oVirt - long way from an unpaved road to the highway

Piotr Kliczewski
Senior Software Engineer
RedHat

KVM Forum, 08/21/2015

Agenda

- Intro and architecture
- State before changes / Motivation
- Adding “a” to sync rpc
- Make it reactive

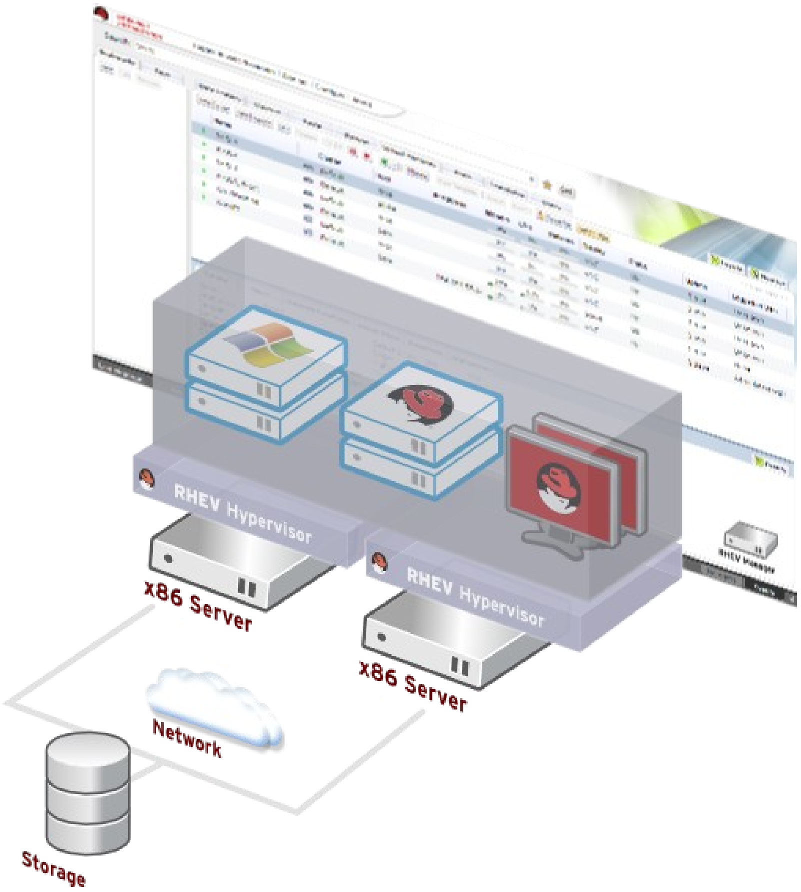
What Is oVirt?

Large scale, centralized management for server and desktop virtualization

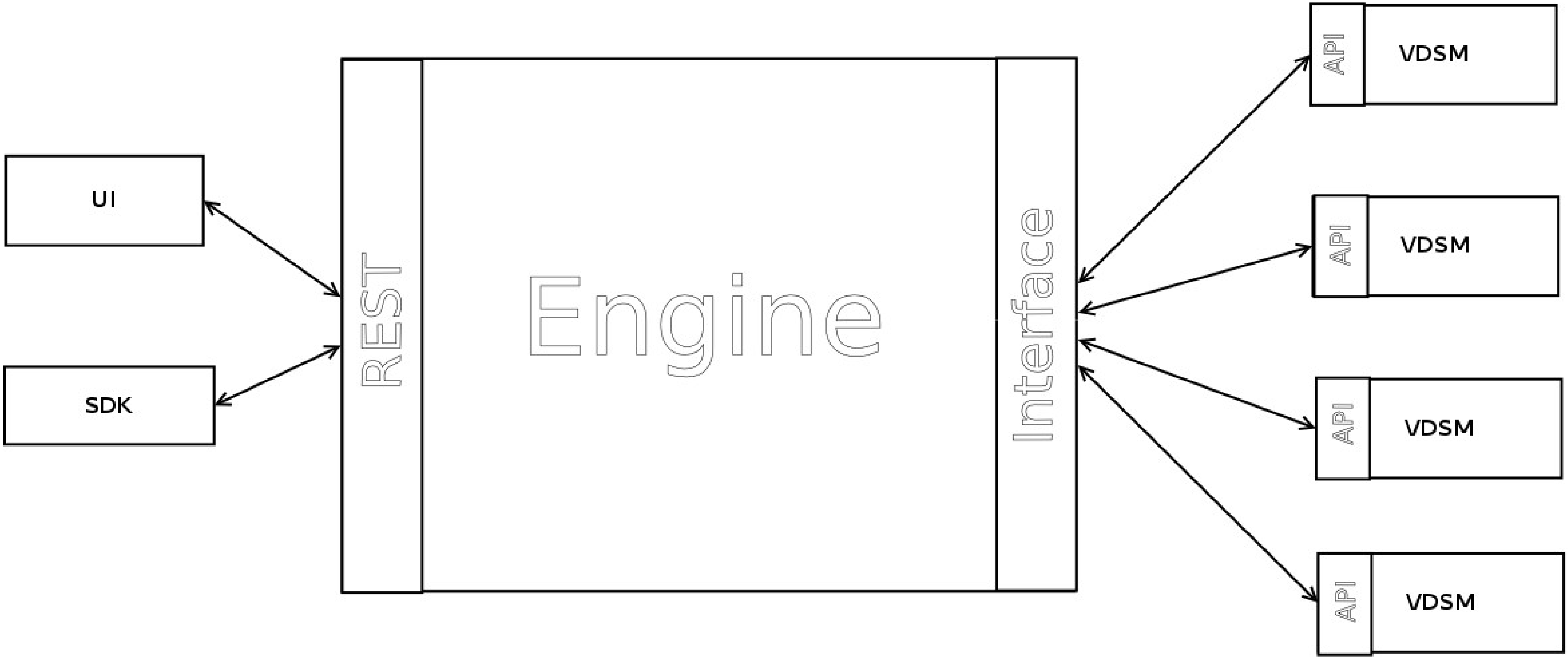
Provide an open source alternative to vCenter/vSphere

Focus on KVM for best integration/performance

Focus on ease of use/deployment



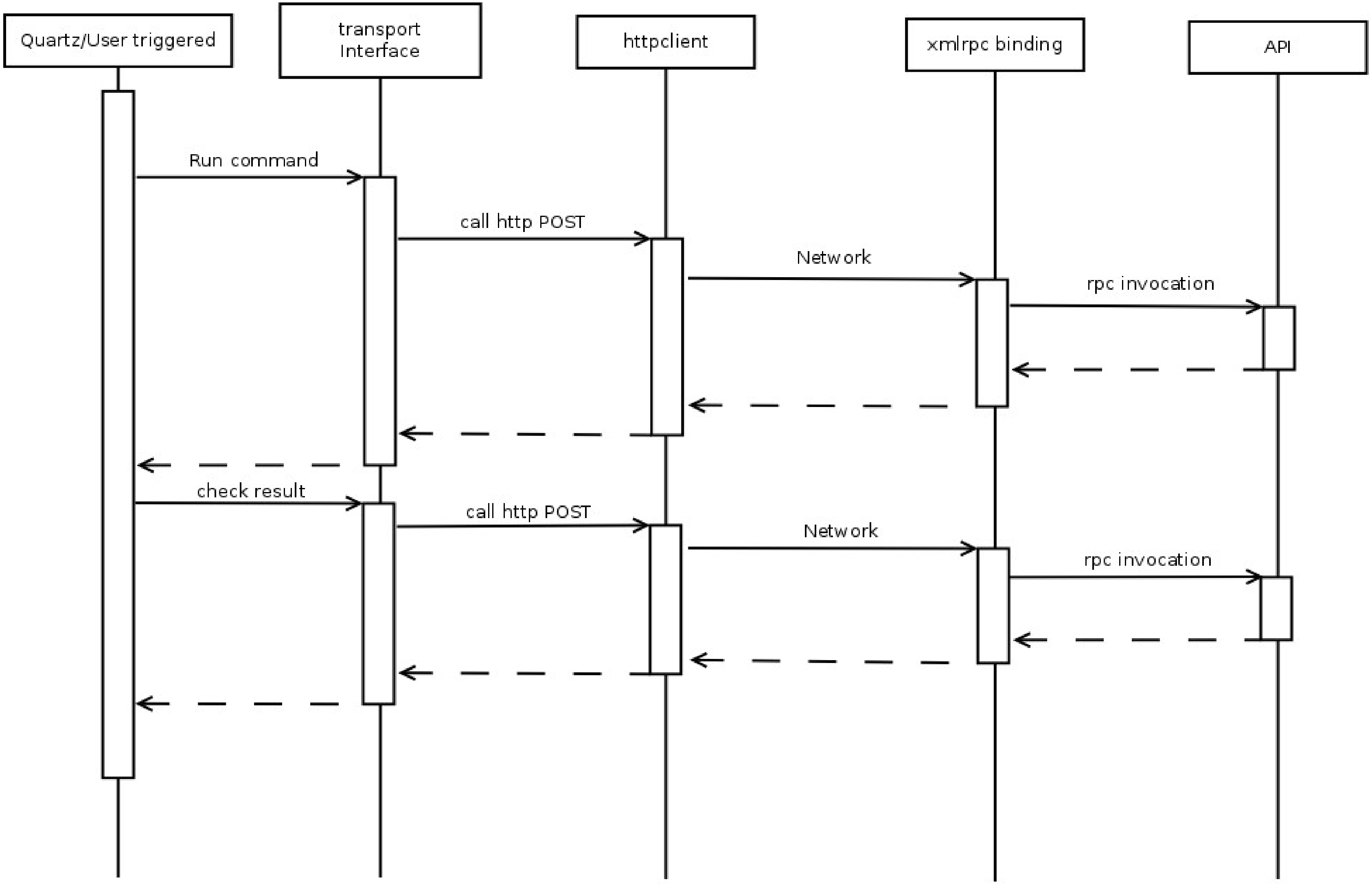
Transport architecture



Current state of transport

- Based on xmlrpc using apache http client
- Synchronous execution (block)
- One side responsible for initiating communication
- Periodic information exchange based on quartz
- Lack of contract (usage of maps)
- Compatibility matrix

Xmlrpc sequence



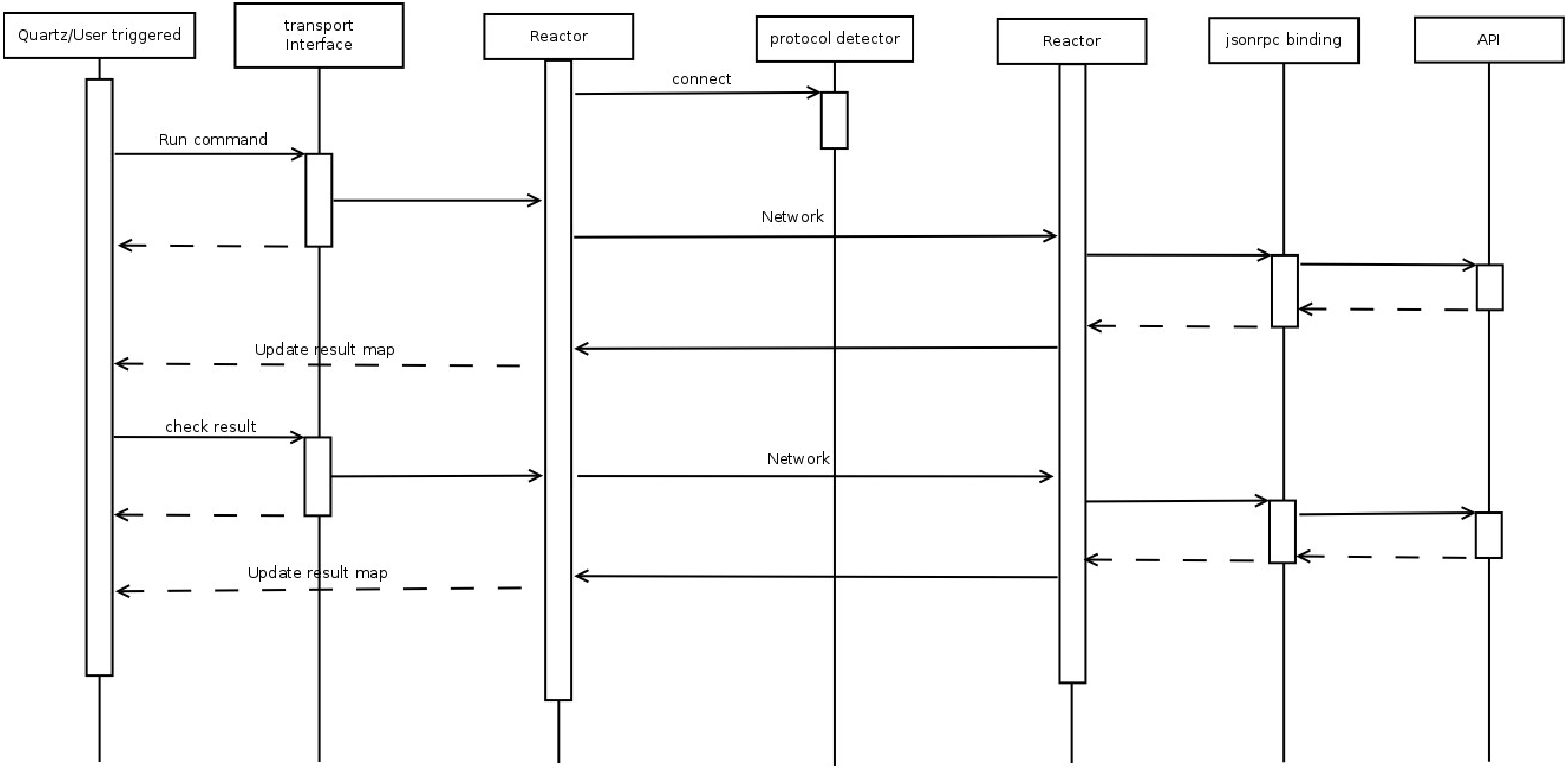
Desired goal

- Information exchange initiated by both sides
- Flexible interface (defined contract if possible)
- Control over speed of processing and amount of data received
- Data aggregation and batching
- Replace point-to-point with a broker
- Reduce resource usage

1st step

- Replace xmlrpc with jsonrpc
- Stomp usage (amqp 1.0 alternative)
- Use plain tcp instead of http
- Maintain the connection (heartbeats)
- Reactor pattern (nio selector, asyncore)
- Hidden asynchronicity (FutureMap)
- No interface change
- Protocol detection

Jsonrpc sequence

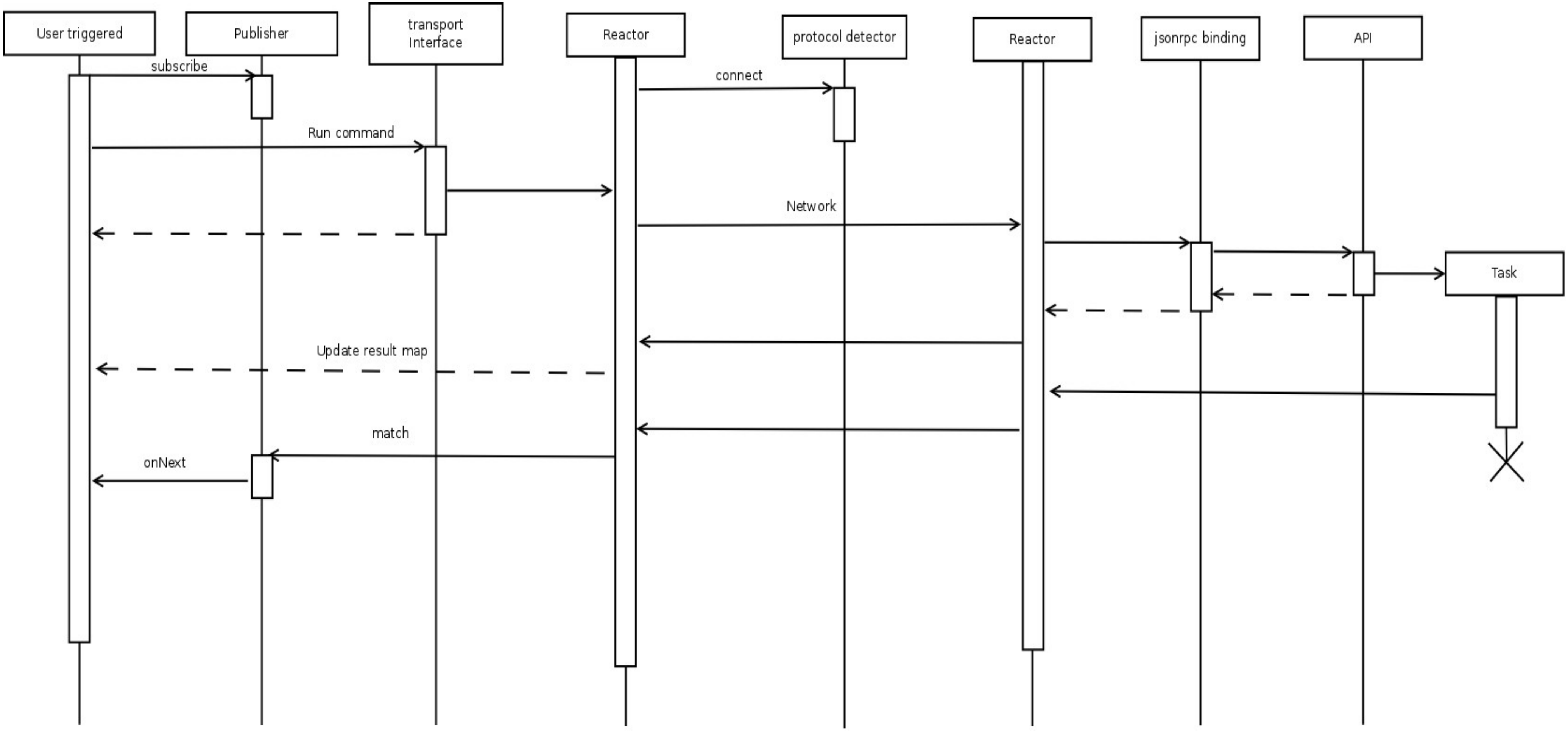


Piotr Kliczewski, August 2015

2nd step

- Expose asynchronicity
- Json-rpc 2.0 notification format
- Bi-directional data exchange
- Broker “ready” - topology still open
- Implementation of org.reactivestreams
- Partial contract by using subscription ID

Data stream



Piotr Kliczewski, August 2015

Future plans

- Back pressure
- Aggregation
- Widespread use (storage, virt and network)
- Broker

Summary

- Evolution of communication layer
  - Synchronous rpc
  - Asynchronous rpc
  - Data stream
- Future plans – many items still open

THANK YOU!

http://www.ovirt.org
pkliczew@redhat.com
@pkliczewski