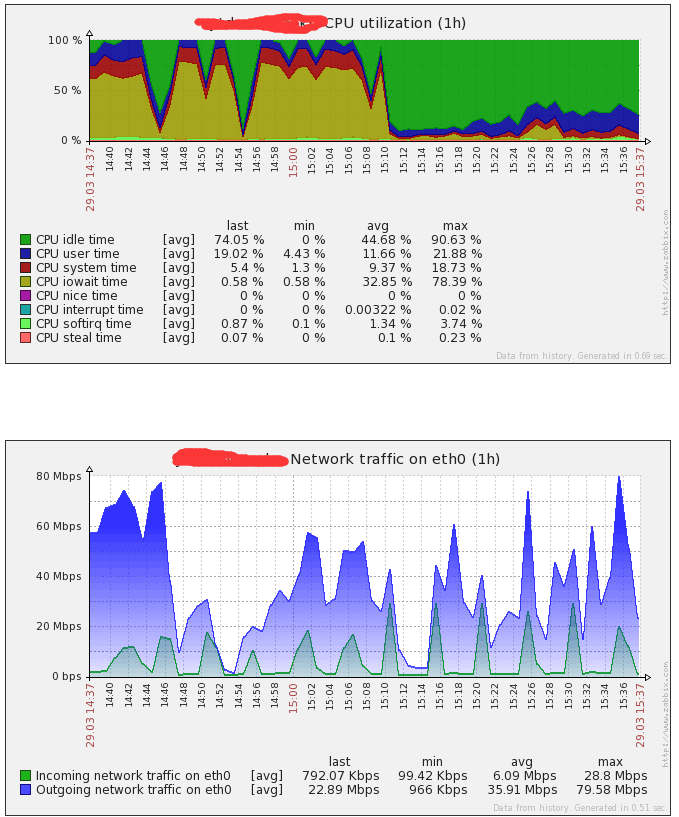
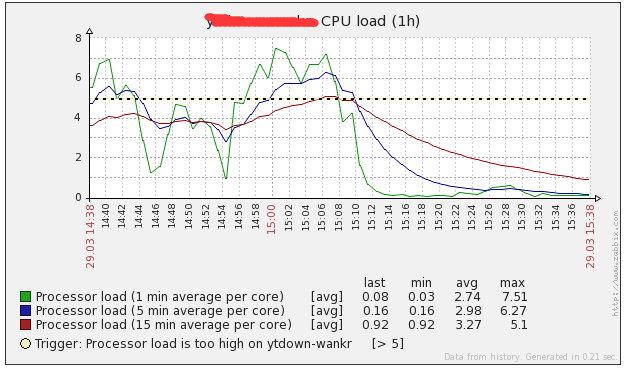
[Edit](http://maxiang.info/" \l "/?provider=evernote&guid=ff31cd2e-d001-4121-af25-bc4040d65168&notebook=linux)

# IOWAIT过高问题

linux io

最近工作中有一台下载服务器，zabbix经常报警disk IO过高，对外宽带80M，基本上也用不完，因为是下载服务器，网络请求时高时低。经常一些调整后，最终把IO问题解决了，下面是调整后的监控





可以看到从下午15:10分之后虽然下载请求依然很高，出口流量也很大，但是CPU IOWAIT已经低了下来

在网上搜到这其实便是http没有做下载限速的原因，下面是一些对http的一些优化,需要使用apxs(apxs是一个为Apache HTTP服务器编译和安装扩展模块的工具)，如果使用的yum安装的httpd那么本身是不带apxs的，需要yum install httpd-devel -y ，

## 为apache安装第三方模块

接下来就需要引用第三方模块**mod\_bw与mod\_limitipconn**一个是限制IP并发数与连接数，一个是限制下载速度，进一步的研究

wget http://dominia.org/djao/limit/mod\_limitipconn-0.22.tar.gz

wget http://bwmod.sourceforge.net/files/mod\_bw-0.7.tgz

tar jxf mod\_limitipconn-0.22.tar.gz

tar zxf mod\_bw-0.7.tgz

cd mod\_limitipconn-0.24

which apxs -c -i -a mod\_limitipconn.c

cd mod\_bw

apxs -i -c -a mod\_bw.c

然后使用httpd -t检查语法错误，如果遇到下面错误

**httpd: Syntax error on line 217 of /etc/httpd/conf/httpd.conf: Cannot load /usr/lib64/httpd/modules/mod\_bw.so into server: /usr/lib64/httpd/modules/mod\_bw.so: undefined symbol: apr\_atomic\_cas**

有两种办法一种是yum install apr apr\_devel 如果这种办法解决不了问题的话，那么就需要用到下面另一种方法

手动修改mod\_bw.c文件，具体修改看下面第60行开始,

vim mod\_bw.c

**#ifdef** APR\_MAJOR\_VERSION /\*需要增加这一个\*/

**#if** (APR\_MAJOR\_VERSION < 1)

#define apr\_atomic\_inc32 apr\_atomic\_inc

#define apr\_atomic\_dec32 apr\_atomic\_dec

#define apr\_atomic\_add32 apr\_atomic\_add

#define apr\_atomic\_cas32 apr\_atomic\_cas

#define apr\_atomic\_set32 apr\_atomic\_set

**#endif**

**#endif** /\*需要增加这一个\*/

然后使用apxs重新编译加载模块就OK了。

apxs不存在，是apxs无法运行。

刚刚测试了一下，在没装perl的情况下编译安装apache生成的apxs的第一行是：#!/replace/with/path/to/perl/interpreter -w 。使用apxs需要安装perl，因为apxs使用的perl脚本。

接下来装perl

yum install perl

安装好后，必须修改apxs文件，因为他的第一行还是#!/replace/with/path/to/perl/interpreter -w ，#!/replace/with/path/to/perl/interpreter这个文件是不存在的，当然不能运行。

装第一行修改成#!/usr/bin/perl -w，保存就行了。

建议还是先安装perl再编译安装apache，这样方便些，不会太麻烦

现在就可以配置httpd.conf了,具体便是增加几行代码

BandwidthModule On

ForceBandWidthModule On

Bandwidth all 1024000

MinBandwidth all -1

**<VirtualHost \*:80>**

**DocumentRoot** "/home/download"

**ServerName** gsandow.com

**Directoryindex** index.php index.html

**<Directory "/home/download">**

**Options** FollowSymLinks

**AllowOverride** All

**Order** Deny,Allow

**Allow** from all

**BandwidthModule** On

**ForceBandWidthModule** On

**Bandwidth** all 1024000

**MinBandwidth** all -1

**</Directory>**

**</VirtualHost>**

## 模块参数

下面是两个模块的具体配置参数

a. BandWidthModule On|Off

//是否开启mod\_bw的带宽限制功能。

b. BandWidth [From] [bytes/s]

设置指定客户机最大带宽,0表示不限制

BandWidth u:[User-Agent] [bytes/s]

c. MinBandWidth [From] [bytes/s]

设置指定客户机带宽的最小值，为0表示每个客户端带宽最大为256bytes/s,为-1表示最大为BandWith的值

d. LargeFileLimit [Type] [Minimum Size] [bytes/s]

设置访问超出特定大小的某种文件的最大带宽,文件类型大小单位为kbytes

e. MaxConnection [From] [Max]

设置指定客户机的最大并发连接数

f. ForceBandWidthModule [On|Off]

默认bw模块将应用所有请求，On可设置过滤类型

关于From，即客户端来源可分以下几种情况：

IP指定单一主机

192.168.1.22

指定网段

192.168.1.0/24或

192.168.1.0/255.255.255.0

域名单一主机

Client1.jb51.net

域名指定范围

.jb51.net

所有客户端

all

以上配置既可以针对所有客户端，也可以对某个虚拟主机进行配置

实例一：

BandWidthModule On

BandWidth 192.168.0.0/16 0 # 这个网段的无限制

BandWidth all 307200

BandWidth 192.168.1.2 102400

BandWidth “u:^Mozilla/5(.\*)” 102400

BandWidth “u:wget” 204800

ForceBandWidthModule On

LargeFileLimit .avi 600 204800

MaxConnection all 100

MaxConnnection 192.168.1.2 5

以上的配置含义：

开启mod\_bw, 限制所有文件类型也开启了

所有客户端最大带宽为300k,最大并发连接为100

192.168.1.2的最大带宽为100k,最大并发连接为5

使用FireFox的客户端最大带宽为100k

使用wget的客户端最大带宽为200k

对超过600k的avi格式的文件最大带宽为200kbyte/s

实例二：

<Virtualhost \*>

BandwidthModule On

ForceBandWidthModule On

LargeFileLimit .avi 1 20000

LargeFileLimit .mpg 1 20000

Servername www.jb51.net

该实例对虚拟主机进行了限制，指定的文件类型avi和mpg最大带宽为20K,ForceBandWidthModule On必须有。

实例三：

<Virtualhost \*>

BandwidthModule On

AddOutputFilterByType MOD\_BW text/html text/plain

Bandwidth all 5000

Servername www.jb51.net

%23%20IOWAIT%u8FC7%u9AD8%u95EE%u9898%0A@%28linux%29%5Bio%5D%0A%0A%0A%u6700%u8FD1%u5DE5%u4F5C%u4E2D%u6709%u4E00%u53F0%u4E0B%u8F7D%u670D%u52A1%u5668%uFF0Czabbix%u7ECF%u5E38%u62A5%u8B66disk%20IO%u8FC7%u9AD8%uFF0C%u5BF9%u5916%u5BBD%u5E2680M%uFF0C%u57FA%u672C%u4E0A%u4E5F%u7528%u4E0D%u5B8C%uFF0C%u56E0%u4E3A%u662F%u4E0B%u8F7D%u670D%u52A1%u5668%uFF0C%u7F51%u7EDC%u8BF7%u6C42%u65F6%u9AD8%u65F6%u4F4E%u3002%u7ECF%u5E38%u4E00%u4E9B%u8C03%u6574%u540E%uFF0C%u6700%u7EC8%u628AIO%u95EE%u9898%u89E3%u51B3%u4E86%uFF0C%u4E0B%u9762%u662F%u8C03%u6574%u540E%u7684%u76D1%u63A7%0A%0A%21%5BAlt%20text%5D%28./QQ%u56FE%u724720160329155734.png%29%0A%21%5BAlt%20text%5D%28./QQ%u56FE%u724720160329155757.png%29%0A%0A%u53EF%u4EE5%u770B%u5230%u4ECE%u4E0B%u534815%3A10%u5206%u4E4B%u540E%u867D%u7136%u4E0B%u8F7D%u8BF7%u6C42%u4F9D%u7136%u5F88%u9AD8%uFF0C%u51FA%u53E3%u6D41%u91CF%u4E5F%u5F88%u5927%uFF0C%u4F46%u662FCPU%20IOWAIT%u5DF2%u7ECF%u4F4E%u4E86%u4E0B%u6765%0A%u5728%u7F51%u4E0A%u641C%u5230%u8FD9%u5176%u5B9E%u4FBF%u662Fhttp%u6CA1%u6709%u505A%u4E0B%u8F7D%u9650%u901F%u7684%u539F%u56E0%uFF0C%u4E0B%u9762%u662F%u4E00%u4E9B%u5BF9http%u7684%u4E00%u4E9B%u4F18%u5316%2C%u9700%u8981%u4F7F%u7528apxs%28apxs%u662F%u4E00%u4E2A%u4E3AApache%20HTTP%u670D%u52A1%u5668%u7F16%u8BD1%u548C%u5B89%u88C5%u6269%u5C55%u6A21%u5757%u7684%u5DE5%u5177%29%uFF0C%u5982%u679C%u4F7F%u7528%u7684yum%u5B89%u88C5%u7684httpd%u90A3%u4E48%u672C%u8EAB%u662F%u4E0D%u5E26apxs%u7684%uFF0C%u9700%u8981%60yum%20install%20httpd-devel%20-y%60%20%uFF0C%0A%0A%23%23%20%u4E3Aapache%u5B89%u88C5%u7B2C%u4E09%u65B9%u6A21%u5757%0A%u63A5%u4E0B%u6765%u5C31%u9700%u8981%u5F15%u7528%u7B2C%u4E09%u65B9%u6A21%u5757\*\*mod\_bw%u4E0Emod\_limitipconn\*\*%u4E00%u4E2A%u662F%u9650%u5236IP%u5E76%u53D1%u6570%u4E0E%u8FDE%u63A5%u6570%uFF0C%u4E00%u4E2A%u662F%u9650%u5236%u4E0B%u8F7D%u901F%u5EA6%uFF0C%u8FDB%u4E00%u6B65%u7684%u7814%u7A76%0A%0A%60%60%60%0Awget%20http%3A//dominia.org/djao/limit/mod\_limitipconn-0.22.tar.gz%20%20%0Awget%20http%3A//bwmod.sourceforge.net/files/mod\_bw-0.7.tgz%0Atar%20jxf%20mod\_limitipconn-0.22.tar.gz%20%0Atar%20zxf%20mod\_bw-0.7.tgz%0Acd%20mod\_limitipconn-0.24%0Awhich%20apxs%20-c%20-i%20-a%20mod\_limitipconn.c%0Acd%20mod\_bw%0Aapxs%20-i%20-c%20-a%20mod\_bw.c%0A%60%60%60%0A%0A%u7136%u540E%u4F7F%u7528%60httpd%20-t%60%u68C0%u67E5%u8BED%u6CD5%u9519%u8BEF%uFF0C%u5982%u679C%u9047%u5230%u4E0B%u9762%u9519%u8BEF%0A\*\*httpd%3A%20Syntax%20error%20on%20line%20217%20of%20/etc/httpd/conf/httpd.conf%3A%20Cannot%20load%20/usr/lib64/httpd/modules/mod\_bw.so%20into%20server%3A%20/usr/lib64/httpd/modules/mod\_bw.so%3A%20undefined%20symbol%3A%20apr\_atomic\_cas\*\*%0A%u6709%u4E24%u79CD%u529E%u6CD5%u4E00%u79CD%u662F%60yum%20install%20apr%20apr\_devel%60%20%u5982%u679C%u8FD9%u79CD%u529E%u6CD5%u89E3%u51B3%u4E0D%u4E86%u95EE%u9898%u7684%u8BDD%uFF0C%u90A3%u4E48%u5C31%u9700%u8981%u7528%u5230%u4E0B%u9762%u53E6%u4E00%u79CD%u65B9%u6CD5%0A%0A%u624B%u52A8%u4FEE%u6539mod\_bw.c%u6587%u4EF6%uFF0C%u5177%u4F53%u4FEE%u6539%u770B%u4E0B%u9762%u7B2C60%u884C%u5F00%u59CB%2C%0A%60%60%60%0Avim%20mod\_bw.c%0A%23ifdef%20APR\_MAJOR\_VERSION%20%20%20/\*%u9700%u8981%u589E%u52A0%u8FD9%u4E00%u4E2A\*/%0A%23if%20%28APR\_MAJOR\_VERSION%20%3C%201%29%0A%20%20%20%20%23define%20apr\_atomic\_inc32%20apr\_atomic\_inc%0A%20%20%20%20%23define%20apr\_atomic\_dec32%20apr\_atomic\_dec%0A%20%20%20%20%23define%20apr\_atomic\_add32%20apr\_atomic\_add%0A%20%20%20%20%23define%20apr\_atomic\_cas32%20apr\_atomic\_cas%0A%20%20%20%20%23define%20apr\_atomic\_set32%20apr\_atomic\_set%0A%23endif%0A%23endif%20%20%20%20%20%20/\*%u9700%u8981%u589E%u52A0%u8FD9%u4E00%u4E2A\*/%0A%60%60%60%0A%u7136%u540E%u4F7F%u7528apxs%u91CD%u65B0%u7F16%u8BD1%u52A0%u8F7D%u6A21%u5757%u5C31OK%u4E86%u3002%0A%0Aapxs%u4E0D%u5B58%u5728%uFF0C%u662Fapxs%u65E0%u6CD5%u8FD0%u884C%u3002%0A%u521A%u521A%u6D4B%u8BD5%u4E86%u4E00%u4E0B%uFF0C%u5728%u6CA1%u88C5perl%u7684%u60C5%u51B5%u4E0B%u7F16%u8BD1%u5B89%u88C5apache%u751F%u6210%u7684apxs%u7684%u7B2C%u4E00%u884C%u662F%uFF1A%23%21/replace/with/path/to/perl/interpreter%20-w%20%u3002%u4F7F%u7528apxs%u9700%u8981%u5B89%u88C5perl%uFF0C%u56E0%u4E3Aapxs%u4F7F%u7528%u7684perl%u811A%u672C%u3002%0A%u63A5%u4E0B%u6765%u88C5perl%0Ayum%20install%20perl%0A%u5B89%u88C5%u597D%u540E%uFF0C%u5FC5%u987B%u4FEE%u6539apxs%u6587%u4EF6%uFF0C%u56E0%u4E3A%u4ED6%u7684%u7B2C%u4E00%u884C%u8FD8%u662F%23%21/replace/with/path/to/perl/interpreter%20-w%20%uFF0C%23%21/replace/with/path/to/perl/interpreter%u8FD9%u4E2A%u6587%u4EF6%u662F%u4E0D%u5B58%u5728%u7684%uFF0C%u5F53%u7136%u4E0D%u80FD%u8FD0%u884C%u3002%0A%u88C5%u7B2C%u4E00%u884C%u4FEE%u6539%u6210%23%21/usr/bin/perl%20-w%uFF0C%u4FDD%u5B58%u5C31%u884C%u4E86%u3002%0A%u5EFA%u8BAE%u8FD8%u662F%u5148%u5B89%u88C5perl%u518D%u7F16%u8BD1%u5B89%u88C5apache%uFF0C%u8FD9%u6837%u65B9%u4FBF%u4E9B%uFF0C%u4E0D%u4F1A%u592A%u9EBB%u70E6%0A%0A%0A%u73B0%u5728%u5C31%u53EF%u4EE5%u914D%u7F6Ehttpd.conf%u4E86%2C%u5177%u4F53%u4FBF%u662F%u589E%u52A0%u51E0%u884C%u4EE3%u7801%0ABandwidthModule%20On%0AForceBandWidthModule%20On%0ABandwidth%20all%201024000%0AMinBandwidth%20all%20-1%0A%0A%60%60%60%0A%3CVirtualHost%20\*%3A80%3E%0A%20%20%20%20%20%20%20%20DocumentRoot%20%22/home/download%22%0A%20%20%20%20%20%20%20%20ServerName%20gsandow.com%0A%20%20%20%20%20%20%20%20Directoryindex%20index.php%20index.html%0A%20%20%20%20%20%20%20%20%20%3CDirectory%20%22/home/download%22%3E%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20Options%20FollowSymLinks%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20AllowOverride%20All%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20Order%20Deny%2CAllow%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20Allow%20from%20all%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20BandwidthModule%20On%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20ForceBandWidthModule%20On%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20Bandwidth%20all%201024000%0A%20%20%20%20%20%20%20%20%20%20%20%20%20%20MinBandwidth%20all%20-1%0A%20%20%20%20%20%20%20%20%3C/Directory%3E%0A%3C/VirtualHost%3E%0A%60%60%60%0A%0A%23%23%20%u6A21%u5757%u53C2%u6570%0A%u4E0B%u9762%u662F%u4E24%u4E2A%u6A21%u5757%u7684%u5177%u4F53%u914D%u7F6E%u53C2%u6570%0A%0Aa.%20%20BandWidthModule%20%20On%7COff%0A//%u662F%u5426%u5F00%u542Fmod\_bw%u7684%u5E26%u5BBD%u9650%u5236%u529F%u80FD%u3002%0Ab.%20%20BandWidth%20%20%5BFrom%5D%20%20%5Bbytes/s%5D%0A%20%20%20%20%u8BBE%u7F6E%u6307%u5B9A%u5BA2%u6237%u673A%u6700%u5927%u5E26%u5BBD%2C0%u8868%u793A%u4E0D%u9650%u5236%0A%20%20%20BandWidth%20u%3A%5BUser-Agent%5D%20%5Bbytes/s%5D%0Ac.%20%20MinBandWidth%20%20%5BFrom%5D%20%20%5Bbytes/s%5D%0A%20%20%20%20%u8BBE%u7F6E%u6307%u5B9A%u5BA2%u6237%u673A%u5E26%u5BBD%u7684%u6700%u5C0F%u503C%uFF0C%u4E3A0%u8868%u793A%u6BCF%u4E2A%u5BA2%u6237%u7AEF%u5E26%u5BBD%u6700%u5927%u4E3A256bytes/s%2C%u4E3A-1%u8868%u793A%u6700%u5927%u4E3ABandWith%u7684%u503C%0Ad.%20%20LargeFileLimit%20%20%5BType%5D%20%20%5BMinimum%20Size%5D%20%20%5Bbytes/s%5D%0A%20%20%20%20%u8BBE%u7F6E%u8BBF%u95EE%u8D85%u51FA%u7279%u5B9A%u5927%u5C0F%u7684%u67D0%u79CD%u6587%u4EF6%u7684%u6700%u5927%u5E26%u5BBD%2C%u6587%u4EF6%u7C7B%u578B%u5927%u5C0F%u5355%u4F4D%u4E3Akbytes%0Ae.%20%20%20MaxConnection%20%5BFrom%5D%20%5BMax%5D%0A%20%20%20%20%u8BBE%u7F6E%u6307%u5B9A%u5BA2%u6237%u673A%u7684%u6700%u5927%u5E76%u53D1%u8FDE%u63A5%u6570%0Af.%20%20%20ForceBandWidthModule%20%5BOn%7COff%5D%0A%20%20%20%u9ED8%u8BA4bw%u6A21%u5757%u5C06%u5E94%u7528%u6240%u6709%u8BF7%u6C42%uFF0COn%u53EF%u8BBE%u7F6E%u8FC7%u6EE4%u7C7B%u578B%0A%u5173%u4E8EFrom%uFF0C%u5373%u5BA2%u6237%u7AEF%u6765%u6E90%u53EF%u5206%u4EE5%u4E0B%u51E0%u79CD%u60C5%u51B5%uFF1A%0AIP%u6307%u5B9A%u5355%u4E00%u4E3B%u673A%0A192.168.1.22%0A%u6307%u5B9A%u7F51%u6BB5%0A192.168.1.0/24%u6216%0A192.168.1.0/255.255.255.0%0A%u57DF%u540D%u5355%u4E00%u4E3B%u673A%0AClient1.jb51.net%0A%u57DF%u540D%u6307%u5B9A%u8303%u56F4%0A.jb51.net%0A%u6240%u6709%u5BA2%u6237%u7AEF%0Aall%0A%u4EE5%u4E0A%u914D%u7F6E%u65E2%u53EF%u4EE5%u9488%u5BF9%u6240%u6709%u5BA2%u6237%u7AEF%uFF0C%u4E5F%u53EF%u4EE5%u5BF9%u67D0%u4E2A%u865A%u62DF%u4E3B%u673A%u8FDB%u884C%u914D%u7F6E%0A%u5B9E%u4F8B%u4E00%uFF1A%0ABandWidthModule%20On%0ABandWidth%20192.168.0.0/16%200%20%20%23%20%u8FD9%u4E2A%u7F51%u6BB5%u7684%u65E0%u9650%u5236%0ABandWidth%20all%20307200%0ABandWidth%20192.168.1.2%20102400%0ABandWidth%20%u201Cu%3A%5EMozilla/5%28.\*%29%u201D%20102400%0ABandWidth%20%u201Cu%3Awget%u201D%20204800%0AForceBandWidthModule%20On%0ALargeFileLimit%20.avi%20600%20204800%0AMaxConnection%20all%20100%0AMaxConnnection%20192.168.1.2%205%0A%u4EE5%u4E0A%u7684%u914D%u7F6E%u542B%u4E49%uFF1A%0A%u5F00%u542Fmod\_bw%2C%20%u9650%u5236%u6240%u6709%u6587%u4EF6%u7C7B%u578B%u4E5F%u5F00%u542F%u4E86%0A%u6240%u6709%u5BA2%u6237%u7AEF%u6700%u5927%u5E26%u5BBD%u4E3A300k%2C%u6700%u5927%u5E76%u53D1%u8FDE%u63A5%u4E3A100%0A192.168.1.2%u7684%u6700%u5927%u5E26%u5BBD%u4E3A100k%2C%u6700%u5927%u5E76%u53D1%u8FDE%u63A5%u4E3A5%0A%u4F7F%u7528FireFox%u7684%u5BA2%u6237%u7AEF%u6700%u5927%u5E26%u5BBD%u4E3A100k%0A%u4F7F%u7528wget%u7684%u5BA2%u6237%u7AEF%u6700%u5927%u5E26%u5BBD%u4E3A200k%0A%u5BF9%u8D85%u8FC7600k%u7684avi%u683C%u5F0F%u7684%u6587%u4EF6%u6700%u5927%u5E26%u5BBD%u4E3A200kbyte/s%0A%u5B9E%u4F8B%u4E8C%uFF1A%0A%3CVirtualhost%20\*%3E%0A%20%20%20%20%20%20BandwidthModule%20On%0A%20%20%20%20%20%20ForceBandWidthModule%20On%0A%20%20%20%20%20%20LargeFileLimit%20.avi%201%2020000%0A%20%20%20%20%20%20LargeFileLimit%20.mpg%201%2020000%0A%20%20%20%20%20%20Servername%20www.jb51.net%0A%3C/Virtualhost%3E%0A%u8BE5%u5B9E%u4F8B%u5BF9%u865A%u62DF%u4E3B%u673A%u8FDB%u884C%u4E86%u9650%u5236%uFF0C%u6307%u5B9A%u7684%u6587%u4EF6%u7C7B%u578Bavi%u548Cmpg%u6700%u5927%u5E26%u5BBD%u4E3A20K%2CForceBandWidthModule%20On%u5FC5%u987B%u6709%u3002%0A%u5B9E%u4F8B%u4E09%uFF1A%0A%3CVirtualhost%20\*%3E%0A%20%20%20%20%20%20BandwidthModule%20On%0A%20%20%20%20%20%20AddOutputFilterByType%20MOD\_BW%20text/html%20text/plain%0A%20%20%20%20%20%20Bandwidth%20all%205000%0A%20%20%20%20%20%20Servername%20www.jb51.net%0A%3C/Virtualhost%3E%0A%0A