

# Infrastructure/Mirroring/zh-cn

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Fedora 项目已  
在全球拥有超过200 个镜像站点 点击查看 (<https://admin.fedoraproject.org/mirrormanager/mirrors>)  
，这十分有助于 Fedora 的传播。我们十分感谢他们！

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## 联系我们

- 邮件列表: mirror-admins (<https://lists.fedoraproject.org/admin/lists/mirror-admin.lists.fedoraproject.org/>)
- IRC 频道: Freenode 上的 #fedora-admin (<https://webchat.freenode.net/?channels=#fedora-admin>)<sup>[?]</sup>
- 管理员: [mirror-admin@fedoraproject.org](mailto:mirror-admin@fedoraproject.org)

## 镜像大约有多大?

- 详见 : [http://dl.fedoraproject.org/pub/DIRECTORY\\_SIZES.txt](http://dl.fedoraproject.org/pub/DIRECTORY_SIZES.txt)

请仔细阅读。

## 出口原则

By downloading Fedora software, you acknowledge that you understand all of the following: Fedora software and technical information may be subject to the U.S. Export Administration Regulations (the “EAR”) and other U.S. and foreign laws and may not be exported, re-exported or transferred (a) to any country listed in Country Group E:1 in Supplement No. 1 to part 740 of the EAR (currently, Cuba, Iran, North Korea, Sudan & Syria); (b) to any prohibited destination or to any end user who has been prohibited from participating in U.S. export transactions by any federal agency of the U.S. government; or (c) for use in connection with the design, development or production of nuclear, chemical or biological weapons, or rocket systems, space launch vehicles, or sounding rockets, or unmanned air vehicle systems. You may not download Fedora software or technical information if you are located in one of these countries or otherwise subject to these restrictions. You may not provide Fedora software or technical information to individuals or entities located in one of these countries or otherwise subject to these restrictions. You are also responsible for compliance with foreign law requirements applicable to the import, export and use of Fedora software and technical information.

## 如何搭建一个公共镜像 ?

搭建公共镜像非常简单，而且将越来越简单。确保您的网站拥有足够的带宽和磁盘空间来承担负载，这就是我们的全部要求。每个 Fedora 发行版都会消耗200GB以上的磁盘空间，并且有可能下载者会耗尽您的全部带宽。镜像站点应至少有 100Mbit/sec\* 的带宽连接到互联网，现有许多站点是基于千兆或更高的带宽工作的。以 Fedora 8 发行版为例，其在主服务器上消耗的总空间（也是镜像站点要消耗的空间）达到了1.1TB并且仍在增长。1-2TB的空间适合于建立长期镜像。这是基于硬链接的空间概念，如果您不能使用硬链接（例如，使用AFS），您将需要更多的磁盘空间。实际磁盘空间消耗在下列文件中已给出[1] ([http://dl.fedoraproject.org/pub/DIRECTORY\\_SIZES.txt](http://dl.fedoraproject.org/pub/DIRECTORY_SIZES.txt))。

- 100Mbit/sec 是针对已经有充足镜像站覆盖的国家而言的。我们希望在具有较少镜像的国家的新镜像能有更大的带宽。我们总是欢迎拥有Internet2、National Lambda Rail、GEANET2、RedIRIS 或者类似的高速科研网络连接的镜像站。

## 如何搭建一个私有镜像 ?

私有镜像是那些只能被内部人员访问的某些组织或者机构专有的镜像，例如公司,学校等等。这些镜像是为了在机构内部加快 Fedora 的分发而被开设的。当然，这些镜像所处的网络对当地的带宽消耗远少于连接互联网的。

私有镜像运行与公共镜像基本无异，除了以下几点：

- 镜像管理器的 publiclist 不会有该镜像的显示。
- 无法从官方镜像目录同步，只能寻求其他公共镜像。
- 私有镜像必须在镜像管理器设置中包含您的 IP 段。这将会允许您的内网用户访问镜像站点时自动重定向至您的镜像。您可以将 IP 段定为类似括号中的 (18.0.0.0/8) 格式；如果您的网络是 NAT 结构，则请输入您的 NAT 网关主机名。
- 私有镜像不会被镜像管理器的蜘蛛爬行，也就是不会被索引。
- 私有镜像必须运行 report\_mirror 工具以告知 MirrorManager 数据库。如果您不行，您的客户端原本想使用您的镜像，但是将不会自动跳转到您的镜像地址。

## 镜像管理器：Fedora 项目的镜像管理系统

镜像管理器 (<https://admin.fedoraproject.org/mirrormanager/>) 跟踪所有的镜像而不需要很多的人工的文件编辑。镜像站点的管理员一点要确保 report\_mirror 脚本和 mirrormanager-client 在每次 rsync 之后被运行以更新镜像管理数据库。

### 注册

### Fedora 账户系统

- 您必须有一个 Fedora 账户 (<https://admin.fedoraproject.org/accounts/>)（在这里 (<https://fedoraproject.org/wiki/AccountSystem>) 获取更多信息）。不过您不必为了镜像内容而去签署Contributors License Agreement，但是如果想要在其他领域做贡献，您必须签署。
- 如果是公共镜像，您必须要发送一封邮件至 [mirror-admin@fedoraproject.org](mailto:mirror-admin@fedoraproject.org) 来介绍一下您的镜像。同时这也是您想成为公共镜像的声明。注意这封邮件必须涵盖了您的镜像的 IP 地址，所处国家或地区以及该镜像的流量和带宽。如果是私有镜像则不必了，如果您想介绍一下自己，请简短。
- 您必须订阅 mirror-admin 邮件列表 (<https://lists.fedoraproject.org/admin/lists/mirror-admin.lists.fedoraproject.org/>)，新发行版的同步通知会在此发布。

### 在 MirrorManager 中注册

- 使用您的 FAS 账户登录 mirrormanager (<https://admin.fedoraproject.org/mirrormanager>)；
- 点击 [Add Site] 创建一个新站点；
- 创建一个新的镜像，并且填写该镜像要同步的 rsync 模块、镜像管理员（多人也可以）以及您的镜像 IP 和其他细节信息。
- Fedora MirrorManager 不再支持 FTP URL。将不能再添加 FTP URL。
- 请在每次同步完成后运行 report\_mirror 工具。
- 您可以列出您的镜像的 IP 段（IP 地址范围）。从您列出的 IP 段内来访的请求会自动跳转至您的镜像。
- 您还可以列出您的镜像的 BGP 自治系统号（ASN）。在您的自治范围内的客户端内容请求将会被自动跳转至您的镜像。一种查找您的 ASN 的方式是从 routeviews.org 的 DNS 服务器请求。就像 PTR 记录查找一样，但是是针对服务器的。例如，想要查找 143.166.1.1 的 ASN，则请输入：

```
$ dig txt 1.1.166.143.asn.routeviews.org @archive.routeviews.org
;; ANSWER SECTION:
1.1.166.143.asn.routeviews.org. 86400 IN TXT      "3614" "143.166.0.0"
"16"
```

ASN 就是 TXT 记录中的第一组引号内的数字，即3614。

## 🔗 搭建

最简单的做法，也是最通用的，就是用 `rsync` 工具来同步。注意该工具的 `-H` (保留硬链接), `--delay-updates`, `--numeric-ids` 和 `--delete-after` 选项是必须要启用的。  
示例：

```
rsync -vaH --exclude-from=${EXCLUDES} --numeric-ids --delete --delete-
after --delay-updates \
rsync://dl.fedoraproject.org/fedora-enchilada ${LOCAL_DIR}
```

- 要同步的内容由您决定，不必同步所有内容，比如某些特殊架构的专用版您可以选择性同步。
- 请从1级镜像站点同步。请见 Infrastructure/Mirroring/Tiering。除了以上方法，您也可以选择从一个比较快的镜像同步。请联系相关站点管理员以便将您的站点添加到他们的访问控制列表中。
- 您应该在08:00 UTC(此时是 rawhide 版本发布)后同步, 14:00 UTC (when bitflips occur), 且一天同步次数为3-5次。
- 您应该设置您的站点同步时间为一个随机值以便拉平上游镜像的负载。最好写一个cron job:

```
45 */6 * * * perl -le 'sleep rand 1800' && bash -l ~/mirror-fedora >
/dev/null
```

- 如果您使用 rsync 3.0以上版本，您可以使用 `--delete-delay` 选项替换 `--delete-after`，这种情况下可以提高性能。具体资料请见：这份报告 (<http://lists.debian.org/debian-mirrors/2009/04/msg00017.html>)。

## 🔗 运行 report\_mirror

镜像管理器包含了一个工具 `report_mirror`，该工具可以在您完成同步任务后通报官方您的镜像本次同步的详细信息。这对我们的日常管理和用户的安装很有帮助。请在每次同步完成后运行 `report_mirror`。请通过以下方法安装获取：

```
yum install mirrormanager-client
```

或者直接从 git 仓库 (<https://github.com/fedora-infra/mirrormanager2/>) 获取代码：

```
git clone https://github.com/fedora-infra/mirrormanager2/
```

您需要 report\_mirror 和 report\_mirror.conf，且必须配置 report\_mirror.conf 以便识别您的磁盘上所有镜像文件位置。

## 可用内容

这些都是可以用 rsync 进行的内容模块，以及在目录树中的节点：

### 建议的同步的部分

rsync 模块名称	描述	主镜像服务器上的路径	备注
fedora-buffer	Fedora - The whole buffet. All you can eat.	/pub	Please use this if you can, it provides the all current Fedora content, including pre-bitflip content. This is open to specific mirrors by request. Mirrors participating in our tiering should use this. Mirrors syncing both fedora-enchilada and fedora-archive should use this, as we can now hardlink across both of those trees under fedora-buffer0.
fedora-enchilada	Fedora - the whole enchilada	/pub/fedora	Please use this if you can, it provides the all current Fedora content, including pre-bitflip content. This is open to specific mirrors by request. Mirrors participating in our tiering should use this.
fedora-epel	Extra Packages for Enterprise Linux	/pub/epel	Please use this to mirror EPEL
fedora-archive	Historical Fedora releases	/pub/archive	Fedora Core 1-6 and Extras 3-6, and obsolete releases 7 and higher
fedora-secondary	Fedora Secondary Arches	/pub/fedora-secondary	
fedora-alt	Fedora Other	/pub/alt	

以下模块请不要同步，它们是特定时期的产物。

模块名称	描述	主镜像服务器上的路径	备注
fedora-linux-releases	Fedora Linux Releases	/pub/fedora/linux/releases	
fedora-linux-development	Fedora Linux Development (Rawhide)	/pub/fedora/linux/development	
fedora-linux-updates	Fedora Linux Updates	/pub/fedora/linux/updates	

## DVD, CD 和 exploded trees

当有一个新版本可用时，您可以先下载它的 ISO 文件(比方说 DVD ISO)，这样会节省带宽，然后您可以把 ISO 解压到镜像目录里面，最后运行 rsync 开始刷新同步。这可以避免您重复下载相同的 RPM。

## Regular hardlink runs

While the Fedora release maintainers try to keep as little redundant packaging around as possible, there are some duplicate packages in the tree. For example, when a Fedora Test release comes out, the package set included there looks remarkably like that of the development tree from a few days before. By copying the development tree over into the new Test directory before starting your `rsync` run, and using `rsync -H`, you can avoid downloading all that content a second time.

In addition, it's good practice to run a tool like `hardlink++` on your tree occasionally (say, weekly), to ensure as much of your tree as possible is hardlinked.

## Pre-Release: Copying Development tree to new release directory

In the days leading up to a release, either test or final, the development tree will stop taking new packages, and will closely resemble what winds up in the new release. As a mirror, you can avoid downloading content that already is in your copy of the development tree that matches what's in the release tree by copying those packages using hardlinks, such as:

```
cp -lr fedora/linux/development/13/i386/os
fedora/linux/releases/13/Fedora/i386/
cp -lr fedora/linux/development/13/x86_64/os
fedora/linux/releases/13/Fedora/x86_64/
cp -lr fedora/linux/development/13/source
fedora/linux/releases/13/Fedora/
```

and then start the `rsync` process, which will clean up any changes and fix up the timestamps.

## Rsync 配置 (示例)

Larger mirrors, like kernel.org, have slightly custom front-ends to `rsync` (mainly so that they can have a single `rsync` instance and have multiple ip based vhost configuration files) That said what follows is a sample `rsync` configuration file for public syncing (this is not intended for private pre-bitflip mirroring)

```
[fedora]
comment      = Fedora - RedHat community project
path         = <path to your fedora directory>
exclude      = lost+found/
read only    = true
max connections = 100
lock file    = /var/run/rsyncd-mirrors.lock
uid          = <user id (numeric, or textual) of an anonymous
style user who should have read access>
gid          = <group id (numeric, or textual) of an
anonymous style user who should have read access>
transfer logging = yes
timeout      = 900
ignore nonreadable = yes
dont compress = *.gz *.tgz *.zip *.z *.Z *.rpm *.deb *.bz2
refuse options = checksum
```

Things to explicitly note:

- The path above should be a full path to your fedora directory

- You should **\*really\*** want to leave this read-only
- Make sure your uid/gid are set to public users, not to the user that you run as your sync agent. If you set this to the user who does your syncs you will be inadvertently giving the public full pre-bitflip access.
- Make sure you have the 'refuse options' set to checksum, your server will be **\*MUCH\*** happier with this set, as it will prevent public users from performing a checksum run against you. This can be incredibly I/O abusive, so should not be available to the general public.

## HTTPd 配置

### Keepalives

HTTP Keepalives should be enabled on your mirror server to speed up client downloads. By default, Fedora's Apache httpd package has keepalives disabled. They should be enabled, with a timeout of at least 2 seconds (the default of 15 seconds might be too high for a heavily loaded mirror server, but 2 seconds is sufficient and appropriate for yum).

```
KeepAlive On
KeepAliveTimeout 2
MaxKeepAliveRequests 100
```

Other http servers such as lighttpd have keepalives enabled by default.

### metadata 缓存

We don't want caching proxy servers between our mirrors and our end user systems to cache our yum repository metadata. So, add explicit metadata handling. (Suggested by the OpenSUSE download redirector.)

```
<LocationMatch "\.(xml|xml\.gz|xml\.asc|sqlite)$">
  Header set Cache-Control "must-revalidate"
  ExpiresActive On
  ExpiresDefault "now"
</LocationMatch>
```

### Redirecting ISO downloads to FTP

While no longer a recommended practice, the following mod\_rewrite rules will force all \*.iso files to be downloaded via FTP. In this example HEAD requests are not redirected, so the MirrorManager crawler is not disrupted.

```
RewriteCond      %{REQUEST_METHOD} GET
RewriteRule      ^\.(.*\.iso)$ ftp://myserver/$1 [L,R=301]
```

### Content Types

ISO and RPM files should be served using MIME Content-Type: application/octet-stream. In Apache, this can be done inside a VirtualHost or similar section:

```
<VirtualHost *:80>
AddType application/octet-stream .iso
AddType application/octet-stream .rpm
</VirtualHost>
```

## 🔗 限制某些加速下载工具

Download accelerators will try to open the same file many times, and request chunks, hoping to download them in parallel. This can overload heavily loaded mirror servers, especially on release day. Here are some tricks to thwart such activities.

To limit connections to ISO dirs by some amount per IP:

```
<IfModule mod_limitipconn.c>
MaxConnPerIP 6
</IfModule>
```

To block ranged requests as this is what download accelerators do indeed:

```
RewriteEngine on
RewriteCond %{HTTP:Range} [0-9] $
RewriteRule \.iso$ / [F,L]
```

Similar things can be done with iptables and the recent module, which might give you a little more ability to control what is being done, either by limiting new connections or by dropping 50% of a users packets.

## 🔗 Logging Partial Content Downloads

Partial content can be logged correctly using apache:

```
# this includes actual counts of actual bytes received (%I) and
# sent (%O); this requires the mod_logio module to be loaded.

LogFormat "%h %l %u %t \"%r\" %>s %b \"%{Referer}i\" %I %O \"%{User-
Agent}i\"" combined
```

## 🔗 Pre-bitflip mirroring

Several days before each public release, the content will be staged to the master mirror servers, but with restricted permissions on the directories (generally mode 0750), specifically, not world readable.

Mirror servers should have several different user/group accounts on their server, for running the different public services. Typically you find:

- HTTP server runs as user apache, group apache
- FTP server runs as user ftp, group ftp
- RSYNC server runs as user rsync, group rsync
- a user account for downloading content from the masters (e.g. user mirror, group mirror).

The user account used to download content from the masters must be *not* be the same as the HTTP, FTP, or RSYNC server accounts. This guarantees that content downloaded with permissions 0750 will *not* be made available via your public servers yet.

On the morning of the public release, the permissions on the directories on the master servers will change to 0755 - world readable. This is called the **bitflip**.

Mirrors may either rsync one more time to pick up these new permissions (but won't have to download all the data again), or preferably, can schedule a batch job to bitflip:

```
$ echo "chmod a+rx /pub/fedora/linux/releases/9" | at '14:45 UTC May 13  
2008'
```

### 🔗 向其它镜像提供内容

Tier 1 mirrors will necessarily need to share content to Tier 2 mirrors before the bitflip. This is done by running another instance of the rsync daemon, on a different port (e.g. 874), with an Access Control List to prevent public downloads, running as a user in the same group as downloaded the content (e.g. group mirror). This could be user mirror, group mirror, who has group read/execute permissions on the still-private content.

Tier 1 mirrors have a tendency to use different authentication methods for granting access to these non-public downloads, they vary from maintaining IP based ACL's to assigning username/password combinations to mirrors wishing to sync from them. Each method has advantages / disadvantages, the IP list is 'simpler' from a mirrormanager perspective as mirrormanager can give you the list of IP's but from an automation standpoint can be more difficult (as rsync's configuration file does not allow that ACL list to be stored in a separate file). Username / passwords can be more versatile as sites mirroring can change IPs without notifying you, but it's easier for those credentials to leak out and get miss-used.

## 🔗 全球镜像分布地图

<https://admin.fedoraproject.org/mirrormanager/map/map.png>

每日更新。如果没有显示请稍后再试。

### 🔗 感谢

本页包含由 MaxMind 旗下产品 GeoLite 的数据。详情请前往：<http://www.maxmind.com/> 查看。

Retrieved from "<https://fedoraproject.org/w/index.php?title=Infrastructure/Mirroring/zh-cn&oldid=505864>"