

High-speed file transfer between your Bull mainframe and your Open Systems

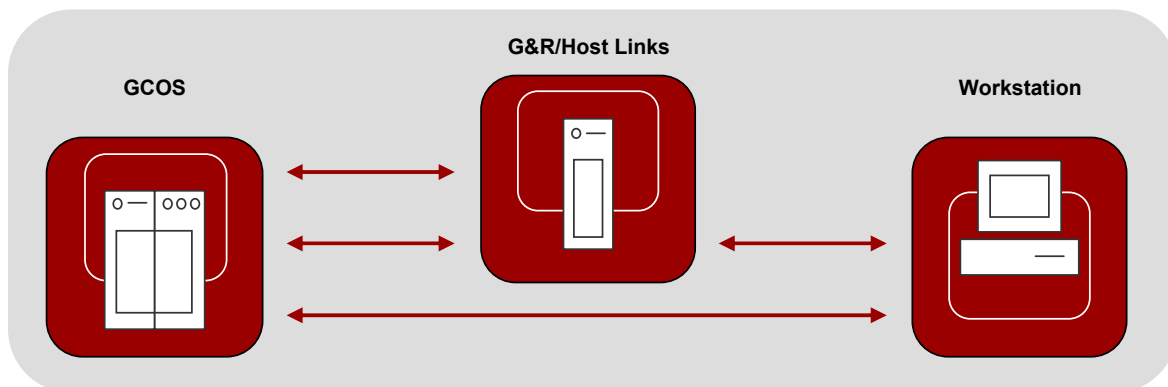
Opening up your Bull mainframe file system

UFT (Unified File Transfer) is a file transfer protocol that defines how to transfer files between heterogeneous systems in a DSA network. G&R/GUFT is our implementation of UFT; which allows you to transfer files efficiently and reliably between your Bull mainframe and your Open Systems. The systems must be interconnected in a DSA/OSI network, using either TCP/IP (RFC1006) or an OSI transport stack for lower level communications. G&R/GUFT supports both, allowing direct connections to the Bull mainframes. GUFT can also connect using G&R/Ggate protocol over TCP/IP to a G&R/Ggate gateway.

GUFT is available on all Bull systems. The file transfers can be initiated by either side. Bull systems have both UFT client and server implementations.

GUFT is available on all UNIX, Linux and Windows platforms supported by the G&R Host Links product line. This includes all major flavors of UNIX, Linux and Windows servers running on 32-bit or 64-bit platforms. The GUFT for Windows client runs on all Windows workstations currently supported by Microsoft.

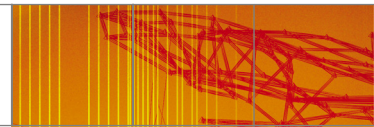
UFT file transfers involve two DSA/OSI nodes. One of the nodes runs a UFT client, called a requester, and the other node runs a UFT server. The requester initiates the various file transfer requests and the server responds by performing the actions that are necessary to carry out the transfer.



File transfer sessions can be established between your mainframe and your Host Links system, from your mainframe via Host Links to your workstation, or directly between your mainframe and your workstation.

The G&R/GUFT offer includes both requester and server software, enabling file transfers between:

- A G&R/GUFT client and a G&R/GUFT server
- A G&R/GUFT client and a Bull UNIX, GCOS6, GCOS7 or GCOS8 UFT server
- A Bull UNIX, GCOS6, GCOS7 or GCOS8 UFT client and a G&R/GUFT server



Bull mainframe UFT clients

GUFT file transfers can be initiated interactively by terminal users connected to a Bull mainframe, e.g. logged on to IOF on GCOS7 or to TSS on GCOS8. Unattended UFT transfers can be invoked from batch routines on a Bull mainframe system. All of these start the Bull mainframe client implementation, which makes an outgoing DSA connection as a requester to the target UFT server.

e.g. from TSS on GCOS8, from the DSAS sub-system, you could issue the command:

```
tran -rn is2c -lf gar/txt8 -rf
'/local/unixtext' -s -moni -r
```

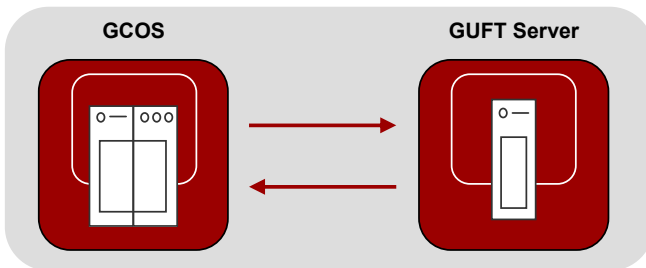
This would cause the GCOS8 DSAS requester to connect to remote DSA node 'is2c' and request transmission of the GCOS8 file 'txt8' to the local file 'unixtext' on that UNIX system. The GUFT server is started on-demand on 'is2c' and services the request by accepting the file and writing it to the requested file path.

From IOF on GCOS7 you could issue a command:

```
eftr my.lib..txt7
$is2c: '/local/unixtext'
```

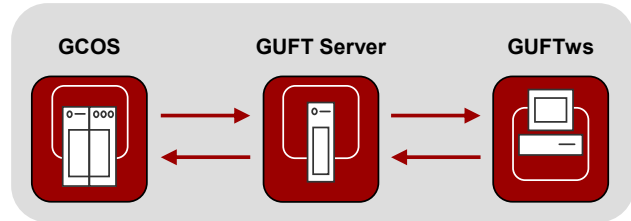
This would cause the GCOS7 GTP requester to connect to the same DSA node, and make a similar request.

GUFT Server



Each time a file transfer is initiated by your mainframe the Host Links listener on your Open System launches a GUFT server automatically to handle the transfer request. There is no limitation to the number of file transfers that you can launch simultaneously; the only limitations are the hardware resources (typically the communication link) of your system. The GUFT server accepts file management and transfer requests issued by a remote UFT requester, usually a Bull mainframe client. Files are read from or written to the local file system unless redirected to a client workstation.

GUFT Server Redirector



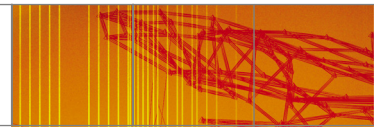
The UFT protocol does not define a way of redirecting files on the server side, so there are no parameters or options that the user can give to the Bull mainframe clients in order to redirect the transfer to the file system on a workstation rather than the GUFT server platform. To overcome this limitation we have introduced a special file name syntax that instructs the GUFT server that the file in question is not a local file, but rather a file located on a user workstation. The syntax is simple; the file name includes the target workstation's network address, preceded by a semicolon.

The following is an example of using the GCOS7 requester to issue a transfer of a GCOS7 file called "myfile" to a file called "myWsFile" on a workstation with network address 188.99.77.123 via GUFTsrv on DSA address EN01:

```
eftr my.lib..myfile
$EN01: 'myWsFile;188.99.77.123'
```

Some competing third party UFT server implementations perform this redirection in a two-step operation, i.e. first, receive the file on the server; and then, once the transmission is complete, launch an FTP session to the workstation. In the GUFT implementation, the redirection is done immediately, i.e. GUFT opens a connection to the workstation as soon as the transfer request is started from the mainframe, and sends the data blocks to the workstation as they are received from the mainframe, greatly reducing total transfer time. This also ensures that the mainframe client is informed of the true status of the transfer; when the mainframe client is informed that the transfer is complete it can be sure the file is on the workstation, there is no second step that can fail.

The workstation program, GUFTws, enables the mainframe clients to initiate file transfers in either direction: from the mainframe to the workstation, or from the workstation to the mainframe. It is included in the GUFT package, and must be installed on the user workstation. It runs in the background waiting for redirected transfer requests from a GUFT server executing on some Host Links system. The GUFTws icon can be seen in the system tray, and once a session is established from the GUFT server, the icon will change color to indicate that a file transfer is in process.



GUFT Requester in command mode, UNIX/Linux and Windows

In command mode, you can initiate a single session to a single server. During this session you can send or receive a single file. GUFT command mode is suitable for unattended or background operation, and can be executed from a script or BAT file.

Given the following guft.cfg file on a UNIX or Linux system:

```
Default
-li dsa
-hm dps8
-dn b6dd
-du jim
```

You can start GUFT in command mode, and send a local file (defaults to VAR type) to the remote system, where the file does not yet exist, using the command:

```
guft -lf myfile -crf
>udd>jim>myfile -put
```

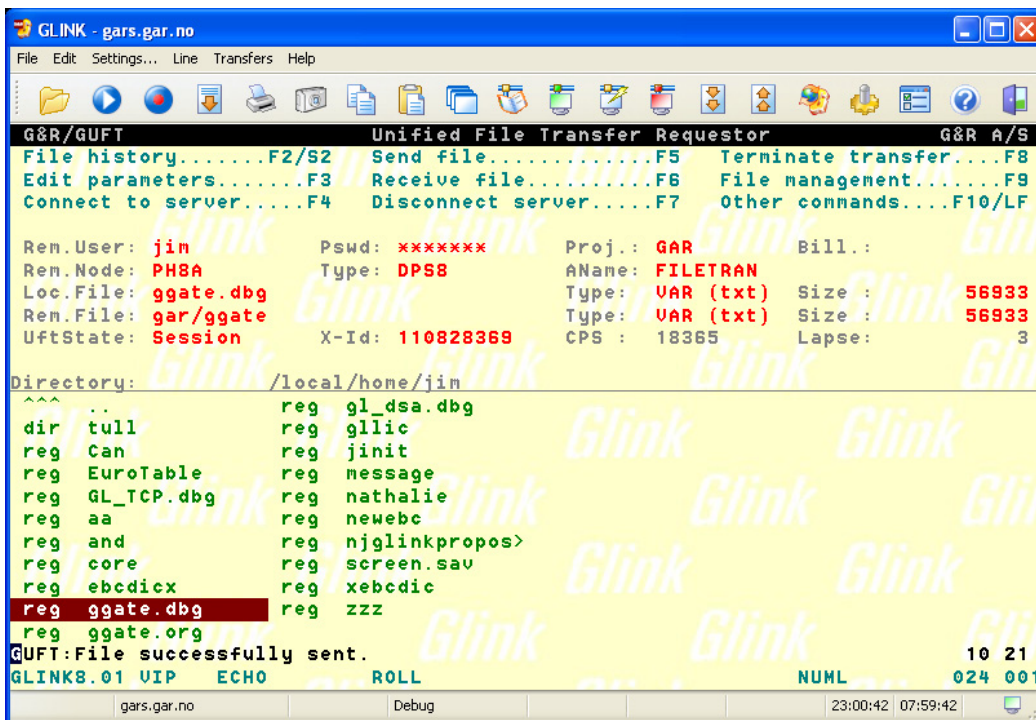
GUFT Requester in screen mode, UNIX/Linux

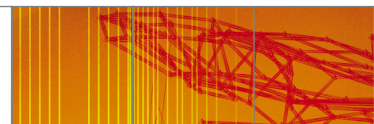
Users logged into a UNIX/Linux system with any standard terminal interface (Vtxxx, ANSI, VIP) can start GUFT in interactive screen mode. In screen mode, GUFT uses the G&R/Gvideo interface to display a user-friendly menu where the various UFT functions are offered. Additionally, a lot of general features are offered, including the possibility of navigating around in the local file system, executing local commands and starting new command shells.

You have only a single session at a time within a given context, but you may execute several contexts using the G&R (or other) context manager to start multiple simultaneous transfers. The UFT protocol allows transfer of only one file at a time, but you can do multiple file transfers serially and have several sessions with different UFT servers serially without terminating GUFT. You can preconfigure all communications related parameters, leaving you to simply select the local and remote file names and press the appropriate function key. While a file transfer is in progress, GUFT updates the screen with status information (number of bytes transferred, bytes per second and elapsed time).

```
Type: VAR (txt) Size : 56933
Type: VAR (txt) Size : 56933
CPS : 18365 Lapse: 3
```

Help is always available, and within the parameters menu it is context sensitive.





The GUFT Windows client

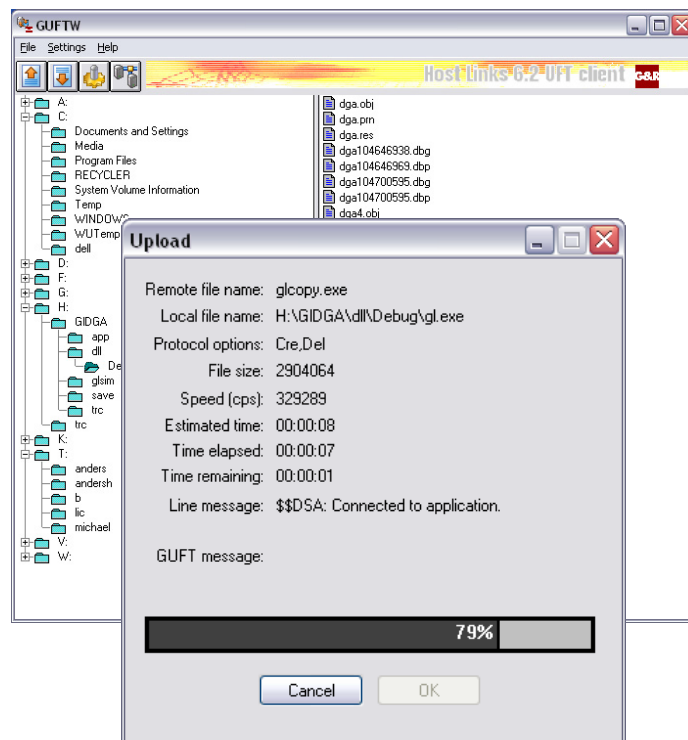
A Windows GUI version offers an interface with buttons, menus and dialog boxes for easy access to all functions. All communication parameters as well as file history information are saved for future use.

Additionally, it offers an interface for navigating through the local file system and selecting files.

Online help is available, and within the configuration dialog boxes the help is context sensitive to the parameter you are entering.

You can have a theoretically unlimited number of sessions at a time, within a given instance of GUFT for Windows. The UFT protocol allows transfer of only one file at a time, but you can do multiple connections to the same UFT server and have several transfers with different UFT servers running simultaneously. You can preconfigure all communications related parameters, leaving you simply to select the local and remote file names and click the appropriate toolbar button.

While a file transfer is in progress, GUFT for Windows updates the screen with status information (number of bytes transferred, bytes per second and elapsed time) and, when information on file sizes is available, a progress bar.



A GUFT Windows client program with an active file transmission upload request

Communications

Between GUFT redirector and GUFTws:

- G&R Ggate protocol over TCP/IP

Between GUFT and Bull mainframe:

- DSA or DIWS over TCP/IP (RFC1006)
- DSA or DIWS over OSI Transport Stack

Supported file functions

Send, receive, create, delete, rename, append

Supported file types

UNIX/Windows files in 'text' or 'binary' mode
 UFAS sequential, indexed and relative
 GCOS8 GFRC and TSS ASCII

Supported UFT mainframes

GCOS 8/9000
 GCOS 7/7000
 GCOS6/HVS/HVX
 G&R/Host Links on all platforms listed below

Supported platforms

Windows 2000/XP/2003
 Linux
 AIX 5L
 Solaris
 HP-UX 11i