

# The PostgreSQL Decade

BRUCE MOMJIAN



This talk is about the first decade of PostgreSQL.

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*Last updated: September, 2017*

*Great Days Rarely  
Announce Themselves*

# The University of California at Berkeley





Michael Stonebraker



Jolly Chen and Andrew Yu

# PostgreSQL Through the Years

1977-1985 Ingres

1986-1994 Postgres

1994-1995 Postgres95

1996- PostgreSQL

# PostgreSQL Code Base History

- ▶ Ingres — research prototype, spawned Relational Technologies, purchased by Computer Associates
- ▶ Postgres — research prototype, spawned Illustra, purchased by Informix
- ▶ Postgres95 — added SQL, spawned PostgreSQL

# Marc: The Future?

Date: Fri, 19 Apr 1996 00:29:03 -0400 (EDT)

From: "Marc G. Fournier" <scrappy@ki.net>

Subject: RE: [PG95]: mSQL vs Postgres95

To: Simon Shapiro <Shimon@i-Connect.net>

cc: Chris Maeda <maeda@parc.xerox.com>, postgres95@shiloh.vnet.net

On Thu, 18 Apr 1996, Simon Shapiro wrote:

> Agree. I consider Postgres95 to have some weaknesses too:

>

> No NULL support, No unique index support. No functional referential

> integrity, no multiple database query...

>

> This is not a bitching. It is a complement. It is a very nice attempt by

> some very bright people I had the pleasure to personally meet.

> I am sure that given time and room, they would have finished it into a

> more functional product.

# Marc: The Future? (Reply)

Urm...just curious here, but **why leave PG95 on Jolly/Andrew's shoulders to continue moving forward?** How many ppl are on this list? How many ppl on this list consider themselves good programmers? How many ppl on this list have a particular area of the server that they want to see advanced, and are willing to spend time on? or...willing to coordinate with a few others to spread that load over?

This is what happens with FreeBSD...there is a core team (in this case, Jolly/Andrew) and a bunch of independent developers that add new features and fix old bugs, or just optimize code.

**Its not as big of a project as developing an OS...is it?**



# Jolly: What It Takes

Date: Tue, 23 Apr 1996 16:06:10 -0400 (EDT)  
From: "Marc G. Fournier" <scrappy@ki.net>  
Subject: Re: [PG95]: postgres95 TODO list posted on the web  
To: Chad Robinson <chadr@brttech.com>  
cc: Jolly Chen <jolly@postgres.berkeley.edu>, postgres95@shiloh.vnet.net  
On Tue, 23 Apr 1996, Chad Robinson wrote:  
> On Tue, 23 Apr 1996, Jolly Chen wrote:  
>  
> > I've posted a TODO list on the postgres95 web site  
> > (<http://s2k-ftp.CS.Berkeley.EDU:8000/postgres95/www/todo.html>)  
> > I've casually sorted the list by priority and I have some editorial  
> > comments on some of them.  
> >  
> > If all the items on the TODO list were completed, postgres95 would be  
> > much improved, and would really be a viable replacement for commercial  
> > RDBMSs in some settings. Some of the items require quite a bit of work  
> > and deep knowledge of postgres95 internals, though. **We would need a few**  
> > **contributors with quite a lot of volunteer hours to make this happen**  
> > **anytime soon. (A large number of contributors each with only a little**  
> > **bit of time to contribute would not be equivalent)**

# Marc: Offer

> Some of these things were on my own list to do also. I'd like to start  
> working on some of them, but the thing is, I'd also like to see a better  
> distribution form. The last update was several months ago, even though  
> there are several known 'good' patches that need to be applied to fix  
> various bugs. What are we missing? :-) Do we need a maintainer? We only  
> have a 28.8 link right now (T1 in a few months) but I'd be happy to provide  
> at least a basic FTP server with space, and some time to process patches,  
> updates, and so forth. I can at least be a mirror...

If it helps, **I'd be willing to setup a cvs database**, including appropriate accounts for a core few developers that patches can go through.  
>From there, it wouldn't be too hard to do a weekly "distribution" that is ftpable.

I don't know enough about the server backend to offer much more than that :(\\

# Marc: Move Ahead?

Date: Mon, 08 Jul 1996 22:12:19 -0400 (EDT)  
From: "Marc G. Fournier" <scrappy@ki.net>  
Subject: [PG95]: **Developers interested in improving PG95?**  
To: Postgres95 Users <postgres95@oozoo.vnet.net>  
Hi...

Awhile back, there was talk of a TODO list and development moving forward on Postgres95...at which point in time I volunteered to put up a cvs archive and sup server so that making updates (and getting at the "newest source code") was easier to do...

So far as I can see on the list itself, this has fallen to the wayside, with everyone posting about database corruptions and whatnot...but few solutions being brought up :( right now, I'm in the middle of cursing over the fact that I can't seem to get a project I'm working on to be stable on either a Solaris box or a FreeBSD box (the FreeBSD box is th emore stable of the two, mind you)...I've just rebuilt the FreeBSD server... then that :(\

## Marc: Move Ahead? (Continued)

Personally, I think that both Jolly and Andrew have done a fantastic job of bringing it to its currently level, but they, like most of the ppl on this list, have full time jobs that sap alot of their time...

...so, unless someone out there has already done this, and unless Jolly/Andrew tell me I can't (guys?)...I'm going to go ahead with what I wanted to do a few months ago...**setup a development site similar to what is done with FreeBSD...**

First stage will be to get a cvs archive of postgres 1.01 online tonight, with a sup server so that everyone has access to the source code.

If anyone has any patches they wish to submit based off of 1.01, please send them to postgres@ki.net and I'll commit those in as soon as cvs is up and running.

Unless there are any disaggrementets with this (or someone else has done this that I missed in mail...sorry if I did...)...I'll send out further data on this as soon as its up and running...

# Marc: cvsup Installed

Date: Wed, 10 Jul 1996 19:38:00 -0400 (EDT)  
From: "Marc G. Fournier" <scrappy@ki.net>  
Subject: [PG95]: sup server active  
To: pg95-dev@ki.net  
cc: Postgres95 Users <postgres95@oozoo.vnet.net>  
Hi...

**Just got the sup server up and running**, and for those that are familiar with sup, the following should work (ie. I can access the sup server from my machines using this):

```
postgres95 release=postgres95 host=sup.ki.net hostbase=/home base=/home/staff/scrappy
```

Currently, only patches 1 and 2 that were found on the web site have been merged in, as nobody else has submitted any patches.

Any changes to the sup server are made at about 6am, since changes aren't *that* frequent (but hopefully this improves? *\*grin\**)

# Marc: The First Tarball

Date: Fri, 12 Jul 1996 14:20:31 -0400 (EDT)  
From: "Marc G. Fournier" <scrappy@ki.net>  
Subject: [PG95]: README.support  
To: Postgres95 Users <postgres95@oozoo.vnet.net>, pg95-dev@ki.net  
Hi...

**I'm putting up a .tar.gz file of current distribution today,**  
including:

- patches 1 and 2 from the Web site
- patches 3 and 4 from Paul
- extensions to pg\_dump from me and David

---- README.support ----

In order to co-ordinate both usage and development of Postgres95,  
**there are currently two mailing lists available:**

General Discussion

- mainly geared towards usage of PostGres95 and associated support & third-party software
- send a message of subscribe to [postgres95-request@postgres95.vnet.com](mailto:postgres95-request@postgres95.vnet.com)

Developers Mailing List

- those wishing to help improve Postgres95 and further develop it
- send a message of subscribe to **[pg95-dev-request@ki.net](mailto:pg95-dev-request@ki.net)**

WWW: <http://s2k-ftp.cs.berkeley.edu:8000/postgres95>

FTP: <ftp://s2k-ftp.cs.berkeley.edu/pub/postgres95>

The current source tree, with all patches installed, is available  
via sup @ sup.ki.net, or in a .tar.gz file available at:

**<ftp://ftp.ki.net/pub/postgres95>**

# Marc: Volunteer?

Date: Wed, 10 Jul 1996 18:46:32 -0400 (EDT)  
From: "Marc G. Fournier" <scrappy@ki.net>  
Subject: Re: [PG95]: Developers interested in improving PG95?  
To: Jacob Hallen <jacob@cd.chalmers.se>  
cc: Postgres95 Users <postgres95@oozoo.vnet.net>

On Tue, 9 Jul 1996, Jacob Hallen wrote:

> Something that would be very good to include in the CVS archive is a set of  
> regression tests. That way we can make sure that we by fixing bugs don't make  
> old and already fixed ones reappear.

>

**Are you on the development mailing list yet? \*grin\*** Do you wish to volunteer to do this development, and/or co-ordinate others towards this end? I'm more than willing to import them into the distribution, as well as run them before I make up a "distribution" tar.gz file...

# Bruce: Where Are We Going?

Date: Mon, 15 Jul 1996 00:28:34 -0400 (EDT)  
From: Bruce Momjian <maillist@candle.pha.pa.us>  
Subject: [PG95]: Future of Postgres95 development  
To: postgres95@oozoo.vnet.net (Postgres95)  
cc: jolly@cs.berkeley.edu

I have read the extensive discussion about the future of Postgres95 in the April 1996 mail list archives.

I am now wondering where Postgres95 is headed in terms of development. There were many discussions of what feature we would like to add, and how to structure team development.

Unfortunately, unless I have overlooked something, we are still at that stage.

I have looked at the todo list on the postgres95 www page, and I see several things that I would be interested in tackling.

**However, I am unsure where we are going.**



## Bruce: Jolly/Andrew?

Is there still desire to do these things? **Is Jolly and Andrew going to continue** to pour over the patches posted to the mailing list and bundle up new releases?

I personally would be happy if we could get into a simple bug-fix mode. I or someone else could pour through the mailing list since the release of 1.01 and gather all the patches that were posted. From this, a new release could be made. We could all then go to the new release and check if more bugs exist or new bugs were added.

If the release is considered stable enough, we could then move on to the todo list and start adding some of these features. I know I could tackle a few of them.

My guess is that a more stable Postgres95 would do more to increase our numbers and relieve user headaches, rather than adding features at this time.

# Bruce: Patch Process

**I prefer the posting of patches to the mailing list** (or developers list) rather than having developers directly patching a common source tree because that way everyone could review the patches being made, and suggest other alternatives before the patch is applied. Only after there are no objections to the patch would it be applied. Marc G. Fournier has set up a source tree for us, and we could use that. I have not read any feedback from Jolly or Andrew on this issue. I would hate to start some parallel development tree while they were still releasing versions based on their own contributions and those of this list.

All this rambling leaves me with the same question, "Where are we going?".

I have posted four or five fixes/enhancements in the past month. At this point, I have no idea when or if these patches will be bundled with the standard postgres distribution. It makes me hesitant to start more development.

# Bruce: TODO List

I think it would be great if Jolly and Andrew would continue to gather patches from postings to this list, and perhaps help suggest solutions to some of the more complex bugs left in the system (corrupt databases?).

If not, where are we going?

I am willing to bundle up a new release based on patches posted to this group since the release of 1.01.

I am also willing to start **gathering a list of known bugs** and coordinate efforts to develop patches to fix them.

After these steps, I am willing to **post the todo list**, and ask for volunteers to start work on them.

# Jolly: Busy

Date: Sun, 14 Jul 1996 23:06:32 -0700  
From: Jolly Chen <jolly@postgres.berkeley.edu>  
Subject: [PG95]: Re: Future of Postgres95 development  
To: Bruce Momjian <maillist@candle.pha.pa.us>  
cc: postgres95@oozoo.vnet.net (Postgres95), jolly@cs.berkeley.edu

...

> Is there still desire to do these things? Is Jolly and Andrew going to  
> continue to pour over the patches posted to the mailing list and bundle  
> up new releases?

>

> I personally would be happy if we could get into a simple bug-fix mode.  
As much as I would like to, **I simply cannot devote the time right now** to  
putting together another release. I know of at least one effort by  
Dr. George Detlefsen to accumulate the posted fixes to produce a new  
release. Since he has already put some energy into this, I think his  
work should be incorporated with other maintenance efforts.

...

# Jolly: My Blessing

- > I prefer the posting of patches to the mailing list (or
- > developers list) rather than having developers directly patching a
- > common source tree because that way everyone could review the patches
- > being made, and suggest other alternatives before the patch is applied.
- > Only after there are no objections to the patch would it be applied.
- >
- > Marc G. Fournier has set up a source tree for us, and we could use that.
- > I have not read any feedback from Jolly or Andrew on this issue. I
- > would hate to start some parallel development tree while they were still
- > releasing versions based on their own contributions and those of this
- > list.

>

I **wholeheartedly support Marc's efforts.** There is no parallel work that Andrew or I are undertaking. Since maintaining a large system like postgres requires quite a bit of work, I believe that work should be carried out in a concerted effort to reduce redundancy and possible inconsistency. In other words, you have my blessing, for whatever it's worth.

...

## Jolly: License Should Remain

In addition, I feel strongly about the current licensing terms, and I recommend that **their spirit be preserved**. Of course, each author will have his or her own convictions and preferences. I want to point out that the current copyright terms allow anyone the freedom to use postgres95 in derivative works. If someone doesn't like the "Fournier" tree, he can branch off on his own and do whatever he wants, even commercialize it and profit from it if he likes. I support his right to do so even though I think a concerted to maintain a freely available database is better. No one should have a monopoly on the current postgres95 code base. You are not permitted to slap any additional licensing terms on the code that is copyrighted by the UC. What you do decide to do with new code that you develop on your own is, of course, completely up to you.

...

# Bruce: Jolly's Blessing

Date: Wed, 17 Jul 1996 15:49:09 -0400 (EDT)  
From: Bruce Momjian <maillist@candle.pha.pa.us>  
Subject: [PG95]: Future of postgres95 (next release)  
To: postgres95@oozoo.vnet.net (Postgres95)  
cc: scrappy@ki.net (Marc G. Fournier)

Many of you have seen Marc's postings and others regarding work on the next release of postgres95.

I wanted to note a few things.

First, this effort is done with the **full blessing of Jolly**. He does not have time to do what he did when he packaged the 1.01 release, and does not think he will have the time to do this in the near future.

Therefore, Marc decided to create a source tree that we can use to generate a new release. I applaud his time and effort in managing this project. This effort is not designed to splinter postgres development, but to coordinate the individual developers.

# Bruce: Generate A Release

Marc has already applied patches to fix many bugs, and someone (Jason?) is going through the mailing list to get all relevant patches. This is a big job. In a few cases, patches are only workarounds, and in others, there are multiple patches to fix the same problem (PAGER). Therefore, I am asking that if you have posted a patch to the mailing list, and you feel it should be in the 1.02 release, please send it to Marc (scrappy@ki.net). We may get it from the mailing list anyway, but sending it to Marc re-enforces the patch's validity and importance.

\* \* \*

Many of you have spent hours fixing postgres95 bugs. We want to **generate a release** that takes advantage of the time you have spent and make postgres95 better for all of its users. And after the bugs are gone, we have a todo list.



# Erich Stamberger: Missing Features

Date: Sun, 21 Apr 1996 09:02:31 +0100 (GMT+0100)  
From: Erich Stamberger <eberger@gewi.kfunigraz.ac.at>  
Subject: Re: [PG95]: Postgres95 and the future.  
To: "G.P. Ciceri" <gp.ciceri@IT.net>  
cc: postgres95@shiloh.vnet.net

On Sat, 20 Apr 1996, G.P. Ciceri wrote:

> \* Adding relational constrains (primary key, referential integrity  
> rules, etc.).

I had the dream

- to make the rule system work,
- to add procedural features,
- to make the vacuumer shrink the files,
- to add a usable support for large objects,
- to remove the 8k limit for tuples,
- to make the file block size configurable,
- to reduce code size and make Postgres five times faster .-)
- to write a better optimizer ("or" in "where" clauses),

...

## Erich Stamberger: Missing Features (Continued)

but I didn't dream to have something like a No-Cost-Oracle.

```
> *** Porting the client library, libpg, to other platform (MS Windows,  
> MAC).  
> **** Build an ODBC driver (for Windows).
```

Best regards

--Erich

# PostgreSQL Core Team



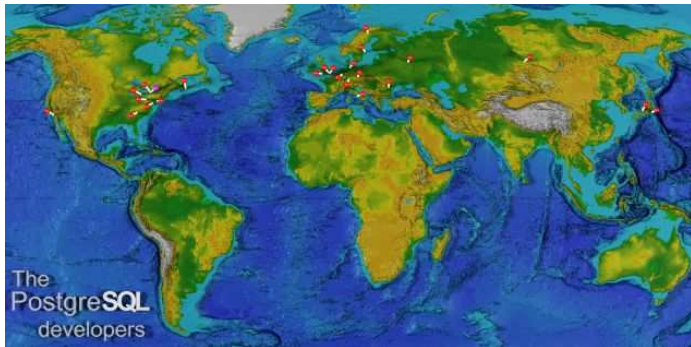
Top row: Thomas Lockhart (retired), Jan Wieck, Tom Lane, Marc Fournier

Bottom row: Vadim Mikheev, Bruce Momjian

# PostgreSQL Core Team With Andrew and Jolly



# Developer's Globe



## Release Dates and Sizes

Date	Release	Lines of code
1994		244,581
1996-08-01	1.02.1	
1996-10-27	1.09	178,976
1997-01-29	6.0	
1997-06-08	6.1	200,709
1997-10-02	6.2	225,848
1998-03-01	6.3	260,809
1998-10-30	6.4	297,918
1999-06-09	6.5	331,278
2000-05-08	7.0	383,270
2001-04-13	7.1	410,500
2002-02-04	7.2	394,274
2002-11-27	7.3	453,282
2003-11-17	7.4	508,523
2005-01-19	8.0	654,437
2005-11-08	8.1	630,422

1997



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Today, after 8 months of intensive development since our last release, the PostgreSQL Global Development Group is proud to announce the first Beta release of PostgreSQL 7.0. The list of changes is available here and the first beta of PostgreSQL 7.0 is available at <ftp://ftp.postgresql.org/pub/postgresql-7.0beta1.tar.gz> and mirror sites around the world, this represents our first public view of the upcoming release, scheduled for April 1st.


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
































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

























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### .ORG domain name registry now powered by PostgreSQL

*Posted on 2003-01-21 by [justin@postgresql.org](mailto:justin@postgresql.org)*

The global .ORG domain name registry is now powered by PostgreSQL!

### PostgreSQL Enterprise Replication Server 1.2 Released

*Posted on 2003-01-05 by [justin@postgresql.org](mailto:justin@postgresql.org)*

"The latest update to our commercial replication solution began shipping today" announced Marc Fournier, President of PostgreSQL, Inc. (PgSQL).

"...customers gain the advantage of a streamlined installation for replicating to one or multiple slave databases, while still retaining all of the flexibility for complex configurations in large scale environments," states Justin Cliff, Director of Australia's Digital Distribution Global Financial Services. (DDGFS).

### psqlODBC 07.02.0005 Released

*Posted on 2003-01-02 by [dpage@postgresql.org](mailto:dpage@postgresql.org)*

The latest version of the official PostgreSQL ODBC driver, psqlODBC 07.02.0005 is now available for download from

<http://gborg.postgresql.org/project/psqlodbc/genpage.php?downloads> in precompiled formats for Windows, and a source tarball.

### PostgreSQL 7.3.1 Released

*Posted on 2002-12-22 by [scrappy@hub.org](mailto:scrappy@hub.org)*

Last night, we packaged up v7.3.1 of PostgreSQL, our latest stable release.

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### PostgreSQL Seminar in Turkey

*Posted on 2003-01-02 by [devrim@gunduz.org](mailto:devrim@gunduz.org)*

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