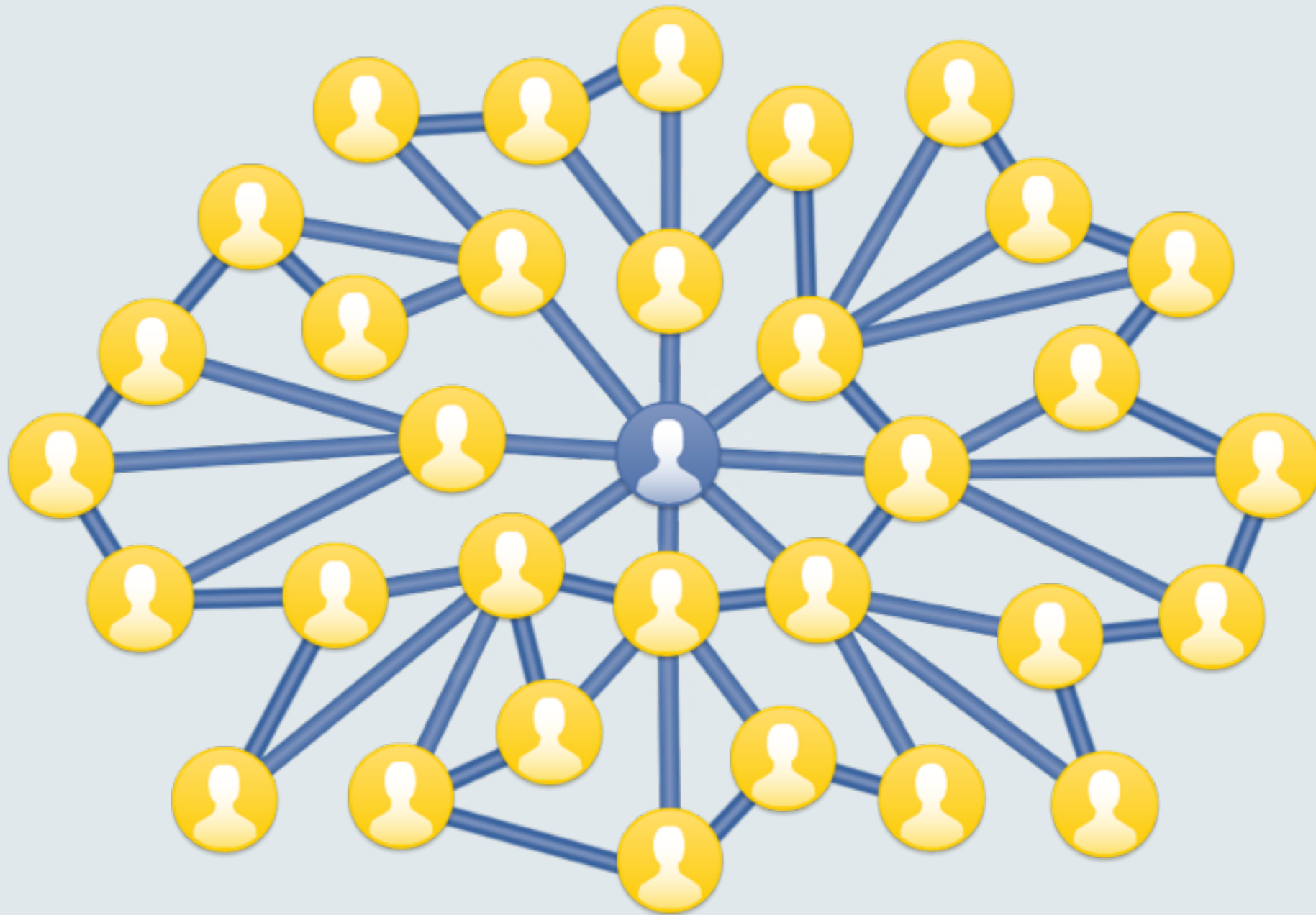


facebook

Contents
Move Fast
Social Data
Architecture Patterns

Move Fast

Frequent small changes
Never a delay waiting for a release
Easier to isolate bugs
Major changes dark launched



Social Data

Many small objects

Social Data

Many small objects

Hard to partition and cluster

Social Data

Many small objects

Hard to partition and cluster

Frequently changing

Social Data

Many small objects

Hard to partition and cluster

Frequently changing

Consistency is important

Social Data

Many small objects

Hard to partition and cluster

Frequently changing

Consistency is important

All data is “warm”

Scaling

Many small objects in real time

It's all about the random read



Robert Johnson

Coming Soon: News Feed is getting a refresh. [Learn more.](#)



FAVORITES

- News Feed
- Messages 83
- Events 2

GROUPS

- feedbomb 1
- NR250 4
- Emanagers 3
- Infra Eng Managers 5
- e FYI (Engineering Ar 16
- Eng Summit Presente 1
- Parents @ Facebook 3
- e Social 18
- Tasty Software Desig 15
- FYI (Company Annou 8
- Early FB Employees 5
- Speakeasy
- Engineering Leadership Tra
- Create Group...

APPS

- Washington Post Social Rea
- Music

LISTS

- Subscriptions

MORE

News Feed

Top News · Most Recent 300+

Update Status Add Photo / Video Ask Question

What's on your mind?



Ann Stimmler Johnson
Halloween 2011 SuperGirl and a Jedi (Luke)



Wall Photos

Like · Comment · Share · 20 hours ago via iPhoto Uploader ·

Divya Srinivasan Breed, Janet Sue Weick, Craig Montuori and 10 others like this.

Belinda Varela-Stajner adorable, I miss u!
18 hours ago · Like

Sadie Logeais cute
2 hours ago · Like

Write a comment...



Bob Trahan added 11 new photos to the album new hampshire compound. — at Arlington Pond.



Upcoming Events [See All](#)

Caltech Women's Basketbal...
Thursday, December 15 at 6:00pm
Join · Maybe

Caltech Women's Basketbal...
Friday, December 16 at 6:00pm
Join · Maybe

Sponsored Stories [See All](#)

Koun Han likes Reshmanator's.



Reshmanator's
Like

Laurie Young likes Ninja Drinking.



Ninja Drinking
Like

Jessie Xu likes One Dish a Day's link.

<http://yunfangjuan.net/onedish>

aday d-wa 3852 ms Kent Beck

Web Server



Memcache



Database



NoSQL

Scaling is how machines interact
Bottlenecks
Reliability

Network Bottleneck

Network Incast

Memcache



Memcache



Memcache



Memcache

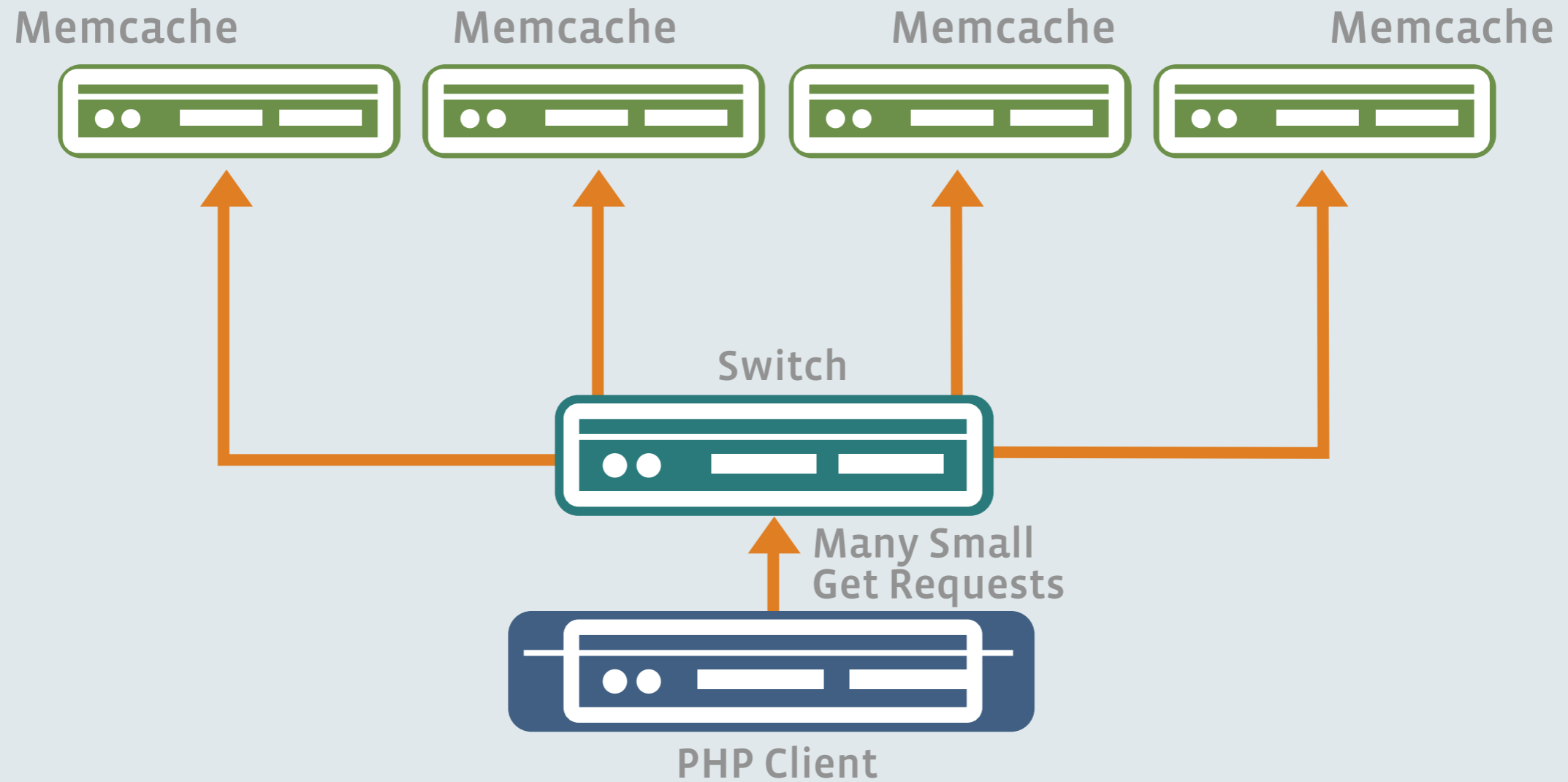


Switch



PHP Client

Network Incast



Network Incast

Memcache



Memcache



Memcache



Memcache

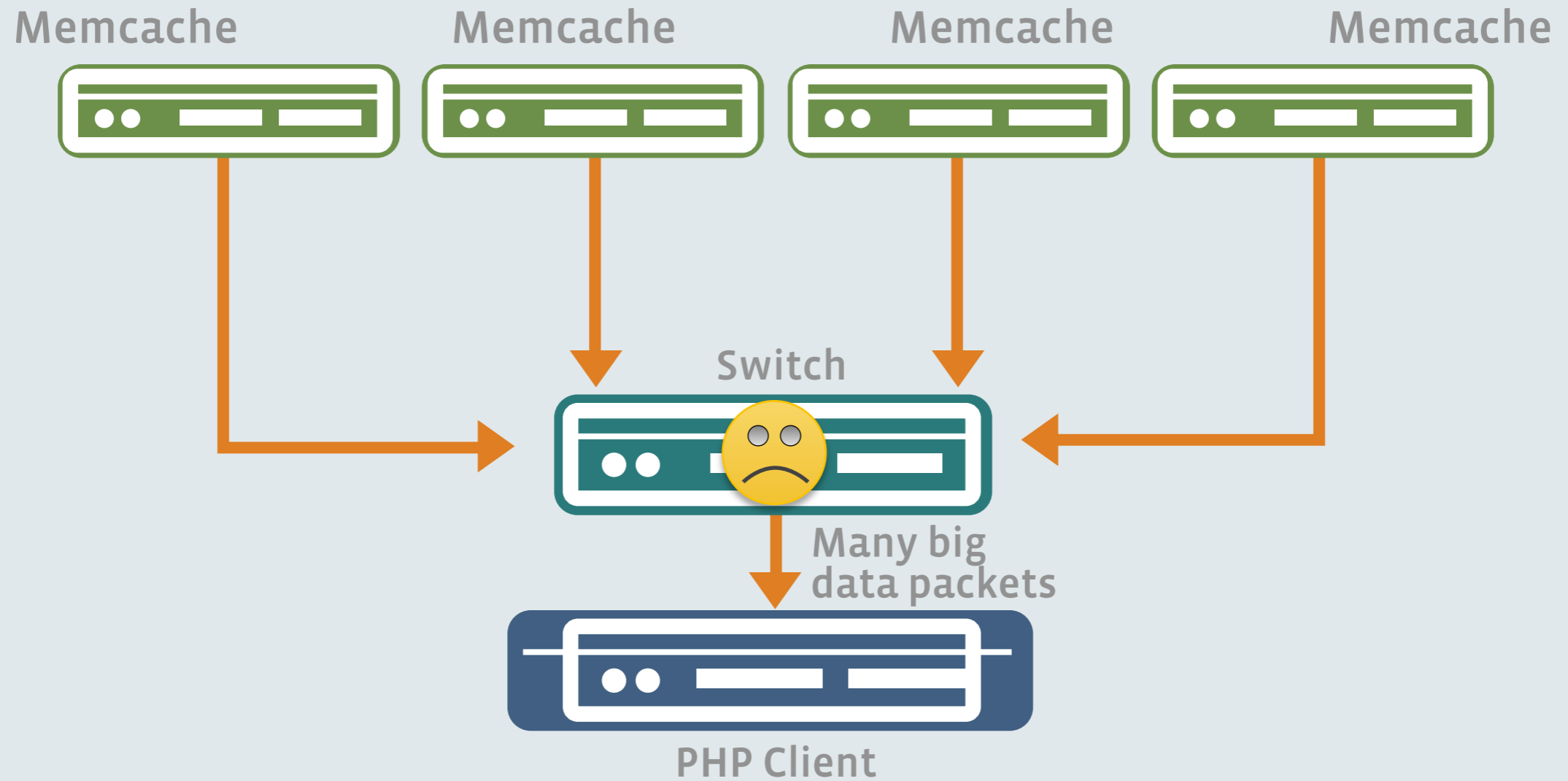


Switch



PHP Client

Network Incast



Network Incast

Memcache



Memcache



Memcache



Memcache

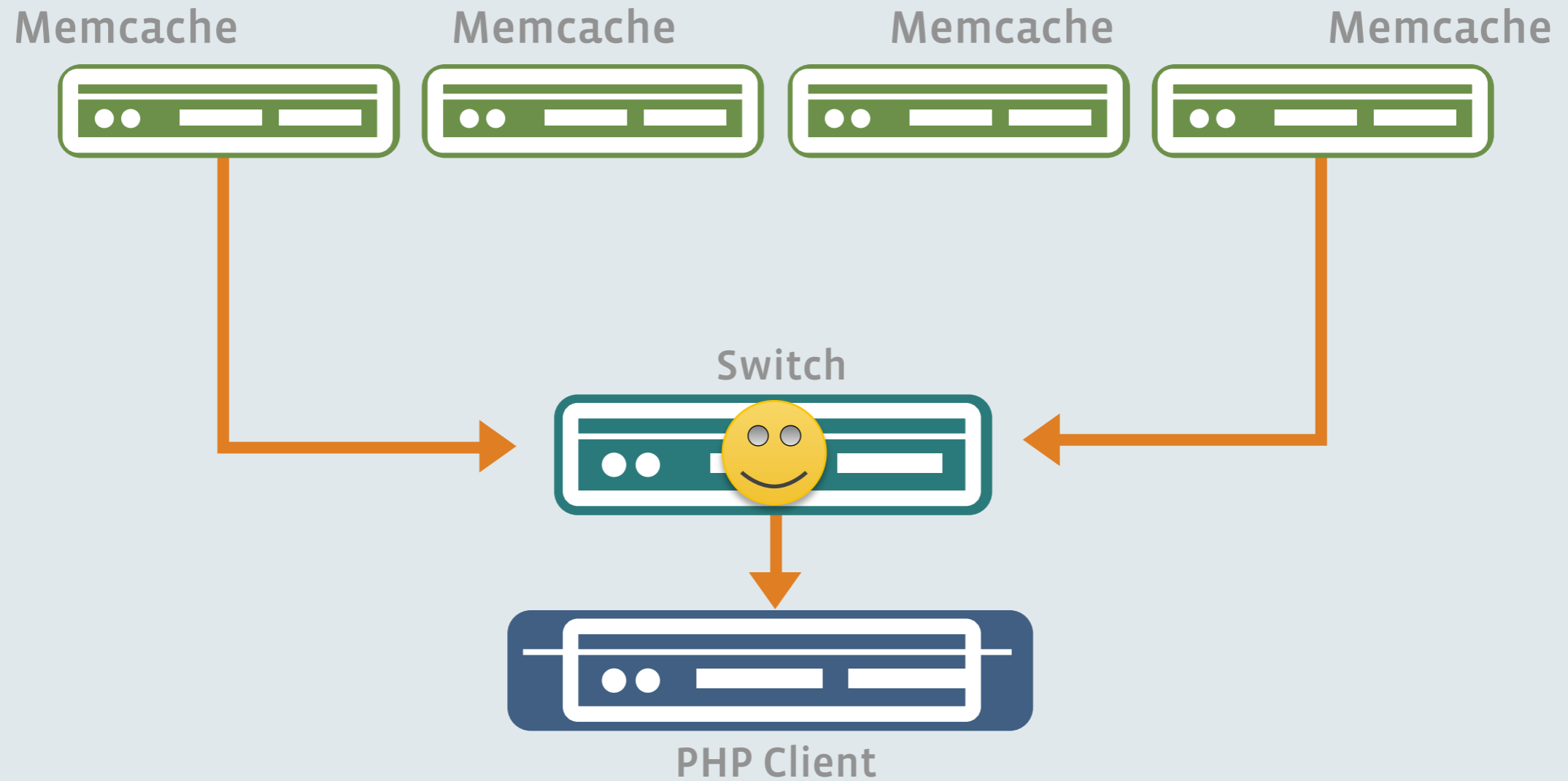


Switch



PHP Client

Network Incast



Network Incast

Memcache



Memcache



Memcache



Memcache

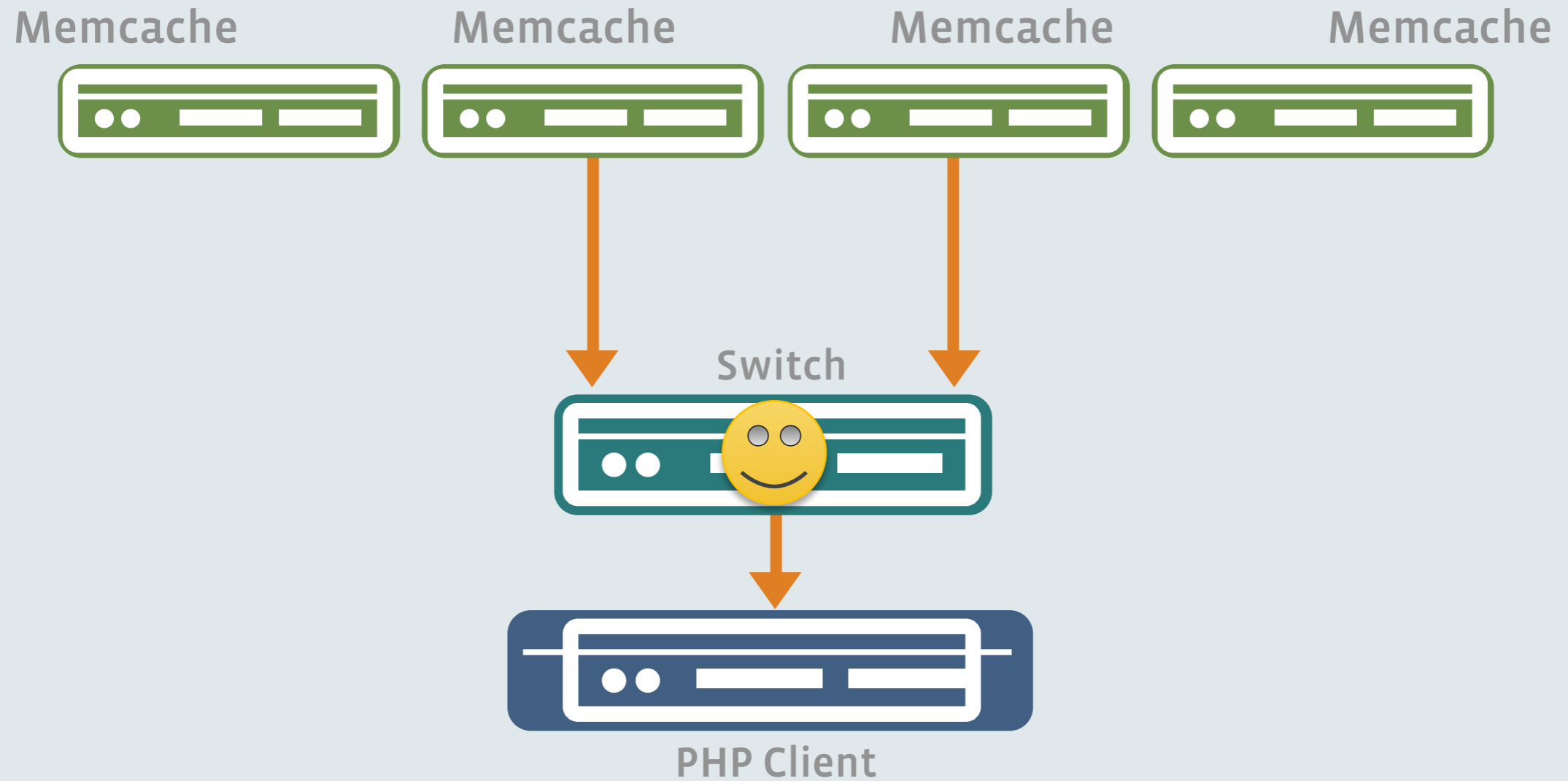


Switch



PHP Client

Network Incast



Reliability

**The goal isn't to avoid mistakes
It's to make the cost of mistakes low**

Ways that small problems get big

Single points of failure

Increasing load under load

Funneling badness

Everyone waiting

Single Points of Failure

Single Points of Failure

Software can be a SPOF

Increasing load under load

**If you lose half of your machines,
you're still doing well if you're
serving half your traffic.**

Funneling badness

Everyone waiting on the same thing

Cultural
Test failure conditions
Monitor everything
Post-mortems

**If something keeps you up at night
Break It!**

Cultural
Test failure conditions
Monitor everything
Post-mortems

Questions