

Firebird

the universal open
source database



Why Firebird?

Facts for decision makers

Many reasons to think about Firebird...

Java, Visual Studio, Delphi, C++

From 1 Mb to Terabyte

Extremely developer-friendly **Powerful**

Choice of tools

PHP, Ruby, Python

4 architectures to choose

Easy to embed

economize

No double licensing

free

Migrate from InterBase

True open source

Multi-versioning architecture

Designed for universal (OLAP+OLTP) systems

32-bit and 64-bit

Migrate from MySQL

Multi-platform

FreeBSD, Solaris, HP-UX

Windows, Linux, Mac OS X

Migrate from Microsoft SQL

SQL standard compliancy

Migrate from Oracle Express and Standard

No hidden limits

..and so many companies use Firebird...

- 1+ million developers
- 2000+ of installations daily at Windows, and many at Linux
- Millions of bundled Firebird copies are installed with ISV applications
- Firebird is included into all main Linux repositories and distributions

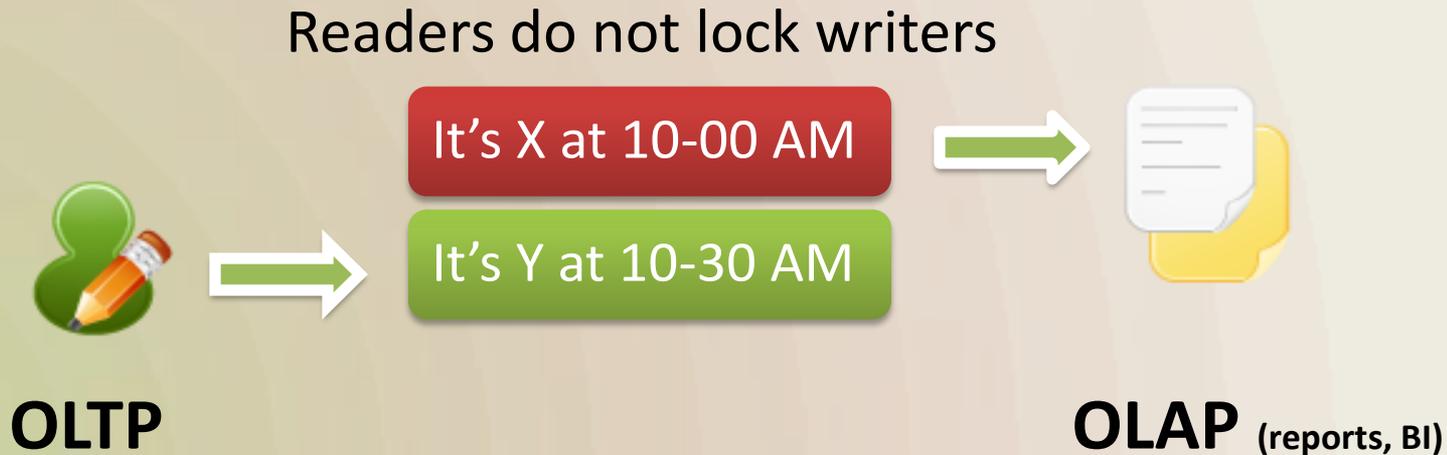
..so this is time to ask:

is Firebird
good enough
for your goal?

The most important features of Firebird

FEATURES

Firebird: multi-generation architecture



Hybrid (OLTP+OLAP)

MGA makes a Firebird database capable of serving simultaneously as both an analytical and an operational data store (OLTP/OLAP).

Automatic sweep

Firebird can manage versioning automatically and perform sweep (known as vacuum in other DBMS) as needed.

Competitors with this feature

- MSSQL 2005+ (Standard and Ent, not Express)
- Oracle
- PostgreSQL
- InterBase

Firebird: active tables

Trigger

Wide range of triggers' types allows flexible modifications of records

Table_1

ID

Name

Age

Scores

Context variables NEW. and OLD. provides easy access to modified values.

NEW.

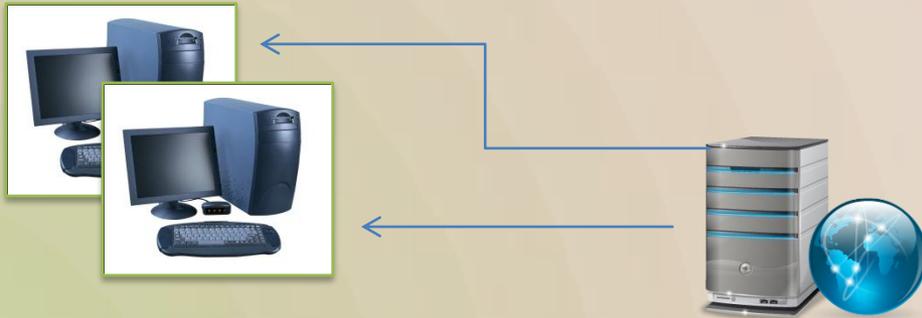
OLD.

```
AS
BEGIN
  IF (NEW.SCORES IS NULL) THEN
    NEW.SCORES = 1;
  // nobody starts from Null with Firebird
END
```

Developer-friendly database

Active tables concept, rich SQL language, wide range of embedded SQL functions, User Defined Functions (UDF) and stored procedures make Firebird database development very easy and pleasant.

Firebird: Events



Events received by all subscribers

```
AS  
BEGIN  
...  
POST_EVENT 'MY_VIP_EVENT1';  
...  
END
```

Events

- Notifications can be sent from database triggers, stored procedures and Execute Blocks
- Flexible subscription mechanism
 - ON TRANSACTION START
 - ON TRANSACTION COMMIT
 - etc

Logging and synchronizing

- Instant notifications can be raised (and written to some table) right from database-level triggers
 - ON CONNECT
 - ON DISCONNECT
 - etc

Firebird: rich SQL

Main features

- High compatibility with ANSI SQL
- Common Table Expressions (CTE)
- Flexible transactions management
- Full-blown stored procedures (selectable SP enables joins w/tables)

Cross-database queries

Query another database using
user\password

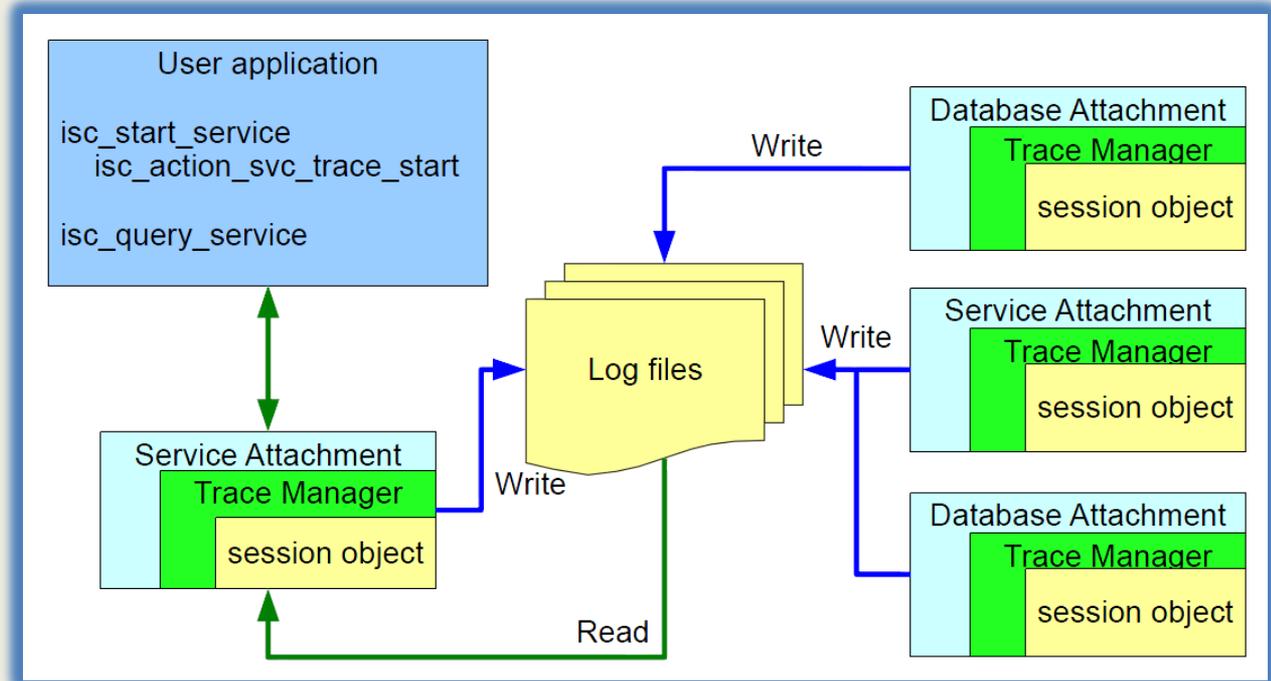
```
EXECUTE STATEMENT '...'  
EXTERNAL DATA SOURCE 'host:path'  
USER 'VLAD' PASSWORD 'passw'
```

High compatibility with industry standards on many fronts makes Firebird the obvious choice for developing interoperable applications for homogeneous and hybrid environments.

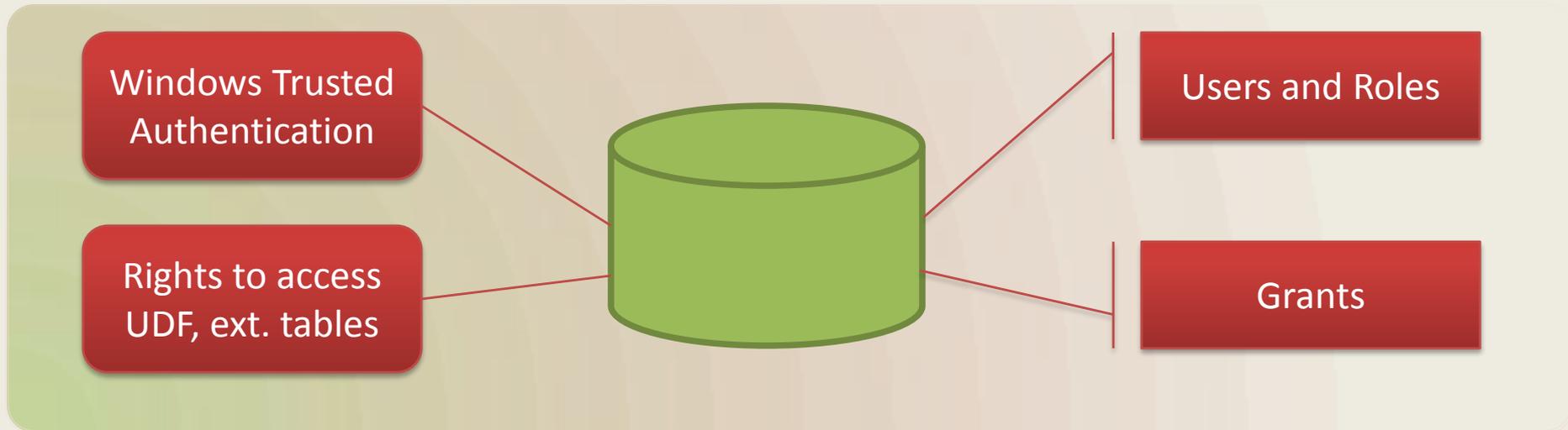
Firebird: Trace API

Trace API

- Real-time monitoring
- SQL debugging
- Audit
 - Events
 - Partial or full logging
 - Through remote connections



Firebird: Security



Standard security

- Users and roles
- GRANT/REVOKE on main operations
- Database owner concept

Windows Trusted Authentication

- Single-sign on for end-users
- Integration with Windows domain/AD security

Network

- The only network port should be open (3050 by default, configurable)
- Aliases (path to the database is not exposed)

Firebird: 4 Architectures



Up to 1000
users, 1Tb size

SuperClassic

New (in 2.5)
architecture!
Combination of
best features of
SuperServer and
Classic. Ideal for
virtualized
environments.



Up to 500 users,
300 Gb size

Classic

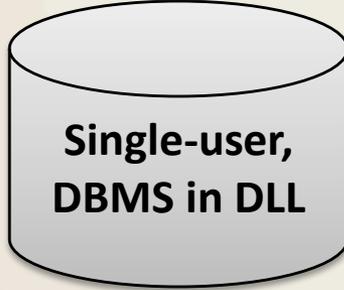
Heavy duty
architecture for
multi-CPU
servers with
large amount of
RAM and fast
HDD.



Up to 100 users,
50Gb size

SuperServer

Small footprint,
performance,
easy embedding
and silent
installation.
Ideal for ISVs.



Single-user,
DBMS in DLL

Embedded

Lightweight
single user full-
blown DBMS in
DLL. Transparent
upgrade to high
architectures.

*# of database users and sizes are not limits of Firebird.
They are given for information purposes only.

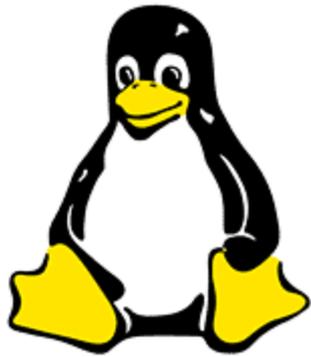
www.MindTheBird.com

Firebird: Scalability

- 4 architectures to scale from 1Mb to 1Tb
 - Database limit is 32Tb
 - Real-world database 1Tb
- From 1 user to 1000 users
 - Transparent scaling
- From embedded DLL to multi-cores/CPU's



Firebird: Multi-platform database



FreeBSD®

HP-ux



- Support Windows, Linux, HP-UX, Solaris, Mac OS X, FreeBSD, etc
- 100% interoperability and 1-step migration between all platforms

*Supports 32-bit and 64-bit Windows and Linux

Firebird: Development tools



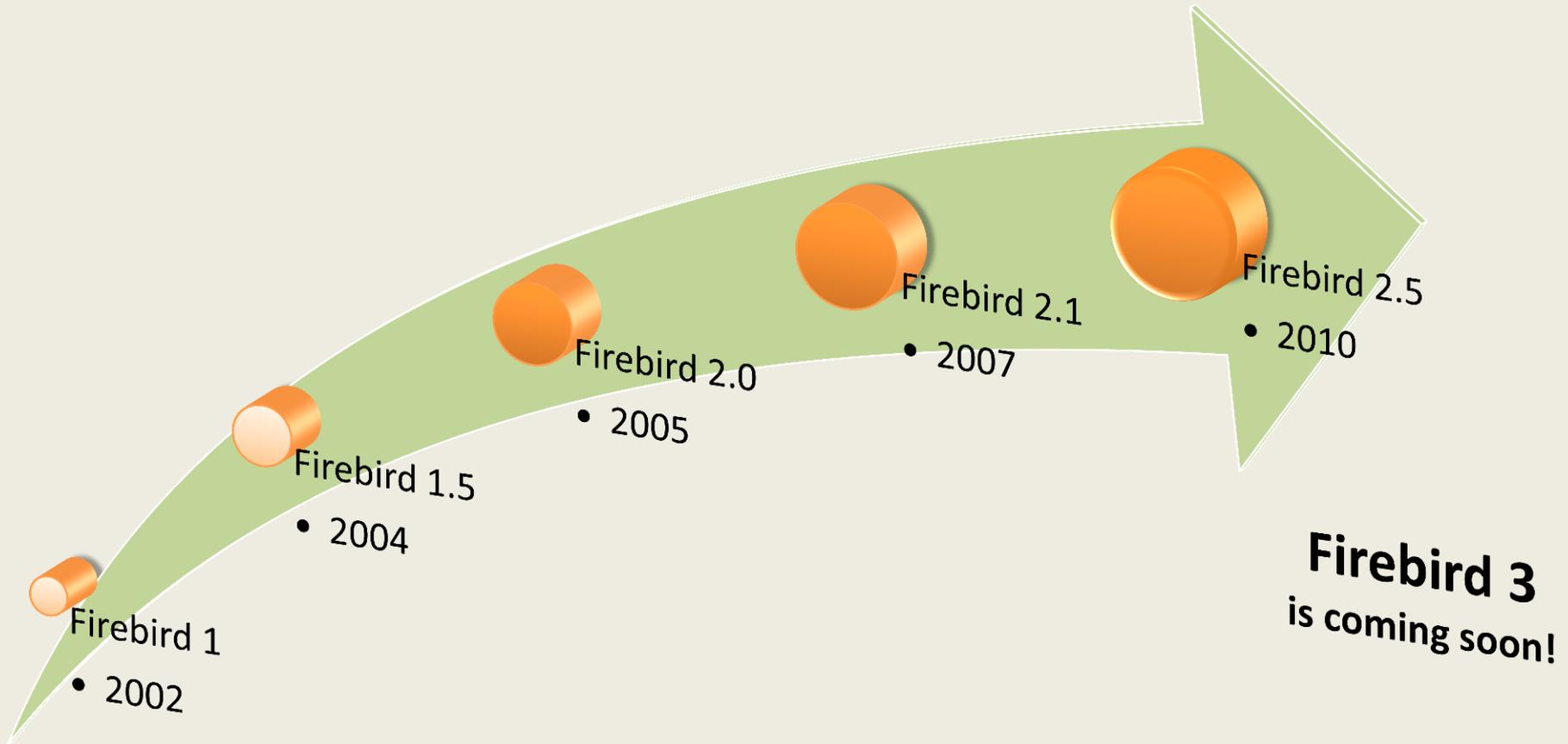
Delphi/C++Builder



- Firebird.NET
- JayBird (Java)
- UIB, FIBPlus*, IBOjects*
(Delphi/C++ Builder)
- FreePascal & Lazarus
- PHP for Firebird
- FireRuby
- and more!

*commercial software

Firebird: Steady roadmap, bright future



Read more www.mindthebird.com

Born in 2000!

Firebird is going where you're going

- Your development and reporting tools
- You choose operation system and architecture
- You choose hardware
- No vendor lock-in



You decide.



Firebird works.

Where Firebird is used?

USAGE

Real-world big Firebird databases

Bas-X

450+ Gb Firebird

Bas-X (Australia) is a leading provider of enterprise information technologies to independent retailers, particularly multi-site operators and management groups.

Bas-X is a true leader in Firebird-based development: two of their customers have Firebird databases with size more than 450Gb, and several others have databases more than 200Gb.

www.basx.com.au

Watermark Technologies

300+Gb Firebird

Watermark Technologies (UK) serves enterprises in Finance and Government sectors. Watermark Technologies produces software which uses Firebird for document management which includes indexed OCR for full text search. It is used by financial advisers, insurance companies and so on. There are several 300+Gb Firebird databases deployed at present.

www.watermarktech.co.uk

Profitmed

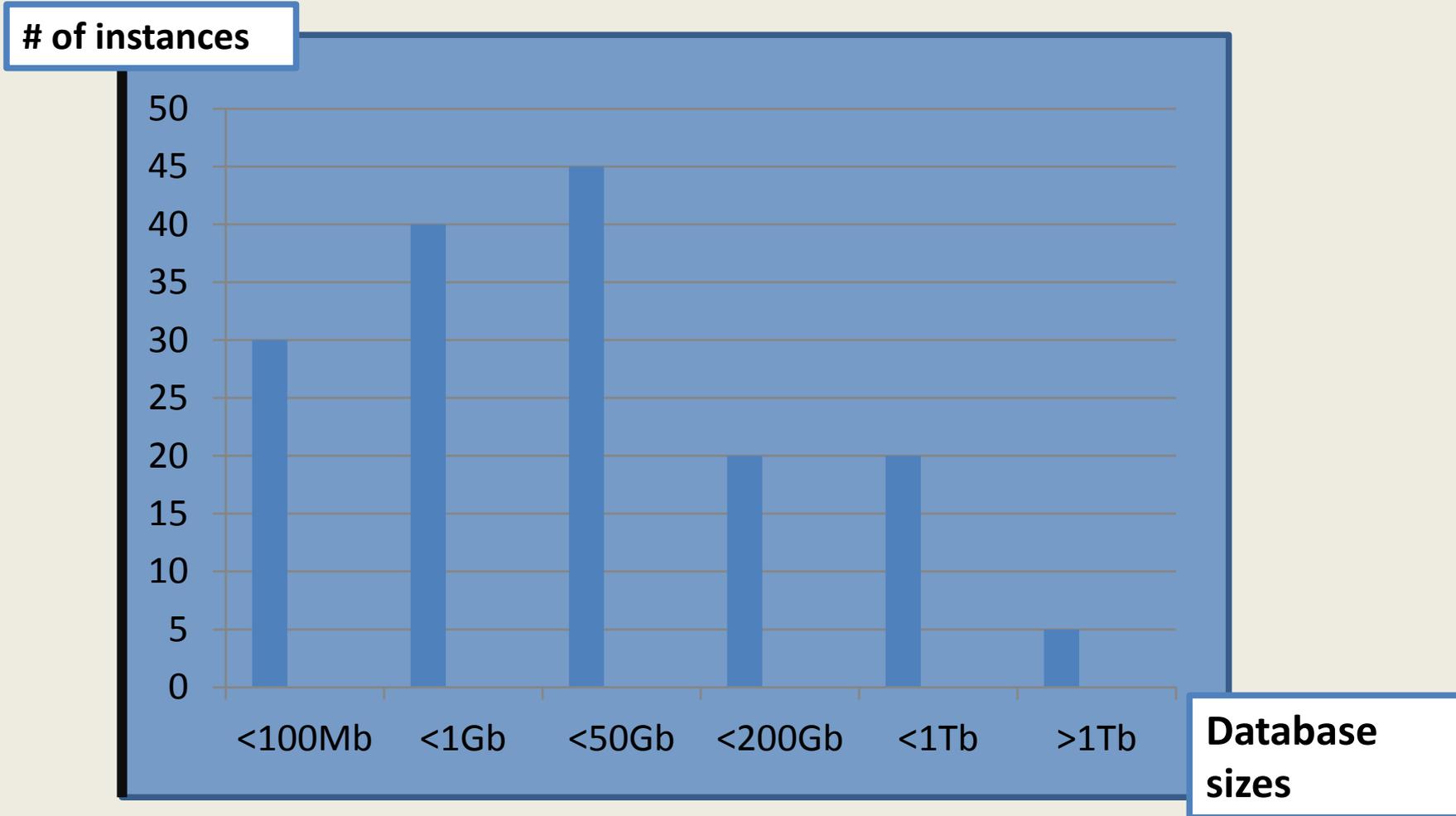
60+Gb Firebird

Profitmed (Russia) joint stock company is one the largest Russian pharmaceutical distributors.

They have relatively small database (only ~60Gb and it's growing 2Gb/month), but we decided to mention them as they have extremely high load in terms of simultaneous active connections, serving hundreds of small resellers and drug store shops across Russia.

www.profitmed.net

What is your database size?



There are real-world Firebird databases up to 1Terabyte in size.
Is it enough for your task?

Firebird: all industries, all types of apps



Retail

Finance



Pharmaceuticals



Government

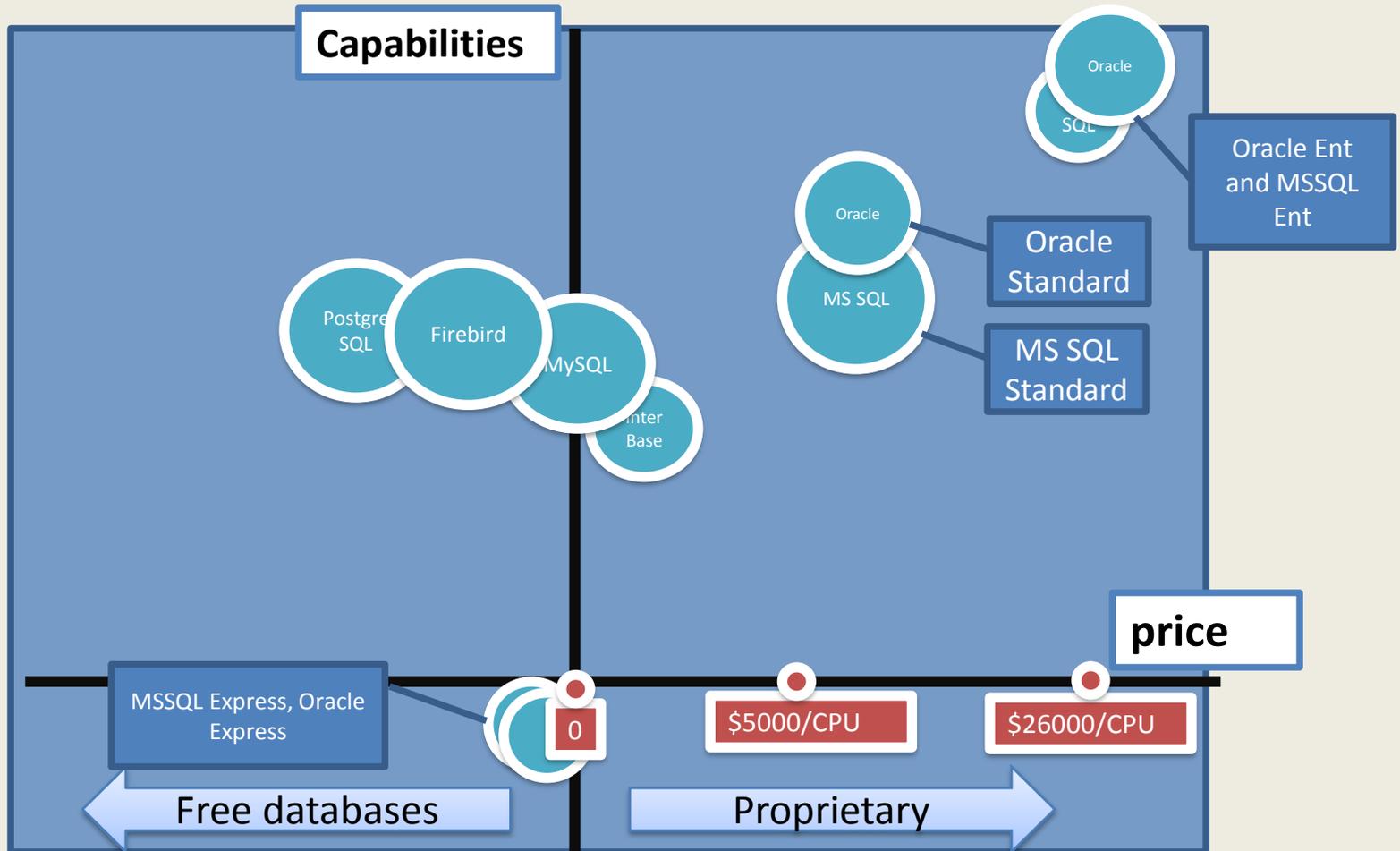


These photos are real pictures of enterprises with Firebird (ERP, etc)

Firebird competitors

COMPETITION

Firebird: Competition overview



*Figure represents price/capabilities graph for the general case of database application, usually required by ISV and in-house developers.

MySQL Points of Consideration

License

MySQL is not free for independent software vendors (ISVs):

“For OEMs, ISVs, VARs and Other Distributors of Commercial Applications:

OEMs, ISVs, VARs and other distributors that combine and distribute commercially licensed software with MySQL software and do not wish to distribute the source code for the commercially licensed software under version 2 of the GNU General Public License (the "GPL") **must enter into a commercial license** agreement with Sun.”

<http://mysql.com/about/legal/licensing/oe>
[m/](http://mysql.com/about/legal/licensing/oe)

Undefined future

MySQL AB was sold to Sun, then Sun was sold to Oracle.
Release MySQL 6.0 not happened.

One of MySQL originators said:
“Help keep the Internet free

A big part of the Internet is built on LAMP (Linux, Apache, MySQL and PHP/Perl/Python). Now Oracle is trying to buy Sun, which owns MySQL.

It's not in the Internet users interest that one key piece of the net would be owned by an entity that has more to gain by severely limiting and in the long run **even killing it as an open source** product than by keeping it alive.”

<http://monty-says.blogspot.com/2009/12/help-keep-internet-free.html>

www.MindTheBird.com

Web <> Ent

MySQL still has no free DB engine which would be their enterprise layer.

Maria – not released.
Falcon – not released.

Firebird is true open source:

- Mozilla-based license, absolutely no restrictions
- No double-licensing or tricky limits

InterBase Points of Consideration

Price

InterBase is a proprietary product.

You can consider prices here <http://www.embarcadero.com/buy-now.php>

Prices are calculated as

- 1) Server + #*Clients
- 2) Unlimited license

Silent installation

To be able to create silent installation (without activation) ISV needs to sign Value Added Reseller (VAR) contract with severe obligations.

Easy migration to Firebird

Modern InterBase 2009 and Firebird 2.5 are descendant of InterBase 6 (released in 2000).

They still have many similar features.

If you have InterBase application, it will be easier to migrate to Firebird, than to any other DBMS.

No 64-bit support

Lack of 64-bit support does not allow leveraging of modern hardware and software.

Less architectures

InterBase has no SuperClassic and Classic architectures.

Less operations systems

InterBase does not support FreeBSD and HP-UX.

InterBase is not an Open Source anymore. You need to seriously count the real advantages and disadvantages of non-open-source product, which has such successful open source competitor as Firebird.

PostgreSQL Points of Consideration

PostgreSQL is similar

Among other open source databases PostgreSQL is really full-blown, and it's as mature as Firebird.

It also uses multi-generational architecture, and has a lot of forks and plugins.

PostgreSQL is widely used in many web-applications and adopted by several large enterprises.

Firebird and PostgreSQL are true open source projects.

No embedded version

PostgreSQL has no embedded version, so you need to use another database (Firebird?) for lightweight version of your application.

Installation & Configuration

Installing of PostgreSQL requires more efforts than Firebird, so it will be more difficult to bundle PostgreSQL with your application and create 100% "silent" installation. Also PostgreSQL is much more complex to configure than Firebird.

Misc

- PostgreSQL has no pre-built binaries for HP-UX
- Requires Cygwin to be built from sources on Windows

Firebird is easy

- Simple installation
- Easy to embed into custom installers (all versions)
- Firebird starts out-of-the-box

“Express” databases = No toys, please

- There are several “express” databases
 - MS SQL Express, Oracle Express, etc
- They have serious restrictions:
 - 4Gb size of database (size is very small in general, not acceptable for multimedia)
 - 1 CPU only
- Cannot be transparently upgraded (re-installation of full version is required)
- Clearly recognized by community as “free cheese”

Microsoft SQL Points of Consideration

Price

You can refer to the prices here

http://store.microsoft.com/microsoft/SQL-Server-2008-Standard-Edition/product/14CF716A/?WT.mc_id=sqlserversite_enterpriselink

Price is calculated:

- 1) Server License + # of Client Access Licenses (CALs)
- 2) Unlimited price per CPU

Embedding into your product

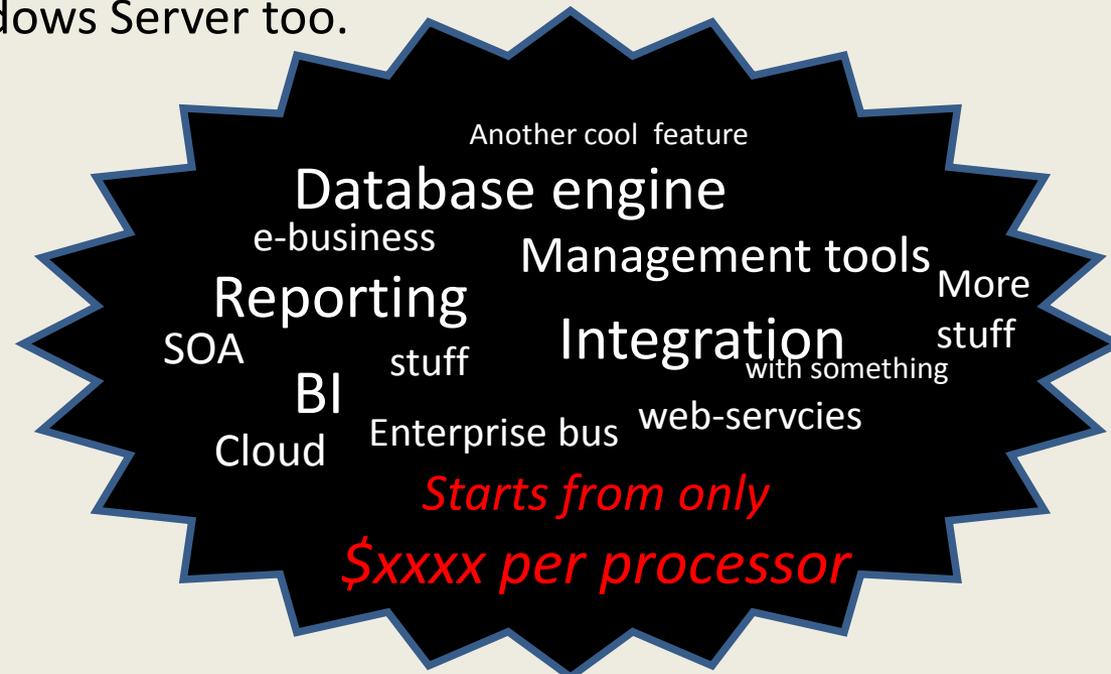
ISV need to sign ISV Royalty Agreement to sell SQL Server as part of third-party solution.

Windows-Only

This is Microsoft.
This is Windows.
So you (or your customer) need to buy Windows Server too.

Heavy administration

MS SQL-based solutions usually require professional support.



Oracle Points of Consideration

Oracle is expensive and cool

If you can afford Oracle licensing and you can afford Oracle administrator to keep database healthy – it is good for you.

Embedding into your product

ISV need to sign special agreement to sell Oracle as part of third-party solution.

Firebird and Oracle

Many enterprises uses Firebird as tier-2 database with Oracle – while main data store is based on Oracle, subsidiaries or remote locations use Firebird.

Many ISVs use Firebird for lightweight versions of their products, and Oracle – for high-end versions.

Heavy administration

Oracle-based solutions usually require professional support and dedicated administrator headcount.

High developer skills

To create professional Oracle-based solutions developers are required to have high skills.

The main point about Oracle is – may be you don't need the most expensive software to do the job that can be accomplished by free software?

So, how Firebird can compete with mature Enterprise databases?

- Million transaction per minute is enough for the most database applications.

Is it so? Check Forrester report:

TPC Benchmarks Don't Matter Anymore

www.forrester.com/rb/Research/tpc_benchmarks_dont_matter_anymore/q/id/53871/t/2

- Modern hardware (SSD, 64Gb RAM) allows to create very fast systems, which exceeds general business needs.

Check IDC report #206058:

Will Storage Virtualization Become the Peacemaker in the Database Wars?

Ask the right question

is Firebird
good enough
for your goal?

Firebird Community: join us!

The most active developers community are in:

- Brazil
- Germany
- Russia
- USA
- Australia
- Italia
- France
- Turkey
- Spain
- and more!



Firebird Launch: next steps

Visit Firebird 2.5 Launch site www.MindTheBird.com

1. Download Firebird presentations and banners
2. Join MindTheBird! and help Firebird 2.5 to start
 - <http://twitter.com/mindthefirebird>
 - <http://groups.google.ru/group/mindthebird>
 - [LinkedIn MindTheBird](#)
- 3. Put Firebird banners and presentations on your site/blog**

Feel free to use any part of this presentation as a template for your own Firebird-related presentations.