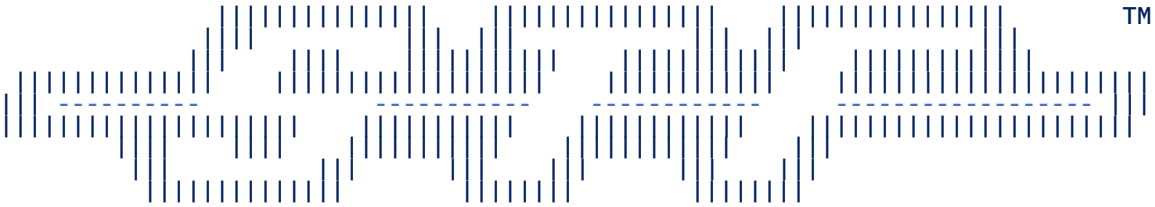

Skybird Test Facility
Version 5, Release 0.0
User Guide

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About this guide

This document describes how to install and use Skybird Test Facility. It does not provide a complete description of all available commands as this information is provided by the STF online Help facility. STF Version 4 was developed for the MVS/XA, RACF and ACF/VTAM environment. STF Version 5.00 is a retrofitted version of STF Version 4, modified to run in the MVS 3.8, RAKF and VTAM2 environment. The documentation has been updated accordingly, but it is possible that some references to STF Version 4 functionality not available with STF Version 5 may still be present in the document.
This document was last updated on 24-December-2024. The latest version of this guide will also be available at the STF website: https://www.skybird.net/stf/

Introduction

Skybird Test Facility was developed to assist VTAM Systems Programmers and Network Operators in monitoring and testing an SNA network. Functions available include:

- Interface to MVS, VTAM, TSO and other applications
- Network Solicitor service (STFNSOL)
- Analysis of network performance (STFANL)
- Testing of network components (STFISC, PING, STATUS)
- Testing 3270 emulators for compatibility (ECHO, TEST)
- Connecting terminals to applications (PASS)
- Interface to RAKF (SAF)
- Debugging tool (DEBUG)
- Cryptographic interface (CUSP)
- Interpretation of ACB and RPL error codes (SHOW)
- Comprehensive Logging (STFLOG)
- Integrated Help facility (HELP)

Installing STF

STF is pre-installed in TK5 Update 4 or later systems so for users running TK5 Update 4 or later then this chapter can be bypassed.

To install STF the following steps are required:

- Upload the distribution file INSTALL.STF.XMI to a sequential data set in the target MVS-TK5 system with a DCB of RECFM(FB) LRECL(80) BLKSIZE(27920) and DSORG(PS)
- Issue the TSO RECEIVE Command
  ```
  RECEIVE INDS('INSTALL.STF.XMI') NOPROMPT DSN('INSTALL.STF')-
  VOL(TK5002)
  ```

- Customize and submit member $INSTALL in the data set INSTALL.STF. This job will install STF for MVS 3.8 on the target MVS-TK5 system.
- STF.CNTL contains two members that are PDF documentation files:
- 1. $CUSTGDE - STF Customization Guide
  2. $USERGDE - STF Users Guide
  Download these members to a PC with filename suffix ".pdf" using the binary file transfer option to view the PDF format manuals. Note: do not EDIT the contents of members $CUSTGDE and $USERGDE.
- Authorize STF by adding an entry in SYS1.PARMLIB(IEAAPFxx) for STF.LINKLIB with volume TK5002 if not already present in the APF list.
- The STF application has to be identified to VTAM by placing the STF application major node definition, member name ASTF, in SYS1.VTAMLST(ATCCONxx). This is performed as part of the $INSTALL JCL stream.
- If STF is being installed for the first time then re IPL the system to refresh VTAM and the APF data set list IEAAPFxx.
- Delete data sets INSTALL.STF and INSTALL.STF.XMI as they are no longer needed.

Optional steps depending on how STF is used
If devices other than locally connected 3270 compatible terminals are going to logon to STF then the USS table specified on their VTAM definition should be updated to support a logon to STF. A sample USS table entry for an STF Logon using BAL format is listed below:

```
STF      USSCMD  CMD=STF,REP=LOGON,FORMAT=BAL
         USSPARM PARM=APPLID,DEFAULT=STF
         USSPARM PARM=P1,REP=DATA
         USSPARM PARM=P2,REP=LOGMODE,DEFAULT=DSILGMOD
```

Usermod ZBP0002 is installed in TK5 to provide a suitable VTAM Interpret Table for locally connected 3270 compatible terminals to logon to STF. If Usermod ZBP0002 is not installed then an update to the currently used VTAM Interpret Table may be required.

The STF JCL PROC is copied to SYS2.PROCLIB as part of the $INSTALL jobstream. This PROC will enable STF to run either as a started task or to invoke STF in batch mode with appropriate JCL to invoke the PROC. Customize this JCL for specific site configurational issues if required.

Installation Considerations

STF is pre-installed in TK5 Update 4 or later systems so for users running TK5 Update 4 or later then this chapter can be bypassed. STF has been installed in an Authorized Library and configured ready for use.

If the STF STEPLIB is not APF authorized then the following STF functions will be disabled:

- writing SMF records
- changing a password during Logon

The STFLOGP DD statement is required only if the LOG task is used. The log dataset requires the DCB parameter of LRECL=133. If the LOG task is started and the STFLOGP DD statement is omitted then log records are written to the MVS SYSLOG. Alternatively, STFLOGP can be a SYSOUT data set. If LOG is not specified in the EXEC PARM then the default is LOG=NO. The log task is therefore not automatically started at STF initialization.

If ACB is not specified in the EXEC PARM then the VTAM ACB name defaults to STF.

If CONFTXT is not specified in the EXEC PARM then the default CONFTXT=YES is used with the result that STF data cannot be captured in a GTF trace.

If CONFLGN is not specified in the EXEC PARM, the default CONFLGN=YES is used and STF will reject Short Logons.

If TEST is not specified in the EXEC PARM then the default TEST=NO is used. In TEST mode, pre-loading of modules is disabled and extra trace messages may be displayed.

If NSOL is not specified in the EXEC PARM then the default NSOL=NO is used. The Network Solicitor subtask (STFNSOL) is not started.

If SMF is not specified in the EXEC PARM, the default SMF=NO is used. STF will not write SMF records. SMF records cannot be written if STF is running unauthorized.

Specify CLOSE=LAST to close STF when the last user has logged-off.

Getting Started with STF

A VTAM driven network in the MVS environment is complex to configure and administer and particularly unforgiving of configurational errors. STF was developed to assist in monitoring and testing VTAM networks and the devices attached to networks. By necessity, STF must provide an extensive set of commands to interface to and run tests in such a complex environment. This chapter provides a step by step tutorial on how to use STF to perform some useful tests. Much of the information in this chapter is also presented elsewhere in this STF User Guide with various topics providing more in-depth descriptions of command options and the responses from the commands. The purpose of this chapter is to introduce the user to STF and encourage the user to explore the full functionality provided by STF as described in the topic specific chapters.

Start STF

STF can be started in a number of ways however, for this tutorial, start STF by issuing a Start command at the MVS console.

```
S STF
```

The following messages will appear on the MVS console

```
IEF403I STF - STARTED - TIME=12.05.12
+STF0003I STF      5.00 ACTIVE 25/01/24-12:05:12
+STF0700A STF      AWAITING OPERATOR COMMAND...
```

STF is now started and available to accept a logon from a 3270 terminal.

Logon to STF

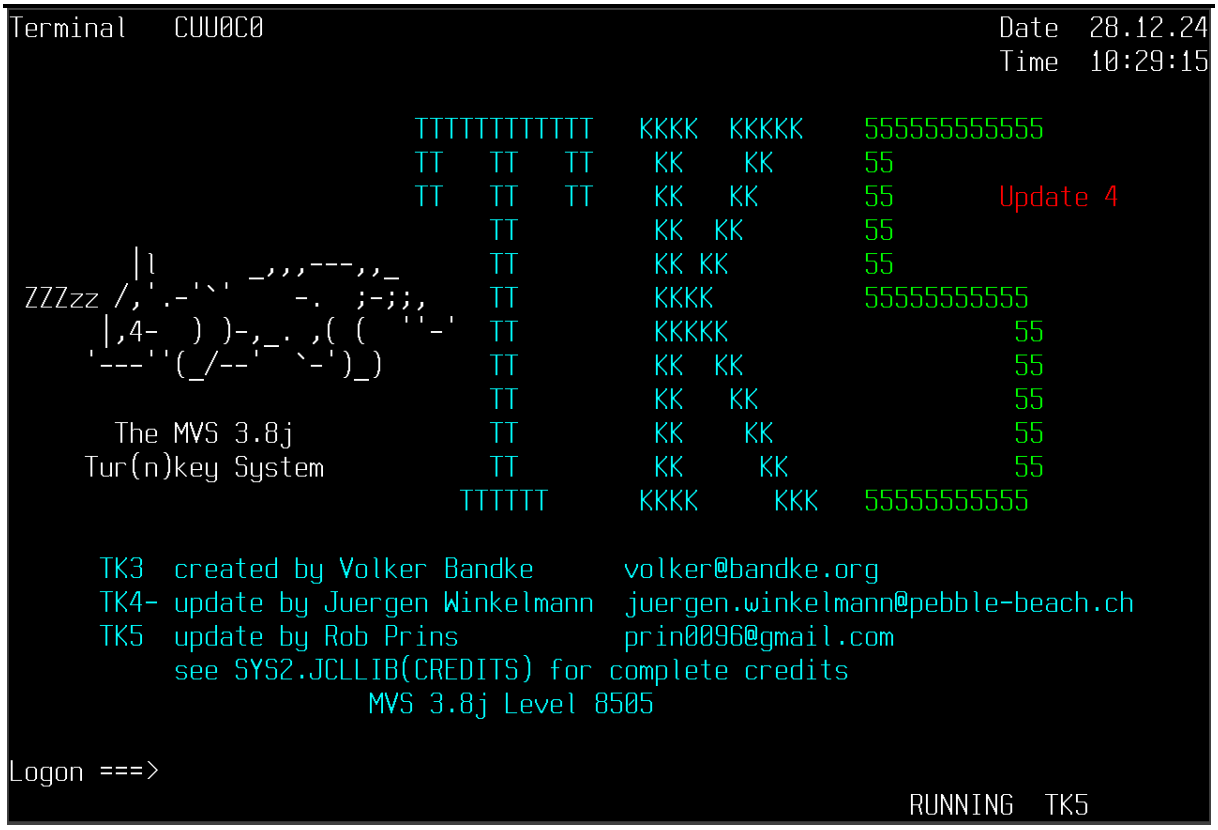

Figure 1 - TK5 Network Solicitor Screen

At a screen displaying the TK5 Network Solicitor screen, as shown in the figure above, enter a logon command to logon to STF. Either format is acceptable.

```
LOGON APPLID=STF
-or-
LOGON APPLID(STF)
```

The STF Logon screen will appear on the display

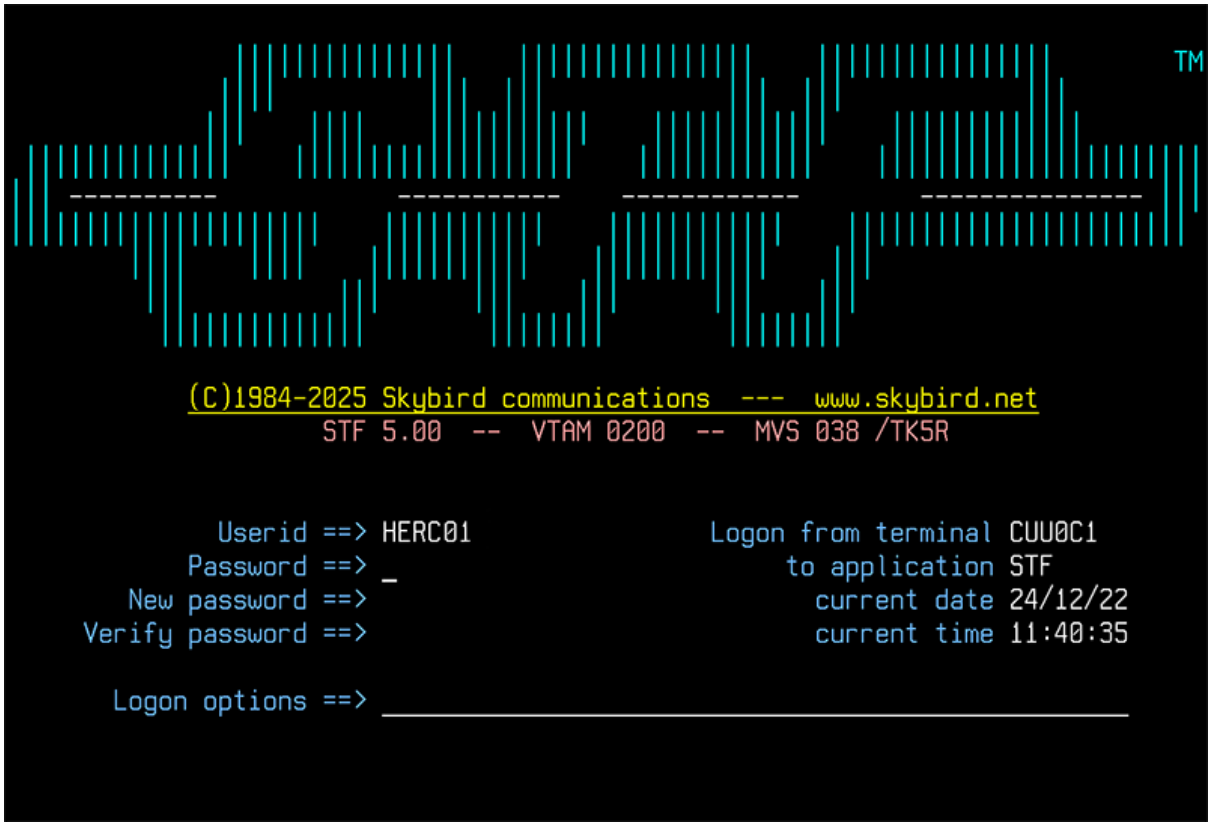

Figure 2 - STF 3270 Logon Screen

Enter the UserID and the password for a UserId that is known to RAKF as the Logon request will be validated by RAKF. In the example above the HERC01 UserId is going to be used to logon to STF. The Logon screen will be replaced by the STF Command screen where commands will be entered into STF and the results of the commands will be displayed.

Taking ownership of a terminal for testing

One of the many functions provided by STF is to test the compatibility of a 3270 emulator to correctly display 3270 orders, attributes and character sets. Before the 3270 compatibility tests, or any other STF testing can be run, STF needs to take ownership of the 3270 terminal that is going to be used for emulator testing.

Important!

Before STF can take ownership of a terminal, the Network Solicitor screen as shown in: Figure 4 - Network Solicitor Screen – How to identify the luname, must be visible.

You can press “Clear” to switch to the Network Solicitor screen in case a terminal still shows the initial Hercules TK5 Welcome screen.

Figure 3 - Hercules Welcome screen

In the MVS TK5 environment every terminal is either owned by the Network Solicitor or logged on, via VTAM, to an application such as TSO. Select a terminal for testing that is owned by the Network Solicitor and not by any application.

Make careful note of the luname of the terminal because the luname will be used to identify the target terminal to STF. The figure below shows where the luname appears on the Network Solicitor screen.

Figure 4 - Network Solicitor Screen – How to identify the luname

The STFACQ subtask is used to take ownership of a terminal away from the Network Solicitor and place it under control of STF.

On the STF Command screen, in the command area, enter the command:

S TASK=STFACQ,ID=CUU0C2,OPN

Where the ID=luname in the command must match the luname of the terminal selected for testing. When STF has gained ownership of the terminal a message is displayed on the terminal identifying that the terminal is now owned by STF as shown in the figure below.

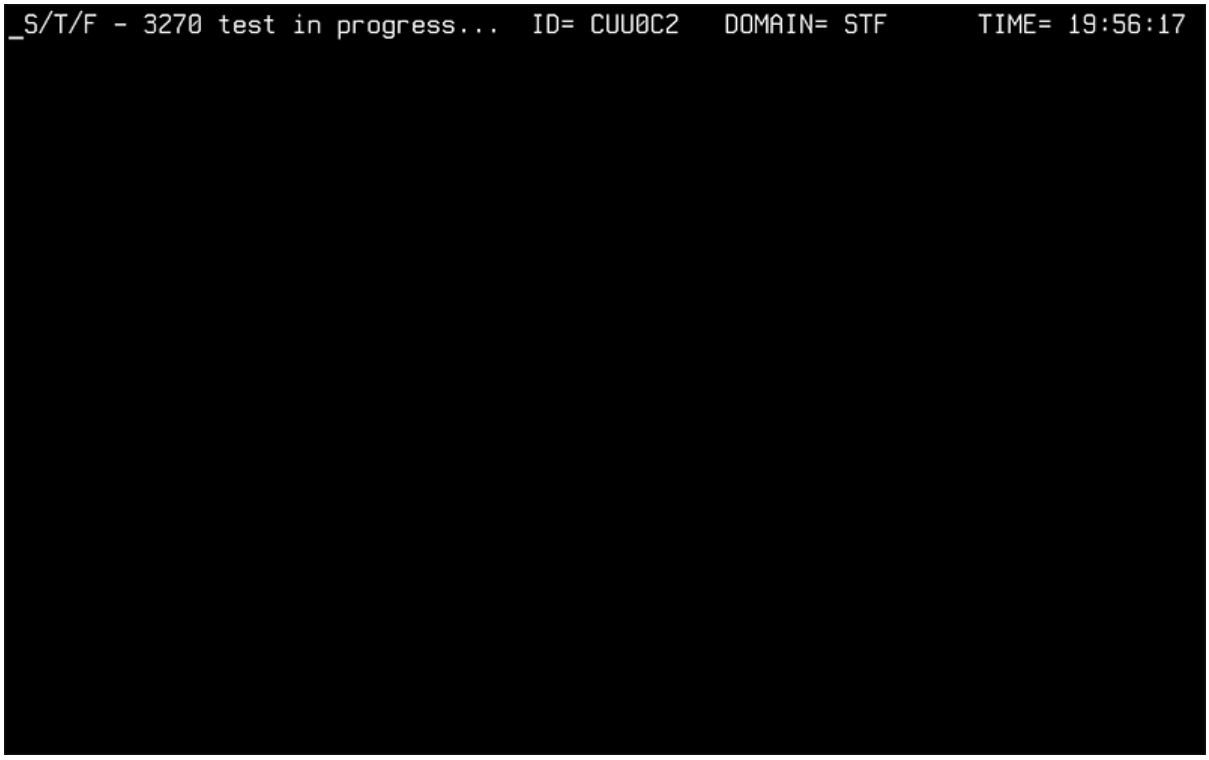

Figure 5 - Terminal for testing under the control of STF

Run 3270 emulator compatibility tests

As STF has ownership of the terminal then STF can send test screens to the terminal. STF provides several test screens that can be sent to the target terminal to test the terminal's 3270 compatibility. Using the luname of the terminal now owned by STF then, on the STF Command screen, in the command area, enter the command:

```
F CUU0C2,SCREEN=STF@@CHR
```

This command will display the standard 3270 character set and the 3270 APL character set as shown in Figure 5 below on the terminal being tested.

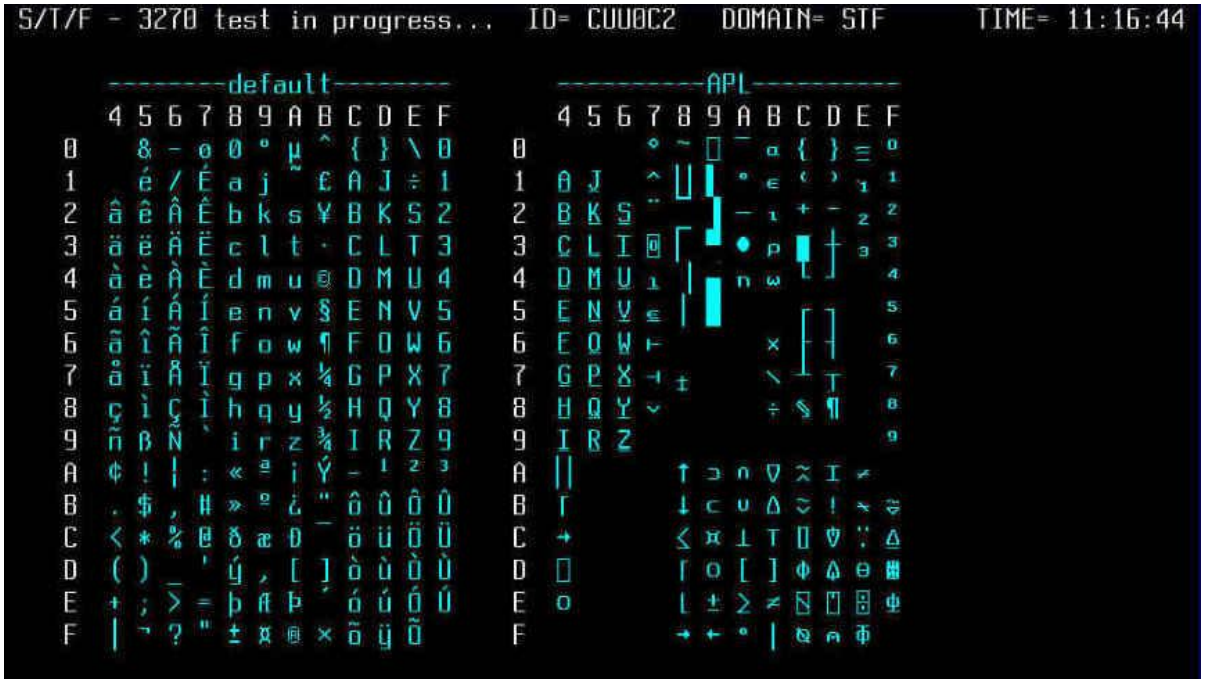

Figure 6 - 3270 Character Sets

On the STF Command screen, in the command area, enter the command:

```
F CUU0C2,SCREEN=STF@@ATR
```

This command shows the 3270 emulator colors for data displayed depending on the 3270 attribute settings as shown in the figure below:

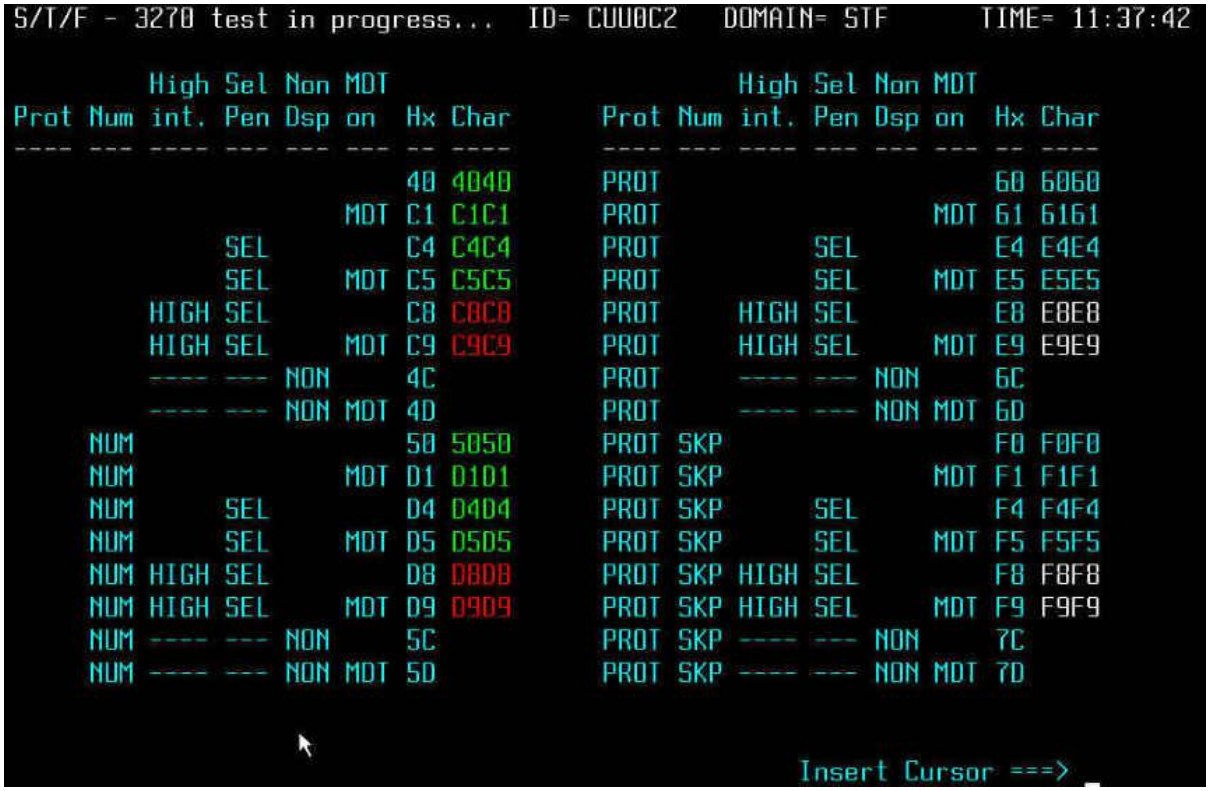

Figure 7 - 3270 Colours set by Attribute Character

On the STF Command screen, in the command area, enter the command:

```
F CUU0C2,SCREEN=STF@@ECS
```

This command uses the 3270 Set Field Extended (SFE) and Set Attribute (SA) Orders to set the character colour and background colour on the display. This is shown in the figure below on the terminal being tested.

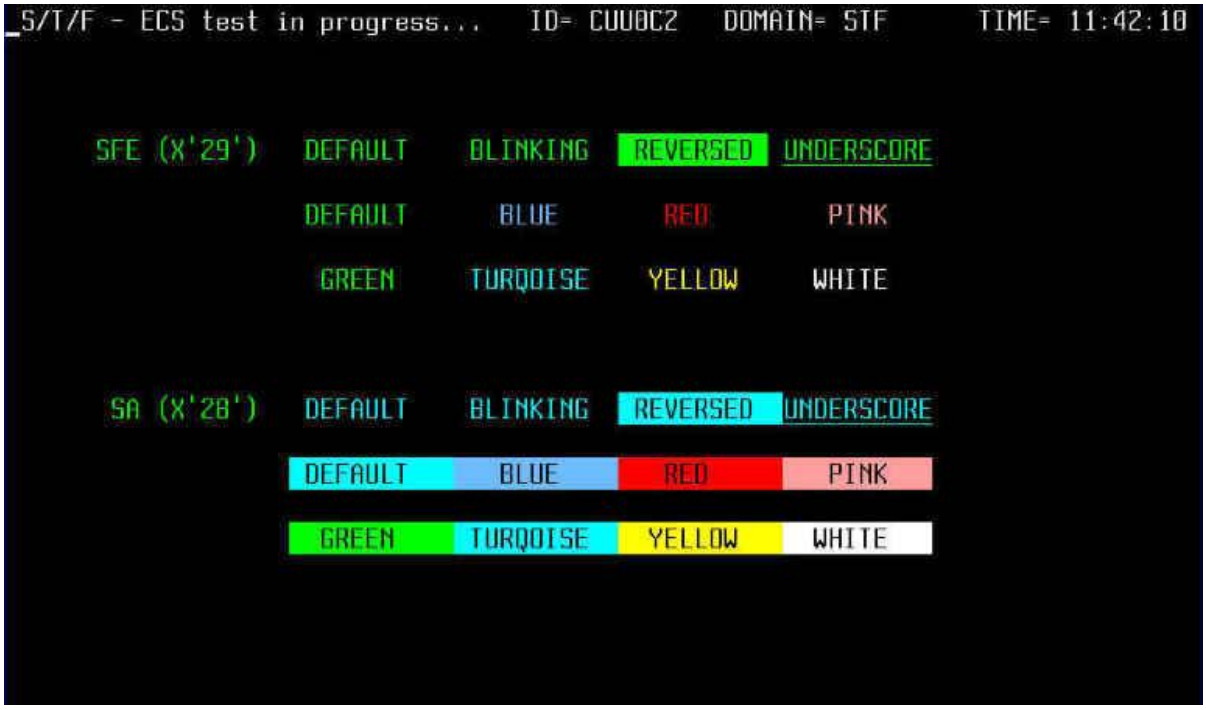

Figure 8 - 3270 Colours set by Extended Attribute

Completing the 3270 emulator compatibility tests

As the 3270 emulator compatibility tests are now complete, release the terminal being tested back to the Network Solicitor by entering the command:

```
F CUU0C2,RELEASE
```

The STF Command screen, at this time, will show the commands entered into STF, the status of each command and the release of the terminal used for testing back to the Network Solicitor. If this is the end of this STF session then enter the LOGOFF command to exit from STF with the terminal being passed back to the Network Solicitor.

The STF started task is still running and can be used for further STF sessions. If the STF started task is no longer required then, at the MVS Console enter the command:

```
P STF
```

The following messages will appear on the MVS console.

```
STF0705I STF       STOP COMMAND ACCEPTED
STF0003I STF       TERMINATING 25/01/25-14:52:33
STF0003I STF       INACTIVE    25/01/25-14:52:34
```

Shutting down the STF started task before shutting down VTAM is recommended otherwise VTAM will not shut down promptly because there is still a VTAM application still running.

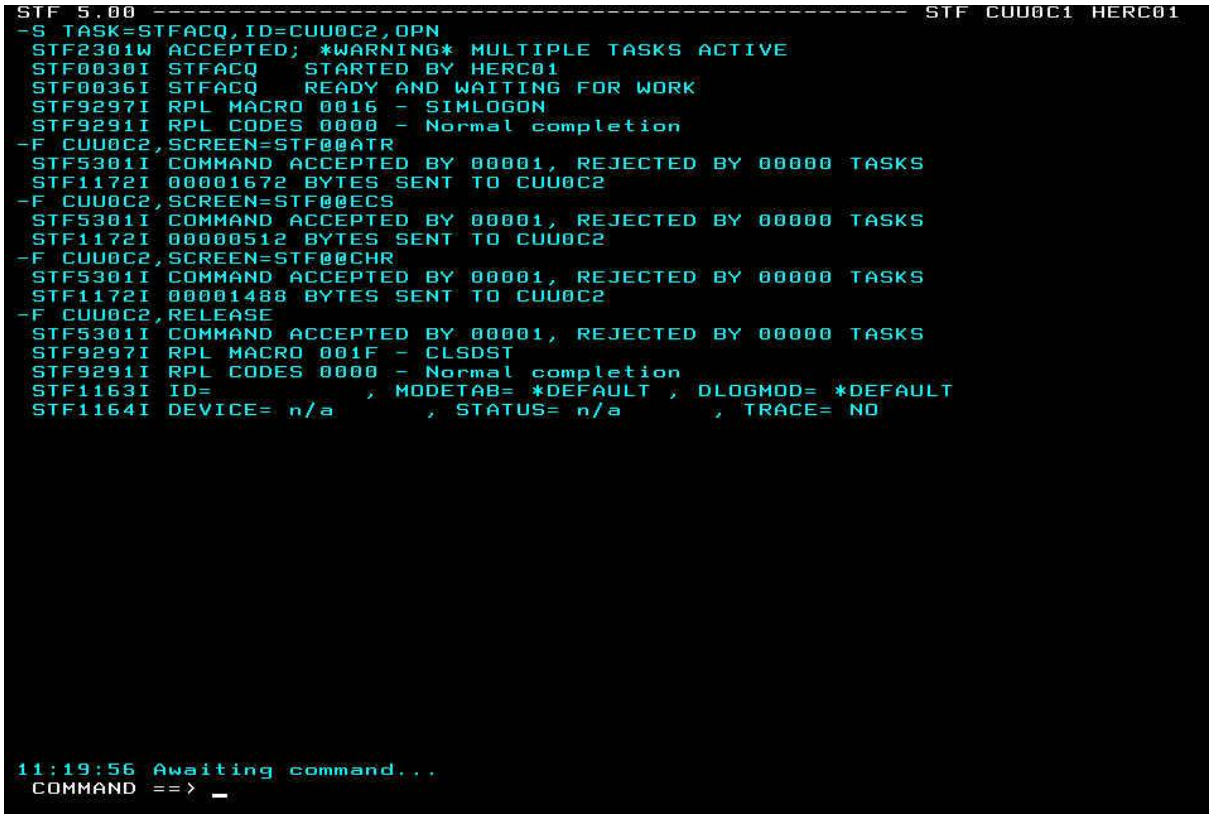

Figure 9 - STF Command Screen on completion of testing

This tutorial has provided an introduction to STF where STF was first started and then accepted a logon from a 3270 terminal. From the STF command screen a command was issued to gain control of a terminal for testing. Using further STF commands, multiple test screens were sent to the terminal being tested to verify 3270 compatibility. The terminal under test was then released back to the Network Solicitor and the user logged off STF. Optionally STF was shut down by a Stop command issued at the MVS Console.

STF provides an extensive set of commands and options for use in a VTAM network. Users are encouraged to read the various topic specific chapters in this STF User Guide and explore the functionality provided by STF.

Running STF

STF can be started and run in three different ways depending on user preference. All three ways provide the same STF functionality and users can LOGON to STF from a 3270 compatible terminal. However, the method of operator interface with STF is different depending on the way STF was started.

Started Task

At the MVS console issue:

```
S STF
```

This is the preferred method of starting STF as it does not require an Initiator address space or a TSO Logon.

Batch

Submit a job invoking the STF JCL Proc. Sample JCL is provided below:

```
//STFBAT  JOB 01,'RUN STF',CLASS=A,MSGCLASS=X,
//            NOTIFY=&SYSUID,REGION=1024K
//            EXEC STF
//
```

TSO Foreground Task

Issue the following commands when at the TSO Ready prompt:

```
ALLOC DATASET('STF.HELP') DDNAME(STFHELP) SHR
CALL 'STF.LINKLIB(STFMAIN)'
FREE DDNAME(STFHELP)
```

When STF runs as a TSO foreground task, the Help dataset must be allocated with an ALLOC command before the TSO CALL command is used to invoke STF.

STF Operator Interfaces

Depending on how STF was started the appropriate Operator Interface is started automatically. When STF runs as a Started Task (STC) or as a Batch Job (JOB) the MVS console operator interface is automatically started. If STF is executed as a TSO foreground application (TSU) the TSO interface is activated automatically. Each of these interfaces are discussed in the later sections.

There are two modes to communicate with STF:

- LINE mode,
- FULLSCREEN mode.

The STF interfaces to MVS, TSO (and optionally other applications) operate in LINE mode. This interface is also called STF OPERATOR interface.

The STF FULLSCREEN interface is also known as the STF User or Terminal interface. This user interface is only available from a 3270 compatible terminal logged onto STF via VTAM.

MVS Operator Interface

When STF has been started, either as a started task or a batch job, the MVS console interface is automatically started. The MVS console Modify command can be used to pass commands to STF. The MVS console Stop command is used to stop STF. Only line-mode commands are accepted from MVS consoles. If a command only appropriate for fullscreen access to STF is entered from MVS then STF returns the following message:

STF2407E COMMAND REJECTED; NOT IN FULLSCREEN MODE

As MVS operators do not have to LOGON to STF, certain commands may be rejected by the security exit(s). In this case the following message appears:

STF2406E COMMAND REJECTED; USER NOT VERIFIED

TSO Operator Interface

When STF runs as a TSO foreground task, the TSO interface is automatically started. STF uses line mode TPUT and TGET macros to communicate with the TSO user. During TSO foreground execution of STF the MVS-console operator interface can be started manually in either of two modes using the STF start command depending on the preferred method of interaction with STF:

S TASK=STFCONS (for command entry using the MVS console Modify command)
S TASK=STFWTOR (for command entry using WTOR and WTO console messages)

STF Help Facility

The STF Help command gives access to help information contained within STF modules and (optionally) the STFHELP dataset.

HELP COMMANDS	Display a list of all line commands
HELP TERMINAL	Display a list of all fullscreen terminal commands
HELP DIR	Display Help directory members
HELP 3270	Display 3270 control characters
HELP HELP	Instructions on how to add additional Help data

Refer to the STF Customization Guide on how to add additional Help information or update the existing Help information

VTAM logon

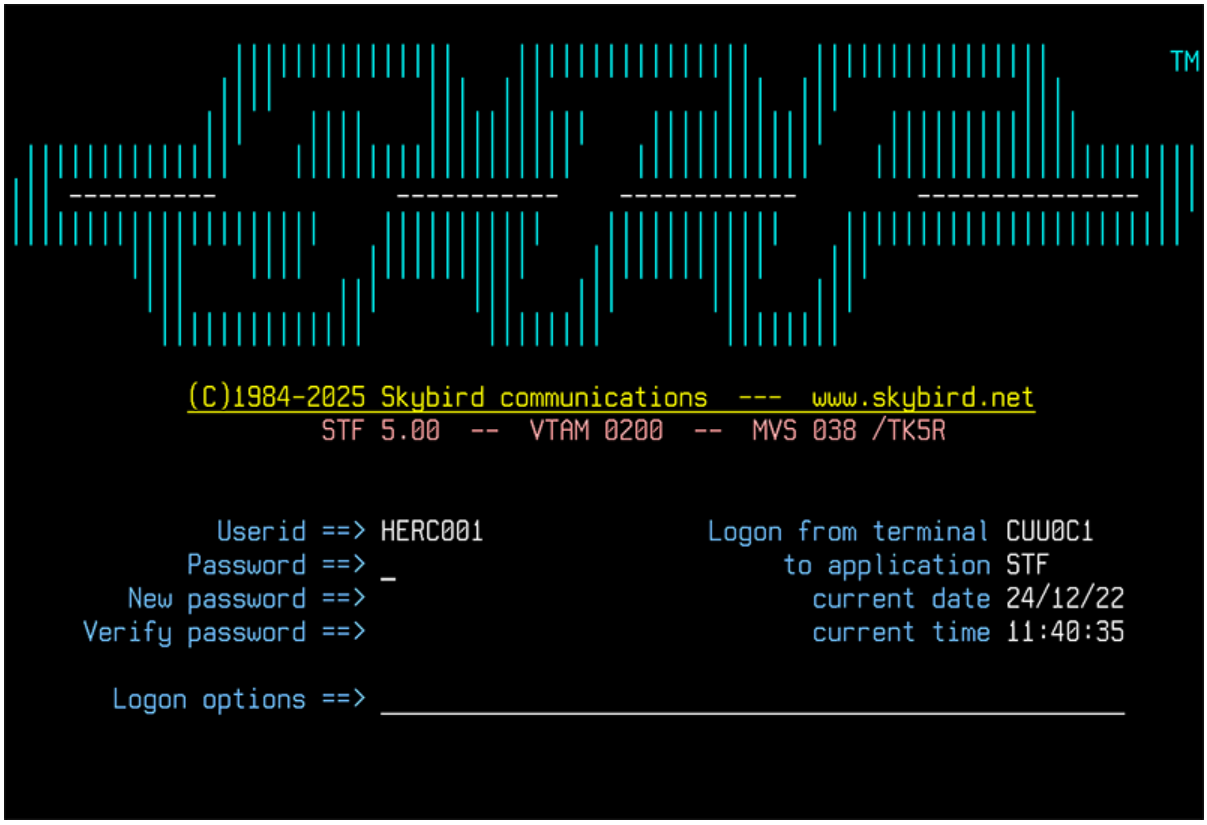

Figure 10 - STF 3270 Logon screen

Fullscreen access to STF is only available when a 3270 compatible terminal logs on to STF through VTAM. This logon procedure is installation dependent based on VTAM customization and configuration options. For most installations the default VTAM logon command can be used to logon to STF and display the Logon screen.

```
LOGON APPLID=STF <userid/password/new-password/verify-password>
-or-
LOGON APPLID(STF) <userid/password/new-password/verify-password>
```

The userid/password and new/verify password are optional. If no userid/password is specified then STF prompts for a userid and a password. Note that STF always requires a userid and a password. Depending on STF installation options, the password may or may not be checked, but it must be specified.

Entering a new password may or may not update the password, depending on what exits are active and if STF is running Authorized. A new password, if provided, must be entered twice for verification purposes. Additional information can be obtained by pressing PF1/13.

Special UserID's

If LOGOFF is entered as a User-ID, the terminal is logged off from STF. Pressing the PA1 key or the PF3/15 key will also logoff the terminal from STF.

If STFANL is entered as a User-ID, it will start an STFANL session for this terminal. Options for STFANL can be entered in the "user logon options" field. If the initialization of STFANL fails, an error message is displayed.

More information about the STFANL task can be found under "Response and Stress tests".

Screen format and command entry

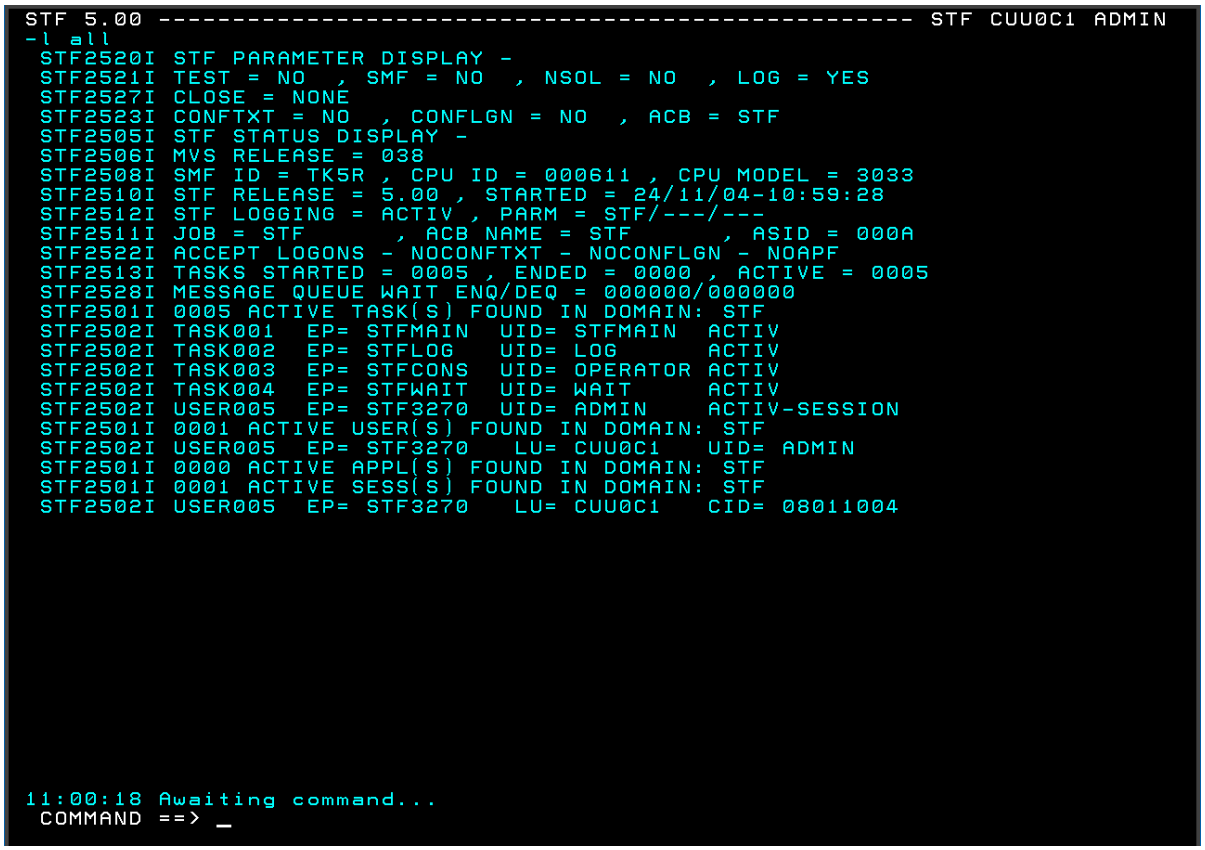

Figure 11 - Sample STF Command screen

The standard STF screen format is divided into the following areas as shown in the Figure above with each area numbered for reference.

1. Screen header
2. Command output
3. Processing state
4. Command input

STF commands are entered in the command input area (4). The command and the output produced are displayed in the command output area (2). If the output from a

command cannot not fit in the command output area on the screen, the text "MESSAGE(S) WAITING" is displayed instead of “Awaiting command” (3). Press the <Enter> key (do not enter a command, as it could be lost), to clear the screen and display the waiting message(s).

Screen control commands

There are several commands available for controlling the STF screen:

Command	Description
?	invoke HELP facility
&	retrieve last entered command
&command	re-display this command after processing
¬command	skip save in command stack
<command	skip save in command stack and do not echo
/command	pass command to VTAM
=	re-execute last entered command
AGAIN	re-execute last entered command
K	clear screen
LOCK	disable command processing
ATTN	not supported
CLEAR	clear screen
PA1 key	retrieve last command
PA2 key	cancel (NetView interrupt key)
PA3 Key	clear screen
PF1/PF13	invoke HELP facility
PF7/19 key	scroll back
PF8/20 key	scroll forward
PF12/24 key	retrieve previous command
SET AUTO(ON)	activate autowrap
SET AUTO(OFF)	deactivate autowrap
SET ECHO(ON)	enable input echo
SET AUTO(OFF)	deactivate autowrap
SET STAT(ON)	display response time statistics
SET STAT(OFF)	do not display response time statistics
SET MODE(nn)	Set 24, 32 or 43 line mode on display
UNLOCK	enable command processing

Skip save “<” and SET ECHO(OFF) are intended for entering passwords or other

data that should remain secret.

Working with STF

Starting and Controlling STF subtasks

STF subtasks are started using the following STF start command:
`S TASK=taskname<,options>`
The STF modify command is used to pass data and/or commands to STF subtasks:
`F taskname,data`

It is possible that multiple tasks with the same taskname are active. In this case, the data is passed to all active tasks with the same name. If data needs to be passed to a specific task then instead of taskname, the taskid, userid or luname can be used to identify the specific task. To list all active tasks, users or sessions (lunames) enter:

L SESS a list of all active sessions,
L TASK a list of all active tasks,
L USER a list of all active users.

STF subtasks can stop automatically (if a pre-defined condition is met e.g. the limit is reached) or can be stopped manually with an STF stop command:

`P TASK=taskname`

If multiple tasks with the same taskname are active, only the first active task is stopped. To identify the specific task to be stopped use the taskid, userid or luname to uniquely identify the task .

Acquire terminal (STFACQ)

STFACQ has been specially developed for MVS-TK5 to overcome limitations in VTAM2 due to the lack of the OPNDST ACQUIRE option. In MVS-TK5 terminals are by default allocated to the Network Solicitor and thus not accessible for STF. By using a SIMLOGON instead of an OPNDST ACQUIRE it is possible to ‘allocate’ a terminal to STF.

```
S TASK=STFACQ,OPN,ID=luname<,options>
```

Options:

LOG=NO|YES	Copy all commands to LOG (if active)
HCL=luname	Copy all commands to Hardcopy (if active)
TRACE=NO|YES	Display TRACE information

Once allocated the following commands are available:

F luname,STATUS	Show status
F luname,BIND	Show session parameters
F luname,QUERY	Show terminal characteristics
F luname,RELEASE	Release terminal (CLSDST)
F luname,RESET	Reset all options
F luname,SCREEN=screen	Send screen
STF@@ATR	3270 attributes
STF@@CHR	APL and standard characterset
STF@@ECS	Extended characters
F luname,PASS,APPL=application	
<DATA=text>	pass logon data (userid/password)

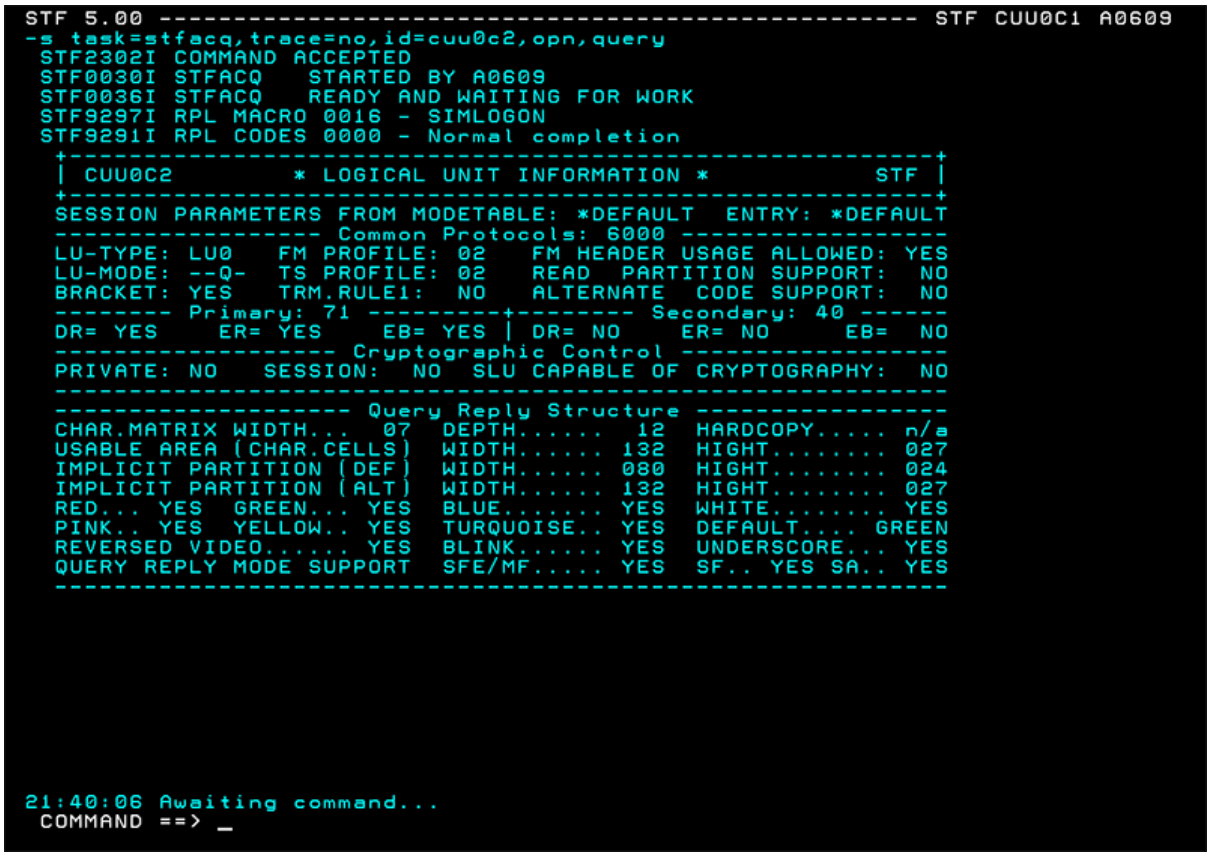

Figure 12 - STFACQ with Query command screen display

Response and Stress tests (STFANL)

STFANL is used to perform response time or stress tests.
There are multiple ways to invoke STFANL:

- Start as subtask
- Enter the STFANL command from a 3270 session
- Specify STFANL as a logon-id at the STF logon screen (Options for STFANL can be specified in the Logon options field).

To start STFANAL as a subtask enter:
`S TASK=STFANL,RESPONSE|STRESS<,options>`

Options for both RESPONSE and STRESS Tests:

Option	Description
`ID=luname`	Destination luname
`HCL=luname`	Pass statistics to STF hardcopy task Default:no hardcopy STFHCL must be started for the specified luname
`INTVL=nnnn`	Sample interval in 0.01 seconds Default: 6000, max.9999, 0= continuous
`LIMIT=nnnn`	Maximum number of samples Default: 0999, max.9999, 0= no limit
`LOG=NO|YES`	Write statistics to STF log dataset Default: LOG=NO
`MN=NO|YES`	Monitor STFANL progress Default: MN=NO. With MN=YES all intermediate results are reported to the user that started the STFANL session. One line for every test cycle.
`SUM=userid`	Send summary report to userid
`SUM=CONSOLE`	Send summary report to MVS console Default: summary report to STF log
Additional options for STRESS Tests only	
`IN=nnnn`	Inbound data length in bytes Default: 0100, max.1500, but less or equal to OUT
`OUT=nnnn`	Outbound data length in bytes Default: 1000, max.1500 STF adds 6 bytes of control information to INbound and 14 bytes to OUTbound data)

Refer to the STF online Help facility for a complete list of operands that can be specified by issuing the command `H STFANL`

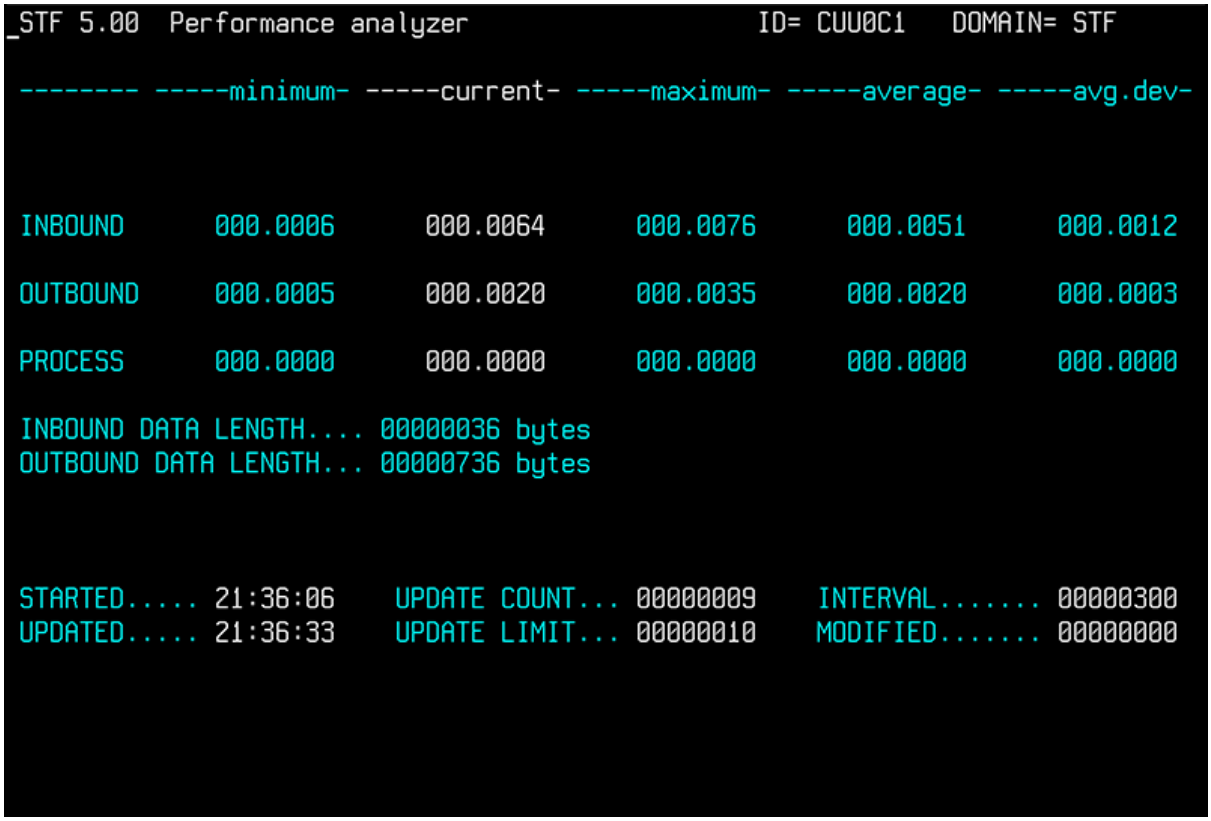

Figure 13 - STFANL screen

The minimum, current, maximum, average and average deviation are calculated for:

INBOUND data received
OUTBOUD date sent
PROCESS internal processing time

Response time test methodology:

```
Cycle WAIT           wait for INTVL timer
      STCK           start OUTBOUND timer
      SEND data      send data
      WAIT           wait for response
      STCK           stop OUTBOUND timer
      STCK           start INBOUND timer
      SEND RD        send read attention
      RECEIVE data   wait for data (last in chain)
      STCK           stop INBOUND timer
      STIMER         start INTVL timer
      goto Cycle
```

Stress test methodology:

```
Cycle WAIT           wait for INTVL timer
      STCK           start OUTBOUND timer
      SEND data      send data
      WAIT           wait for response
```

```
STCK            stop OUTBOUND timer
STCK            start INBOUND timer
SEND RD         send read attention
RECEIVE data    wait for data (last in chain)
STCK            stop INBOUND timer
STIMER          start INTVL timer
goto Cycle
```

Note the Response data results could be sent by Session Monitor instead of Terminal.

Hardcopy printer (STFHCL)

The task STFHCL can be started to print a realtime hardcopy on a specified printer. Data is passed to STFHCL with the STF modify command or by specifying HCL=luname, where luname is the name of the printer used by STFHCL, for an STF subtask. If the printer to be used by STFHCL is in another domain then STFHCL may not be able to determine the LU-type. Use the MODE=SCS operand for LU1 printers or MODE=DSC for LU0 and LU3 printers. For SCS (LU1) printers the lines per page can be changed with the PAGE=nnn operand.

```
S TASK=STFHCL,ID=luname1,MODE=SCS,PAGE=066
S TASK=STFANL,ID=luname2,HCL=luname1
```

In the above example STFHCL is started for an LU1 printer with 66 lines per page. STFANL will pass its statistics to STFHCL, indicated by luname1, where they will be printed on luname1.

Interactive Session Control (STFISC)

STFISC provides for complete control over a 3270 session. Start STFISC by entering the STF start command. Data is passed to STFISC with the STF modify command.

```
Due to the limited functionality of VTAM2 many
STFISC commands will not function properly. It is
HIGHLY RECOMMENDED to use STFACQ instead of STFISC.
```

Please specify the ID as the luname operand on the start command for STFISC and use this luname with all subsequent modify commands. This ensures that the command reaches the correct session in case multiple STFISC tasks are active.

```
S TASK=STFISC,SIMLOGON,ID=luname
F luname,SCREEN=STF@@ATR
```

Refer to the STF online Help facility for a complete list of all operands that can be specified:

```
H STFISC
H STFISC1
H STFISC2
```

The MVS 3.8 VTAM2 implementation limits the number of SNA commands that can be issued by STFISC. However, STFISC can still be used to send STF defined test screens or user defined datastream(s) to a terminal. A Clear request should be done before the next Screen can be sent.

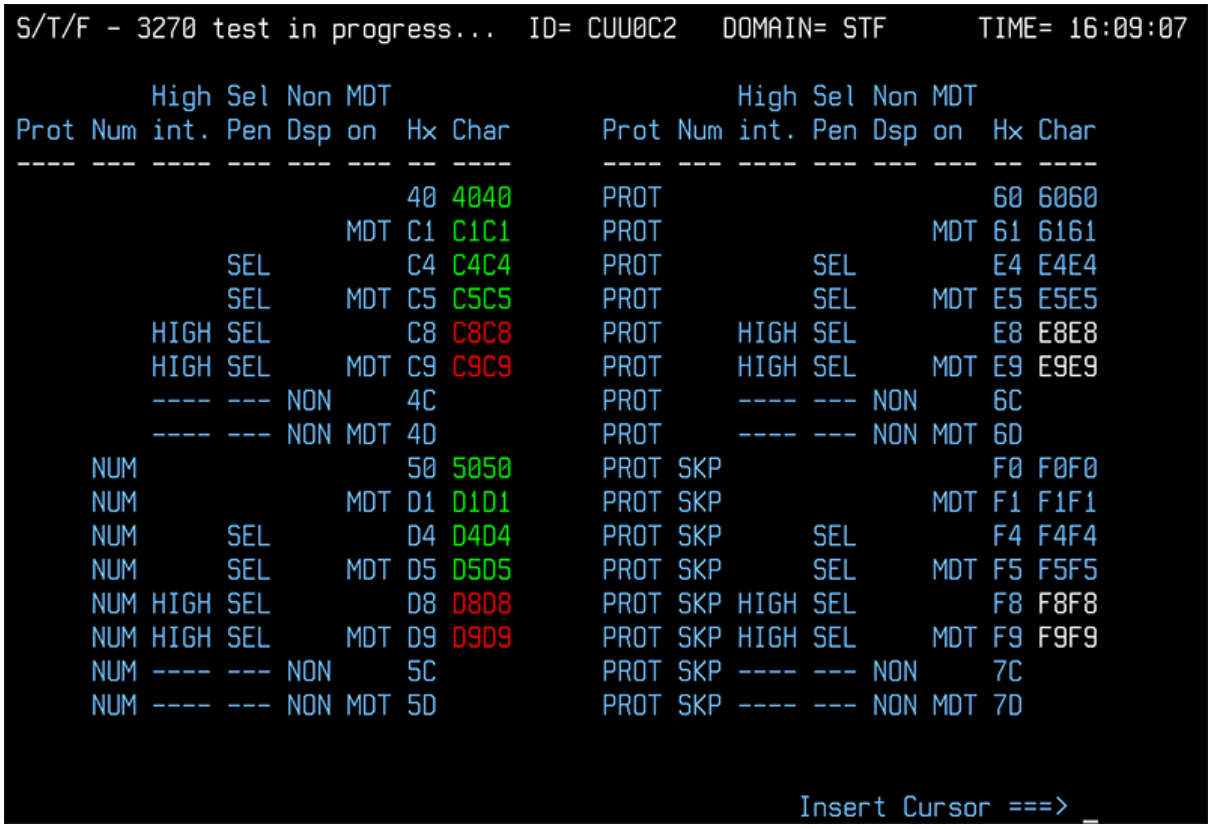

Figure 14 - STFISC screen

Logging Facilities (STFLOG)

The task STFLOG is used to write STF log records to the STF internal log, the MVS system log and/or the STF log dataset. STFLOG can be started with the STF start command or by specifying LOG=YES parameter in the STF Started task procedure (or MVS start command for STF). If STFLOG is started automatically during STF

initialization by specifying LOG=YES then STF attempts to open the STF log dataset. If this open fails, STFLOG will automatically switch to the MVS system log. If STFLOG is started using the STF start command, the options specified with the start command indicate whether the STF log or MVS system log is used:

```
S  TASK=STFLOG,MVSLOG        writes to MVS system log
S  TASK=STFLOG,STFLOG        writes to STF log dataset
S  TASK=STFLOG,WTOLOG        writes to MVS console
```

Fullscreen commands

Fullscreen commands are only available for 3270 terminal sessions.
The following fullscreen commands have been implemented:

- STFANL start STFANL on this terminal
- CUSP encrypt/decrypt data
- DEBUG alter/display storage
- ECHO perform an input echo test
- EDIT edit small PDS member
- SAF perform RAKF functions
- TEST display (STFISC) test screens

CUSP

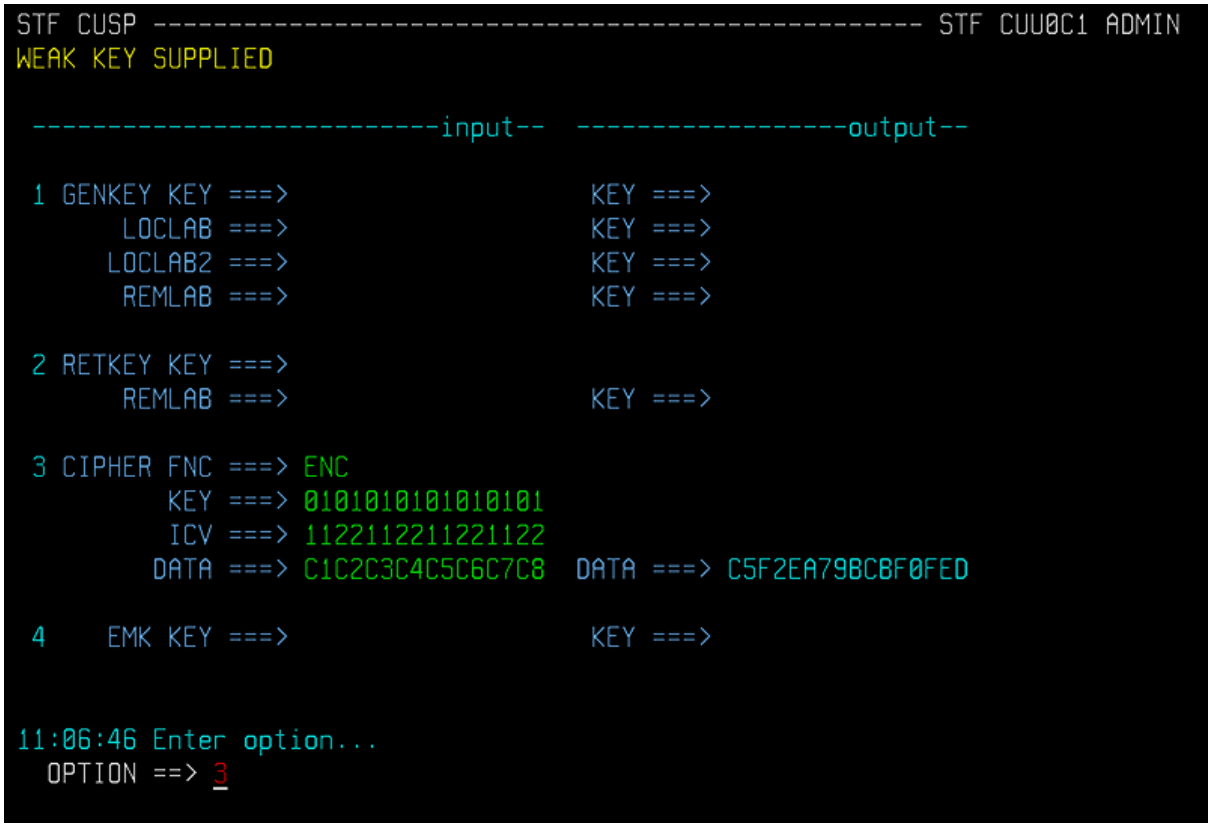

Figure 15 - CUSP screen

STFCUSP provides a fullscreen interface to the IBM 3848 Cryptographic Unit Subsystem. As IBM 3848 devices are not available under MVS-TK5, STFCUSP emulates some CUSP functions using a DES software implementation.

DEBUG

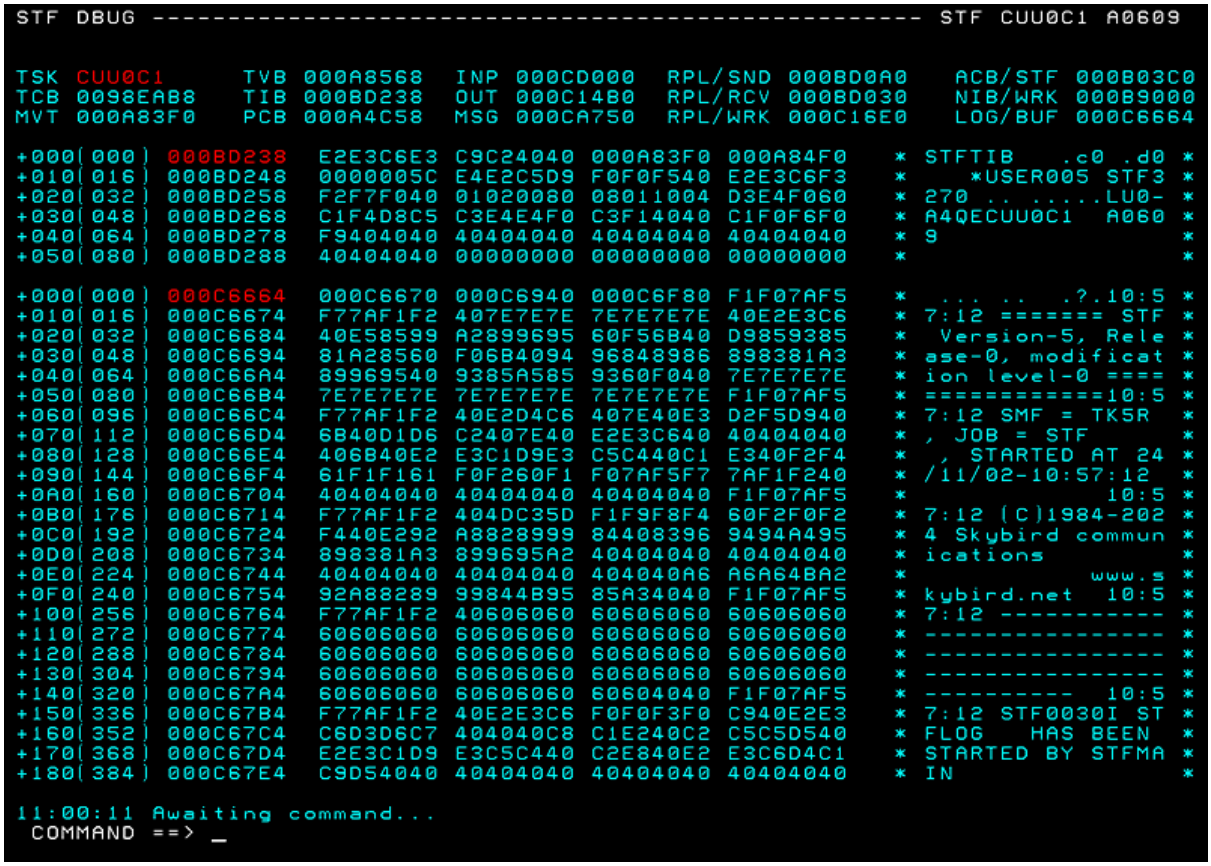

Figure 16 - DEBUG screen

The DEBUG command was developed as an online debugging tool to solve problems within STF. DEBUG can be used to view and alter storage areas including STF program storage and (unprotected only) storage not obtained by STF.

The DEBUG display is divided into 3 parts:

```
TSK CUU0C1 contains control block addresses
+000(000) 000BD238 first storage area (default: TIB)
+000(000) 000C6664 second storage area (default: LOG)
```

The control block addresses displayed apply to the task name in TSK. The task name (CUU0C1 in this example) can be changed to view the control block addresses of another task.

The addresses of storage area-1 and storage area-2 can be changed by typing a new address. To set storage area-1 to a specific control block address, the following commands may also be used:

```
ACB, TCB, MVT, TVB, TIB, INP, OUT, PCB, RPS, RPW, NBW, BND, LGN or
LOG
```

Use the ZAP command to alter 4 bytes at storage area-1. You must change 4 bytes at a time:

```
ZAP HEX=xxxxxxxx
```

Before the storage is updated, DEBUG will verify if the storage has not been altered since it was displayed.

Other commands:

PF07/19	Scroll back in storage area-2
PF08/20	Scroll forward in storage area-2
END/EXIT/QUIT	Return to terminal mode
LOGOFF	Logoff from STF

ECHO

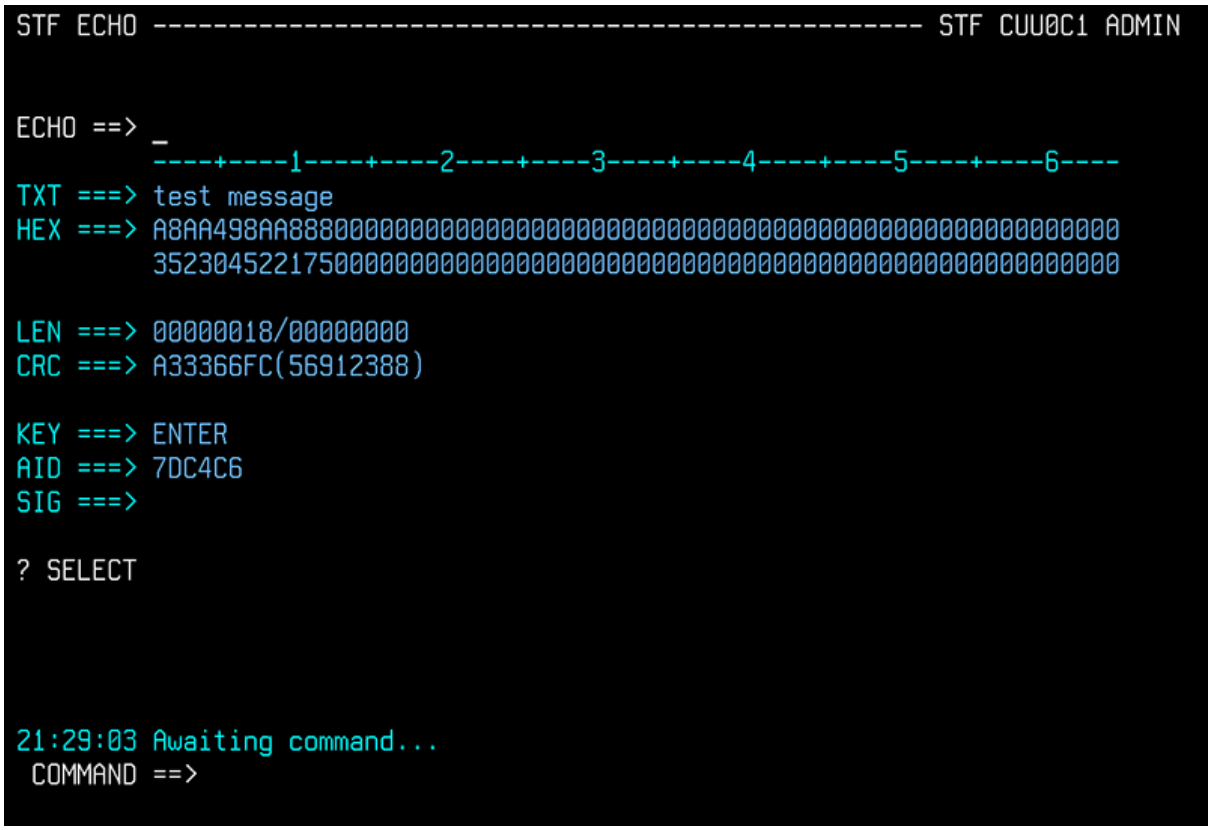

Figure 17 - ECHO screen

ECHO presents a 3270 screen where text data can be entered. It will “echo” the input data in the display in text and hexadecimal format. The keyboard AID key used

to enter the data and the (internal) checksum generated by STF are also shown on the display. To close the ECHO test type END or EXIT or QUIT in the command area and press Enter.

EDIT

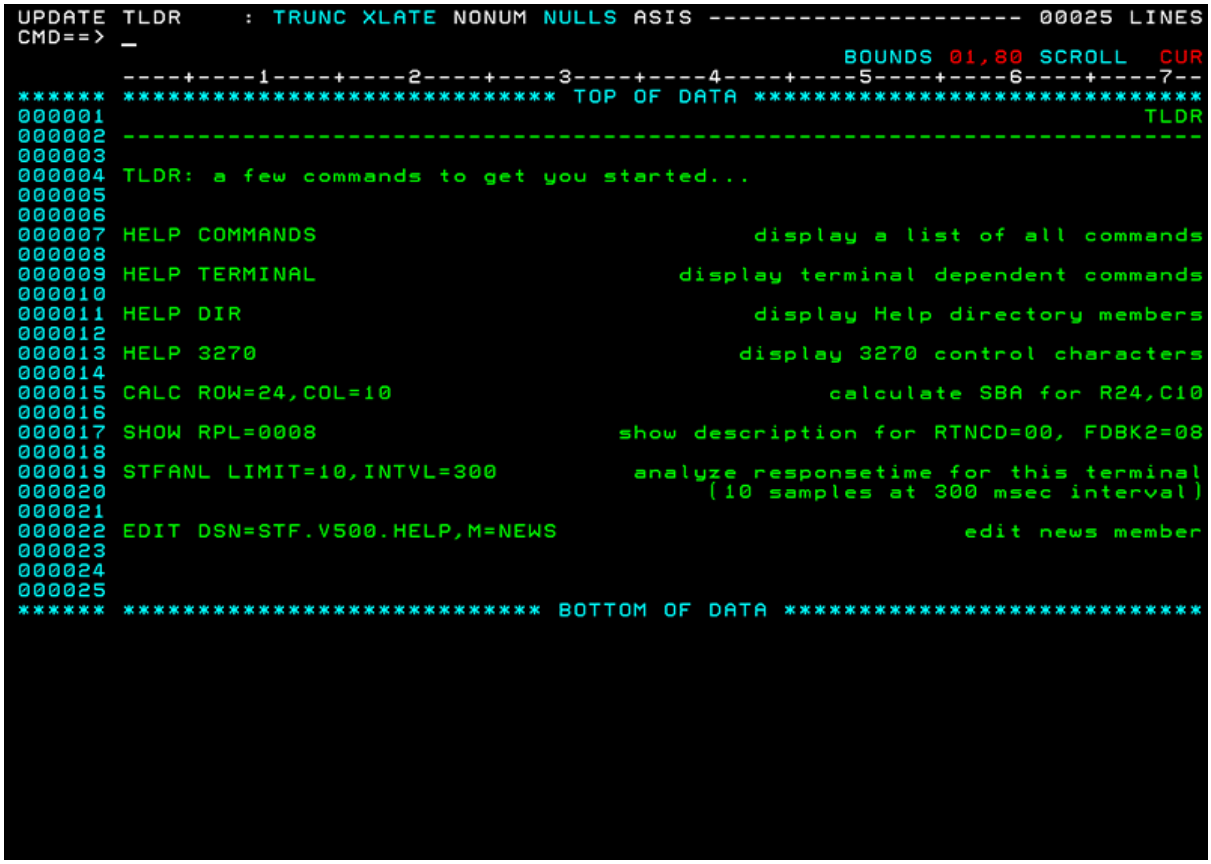

Figure 18 - EDIT screen

EDIT is a fullscreen editor to update small text files. Its primary purpose is to update STF Help members.

```
EDIT DSN=dataset name,M=member name
```

The header line displays the current status (left to right):

UPDATE | CREATE	Update existing member or Create new member
Member name	Member name
TRUNC	If highlighted, the member was too big and has been truncated
XLATE	The member contained unprintable characters which have been translated to blanks

```
NONUM                       No numbers in col.72-80
NULLS                       Lines filled with trailing nulls
ASIS                        Text not translated to uppercase
BOUNDS                      Current bounds
SCROLL                      Current scroll amount
```

If the member name does not exist a new empty member is created. To start editing, first insert a few empty lines:

I *,n where n= number of lines to insert

Although the EDIT screen resembles RPFEDIT (or ISPF EDIT), it does NOT accept line commands. All commands must be entered at the CMD ==> prompt.

The following EDIT commands are available:

```
BNDS n,m                    Set boundary at columns n and m
NUM | UNNUM                 (Remove) line numbers in col.72-80
NULLS | NONULLS             (Do not) fill lines with trailing nulls
ASIS | CAPS                 (Do not) translate content to uppercase
SAVE                        Save changes (update member)
END                         Exit without save

TOP                         Scroll to first line
BOTTOM                      Scroll to last line
BACK                        Scroll back 1 page
NEXT                        Scroll foreward 1 page

I n,m                       Insert n lines after line m
DEL n,m                     Delete n lines after line n

F string <c>                Find string <at column c>
C /string1/string2/<A>      Change string1 into string2 <in ALL
                            lines>
C /string1/string2/<n,m>    Change string1 into string2 <in lines n
                            through m>
COPY n,m,o                  Copy lines n through m after line o
MOVE n,m,o                  Move lines n through m after line o

PF3/15                      Exit
PF7/19                      Scroll back (up)
PF8/20                      Scroll forward (down)
PF10/22                     Scroll left
PF11/23                     Scroll right
```

SAF

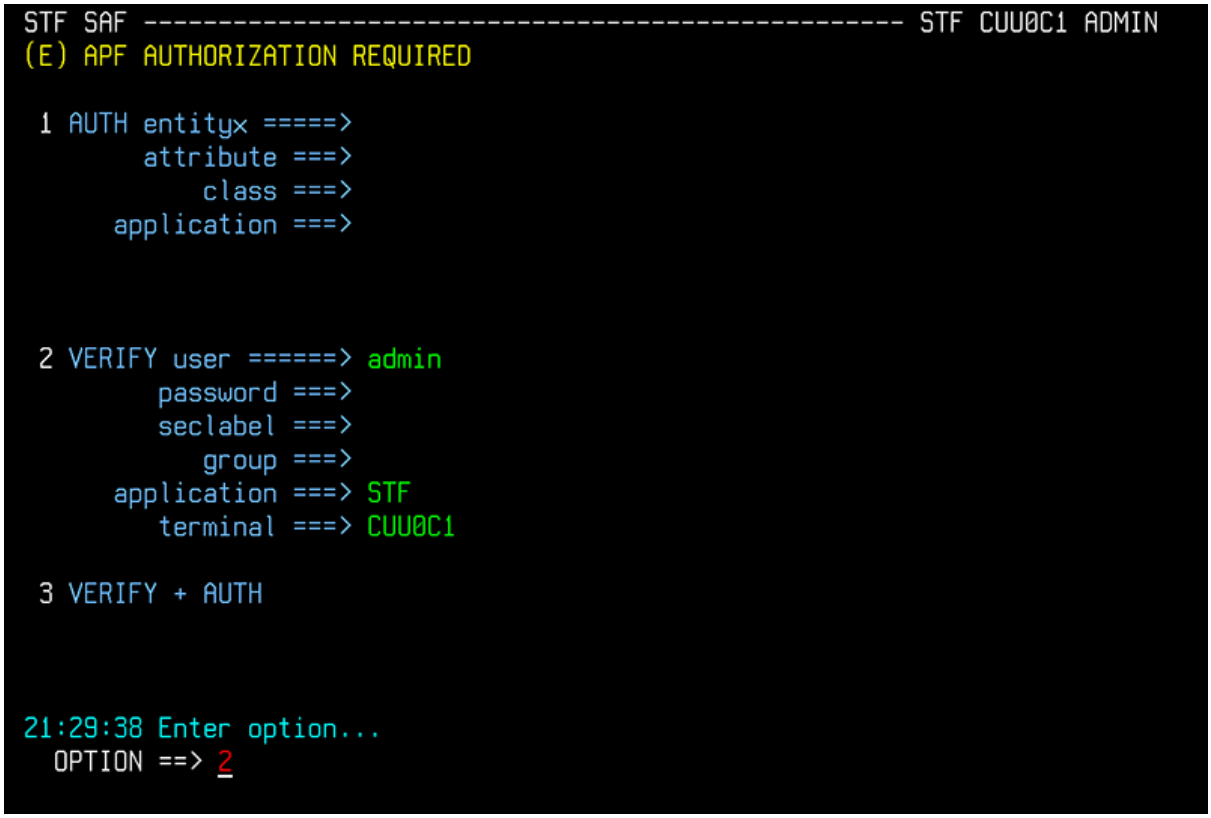

Figure 19 - SAF screen

SAF provides the ability to interactively perform selected calls to RAKF via the SAF interface.

TEST

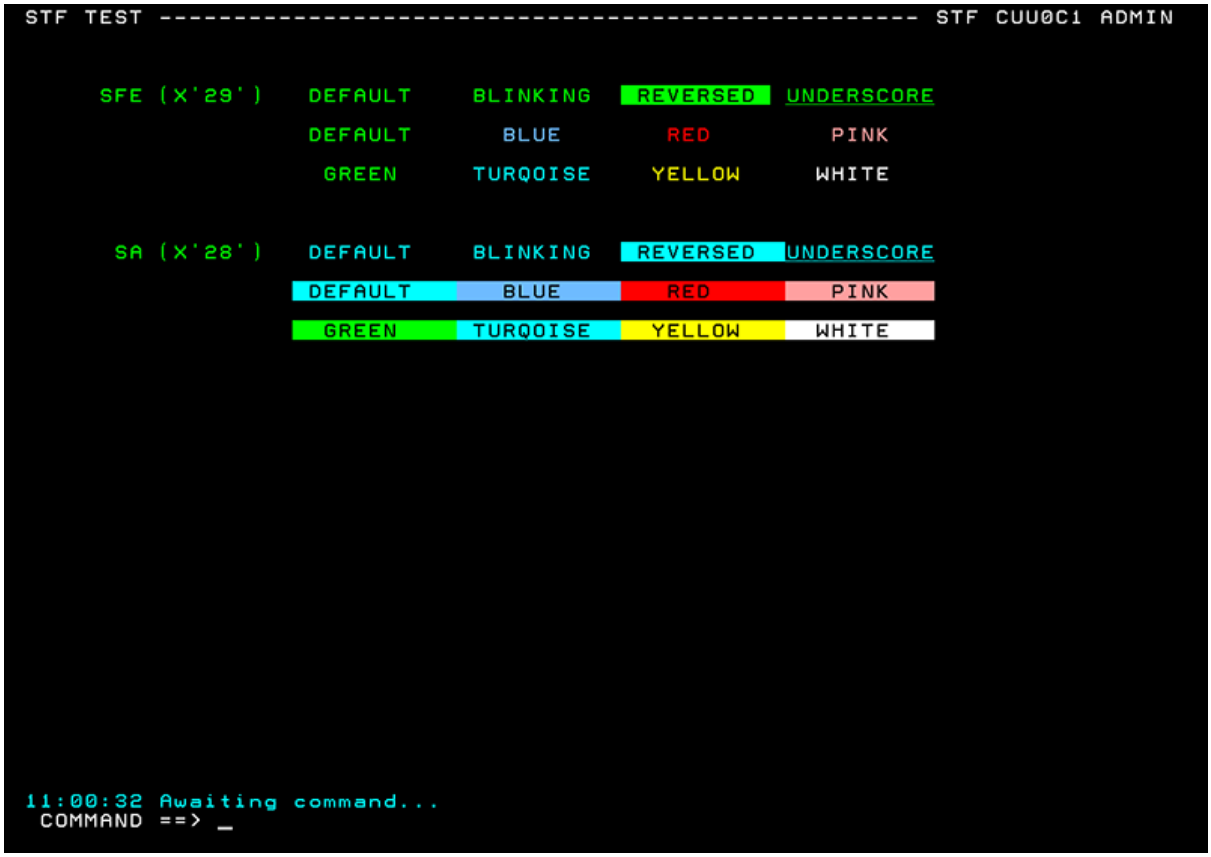

Figure 20 - TEST screen

Some STFACQ screens are also available as a full screen TEST command. The advantage of using STFACQ over the TEST command is that if a TEST fails, you do not lose your STF access.

The TEST screen supports the following commands:

PF01/13	Help
ATR	Run 3270 Attribute test
CHR	Run 2370 APL / Character test
ECS	Run 3270 SA + SFE extended characters test
PF03/15	End, leave TEST mode

STF Security Considerations

STF has a number of options provided to protect sensitive data. These options may not be required in an MVS-TK5 environment. However, they are available in case there is a need to use them.

CONFLGN

The CONFLGN startup parameter can be used to prevent “short logons”. A short logon is defined as a logon string that specifies the userid/password on the Logon command. By setting CONFLGN=YES short logons are rejected. The user is required to use the STF Logon screen to enter the userid and the password is entered in a non-displayed field.

CONFTXT

When CONTEXT=YES is specified then data traffic sent to and from STF to the terminal is marked as confidential and will not be captured in a GTF trace.

<command

STF commands entered through a 3270 terminal are echoed on screen and stored on the command stack from which they can be retrieved using PF12/24 (or AGAIN or ‘=’). If a command is preceded by ‘<’ then it is not echoed and not stored on the command stack. The ‘<’ command prefix can be used to prevent possible disclosure when entering sensitive information such as passwords.

ECHO ON|OFF

The terminal command “SET ECHO (ON|OFF)” can be used to enable or disable the echoing of commands. When SET ECHO OFF is in effect then echoing of command input in the input area is also suppressed. Care must be taken entering commands as there will be no visibility of what was actually typed.

LOCK/UNLOCK

The LOCK and UNLOCK commands are used to Lock (and Unlock) a terminal when it is left unattended.

HOLD/RELEASE

When a task is Held, the task will not process commands until it is released. User interface tasks, such as STF3270 and STF3767 cannot be placed in a Held status.

SMF recording (STFSMF)

SMF logging must be activated through the STF start-up parameter SMF=nnn, where nnn is the SMF record type to be written. Only record types 128 to 255 are valid for user defined SMF records. STF must be running APF authorized to be able to write SMF records. If STF is not running APF authorized then SMF logging is disabled. SMF logging is intended for accounting purposes. It does not replace the standard STF logging. SMF records written by STF have the following format:

Bytes:	Data Definition	Description
0-1	XL1'0050'	Record length (80 bytes)
2-3	XL1'0000'	Reserved for VBS
4	BL1'00000010'	Flag byte
5	XL1'..'	Record type (128..255)
6-9	XL4	Recording time
10-13	XL4	Recording date
14-17	CL4	System id
18-21	CL4	Subsystem id
22-79	0CL60	STF user data:
22-29	CL8	Action: Start/Stop/Logon/Logoff
30-37	CL8	TIBTEP
38-45	CL8	TIBRID
46-53	CL8	TIBUID
54-61	CL8	TIBLU
62	XL1	TVBREQ
63	XL1	TVBRSP
64-79	XL18	Reserved

STFSMF is called whenever a subtask is started or stopped.

Appendix-A Command summary

Command	Action
ABEND <STEP>	Issue (STEP) abend
ACCEPT	Accept LOGON's
AGAIN	Re-execute previous command
CALC SBA=nnnn	Calculate Col for the given SBA
| ROW=nn,COL=nnn	or calculate SBA from Row, Col
| <,WIDTH=nnn	optionally specify screen width.
CALC RU=nnnn	Calculate INBOUND and OUTBOUND data size for the given RU size.
CANCEL TASK=taskname	Cancel task with dump (U109 abend)
CLOSE	Start CLOSEDOWN
CUSP	Invoke fullscreen Cryptographic Support Facility
DATE	Display DATE/TIME/DAY
DEBUG	Invoke fullscreen DEBUG facility
DLOG	Display STF in-storage log entries
DUMP	Cancel STF with DUMP (U007 abend)
EDIT DSN=dataset,M=member	Invoke fullscreen text EDITOR
ECHO	Invoke fullscreen ECHO test
END	End service
HELP <command>	Display HELP information
HELP CMD	Display all STF commands
HELP DIR	Display all members in Help directory
HELP HELP	Display additional HELP functions
HELP PFK	Display PF/PA key settings
HOLD TASK=taskname	Put task/user in HOLD status
K	Clear screen
LIST APPL	List APPL-APPL sessions
| STAT	or STATUS
| TASK	or TASK entries
| USER	or USER entries
| PARM	or Startup parameters
| ALL	or ALL of the above
| name	or specific task/user entry
| ''	or entry of your terminal
LOCK lockword	Disable command processing
LOGOFF	Logoff from STF
LOGON APPLID=applname	Logon to another application
<,DATA=text>	pass logon data to application
MODIFY taskname,string	Send string to specified task
PASS ID=luname	Pass LU
,LOGON=application	to application
<,DATA=text>	pass logon data to application

```
REJECT                      Reject LOGON's
RELEASE TASK=taskname       Release task/user from hold status
ROUTE applname,text         Route text to application
SAF                         Invoke fullscreen SAF interface
SET AUTO(OFF|ON)            Turn OFF|ON autowrap
    | ECHO(OFF|ON              turn OFF|ON input character echo
    | MODE(24|32|43)          set number of lines on display
    | STAT(OFF|ON)            turn OFF|ON statistics display
SEND userid,text            Send text to STF user(s)
SHOW ACB=nn                 Show description of ACB ERROR
     | REQ=nn                  or description of RPL REQUEST
     | RPL=nnnn                or description of RTNCD/FDBK2
     | SENSE=nnnn              or description of SSENSEI/MI
START TASK=taskname         Start task
      <,options>                options to be passed to task
STOP TASK=taskname          Stop task/user
     | FORCE=taskname           Stop task/user
STATUS ID=luname            Display status of an LU
PING ID=luname              Run IBM3270 test on terminal
     | ID=''                    or test this terminal
       <,PRINTER=NO|YES>        for LU0 only: indicate if LU is
                                a printer
       <,MODETAB=xxxxxxxx>      Use mode table xxxxxxxx
       <,DLOGMOD=xxxxxxxx>      Use mode table entry xxxxxxxx
       <,INTVL=nnnn>            Interval in 0.01 seconds
       <,ACQUIRE=YES|NO>        Indicates if the  LU  should or
                                should not be ACQUIRED
       <,RTIME=YES|NO>          Specify  RTIME=NO   to  suppress
                                response time measurement
TSO userid,text             Send text to TSO user
UNLOCK lockword             Enable command processing
```

Commands in GRAY are available but may not work correctly without ACF/VTAM and/or a full SNA implementation. See also: STFACQ which implements an alternative solution for these commands.

All commands are processed immediately after they have been entered. A new command should not be entered before the processing of the current command has completed and when the message “Awaiting command” appears on the display. More information about specific commands is available in the STF online Help facility.

Contact information & Credits

STF is written by Rob Kemme for Skybird communications.

Special thanks to Rob Prins for reviewing and updating the STF source code.

Special thanks to Thomas Armstrong for reviewing and updating the STF documentation.

For the latest news and documentation updates visit the STF Homepage:
http://www.skybird.net/stf/

Consider joining one or more of the following MVS user groups:
https://groups.io/g/turnkey-mvs/
https://groups.io/g/H390-MVS/