



Moyea Software

Flash Video Server

Introduction on Virtual Host

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# Moyea Software Company

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# Flash Video Server

## Introduction on Virtual Host

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## About This Manual

Welcome to Flash Video Server – a powerful video server platform for streaming audio and video between the server and the Flash clients, and for developing media applications. With Flash Video Server, you can record video and publish live video using the applications that was developed in ActionScript.

The end users can use the Flash Player to play the videos on the server, or upload videos to the server. Flash Video Server allows multiple users to publish and play live videos at the same time. For example, when you are publishing a live video, the other users can receive the same frame at the same time. Flash Video Server also provides the functions of recording and appending video. While you are publishing a live video, you can record the video on the server. And it also allows you to append video to an existed video file.

This manual is to provide a detailed description of Flash Video Server and Virtual Host.

## Introduction of Flash Video Server

Flash Video Server is a high-performance, extensible, secure and multi-functional Flash media server for live and on-demand streaming, recoding; and a powerful, flexible development environment. With Flash Video Server, the end users can publish videos or play the videos on the server using Flash player. What's more, the server also enables the end users to record video, append video, and publish live video. It features the high performance, virtual host and data management, security, and authorization, etc. Using Flash Video Server, you can create a wide range of interactive media applications, such as video websites, video blogging, and live video conferences. Flash Video Server is an affordable and reliable alternative to the Adobe Flash Media Server.

Its possible owners may be a service provider, company user, and so on. As a service provider he can create various virtual hosts on the server and provide web services to web service providers. So that the web service providers can provide end users services of video playing, recording, and live video broadcasting. For the company users, they may have internet video conference and allow users in certain IP address areas to access the conference.

The server works with the client-side Flash player to create media-driven, multi-user internet applications. The server communicates with the clients over RTMP protocol (Real Time Messaging Protocol), as well as its variants that base on connective TCP connection. On the server side, the media data are put in different virtual hosts, which enable different users to access categorized data under multiple URLs. The server also allows you to assign the user authority to access the server. And the information of the users is stored in an embedded database. With the log system, the server will record all of the events.

The communication layer uses socket to ensure more than 10, 000 users to connect to a single server simultaneously for on-demand streaming, live streaming, and remote recording.

In addition to edit the configuration files under the installing directory, the management consoles simplify the server administration and enables an administrator to easily create, start, stop and monitor the services. With the management consoles, you can manage the users, servers, and view detail information of the server. And Flash Video Server enhances user experiences by taking vary network conditions into account while streaming video content.

Flash Video Server can be deployed on Windows.

The parts in this documentation will describe the structure of the Flash Video Server, and how to use virtual host.

## Flash Video Server Features

Flash Video Server is a powerful server for on-demand and live streaming, and remote recording. It is a good choice for you since it features as following:

### **High-performance**

Flash Video Server is a highly multi-threaded server that provides perfect performance for video on demand, live streaming, and remote recording.

### **Reliability**

With Flash Video Server, you can deliver or enjoy Flash online without difficulty.

### **Unlimited connections**

The server is designed to support connections above 10000 at the same time, data delivery interval within 1ms with permitted bandwidth, synchronous live streaming which allows users with the worst bandwidth to play the latest pictures. As the server can serve as edge and origin server, the connection capacity is virtually unlimited.

### **Manageability**

Flash Video Server provides complete, infrastructure management consoles. From the management consoles, you can create new virtual host, add new application, create new instances, manage users, manage servers, and monitor the servers and users.

### **Event logging**

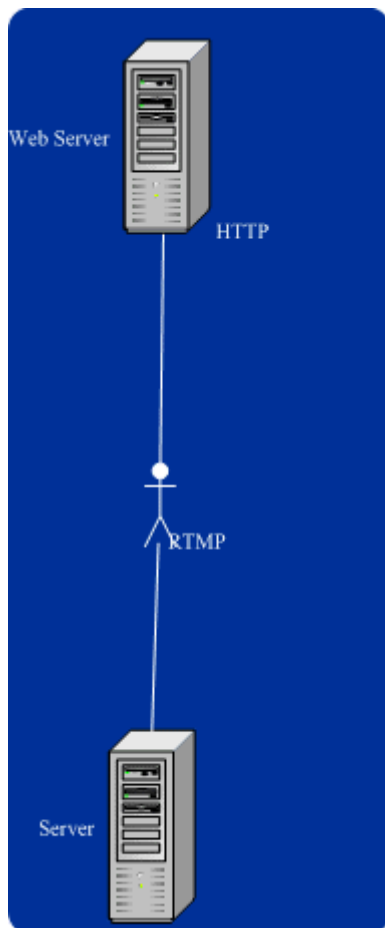
To ensure that problems are detected and resolved before they affect service availability, the server logs messages by using the log system which is based on standard W3C. It allows administrators to configure the severity level of the logged messages.

## Flash Video Server Architecture

Flash Video Server is consisted of two parts: the server and the client side Flash Player. The server and Flash Player communicate over a persistent TCP connection using standard RTMP protocol.

On the client side, the Flash player, which you can create yourself by using the provided client-side programming interfaces, can be used to play and publish videos. On the server side, the server will handle the request and send data back to the client. And you can manage the server remotely through the management consoles which are Flash Script based console (SWF file).

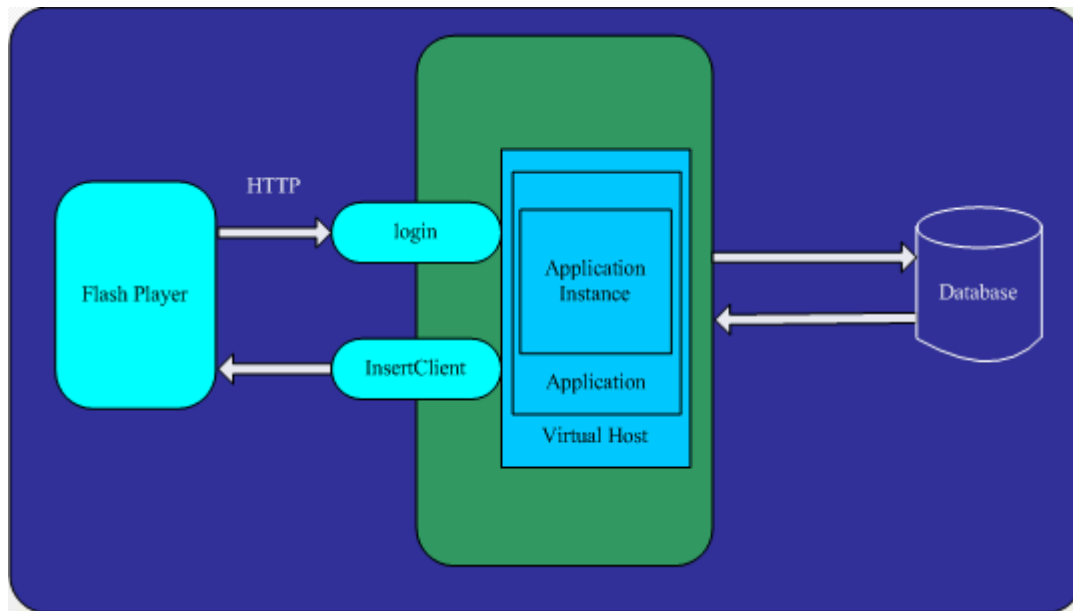
**Figure 1** represents the communication between the server and client.



As you can see, all communication is done via HTTP calls using RTMP between Flash player and the server. The applications on the server, which are created by using Flash Script, handle the requests as well as passing data back to the Flash player. The data come in the format of AMF, which is FLV. For all of these to take place, the Flash player needs to be developed. The Flash player is developed for remote service calls using Flash Script and the provided client-side API

interfaces. Along with the management consoles, you can trace and watch events on both the client and server. This happens in real time and is a great enhancement to monitor the server and users.

**Figure 2** illustrates the communication process of the server.



At the top of the object hierarchy for the server is a virtual host object. Each virtual host contains a set of application objects and each application contains a set of application instance objects. All client objects and streams objects are children of an application instance object.

The service calls can be accessed from Flash player via applications on the server and will respond accordingly. If the login method is called, the logic will take care of authenticating the user and sending a flag back to the Flash player allowing or denying access to the user. The user can also login anonymously, but only access limited resources. When the client request to play the video on the server, the server loads the application first and then creates an application instance under the application folder. If the client has the authority to get the video, the server will delivery the data to the client using Insert Client method. At the same time, the relevant information will be recorded to the log files.

When the client requests to publish live video, the server will startup an object of live resource class to buffer the media data, and create a new thread to manage the data. If someone requests the data, the server will use the live manage class to get the user's address and send the media data to the client. Once again, all of these happen behind the scenes and are invisible to the user.

With the FVS (Flash Video Server) manager, the administrator can manage the users and the server, such as create new virtual host, allocate authority, monitor the connection state, etc.

## System Requirements

The following software and hardware are the minimum required to run Flash Video Server:

- ◆ Windows NT
- ◆ Windows 2000 Server
- ◆ 128MB Memory
- ◆ 40GB disc space

The following software and hardware are recommended to install Flash Video Server:

- ◆ Windows 2000 Server
- ◆ 2G available RAM
- ◆ 200GB available disc space

## Introduction of Virtual Host

Virtual host is widely used in the web service area. It is a provider of Web services that include server functions and Internet connection services. It is often used by companies or individuals who do not want to purchase and maintain their own web servers and Internet connections. Hence, Flash Video Server implements virtual host to let multiple users to apply multiple domain names on the same server. A virtual host is equivalent to a domain name. With virtual host, you can group users and specify their powers. This is very useful if you are a service provider who hosts websites with Flash Video Server.

After installation, there is only one default virtual host named 127.0.0.1(local host) on Flash Video Server. Locate the default virtual host folder in the virtual host directory in the Flash Video Server installing folder, you may find the following folders in the default virtual host:

The virtual host application directory

The virtual host log directory

The virtual host UserInfo file

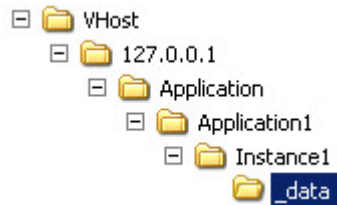
The virtual host configuration file



In order to add the client applications that will be used when end users plan to connect to the server, the administrator should put applications in the application folder and register them by



adding the corresponding names in the application directory. Flash Video Server will search the application directory to check if the application exists, and then load the application in the application folder. For more information about the application, take a reference of [Application Configuration](#).



The videos and audios which will be streamed between the server and the clients are stored in the “\_data” folder in the Application directory of the virtual host.

The virtual host configuration file stores information of the settings to the virtual host. You can edit the file to configure the virtual host as you like. For detailed information, see [Virtual Host Configuration](#).

The UserInfo file stores the information of users.

Statistic log files will be saved in Log folder.

## Virtual Host Configuration

Each virtual host on the server has its own configuration file. You can configure the settings with VH (Virtual Host) Manager. In this way, the changes will take effect without restarting the server. For detail information, see the **FVS Console Manual**.

Alternatively, you can set the parameters in this configuration file manually. But after all the settings, you must reboot the server to enable your changes to the virtual host, which is not as convenient as configuring with VH manager, because once the server is shut down, all connections from end users will be cut off.

The configuration file contains tags that define the settings for the virtual host. The following is the content of a virtual host configuration file. It is stored in vhost.xml file of the relative virtual host directory.

```
<Root>
  <!--Virtual Host administrator-->
  <VhostAdmin>
    <AdminName>Admin</AdminName>
    <Password>d41d8cd98f00b204e9800998ecf8427e</Password>
  </VhostAdmin>
  <Server>
```

```

<MaxConnection>0</MaxConnection>
<UninstallTime>0</UninstallTime>
<!--Configuration on IP Address-->
<DenyIp />
<AllowIp />
<!--Statistic log configuration-->
<StatisLog>
<!--Log recording field-->
<bRecvBytes>0</bRecvBytes>
<bSendBytes>0</bSendBytes>
<bUserName>0</bUserName>
<bResourceName>0</bResourceName>
<bUseTime>0</bUseTime>
<bProtocolType>0</bProtocolType>
<bReference>1</bReference>
<!--Record type of statistic log-->
<LogType>2</LogType>
<!--Method to create a statistic log-->
<LogTime>1</LogTime>
</StatisLog>
</Server>
</Root>

```

## Configure Virtual Host

By editing the virtual host configuration file, you can configure the virtual host as you like. The table below lists the tags in the configuration file.

Tag name	Value	Description
<!--Virtual Host administrator-->		
<VhostAdmin>		
<AdminName>Admin</AdminName>	Admin	The name of the virtual host administrator.
<Password>d41d8cd98f00b204e9800998ecf8427e</Password>	d41d8cd98f00b204e9800998ecf8427e	Virtual Host administrator password (encrypted).
</VhostAdmin>		
<Server>		

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<MaxConnection>0</MaxConnection>	0,1,2,...	The maximum number of connection that is allowed to this virtual host.
<UninstallTime>0</UninstallTime>	0,1,2,...	Time to uninstall the idle resource (measured by minute).
<!--Configuration on IP Address-->		
<DenyIp />		The IP address (es) that is (are) denied. (Separated with ";", mark an area of IP addresses with "-"). E.g.<DenyIp>123.10.10.0;192.168.0.1-192.168.0.6;<DenyIp />
<AllowIp />		The IP address (es) that is (are) allowed. (Separated with ";", and mark an area of IP address with "-"). E.g.<AllowIp>123.10.10.0;192.168.0.1-192.168.0.6;<AllowIp />
<!--Statistic log configuration -->		
<StatisLog>		
<!--Log recording field-->		
<bRecvBytes>0</bRecvBytes>	0, 1	Record the received statistics. 0 stands for false; 1 stands for true.
<bSendBytes>0</bSendBytes>	0, 1	Record the sent statistics. 0 stands for false; 1 stands for true.
<bUserName>0</bUserName>	0, 1	Record the usernames of each connection. 0 stands for false; 1 stands for true.
<bResourceName>0</bResourceName>	0, 1	Record the name of the connected resource. 0 stands for false; 1 stands for true.
<bUseTime>0</bUseTime>	0, 1	Record the time duration of this request. 0 stands for false; 1 stands for true.
<bProtocolType>0</bProtocolType>	0, 1	Record the protocol type. 0 stands for false; 1 stands for true.
<bReference>1</bReference>	0, 1	Record other references. 0 stands for false; 1 stands for true.
<!--Record type of statistic log -->		
<LogType>2</LogType>	1, 2	Record type of statistic log. 1: record by time; 2: record by size.
<!--Method to create a statistic log-->		

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<LogTime>1</LogTime>	Size: 2, 5, 10 Time duration: 1, 3, 7	The specific time duration or size for generating a log. Size (M): 2M, 5M, or 10M; Time duration: 1 day, 3 days, or 7 days.
</StatLog>		
</Server>		
</Root>		

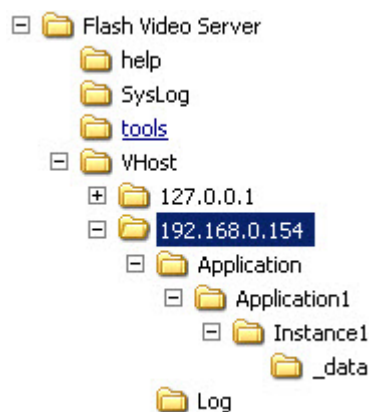
Tips: In the “<UninstallTime>0</UninstallTime>” section, while an idle resource is uninstalled, it is not deleted. You can reload it by rebooting the server. For more information about the filtering order of the IP addresses, please refer to **FVS Console Manual**.

After all of the settings, you must reboot the server to enable your changes to the virtual host.

## Add a Virtual Host

Using the FVS manager, the administrator can easily add new virtual hosts to the server. The new virtual host also can be added to the server manually under the VHost folder. To get how to add by FVS manager, please refer to **FVS Console Manual**.

Once you added a virtual host with FVS manager, a new virtual host folder will be created in VHost directory. The structure is just the same with the default one. You can logon the VH Manager with either the FVS administrator account or virtual host account. The virtual host administrator name shall be a domain name or IP address.



To add a virtual host manually, the administrator can create a folder under VHost directory. Name it as an IP, or a domain name. Then restart the server, and the new virtual host will be activated.

What's more, there is a default virtual host directory named 127.0.0.1. If end user tries to connect to an inexistent virtual host, the server will connect it to the default virtual host.

## Delete Virtual Host

An unwanted virtual host can be deleted with FVS manager or in the Vhost directory manually. If you delete the virtual host with FVS manager, the virtual host data will not be deleted. Once the server is restarted, the virtual host will be activated again. For a complete deletion, you must delete the virtual host folder in the VHost directory manually.

Notes: Normally, you'd better not to restart the server once started, since the connection with users will be cut down in that case.

With virtual host, the FVS administrator can manage the data and the users easily. The administrator can separate different data under different virtual host, and assign different users to have the authority to access different virtual host and assign end users to read or write the data at the virtual host level. Flash Video Server also supports IP-address based virtual hosting. You can see the details in the following sections.

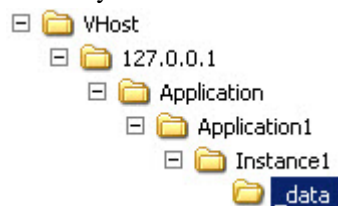
## Application

In the Application directory, you will find some application folders which you can create with VH (Virtual Host) Manager. With the VH (Virtual Host) Manager, you can configure these applications easily.



To add an application, you can click on the “+” button on Application list. Name it and submit; a new folder will be created in the Application directory. (For more information about the Manager, please refer to **FVS Console Manual**.)

What's more, the administrator is able to add an application under the Application directory manually. But the server must be restarted to active the application.



Click into the application folder in the virtual host directory step by step, you will find the data folder to place the FLV files from either client-side or administrator. As an administrator, you can place the FLV files to the data folder manually.

## Logging

When managing Flash Video Server, it is very important to gather statistical information about the various applications, application instances running on the server. In term of Flash Video Server, which handles communication traffic that can use a lot of bandwidth, and has many different applications and application instances running at the same time, it is especially important to keep track of how many users are connecting to the server and how much bandwidth is being used by each application and application instance. Besides, the event and error information will help you to manage and troubleshoot the server. The Flash Video Server logging system is very useful to record the information about client connections and other events occurred while the server is active. All of the information is stored in the logging files, which are based on the W3C standard. What is more, the Flash Video Server also extends the standard according to its own requirements. By default, the logging information is recorded in the two log files, statistical log file and abnormal log file, in the Flash Video Server directory. As an administrator, you can set all of the logging information about the specified virtual host using the FVS manager and view the log files in the server directory. The following parts describe the detailed logging information in respective log file.

- ◆ [Statistic Log File](#)
- ◆ [Abnormal Log File](#)

## Configuring Log Field

Flash Video Server logging is configured through a set of \*.xml files. The tags in the file determine how the file is generated. By editing the tags in the files, the statistic log files can be configured to be generated according to the time or file size. The server will record the events according to the time in the following ways:

**Day:** Generates a log file every day or every 3 days. The file records information about all of the client connections that occurred every day, or every 3 days.

**Week:** Generates a log file every week. The file records information about all of the client connections that occurred every week.

At the same time, it also takes account of the log file size. If the predefined maximum file size achieved within the specified time, new records will be written to a new file in the same folder.

The log file also can be configured to be generated just according to the file size. When the log file achieves the maximum file size, the new statistic information will be recorded to a new file.

For abnormal log file, administrator specifies the file size, generating time, and storing field in the management console.

## Statistical Log File

The statistic log files are located in directory of each application instance, and record the information about activities in each application instance. This log is usually used by the administrator to see the connection state of a specific application instance.

The default statistic log file name is \*.log in the subdirectory of matching application. The log file name is generated according to generating mode of the file. They are named as Stasisymmddhhmmss.log.

The italic characters are numeric data: **yyyy** is year, **mm** is month, **dd** is day, **hh** is hour (24 hours a day), **mm** is minute, **ss** is second. E.g. Statis20080927182040.log

The log files are in self-defined/fixed ASCII file format, including variety strings. All of the fields in the file are separated by "|", and the recoded time is UTC.

The following table lists a sequence of field identifiers specifying the information recorded in each entry. The fields below are selective which can be chosen on VH Manager (see **FVS Console Manual**).

Field	Description
date	Date on which the event occurred
time	Time at which the event occurred
vhappname	Names of the matching virtual host and application
s-ip	IP address of the server

Field	Description
s-port	Port of the server which serves the clients.
c-ip	IP address of the client who connects to the server.
c-port	Port of the client which will connect to the server.
cs-bytes	Size of the data that the client sends.
sc-bytes	Size of the data that the server will sent to the client.
time-taken	Time that the operation takes.
cs(User-Agent)	Version of the flash player used by the client.
cs(Referer)	Other relevant information about client.
cs-username	The name of the client who have authority to access the server or anonymous customer who did not log in.
cs-resourcename	Name of the resource on the accessed server If there are no resources, the name is null.
cs-method	The action that the client attempts to do.
cs-pstype	Type of the protocol which is used to access the server.

As the field displayed above, Flash Video Server uses the symbols such as s-, c-, cs-, and sc- as prefix strings in some fields. All of the strings has its own special meaning, s- denote the operation is taken by the server; c- indicates the operation is taken by the client; cs- states the operation is taken by the client and will act on the server; but sc- means the operation is taken by the server and will act on the client.

The following is an example of the log information in the extended log format:

```
#Software: Flash Video Server 1.0
#Date: 2008-09-27 17:42:15
#Fields:time cs-pstype vmname appname c-ip c-port cs-method cs-resourcename cs-version

17:48:15||rtmp||sample||test||172.16.255.255||sample||test||1935||creatstream||01.flv||9.0
```

The meaning of the above information is that at PM 5:42 2008-9-27 (UTC), the client whose IP address is 172.16.255.255 requested the 01.flv file in the \sample\test directory of the Flash Video Server according Flash Player 9.0.



## Abnormal Log File

The abnormal log file records the abnormal information about Flash Video Server. By default, the abnormal log file is generated in the Syslog folder of Flash Video Server directory. The exception file is named as follow:

*log+yy-mm-dd-hh-mm-ss+format*

E.g. log20080927 164043.log

There are three levels to generate abnormal log file, normal, abnormal, and crash. FVS administrator can specify which level to be stored in the log file with FVS Manager (see **FVS Console Manual**).

Flash Video Server generates the following error code:

Field	Error ID	Description
Program exception	0x0101	Failed to introduce parameters
System exception	0x0201	Failed to decode the message (record the sender)
	0x0202	No secondary virtual host
	0x0203	The virtual host already exists

Flash Video Server generates the following information code:

Category	Message ID	Description
Normal  (begins with 0x0)	0x0000	Startup program
	0x0001	Clients connect to the server
	0x0002	Clients disconnect to the server
	0x0003	Connect overtime
	0x0004	Forces to close a connection
Program exception  (begins with 0x1)	0x1001	Failed to allocate memory
	0x1002	File read exception
	0x1003	File writing exception
	0x1004	File opening exception
	0x1005	Target file can't be found
	0x1006	Failed to invoke function
	0x1007	Failed to create socket
	0x1008	Failed to bind socket
	0x1009	Socket conflict
	0x100A	Failed to accept data
	0x100B	Failed to send data
	0x100C	Network overtime
	0x100D	Failed to load library file
	0x100E	Failed to create thread
	0x100F	Thread exception occurs

Category	Message ID	Description
Program exception (begins with 0x1)	0x1010	Failed to authenticate
	0x1011	Failed to play
	0x1012	Failed to record
	0x1013	Failed to publish
	0x1014	Function parameters error
	0x1015	No virtual host
	0x1016	Virtual host already exists
	0x1017	Can't find user stream ID
	0x1018	Can't find Channel ID
	0x1019	Failed to accept connection
	0x1020	Failed to code message
	0x1021	Point can't be null
	0x1060	Others
Error	0x2001	Disc is full
	0x2002	Memory read error
	0x2003	System exception exits

The abnormal information is very useful if you get any problem when using Flash Video Server. You can report the problem to our support. The more detail you can give us about the problem, the faster we can suggest a solution.

Please tell us the following:

- ◆ Which version of Flash Video Server you are running?
- ◆ What operating system are you using?
- ◆ When did you meet the problem? And please send us the error code.

## FVS Users

One of the outstanding features of Flash Video Server is that it provides the user management functions. Virtual Host administrators can add new users, group them, and specify powers. All of these operations are easy to accomplish with the VH Manager (see **FVS Console Manual**).

With the VH Manager, VH administrator can group different users in the same group, and specify the same power to the group. So that users in the same group are able to get the same authority to access the virtual host and do relative operations like video playing, recording, and live video broadcasting.

For more information about playing and publishing videos, please refer to [Video Contents](#).

To get how to specify power to groups and users, please refer to [Video Contents Access Control](#).

## Client-side Programming

For connecting to the Flash Video Server, client-side developers can create client-side console with Flash development tools. As long as the end users have a Flash player, they will be able to use the console. With the console, end users are able to play video, record video, and publish live video.

The following command is useful to them while developing:

```
var nc:NetConnection = new NetConnection();
```

The client will be connected to the server with the *connect* command.

```
nc.connect("rtmp://localhost/myapp/myinstance", "UserName", "PassWord");
```

In this command, the *rtmp://localhost/myapp* is the Uniform Resource Identifier (URI) of an application on the Flash Video Server. The *localhost* indicates that the server is running on your local computer. If the server is not running on your local computer, you can specify the URI like this: *rtmp://host/myapp*. The *myapp* is the name of the application on the server. With the commands of *UserName* and *PassWord*, you are able to create an interface with user name and password boxes. Users must enter them to access. If the console is generated without the *UserName* and *PassWord* commands, there will be no boxes to enter the user name or password, and visitors can only access to the server as guests. By default, a guest can do all the operations like video playing, recording, and live video publishing, but if VH administrator has specified power to certain users with VH Manager, only authorized user can do the relative operations. This is one of the unique features of Flash Video Server which makes it easier to manage the power of users.

The following ActionScript code uses the *NetConnection()* constructor to create a connect object. Then the object is connected to the application on the server, and the video *flvName* will be transmitted to the client who enters the virtual host with his user name and password.

```
var videoInstance:Video = your_video_instance;  
var nc:NetConnection = new NetConnection();  
var connected:Boolean = nc.connect("rtmp://localhost/myapp/myinstance", "UserName",  
"PassWord");  
var ns:NetStream = new NetStream(nc);  
videoInstance.attachVideo(ns);  
ns.play("flvName");
```

As an example, Flash Video Server provides you some sample consoles. You can access by clicking Start> Programs> All Programs> Moyea> Flash Video Server> Samples.

## Video Contents

On the Flash Video Server, video contents are placed in the `_data` folder under each application. End users can play, publish, and record videos with client-side consoles.

Under the `_data` folder, you are able to find the FLV from end users and administrators. In this folder, administrator can add folder to group the relative FLV files as well.

## Playing Videos

To play the FLV from Flash Video Server, users must use the client-side consoles. If the VH administrator has specified the user name and password, the user must enter the playing console with the name and password first and then enter the right URL and name or path of the FLV. For example, you enter the URL: `rtmp://127.0.0.1/Application1/Instance1` and FLV name: `myvideo` or `videofolder/myvideo`. “myvideo” stands for the name of the FLV you plan to play. You needn’t enter the suffix, “.flv”. Then connect to the server and play. The specified video will be played with Flash player.

If a publisher is publishing a live video with the same name of an existed FLV in `_data` folder, and an end user applies to connect to the same name, the live video will first be played by default.

## Publishing Videos

### Videos from PC Camera

With the client-side consoles, users are able to record, append videos, and also publish live videos from local PC camera. Just enter the right instance path you plan to connect to and name the video, and then connect and stream.

### Other FLV Files

For publishing other FLV files to the Flash Video Server, users can upload the files with FTP. If authorized, users can create their own folders under `_data` as well and upload the FLV in it.

## Security

In this section, Flash Video Server falls into three parts, authorization IP access control, and video contents access control. To ensure the security of your application and the media data, each section adopts security strategies.

By default, the Flash Video Server uses the Real-Time Messaging Protocol (RTMP) to stream the media data unencrypted between the clients and the server.

In addition to let multiple users to use the same server, the virtual host enhances the security of the media data on the server. The media data on the server are stored in different virtual hosts. Each virtual host has its own configuration file, applications, and application instances. The clients connect to the server in the form of:

- `nc.connect("rtmp://flvsoft.com:PORT/myapp/myinstance");`

which will request the application under the specified virtual host *flvsoft.com*.

For multiple users, the server assigns them different authorities to access the media data. Each user can manipulate its own video, such as delete, append the video, or share it with others. When the user attempts to connect to the server, the server will use the configuration file to authenticate whether the connection is allowed.

Flash Video Server uses Real-Time Messaging Protocol (RTMP) based on a binary TCP connection or polling HTTP tunnel. By default, the media data are transmitted unencrypted using RTMP protocol over port 1935.

The following sections will illustrate the security strategies in detail.

## About Authorization

Authorization is a process that protects computer resources by only allowing those resources to be used by resource consumers that have been granted authority to use them.

To ensure clients not to achieve unauthorized data or other resources on the server, the Flash Video Server assigns each user an ID and password, which are stored in an embedded database. When a user first attempts to play the video on the server or upload video to the server, the server will check out if the user has the corresponding authority.

But for the FVS administrator, who establishes the server, should enter ID and password when you first install the program. The authorization information is stored in the *server.xml* file. The password is encrypted in the tags `<Password> </Password>`. You can change the password with the FVS manager.

The detailed information about the authorization is as follows:

The FVS administrator is the server's owner, who has the authority to access all of the resources on the server, and assign other users' authority. With an FVS administrator account, you can enter either FVS Manager or VH Manager.

The VH administrator can manage the users and applications. He can only access to VH Manager and set the relative applications and users of the certain virtual host.

If a user is assigned authority, he can enter the client-side consoles with the user name and password to publish live video, play and record the existed videos and audios as is authorized. If there is no authorization assigned, all users can access the client-side console to publish live video, play and record videos and audios.

## IP Access Control

Flash Video Server provides wonderful power controls, with which FVS administrators can assign authorities to certain IP, IP address area, and domain name. For more information about how to assign these authorities, please refer to **FVS Console Manual**. Only users under these IP addresses and domain names are able to access the server.

## Video Contents Access Control

What's more, VH administrators among the empowered IP addresses and domain names can specify power for every instance data (`_data`), folder created under `_data` directory, and every



specific FLV. Only the empowered users can access the server to do the relative operations, such as playing, recording video, and publishing live video. VH administrators can specify power with VH Manager (See **FVS Console Manual**).

Once specified power to one of the `_data` directories, folders in `_data` directory, or certain FLV files, a file ended with `".pr"` will be generated in the same folder of the file you configured, with the same file name. This `.pr` file stores the configuration information. Opening it, you will see the values listed below:

```
PLAY::uadmin;ulily;ubetty;ulucy;g1  
PUBLISH::  
OWNER::uadmin;ulily;ubetty;ulucy;g1  
INHERIT::1
```

The value behind `INHERIT` explains whether to inherit the specified power of the upper folder. 1 stands for true; 0 stands for false.