

# Apache 2.2 and mod\_proxy\_balancer

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# Hello World



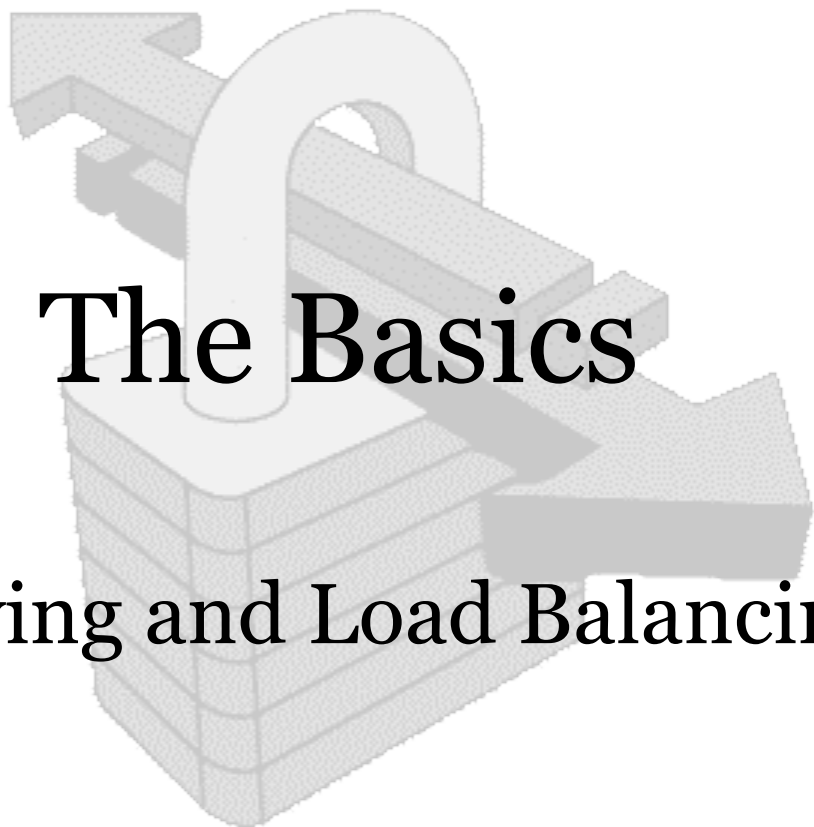
- Introduction
- The Basics
  - A Problem and Possible Solution
  - Review of Proxying
  - Review of Load Balancing
- The Nit and Gritty
  - The Solution
  - Setting Up the Reverse Proxy
  - Setting Up the Load Balancer
  - Pulling Everything Together

# Notice



“Persons attempting to find a motive in this narrative will be prosecuted; persons attempting to find a moral will be banished; persons attempting to find a plot will be shot.”

- Preface for The Adventures of Huck Finn By Mark Twain



# The Basics

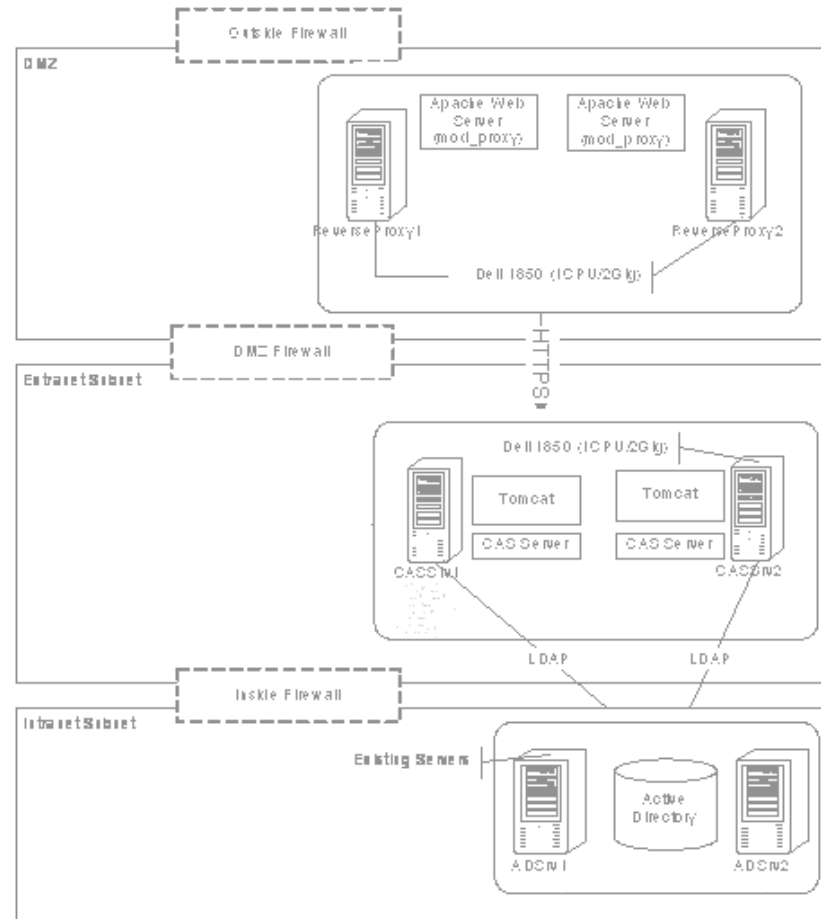
## Proxying and Load Balancing

# The Problem

- **Control Access to Internal Set of Web Servers Providing a Critical Web Application while Managing the Proper Utilization of Web Servers in Question**

# The Problem

Enterprise **Production** Environment  
(Internet / Extranet Webs / Service Tier / Intranet Webs)



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# Possible Solution



- Reverse Web Proxy
  - Control Access to Internal Web Servers
    - Sits @ Gateway to Internal Network
      - Cache Content
      - Control Access
      - Filter Content

# Possible Solution



- Load Balancer
  - Redundancy with Failover for Critical App
    - Controllable Failover
  - Distribution of Work Load for Better Utilization of Web Servers



# Possible Solution

- Apache Specific
  - mod\_proxy and mod\_rewrite
    - Completely Random
  - mod\_proxy and mod\_jk
    - Apache Module for Communication Between Apache and Tomcat Instances
    - Provides Load Balancing of
      - AJP13
      - HTTP
  - mod\_proxy and mod\_proxy\_balancer
    - “One” Solution mod\_proxy\_\* for All Requirements
    - Provides Load Balancing of
      - HTTP
      - FTP
      - AJP13

# Apache 2.2

- Released on 2/Dec/05
- Current Version is 2.2.2
- Continues Redevelopment and Enhancement of mod\_proxy
  - mod\_proxy\_balancer
  - mod\_proxy\_ajp

# mod\_proxy



- Important Feature of Apache Web Server
- Forward or Reverse Proxying
- Modules in Play
  - mod\_proxy
  - mod\_proxy\_http
  - mod\_proxy\_ftp
  - mod\_proxy\_connect
  - mod\_proxy\_html
  - mod\_cache

# mod\_proxy\_balancer



- New to Apache with Version 2.2
- Provides Load Balancing for
  - HTTP
  - FTP
  - AJP13
- Load Balancing Methods
  - Request Counting
  - Weighted Traffic Counting



# The Nit and Gritty

Creating and Putting to Use Our  
Proxy/Load Balancing Server

# The Solution

```
ProxyRequests Off
ProxyPass /wcs balancer://cluster

ProxyPassReverse /wcs http://app1.keplersol.com:8080/wcs
ProxyPassReverse /wcs http://app2.keplersol.com:8080/wcs

<Proxy balancer://cluster>
    BalancerMember http://app1.keplersol.com:8080/wcs
    BalancerMember http://app2.keplersol.com:8080/wcs
</Proxy>
```

# Setting Up Reverse Proxy

```
ProxyRequests Off
ProxyPass /wcs balancer://cluster

ProxyPassReverse /wcs
http://app1.keplersol.com:8080/wcs
ProxyPassReverse /wcs
http://app2.keplersol.com:8080/wcs
```

- ProxyRequests – Enable/Disable Forward Proxying
- ProxyPass – Pass Requests for /wcs Onward
- ProxyPassReverse – Remap Header Information

# Setting Up Load Balancer

```
ProxyPass /wcs balancer://cluster
```

```
<Proxy balancer://cluster>
```

```
    BalancerMember http://app1.keplersol.com:8080/wcs
```

```
    BalancerMember http://app2.keplersol.com:8080/wcs
```

```
</Proxy>
```

- ProxyPass
  - stickysession – Sticky Session Name, if Defined
  - nofailover – If Enabled, Current Session Break if Worker Disabled
  - lbmethod – Load Balancing Method in Use, byrequest or bytraffic
  - timeout – Time to Wait for a Worker
  - maxattempts – Number of Failover Attempts Before Giving Up



# Setting Up Load Balancer

```
ProxyPass /wcs balancer://cluster
```

```
<Proxy balancer://cluster>
```

```
    BalancerMember http://app1.keplersol.com:8080/wcs
```

```
    BalancerMember http://app2.keplersol.com:8080/wcs
```

```
</Proxy>
```

- BalanceMember
  - loadfactor - Worker Load Factor Between 1 and 100 and Defines the Normalized Weighted Load Applied to the Worker.
  - route - Route of the Worker. The Route is a Value Appended to Session ID Name.
  - redirect - Redirection Route of the Worker.

# Setting Up Load Balancer

```
ProxyPass /wcs balancer://cluster stickysession=JSESSIONID  
nofailover=On
```

```
<Proxy balancer://cluster>  
    BalancerMember http://app1.keplersol.com:8080/wcs  
loadfactor=50 route=app1  
    BalancerMember http://app2.keplersol.com:8080/wcs  
loadfactor=50 route=app2  
</Proxy>
```

# Pulling Everything Together

```
RequestHeader unset Accept-Encoding

ProxyHTMLURLMap http://app1.keplersol.com:8080/wcs /wcs
ProxyHTMLURLMap http://app2.keplersol.com:8080/wcs /wcs

<Location /wcs>
    ProxyHTMLURLMap / /wcs/
    ProxyHTMLURLMap / /wcs
    RequestHeader      unset Accept-Encoding
    ProxyPassReverseCookiePath / /wcs
    ProxyPassReverseCookiePath /wcs/ /wcs
</Location>
```

- RequestHeader - Replace, Merge or Remove HTTP Request Headers
- ProxyHTMLURLMap – This directive, part of mod\_proxy\_html, is used for rewriting HTML links
- ProxyPassReverseCookiePath – In usage this directive is similar to ProxyPassReverse, but instead of rewriting header information this directive takes care in rewriting the path string in the Set-Cookie header

# Pulling Everything Together

```
ProxyRequests Off
ProxyPass /wcs balancer://cluster stickysession=JSESSIONID nofailover=On
ProxyPassReverse /wcs http://app1.keplersol.com:8080/wcs
ProxyPassReverse /wcs http://app2.keplersol.com:8080/wcs
ProxyHTMLURLMap http://app1.keplersol.com:8080/wcs /wcs
ProxyHTMLURLMap http://app2.keplersol.com:8080/wcs /wcs

<Location /wcs>
    ProxyPassReverse /
    ProxyHTMLURLMap / /wcs/
    ProxyHTMLURLMap / /wcs
    RequestHeader unset Accept-Encoding
    ProxyPassReverseCookiePath / /wcs
    ProxyPassReverseCookiePath /wcs/ /wcs
</Location>

ProxyPass /wcs balancer://cluster sticksession=JSESSIONID nofailover=On

<Proxy balancer://cluster>
    BalancerMember http://app1.keplersol.com:8080/wcs loadfactor=50
    route=app1
    BalancerMember http://app2.keplersol.com:8080/wcs loadfactor=50
    route=app2
</Proxy>
```

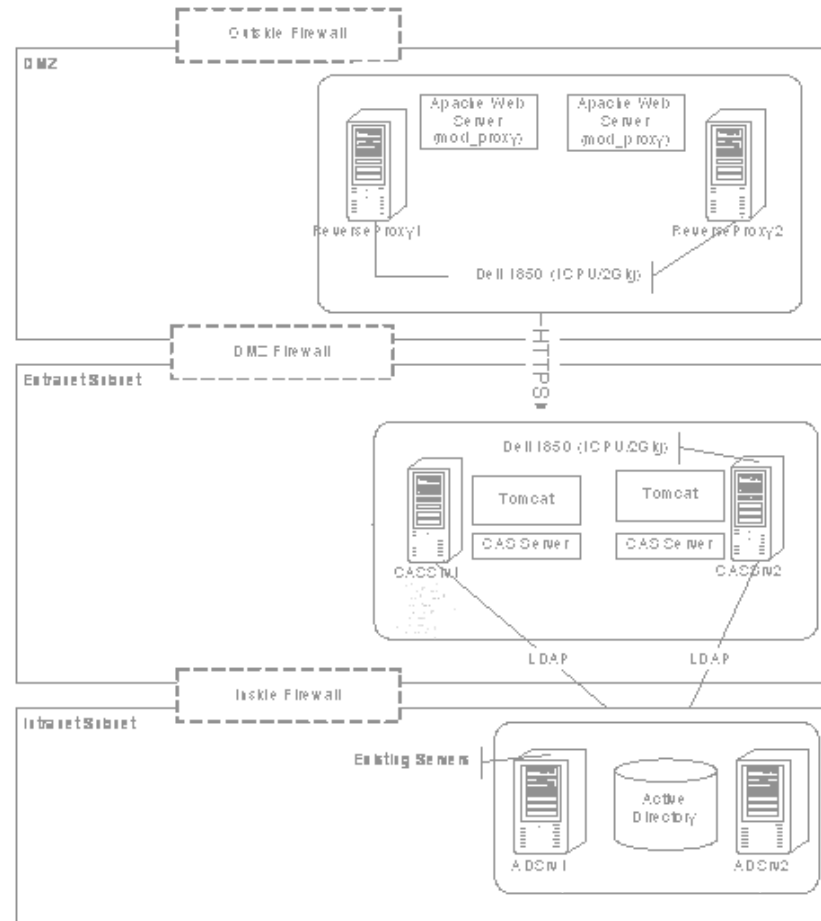
# Pulling Everything Together



- Single Point of Failure at Proxy/Load Balancer
- Need Solution for Proxy/Load Balancer
  - Round Robin DNS

# Pulling Everything Together

Enterprise **Production** Environment  
(Internet / Extranet Webs / Service Tier / Intranet Webs)



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# Review



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# Citation

Kew, Nick *Running a Reverse Proxy with Apache.*

<<http://www.apacheweek.com/features/reverseproxies>>.

*mod\_proxy Documentation*

<[http://httpd.apache.org/docs/2.2/mod/mod\\_proxy.html](http://httpd.apache.org/docs/2.2/mod/mod_proxy.html)>.

*mod\_proxy\_balancer Documentation*

<[http://httpd.apache.org/docs/2.2/mod/mod\\_proxy\\_balancer.html](http://httpd.apache.org/docs/2.2/mod/mod_proxy_balancer.html)>.



# Resources

- This Presentation:
  - [<http://www.weinstein.org/work/presentations/apacheconeuo6/lb/>](http://www.weinstein.org/work/presentations/apacheconeuo6/lb/) (HTML)
  - [<http://www.weinstein.org/work/presentations/apacheconeuo6/lb.pdf>](http://www.weinstein.org/work/presentations/apacheconeuo6/lb.pdf) (PDF)

# Any Questions?

