

GNS FileXFer System

Overview

For many years, GNS has written custom tasks to both run reports and upload them to brokers on behalf of their clients. Additionally, we download hundreds of files from brokers and other agents to our clients' servers, and then feed them into systems such as Geneva, EZE OMS, Wall Street Office, Charles River or other systems. Our clients rely on these 'data feeds' for the successful operation of their back office and trading environments.

In response to client requests, we initiated a project to develop a system that would centrally manage all of these jobs, as well as offering a number of features that individual scripts lacked. We have deployed this system throughout our hosted and managed environments, and continue to roll out this system to our clients.

Features

- ▶ Robust file transfers between agents and brokers, and to and from systems managed and/or hosted by GNS.
- ▶ Central setup, management, and reporting to GNS technicians, which enables monitoring and change requests by clients or third parties.
- ▶ Job status displays in the GNS Client Portal.
- ▶ Automated error handling and retries.
- ▶ Flexibility to deal with permutations, such as encryption/decryption of files, pre- and post-processing of files, and archiving.
- ▶ Ability to group jobs and alert client staff or third-parties if one or more jobs fail.

How it Works

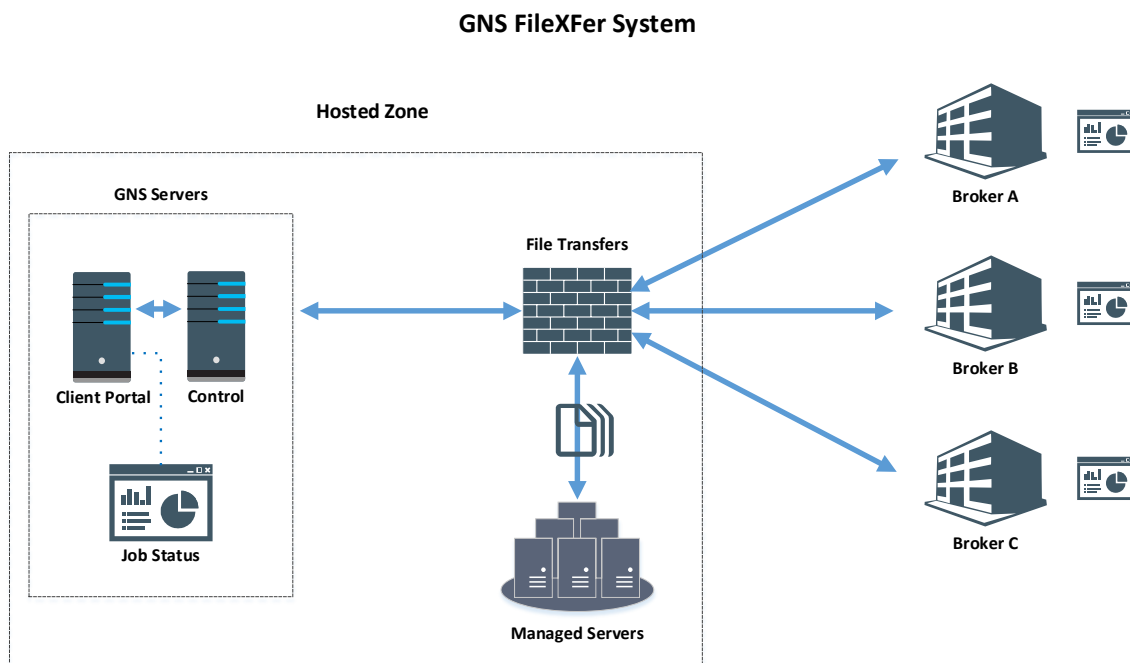
Previously, many of the file transfer jobs GNS set up were simply PowerShell scripts that utilized a small set of libraries and were created on an as needed basis. These are/were scheduled in local systems to occur at set times throughout the day, and delivered simple alerts so that engineers could investigate if they failed. Failures were often due to a broker experiencing a delay in producing the files, and so the job would be rescheduled. File corruption checks, or pre- and post-processing, was a feature unique to the particular script.

The GNS FileXFer system is a small agent program that runs on the target server every 10 or 15 minutes and securely polls a central GNS server for tasks. If a task is scheduled, the information is passed to the agent, and this acts to facilitate the download or upload along with any additional actions required. Once complete, or in the event of failure, the agent reports back to the central server and technicians can diagnose the issue, or in the event of a delay in the file being available, allow the system automatically retry.

In addition to simple file uploads and downloads, brokers are increasingly adding encryption to their files, as well as using Secure File Transfer protocols with more complex encryption standards. As such, each transfer requires its own public or private key in order to be encrypted or decrypted both before and after the task is complete, so that the file can be imported into the client's system. By centralizing configurations for these parameters, GNS can quickly and easily respond to any changes in broker encryption keys. Brokers are now mandating that keys change periodically, potentially several times per year. Neither GNS nor our clients want to experience any disruption to the data flow, so it is essential that this process be easy to manage and change upon demand.

Implementation

The agent is a .NET core binary on Windows systems and a native binary on Unix platforms. It is now part of the software suite of tools GNS installs on all managed servers. Execution of this software is handled either by cron on Unix or TaskScheduler on Windows, or one of a number of third-party tools such as AirFlow (Unix and Windows), or Job2Do and Automate (Windows).



Summary

The FileXfer system has successfully met the requirements laid out above to migrate automated jobs from individual scripts. The implementation of a centrally managed process allows GNS to more effectively handle the varied requirements of our clients and their counterparts. We have also been able to develop 'higher level' groupings of jobs. Our clients are now provided with custom notifications so they know when, for example, all their file uploads to JPMorgan Chase have been completed for the day, or when their nightly batch finishes and has been sent to Citco. The system is now considered mature for a variety of tasks, but we continue to look at client requests and add new functionality upon demand.