

# Taming The Rabbit

Writing RabbitMQ Plugins

Alvaro Videla - VMware

# About Me

- Developer Advocate for Cloud Foundry
- Blog: <http://videlalvaro.github.com/>
- Twitter: @old\_sound

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- I created gifsockets™

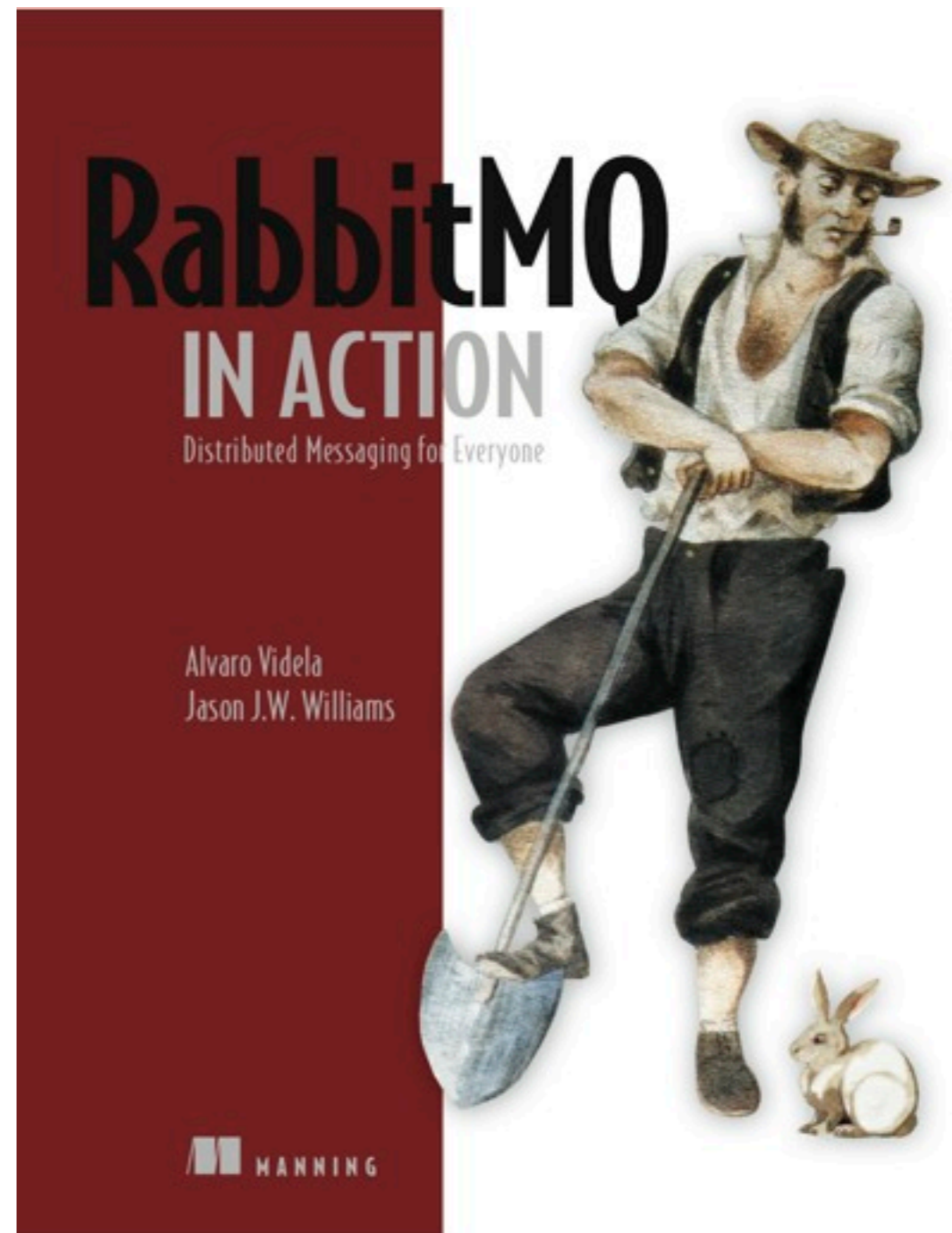


# About Me

Co-authored

RabbitMQ in Action

<http://bit.ly/rabbitmq>



# RabbitMQ

# RabbitMQ

- Enterprise Messaging System
- Open Source MPL
- Written in Erlang/OTP
- Messaging via AMQP
- Acquired by Spring Source (VMware)

# Features

- Reliable and High Scalable
- Easy To install
- Easy To Cluster
- Runs on: Windows, Solaris, Linux, OSX
- AMQP 0.8 - 0.9.1

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<p><a href="#">puppetlabs / puppetlabs-rabbitmq</a> (Ruby)</p> <p>RabbitMQ Puppet Module</p> <p>152.3 KB   36 forks   50 stars   last activity about 1 month ago</p>		<p> <b>rabbitmq-github</b> - RabbitMQ Github Mirror Account</p> <p>1 follower   0 repositories   located in In the clouds</p>	
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# Extensible

- Plugin System
- Official Plugins
- Community Plugins

# Extensible

- Plugin System
- Official Plugins
- Community Plugins
- Plugins must be written in Erlang



**problem?**

**What can you do with  
plugins?**

# Add new Protocols

**STOMP**

# STOMP

COMMAND

header1:value1

header2:value2

Body^@

# STOMP

```
CONNECT
```

```
accept-version:1.1
```

```
host:stomp.github.org
```

```
^@
```



# STOMP

CONNECTED  
version:1.1

^@

**Websockets**

**+**

**STOMP**

**=**

**WebSTOMP**

# Add Authentication Mechanisms

**LDAP**

**SSL**

# Add your own Message Store

# Must Read

<http://www.rabbitmq.com/blog/2011/01/20/rabbitmq-backing-stores-databases-and-disks/>

# Wrap Erlang apps together with RabbitMQ



cowboy-wrapper

# Idap-wrapper

# webmachine-wrapper

**Add extra functionality  
to the broker**

# RabbitMQ Management Plugin

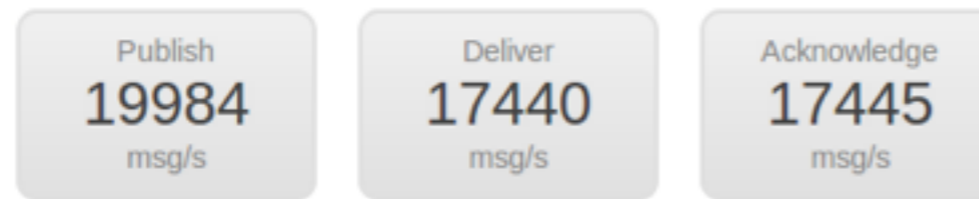
## Overview

### ▼ Totals

#### Queued Messages



#### Message Rates



### ▼ Nodes and Ports

#### RabbitMQ Nodes

Name	File Descriptors (used / available)	Erlang Processes (used / available)	Memory (used / high watermark)	Uptime	Version (RabbitMQ / Erlang)	Mnesia Storage
rabbit@smacmullen	28 / 1024	206 / 1048576	156.1MB / 4.7GB	0m 19s	2.2.0 / R14B	disc

#### Listening Ports

Host	Bound to	Port
smacmullen.eng.vmware.com rabbit@smacmullen	0.0.0.0	5672 amqp
smacmullen.eng.vmware.com rabbit@smacmullen	0.0.0.0	5671 amqp/ssl

### ▶ Import / Export Configuration

Last update: Thu Dec 02 2010 17:10:25 GMT+0000 (GMT)

Update

# RabbitMQ Shovel Plugin

# Create your Own Exchanges

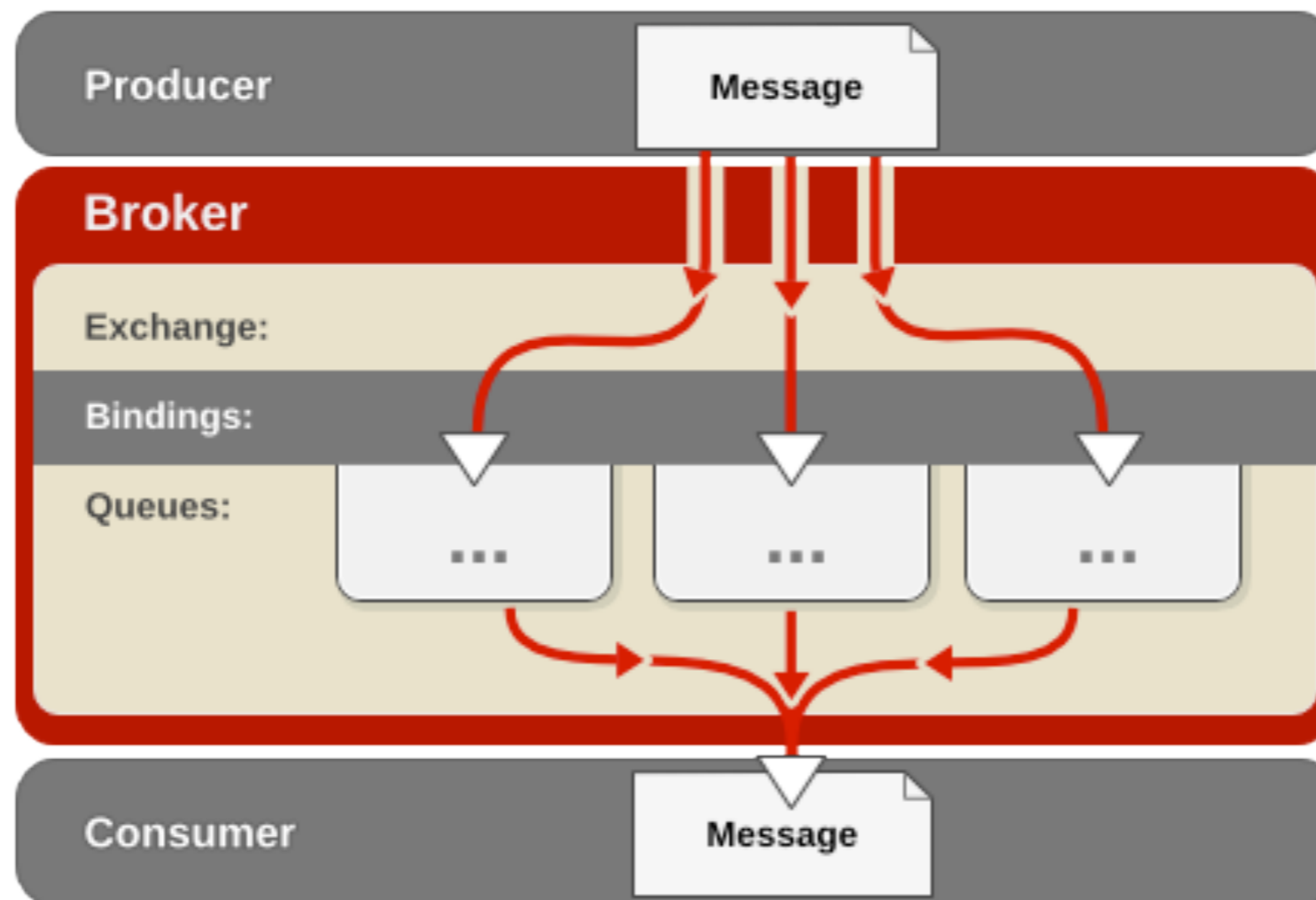


**Why?**

# Exchanges

# Message Flow

## Producer Consumer



[http://www.redhat.com/docs/en-US/Red\\_Hat\\_Enterprise\\_MRG/1.0/html/Messaging\\_Tutorial/chap-Messaging\\_Tutorial-Initial\\_Concepts.html](http://www.redhat.com/docs/en-US/Red_Hat_Enterprise_MRG/1.0/html/Messaging_Tutorial/chap-Messaging_Tutorial-Initial_Concepts.html)

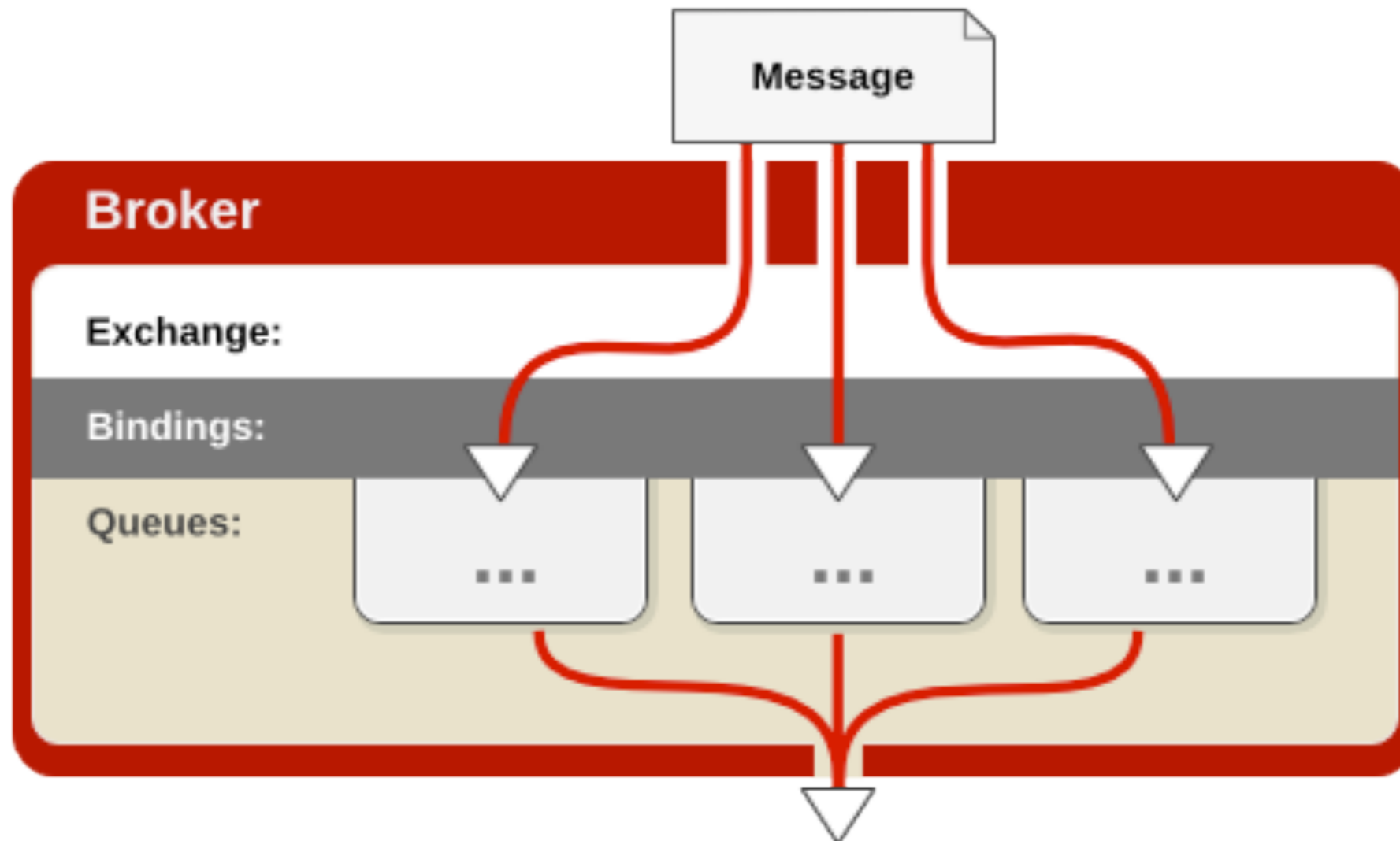
# AMQP Model

- Exchanges
- Message Queues
- Bindings
- Rules for binding them

# Exchange Types

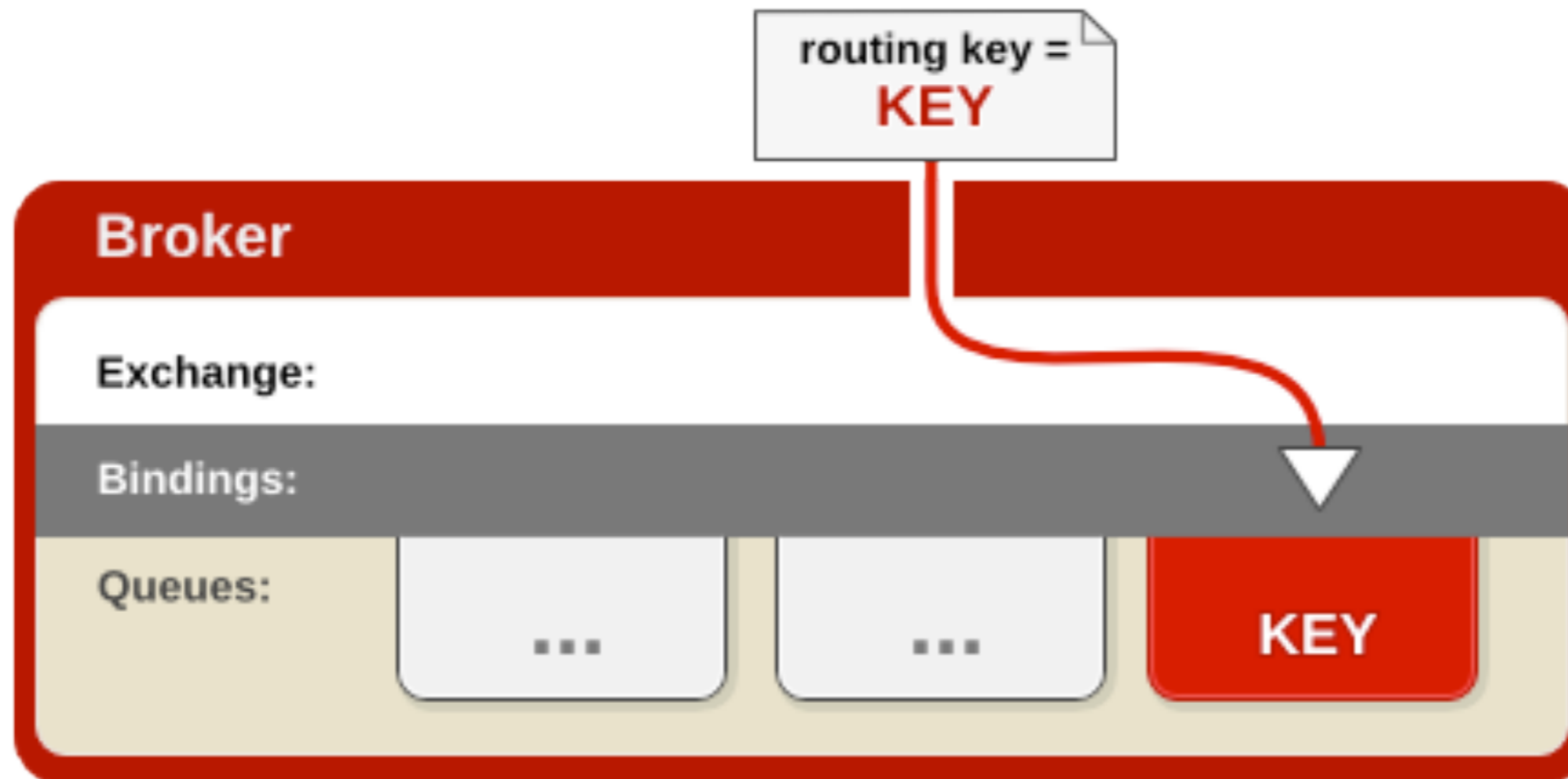
- Fanout
- Direct
- Topic

## Fanout Exchange



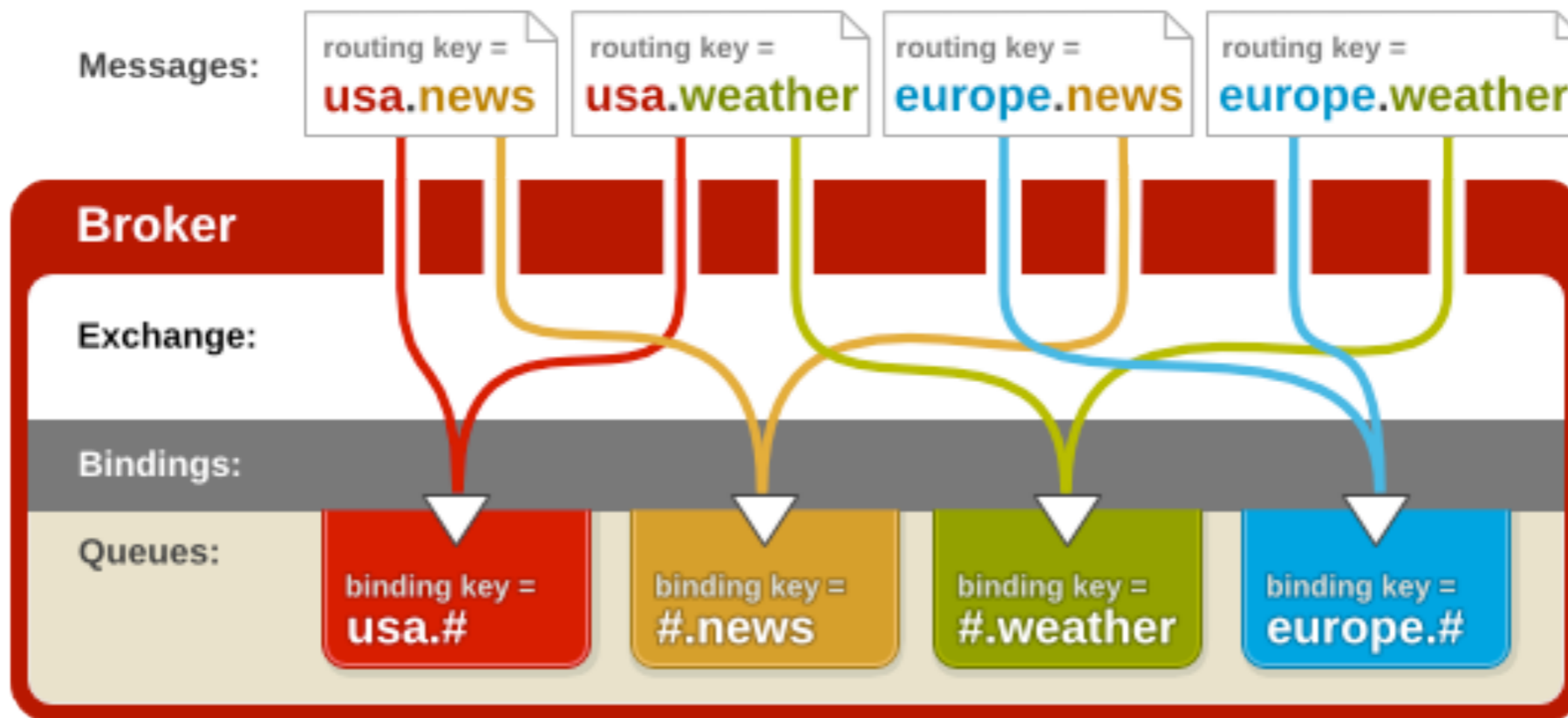
[http://www.redhat.com/docs/en-US/Red\\_Hat\\_Enterprise\\_MRG/1.0/html/Messaging\\_Tutorial/sect-Messaging\\_Tutorial-Initial\\_Concepts-Fanout\\_Exchange.html](http://www.redhat.com/docs/en-US/Red_Hat_Enterprise_MRG/1.0/html/Messaging_Tutorial/sect-Messaging_Tutorial-Initial_Concepts-Fanout_Exchange.html)

## Direct Exchange



[http://www.redhat.com/docs/en-US/Red\\_Hat\\_Enterprise\\_MRG/1.0/html/Messaging\\_Tutorial/sect-Messaging\\_Tutorial-Initial\\_Concepts-Direct\\_Exchange.html](http://www.redhat.com/docs/en-US/Red_Hat_Enterprise_MRG/1.0/html/Messaging_Tutorial/sect-Messaging_Tutorial-Initial_Concepts-Direct_Exchange.html)

## Topic Exchange



[http://www.redhat.com/docs/en-US/Red\\_Hat\\_Enterprise\\_MRG/1.0/html/Messaging\\_Tutorial/sect-Messaging\\_Tutorial-Initial\\_Concepts-Topic\\_Exchange.html](http://www.redhat.com/docs/en-US/Red_Hat_Enterprise_MRG/1.0/html/Messaging_Tutorial/sect-Messaging_Tutorial-Initial_Concepts-Topic_Exchange.html)



random-exchange

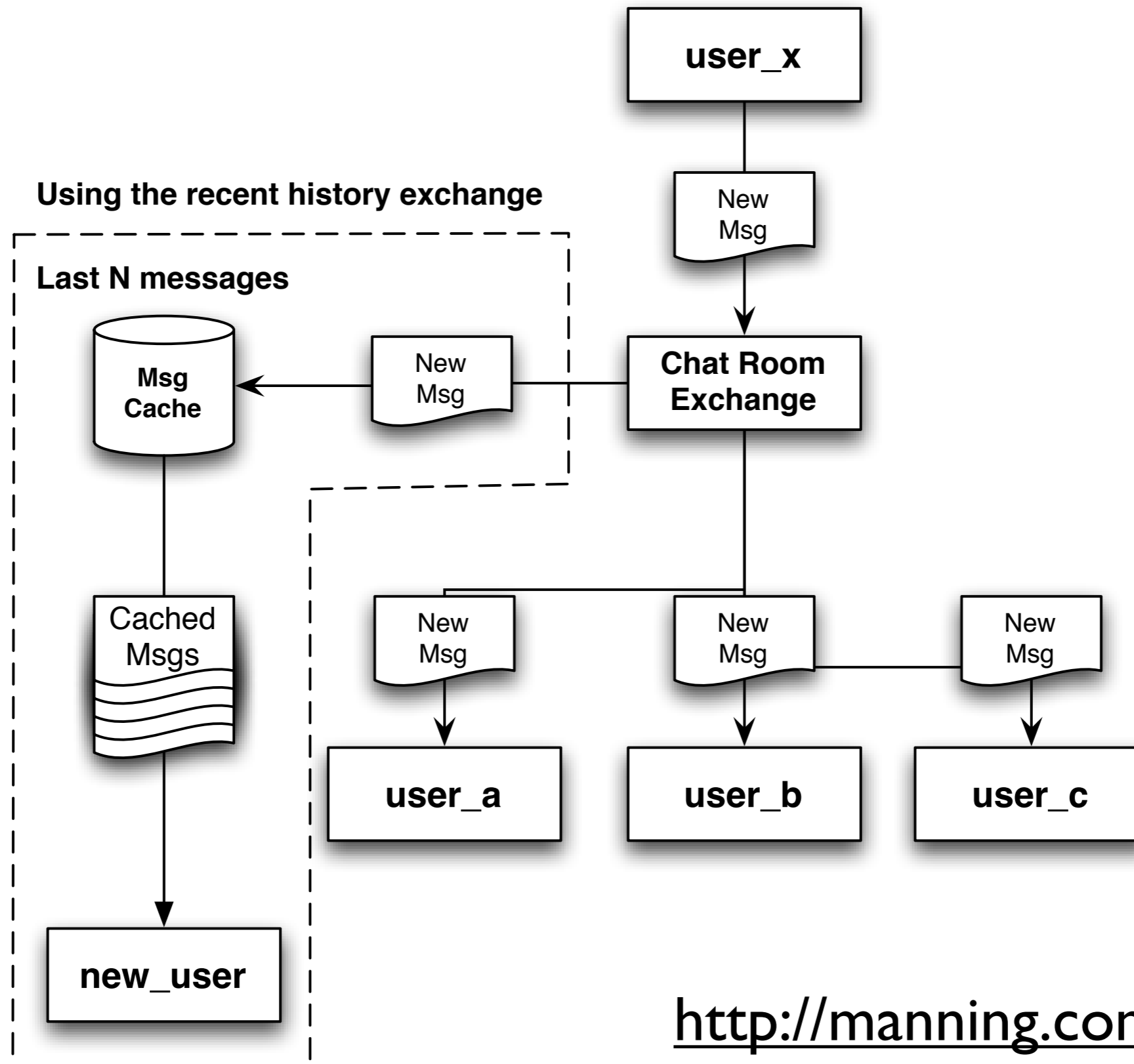
# consistent-hash-exchange

**riak-exchange**

**rabbitmq-global-fanout-exchange**

**recent-history-exchange**

# recent-history-exchange



<http://manning.com/videla/>

# Exchange Behaviours

```
Terminal — tmux — 78x46
tmux  tmux  ...  bash  bash  bash
%% Should Rabbit ensure that all binding events that are
%% delivered to an individual exchange can be serialised? (they
%% might still be delivered out of order, but there'll be a
%% serial number).
-callback serialise_events() -> boolean().

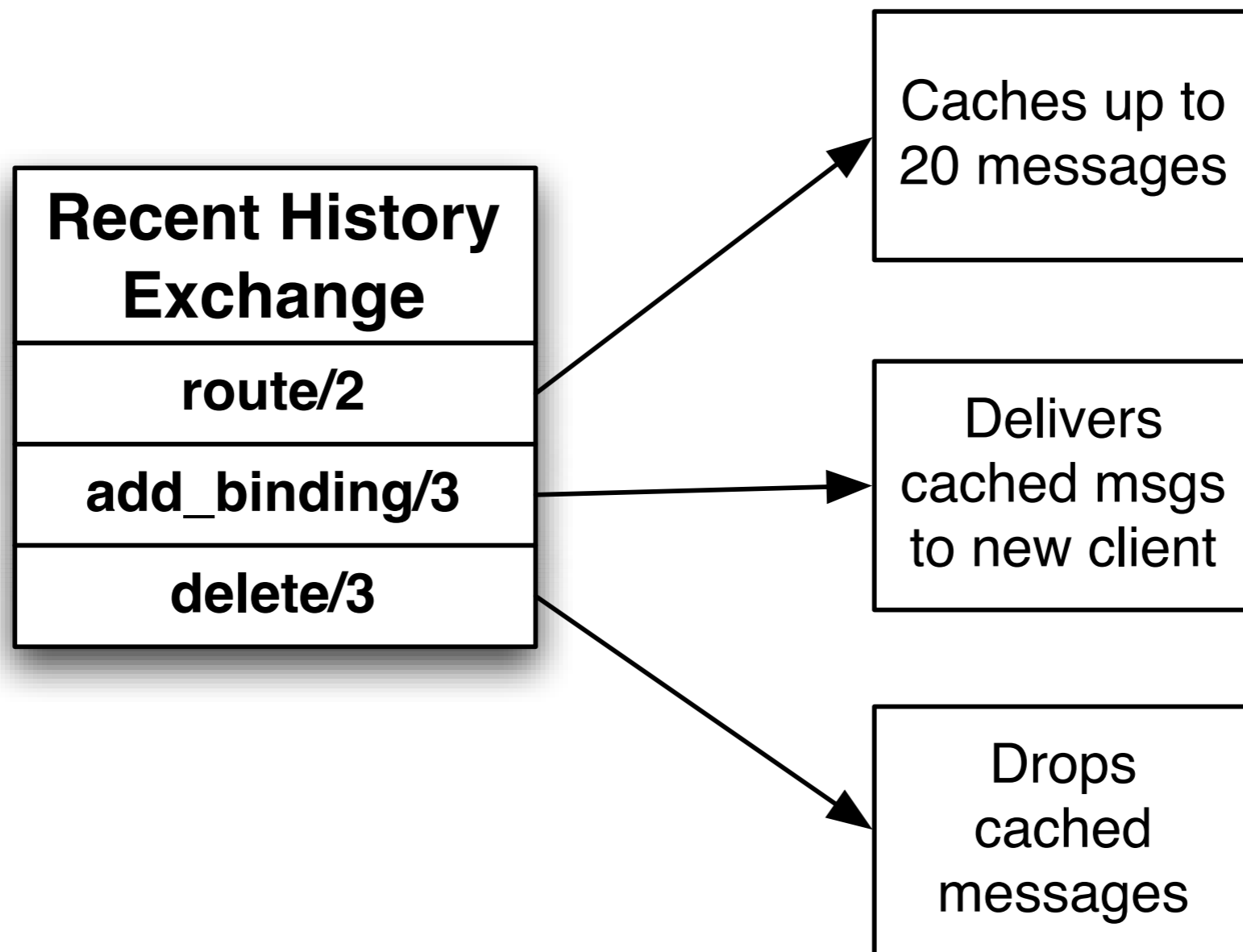
%% The no_return is there so that we can have an "invalid" exchange
%% type (see rabbit_exchange_type_invalid).
-callback route(rabbit_types:exchange(), rabbit_types:delivery()) ->
    rabbit_router:match_result().

%% called BEFORE declaration, to check args etc; may exit with #amqp_error{}
-callback validate(rabbit_types:exchange()) -> 'ok'.

%% called after declaration and recovery
-callback create(tx(), rabbit_types:exchange()) -> 'ok'.

%% called after exchange (auto)deletion.
-callback delete(tx(), rabbit_types:exchange(), [rabbit_types:binding()]) ->
    'ok'.
```

# recent-history-exchange



<http://manning.com/videla/>



# Env Setup

```
hg clone http://hg.rabbitmq.com/rabbitmq-public-umbrella  
cd rabbitmq-public-umbrella  
make co
```

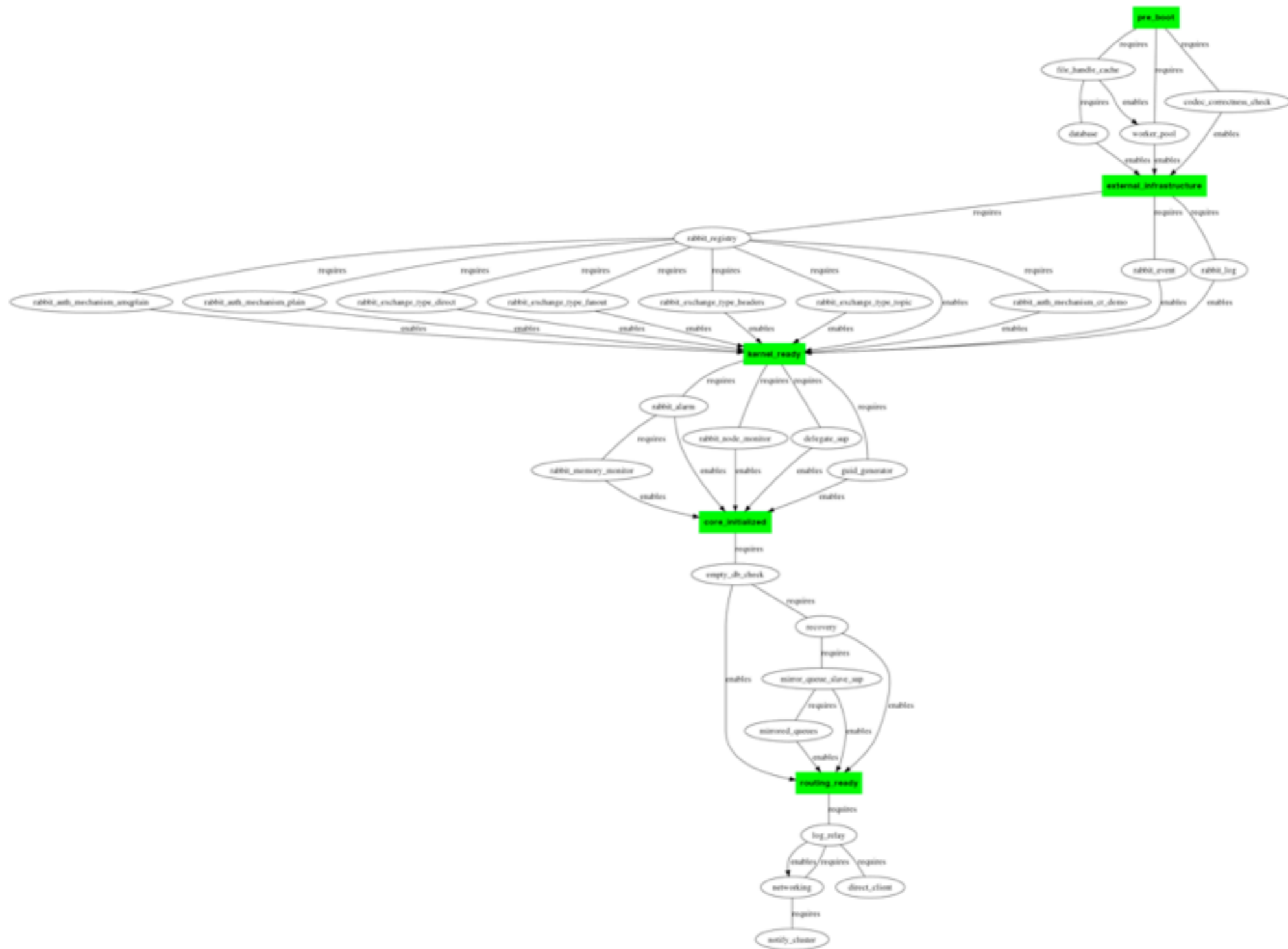
# File Structure

```
| -- rabbitmq-public-umbrella  
| | -- myplugin-folder  
| | | -- package.mk  
| | | -- Makefile
```

# RabbitMQ Boot Steps

[https://github.com/videlalvaro/rabbit-internals/blob/master/rabbit\\_boot\\_process.md](https://github.com/videlalvaro/rabbit-internals/blob/master/rabbit_boot_process.md)

# RabbitMQ Boot Steps



# RabbitMQ Boot Steps

```
-rabbit_boot_step({recovery,  
                  [{description,  
                    "exchange, queue and binding  
recovery"}],  
                  {mfa,      {rabbit, recover, []}},  
                  {requires, empty_db_check},  
                  {enables,  routing_ready}}).
```

# RabbitMQ Boot Steps

```
-rabbit_boot_step({msg_store_bitcask_index,  
  [{description,  
    "Bitcask Index for rabbit_msg_store"},  
   {mfa, {application, set_env,  
         [rabbit, msg_store_index_module, ?MODULE]}}},  
  {enables, recovery}]}) .
```

Modify Configuration at Startup

# Demo Code

# Managing Plugins



# rabbitmq-plugins

```
$ rabbitmq-plugins list  
$ rabbitmq-plugins enable plugin_name  
$ rabbitmq-plugins disable plugin_name
```

<http://www.rabbitmq.com/man/rabbitmq-plugins.1.man.html>

# ACHTUNG!

- Plugins Run in the same Erlang process

# ACHTUNG!

- Plugins Run in the same Erlang process
- They may crash your broker

**Have Fun  
and  
Experiment!**

# Questions?

# Thanks!

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