GV File
Installation Guide Linux

grass valley

Version History

Table 1: Version Table

Date	Version	Released by	Reason for Change
09/07/2014	1.0	Andy Gingell	Initial release
02/09/2014	1.1	Jeremy Courtney	Renamed xFile Installation Guide
09/10/2014	1.2	Andy Gingell	Added license revocation warning
12/03/2015	2.0	Andy Gingell	Revised edit for V2.*.*.*
08/09/2015	2.1	J Metcalf	Edit for XF rebrand
26/01/2016	2.2	G Emerson	Completed rebrand
21/10/2016	2.3	J Metcalf	Updated Support web links
06/02/2017	3.0	J Metcalf	Updated for V3 release
13/02/2017	3.1	J Metcalf	Minor update
12/09/2018	4.0	J Metcalf	Update for V4 release + GV Rebrand
26/08/2020	4.1	J Metcalf	Rebranding / Link modification
26/05/2021	4.2	J Metcalf	Remove note on running License server on a VM

Table of Contents

List of Tables

1. Introduction

1.1 Purpose

This document is a GV File Installation guide. It describes how to install the GV File framework and how to license it.

By following the steps described, all the GV File Services/Applications will be installed on a single host machine. However the GV File framework does facilitate a distributed system and some of the Services/Applications can be run on another PC where appropriate. This is discussed later in the document.

1.2 GV File Framework License Warning

The GV File product licenses are locked to specified locking criteria of the host machine of the license service.

Please be aware any changes made to this host machine could invalidate the licenses and stop your GV File products from working.

The locking criteria includes unique hardware ID's, hostname and the operating system i.e. a reinstall will invalidate you licenses.

If you need to change the license server host machine in anyway please contact GV Support first as it **is imperative that we revoke your existing license prior to supplying a new one** after you have made your changes.

Please note adding memory or Replacing /adding GPUs are not classified as major hardware changes.

1.3 Assumptions

- The host machine has at least the minimum specification, including a GPU with correct GPU driver

- The GV File services will be initially installed on one host machine but there are possibilities of supporting multiple instances of the GV File Browser, Watcher and Node depending on topology.

- It must be possible to access the host machine either locally via a display, keyboard and mouse, or via remote console.

1.4 Definitions, Acronyms and Abbreviations

Table 2: Table of Terminology

Term	Definition
API	**Application Programming Interface**. An API specifies how some software components should interact with each other.
APT	Advanced Packing Tool
Destination folder	Folder where finished jobs are written to (access and authorisation is required).
FIMS	**Framework for Interoperable Media Services**. A framework of service definitions for implementing media related operations using a Service Orientated Architecture (SOA).
GPU	**Graphical Processing Unit**. They are very efficient at manipulating computer graphics, and their highly parallel structure makes them more effective than general-purpose CPUs for algorithms where processing of large blocks of data is done in parallel.
Install / Installation	Installation of the services within the GV File framework
Locking code	Lock code base on specified locking criteria
License file	Defines the quantity of products available
License Server	Manages product licenses
XF	Former name of GV File. Alchemist was originally Alchemist OD, then Alchemist XF, but is now Alchemist File. Its just a name change. The product is the same.
Profile (default/user)	Describes a collection of parameters for a given job. User defined profiles and a selection of read only default profiles are available.
REST	**Representational state transfer**. Rest is a simple way of sending and receiving data between client and server. A RESTful web service is a web API implemented using HTTP and REST principles. Request methods include GET, POST, PUT, DELETE.
GV File Browser	Service which provides access and directory listings for local and remote shares to the client. Enables the use of **browse** feature in the client.
GV File Deployment	A collection of GV File services which touch the actual media assets. This might be dictated by geographic location and/or SAN configuration. The services which touch the media are the GV File Node, GV File Browser and GV File Watcher.
GV File Node	Service which executes the jobs within the job queue. It performs all data processing (image/audio/metadata).
GV File Server	Service which orchestrates the framework and manages the products, profiles, licenses available within a given server. One server can manage multiple deployments.
GV File Watcher	Service to monitor watch folders and automatically add jobs to the job queue. Monitoring can be based on notification or polling.

Term	Definition
SOAP	**Simple Object Access Protocol.** SOAP is a method of transferring messages, or small amounts of information, over the Internet. SOAP messages are formatted in XML and are typically sent using HTTP (hypertext transfer protocol).
Source file	Location of the source file. Path can be entered explicitly or via the "browse" feature (access and authorisation is required).
SUDO	Super User Do
YUM	Yellow Dog Update Manager

2. Hardware and Software Requirements

Please refer to the website for details of the hardware and software required to run GV File.

Alchemist-File:

[Alchemist File - Datasheet](#)

Kronos-File:

[Kronos File - Datasheet](#)

Quasar-File

[Quasar File - Datasheet](#)

For more detailed info, please see Optimising Performance documents here:

Alchemist-File:

[Alchemist File - Optimising Performance](#)

Kronos-File:

[Kronos File - Optimising Performance](#)

2.1 Software Prerequisites Specific to Linux Installation

Whilst installing, the GV File services will need to run an update tool such as YUM (Yellow Update Manager) or APT (Advanced Package Tool*)* to access and manage the installation of required software dependencies. Your choice of update tool will depend on your Linux distribution.

The GV File services are installed as **root** user. Customers can either log on as **root** or configure **sudo** to carry out the installation and management (**sudo** will allow specific users to run as **root** temporarily).

In order to run the GV File Client on a Linux host machine, the machine will need to have a suitable X Windows session running.

3. GV File Architecture

3.1 Overview

The GV File framework benefits from a Service Orientated Architecture (SOA). This SOA design philosophy aids your ability to develop your installation and allow it to grow as your needs evolve.

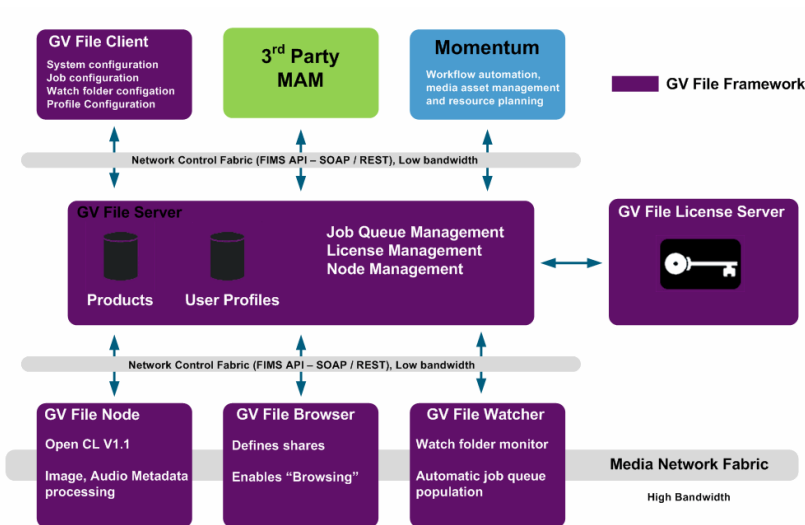The minimum required services are:

- GV File Client

- GV File Server

- GV File Node (minimum of one)

Optional Services are:

- GV File Browser

- GV File Watcher

Without the **GV File Browser** installed and started the **Browse** feature will not work in the client.

Without the **GV File Watcher** installed and started the **Watch Folders** feature will not work.

GV File Framework

3.2 Deployment Components

There are separate installers for each of the application/services allowing deployment on a distributed system, alternatively each application/service may be installed on a single host machine. The install package are:

- GV File Client   (Client application)

- GV File Server   (Service)

- GV File Node   (Service)

- GV File Browser   (Service)

- GV File Watcher   (Service)

- License Server   (Service)

GV File Client is the application used to connect to the GV File Server. It can be installed locally on the host or run from a remote computer which is running CentOS or Redhat. Multiple clients can be connected to a single server. The client offers intelligent profile creation, job creation, visibility of available products (and associated quantity of licenses), framework configuration and status.

Note that remote clients running on Windows 64bit OS, or MAC, can be configured.

GV File Server is the service responsible for the main orchestration of the framework. It organizes the various deployments and their associated services. It manages the job queue, the license server and all job profiles (user and default) for the available GV File products. Job priority can be specified with jobs of an equal priority executed on a first come, first served basis. For a job to start a GV File Node and license must be available.

GV File Node is the service which transforms/converts the video/audio and metadata. For successful operation an OpenCL V1.1 environment is required. This can be achieved using single or multiple GPUs within a host machine.

Details of supported GPUs can be found in the appropriate Datasheet on the website (see section 2 above).

Multiple GPUs within a host machine can be used to increase the speed of processing up to real time.

A deployment can consist of multiple nodes to enable parallel processing of jobs within the queue. The number of GV File Nodes available dictates the number of jobs that can be run in parallel at any one time.

Dependant on the network topology, this service may require authorisation to access the media on specified shares.

GV File Browser is a service which provides access and directory listings for local and remote shares to the client. This enables the "browsing" feature within the client and enhances the user experience when creating new jobs.

Dependant on the network topology, this service may require authorisation to access the media on specified shares.

GV File Watcher is a service which monitors user specified Watch Folders and automatically adds jobs to the job queue when their contents changes. Monitoring can be based on file system notifications or dedicated polling. The user specifies a Profile to be applied to each asset which is copied to a Watch Folder. The processed asset is then written to the associated Drop Folder. Filters and output filenames can be assigned to each Watch Folder. Dependant on the network topology, this service may require authorisation to access the media on specified shares.

License Service – is the service that manages licensing of the GV File framework. If the license service is not available, or cannot be accessed over the network, products within the framework will not be available for use.

4. Framework Topology

The GV File software framework benefits from a Service Orientated Architecture (SOA) which has been engineered to support a range of deployments from a single node through to a cluster of nodes within a data centre.

This SOA design philosophy aids your ability to evolve your installation and allow it to grow as your needs change. Whether you want a centralized job queue managing many processing nodes, or prefer singular job queues managing individual nodes, the framework can accommodate your requirements.

4.1 Framework Configuration Examples

Here are few examples to demonstrate the various ways you could configure your GV File Framework.

4.1.1 Standalone

This example shows a typical installation where all Services and the Client have been installed on a single workstation/server. The key consideration here is that the license server is installed on the same piece of hardware that is running the node. Typically the node is more likely to be upgraded (operating system and/or, hardware).

As the license is locked to specific criteria of the hardware it could be argued it is not ideal having the license server and node coexist on the same hardware.
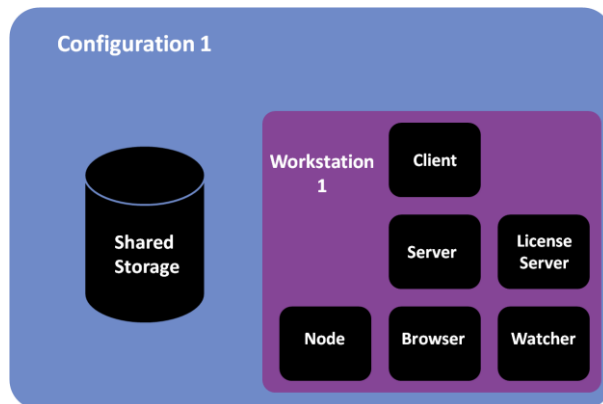
4.1.2 Multiple Servers

This example shows how multiples servers can be configured to support separate workflows with a common license server.

This topology is useful when the two workstations support different user groups or workflows. The job queues and profiles are independently managed.
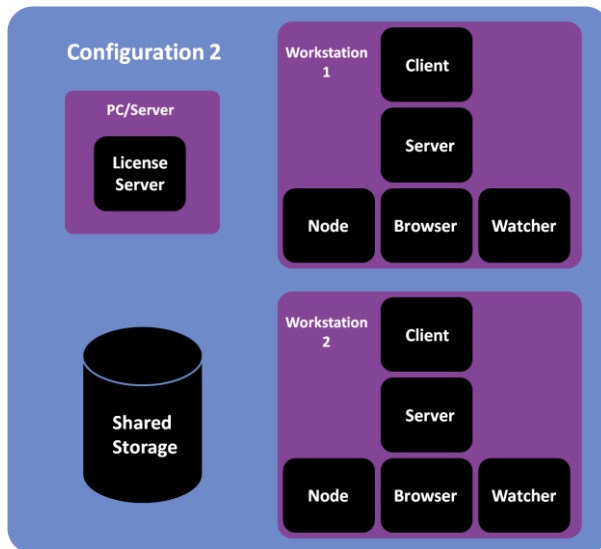

4.1.3 Single Server, Multiple Nodes

This example shows how a single server can manage multiple nodes. This offers the ability to process jobs in parallel (assuming multiple licenses are available). One server manages all the jobs and all the profiles. As soon as both a node and a license are available, the next job in the queue will be processed.
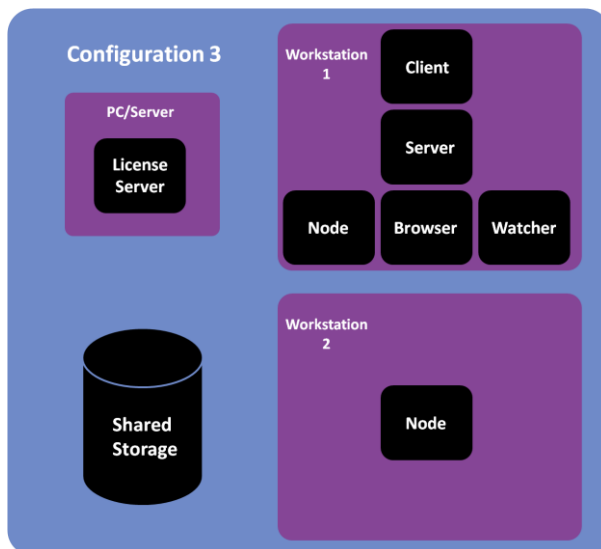
4.1.4 Use of the Client

The Client can be installed directly on the workstation/server or it can run remotely on a desktop/laptop. Any number of clients can access a single GV File Server.
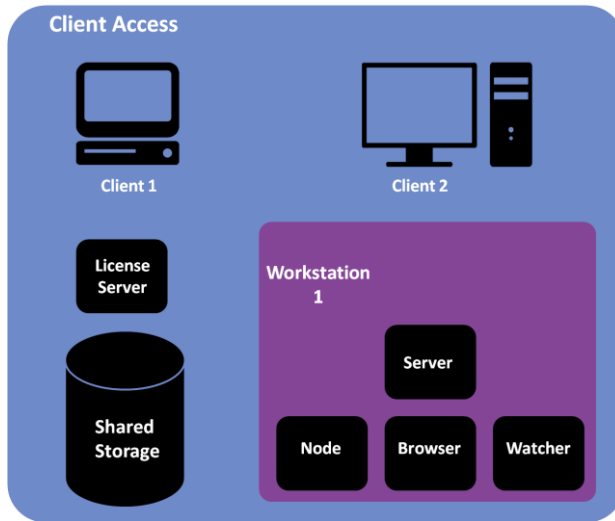
4.2 Considerations for Distributed Installations

Key Considerations:

1. It is recommended that the License Server is located on a compute instance which is permanently available. Please note for security reasons virtual machines are not permitted.

2. GV File Nodes must have access to GPUs offering an OpenCL environment.

3. GV File Node, Watcher and Browser all require authorisation to access the media files.

4. GV File Node requires high bandwidth access to shares.

5. Installer Package Download

The GV File software package is downloaded from the GV Store.

Using an internet browser go to: http://store.s-a-m.com/xFile

Scroll down the opening page and click on the chosen GV File product icon.

Add the **Product Base Model single license** to the Cart. Then go to the Cart and checkout.

To complete the order it will be necessary to register, or if you are a returning customer, login.

Once an order has been placed, access will be granted to a download package within the **Downloads** section of the GV Store.

Download the software package and copy it to a location that is accessible from the host machine on which it is desired to install GV File.

6. GV File Package Content

The GV File Installer package downloaded from the store will arrive in the form of a zip file.

Unzip the GV File Installer package to the GV File Host Machine:
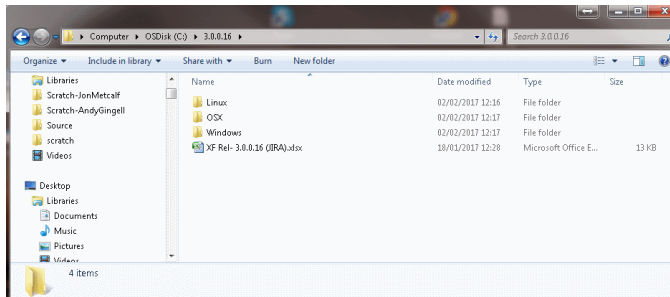
Note that the package includes full install packages for Windows and for Linux.

An OSX version of the GV File Client is also included enabling a GV File install to be controlled from a remote MAC (note – currently GV File Installation is not supported on OSX).

Opening the Linux folder will reveal the component Installers.

7. Software Installation

7.1 Overview

The GV File services are installed as **root** user. Customers can either log on as **root** or configure **sudo** to carry out the installation and management (**sudo** will allow specific users to run as **root** temporarily).

7.2 Service Install

1. Logon to the host machine using a terminal emulator such as **putty**.

2. Create a temporary directory for the GV File package:

   For example:

   ```
   /var/tmp/GVfile
   ```

   and then copy the downloaded GV File zip file to that directory.

3. Change directory to:

   ```
   /var/tmp/GVfile
   ```

   and then unzip the GV File Linux64.zip file.

4. To Install all the GV File packages and the license server use the following:

   ```
   [root]# sh installAll.sh
   ```

   At the end of the script you will be asked if you wish to start all the services, respond with '**Y'** for yes.

5. List each of the GV File services using the following:

   ```
   chkconfig --list | grep -i xfile
   chkconfig --list | grep -i Safenet
   ```

7.3 Installing the GV File Client

1. The GV File package set contains both Linux and Windows 64-bit compatible GV File clients. The Linux client has been installed on to the host machine as part of step 4 above. If you require a remote client then copy the appropriate GV File Client installer on to a remote workstation.

2. Install the Linux 64-bit GV File Client:

   Open a terminal session and type the command:

   ```
   yum –y install gvfile-client-x.x.x.x-Linux-x86_64.rpm
   ```

   Firewall configuration: there are no **iptables** requirements for a single system deployment with a local GV File Client. However, if a remote GV File Client is being used, then the **iptables** will need to be adjusted to allow the client to connect to port 35061 (TCP) on the machine hosting the GV File Server.

8. System Configuration

Once GV File components have been installed, configuration can begin. Configuration is required before any of the GV File products can be used. Configuration includes specifying where the various services are located and configuring the locations of shares.

8.1 Default Deployment Creation

This section covers the creation of a **Default Deployment**. A Default Deployment assumes all Applications/Services have been installed on a single host machine.

1. To launch the **GV File Client.**

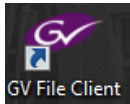   Change directory to `/usr/lib/xfile_client/`

   To start a Linux xFile Client, open a terminal session and type:
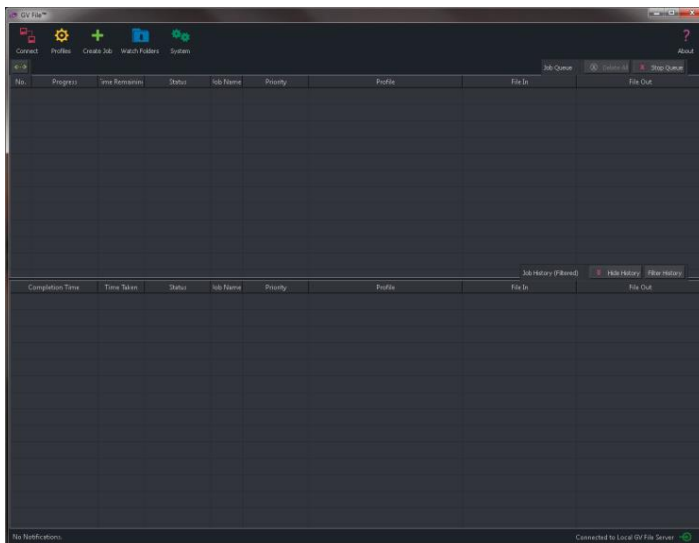
   `xFile_Client &`

   If a graphical interface is being used, navigate to:

   `Applications > Sound & Video,` and select `Grass Valley`

   To start a Linux GV File Client, go to the desktop and double click on the **GV File** icon.

   The GV File Client will now open.

Key points of interest:

 Connect is used to define the GV File Server you wish to connect to.

 Profiles is used to configure **User Profiles**.

 Create Job is used to add a new manual job to the job queue.

 Watch Folders is used manage Watch Folder Configuration.

 **System** is used to configure, manage and maintain the GV File deployments and services.

 **About i**s used to inform the user of the client version currently in use.

 Connection to is used to indicate Server connection success (green) or failure (red).

2. The client will automatically connect to the **Server.** This can be confirmed by looking at the bottom right corner of the client. Successful connection will be confirmed by the green **Connected** icon:
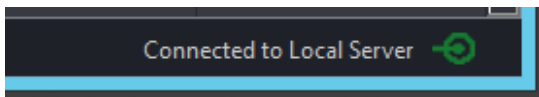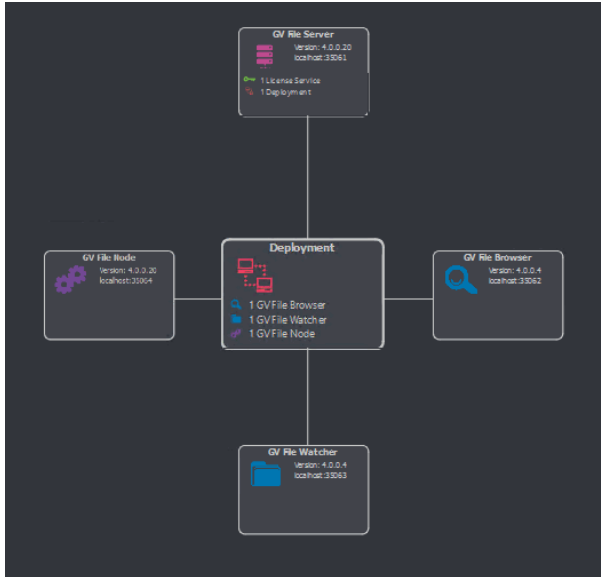

3. Once connected, a pop window will appear.
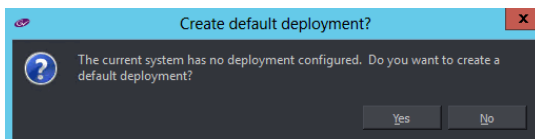
Click **Yes** to create a default deployment.

4. Check the default deployment has been successfully configured. Click on the **System** icon, followed by **Deployment.** The Deployment should appear like this:

8.2 Remote Client Installation

A GV File installation may be controlled via the GV File Client installed on an external workstation. A network connection is required between the GV File host machine and remote workstation.

The Client Installer should be copied to the remote workstation and installed, as described in part 6.2 above.

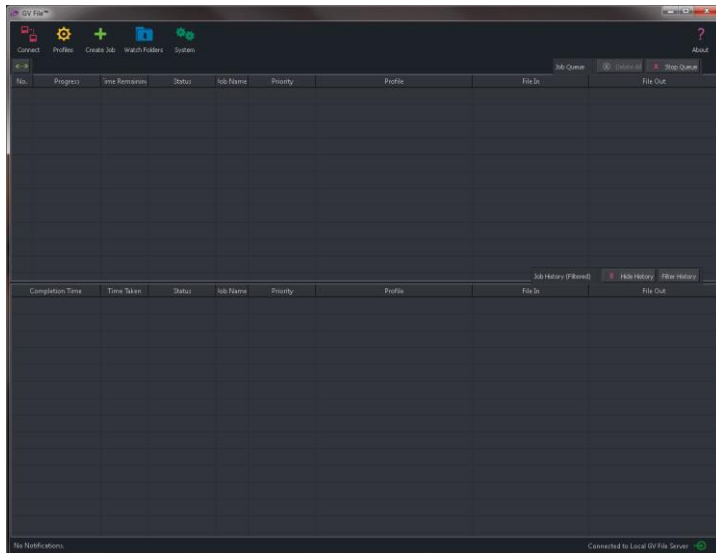Note that the external client can run on a remote workstation running either Linux, Windows or IOS.

Remote Client Configuration

1. Launch the **GV File Client** on the external workstation.

From your Windows desktop, double click on the **GV File** icon to start the GV File Client.
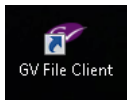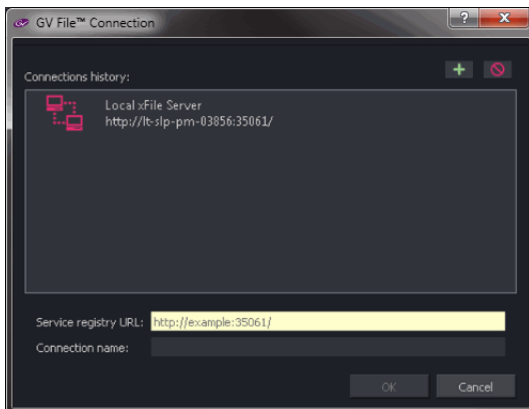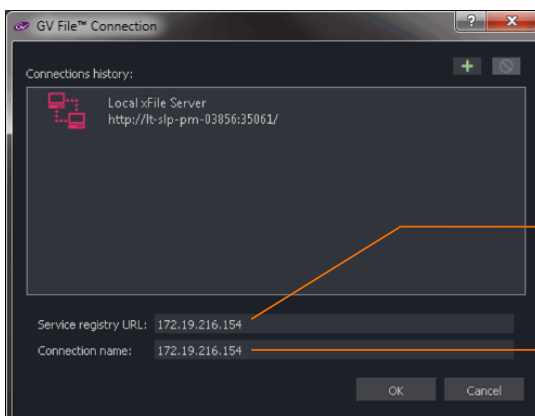

The Client will open:

2. In the **GV File Client**, click on the **Connect** icon.

The **GV File** connection window will appear. Specify the desired GV File server using the **Service registry URL** field.
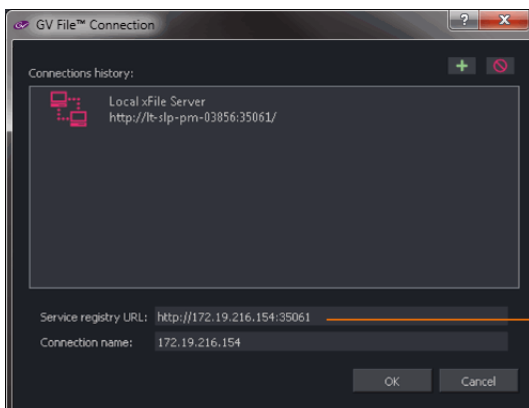

Specify the desired GV File server using the **Service registry URL** field.

In this example the **IP Address** of the GV File host machine is used. It is only necessary to input the IP Address.
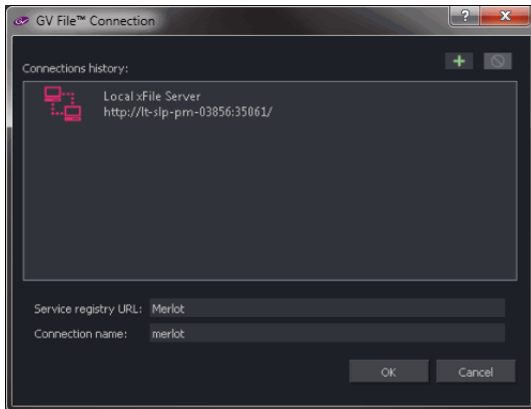
The **Connection name** will automatically populate or can be manually entered
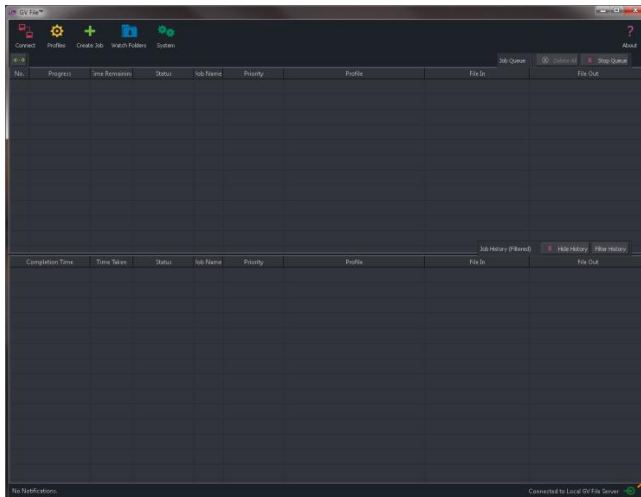

The **Service registry URL** field will populate with the full URL path, including the Port, automatically.

The port used here is always **35061**

Alternatively, a qualified name can be used

Once connected to the GV File Server, the following screen will be displayed.


The green icon confirms a successful connection

The port used here is always **35061**

8.3 GV File Node Configuration

GPUs can be enabled and disabled by changing the configuration of a GV File Node. To access this control, click on the Configuration tab of a Node in the **System Management** menu**.**

The Node's **Status** tab will show the status of each GPU installed in the host machine. Using this status information the user can decide which GPUs to disable/enable.
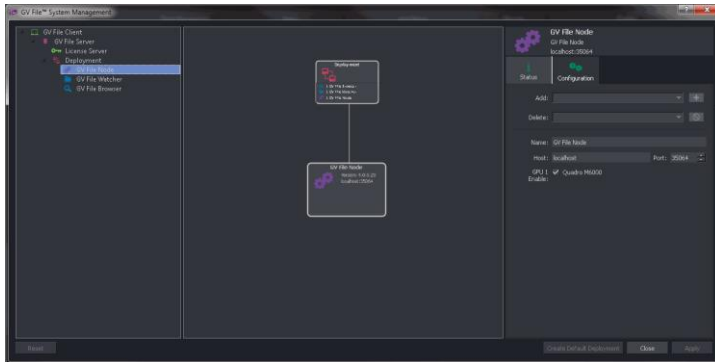
Typical reasons for disabling a GPU might be:

- A low specification GPU is installed to drive a monitor

- The system has a mixture of GPUs installed and the user wants to maximise performance.

Note!

Multiple GPUs should be matched. If different GPUs are used higher spec GPUs will only operate at the speed of the lowest spec GPU. It is recommended only GPUs from the same vendor are used within a host machine.

It is highly recommended not to mix AMD and Nvidia GPU within the same compute enclosure. The respective drivers will conflict and the system will not function.

9. Licensing

The following steps are for a Production Installation. During a Trial installation the license is automatically installed.

Before Installation of the License Server, please refer to:

- **Section 1.2** : GV File Framework License Warning

- **Section 4** : Frame Topology.

The License Server may be installed either locally on the GV File Host Machine, or on a separate workstation.

The following instructions describe the procedure if the License Server is running on the GV File Host Machine.

If the License server is to be installed on a separate workstation, please refer to **Appendix B.**

9.1 License Software Install

The License software is installed automatically when running the **installAll.sh.**

Alternatively if the License server is being hosted on another Linux system, simply copy the supplied **Safenet** rpm within the distribution file set, and install it using yum.

9.2 Accessing the Lock Code

The lock code is required to activate a purchased license. The lock code is generated using unique hardware information from the host of the License Server. The License generated for this host will only work when installed on this host.

Using the GV File Client, click **System** followed by **License Server.**

Verify the hostname of the license server

Copy and paste the Unique code into Notepad. This code is required to generate a new license.

Cut and paste the **License Server lock Code** into notepad, giving the file an appropriate name. This string will be used by to create your license via the SAM Store.

Important!

- The license will only work on the system the lock details were generated on!

9.3 License Generation

Note on Licensing:

A confirmation email is sent once your order has been processed but it does not contain any license details or files.

To access your **Base** license, log into your [GV Store](#) account and review the **Order History** section. The license(s) can be activated by entering the **License Server Lock Code** (retrieved in part 9.2 above) then clicking the **Send** button.

Accept the license file download (lservrc) and save it in a safe location on the License Server host machine.

Once the Locking Code has been entered in your SAM Store account, a Feature License will be sent as an email attachment. As with the Base License above, this will be in the form of an **lservrc** file. This file should be saved alongside the Base License on the License Server host machine.
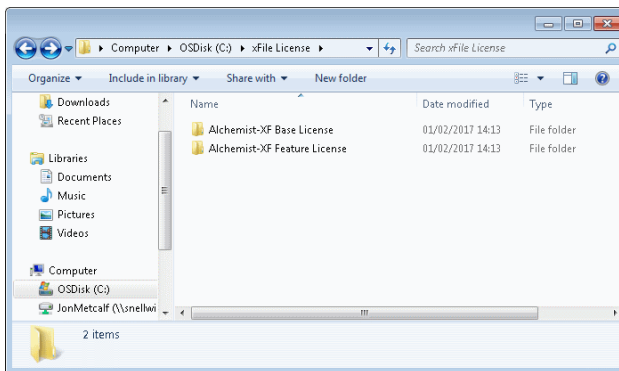

9.4 License Installation

The license key needs to be added to the License Server before your purchased GV File product can be used.

1. Logon to the system that is hosting the license service as a user with access root privileges. Change to the license server installation directory: **/usr/lib/safenet**

2. To install the license type the following: **./lslic –F {your license file}**

   - The license details are displayed directly after the license has been installed.

   - If the license and features are correct then they will be active as soon as it has been added.

3. To check to see if the license has installed type: **lsmon $HOSTNAME**, the license details should be returned.
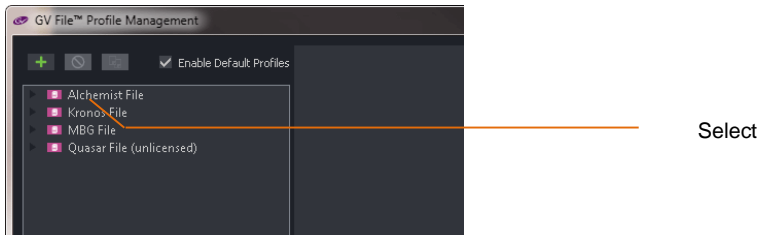
4. This completes the licensing.

9.5 Validation of the GV File License using the GV File Client

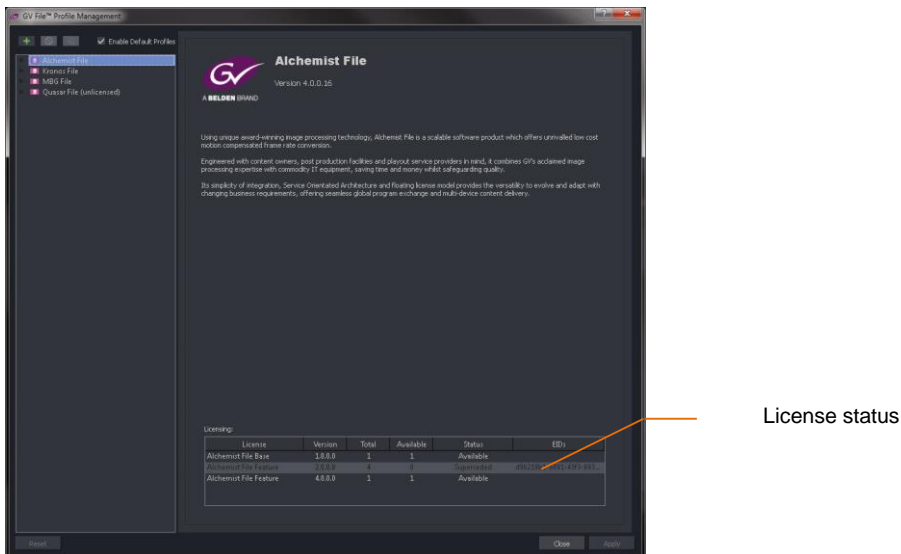In the GV File Client, click on the **Profiles** icon.

The **GV File Profile Management** window will open:
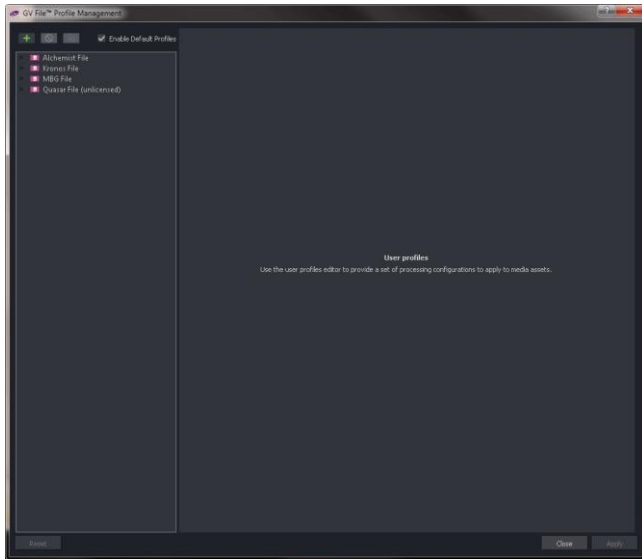
Click on the Product that is to be verified:

Select

A product information page for the selected product; in this example, Alchemist File:

License status

10. Remote storage

Remote storage is usually mounted and acts as a local file system.

The GV File Browser, Watcher and Node will need the necessary access rights to any remote storage.

11. Programs and Features Listing

To view the combined GV File services, type the following:

```
-sh-4.1# rpm -qa | grep -i gvfile
```

This will return GV File Services details:

gvfile-node-x.x.x-x.x86_64

gvfile-server-x.x.x-x.x86_64

gvfile-watcher-x.x.x-x.x86_64

gvfile-browser-x.x.x-x.x86_64

gvfile-client-x.x.x-x.x86_64

To view the GV File License Server details, type:

```
-sh-4.1# rpm -qa |grep -i Safenet
```

This will return GV File License Server details:

safenet-x.x.x-x.x86_64

NOTE: This print out reflects a host machine that has all the GV File services installed on it. Depending on topology in use this may vary.

12. Services Listing

To check the status of each service, type:

```
-sh-4.1# service xfile_server status
-sh-4.1# service xfile_node status
-sh-4.1# service xfile_watcher status
-sh-4.1# service xfile_browser status
```

To check the License Server status type:

```
-sh-4.1# service safenet status
```

Extracted output:-

```
Sentinel RMS Development Kit 8.5.1.2009 Application Monitor

Copyright (C) 2011 SafeNet, Inc.


[Contacting Sentinel RMS Development Kit server on host "localhost"]


 |- Feature Information

   |- Feature name               : "Alchemist_OD_Base"

   |- Feature version            : "1.0.0.0"

   |- License type               : "Normal License"

   |- License Version            : 0x08500000

   |- Commuter license allowed   : NO

   |- Maximum concurrent user(s) : 2

   |- Unreserved tokens in use   : 0

   |- Reserved tokens in use     : 0

   |- Available reserved         : 0

   |- Soft limit on users        : Unlimited


|- Feature Information

   |- Feature name               : "Alchemist_OD_Feature"

   |- Feature version            : "4.0.0.0"

   |- License type               : "Normal License"
```

```
|- License Version            : 0x08500000

|- Commuter license allowed   : NO

|- Maximum concurrent user(s) : 1

|- Unreserved tokens in use   : 0

|- Reserved tokens in use     : 0

|- Available reserved         : 0

|- Soft limit on users        : Unlimited

|- License start date         : Thu Mar 12 00:00:00 2015

|- Expiration date            : Mon Mar 16 23:59:59 2015
```

13. Testing the GV File System

Once the installation is complete, it is recommended to test the system.

It is suggested that a small video test file (i.e. 30 second duration, SD file) is copied to the GV File host machine.
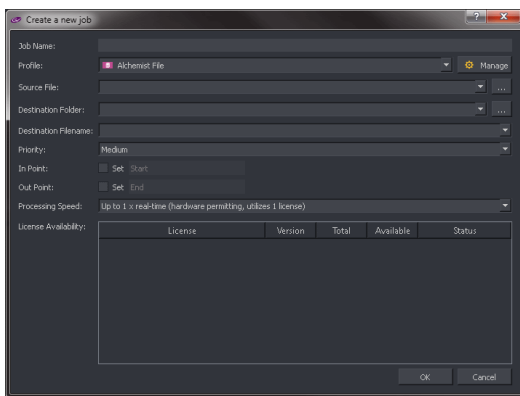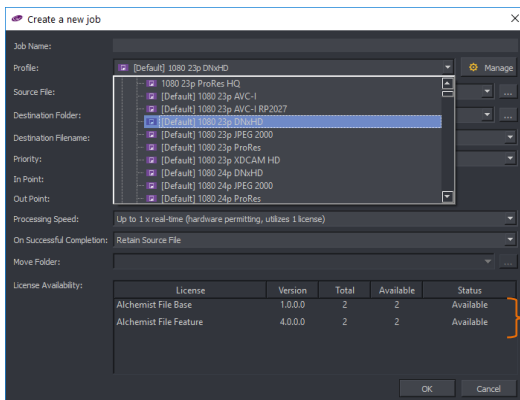
Open the GV File Client.
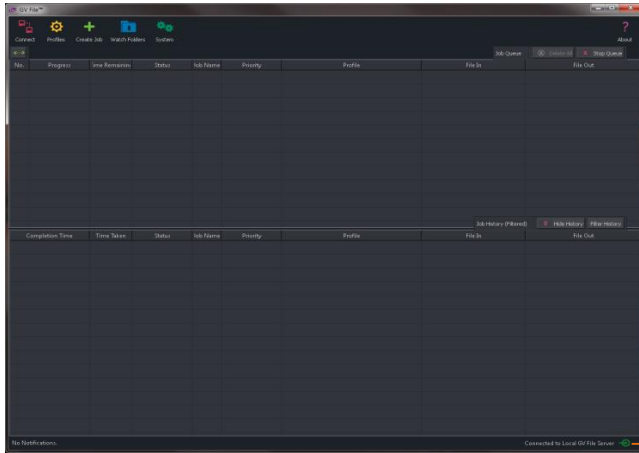
Confirm the Client is connected to the new GV File installation

Select **Create Job.**

The **Select Job** window will appear.


Select one of the Default Profiles.

Note that upon selecting a Profile, Licensing information will be displayed in the **License Availability** field.
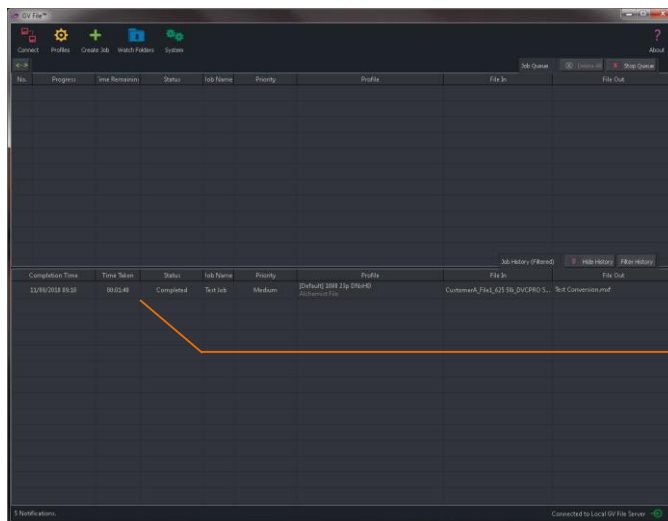
In this example a single Alchemist File license is available and so a job can be processed.

License information

Configure a job using the small source file now present on the GV File Host Machine and configure the output file to be written also to a location on the GV File host machine.
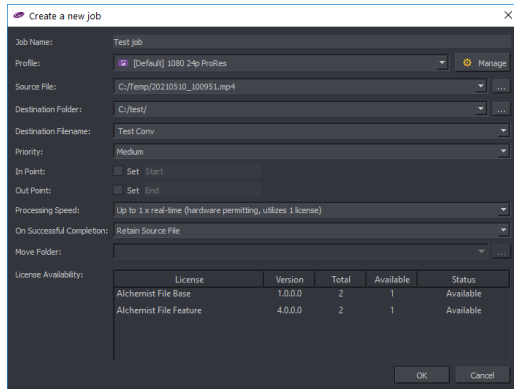
Confirm that the job processes correctly.

Confirm job completes

Appendix A.   Communication Matrix – iptable Information.

Table 3: Alchemist File Service Names and Communication Matrix

Source Service	Source Port	Destination Service	Destination Port	TCP/UDP
GV File Client	HIGH PORT	GV File Server	35061,35060	TCP
GV File Client	HIGH PORT	GV File Watcher	35063	TCP
GV File Server	HIGH PORT	GV File Browser	35062	TCP
GV File Server	HIGH PORT	GV File Watcher	35063, 35069	TCP
GV File Server	HIGH PORT	GV File Node	35064	TCP
GV File Server	HIGH PORT	License Server	5093	UDP
GV File Node	HIGH PORT	License Server	5093	UDP

Here is a table that shows the Alchemist File connectivity if the services are distributed. The above table gives the required details to configure the firewalls of all machines in your system.

- If all services are installed on one server then no Firewall configuration is required.

- If you have a GV File client installed on a remote machine then the firewall will need to be open between the GV File Client and the GV File Server, and the GV File Client and the GV File Watcher as detailed above.

Appendix B.   Remote License Server

A PC that has no GV File services installed on it can act solely as a license server.

It will need to be one of the supported 64 bit Operating systems.

This example is for the Windows Operating System.

Note - If it is desired to run a remote license server on CentOS or Redhat then please contact GV Support.

The **Licensing Tools** folder that is created as part of a GV File install, will need to be manually copied to the License Server PC.

Procedure:

1. Logon to the GV File host machine.
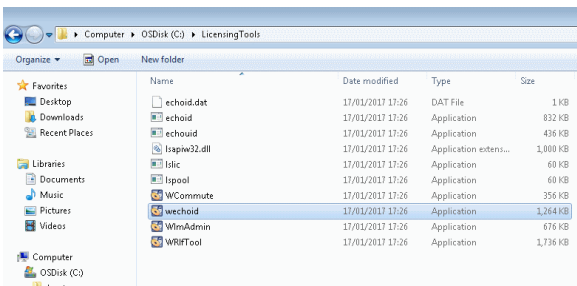
2. Locate the **Licensing Tools** folder:

```
c:\Program Files\SAM\xFile_Server\Licensing Tools
```

Copy this folder to the workstation that is to act as the License Server.
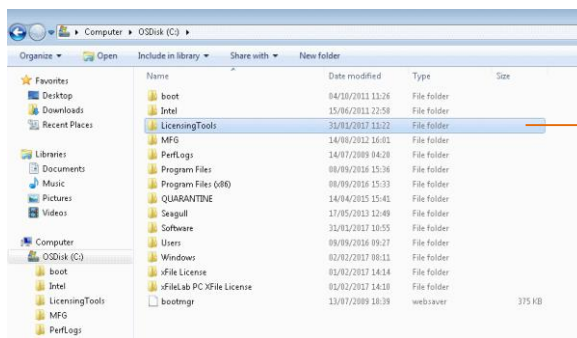
In this example the **Licensing Tools** folder has been copied directly to the C:/ Drive of the License Server workstation.

3. Open the Licensing Tools Folder on the remote PC/Server:

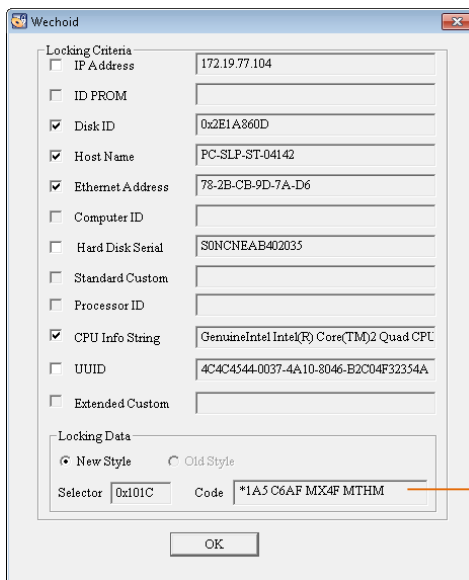Locate the application: **wechoid**

Double click to run the **wechoid** application.

4. The **wechoid** application will now open.

The **wechoid** tool is used to define the locking criteria of the License Server workstation.

5. Edit the **wechoid** locking criteria.

GV File licensing locking criteria uses:

- Disk ID

- Host Name

- Ethernet Address

- CPU Info String

Set the locking criteria by selecting the check-boxes, as shown above.

Copy and paste the resultant locking code into a suitable application (i.e Notepad).

6. Now proceed with part **9.3 License Generation** above.