Why is ejabberd built on erlang?

(because the name «jabberd» was already taken)

Eric Cestari

process one
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Show of hands

http://funny.funnyoldplanet.com/funny/show-off-hands/

ejabberd

Hosted.IM

TextOne

TeamLeader

Tsung

OneTeam for iPhone

OneTeam for desktop

And ...

OpenPush

Web to Device Push

http://openpush.im/

1. A personal journey
2. Erlang in ejabberd, the good parts
3. The other parts

ejabberd

XMPP server

Popular

Scalable

Compliant

A bit of background

about the guy standing in front of you

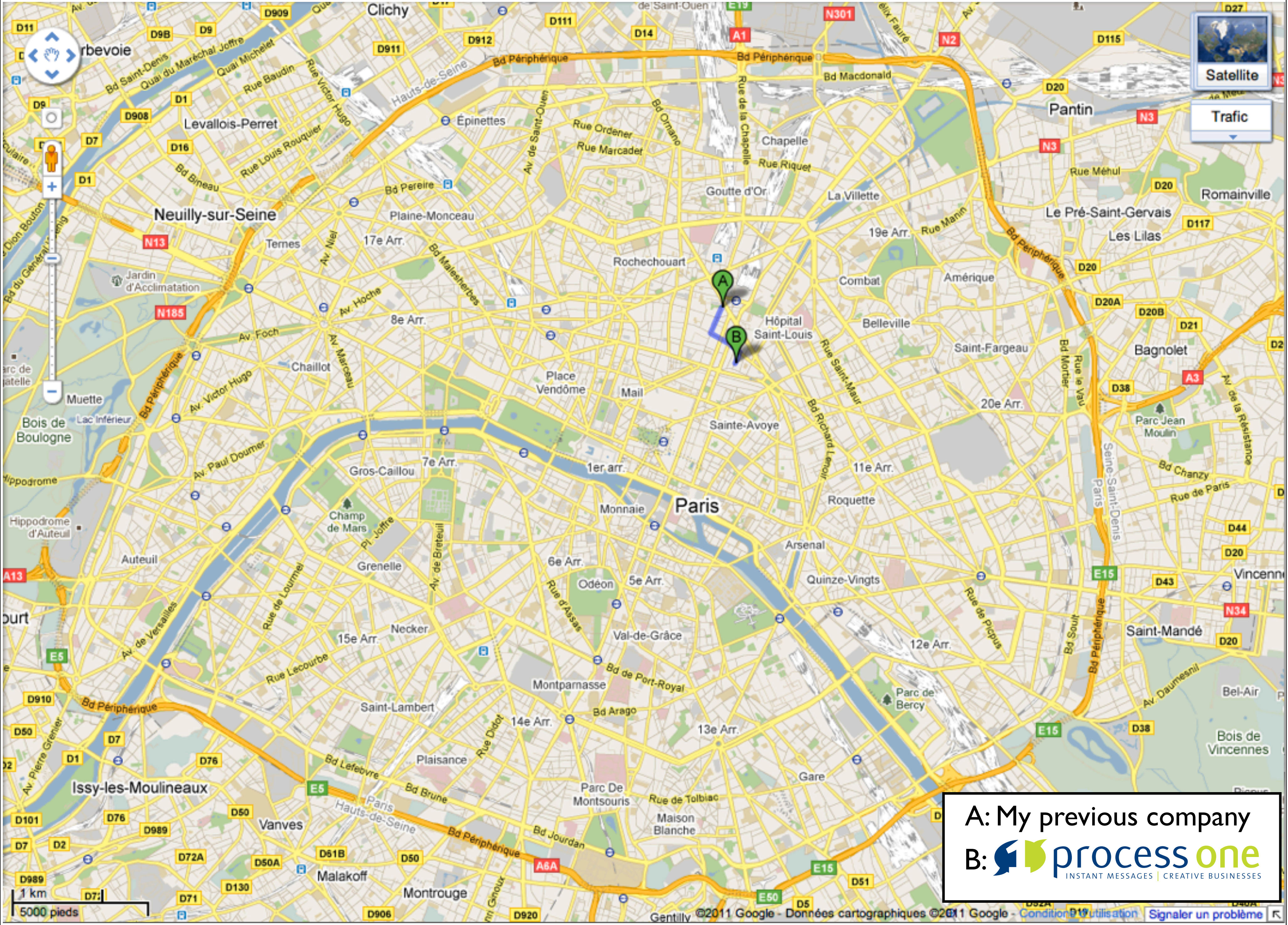
OpenFire ?

I know my Java. I can do that.

ejabberd?

ejabberd!

Clustering included.
LOC count way down.
erlang not that weird and ~~rather cool~~ FANTASTIC!


A: My previous company
B: process one
INSTANT MESSAGES | CREATIVE BUSINESSES
Satellite
Trafic
Paris
Clichy
Levallois-Perret
Neuilly-sur-Seine
Pantin
Romainville
Le Pré-Saint-Gervais
Les Lilas
Bagnolet
Vincennes
Saint-Mandé
Bois de Boulogne
Bois de Vincennes
Issy-les-Moulineaux
Vanves
Malakoff
Montrouge
Gentilly
Chapelle
Goutte d'Or
La Villette
Rochechouart
Hôpital Saint-Louis
Belleville
Combat
Amérique
Saint-Fargeau
Place Vendôme
Mail
Sainte-Avoye
1er arr.
Monnaie
Odéon
Val-de-Grâce
Montparnasse
Plaisance
Saint-Lambert
Grenelle
Necker
Gros-Caillou
Champ de Mars
Chaillot
Muette
Auteuil
Arsenal
Roquette
Quinze-Vingts
Parc de Bercy
Gare
Maison Blanche
Parc De Montsouris
Bd Périphérique
1 km
5000 pieds
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Signaler un problème

The fantastic capabilities ejabberd has, just by being written with erlang/OTP

Cheap lightweight processes

Under strict supervision

mnesia

ejabberd runs right out of the box.

```
handle_info({mnesia_table_event, {write, #route{pid = Pid}, _ActivityId}},
            State) ->
    erlang:monitor(process, Pid),
    {noreply, State};
handle_info({'DOWN', _Ref, _Type, Pid, _Info}, State) ->
    F = fun() ->
        Es = mnesia:select(
               route,
               [{#route{pid = Pid, _ = '_'},
                 [],
                 ['$_']}]),
        lists:foreach(
          fun(E) ->
              if
                  is_integer(E#route.local_hint) ->
                  LDomain = E#route.domain,
                  I = E#route.local_hint,
                  mnesia:write(
                    #route{domain = LDomain,
                           pid = undefined,
                           local_hint = I}),
                  mnesia:delete_object(E);
                  true ->
                  mnesia:delete_object(E)
              end
          end, Es)
    end,
    mnesia:transaction(F),
    {noreply, State};
```

ejabberd_router.erl

Clustering

mnesia + message passing across servers

Pattern matching

Because ejabberd is a big router.

```
normal_state({route, From, ToNick,
              {xmlelement, "iq", Attrs, _Els} = Packet},
             StateData) ->

normal_state({route, From, ToNick,
              {xmlelement, "message", Attrs, _} = Packet},
             StateData) ->

normal_state({route, From, Nick,
              {xmlelement, "presence", _Attrs, _Els} = Packet},
             StateData) ->


normal_state({route, From, "",
              {xmlelement, "iq", _Attrs, _Els} = Packet},
             StateData) ->

normal_state({route, From, "",
              {xmlelement, "message", Attrs, Els} = Packet},
             StateData) ->
```

mod_muc_room.erl

ejabberd.cfg

POET: plain old erlang terms

ejabberdctl debug

connect to node, debug/redbug, done.

The API

gen_mod, jlib module, register_route() and hooks

gen_mod

ejabberd module behaviour

```
start(Host, Opts)
stop(Host)
```

jlib.erl

Stanza manipulation

Register route

ejabberd_router:register_route(SubDomain, Pid)

IQ Registration

```
gen_iq_handler:add_iq_handler(ejabberd_sm, Host, ?NS_PRIVATE,
                              ?MODULE, process_sm_iq, IQDisc).
```

IQDisc {
- no_queue
- one_queue
- {queues, N}
- parallel

Hooks

Customize or replace ejabberd behaviour
Hooks can be located on another node

User online
User offline
Roster changed
Message filtering

https://support.process-one.net/doc/display/MESSENGER/Events+and+hooks

Code is readable

And the API is very small.

The not-so-good parts of ejabberd

Radical honesty

It's not an OTP app

So it can't be managed as one.

Too many lists!

Memory usage not as low as it could.
exmpp and ejabberd 3 use binaries and atoms.

```
<message to='test@conference.example.org'
type='groupchat'>
  <body>test</body>
</message>
```

XML

```
{xmlelement,"message",
  [{"to","test@conference.example.org"},{"type","groupchat"}],
  [{xmlcdata,<<"\n">>},
   {xmlcdata,<<"  ">>},
   {xmlelement,"body",[],[{xmlcdata,<<"test">>}]},
   {xmlcdata,<<"\n">>}]}
```

jlib

```
[{xmlel,undefined,[],message,
 [{xmlattr,undefined,to,<<"test@conference.example.org">>},
         {xmlattr,undefined,type,<<"groupchat">>}],
 [{xmlel,undefined,[],body,[], [{xmlcdata,<<"test">>}]}]}]
```

exmpp

Monolithic

Archeology is fun

Some parts of the codebase are really old.
Autoconf in a rebar world.

Aleksey Shchepin says:

«Without Erlang/OTP, I would not start ejabberd.»

http://www.ejabberd.im/interview-aleksey

Questions ?

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