

# Apache httpd 2.4 The Web Server for the Cloud

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#### **About me**

- Mladen Turk
  - ASF Member, Tomcat PMC chair
  - Contributor from 20<sup>th</sup> century
  - Principal Software Engineer with Red Hat



#### What we will cover

- What's new in 2.4
  - General improvements
  - Proxy module improvements
- Cloud and the Web



- Currently in 2.4.1 (in vote)
- Significant improvements
  - Performance
  - New features
  - Cloud ready
    - Sort of...



- Async I/O
  - Event mpm as default
  - Further "modularization"
    - Loadable MPMs
- High performance APR



- More advanced logging
  - new log levels

```
[mpm_event:trace6] ... event.c(1372): connections: 0 ...
```

HTTPD 2.4

- per module/per directory
- <If> supports per-requests conditions
- Generic shared memory provider



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- Standard bandwidth control
  - mod\_ratelimit
- Security enhancements
  - mod\_reqtimeout
- I/O buffering control
  - mod\_buffer
- Support for LUA
  - You guess ... mod\_lua



#### **Reverse proxy**

- Cloud is all about horizontal scalability
- Apache httpd still the most frequently used front-end
- Proxy must be cloud friendly
  - mod\_slotmem\_shm
    - originates from mod\_cluster
  - we just scratch the surface



#### Reverse proxy features

- Generic reverse proxy implementation
- Supports various protocols
  - HTTP, HTTPS, CONNECT, FTP
  - AJP, FastGCI, SCGI
  - FDPASS
- Clustering and failover
- Load balancing
- Performance



## Reverse proxy: What's new in httpd 2.4

- Supports FastCGI and SCGI in balancer
- mod\_proxy\_express
  - OpenShift
- mod\_proxy\_html
- mod\_fcgid
- Support for dynamic configuration
- Runtime change of clusters w/o restarts
  - we still need descent persistence layer



## mod\_proxy\_balancer

- Loadable strategy modules
  - mod\_lbmethod\_heartbeat
  - requests
  - traffic
  - busyness
  - custom
- Goal is to catch up with mod\_jk
  - Improve AJP
  - Support comet with AJP?



#### Reverse proxy

- Connection pooling
- Available for named workers
  - ProxyPass ...
- Reusable connection to origin
  - For threaded MPMs
  - Prefork always use single connection



#### **Load Balancer**

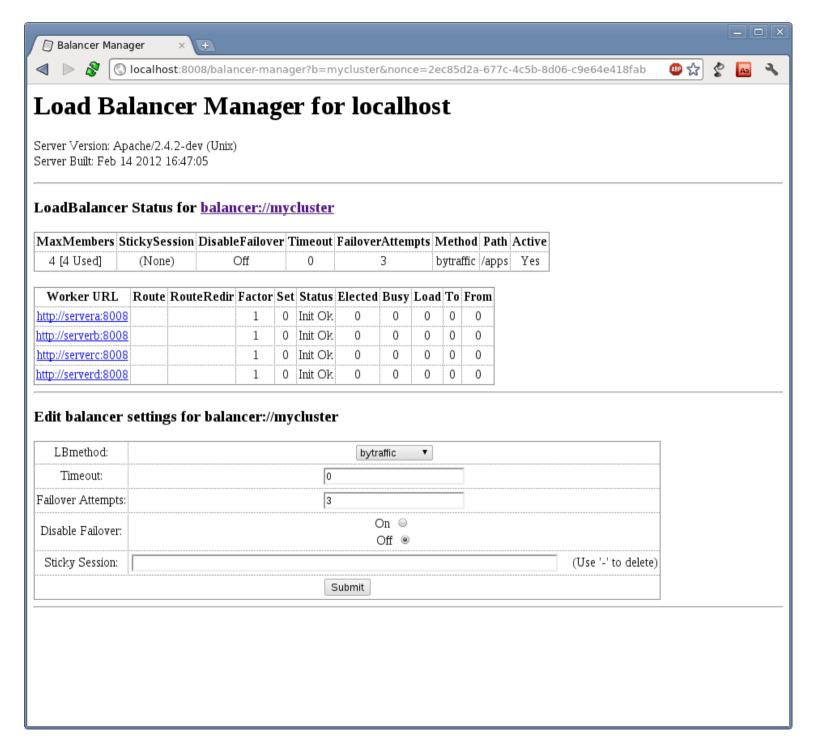
- Cluster sets with failover
- Group your backend servers
  - lower to higher sets first
  - auto switch back
- Hot standby



## **Balancer manager**

- Monitor the status at run time
- Edit capabilities
- CLI usage
- XML or HTML





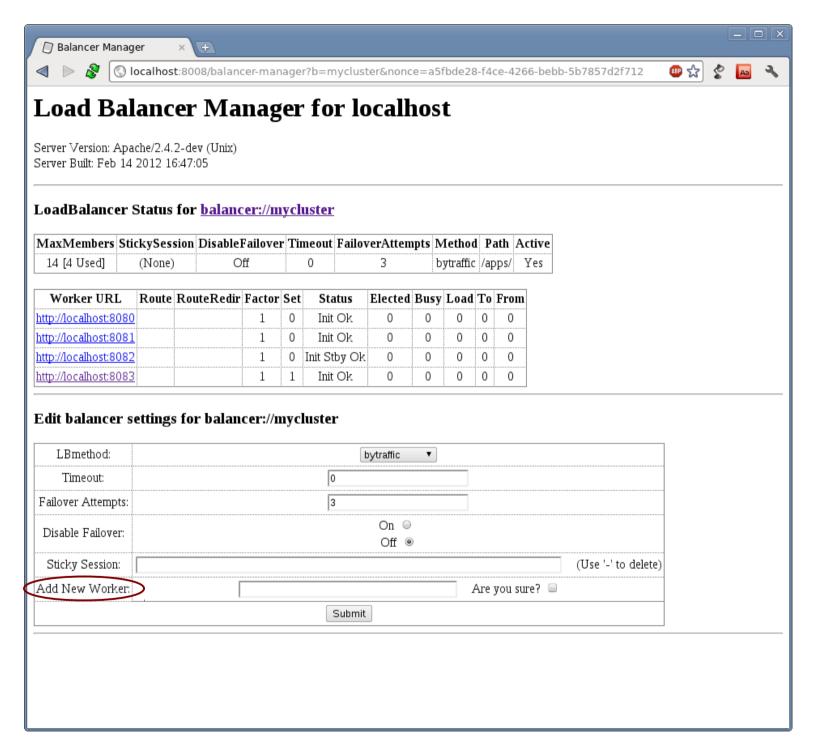


#### **Balancer manager**

```
<Proxy balancer://mycluster>
    BalancerMember http://localhost:8080
    BalancerMember http://localhost:8081
    BalancerMember http://localhost:8082 status=+h
    BalancerMember http://localhost:8083 lbset=1
    ProxySet lbmethod=bytraffic
    ProxySet growth=10

ProxyPass /apps/ balancer://mycluster
ProxyPassReverse /apps/ balancer://mycluster
```







#### **Cloud and Web Servers**

- Horizontal scalability solved
- Minimized concurrency
- Density still matters
- Transaction time is now important
  - Low latency
  - Fast request/response turnover



#### **Conclusion** ...

- httpd 2.4 has painless transition
- Performance is still relevant
- A lot of room for improvement (both for cloud and not)



## Thank you.



