

Firebird on Linux



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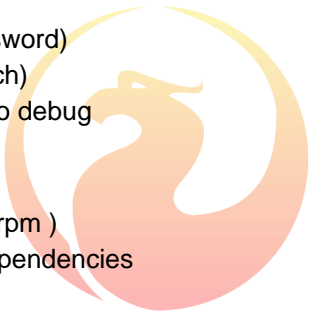
How to install

- Project packages
 - rpm
 - tar.gz
- Distributions packages
- Build from sources



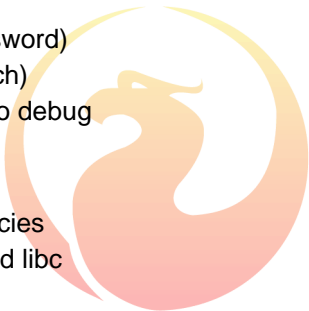
Project packages - rpm

- pro
 - easy ?
 - secure (sysdba password)
 - project build (no patch)
 - project build easier to debug
- con
 - too generic
 - not support update (rpm)
 - not always check dependencies
 - all in /opt
 - pre 2.5 builds with old libc
 - old and not full icu



Project packages - tar.gz

- pro
 - easy (extract, install)
 - secure (sysdba password)
 - project build (no patch)
 - project build easier to debug
- con
 - not support update
 - not check dependencies
 - pre 2.5 builds with old libc
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Project packages - check list

- classic server

- xinetd:

```
yum install xinetd
```

- all

- libc for pre 2.5 (libstdc++.so.5):

```
urpmi libstdc++5  
yum install compat-glibc
```

- problem ? support list

Distribution packages

- pro
 - easy
 - good integration
 - dependencies correctly managed
 - build with default distro libc
 - full icu
- con
 - can have wrong patch
 - available later
 - usually one version at the same time
 - full icu



Build from sources

- pro
 - choice
- con
 - time
- what you need to build
 - g++, awk, sed, autoconf
 - lib headers

example under debian:

```
apt-get install g++ autoconf automake libtool sed libncurses5-dev make
```



Build from sources - options

Building from source give you options :

- with or without OS editline
- with or without OS ICU
- service name, port
- files location options

Example:

```
./autogen.sh --prefix=/opt/firebird --enable-superserver --with-system-editline --with-system-icu
```


Fine tuning of the installation directories:

```
--with-fbbin executables DIR (PREFIX/bin)
--with-fbsbin system admin executables DIR (PREFIX/bin)
--with-fbconf config files DIR (PREFIX)
--with-fbllib object code libraries DIR (PREFIX/lib)
--with-fbinclude C/C++ header files DIR (PREFIX/include)
--with-fbdoc documentation root DIR (PREFIX/doc)
--with-fbudf UDF DIR (PREFIX/UDF)
--with-fbsample examples DIR (PREFIX/examples)
--with-fbsample-db examples database DIR (PREFIX/examples/empbuild)
--with-fbhelp QLI help DIR (PREFIX/help)
--with-fbintl international DIR (PREFIX/intl)
--with-fbmisc misc DIR (PREFIX/misc)
--with-fbsecure-db security database DIR (PREFIX)
--with-fbmsg message files DIR (PREFIX)
--with-fblog log files DIR (PREFIX)
--with-fbglock guardian lock DIR (PREFIX)
--with-fbplugins plugins DIR (PREFIX)
```

After installation

Some points you may have to check :

- xinetd
- max open files
- file system



Classic and xinetd

Below is a sample `/etc/xinetd.conf` file:

```
defaults
{
    instances          = 500
    log_type           = SYSLOG authpriv
    log_on_success     = HOST PID
    log_on_failure     = HOST
    cps                = 5000 1000
    per_source         = 200
}
includedir /etc/xinetd.d
```

instances — Sets the maximum number of requests xinetd can handle at once

cps — Configures xinetd to allow no more than 5000 connections per second to any given service. If this limit is reached, the service is retired for 1000 seconds.

per_source — Defines the maximum number of instances for a service per source IP address.

Firebird and Systemd

systemd is a replacement for the *System V init daemon* for Linux. It is intended to provide a better framework for expressing services' dependencies, allow more work to be done in parallel at system startup, and to reduce shell overhead.

Website: <http://www.freedesktop.org/wiki/Software/systemd/>

With *systemd* Classic not use anymore *xinetd*, but a socket activation. For example in Fedora, we have to files :

- `/lib/systemd/system/firebird-classic.socket`
- `/lib/systemd/system/firebird-classic@.service`

To start Firebird Classic:

```
systemctl start firebird-classic.socket
```

Check max open files

You have to check :

- file-max
- ulimit

On Linux systems, there is a limit set in the kernel on how many open file descriptors are allowed on the system

To check this value:

```
# sysctl fs.file-max  
fs.file-max = 203786
```

usually this number is high enough, but if you need to change it:

```
# sysctl -w fs.file-max=360000  
fs.file-max = 360000
```

Above commands let the system remember new settings until the next system restart. If you want to make the change permanent you have to edit file: `/etc/sysctl.conf`:

```
fs.file-max=360000
```

It will be automatically loaded next time you start the server. Command:

```
# sysctl -p
```

Causes the `/etc/sysctl.conf` to be reloaded which is useful when you added more parameters to the file and don't want to restart the server.

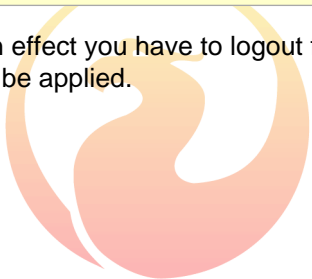
There are also 2 types of system limits: soft limit which can be temporarily exceeded by the user and hard limit which can not be exceeded. To see your hard limit execute command:

```
# ulimit -Hn
```

but to see the limit for the firebird user, you have to be logged in as firebird user.
To set up firebird limits, edit `/etc/security/limits.conf`:

```
firebird soft nofile 4096  
firebird hard nofile 10240
```

For those changes to make an effect you have to logout from the modified account and login again. New limits should be applied.



File system

No obvious rules there

- kernel dependant
- choose the file system you trust

What can have performance influence :

- mount option
 - sync / async : How the input and output to the filesystem should be done. sync means it's done synchronously (more secure)
 - atime / noatime : atime (update on access), noatime (do not update) last accessed time.

you can check this in */etc/fstab*

- scheduler : often deadline scheduler perform better than cfq

you can check the scheduler used with:

```
# cat /sys/block/sda/queue/scheduler  
noop deadline [cfq]
```


About the scheduler, pass the option to your boot loader, */etc/grub.conf*:

```
title Red Hat Enterprise Linux Server (2.6.18-8.el5)
root (hd0,0)
kernel /vmlinuz-2.6.18-8.el5 ro root=/dev/sda2 elevator=deadline
initrd /initrd-2.6.18-8.el5.img
```

or change it for the hard disk you want:

```
# echo deadline > /sys/block/sda/queue/scheduler
or
$ echo deadline | sudo tee /sys/block/sda/queue/scheduler
```

If you want a permanent change, use `sysfsutils`:

```
# apt-get install sysfsutils
# grep scheduler /etc/sysfs.conf
block/sdc/queue/scheduler = cfq
# /etc/init.d/sysfsutils restart
```

Make your own tests, read

Article about Firebird and Linux File Systems :

http://www.ibphoenix.com/resources/documents/search/doc_26



Thank you !

