System Integration

OpenStack's success story

@flaper87

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redhat®

RDO

member of

@flaper87

Other things ...

- GsoC / OPW mentor
- Rust language contributor
- Member of MongoDB Masters
- Physics and Philosophy

Theory

What does integrating a system mean?

Theory

Vertical Integration

Star Integration

Horizontal Integration

Theory

Horizontal Integration

from an application's perspective

RPC

Messaging

Databases

Files

Methods

Probably one of the oldest method

Good for few and very specific cases

Try not to use it

Speaking of files

Messaging

Files

RPC

Databases

Methods

Asynchronous data-wise

Not a message broker

Probably the most common

Great for storing states

Speaking of databases

Files

Databases

Messaging

RPC

Methods

Remote Procedure Calls

Most used throughout OpenStack

Message's channels may vary (database, broker, etc)

Tightly coupled

Speaking of RPC

Databases

RPC

Files

Messaging

Methods

Loosely coupled

Add more complexity

Commonly used for notifications

May depend on message routers, transformation, etc.

Speaking of Messaging

Shared Nothing Architecture

Databases (Inter-service)

RPC (Inter-service)

Messaging (Cross-service)

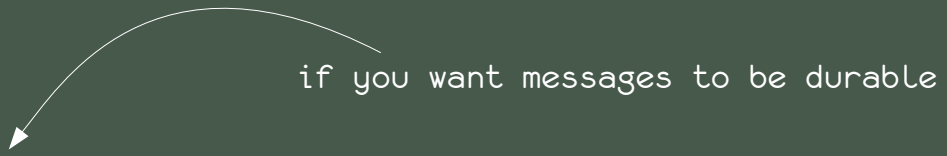
OpenStack's case

← Scaling brokers is hard →

Brokers ~~can be~~ are a PITA

Brokers need lot of memory

Brokers ~~can be~~ are a PITA



Brokers need storage

Brokers ~~can be~~ are a PITA

Prefer federation over centralization

AMQP 1.0

Message Router (qpid-dispatch)

Brokers ~~can be~~ are a PITA

Transmission protocol matters

Tips / Tricks

Use versions for
your wire protocol

Tips / Tricks

Keep everything explicit

Tips / Tricks

Design by contract

Tips / Tricks

Keep services isolated...
As much as possible.

Tips / Tricks

Q&A

Thanks

we're hiring

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