

## Introduction

Vipersat File Streamer (VFS) is a software application used in conjunction with the Vipersat Management System and Vipersat-enabled CDM-5xx IP family of modems to provide efficient and reliable file transfers over satellite networks. VFS overcomes the limitations of TCP/IP over satellite links by implementing an efficient datagram protocol, while at the same time having the ability to request dynamic SCPC (*dSCPC*) satellite bandwidth.

VFS provides for channel utilizations of up to 99% while allowing for file transfers of any size and any format over satellite. VFS is not a stand-alone product for file transfers; rather it is an optional accessory that integrates with the Vipersat Management System, augmenting the bandwidth on-demand capabilities of the system for applications, such as file transfers.

## Simplicity of Operation

Through its graphical user interface, VFS simplifies the file transfer process by allowing the operator to select which files or folders are to be transferred and where they are to be stored. Files or folders can be dragged from the desktop or Windows Explorer™ and dropped into VFS to create a new transfer session. Transfers can be scheduled or performed instantaneously. Scheduled transfers during non-peak hours aid in avoiding network congestion.

## Overview

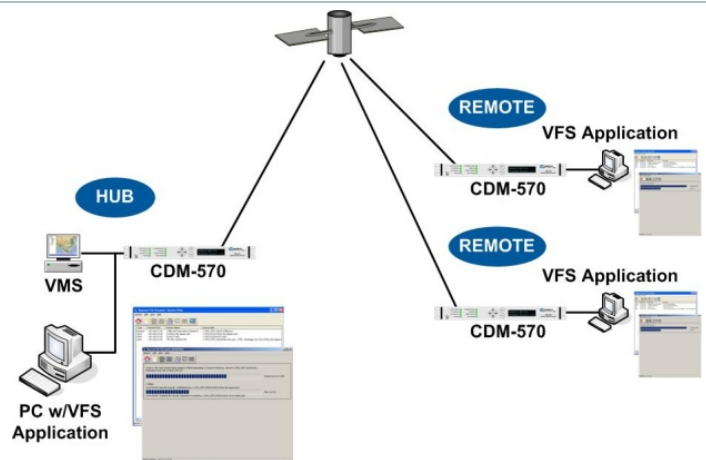
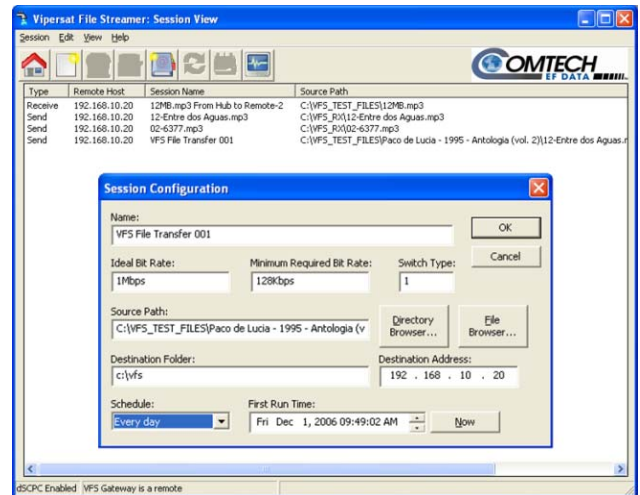
VFS is a peer-to-peer application where each endpoint in the network provides its client and server. With VFS, there is no centrally located server required to manage file transfers in the network. VFS is authorized by enabling a FAST feature code within the CDM-570/L gateway modems at each endpoint in the network. VFS uses Vipersat *Streamload* protocol to provide efficient file transfers over satellite links. *Streamload* protocol is optimized for satellite communications and allows for reliable transfer of data by providing precise bandwidth flow control and use of negative ACKs.

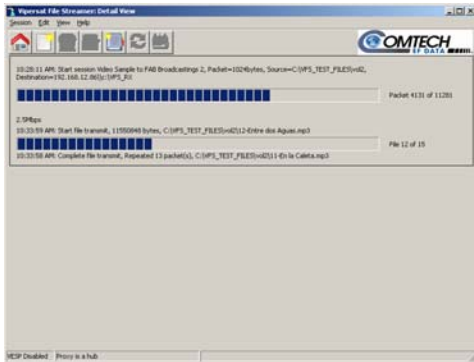
VFS integrates with the Vipersat Management System to request bandwidth for file transfers. When a file or folder is ready to be transferred, an automatic switch request is sent to the VMS. VMS automatically establishes the low-latency, low-jitter dynamic SCPC satellite connection between endpoints at a specified session bit rate. VFS through its *Streamload* protocol, completes the file transfer, and updates its event log.

VFS allows users to send individual files or a directory (folder) of files. Users specify the destination PC and the directory in the remote file system where the information is to be placed.

## Features and Benefits

- Up to 99% channel utilization – full utilization of satellite bandwidth
- Significant reduction in file transfer time when compared to TCP/IP-based solutions
- Integrates with the Vipersat Management System providing dynamic SCPC satellite bandwidth for all file transfers
- Provides Operating Expense savings Simple graphical user interface and ease of setup
- Files can be distributed on a schedule or immediately
- Event logging of file transfers and real-time transfer status indicators





## File Transfer Status

Progress of received file transfers is visually displayed through the Progress View screen. Progress bars exist for the duration of the transfer. Progress bars use color coding to indicate transmission state. Blue indicates a normal transfer state, while yellow indicates missing packets are being resent.

## Comparisons

A comparison test consisting of downloading a 12 MB file over a 2.5 Mbps satellite link is summarized below. Tests were performed with the following configurations:

- TCP/IP (Windows XP) – no external acceleration
- TCP/IP (Windows XP) – with external hardware accelerator
- Vipersat File Streamer

FTP put operation and VFS send (from remote) were performed to send a file using IP based protocols.

Channel utilization with a standard non-accelerated FTP file transfer over satellite yielded a utilization of approximately 15%. Adding an external hardware accelerator increased utilization to 37%.

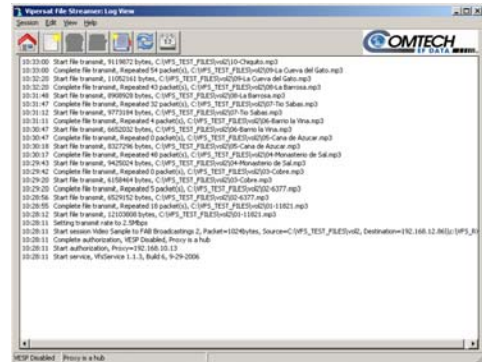
VFS yielded 99% channel utilization for the same file, at the same data rate over the same space segment.

With the addition of VFS into the Vipersat Network solution, channel utilization efficiencies improve dramatically over standard FTP file transfers. VFS builds on Comtech EF Data's commitment to maximizing transponder utilization, minimizing operating expenses, and optimizing satellite communications.

## System Requirements

VFS is a Windows™-based application that can be run from any client PC using Windows 2000 or later and must meet the requirements in the table below.

CPU	Pentium IV, 3.0 GHz or higher
RAM	1 GB
Bus Speed	533 MHz FSB
Hard Disk Space	80 GB
Video	PCI or AGP, 1280 x 1024, 65,536 Colors
Network Interface	Ethernet 10/100Base-T, RJ-45
Serial Port	One available USB port
Satellite Modem	CDM-570/L with VFS FAST option enabled
Management System	VMS 3.3 or later
Operating System	Windows 2000, Windows XP, Windows 2003 Server



## Event Log

VFS maintains a log of files transferred in both sent and received directions. Information contained in the event log indicates size of the file as well as source and destination locations.

