

Comet

What is Comet?

Gmail Chat

The screenshot shows the Gmail interface with the 'Chats' section selected. A conversation with Aaron Swartz is displayed, showing a message from him about adding a post. The interface includes standard Gmail navigation elements like 'Compose Mail', 'Inbox (8)', and 'Starred'.

Chat with Aaron Swartz

Aaron: I guess I should add my post about how dangerous that kind of thinking is back into the pipe
I took it out because I thought it was obvious; plainly not

10:32 AM Aaron: Aaron is not available to chat

meebo

The meebo interface shows a chat window with Jacob Rus and a buddy list window showing availability levels 02 through 06.

Renkoo

The Renkoo interface shows an event invitation for "John invites you to 'some stuff' this week - Do it again?". It includes sections for "Me", "Events", "Places", and "Fun". A "Buddy List" window is also visible, showing a conversation with Michael and a list of other users invited to the event.

Other: Michael invites you to "Kumbaya" at El Cholo in Los Angeles, date TBD

Your Response

- I'm there!
- Sorry, can't make it this time.
- Maybe, depends on...

Customize your response

Send

Meebo

diagram of asynchrony
mention low latency

Transports

IFrame

diagram of IFrame

total IFrame code. make
as short as possible.

images of loading bars,
wait cursor

unacceptable:
usability

XHR Long-Polling

simple long polling
diagram

cross-browser

show long polling code?

image showing payload
vs. total content of
facebook packets, using
colored backgrounds

unacceptable:
latency
bandwidth

HTMLFile Object

ActiveX!



photo by Mykl Roventine

works great.
no side-effects

Explorer only

XHR Streaming

ready state 3

manually parse own
format

Server-Sent Events

**standard:
HTML5**

deprecated version
implemented by Opera

streaming,
not a hack

Opera 8+ only

Transport Conclusions

it's hacks
all the way down



aim
carefully

bullseye?



photo by Diane Allison-Stroud

streaming
across-domains
is possible

Orbited does it

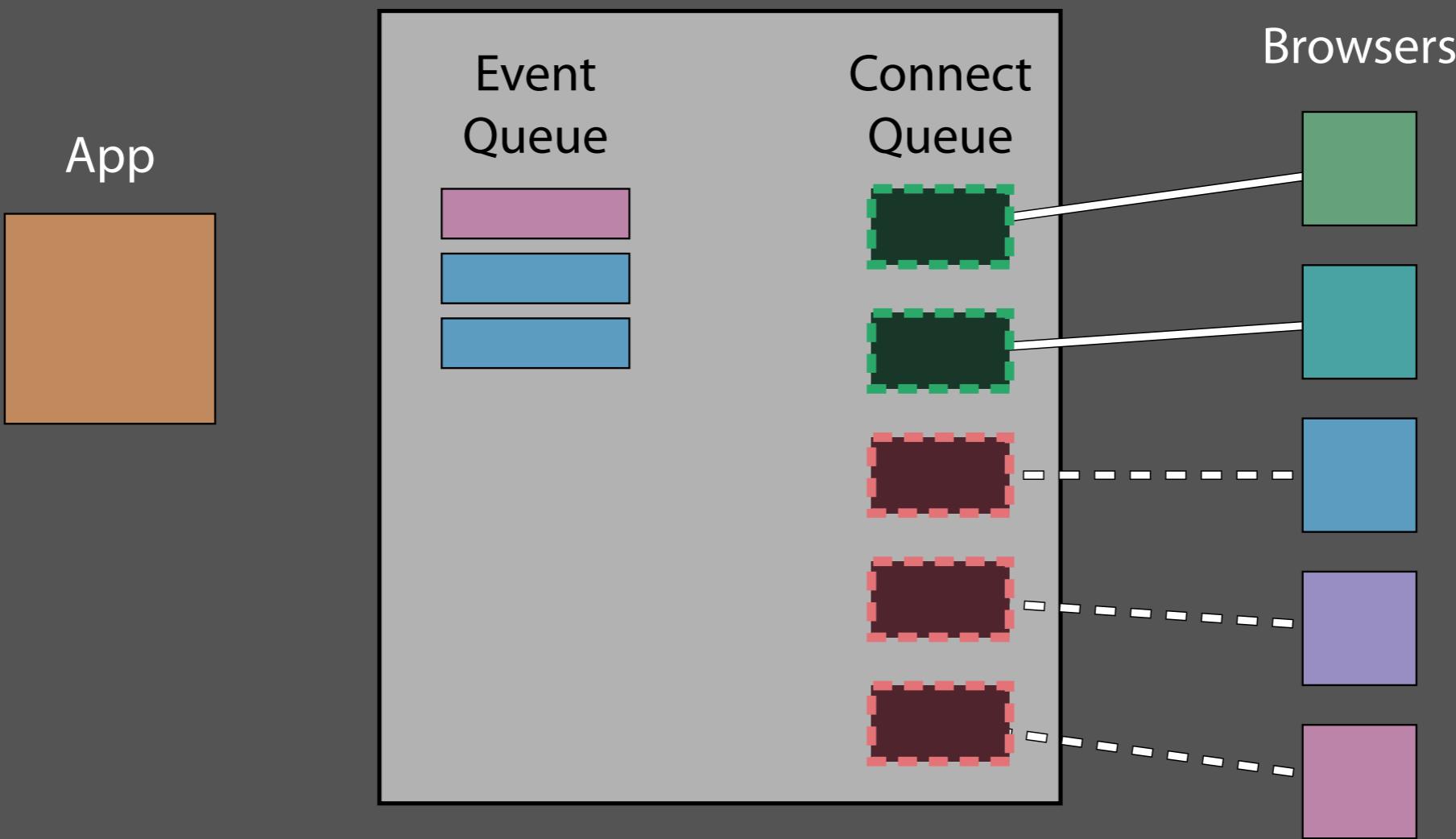
Scalability

Vertical Scaling

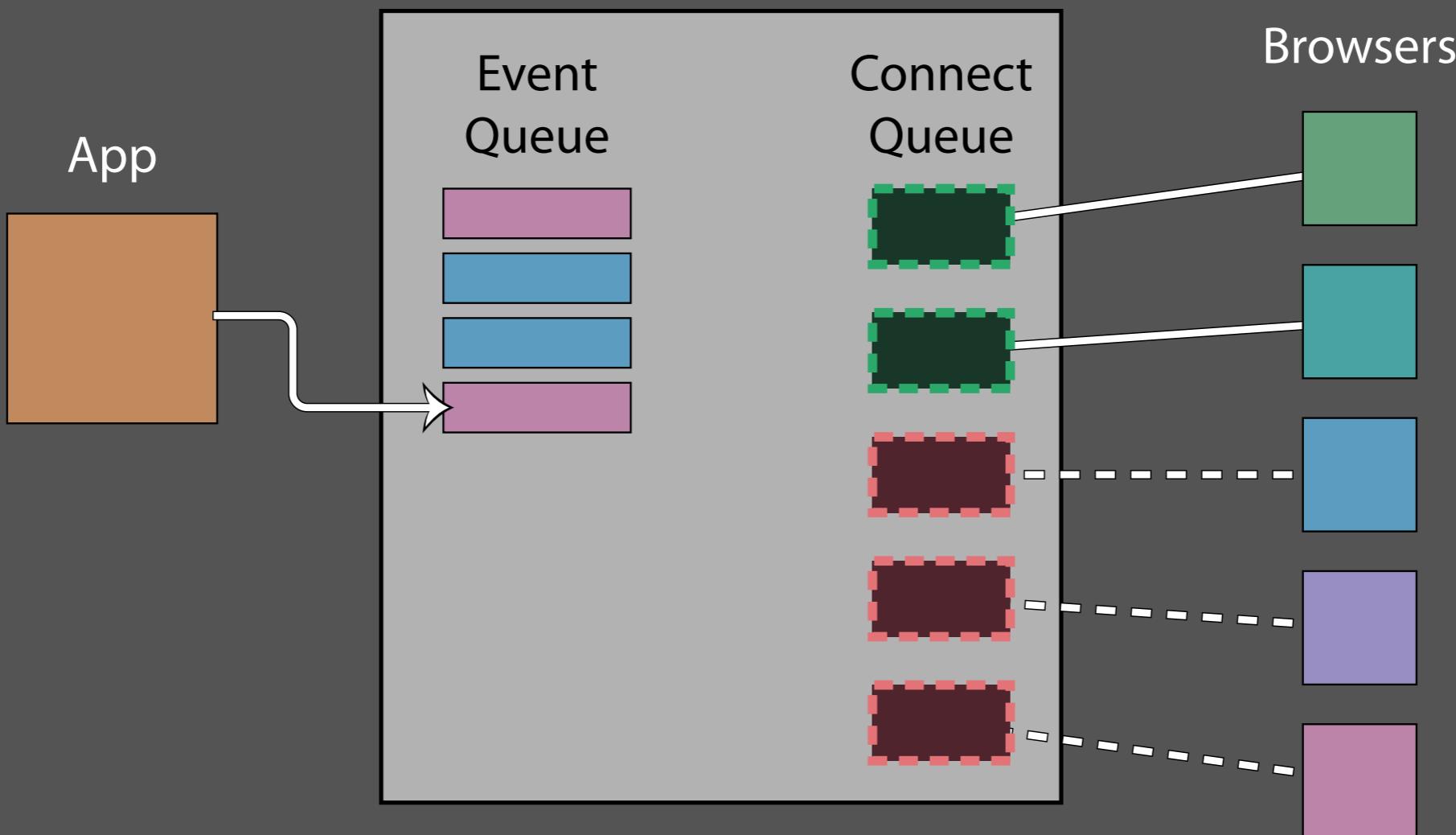


photo by Michael (mx5tx)

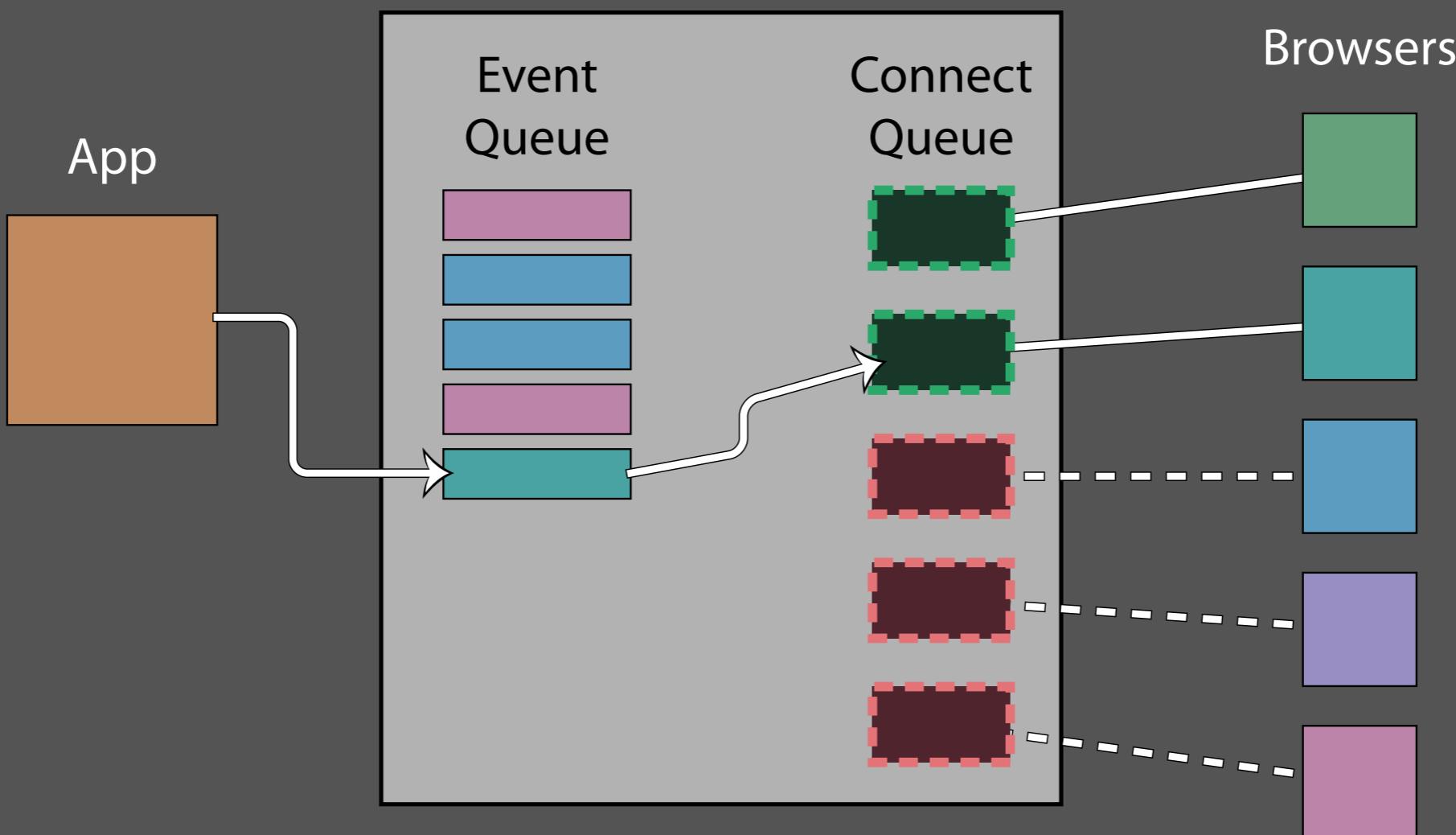
Threaded Comet Dispatcher



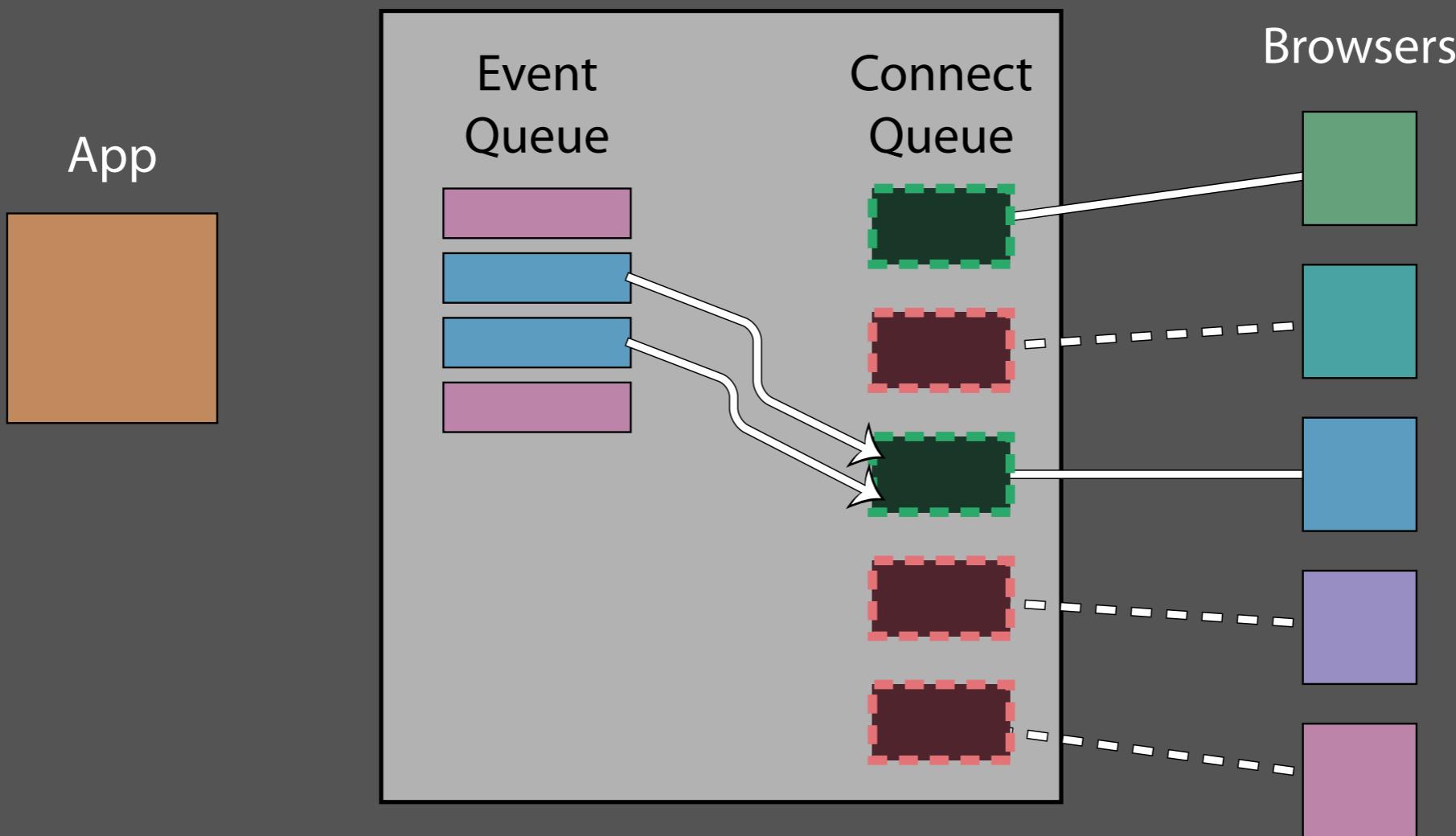
Threaded Comet Dispatcher



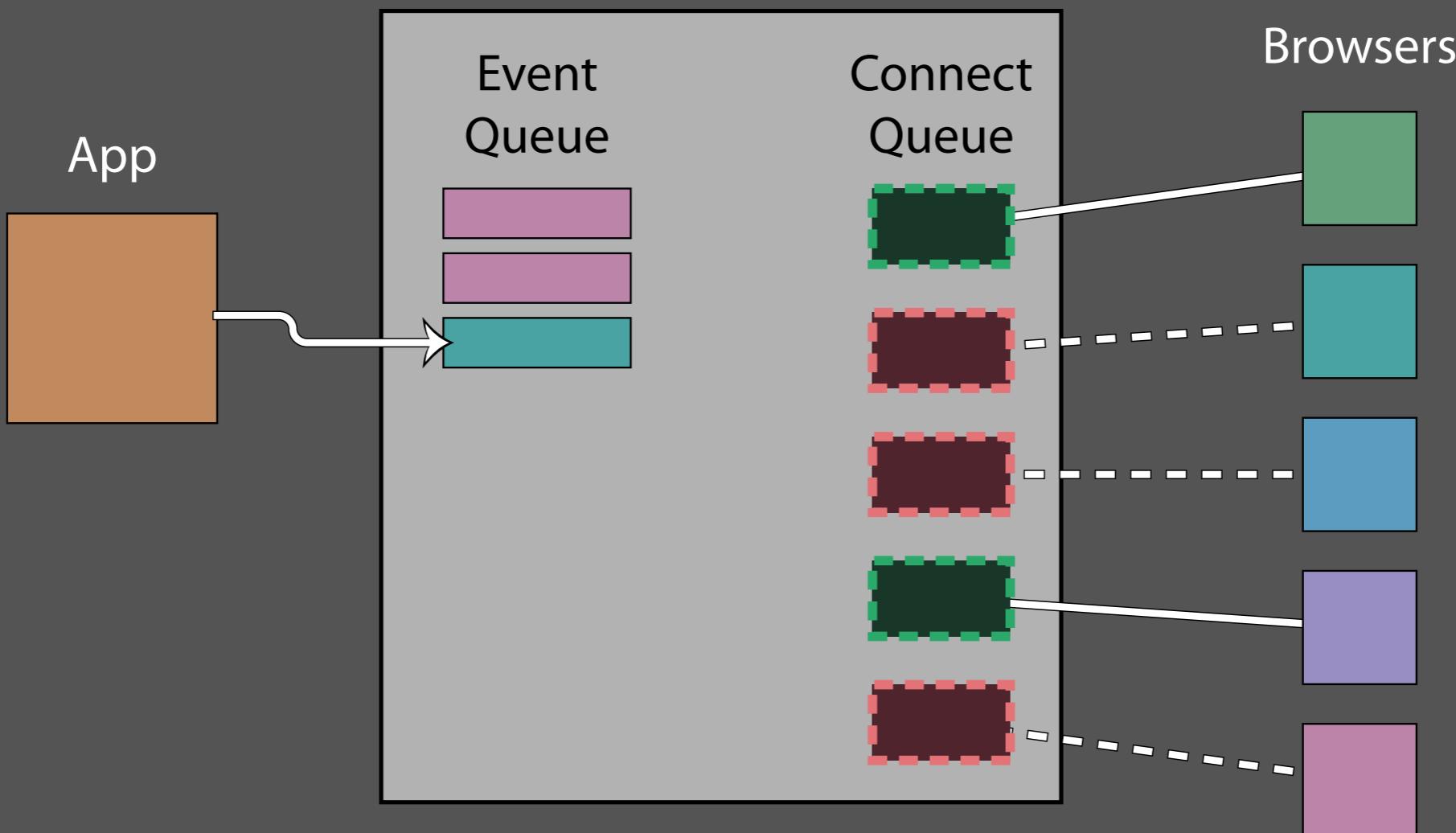
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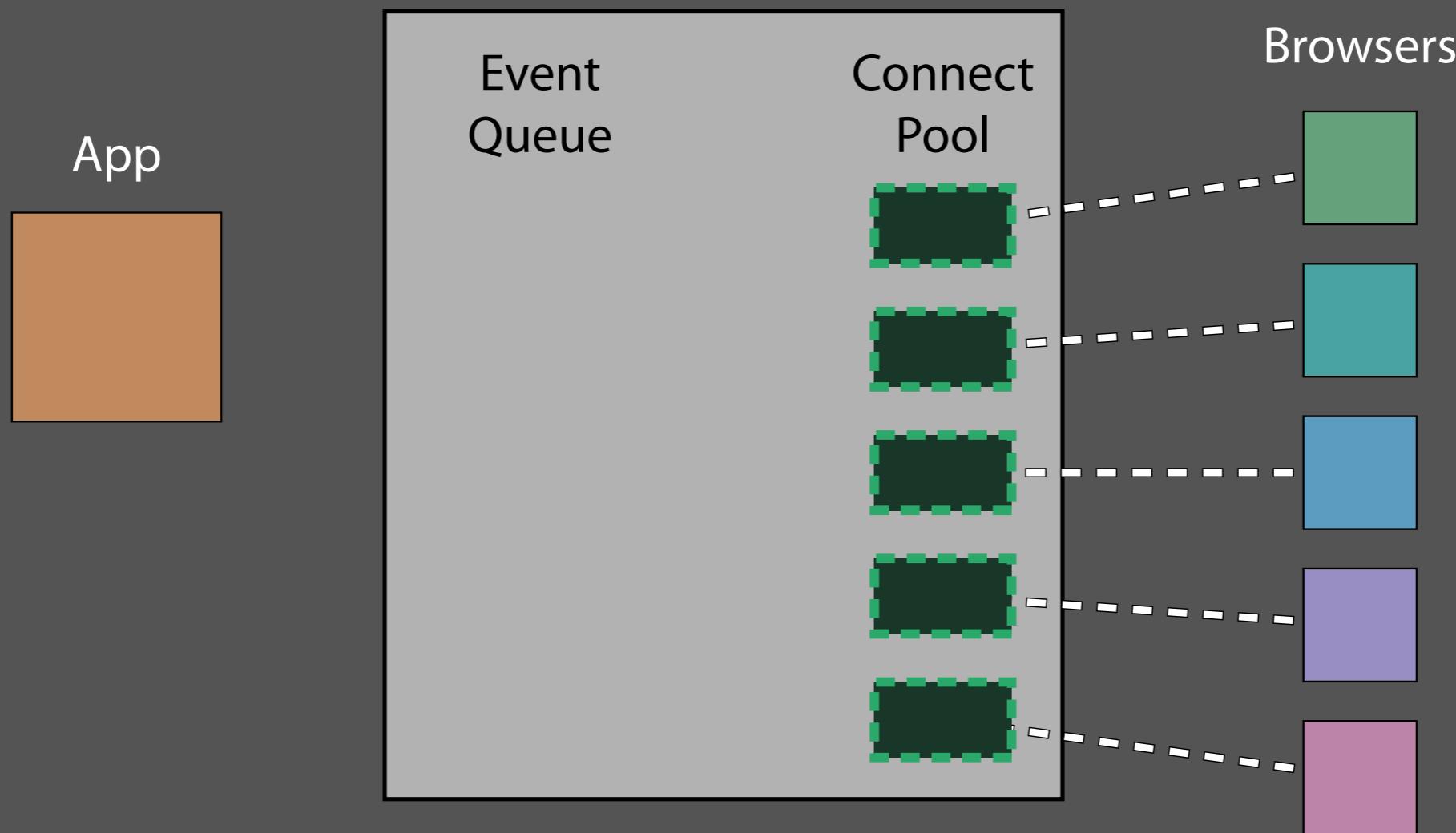


Comet + threads
≠ scalable

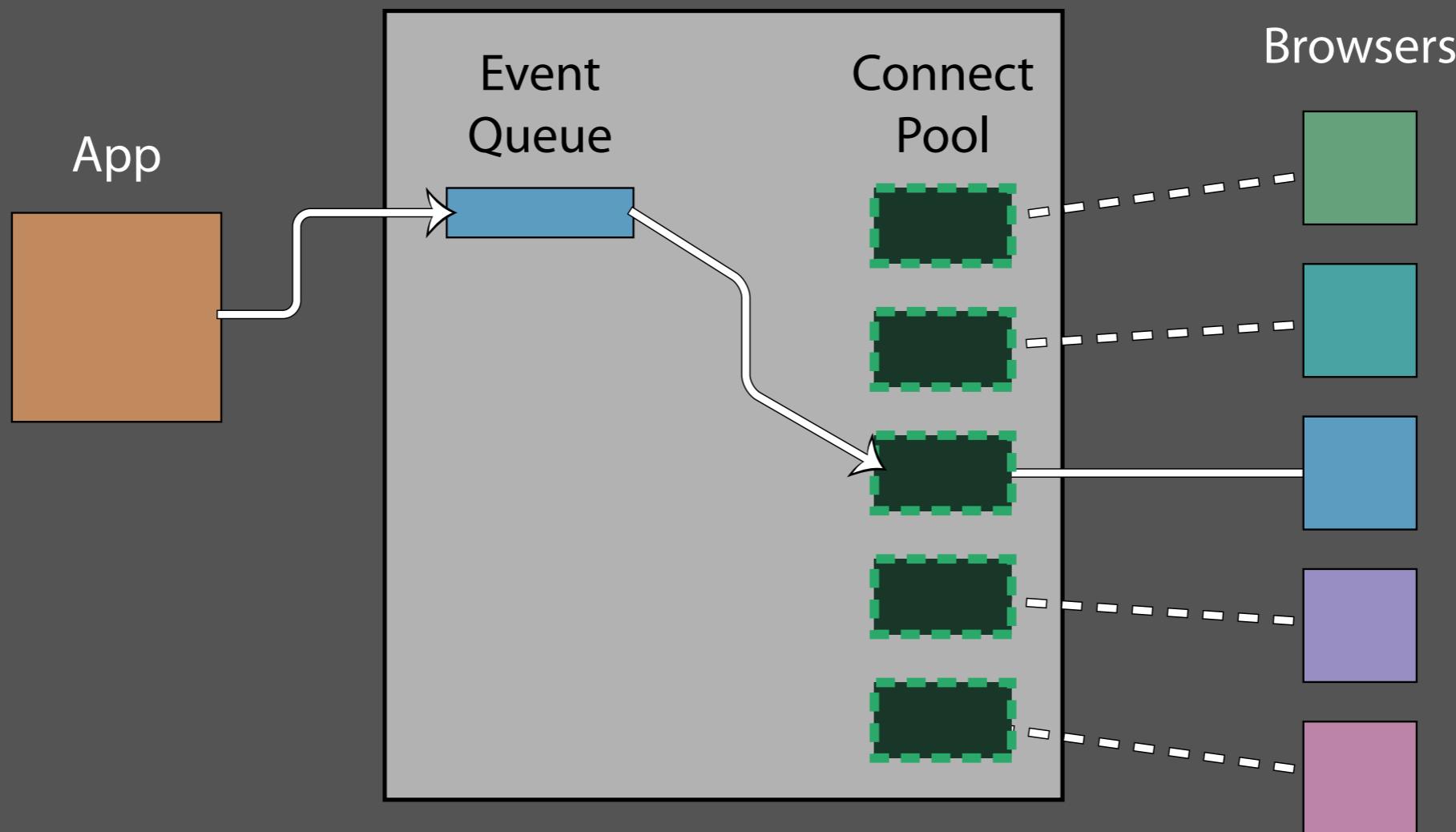
All major
web app frameworks
use threads

don't use
web frameworks
for Comet

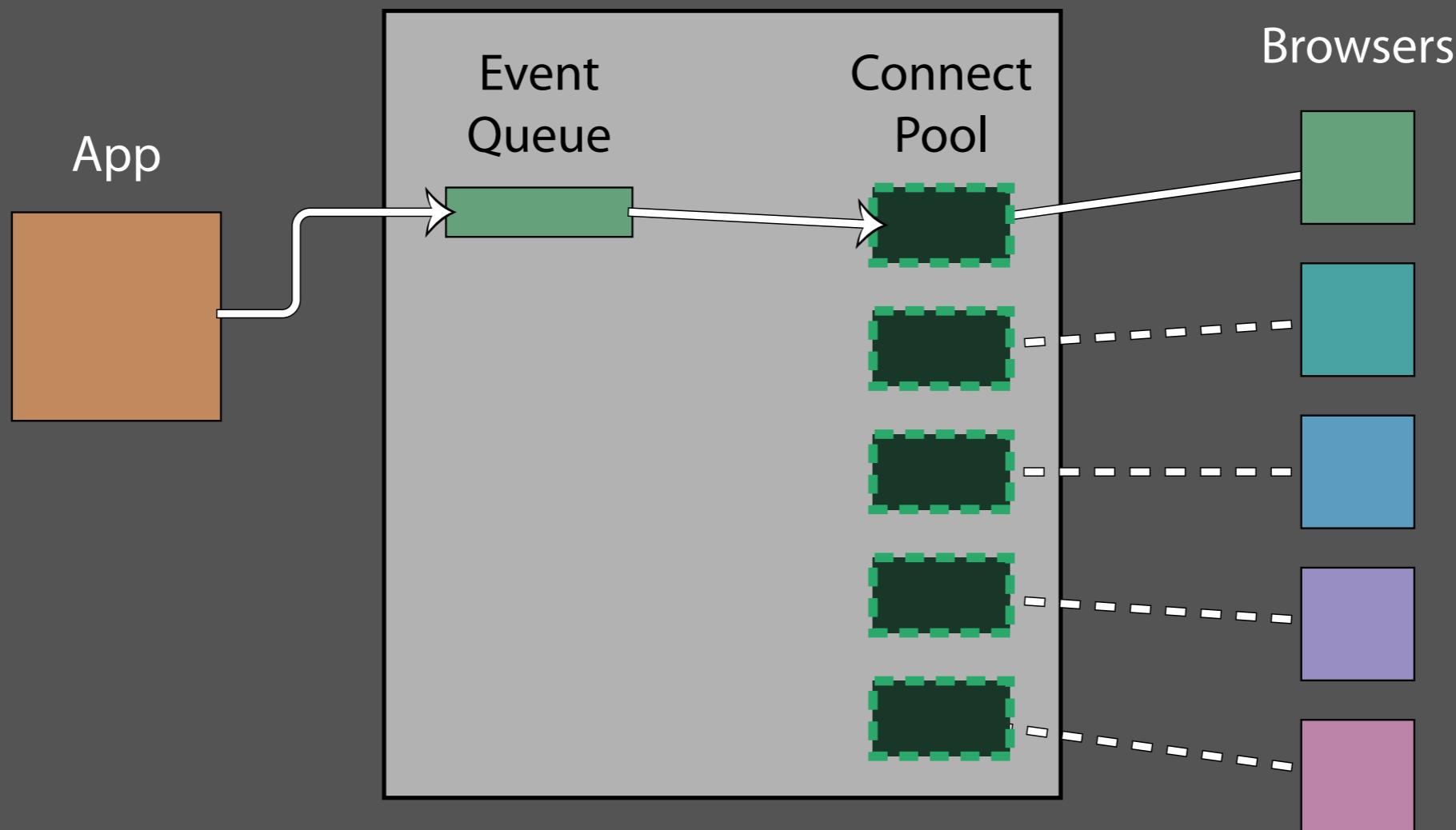
Event-Based Comet Dispatcher

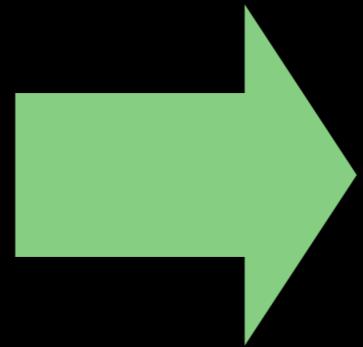


Event-Based Comet Dispatcher



Event-Based Comet Dispatcher





photos by babasteve & jurvetson

zzzz.....

this is the easy problem

Horizontal Scaling



photo by ulybug

horizontal scaling is
HARD

just Comet is
tricky enough

don't make the
Comet server do
load balancing

don't make the
Comet server do
publish/subscribe

don't make the
Comet server do
anything but Comet

Publish – Subscribe

useful? yes

Comet? no

hard to scale
hard to integrate

everyone wants it
anyway

Scaling Pub/Sub Horizontally

tough routing,
needs shared state

can't scale linearly

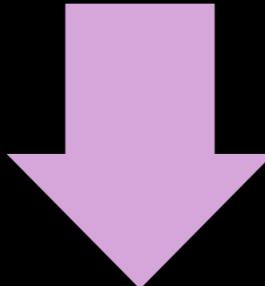
Peer Messaging
on top of Pub/Sub

per-user channel

dead simple model

don't do it

$O(l)$ routing algorithm



$O(\text{complex} \times \text{unscalable})$

Future

server-sent events

TCPConnection

a socket ...
in a browser?

firewalls?
proxies?

security?!

cuts out
middle-man logic

diagram a:
jabber server + few
clients

diagram b:
2 jabber servers, a few
clients

diagram c:
cloud of jabber servers
w/ clients

diagram d:
jabber server connected
to app w/ threaded on-
board comet & XMPP-
JSON translator, w/
browsers + SQL/LDAP

diagram e:
jabber server connected
to two of those

diagram f:
web app split into
separate thing from
comet server working as
jabber front-end

diagram g:
same as before, w/
simple comet proxy
instead

diagram h:
put the comet proxy and
jabber server on same
machine

diagram i:
connect two of those
boxen

diagram j:
put some in a cloud

Orbited



photo by Diane Allison-Stroud