mak
Windows®	.mnt

A single definitions file (one for each operating system) which contains the definitions relating to the user's own development environment is supplied in the *Dialogic® User Part Development Package*. The definitions files are as follows, and the appropriate file should be used depending on the operating system:

makdefs.mak(Linux)

makdefs_sol.mak(Solaris)

makdefs.mnt(Windows®)

For the Windows® operating system, a dynamically linked GCT library that allows the application to link to the GCT functions is supplied in the *Dialogic® SS7 Development Package* as follows:

gctlib.dll (Visual C++® compiler)

For 'UNIX', a GCT shared object is supplied in the *Dialogic® SS7 Development Package*

e.g.libgctlib.so.1.0.0(Linux & Solaris)

The source code for the example program should be compiled and linked with the appropriate library for the operating system in use.

3.1 Host software directory structure

To build the ISTU/ISTR applications, the user should first ensure that the required files are copied into the correct directories as follows:

1. Copy either the zip or tar file from the *Dialogic® User Part Development Package* to the *Dialogic® SS7 Development Package* directory and decompress using the appropriate tool. The choice of the zip or tar file is up to the user; both will create the UPD directory structure shown in the table below. Note that the table below shows files required by the ISTU/ISTR programs only.
2. The C header files in the INC directory shown in the table below The C header files in the INC directory shown in the table below list the header files required by the ISTU/ISTR program.

The following table lists the directory structure and files required to build the INTU programs supplied on the *Dialogic® User Part Development Package*.

Root directory				
Septel				
INC	UPD			
is41_inc.h system.h msg.h sysgct.h ss7_inc.h pack.h strtonum.h asciibin.h	BACKUP_WIN BACKUP_LNX BACKUP_SOL	ISTU istu.mnt istu.mak istu_sol.mak istu.c istumain.c istu_fmt.c istu.h istu_iss.txt	ISTR istr.mnt istr.mak istr_sol.mak istr.c istrmain.c	makdefs.mnt makdefs.mak makdefs_sol. mak makeall.bat makeall makeall_sol

1.2 Building ISTU and ISTR

It is assumed that the UPD is extracted in the *Dialogic® SS7 Development Package* directory i.e. for Windows® C:\Septel as shown above.

A script is provided in the BIN\SRC directory to build and copy all of the example programs into the UPD/BIN directory. To run this script, change to the BIN\SRC directory and type one of the following commands depending on the operating system:

makeall(Linux)

makeall_sol(Solaris)

makeall.bat(Windows®)

A pre-built copy of the ISTU and ISTR applications, for each operating system, can be located within the backup subdirectories in the BIN directory.

To build the ISTU program, change to the SRC\ISTU directory and type one of the following commands depending on the operating system:

make -f istu.mak

make -f istu_sol.mak

nmake /f istu.mnt

To build the ISTR program, change to the SRC\ISTR directory and type one of the following commands depending on the operating system:

```
make -f istr.mak
```

```
make -f istr_sol.mak
```

```
nmake /f istr.mnt
```

4 Configuration

The two ends of the system need to be configured before the ISTU or ISTR applications may be run. Example configuration files are provided in the *Dialogic® User Part Development Package* and after installation will be stored in the directories as shown in the following table:

Root directory	
RUN	
CONFIG	
ISTU	ISTR
config.txt	config.txt
system.txt	system.txt
[istucfg.ms7]	[istucfg.ms7]

The configuration files in the ISTU and ISTR should be copied to the appropriate nodes at each end of the link. Refer to the appendices for further information.

4.1 System Configuration

The GCT environment is configured using the `gctload` program and the `system.txt` file. The basic board configuration along with the Dialogic® MTP, SCCP, TCAP and IS-41 modules are configured is achieved by using the `config.txt` file.

4.1.1 SPCI2S, SPCI4 and SS7HD

For TDM based configurations, example board based configuration files are provided in Appendix A for ISTU and ISTR.

When running ISTU/ISTR on a Windows® host system using an SPCI4 board with the MTP3, SCCP, TCAP and IS-41 modules running on the host, the example configuration files provided in Appendix A may be used without any modification.

Configuration details for other board types are also provided for reference.

4.1.2 SS7G2x SIU

System and protocol information is configured using the SIU management module and commands in the `config.txt` and `system.txt` file. Further information on this can be obtained in the SIU user manual [5].

Note: These files are not contained in the User Part Development Package.

1.2.1 SIGTRAN M2PA

It is also possible to run the ISTU and ISTR applications from 2 hosts connected in back-to-back with SIGTRAN M2PA links. Configuration files for such systems are contained in Appendix C. When running ISTU and ISTR on a Windows® host system using Dialogic® M2PA, MTP3, SCCP, TCAP and IS41 host binaries running on the host, the provided configuration files may be used without modification.

4.2 Protocol Configuration

The example application files given in the appendices will perform the appropriate protocol configuration shown below. If the user wishes to better understand or alter the configuration given, note the following sections.

Before configuring the protocol modules, determine the following information relative to each network entity:

- Local point code
- Local sub-system number
- Remote point code and
- Remote sub-system number

4.2.1 SCCP

The local point code and ANSI configuration options are contained in the main SCCP configuration message and these should be set to the appropriate values given in the programmer's manual [3]. In addition, configuration messages are required for the local subsystem, remote point code and remote sub-system.

4.2.2 TCAP

TCAP should be configured for ANSI operation in the flags parameter of the TCAP configuration message (further details in the programmer's manual [2]). The dialogue id ranges should be set to allow the appropriate number of ids split between incoming and outgoing dialogues. Some applications may require initiation of dialogues in one direction only.

4.2.3 IS-41

The TCAP dialogue base id and number values should be set to match those given in the TCAP configuration module. The user dialogue values are a separate independent range from the TCAP dialogue ids but will need to be similarly dimensioned, e.g. if 16 incoming dialogue ids are configured in IS-41 then TCAP must also support at least 16 incoming dialogue ids.

5 Running the ISTU and ISTR application

The default mode of operation uses only one dialogue at a time but will work through a range of dialogue ids for each new dialogue.

5.1 ISTU Command Line Arguments

The module takes a number of run time options, which are summarized below. These include options for tracing the program as it progresses.

Option	Default	Notes
-m	0x2d	ISTU module Id
-u	0x25	IS-41 module id
-b	0	Base incoming dialogue id
-n	0x400	Number of dialogue ids to use
-r	0x800	Number of dialogues in run
-x	0x01	Max active dialogues
-g	-	Home MC address
-a	-	Serving MSC address
-i	-	Mobile identity number
-d	-	Inter MSC circuit identity
-t	-	SMS teleservice id
-s	-	Appropriately formatted Bearer Data
-h, -?	-	Displays help information
-o	0x001f	Options Add together required values for tracing options (see section 5.1.1 ISTU Display Options).

Example:

```
istu -g430c010000 -a430a020000 -i0123456789 -d0102 -t0203 -s9876543210
```

The above example will send a short message from a Home Message Centre (SSN 0xc, PC 1) to a Servicing Mobile Switching Centre (SSN 0xa, PC 2). In this example the mobile identity number is 0123456789. The Inter MSC circuit identity, Teleservice Id and short message bearer data are all given arbitrary values.

5.1.1 ISTU Display Options

Tracing option	Value	Notes
ISTU_TRACE_TX	0x0001	Trace transmitted dialogue messages
ISTU_TRACE_RX	0x0002	Trace received dialogue messages
ISTU_TRACE_ERROR	0x0004	Trace error messages
ISTU_TRACE_BEARER_DATA	0x0008	Trace received service indication messages
ISTU_TRACE_DISPLAY	0x0010	Include dialogue parameters in trace

5.2 ISTR Command Line Arguments

The module takes a number of run time options, which are summarized below. These include options for tracing the program as it progresses.

Option	Default	Notes
-m	0x2d	ISTR module Id
-u	0x25	IS-41 module id
-h, -?		Displays help information
-b	0x8000	Base IS-41 dialogue id
-n	0x0400	Number of IS-41 dialogue ids to use
-o	0x001f	Options Add together required values for tracing options (see section 5.2.1 ISTR Display Options).

Example:

```
istr -o0xf
```

The above example will use the default module ids and a reduced set of tracing options (ISTR_TRACE_DISPLAY not selected).

5.2.1 ISTR Display Options

Tracing option	Value	Notes
ISTR_TRACE_TX	0x0001	Trace transmitted dialogue messages
ISTR_TRACE_RX	0x0002	Trace received dialogue messages
ISTR_TRACE_ERROR	0x0004	Trace error messages
ISTR_TRACE_BEARER_DATA	0x0008	Trace received service indication messages
ISTR_TRACE_DISPLAY	0x0010	Include dialogue parameters in trace

6 References

- [1] U17SSS, Dialogic® IS41 Programmer's Manual
- [2] U06SSS, Dialogic® TCAP Programmer's Manual
- [3] U05SSS, Dialogic® SCCP Programmer's Manual
- [4] U10SSS, Dialogic® Software Environment Programmer's Manual
- [5] 05-2302, Dialogic® SS7G2x SIU Mode User Manual
- [6] 05-2063, Dialogic® SS7HD Programmer's Manual
- [7] ANSI/TIA/EIA-41D-1997 Cellular Radiotelecommunications Intersystem Operations
- [8] U04STN, Dialogic® Programmer's Manual for Sigtran Host Software
- [9] U03HSP, Programmer's Manual for SPCI2S, SPCI4S and CPM8

This guide and the IS41 manual use the term 'IS-41' although for Issue D the correct name for the specification is ANSI/TIA/EIA-41-D. The current issue of the IS-41 module supports the standard to this revision [5].

Updates to the documentation are available on the Dialogic web site at <http://www.dialogic.com/support/helpweb/signaling/default.htm>

7 Abbreviations

HLR	Home Location Register
IS-41	Interim ANSI Standard No. 41 (Issue D is also known as ANSI/TIA/EIA-41-D)
MC	Message Centre
MSC	Mobile Switching Centre
PC	Point Code
Rx	Received
SME	Short Message Entity
SMS	Short Message Service
SSN	Sub-System Number
Tx	Transmitted
UDT	Unit Data Message
VLR	Visitor Location Register

Appendix A - Example configuration files with TDM MTP2 links

Example configuration files for use with ISTU on a Windows NT® host system. The IS-41, TCAP and SCCP modules are running on the host. ISTU is running as module id 0x2d and sub-system 0xc. The local point code is 1. ISTR is running on the remote point code 2 as sub-system 0xa. TCAP and SCCP are configured to run using ANSI primitives and 24 bit point codes.

One system.txt file and two config.txt files are provided.

Example configuration

Operating system: Windows®

Board type: SPCI4

Local point code: 1 ((ISTU))

Remote point code: 2 (ISTR)

ISTU module ID: 0x2d (remote point code)

ISTR module ID: 0x2d (remote point code)

Modules running on the host: MTP3, SCCP(ANSI), TCAP(ANSI), and IS-41



Figure 5. Example configuration
ISTU
Point Code 1
subsystem 0xc

ISTR
Point Code 2
subsystem 0xa

A.1 system.txt

```

*****
* Example system.txt.
* Edit this file to reflect your configuration.
*****
*
* Essential modules running on the host:
*
LOCAL          0x20          * ssd - Board Interface task
LOCAL          0x00          * Timer Task
*
* Optional modules running on the host:
*
LOCAL          0xef          * s7_log - logs messages
LOCAL          0xcf          * s7_mgt - Management/config task
LOCAL          0x33          * SCCP
LOCAL          0x14          * TCAP module
LOCAL          0x25          * IS41
LOCAL          0x2d          * ISTU
*
* Modules running on the board (all redirected via ssd):
*
*REDIRECT      0x14      0x20      * TCAP module
*REDIRECT      0x33      0x20      * SCCP module
REDIRECT       0x22      0x20      * MTP3 module
REDIRECT       0x71      0x20      * MTP2 module
REDIRECT       0x10      0x20      * MVIP/SCbus/Clocking control module
REDIRECT       0x8e      0x20      * On-board management task
*
* Redirection of status:
*
REDIRECT       0xdf      0xef      * LIU/MTP2 status messages to s7_log
REDIRECT       0x9e      0xef
*
* Now start-up all local tasks:
*
FORK_PROCESS   ..\..\..\..\ssd.exe -d
FORK_PROCESS   ..\..\..\..\ssd_poll.exe
FORK_PROCESS   ..\..\..\..\tim_nt.exe
FORK_PROCESS   ..\..\..\..\tick_nt.exe
FORK_PROCESS   ..\..\..\..\s7_mgt.exe
FORK_PROCESS   ..\..\..\..\s7_log.exe
FORK_PROCESS   ..\..\..\..\scp_nt.exe
FORK_PROCESS   ..\..\..\..\tcp_nt.exe
FORK_PROCESS   ..\..\..\..\is41_nt.exe

```

A.1.1 Using different operating systems and board configurations

The following subsections provide information regarding the system.txt file if using different operating systems or board based configurations.

A.1.2 Running ISTU/ISTR with SS7HD

If using SSHD, the following lines:

```
REDIRECT      0x71      0x20      * MTP2 module
              FORK_PROCESS  SSDS.EXE  -d
```

should be replaced by:

```
REDIRECT      0x81      0x20      * MTP2 module_id for SP0
REDIRECT      0x91      0x20      * MTP2 module_id for SP1
REDIRECT      0xe1      0x20      * MTP2 module_id for SP2
REDIRECT      0xf1      0x20      * MTP2 module_id for SP3
              FORK_PROCESS  SSDH.EXE  -d
```

Refer [9] and [6] for further information.

A.1.2.1 Running ISTU/ISTR with SS7G2x

If using the SIU, additional commands required by the SIU will need to be included. Therefore, the example system.txt provided in this appendix should not be used. Refer to [5] for further information.

A.1.2.2 Running IS41/TCAP/SCCP on the board

If using a board license button so that the IS41, TCAP, SCCP and MTP3 modules are run on the board instead of the host, remove the `FORK_PROCESS` command for the IS41 host binary, the `LOCAL` declaration should be removed for the IS41P module and a `REDIRECT` command (which redirects messages for that module to the board) should be added. Similar changes should also be made for the MTP3, SCCP and TCAP modules.

Refer to [1], [2] and [3] as appropriate.

A.1.2.3 Running ISTU/ISTR with other operating systems

If using operating systems other than Windows®, the names of some of the executable files used in the `FORK_PROCESS` commands need to be changed.

Refer to [9] and [6] as appropriate.

A.2 config.txt

```
*****
* Example config.txt.
* Edit this file to reflect your configuration.
*****
*
* Configure individual boards:
* SEPTELPCI <board_id> <flags> <code_file>
SEPTELPCI_BOARD 0 0x0043 ss7.dc3 MTP
*
*
* Configure individual E1/T1 interfaces:
* LIU_CONFIG <board_id> <liu_id> <liu_type> <line_code> <frame_format>
<crc_mode>
LIU_CONFIG 0 0 5 1 1 1
*
*
* MTP Parameters:
* MTP_CONFIG <reserved> <reserved> <options>
MTP_CONFIG 0 0 0x0f00
*
* Define linksets:
* MTP_LINKSET <linkset_id> <adjacent_spc> <num_links> <flags> <local_spc>
<ssf>
MTP_LINKSET 0 2 3 0x0000 1 0x0b
*
* Define signaling links:
* MTP_LINK <link_id> <linkset_id> <link_ref> <slc> <board_id> <blink>
<stream> <timeslot> <flags>
MTP_LINK 0 0 0 0 0 0 0x10 0x01 0x0006
*
* Define a route for each remote signaling point:
* MTP_ROUTE <dpc> <linkset_id> <user_part_mask>
MTP_ROUTE 2 0 0x0008
*
*
* Define any user provided Layer 4 protocol:
* MTP_USER_PART <service_ind> <module_id>
MTP_USER_PART 0x03 0x33
*
*
```

A.2.1 Using different operating systems and board configurations

The following subsections provide information regarding the config.txt file if using different operating systems or board based configurations.

A.2.1.1 Running ISTU/ISTR with SS7HDP

If using SS7HDP boards, the SEPTTELPCI_BOARD command should be replaced with the following:

```
SS7_BOARD 0 SS7HDP 0x0003 ss7.dc4 MTP2
```

Refer to [9] and [6] for further information.

A.2.1.2 Running IS41/TCAP/SCCP on the board

When using a license button so that the IS41, TCAP, SCCP and MTP modules run on the board instead of the host:

- For SPCI2S and SPCI4:
the <run_mode> field in the SEPTTELPCI_BOARD command should be set to IS41
- For SS7HDP:
the <run_mode> field in the SS7_BOARD command should be set to IS41

Refer to [9] and [6] and as appropriate.

A.2.1.3 Running ISTU/ISTR with the SIU

If using the SIU, additional commands required by the SIU will need to be included. Therefore, the example config.txt provided in this appendix should not be used.

Refer to [5] for further information.

A.2.1.4 Running ISTU/ISTR with other operating systems

There are no additional commands specific to various operating systems.

Refer to [9] and [6] as appropriate.

Appendix B - ISTR configuration files

Example configuration files for use with ISTR on a Windows NT® host system. The IS-41, TCAP and SCCP modules are running on the host. ISTR is running as module id 0x2d and sub-system 0xa. The local point code is 2. ISTU is running on the remote point code 1 as sub-system 0xc. TCAP and SCCP are configured to run using ANSI primitives and 24 bit point codes.

A.4 system.txt

```
*****
* Example system.txt.
* Edit this file to reflect your configuration.
*****
*
* Essential modules running on the host:
*
LOCAL          0x20          * ssd - Board Interface task
LOCAL          0x00          * Timer Task
*
* Optional modules running on the host:
*
LOCAL          0xef          * s7_log - logs messages
LOCAL          0xcf          * s7_mgt - Management/config task

LOCAL          0x22          * MTP3 module
LOCAL          0x33          * SCCP
LOCAL          0x14          * TCAP module
LOCAL          0x25          * IS41
LOCAL          0x2d          * ISTR
*
* Modules running on the board (all redirected via ssd):
*
*REDIRECT      0x14      0x20      * TCAP module
*REDIRECT      0x33      0x20      * SCCP module
REDIRECT       0x22      0x20      * MTP3 module
REDIRECT       0x71      0x20      * MTP2 module
REDIRECT       0x10      0x20      * MVIP/SCbus/Clocking control module
REDIRECT       0x8e      0x20      * On-board management task
*
* Redirection of status:
*
REDIRECT       0xdf      0xef      * LIU/MTP2 status messages to s7_log
REDIRECT       0x9e      0xef
*
* Now start-up all local tasks:
*
FORK_PROCESS   ..\..\..\..\ssds.exe -d
FORK_PROCESS   ..\..\..\..\tim_nt.exe
FORK_PROCESS   ..\..\..\..\tick_nt.exe
FORK_PROCESS   ..\..\..\..\s7_mgt.exe
FORK_PROCESS   ..\..\..\..\s7_log.exe
FORK_PROCESS   ..\..\..\..\scp_nt.exe
FORK_PROCESS   ..\..\..\..\tcp_nt.exe
FORK_PROCESS   ..\..\..\..\is41_nt.exe
```

A.5 config.txt

```

*****
* Example config.txt.
* Edit this file to reflect your configuration.
*****
*
* Configure individual boards:
*
* SEPTTELCPI_BOARD <board_id> <flags> <code_file>
SEPTTELCPI_BOARD 0 0x0043 ss7.dc3 MTP
*
*
* Configure individual E1/T1 interfaces:
* LIU_CONFIG <board_id> <liu_id> <liu_type> <line_code> <frame_format>
<crc_mode>
LIU_CONFIG 0 0 5 1 1 1
*
*
* MTP Parameters:
* MTP_CONFIG <reserved> <reserved> <options>
MTP_CONFIG 0 0 0x0f00
*
* Define linksets:
* MTP_LINKSET <linkset_id> <adjacent_spc> <num_links> <flags> <local_spc>
<ssf>
MTP_LINKSET 0 1 3 0x0000 2 0x0b
*
* Define signaling links:
* MTP_LINK <link_id> <linkset_id> <link_ref> <slc> <board_id> <blink>
<stream> <timeslot> <flags>
* (Note: PCI boards the first LIU port is stream=0)
MTP_LINK 0 0 0 0 0 0 0x10 0x01 0x0006
*
* Define a route for each remote signaling point:
* MTP_ROUTE <dpc> <linkset_id> <user_part_mask>
MTP_ROUTE 1 0 0x0008
*
*
* Define any user provided Layer 4 protocol:
* MTP_USER_PART <service_ind> <module_id>
MTP_USER_PART 0x03 0x33
*
*

```


Appendix C - Example ISTU configuration files using SIGTRAN M2PA

Example configuration files for use with ISTU on a Windows NT[®] host system using SIGTRAN M2PA links. The IS-41, TCAP and SCCP modules are running on the host. ISTU is running as module id 0x2d and sub-system 0xc. The local point code is 1. ISTR is running on the remote point code 2 as sub-system 0xa. TCAP and SCCP are configured to run using ANSI primitives and 24 bit point codes. One system.txt file and two config.txt files are provided.

Example configuration

Operating system: Windows[®]

Link type: M2PA

Local point code: 1 ((ISTU))

Remote point code: 2 (ISTR)

ISTR module ID: 0x2d (remote point code)

ISTU module ID: 0x2d (remote point code)

Modules running on the host: M2PA, MTP3, SCCP(ANSI), TCAP(ANSI),
and IS-41

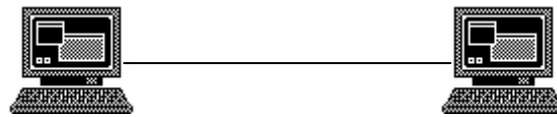


Figure 6. Example configuration

A.7 system.txt

```

*****
* Example system.txt.
* Edit this file to reflect your configuration.
*****
*
* Essential modules running on the host:
*
LOCAL          0x20          * ssd - Board Interface task
LOCAL          0x00          * Timer Task
*
* Optional modules running on the host:
*
LOCAL          0xef          * s7_log - logs messages
LOCAL          0xcf          * s7_mgt - Management/config task
LOCAL          0xc2          * mbm - Management task
LOCAL          0xd0          * SCTPD module
LOCAL          0xd1          * SCTP module
LOCAL          0xc1          * M2PA module
LOCAL          0x33          * SCCP
LOCAL          0x14          * TCAP module
LOCAL          0x25          * IS41
LOCAL          0x22          * MTP3
LOCAL          0x2d          * ISTU
*
* Modules running on the board (all redirected via ssd):
*
*REDIRECT      0x14      0x20      * TCAP module
*REDIRECT      0x33      0x20      * SCCP module
*REDIRECT      0x22      0x20      * MTP3 module
*REDIRECT      0x71      0x20      * MTP2 module
REDIRECT       0x10      0x20      * MVIP/SCbus/Clocking control module
REDIRECT       0x8e      0x20      * On-board management task
*
* Redirection of status:
*
REDIRECT       0xdf      0xef      * LIU/MTP2 status messages to s7_log
REDIRECT       0x9e      0xef
*
* Now start-up all local tasks:
*
FORK_PROCESS   ..\..\..\..\sctpd.exe
FORK_PROCESS   ..\..\..\..\sctp.exe
FORK_PROCESS   ..\..\..\..\m2pa_nt.exe -t
FORK_PROCESS   ..\..\..\..\mtp_nt.exe -t
FORK_PROCESS   ..\..\..\..\mbm.exe -d
FORK_PROCESS   ..\..\..\..\tim_nt.exe
FORK_PROCESS   ..\..\..\..\tick_nt.exe
FORK_PROCESS   ..\..\..\..\s7_mgt.exe
FORK_PROCESS   ..\..\..\..\s7_log.exe
FORK_PROCESS   ..\..\..\..\scp_nt.exe -t
FORK_PROCESS   ..\..\..\..\tcp_nt.exe -t
FORK_PROCESS   ..\..\..\..\is41_nt.exe -t
*

```

A.8 config.txt

```
*****
* Example config.txt.
* Edit this file to reflect your configuration.
*****
*
CNSYS:IPADDR=192.168.0.1,per=0;
*
SNSLI:SNLINK=1,IPADDR=192.168.0.2,SNEND=s,SNTYPE=M2PA,M2PA=1,PPORT=3565;
*
* MTP Parameters:
* MTP_CONFIG <reserved> <reserved> <options>
MTP_CONFIG 0 0 0x0f00
*
* Define linksets:
* MTP_LINKSET <linkset_id> <adjacent_spc> <num_links> <flags> <local_spc>
<ssf>
MTP_LINKSET 0 2 3 0x0000 1 0x0b
*
* Define signaling links:
* MTP_LINK <link_id> <linkset_id> <link_ref> <slc> <board_id> <blink>
<stream> <timeslot> <flags>
MTP_LINK 0 0 0 0 0 0 0x10 0x01 0x0006
*
* Define a route for each remote signaling point:
* MTP_ROUTE <dpc> <linkset_id> <user_part_mask>
MTP_ROUTE 2 0 0x0008
*
*
* Define any user provided Layer 4 protocol:
* MTP_USER_PART <service_ind> <module_id>
* MTP_USER_PART 0x03 0x33
*
*****
*
* SCCP Parameters :
* SCCP_CONFIG <local_pc> <ssf> <options>
*
SCCP_CONFIG 2 0xb 0x0ff2
*
* Define SCCP Remote signalling points :
* SCCP_RSP <spc> <rsp_flags>
*
SCCP_RSP 1 0x00
*
* Define all local sub-systems :
* SCCP_LSS <ssn> <module_id> <lss_flags>
*
SCCP_LSS 0xa 0x2d 0x0 IS41
*
*
* Define all remote sub-systems :
* SCCP_RSS <spc> <ssn> <rss_flags>
*
SCCP_RSS 1 0xc 0x0
*
* Define all local sub-systems that require notification of
* changes in state of other signalling points or sub-systems :
* SCCP_CONC_LSS <local_ssn> RSP <remote_spc>
```

```
*   SCCP_CONC_LSS <local_ssn> RSS <remote_spc> <remote_ssn>
*
*SCCP_CONC_LSS 0xa RSP 1
*SCCP_CONC_LSS 0xa RSS 1 0xc
*
*   Define all remote signalling points that require notification
*   of change in state of local sub-systems :
*   SCCP_CONC_RSP <remote_spc> LSS <local_ssn>
*
*SCCP_CONC_RSP 1 LSS 0xa
*
*   Configure TCAP
*   TCAP_CONFIG <base_ogdlg_id> <nod_dialogues> <bic_dlg_id>
<nic_dialogues> <options> <dlg_hunt>
*   TCAP_TRACE <op_evt_mask> <ip_evt_mask> <mng_evt_mask>
*
TCAP_CONFIG 0x0000 1024 0x8000 1024 0x0002 0x00
*
*   Optionally configure a TCAP dialogue group (for each host)
*   TCAP_CFG_DGRP <gid> <base_ogdlg_id> <nod_dialogues> <bic_dlg_id>
<nic_dialogues> <options> <host_id>
*
*TCAP_CFG_DGRP 0 0x0000 1024 0x8000 1024 0x0000 0x00
*
*
*   IN-41 parameters
*
*   IS-41 Trace
IS41_TRACE 0x0000000f 0x0000000f 0x0000007f
*
*   Configure connection of bearer channels through the SIU.
*   STREAM_XCON <bpos> <stream_a> <stream_b> <mode> <tmask> <pattern>
*
*STREAM_XCON 7 16 17 3 0xffffeffe 0x00
*STREAM_XCON 8 16 17 3 0xffffeffe 0x00
*
* End of file
```

Appendix D - SIU Configuration

A.9 Config.txt for ISTU

```

*****
* Example system.txt.
* Edit this file to reflect your configuration.
*****
*
* SIU commands :
* Set the SIU instance. Set to SIUA for standalone, SIUA or SIUB for dual
operation.
* SIU_INSTANCE <instance_token> = SIUA | SIUB
*
SIU_INSTANCE SIUA
*
* Define the network address of the partner SIU (dual operation only) :
* SIU_REM_ADDR <remote_address>
*
*SIU_REM_ADDR 193.195.185.251
*
* Define the number of hosts that this SIU will connect to :
* SIU_HOSTS <num_hosts>
*
SIU_HOSTS 4
*
* Set physical Interface Parameters :
* LIU_CONFIG <bpos> <liu_id> <liu_type> <line_code> <frame_format>
<crc_mode>
*
SEPTELCP_BOARD 0 0x0043 ss7.dc3 IS41
*
*
* Configure individual E1/T1 interfaces:
* LIU_CONFIG <board_id> <liu_id> <liu_type> <line_code> <frame_format>
<crc_mode>
LIU_CONFIG 0 0 5 1 1 1
*
* MTP Parameters :
* MTP_CONFIG 0 0 <options>
*
MTP_CONFIG 1 0xb 0x0f00
*
* Define linksets :
* MTP_LINKSET <linkset_id> <adjacent_spc> <num_links> <flags> <local_spc>
<ssf>
*
MTP_LINKSET 0 2 2 0x0000 1 0xb
*
* Define signalling links :
* MTP_LINK <link_id> <linkset_id> <link_ref> <slc> <bpos> <blink>
<stream> <timeslot> <flags>
*
MTP_LINK 0 0 0 0 4 0 0x10 0x01 0x06
*
* Define a route for each remote signalling point :
* MTP_ROUTE <dpc> <linkset_id> <user_part_mask>
*
MTP_ROUTE 2 0 0x0008
*
*MTP_TRACE 0x21 0x3 0x0001ffff
*
*****

```

```

*
*
*   SCCP Parameters :
*   SCCP_CONFIG <local_pc> <ssf> <options>
*
SCCP_CONFIG 1 0xb 0x0ff2
*
*   Define SCCP Remote signalling points :
*   SCCP_RSP <spc> <rsp_flags>
*
SCCP_RSP 2 0x00
*
*   Define all local sub-systems :
*   SCCP_LSS <ssn> <module_id> <lss_flags>
*
SCCP_LSS 0xc 0x2d 0x0 IS41
*
*
*   Define all remote sub-systems :
*   SCCP_RSS <spc> <ssn> <rss_flags>
*
SCCP_RSS 2 0xa 0x0
*
*   Define all local sub-systems that require notification of
*   changes in state of other signalling points or sub-systems :
*   SCCP_CONC_LSS <local_ssn> RSP <remote_spc>
*   SCCP_CONC_LSS <local_ssn> RSS <remote_spc> <remote_ssn>
*
*SCCP_CONC_LSS 0xc RSP 2
*SCCP_CONC_LSS 0xc RSS 2 0xa
*
*   Define all remote signalling points that require notification
*   of change in state of local sub-systems :
*   SCCP_CONC_RSP <remote_spc> LSS <local_ssn>
*
*SCCP_CONC_RSP 1 LSS 0xc
*
*   Configure TCAP
*   TCAP_CONFIG <base_ogdlg_id> <nod_dialogues> <bic_dlg_id>
<nic_dialogues> <options> <dlg_hunt>
*   TCAP_TRACE <op_evt_mask> <ip_evt_mask> <mng_evt_mask>
*
TCAP_CONFIG 0x0000 1024 0x8000 1024 0x0002 0x00
*
*   Optionally configure a TCAP dialogue group (for each host)
*   TCAP_CFG_DGRP <gid> <base_ogdlg_id> <nod_dialogues> <bic_dlg_id>
<nic_dialogues> <options> <host_id>
*
*TCAP_CFG_DGRP 0 0x0000 1024 0x8000 1024 0x0000 0x00
*
*
*   IN-41 parameters
*
*   IS-41 Trace
IS41_TRACE 0x0000000f 0x0000000f 0x00000007f
*
*   Configure connection of bearer channels through the SIU.
*   STREAM_XCON <bpos> <stream_a> <stream_b> <mode> <tmask> <pattern>
*
*STREAM_XCON 7 16 17 3 0xffffefffe 0x00
*STREAM_XCON 8 16 17 3 0xffffefffe 0x00
*
* End of file

```

A.10 Config.txt for ISTR

```

*****
* Example config.txt.
* Edit this file to reflect your configuration.
*****
*
* SIU commands :
* Set the SIU instance. Set to SIUA for standalone, SIUA or SIUB for dual
operation.
* SIU_INSTANCE <instance_token> = SIUA | SIUB
*
SIU_INSTANCE SIUA
*
* Define the network address of the partner SIU (dual operation only) :
* SIU_REM_ADDR <remote_address>
*
*SIU_REM_ADDR 193.195.185.251
*
* Define the number of hosts that this SIU will connect to :
* SIU_HOSTS <num_hosts>
*
SIU_HOSTS 4
*
* Set physical Interface Parameters :
* LIU_CONFIG <bpos> <liu_id> <liu_type> <line_code> <frame_format>
<crc_mode>
*
SEPTELCP_BOARD 0 0x0043 ss7.dc3 IS41
*
*
* Configure individual E1/T1 interfaces:
* LIU_CONFIG <board_id> <liu_id> <liu_type> <line_code> <frame_format>
<crc_mode>
LIU_CONFIG 0 0 5 1 1 1
*
* MTP Parameters :
* MTP_CONFIG 0 0 <options>
*
MTP_CONFIG 2 0xb 0x0f00
*
* Define linksets :
* MTP_LINKSET <linkset_id> <adjacent_spc> <num_links> <flags> <local_spc>
<ssf>
*
MTP_LINKSET 0 1 2 0x0000 2 0xb
*
* Define signalling links :
* MTP_LINK <link_id> <linkset_id> <link_ref> <slc> <bpos> <blink>
<stream> <timeslot> <flags>
*
MTP_LINK 0 0 0 0 4 0 0x10 0x01 0x06
*
* Define a route for each remote signalling point :
* MTP_ROUTE <dpc> <linkset_id> <user_part_mask>
*
*MTP_ROUTE 1 0 0x0033
*
*MTP_TRACE 0x21 0x3 0x0001ffff
*
*****
*
* SCCP
* SCCP_CONFIG <local_pc> <ssf> <options>
*

```

```

SCCP_CONFIG 2 0xb 0x0ff2
*
* Define SCCP Remote signalling points :
* SCCP_RSP <spc> <rsp_flags>
*
SCCP_RSP 1 0x00
*
* Define all local sub-systems :
* SCCP_LSS <ssn> <module_id> <lss_flags>
*
SCCP_LSS 0xa 0x2d 0x0 IS41
*
* Define all remote sub-systems :
* SCCP_RSS <spc> <ssn> <rss_flags>
*
SCCP_RSS 1 0xc 0x0
*
* Define all local sub-systems that require notification of
* changes in state of other signalling points or sub-systems :
* SCCP_CONC_LSS <local_ssn> RSP <remote_spc>
* SCCP_CONC_LSS <local_ssn> RSS <remote_spc> <remote_ssn>
*
*SCCP_CONC_LSS 0xa RSP 1
*SCCP_CONC_LSS 0xa RSS 1 0xc
*
* Define all remote signalling points that require notification
* of change in state of local sub-systems :
* SCCP_CONC_RSP <remote_spc> LSS <local_ssn>
*
*SCCP_CONC_RSP 1 LSS 0xa
*
* Configure TCAP
* TCAP_CONFIG <base_ogdlg_id> <nod_dialogues> <bic_dlg_id>
<nic_dialogues> <options> <dlg_hunt>
* TCAP_TRACE <op_evt_mask> <ip_evt_mask> <mng_evt_mask>
*
TCAP_CONFIG 0x0000 1024 0x8000 1024 0x0002 0x00
*
* Optionally configure a TCAP dialogue group (for each host)
* TCAP_CFG_DGRP <gid> <base_ogdlg_id> <nod_dialogues> <bic_dlg_id>
<nic_dialogues> <options> <host_id>
*
*TCAP_CFG_DGRP 0 0x0000 1024 0x8000 1024 0x0000 0x00
*
*
* IN-41 parameters
*
* IS-41 Trace
IS41_TRACE 0x0000000f 0x0000000f 0x0000007f
*
* Configure connection of bearer channels through the SIU.
* STREAM_XCON <bpos> <stream_a> <stream_b> <mode> <tmask> <pattern>
*
*STREAM_XCON 7 16 17 3 0xffffeffe 0x00
*STREAM_XCON 8 16 17 3 0xffffeffe 0x00
*
* End of file

```