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
  • old and not full icu
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:

```bash
apt-get install g++ autoconf automake libtool sed libncurses5-dev make
```
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-fblib 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 have may have to check:

- xinetd
- max open files
- file system
Below is a sample /etc/xinetd.conf file:

```plaintext
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.
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:

```bash
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.
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/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!