OpenVMS Terminal Fallback Utility Manual

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This document describes the Terminal Fallback Utility used to manage
the libraries, character conversion tables, and terminal parameters
available with the VMS Terminal Fallback Facility.

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Preface

Intended Audience

This document is intended for VMS system managers and users who want user-transparent character conversion at their terminals. For some Terminal Fallback Utility functions, you are assumed to be familiar with terminals, terminal setup characteristics, and character sets.

Document Structure

This document consists of the following three sections:

- Description—Provides a full description of the Terminal Fallback Utility (TFU).

- Usage Summary—Outlines the following TFU information:

    – Invoking the utility
    – Exiting the utility

- Commands—Describes TFU commands, including format, parameters, and examples.

Associated Documents

In some instances, you may need the hardware documentation for the terminals you use with the VMS operating system.

Conventions

In this manual, every use of VMS means both the OpenVMS AXP and the OpenVMS VAX operating system.

The following conventions are used in this manual:

Ctrl/x	A sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
PF1 x	A sequence such as PF1 x indicates that you must first press and release the key labeled PF1, then press and release another key or a pointing device button.
Return	In examples, a key name enclosed in a box indicates that you press a key on the keyboard. (In text, a key name is not enclosed in a box.)

. . .	A horizontal ellipsis in examples indicates one of the following possibilities:
	• Additional optional arguments in a statement have been omitted.
	• The preceding item or items can be repeated one or more times.
	• Additional parameters, values, or other information can be entered.
. . .	A vertical ellipsis indicates the omission of items from a code example or command format; the items are omitted because they are not important to the topic being discussed.
( )	In format descriptions, parentheses indicate that, if you choose more than one option, you must enclose the choices in parentheses.
[ ]	In format descriptions, brackets indicate optional elements. You can choose one, none, or all of the options. (Brackets are not optional, however, in the syntax of a directory name in a VMS file specification, or in the syntax of a substring specification in an assignment statement.)
{ }	In format descriptions, braces surround a required choice of options; you must choose one of the options listed.
boldface text	Boldface text represents the introduction of a new term or the name of an argument, an attribute, or a reason.
	Boldface text is also used to show user input in online versions of the manual.
italic text	Italic text emphasizes important information, indicates variables, and indicates complete titles of manuals. Italic text also represents information that can vary in system messages (for example, Internal error *number*), command lines (for example, /PRODUCER=*name*), and command parameters in text.
UPPERCASE TEXT	Uppercase text indicates a command, the name of a routine, the name of a file, or the abbreviation for a system privilege.
-	A hyphen in code examples indicates that additional arguments to the request are provided on the line that follows.
numbers	All numbers in text are assumed to be decimal, unless otherwise noted. Nondecimal radixes—binary, octal, or hexadecimal—are explicitly indicated.

TFU Description

The VMS Terminal Fallback Utility (TFU) is the user interface to the VMS
Terminal Fallback Facility (TFF). This facility provides character conversion
for terminals and can perform character compose emulation on input from a
terminal.

Use the Terminal Fallback Utility to set up the system to use TFF character
conversion tables, and to set, change, and display TFF terminal-related
parameters.

1 Terminal Fallback Facility

The VMS Terminal Fallback Facility (TFF) provides table-driven character
conversion for terminals. Because every computer terminal can display only one
set of characters at a time and each keyboard has a limited number of keys,
software developed with one character set or terminal can be impossible to use
with another character set or terminal. To help you bridge the gap between
incompatible character sets and incompatible terminals, TFF converts characters
transparent to software applications (unnoticed by the application software
unless explicit inquiries are made). TFF can convert one character to many
for characters sent to a terminal, and one to one for characters entered from a
terminal.

TFF provides terminal fallback. When an application program sends a character
that a terminal cannot display, TFF replaces that character with the closest
possible visual character that the terminal can display. This is called *fallback*.

Finally, TFF can perform character compose emulation on input. You can create
characters that have no associated face on the keyboard by combining two
existing characters. This process is known as *composing*. Although TFF offers
compose sequence tables, you can also control which keys are *auto-compose* keys.

One of the applications of TFF is to allow users with National Replacement
Character (NRC) set terminals to use software developed with the Digital
Multinational Character Set (MCS). MCS is essentially the ASCII character set
plus 128 characters currently used by owners of NRC terminals around the world.

You can use the Terminal Fallback Facility by entering Terminal Fallback Utility
(TFU) commands, described in this manual. The TFU supersedes the function of
the VMS Version 4.x DCL command SET TERMINAL/FALLBACK.

2 The Purpose of Terminal Fallback

Terminals have physical limits. Every computer terminal can display one set
of characters and each keyboard has a limited number of keys. Characters are
arranged into character sets, where each character has a cardinal number (1, 2,
3, and so forth). Computers then use a character's cardinal number to tell the
terminal to display that character. For example, to display the character *A* a
computer sends the binary value 64 to the terminal. In the same way, when you
press the key labeled *A*, the terminal sends the binary value 64 to the computer.

One common character set is the ASCII character set, designed by the United
States primarily for the English language. The ASCII character set, however,
does not include many characters used in languages other than English. For
example, the ASCII character set does not include accented characters.

Because of the limitations of the ASCII character set, many countries replace some symbols in ASCII with local characters, mostly accented, to produce their own variant of ASCII. A country-specific variant of ASCII is called a National Replacement Character (NRC) set.

NRCs do not, however, solve the needs of all countries. Few countries are able to get all the characters they want into ASCII, because ASCII consists of a fixed set of symbols. Also, different countries replace the same ASCII symbol with different local characters. This leaves application software highly dependent on a country's NRC. It cannot be used in other countries.

In an effort to solve these problems, Digital Equipment Corporation designed a Multinational Character Set (MCS). MCS contains twice as many characters as ASCII, and covers the needs of most European languages. The VT200-series terminal uses MCS.

To use an NRC terminal with an MCS-specific application, characters must be converted going to and from the terminal to MCS. The Terminal Fallback Facility provides this conversion transparent to the application through a library of character tables.

Most NRC terminals cannot display all the MCS characters. When the application sends a character that the NRC terminal cannot display, TFF replaces that character with the closest possible visual character that the terminal can display. For example, if a terminal cannot display the Japanese yen sign ¥, TFF sends a **Y** as the fallback character.

3 The Purpose of Compose Characters

Sometimes you cannot use software developed with one character set on a terminal that does not include all of the required characters. Because each terminal keyboard has a limited number of keys, you must use compose sequences to create characters that have no associated face on the keyboard. Currently, TFF provides three compose sequence tables, LATIN_1 (see Table TFU–1), ISO_ COMPOSE, and ISO3_COMPOSE. More tables may be provided in the future. The default compose sequence table is LATIN_1. You should use this table with Digital applications. If an application uses a character set other than MCS, you need a matching compose sequence table. For example, to use the ISO table ISO_VT100MCS, you need the compose sequence table ISO_COMPOSE. After you choose the tables, TFF handles the conversion process. The ISO3_COMPOSE table is used in southeastern Europe.

3.1 Composing Characters with TFF

To compose a character in the TFF environment, you press Ctrl/K, and then enter the two existing keyboard characters that make up the compose sequence. For example, to compose the copyright sign, ©, press Ctrl/K followed by CO; to compose ñ, press Ctrl/K followed by n~ (lowercase *n* followed by tilde). You can create some characters from more than one compose sequence. Some compose sequences are order or case sensitive, or both. To abort a compose sequence, press the DELETE key. If you press Ctrl/K before completing the compose sequence, TFF restarts the compose sequence. If you press any other control key before completing the compose sequence, the compose sequence is aborted and the control character is sent to the application.

3.2 Compose Sequences—Digital LK201 Keyboard and the LATIN_1 Table

Table TFU–1 contains the compose sequences defined for entering MCS characters on most keyboards. You can use these compose sequences to enter all the characters currently available with the standard LK201 keyboard used with VT200-series terminals, DECmate, VAXmate, and Digital workstations.

TFF converts characters that do not have an accurate visual representation to the closest possible fallback representation. If no such fallback exists, TFF replaces the character with an underscore.

Table TFU–1 LATIN_1 Table

Fallback	Character	Name	Compose	Sensitivity
"	"	quotation mark	" space	
#	#	number sign	+ +	
'	'	apostrophe	' space	
@	@	commercial at	a a	
[	[	opening bracket	((	
\	\	backslash	/ / or /	
]	]	closing bracket	))	
^	^	circumflex accent	^ space	
'	'	single quote	' space	
{	{	opening brace	(-	
|	|	vertical line	/ ^	
}	}	closing brace	) -	
~	~	tilde	~ space	
!	¡	inverted exclamation	! !	
c	¢	cent sign	c / or c |	
L	£	pound sign	l - or l =	
Y	¥	yen sign	y - or y =	
_	§	section sign	s o or s 0 or s !	
_	¤	currency sign	x o or x 0	
_	©	copyright sign	c o or c 0	
a	ª	female ordinal indicator	a -	
<	«	double open angle brackets	< <	
_	°	degree sign	0 ^	
_	±	plus/minus sign	+ -	
1	¹	superscript 1	1 ^	
2	²	superscript 2	2 ^	
3	³	superscript 3	3 ^	
u	µ	micro sign	/ u	Order
_	¶	paragraph sign (pilcrow)	P !	
.	·	middle dot	^ .	

(continued on next page)

TFU Description

Table TFU–1 (Cont.)   LATIN_1 Table

Fallback	Character	Name	Compose	Sensitivity
o	º	masculine ordinal indicator	o _	
>	»	double close angle brackets	> >	
_	¼	fraction one-quarter	1 4	Order
_	½	fraction one-half	1 2	Order
?	¿	inverted question mark	? ?	
A	À	A grave	A '	Case
A	Á	A acute	A '	Case
A	Â	A circumflex	A ^	Case
A	Ã	A tilde	A ~	Case
A	Ä	A umlaut	A "	Case
A	Å	A ring	A *	Case
_	Æ	A E ligature	A E	Order & Case
C	Ç	C cedilla	C ,	Case
E	È	E grave	E '	Case
E	É	E acute	E '	Case
E	Ê	E circumflex	E ^	Case
E	Ë	E umlaut	E "	Case
I	Ì	I grave	I '	Case
I	Í	I acute	I '	Case
I	Î	I circumflex	I ^	Case
I	Ï	I umlaut	I "	Case
N	Ñ	N tilde	N ~	Case
O	Ò	O grave	O '	Case
O	Ó	O acute	O '	Case
O	Ô	O circumflex	O ^	Case
O	Õ	O tilde	O ~	Case
O	Ö	O umlaut	O "	Case
O	Ø	O slash	O /	Case
_	Œ	O E ligature	O E	Order & Case
U	Ù	U grave	U '	Case
U	Ú	U acute	U '	Case
U	Û	U circumflex	U ^	Case
U	Ü	U umlaut	U "	Case
Y	Ÿ	Y umlaut	Y "	Case
_	ß	German small sharp s	s s	Case
a	à	a grave	a '	Case
a	á	a acute	a '	Case
a	â	a circumflex	a ^	Case

(continued on next page)

Table TFU–1 (Cont.)   LATIN_1 Table

Fallback	Character	Name	Compose	Sensitivity
a	ã	a tilde	a ~	Case
a	ä	a umlaut	a "	Case
a	å	a ring	a *	Case
_	æ	a e ligature	a e	Order & Case
c	ç	c cedilla	c ,	Case
e	è	e grave	e '	Case
e	é	e acute	e '	Case
e	ê	e circumflex	e ^	Case
e	ë	e umlaut	e "	Case
i	ì	i grave	i '	Case
i	í	i acute	i '	Case
i	î	i circumflex	i ^	Case
i	ï	i umlaut	i "	Case
n	ñ	n tilde	n ~	Case
o	ò	o grave	o '	Case
o	ó	o acute	o '	Case
o	ô	o circumflex	o ^	Case
o	õ	o tilde	o ~	Case
o	ö	o umlaut	o "	Case
o	ø	o slash	o /	Case
_	œ	o e ligature	o e	Order & Case
u	ù	u grave	u '	Case
u	ú	u acute	u '	Case
u	û	u circumflex	u ^	Case
u	ü	u umlaut	u "	Case
y	ÿ	y umlaut	y "	Case

Note that the characters circumflex (^), tilde (~), and grave accent (') are used frequently to compose MCS characters. Many NRC sets, however, replace them with an NRC character. Thus, they are not available on an NRC keyboard. For each one of these keys, TFF accepts a replacement key. If you use this replacement key, however, you must begin the compose sequence with it; these compose sequences are order sensitive. For example, you can compose Ê with ^E, E^ or $E, but not with E$. TFF offers the following replacement keys:

- $ (dollar sign) replaces ^ (circumflex)

- % (percent) replaces ~ (tilde)

- & (ampersand) replaces ' (grave accent)

Section 4.5 describes the commands to associate the chosen tables with specific terminals.

4 Setting Up the TFF Environment

Before you can use TFF on a system, you must perform three basic steps. First, you must enable TFF on the VMS operating system. Next, you must load TFF tables into nonpaged dynamic memory pool. Finally, you or the system users must set terminal characteristics to make use of TFF. When you perform these steps, you can also establish system defaults to lessen the startup time for terminal users on your system.

4.1 Installing TFF on Your System

After you install VMS on your system, you must enable TFF. Invoke the command procedure TFF$STARTUP.COM located in the directory SYS$MANAGER on your system disk. The TFF$STARTUP.COM command procedure uses the System Generation Utility (SYSGEN) to load the fallback terminal driver (FBDRIVER) into nonpaged dynamic memory pool (see the *OpenVMS System Management Utilities Reference Manual*). To make the FBDRIVER available whenever the system is rebooted, edit the site-specific startup command procedure SYS$MANAGER:SYSTARTUP_V5.COM to include the following command:

```
$ @SYS$MANAGER:TFF$STARTUP.COM
```

4.2 Loading Tables into Nonpaged Dynamic Memory Pool

After TFF is enabled on a system, you must determine which character conversion tables and compose sequence tables the system users may need. Then you must load the desired tables into system physical memory, known as nonpaged dynamic memory pool. No users can access tables until you load them. To do this, you must direct TFU to the library containing the tables (use the SET LIBRARY command). The master library of character conversion tables is located on the VMS operating system disk in the following directory:

SYS$SYSTEM:TFF$MASTER.DAT

This library, shown in Table TFU–2, contains all the character tables supported by TFF.

Table TFU–2   TFF Tables in SYS$SYSTEM:TFF$MASTER.DAT

Table Name	Type	Base	Description
ASCII	Fallback	MCS	MCS for ASCII (US)
ASCII_OVST	Fallback	MCS	MCS for hardcopy ASCII terminal (overstrike)
BRITISH	Fallback	MCS	MCS for British NRC (BS 4730 [ISO 646 variant])
CANADIAN	Fallback	MCS	MCS for French-Canadian NRC (CSA Z243.4-1985)
DANISH	Fallback	MCS	MCS for Danish NRC (DS 2089)
DEC_SUPP	Fallback	MCS	MCS for DEC-Supplemental
DUTCH	Fallback	MCS	MCS for Dutch NRC
FINNISH	Fallback	MCS	MCS for Finnish NRC
FINNISH_VT102LD	Fallback	MCS	MCS for Finnish VT102LD
FRENCH	Fallback	MCS	MCS for French NRC (ANFOR NF Z 62-010 [1973])
FRENCH_VT100WF	Fallback	MCS	MCS for French VT100WF
GERMAN	Fallback	MCS	MCS for German NRC (DIN 66 003)
GERMAN_VT102GY	Fallback	MCS	MCS for German VT102GY
GREEK	Fallback	Grek	Greek 8-bit for DEC Greek 7-bit
HEBREW_VT100	Fallback	Hebr	8-bit Hebrew for DEC Hebrew VT100
ISO3_COMPOSE	Compose	ISO3	ISO Latin 3 compose sequence validation
ISO3_VT100TURK	Fallback	ISO3	ISO Latin 3 for DEC Turkish 7-bit
ISO3_VT200TURK	Fallback	ISO3	ISO Latin 3 for DEC Turkish 8-bit
ISO_7BIT	Fallback	ISO1	ISO Latin 1 for ASCII 7-bit terminals
ISO_COMPOSE	Compose	ISO	ISO Latin 1 compose sequence validation
ISO_VT100MCS	Fallback	ISO1	ISO Latin 1 for VT100s with DEC-Supp in ROM #1
ISO_VT200MCS	Fallback	ISO1	ISO Latin 1 for MCS terminals
ITALIAN	Fallback	MCS	MCS for Italian NRC (ISO registry #15)
LATIN_1	Compose	MCS	MCS compose sequence validation
MCS_FOR_ISO	Fallback	MCS	MCS for a terminal with ISO Latin 1
NORWEGIAN	Fallback	MCS	MCS for Norwegian NRC (NS 4551 V1)
PORTUGUESE	Fallback	MCS	MCS for DEC Portuguese NRC
SPANISH	Fallback	MCS	MCS for Spanish NRC (ISO registry #17)
SWEDISH_D47	Fallback	MCS	MCS for Swedish NRC (old type D47)
SWEDISH_E47	Fallback	MCS	MCS for Swedish NRC (SEN 85 02 00 - E47)
SWISS_VT102PY	Fallback	MCS	MCS for Swiss VT102PY
TURKISH	Fallback	MCS	MCS for Turkish NRC (partial ISO 6937/2)
VT100_MCS	Fallback	MCS	MCS for VT100s with DEC-Supp in ROM #1
YUGOSLAVIAN	Fallback	MCS	MCS for Yugoslavian NRC (JUS I B1.002)

TFU Description

4.2.1 Choosing TFF Tables

Before anyone can use TFF, you or the system users must choose the appropriate TFF conversion tables. Each terminal uses two tables: the fallback table and the compose sequence emulation table.

Fallback tables are tailored for different terminals. There is one fallback table for a base character set for a particular terminal. For example, table SWEDISH_E47 is intended to be used on a Swedish VT100-type terminal, conforming to the Swedish character set E47. The default compose sequence table is LATIN_1, used with Digital applications. However, if an application uses a character set other than MCS, you need a matching compose sequence table. For example, to use the ISO tables ISO_VT200MCS or ISO_VT100MCS, you need the compose sequence table ISO_COMPOSE. But, if you have an ISO terminal and want to use an MCS character set, you need the fallback table MCS_FOR_ISO, with which you also need the LATIN_1 compose sequence table.

4.2.2 System Resources and User Convenience

Because TFF makes use of valuable system resources (nonpaged dynamic memory pool), you must carefully prepare the environment from the system level. After you determine the requirements of the system's users, you need to establish any desired systemwide TFF defaults and load the appropriate conversion tables into nonpaged dynamic memory pool. Only previously loaded tables can be enabled by users at their terminals. How users control TFF from their terminals is explained later.

If your system is not shared by many users and has a large memory capacity installed, you may load into nonpaged dynamic memory pool each of the character conversion tables requested by the users. The convenience of having the tables quickly available to users may exceed the need for all available nonpaged dynamic memory pool. If, however, your system has many users competing for resources or has limited memory capacity installed, you may want to determine which tables are essential at a given time and which should be loaded only as needed. You can arrange to have users notify you when they need the conversion tables they use less often. You can also monitor the use of loaded tables with TFU commands. Thus, you can load and unload tables as they are needed.

4.3 Setting System Default Tables

When TFF is enabled, two tables are established as the default tables. ASCII is defined as the default fallback table, and LATIN_1 is defined as the default compose sequence table. These tables are permanently loaded into nonpaged dynamic memory pool. After you load other tables into nonpaged dynamic memory pool, you can establish a new default fallback table and a new conversion table.

One advantage of setting new defaults is ease of use for terminal users. For example, if most of the users on the system use the table FRENCH_VT100WF, establish it as the default. To use it, users can then enter either the DCL command SET TERMINAL/FALLBACK or the TFU command SET TERMINAL /FALLBACK. If you do not set FRENCH_VT100WF as the default, each user must enter TFU and enter SET TERMINAL/FALLBACK=TABLE:FRENCH_ VT100WF.

4.4 Invoking TFU

To use the Terminal Fallback Utility (TFU), enter the following command in response to the DCL prompt:

```
$ RUN SYS$SYSTEM:TFU
```

The utility responds with the following prompt:

```
VAX/VMS Terminal Fallback Facility (TFF)
TFU>
```

After you invoke TFU, you can enter any of the TFU commands. These commands follow the standard rules for DCL commands.

For example, to view the previous list of tables on line, you can invoke TFU and enter the following commands:

```
$ RUN SYS$SYSTEM:TFU
VAX/VMS Terminal Fallback Facility (TFF)
TFU> SET LIBRARY SYS$SYSTEM:TFF$MASTER.DAT
TFU> DIRECTORY
```

These commands are described in detail in the TFU Commands section.

4.5 Commands for Setting Up a TFF Environment

You can use the following TFU commands to customize your site. How you set up your system is determined by the needs of your site. You can use these commands regularly to *maintain* the system.

Command	Use
DIRECTORY	Displays a directory listing of a TFF library.
LOAD TABLE	Loads a character conversion table from the current work library into nonpaged dynamic memory pool.
SET DEFAULT_TABLE	Establishes the default fallback character conversion table.
SET LIBRARY	Declares a library as a current work library.
SHOW STATISTICS	Displays memory used, default TFF character conversion tables, and other TFF statistics.
SHOW LIBRARY	Displays information about the current work library.
SHOW TABLES	Displays information about loaded character conversion tables.
UNLOAD TABLE	Unloads a character conversion table from nonpaged dynamic memory pool.

Note that the SET DEFAULT_TABLE, LOAD TABLE, and UNLOAD TABLE commands require operator (OPER) privilege; the SHOW commands do not. Note also that there is no SET TABLE command.

4.6 Managing TFF Terminal Parameters

After TFF is installed on your system, you *and* individual users can set, change, and display TFF terminal parameters. You can set defaults from a system level or a terminal level. Thus, two terminals on the same VMS operating system can use different default conversion tables.

TFU Description

After you load the desired tables into nonpaged dynamic memory pool, you can set some default characteristics for the terminals attached to your system. For example, you may set one fallback table as a system default, and one compose table as a system default. This allows any user who logs in to a local terminal to enter a DCL *or* TFU SET TERMINAL/FALLBACK command and make use of the system conversion table defaults. In addition, users can set their own default fallback tables from tables previously loaded into nonpaged dynamic memory pool.

After you set up the TFF environment, terminal users can make full use of the TFU SET TERMINAL/FALLBACK command and its many options. For a detailed description of these options, see the TFU Commands section.

Use the following commands to manage TFF terminal parameters:

Command	Use
SET TERMINAL/FALLBACK[=option]	Enables or modifies TFF terminal parameters. This is the primary Terminal Fallback Utility command. Use this command to activate the desired behavior at the specified terminal.
SHOW DEFAULT_TABLE	Displays the default fallback character conversion table.
SHOW TABLES	Displays information about loaded conversion tables. This information is helpful before you try to enable TFF terminal parameters.
SHOW TERMINAL/FALLBACK	Displays TFF terminal parameters.

TFU Usage Summary

The VMS Terminal Fallback Utility (TFU) is the user interface to the VMS Terminal Fallback Facility (TFF). This facility provides character conversion for terminals and can perform character compose emulation on input from a terminal.

Use the Terminal Fallback Utility to set up the system to use TFF character conversion tables, and to set, change, and display TFF terminal-related parameters.

Format

RUN SYS$SYSTEM:TFU

Usage Summary

To use the Terminal Fallback Utility (TFU), enter the following command in response to the DCL prompt:

```
$ RUN SYS$SYSTEM:TFU
```

The utility responds with the following prompt:

```
VAX/VMS Terminal Fallback Facility (TFF)
TFU>
```

After you invoke TFU, you can enter any of the TFU commands. These commands follow the standard rules for DCL commands.

To exit from TFU, enter the EXIT command at the TFU prompt:

```
TFU> EXIT
```

You can also exit from TFU by pressing Ctrl/Z.

TFU Commands

This section describes the Terminal Fallback Utility (TFU) commands.

    DIRECTORY
    EXIT
    HELP
    LOAD TABLE
    QUIT
    SET DEFAULT_TABLE
    SET LIBRARY
    SET TERMINAL/FALLBACK=option
    SHOW DEFAULT_TABLE
    SHOW LIBRARY
    SHOW STATISTICS
    SHOW TABLES
    SHOW TERMINAL/FALLBACK
    UNLOAD TABLE

DIRECTORY

Provides a directory of a TFF library file. You can specify selective, brief, or full directory listings.

If you specify a library name, that library becomes the current work library.

Format

DIRECTORY   [library-name]

Parameter

library-name
Indicates the name of the library for which a directory listing is requested. If you have already established a work library, **library-name** is optional.

Qualifiers

/ALL
Lists all tables in the target library.

/COMPOSE
Lists only compose sequence tables. You cannot use /COMPOSE simultaneously with /ALL or /FALLBACK.

/FALLBACK
Lists only fallback tables. This is the default for the DIRECTORY command. You cannot use /FALLBACK simultaneously with /ALL or /COMPOSE.

/FULL
Displays more detailed table information. By default, only one line of information is displayed about each table you select.

Examples

1.
```
TFU> DIRECTORY
Directory of TFF library SYS$COMMON:[SYSEXE]TFF$MASTER.DAT;1
Name                  Type Base Description
----                  ---- ---- -----------
ASCII                 Fbk  MCS  MCS for ASCII (US)
ASCII_OVST            Fbk  MCS  MCS for hardcopy ASCII terminal (overstrike)
BRITISH               Fbk  MCS  MCS for British NRC (BS 4730 [ISO 646 variant])
CANADIAN              Fbk  MCS  MCS for French-Canadian NRC (CSA Z243.4-1985)
.
.
.
SWEDISH_D47           Fbk  MCS  MCS for Swedish NRC (old type D47)
SWEDISH_E47           Fbk  MCS  MCS for Swedish NRC (SEN 85 02 00 - E47)
SWISS_VT102PY         Fbk  MCS  MCS for Swiss VT102PY
TURKISH               Fbk  MCS  MCS for Turkish NRC (partial ISO 6937/2)
VT100_MCS             Fbk  MCS  MCS for VT100s with DEC-Supp in ROM#1
YUGOSLAVIAN           Fbk  MCS  MCS for Yugoslavian NRC (JUS I B1.002)
A total of 28 tables
TFU>
```

This example shows how to produce a brief directory listing of all the fallback tables in the current work library.

2. TFU> DIRECTORY SYS$SYSTEM:TFF$MASTER.DAT/FALLBACK/FULL

    Directory of TFF library SYS$COMMON:[SYSEXE]TFF$MASTER.DAT;1
    Name   Type Base Description
    ----   ---- ---- -----------
    ASCII   Fbk MCS MCS for ASCII (US)
                                   Table edit level: V1.0-0
                                   Size (in bytes): 1128
                                   Table format version: 0
    ASCII_OVST   Fbk MCS MCS for hardcopy ASCII terminal (overstrike)
                                   Table edit level: V1.0-0
                                   Size (in bytes): 1352
                                   Table format version: 0
    BRITISH   Fbk MCS MCS for British NRC (BS 4730 [ISO 646 variant])
                                   Table edit level: V1.0-0
                                   Size (in bytes): 1128
                                   Table format version: 0
     .
     .
     .
     .
    VT100_MCS   Fbk MCS MCS for VT100s with DEC-Supp in ROM#1
                                   Table edit level: V1.0-0
                                   Size (in bytes): 1413
                                   Table format version: 0
    YUGOSLAVIAN   Fbk MCS MCS for Yugoslavian NRC (JUS I B1.002)
                                   Table edit level: V1.0-0
                                   Size (in bytes): 1128
                                   Table format version: 0
    A total of 28 tables
    TFU>

    > This example shows how to display full information about all fallback tables
    > in the library SYS$SYSTEM:TFF$MASTER.DAT. The library specified in this
    > command then becomes the new default work library.

EXIT

Terminates the TFU session and returns you to the DCL command level. You can also type QUIT or press Ctrl/Z or Ctrl/C to exit from TFU.

Format

EXIT

HELP

Allows you to obtain online information about the Terminal Fallback Utility.

Format

HELP   [topic]

Parameter

topic
Indicates a topic about which you want information.

Example

```
TFU> HELP *
```

This command provides information about all of the TFU commands. To obtain information about the individual commands or topics, enter HELP followed by the desired topic.

LOAD TABLE

Loads a table from the current work library into nonpaged dynamic memory pool. Before you use this command, the fallback driver, FBDRIVER, must be loaded into memory by means of the System Generation Utility (SYSGEN) or SYS$MANAGER:TFF$STARTUP.COM. A table must be loaded into nonpaged dynamic memory pool before it can be used.

The following tables are always present and cannot be loaded or unloaded:

- ASCII—Fallback
- LATIN_1—Compose sequence validation

Format

LOAD TABLE   table-name

Parameter

table-name
Indicates the name of the table to be loaded.

Example

```
TFU> LOAD TABLE HEBREW_VT100
TFU>
```

This example shows how to load table HEBREW_VT100 into nonpaged dynamic memory pool from the current work library.

QUIT

Terminates the TFU session and returns you to the DCL command level. You can also type EXIT or press Ctrl/Z or Ctrl/C to exit from TFU.

Format

QUIT

SET DEFAULT_TABLE

Establishes a default table for the system. Before you specify a table as the system default, you must load the table into nonpaged dynamic memory pool using the LOAD command. The SET DEFAULT_TABLE command reads the table type (fallback or compose) from the specified table's header and makes the target table the default for its type.

Before you enable any defaults, the following defaults apply:

- ASCII—Fallback
- LATIN_1—Compose validation

Format

SET DEFAULT_TABLE   table-name

Parameter

table-name
Indicates the name of the table to be the default table.

Examples

```
1.  TFU> SET DEFAULT_TABLE HEBREW_VT100
    TFU> SHOW DEFAULT_TABLE
    System default TFF tables are:
        HEBREW_VT100                  (fallback)
        LATIN_1                       (compose sequence validation)
    TFU>
```

The command in this example establishes HEBREW_VT100 as the default fallback table for the system. The table HEBREW_VT100 must be loaded before you enter this command.

```
2.  TFU> SET DEFAULT_TABLE LATIN_1
    TFU>
```

Because the LATIN_1 table is a compose sequence validation table rather than a fallback table, the command in this example makes the LATIN_1 table the default compose sequence validation table.

SET LIBRARY

Allows you to declare a work library. Note that some commands implicitly declare a work library. If the library is located, it becomes the new work library.

Format

SET LIBRARY   library-name

Parameter

library-name
Indicates the name of the library to be made the current library. You must specify a library with the SET LIBRARY command.

Example

```
TFU> SET LIBRARY SYS$SYSTEM:TFF$MASTER.DAT
TFU> LOAD HEBREW_VT100
TFU>
```

In this example, the first command sets the library to be SYS$SYSTEM:TFF$MASTER.DAT which is the default file name and location. This command directs TFF to use character conversion tables located in that file. The second command loads the table HEBREW_VT100 into nonpaged dynamic memory pool.

SET TERMINAL/FALLBACK

Enables or modifies TFF terminal parameters. The /FALLBACK qualifier is required, but you can place it before or after the *terminal-name* parameter.

SET TERMINAL/NOFALLBACK takes no options and is equivalent to SET TERMINAL/FALLBACK=TABLE:NONE.

Format

SET TERMINAL/FALLBACK   [=(option,...)] [terminal-name]

SET TERMINAL/NOFALLBACK   [terminal-name]

Parameters

terminal-name
Indicates the target terminal for the set operation. If not specified, your own terminal is used. Note that you can use TFF only from local terminals; you cannot use terminal fallback on a remote terminal (RTAx),[1] the fallback terminal device (FBA0), a Packet Switch Interface (PSI) terminal (NVA0), a disconnected virtual terminal, or a terminal set for dynamic switching (DYNSWITCH) with DECnet.

option
Modifies the terminal parameters. If you specify more than one, enclose them in parentheses, and separate each with commas. You can use the following options with the FALLBACK=option qualifier:

Option	Definition
ACCEPT NOACCEPT	Enables input of 8-bit characters if the terminal is capable of generating 8-bit characters. The default is 7-bit character generation. 7-bit terminals, such as VT1xx and LA1xx, should have this feature turned off whereas VT2xx terminals may have it on (depending on the active table). The NOACCEPT option causes TFF to clear the eighth bit.
AUTOCOMPOSE NOAUTOCOMPOSE	Enables or disables all auto-compose keys available for the fallback table associated with a terminal. The AUTOCOMPOSE and NOAUTOCOMPOSE options override any keys specified with the ENABLE and DISABLE options.

---

[1]   You can use TFF locally and then use the DCL command SET HOST to access a remote system.

Option	Definition
DISABLE=(value[,...])	Disables one or more active auto-compose keys. Keys are chosen from the list of keys available for the fallback table associated with a terminal. The **value** argument is a list of the decimal values of the keys to disable. If you specify more than one value, separate the values with commas and place them in parentheses. SHOW TERMINAL/FALLBACK lists the currently active keys and their decimal values.
ENABLE=(value[,...])	Enables one or more auto-compose keys. Choose keys from the list of keys available for the fallback table associated with the specified terminal. The **value** argument is a list of the decimal values of the keys to enable. If you specify more than one value, separate the values with commas and place them in parentheses. SHOW TERMINAL/FALLBACK lists the currently active keys and their decimal values.
GX_DEFAULT:gx-name	Defines as the default character set the name of a character set, previously defined and stored in Read Only Memory (ROM) of the specified terminal. For example, VT100LD specifies the line drawing alternate character set available on VT100 terminals, and DECSUPP specifies Digital's supplemental character set.
	These options are available for a variety of incompatible terminals. For example, the ASCII option applies to a special class of older Digital terminals that do not have an ASCII ROM that allows display of the full ASCII character set. These terminals have only the NRC set of characters.
	Currently you can specify any of the following character sets for the default: ASCII, CANADA, CANADA_2, DECSUPP, FINLAND, FINLAND_2, FRANCE, GERMANY, ITALY, JIS, NETHERLAND, NORDAN, NORWAY, NORWAY_2, SPAIN, SPECIAL1, SPECIAL2, SPECIAL3, SWEDEN, SWEDEN_2, SWISS, TCS, UK, or VT100LD.
	For more information about available default and alternate ROM-based character sets, see the documentation for your specific terminal.

Option	Definition
SIGNAL NOSIGNAL	Enables the output of a BELL character to sound a terminal bell when an invalid compose sequence is entered. This is the default. You can disable this feature for applications that split escape sequences (for output) into two or more QIOs, because the BELL character may destroy such a sequence.
SOFT NOSOFT_COMPOSE	Enables software emulated compose, using the terminal's compose sequence validation table. You can enter compose sequences either by pressing Ctrl/K followed by the sequence, or by pressing an auto-compose key followed by the second character of the sequence.
SUSPEND NOSUSPEND	Suspends or resumes TFF intervention. In command procedures that perform data transfers over the terminal line, use the SUSPEND option to avoid having to remember which TFF parameters are to be reset. The SUSPEND option suspends TFF intervention until you specify NOSUSPEND.
TABLE:table-name	Indicates the name of the fallback table to enable. If you omit the **table-name** option and the terminal does not yet have fallback enabled, then the system default is used. Otherwise, no change is made to the terminal's table. Specify NONE for the table to disable fallback for the target terminal. This is equivalent to SET TERMINAL/NOFALLBACK. Before you can enable it, the target table must be present in nonpaged dynamic memory pool. Use the SHOW TABLES command for information about what tables are available.
TERMINAL:terminal_type	Specifies the terminal type, as seen by TFF. The terminal type controls part of the escape sequence parsing done by TFF. Thus, you should set this to the correct value. Use one of the following values: VT100, VT102, VT200, or AL_ARABI. VT102 also includes the terminals that are named VT100xy, for example, VT100WF.

Examples

1. ```
   TFU> SET TERMINAL/FALLBACK
   TFU>
   ```

   The command in this example enables fallback for the current terminal, using the default fallback table and default compose sequence table. The default terminal type is VT100.

2. ```
   TFU> SET TERMINAL/FALLBACK=(ACCEPT, NOSIGNAL)
   TFU>
   ```

   The command in this example enables fallback using system defaults, if they are not already enabled. The option ACCEPT enables input of 8-bit characters; NOSIGNAL disables the terminal bell that sounds when invalid compose sequences are entered.

3. ```
   TFU> SET TERMINAL TXB0: /FALLBACK=TABLE:NONE
   TFU>
   ```

   The command in this example disables fallback for terminal TXB0. This is the same as SET TERMINAL/NOFALLBACK TXB0. Note that you can place qualifiers before *or* after the **terminal-name** parameter.

SHOW DEFAULT_TABLE

Displays the default fallback tables for your system.

Format

SHOW DEFAULT_TABLE

Example

```
TFU> SHOW DEFAULT_TABLE
System default TFF tables are:
   CANADIAN                    (fallback)
   LATIN_1                     (compose sequence validation)
TFU>
```

The command in this example displays the default fallback and compose tables
as they were established before the command was entered. In this example, the
table CANADIAN is the default fallback table, and the table LATIN_1 is the
default compose sequence validation table.

SHOW LIBRARY

Provides information about the current work library.

Format

SHOW LIBRARY

Example

```
TFU> SHOW LIBRARY
%TFF-I-READIS, Current input library is SYS$COMMON:[SYSEXE]TFF$MASTER.DAT;1
TFU>
```

The command in this example lists the current work library. In this case, the default library TFF$MASTER.DAT is listed.

SHOW STATISTICS

Displays memory and other statistical information related to TFF.

Format

SHOW STATISTICS

Example

```
TFU> SHOW STATISTICS
TFF system statistics:
   Memory (bytes) -
     Fixed memory:
       FBDRIVER                                  5608
     Loaded tables:
       Compose tables (0)                           0
       Fallback tables (2)                       2288
     Memory allocated by fallback terminals (0):
       FBKs                                         0
       Replaced vectors                             0
     Total memory used (bytes):                  7896
   Misc -
     Total tables loaded since boot: 2
 System default TFF tables are:
     CANADIAN                    (fallback)
     LATIN_1                     (compose sequence validation)
TFU>
```

The command in this example displays information about TFF use. From this display you can see that two fallback tables have been loaded (in addition to the default table), no new compose tables have been loaded, and no fallback terminals have memory allocated to them. Other information is also displayed.

SHOW TABLES

Displays information about all loaded TFF conversion tables.

Format

SHOW TABLES

Parameters

None.

Qualifiers

None.

Example

```
TFU> SHOW TABLES
The following TFF tables are currently loaded
Name                      Type Base Crefc Trefc
----                      ---- ---- ----- -----
ASCII                     Fbk  MCS  *   0 0
LATIN_1                   Cmp  MCS  *   0 0
HEBREW_VT100              Fbk  Hebr     0 0
CANADIAN                  Fbk  MCS      0 0
%TFF-W-NOMORETAB, No more tables in wildcard scan
```

This example shows how to display a line of information about the tables currently loaded into nonpaged dynamic memory pool.

SHOW TERMINAL/FALLBACK

Displays TFF statistics about a specific terminal. The /FALLBACK qualifier is required, but you can place it before or after the **terminal-name** parameter.

Format

SHOW TERMINAL/FALLBACK   [terminal-name]

Parameter

terminal-name
Indicates the target terminal for the show operation. If excluded, your own terminal is used. Note that you can use TFF only from local terminals; you cannot use terminal fallback on a remote terminal (RTAx), the fallback terminal device (FBA0), a Packet Switch Interface (PSI) terminal (NVA0), a disconnected virtual terminal, or a terminal set for dynamic switching (DYNSWITCH) with DECnet.

Qualifiers

/ESCAPE_STATE
Displays information about escape sequence parsing and triggering Read Only Memories (ROMs). Use this information to debug your application.

/FLAGS
Displays which TFF terminal flags (options) you can set from the terminal, and displays any internal TFF flags.

/FULL
Displays full information about the terminal. You cannot use this qualifier with /ESCAPE_STATE or /STATISTICS.

/STATISTICS
Displays statistics about the specified terminal.

/TABLES
Displays the names of tables assigned to the specified terminal, including auto-compose keys for the fallback table.

Example

```
TFU> SHOW TERMINAL/FALLBACK/FULL TXB0:
TFF status for physical terminal _TXB0:

  Active tables:
    ASCII          (FALLBACK)
    LATIN_1        (compose sequence validation)

  Autocompose-keys (Parenthesized values are character's decimal value):
    None

  Settable flags:
    Nosuspend, Noaccept_8bit, Soft_compose, Signal, NoGR_terminal
  Internal state flags:
    None
```

```
     Rom(s) that will trigger TFF I/O conversion:
       ASCII
     Escape sequence parsing states:
       Input_state: Off (0), Output_state: Off (0)
       Terminal graphic registers for the next character (setup = VT00):
         G0 = ASCII,   G1 = ASCII
       Output mapping:
         GL = G0 (maps 7-bit; 8th bit is truncated)
     Output formatter expansion:
       Received:  4579  Transmitted: 4579 Expansion rate: +0.0%

     Replaced vector sizes (bytes):
       Port vector: 99, Class vector: 139
 TFU>
```

This example shows how to produce a full display of TFF information for terminal
TXB0.

UNLOAD TABLE

Unloads a table from nonpaged dynamic memory pool, releasing all memory used by the specified table. You can only unload tables that are not currently referenced by users and that are not the system default table. You must log out or enter SET TERMINAL/NOFALLBACK from your terminal to release a table for unloading. Note that you cannot unload the ASCII and LATIN_1 tables.

Format

UNLOAD TABLE   table-name

Parameter

table-name
Indicates the name of the table to be unloaded.

Example

```
TFU> UNLOAD TABLE HEBREW_VT100
TFU>
```

The command in this example unloads table HEBREW_VT100 from nonpaged dynamic memory pool.

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