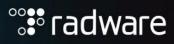


Alteon 34.x

Alteon Level 1
Lab Manual
Content Based SLB

010010101010





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### **Overview**

Alteon blends traditional server load balancing with advanced, application-aware Layer 7 switching to support the design of a highly scalable, optimized application delivery system.

Layer 7 load balancing allows for increased efficiency of the application infrastructure. Layer 7 switching directs its requests at the application layer. It differs from Layer 4 load balancing in a fundamental way because the servers do not to replicate the same content, but effectively "pass the parcel". This allows for fine tuning.

This lab uses Layer 7 switching to differentiate traffic and make forwarding decisions based on content. Using the Alteon and a browser, we define different content-based situations and see how the traffic is forwarded when content is triggered.

In this lab we distinguish between different browsers. We will create a content class to configure the Alteon to send traffic to different servers based on the browser requesting content. At the end of this lab, content load balancing scenarios are offered so you can practice your skills.

**IMPORTANT**: When creating a new content class in a virtual service, be sure to remove unwanted content classes.

# **Objectives**

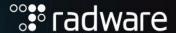
After completing this lab, you should be able to:

- Define content rules for different URL paths.
- Distinguish between different browsers.
- Optional: Use regular expressions to create complex matches.

### **Lab Preparations: Restore Standard Setup**

Before you begin this lab:

- a. You should have successfully completed ADC server load balancing setup (HTTP and HTTPS services).
- b. Access Alteon management port and login.
  - i. Set the group metric to Round Robin
     Configuration → Application Delivery → Server Resources → Server Groups → Edit
     Group1 → Group Setting → SLB Metric
  - ii. Disable persistent binding (pbind). PBind takes precedence over string load balancing.
     Configuration → Application Delivery → Virtual Services → Edit Virtual Service(s) → Persistency → Persistence Mode
- c. Verify your SLB SETUP is properly working before going on.



### **Lab Activities**

Here is a summary of what you will be doing in lab:

- 1. Configure Content SLB URL Path
- 2. Configure Content SLB browser
- 3. Optional: Configure Regular Expression Configuration

## Content SLB – URL Path

Content load balancing based on URL path string selection.

1. Create a new, unique content class.

HINT: A class may contain multiple elements. Each element requires a unique ID.

- a. Content Class ID: IMAGES
- b. Class Type: http
- c. Path ID: images
- d. Path: images



# Configuration à Application Delivery à Traffic Match Criteria à Content Classes

Click "+" to add new content class

- Content Class ID: IMAGES
  - Content Class Type: http
  - URL Path tab:
    - o Click "+" to add new URL Path
    - ID: images
    - Path: images
  - 2. Create a new server group to support the defined content class.
    - a. Server Group ID = Images
      - i. Add WebServer2 to the new server group.
    - b. Create an advanced health check for the group.
      - i. Health Check Type: HTTP(S)
      - ii. Health Check ID: img1
      - iii. Destination Port: 80
      - iv. Path: images/img1.jpg
      - v. Hostname: www.radware.lab
    - c. Assign new health check to the group.
    - d. Apply, synchronize, and save the configuration
    - e. Verify server group Images is operational (UP)
  - a) Configuration → Application Delivery → Server Resources → Server Groups
  - b) Click "+" to add a new group
    - Server Group ID: Images
    - Real Servers tab: add real server WebServer2 to the Selected
    - Group Setting tab: Health Check: img1
    - Submit
  - c) Apply
  - d) Save
  - e) Sync
  - f) Configuration → Overview → Service Status View



- 3. Enable Content Rule SLB for the virtual service IP address.
  - a. Content based service rule number: 10
  - b. Content Class: IMAGES
  - c. Group: Images
- a) Configuration → Application Delivery → Virtual Servers
- b) Edit the virtual server Virt1
- c) Virtual Services tab
  - 1. Edit the virtual service HTTP
  - 2. Content Based Rules tab
    - Click "+" to add a Content Based Rule
    - Rule ID: 10
    - Content Class: IMAGES
    - Group ID: Images
    - Submit
  - 3. Close
- d) Close
- e) Apply
- f) Save
- g) Sync
- 4. Enable statistics collection for Content Rules.

(By default, this is already enabled in Alteon version 32.x.)

- a) Configuration → Application Delivery → Virtual Services → Settings
- b) Statistics tab

Per Service Statistics: Enable

c) Submit, Apply, Save, Sync

# Validate Your Configuration



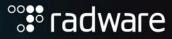
Verify using Statistics

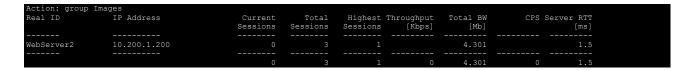
- a. Generate test traffic to the VIP for web servers.
- b. Use browser to http://www.radware.lab/ and http://www.radware.lab/images/img1.jpg
- c. Verify the configuration and check the working status. HINT: Close and reopen the browser several times.

View the statistics in the Alteon to verify activity.



```
/st/slb/virt Virtl 80 all
Virtual server Virtl stats:
Virtual server Virtl service Stats:
Virtual server Virtl server Stats:
Virtual server Virtl s
```





If you do not get expected results after refreshing page by <ctrl>F5, check cache in browser is cleared.

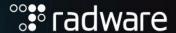
- Chrome: settings → clear browsing data
- FireFox: settings → clear data

Access the image file from the client web browser.

NOTE: Image files on WebServer2 are: img1.jpg, img2.jpg, and img3.jpg. Close/reopen browser several time to http://www.radwarelab/images/img1.jpg



/st/slb/virt Virt1 80 all



# Content SLB - Browser

Content Server Load Balancing based on the User Agent (browser type).

**IMPORTANT**: Before you begin this exercise, be sure SLB setup is verified.



As a student, you have multiple browsers on your RDP PC. In this exercise we are using the content server load balancing to send the user of different browsers to different groups.

- 1. Identify the information you can use in content SLB.
  - a. Access your VIP with two different browsers, Firefox and Chrome.
  - b. Review the information displayed on the page displaying your browser information "Your browser is:"
  - c. Identify the information that can be used in the content SLB to identify the browser. For example:
    - i. Firefox has a string "Firefox"
    - ii. Chrome has a string "Chrome"
    - iii. Don't use something too specific like "Chrome/89.0" because it will only match a specific version of Chrome.
- 2. Configure the content class for the two browsers.
  - a. Configure content class for Firefox

| Parameter                        | Value      |
|----------------------------------|------------|
| Content Class ID                 | Firefox    |
| Content Class Type               | http       |
| Header → ID                      | UserAgent  |
| Header → Header Name Match Type  | Equal      |
| Header → Header Name             | User-Agent |
| Header → Header Value Match Type | Include    |
| Header → Header Value            | Firefox    |
| Header → Case-Sensitive Matching | Enable     |



- a) Configuration → Application Delivery → Traffic Matching Criteria → Content Classes
- b) Click "+" to add a content class.
  - Content Class ID: Firefox
  - Content Class Type: http
  - Header tab
    - Click "+" to add a header
    - ID: UserAgent
    - Header Name Match Type: Equal
    - Header Name: User-Agent
    - Header Value Match Type: Include
    - Header Value: Firefox
    - Case-Sensitive Matching: Enable
    - Submit
  - Close
- c) Apply
- d) Save
- e) Sync



# b. Configure content class for Chrome

| Parameter                        | Value      |
|----------------------------------|------------|
| Content Class ID                 | Chrome     |
| Content Class Type               | http       |
| Header → ID                      | UserAgent  |
| Header → Header Name Match Type  | Equal      |
| Header → Header Name             | User-Agent |
| Header → Header Value Match Type | Include    |
| Header → Header Value            | Chrome     |
| Header → Case-Sensitive Matching | Enable     |

Repeat steps you did for Firefox with the values for Chrome.

- 3. Create two server groups to be used with the content-based rules:
  - a. WebChrome add WebServer1
  - b. WebFirefox add WebServer2
- 4. Configure the content-based load balancing inside the virtual service.
  - a. For Firefox

| Parameter                 | Value                       |
|---------------------------|-----------------------------|
| Enable Content-Based Rule | Checked                     |
| Rule ID                   | 20                          |
| Rule Name                 | Firefox to group WebFirefox |
| Content Class             | Firefox                     |
| Action                    | Group                       |
| Group ID                  | WebFirefox                  |



#### GIII:

- Configuration → Application Delivery → Virtual Services
- Edit the Virtual Server
  - Edit the Virtual Service
  - Content Based Rules tab
    - Add a Content based Rule
    - Enable the new content based rule
    - Rule ID: 20
    - Rule Name: Firefox to group WebFirefox
    - Group ID: WebFirefox
    - Submit
  - Submit
- Close
- Apply
- Save
- Sync
  - b. For Chrome



| Parameter                 | Value                     |
|---------------------------|---------------------------|
| Enable Content-Based Rule | Checked                   |
| Rule ID                   | 30                        |
| Rule Name                 | Chrome to group WebChrome |
| Content Class             | Chrome                    |
| Action                    | Group                     |
| Group ID                  | WebChrome                 |



Repeat the operations for Chrome browser content-based rule.



# **Validate Your Configuration**

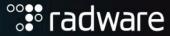
Verify - Statistics

- d. Generate test traffic to the VIP for web servers using Chrome and Firefox.
  - i. Use browser to <a href="http://www.radware.lab/">http://www.radware.lab/</a>
- e. Verify the configuration and check the working status.
  - Close and reopen the browser several times.
  - i. View the statistics in the Alteon to verify activity.



| — СЫ.           |              |          |          |          |            |          |     |            |
|-----------------|--------------|----------|----------|----------|------------|----------|-----|------------|
| /st/slb/        | virt Virt1   | 80 all   |          |          |            |          |     |            |
| Content Rule 30 | ):           |          |          |          |            |          |     |            |
| Action: group V | WebChrome    |          |          |          |            |          |     |            |
| Real ID         | IP Address   | Current  | Total    | Highest  | Throughput | Total BW | CPS | Server RTT |
|                 |              | Sessions | Sessions | Sessions | [Kbps]     | [Mb]     |     | [ms]       |
|                 |              |          |          |          |            |          |     |            |
| WebServer1      | 10.200.1.100 |          |          |          |            | 0.326    |     | 0.00       |
|                 |              |          |          |          |            |          |     |            |
|                 |              |          |          |          |            | 0.326    |     | 0.00       |

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| Virtual server<br>Virtual server<br>Fallback action<br>Action: group G | Virt1 service http<br>n:    |                     |          |         |                      |           |     |                    |     |
|--|-----------------------------|---------------------|----------|---------|----------------------|-----------|-----|--------------------|-----|
| Real ID  | IP Address                  | Current<br>Sessions | Sessions |         | Throughput<br>[Kbps] |           | CPS | Server RTT<br>[ms] | PPS |
| WebServer1   | Web Application Server      | 0                   | 0        | ø       |                      | ø         |     | 0.00               | (   |
| WebServer2   | Web Application Server<br>2 | Ø                   | Ø        | 0       |                      | Ø         |     | 0.00               | (   |
|  |                             | o                   | 0        | ø       | 0                    | ø         | ø   | 0.00               |     |
| Content Rule 10  |                             |                     |          |         |                      |           |     |                    |     |
| Action: group I  |                             |                     | T-4-7    | 112 -1  | *b                   | T-4-1 D:: |     | C B77              |     |
| Real ID  | IP Address                  | Current<br>Sessions | Sessions |         | Throughput<br>[Kbps] |           | CPS | Server RTT<br>[ms] | PPS |
| WebServer2   | Web Application Server<br>2 | 0                   |          | ø       |                      | ø         |     | 0.00               | (   |
|  |                             |                     |          |         |                      |           |     |                    |     |
|  |                             | ø                   | Ø        | Ø       | ø                    | Ø         | 0   | 0.00               | (   |
| Content Rule 20<br>Action: group W                                     |                             |                     |          |         |                      |           |     |                    |     |
| Action: group w<br>Real ID   | IP Address                  | Current             | Total    | Widhest | Throughput           | Total BU  | CDS | Server RTT         | PPS |
| real ID  | Ir Muul Ess                 |                     | Sessions |         | [Kbps]               | [Mb]      |     | [ms]               | rr. |
| WebServer2   | Web Application Server<br>2 | 1                   | 5        | 1       | 8                    | 0.068     |     | 0.00               | 6   |
|  |                             |                     |          |         |                      |           |     |                    |     |
|  |                             | 1                   | 5        | 1       | 8                    | 0.068     | Ø   | 0.00               | 6   |
| Content Rule 30<br>Action: group W                                     |                             |                     |          |         |                      |           |     |                    |     |
| Action: group w<br>Real ID   | IP Address                  | Current             | Total    | Wighest | Throughput           | Total Bu  | CDS | Server RTT         | PPS |
| reat in  | IF MUUI ESS                 |                     | Sessions |         | [Kbps]               |           | CPS | [ms]               | PP: |
| WebServer1   | Web Application Server<br>1 | 1                   | 1        | 1       |                      | 0.511     |     | 0.00               | (   |
|  |                             |                     |          |         |                      |           |     |                    |     |
|  |                             |                     |          | 1       | 0                    | 0.511     | 0   | 0.00               |     |

# **Optional: Configure Regular Expression Configuration**

Use a regular expression to select a real server.

- 1. Disable the current content rules to allow the new to match!
- 2. Continue with the configuration from the previous section.

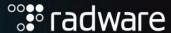
TIP: WebServer1 hosts "alteo.htm". WebServer2 hosts "altea.htm" and "alter.htm".

3. Create content class and content rules using regular expressions to select appropriate webservers.

HINT: Regex "alte[ar].htm" allows selection of the content stored on web2. Inverting this regular expression avoids selection of this machine. Regex "alte[^ar].htm" allows access to "alteo.htm" and to many other "alteX.htm" pages. Skip any setup -- use default case value.

a. WebServer1 content rule

| Parameter                 | Value     |
|---------------------------|-----------|
| Content Class ID          | Alte1     |
| Content Class Type        | http      |
| URL Filename → ID         | alteo     |
| URL Filename → Match Type | Regex     |
| URL Filename → Filename   | alte[^ar] |



### b. WebServer2 content rule

| Parameter                 | Value    |
|---------------------------|----------|
| Content Class ID          | Alte2    |
| Content Class Type        | http     |
| URL Filename → ID         | altear   |
| URL Filename → Match Type | Regex    |
| URL Filename → Filename   | alte[ar] |

### First Rule: alte[^ar]

The regular expression **alte[^ar]** is designed to match any string that starts with "alte" followed by any character that is not 'a' nor 'r'. The notation **[^ar]** specifies a negated character class, meaning it looks for a character that is not in the specified set (**a** or **r**) right after "alte". Matching Examples:

- alteo Matches because it follows "alte" with 'o', which is neither 'a' nor 'r'.
- altez Matches because 'z' is neither 'a' nor 'r'.
- alte1 Matches because the digit '1' is not excluded by the negated character class.

### Non-Matching Examples:

- altear Does not match because it follows "alte" directly with 'a', which is explicitly excluded.
- alter Does not match for the same reason as above, 'r' is excluded.

#### Second Rule: alte[ar]

The regular expression **alte[ar]** looks for matches of strings that start with "alte" immediately followed by 'a' or 'r'. Unlike the first rule, this expression employs a positive character class **[ar]**, explicitly including 'a' and 'r' as valid options for the character following "alte". Matching Examples:

- altea Matches because 'a' is within the specified character set.
- alter Matches because 'r' is also an accepted character according to the expression.

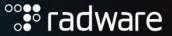
### Non-Matching Examples:

- alteo Does not match because 'o' is not included in the character class [ar].
- altez Does not match for the same reason, 'z' is neither 'a' nor 'r'.
- 4. Create two new server groups to support the defined regular expressions. Add one real server to each server group.

TIP: All real servers supporting string "alte[^ar].htm" need to be in a common group.

- a. Create Server Group = alteo and add real server WebServer1.
- b. Create Server Group = altear and add real server WebServer2.
- 5. Enable content class SLB for the real server group number.

#### Content Based Rules:



### a. Alte1

| Parameter     | Value |
|---------------|-------|
| Rule ID       | 40    |
| Rule Name     | alte1 |
| Content Class | Alte1 |
| Group ID      | alteo |

### b. Alte2

| Parameter     | Value  |
|---------------|--------|
| Rule ID       | 50     |
| Rule Name     | alte2  |
| Content Class | Alte2  |
| Group ID      | altear |

Apply, Save, Sync.

# 6. Validate your configuration



Make sure other content rules are disabled so they do not interfere with these.

- a. Verify configuration by generating test-traffic to your web servers. Test your configuration using PC to send requests.
  - i. <a href="http://www.radware.lab/alteo.htm">http://www.radware.lab/alteo.htm</a>
  - ii. <a href="http://www.radware.lab/alter.htm">http://www.radware.lab/alter.htm</a>
  - iii. http://www.radware.lab/altea.htm
- b. Verify the configuration and check the working status.
  - i. Close and reopen the browser several times.
  - ii. View the statistics in the Alteon to verify activity.





|   |                               |                              | ( 31 ( 3 ) )      |                              |                      |                  |       |                    |     |
|---|-------------------------------|------------------------------|-------------------|------------------------------|----------------------|------------------|-------|--------------------|-----|
| >> Alteon-A - Sei   | rver Load Balancing Sta       | tistics# /stat               | s/slb/virt '      | Virt1 80 a.                  | 11                   |                  |       |                    |     |
| Virtual server V:<br>Virtual server V:<br>Fallback action:  | irt1 service http             |                              |                   |                              |                      |                  |       |                    |     |
| Action: group Gro<br>Real ID  | oup1<br>IP Address            | Current<br>Sessi <b>o</b> ns | Total<br>Sessions | Highest<br>Sessions          | Throughput<br>[Kbps] | Total BW<br>[Mb] | CPS   | Server RTT<br>[ms] | PPS |
| WebServer1  | Web Application Serve         | r 0                          | ø                 | 0                            |                      | 0                |       | 0.00               | 0   |
| WebServer2  | Web Application Serve         | r 0                          | Ø                 | ø                            |                      | Ø                |       | 0.00               | 0   |
|   |                               | 0                            | 0                 | ø                            | 0                    | 0                | ø     | 0.00               | 0   |
| Content Rule 40:<br>Action: group alt   | teo                           |                              |                   |                              |                      |                  |       |                    |     |
| Real ID   | IP Address                    | Current<br>Sessi <b>o</b> ns |                   |                              | Throughput<br>[Kbps] | [Mb]             | CPS   | Server RTT<br>[ms] | PPS |
| WebServer1  | Web Application Serve         | r 0                          | 1                 | 1                            |                      | 0.012            |       | 0.00               | ø   |
|   |                               | 0                            | 1                 | 1                            | 0                    | 0.012            | o     | 0.00               | 0   |
| Content Rule 50:<br>Action: group alt   | taan                          |                              |                   |                              |                      |                  |       |                    |     |
| Real ID   | IP Address                    | Current<br>Sessions          | Total<br>Sessions | Highest<br>Sessi <b>o</b> ns | Throughput<br>[Kbps] | Total BW<br>[Mb] | CPS   | Server RTT<br>[ms] | PPS |
| WebServer2  | Web Application Serve         |                              | 2                 | 1                            |                      | <b>0.0</b> 26    |       | 1.3                | 0   |
|   |                               | 1                            | 2                 | 1                            | 0                    | 0.026            | <br>Ø | 1.3                | 0   |
| Service http sum  | mary statistics               |                              |                   |                              |                      |                  |       |                    |     |
| Current Sessions Total Sessions: Highest Sessions Total Octets: Connections per : Packets per secon Throughput per si | 3<br>: 2<br>4836<br>second: 0 |                              |                   |                              |                      |                  |       |                    |     |

7. Export configuration as a backup. Name the file BACKUP CONTENT LOAD.

Alteon Level 1 Lab Manual

