Alteon Application Switch (AAS) optimizing the delivery of Microsoft Lync 2010

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Introduction

In today’s competitive business landscape, the “always up” requirement from a unified communication service, such as Microsoft Lync Server 2010, has a strong business justification. A planned conference call with a customer that was canceled due to communication issues or an important executive-level update that was delayed or prevented due to a failed communication service are just two examples of the high business impact of a failed communication service. Additionally, the need to efficiently scale-up the unified communication solution to support additional services, increased capacity, and more concurrent users is a challenge that all IT organizations must address when planning and deploying a Microsoft Lync solution.

The Radware Alteon and Microsoft Office Communications Server joint solution ensures Office Communications Server customers solution resilience, efficiency and scale. Radware’s Alteon Application Switch guarantees Office Communications Server maximum availability, scalability, performance and security. Managing traffic for both the Web Service content and SIP based Unified Communication services, Alteon Application Switch provides advanced health monitoring to avoid system down time and advanced traffic management to deliver a best of breed subsystem. With a pay as you grow platform licensing model, Alteon Application Switch ensures long term investment protection facilitating incremental growth demanded by today’s business.

Using Microsoft Lync server 2010 and Radware ADC solutions, customers can receive the following key business benefits:

- A complete highly available and highly-performing unified communication solution - by leveraging Radware ADC solution capabilities, such as server health monitoring and smart load balancing
- Seamless multi-site load balancing through Radware’s patented global server load balancing functionality, enabling transparent disaster recovery fail over and active-active site backup
- The combined Radware-Microsoft solution can support larger number of users with smaller and more cost-effective infrastructure, by offloading resource intensive server tasks to the Radware ADC, such as SSL termination and thus supporting more users per server
- By using the Radware ADC with its content caching and compression features in conjunction with the Microsoft Lync Server 2010, end-users connected over slow speed WAN connections (such as over cellular networks), can benefit from faster response time and a noticeably improved Quality of Experience (QoE)
- Seamless scalability – Radware’s “Pay-as-you-Grow” approach enables adding more capacity to the solution, with no service interruption or system reconfiguration, via Radware’s On-Demand Switch platforms
- A Microsoft certified solution, fully tested and validated.
Microsoft Lync 2010 Overview

Microsoft® Lync™ ushers in a new connected user experience transforming every communication into an interaction that is more collaborative, engaging, and accessible from anywhere. For IT, the benefits are equally powerful, with a highly secure and reliable system that works with existing tools and systems for easier management, lower cost of ownership, smoother deployment and migration, and greater choice and flexibility.

Connected End User Experience

Users seek communications tools that make their work easier and are available anywhere, anytime—including within the context of other applications. Microsoft Lync 2010 provides a single interface that unites voice communications, IM, and audio, video, and Web conferencing into a richer, more contextual offering.

Find and communicate with the right person Rich presence including pictures, skill search, location information, and more gives users the context they need to make smart communication choices including built-in instant messaging capability. Users can add and connect with users on Public IM services such as Windows Live, AOL, and Yahoo! and communicate with them using their single work identity.

Create a more fun work environment by building social connections The rich experience of Lync 2010 helps workers make connections across time and distance with picture-enhanced presence, automatic frequent contacts lists, and activity feeds for keeping up with co-workers.

Make every interaction a near face to face meeting Transform any conversation to include high-resolution video-, application-, and desktop-sharing and be fully present in meetings without making the physical trip.

Communicate with context from Microsoft Office applications The visually compelling experience of Lync 2010 is consistent throughout Microsoft Office and other business applications, including color-coded presence icons, pictures, high-resolution video, and desktop sharing.

Stay connected from virtually anywhere A single experience across the PC, phone, or Web means that users have the choice to connect from many devices.

Benefits

From controlling costs to managing compliance, Microsoft® Lync™ delivers value that speaks to the needs of today’s organizations.
Do more. With less.

Control costs Voice over IP (VoIP) enables communications among geographically dispersed company locations without long distance charges. Integrated audio, video, and Web conferencing helps reduce travel costs as well as the cost of third-party conferencing solutions.

Improve productivity Rich presence information helps employees find each other and choose the most effective way to communicate at a given time. Instead of e-mailing documents back and forth for approval, workers can rely on real-time collaboration through enhanced conferencing with desktop, application, and virtual whiteboard sharing—or contact a collaborator from within Microsoft Office or other applications. The unified Microsoft Lync 2010 client provides access to enterprise voice, enterprise messaging, and conferencing from one simplified interface.

Support the mobile workforce Mobile workers get access to rich Unified Communications tools from practically anywhere with an Internet connection, no VPN needed. An updated Lync Mobile client makes joining and managing conferences, searching the Global Address List, and viewing presence information easy. Rich presence in Lync Server 2010 has been updated with mobile location information, making on-the-go workers easier to find and contact. A single user experience across PC, phone, mobile phone, and browser gives workers more ways to stay in touch.

Gain operational efficiencies By integrating Unified Communications and rich presence into business workflows, latency and delays can be reduced or eliminated. For geographically dispersed teams, group chat can enable efficient, topic-specific, multi-party discussions that persist over time.

Be more responsive to customers, partners, and employees Enhanced delegation through Lync 2010, one-click call routing and management features in Microsoft Lync 2010 Attendant for receptionists, and rich presence information in both help ensure that opportunities are routed to the right person at the right time.

Maintain regulatory compliance Built-in security, encryption, archiving, and call detail records help meet regulatory requirements. By using your own servers and network, you maintain control over sensitive data that would otherwise be transmitted over public telephone networks and third-party conferencing platforms.
Joint Solution Topology example:

Radware’s ADC solution provides high availability and improved performance to the Microsoft Lync 2010 unified communication solution through smart traffic load balancing and redirection. The simplest implementation is done by configuring a virtual IP address on the Alteon ADC, to which all LYNC traffic will go through, and intelligently distributed to the pool of LYNC servers.

The following topology diagram is a generic logical example, demonstrating which Lync server elements can be load balanced by the Alteon ADCs, i.e. Lync Edge servers and Lync Front End Servers.
A more realistic topology would use a single ADC device (or a cluster of two for redundancy), to provide all ADC services to the various Lync server pools, and zones in the network, separating the traffic through VLANs and by using a different virtual IP per VLAN – representing a network zone (e.g. DMZ or LAN), and per server pool.

### Office Communications Server Protocols load balanced by Alteon

#### Front End Server

<table>
<thead>
<tr>
<th>Front End Servers</th>
<th>Lync Server Front-End service</th>
<th>5060</th>
<th>TCP</th>
<th>Optionally used by Standard Edition servers and Front End Servers for static routes to trusted services, such as remote call control servers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front End Servers</td>
<td>Front-End service</td>
<td>5061</td>
<td>TCP (TLS)</td>
<td>Used by Standard Edition servers and Front End pools for all internal SIP communications between servers (MTLS), for SIP communications between Server and Client (TLS) and for SIP communications between Front End Servers and Mediation Servers (MTLS). Also used for communications with Monitoring Server.</td>
</tr>
<tr>
<td>Front End Servers</td>
<td>Front-End service</td>
<td>444</td>
<td>HTTPS</td>
<td>Used for HTTPS communication between the Focus (the Lync Server component that manages conference state) and the individual servers. This port is also used for TCP communication between Front End Servers and Survivable Branch Appliances.</td>
</tr>
<tr>
<td>Front End Servers</td>
<td>Lync Server Front-End service</td>
<td>135</td>
<td>DCOM and remote procedure call (RPC)</td>
<td>Used for DCOM based operations such as Moving Users, User Replicator Synchronization, and Address Book Synchronization.</td>
</tr>
<tr>
<td>Front End Servers</td>
<td>Lync Server IM Conferencing service</td>
<td>5062</td>
<td>TCP</td>
<td>Used for incoming SIP requests for instant messaging (IM) conferencing.</td>
</tr>
<tr>
<td>Front End Servers</td>
<td>Lync Server Web Conferencing service</td>
<td>8057</td>
<td>TCP (TLS)</td>
<td>Used to listen for Persistent Shared Object Model (PSOM) connections from client.</td>
</tr>
<tr>
<td>Front End Servers</td>
<td>Lync Server Audio/Video Conferencing service</td>
<td>5063</td>
<td>TCP</td>
<td>Used for incoming SIP requests for audio/video (A/V) conferencing.</td>
</tr>
</tbody>
</table>
### Front End Servers

<table>
<thead>
<tr>
<th>Service</th>
<th>Port</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lync Server Web Compatibility service</td>
<td>443</td>
<td>HTTPS</td>
<td>Used for communication from Front End Servers to the web farm FQDNs (the URLs used by IIS web components).</td>
</tr>
<tr>
<td>Lync Server Application Sharing service</td>
<td>5065</td>
<td>TCP</td>
<td>Used for incoming SIP listening requests for application sharing.</td>
</tr>
<tr>
<td>Lync Server Conferencing Announcement service</td>
<td>5073</td>
<td>TCP</td>
<td>Used for incoming SIP requests for the Lync Server Conferencing Announcement service (that is, for dial-in conferencing).</td>
</tr>
<tr>
<td>Lync Server Call Park service</td>
<td>5075</td>
<td>TCP</td>
<td>Used for incoming SIP requests for the Call Park application.</td>
</tr>
<tr>
<td>Audio Test service</td>
<td>5076</td>
<td>TCP</td>
<td>Used for incoming SIP requests for the Audio Test service.</td>
</tr>
<tr>
<td>Lync Server Response Group service</td>
<td>5071</td>
<td>TCP</td>
<td>Used for incoming SIP requests for the Response Group application.</td>
</tr>
<tr>
<td>Lync Server Bandwidth Policy Service</td>
<td>5080</td>
<td>TCP</td>
<td>Used for call admission control by the Bandwidth Policy service for A/V Edge TURN traffic.</td>
</tr>
<tr>
<td>Lync Server Web Services</td>
<td>8080</td>
<td>TCP</td>
<td>Front End web services</td>
</tr>
</tbody>
</table>

### Edge Server External Leg

<table>
<thead>
<tr>
<th>Service</th>
<th>Port</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load balancer for Edge Servers</td>
<td>443</td>
<td>TCP</td>
<td>Used for SIP Access Service (VIP1)</td>
</tr>
<tr>
<td>Load balancer for Edge Servers</td>
<td>5061</td>
<td>TCP</td>
<td>Used for Federation mode</td>
</tr>
<tr>
<td>Load balancer for Edge Servers</td>
<td>443</td>
<td>TCP</td>
<td>Used for Web Conferencing service (VIP2)</td>
</tr>
<tr>
<td>Load balancer for Edge Servers</td>
<td>443</td>
<td>TCP</td>
<td>Used for A/V service (VIP3)</td>
</tr>
<tr>
<td>Load balancer for Edge Servers</td>
<td>3478</td>
<td>UDP</td>
<td>STUN/UDP for A/V service</td>
</tr>
</tbody>
</table>
## Edge Server Internal Leg

<table>
<thead>
<tr>
<th>Edge Servers Internal Leg</th>
<th>Load balancer for Edge Servers</th>
<th>443</th>
<th>TCP</th>
<th>Used for Web Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edge Servers Internal Leg</td>
<td>Load balancer for Edge Servers</td>
<td>5061</td>
<td>TCP</td>
<td>SIP TLS</td>
</tr>
<tr>
<td>Edge Servers Internal Leg</td>
<td>Load balancer for Edge Servers</td>
<td>5062</td>
<td>TCP</td>
<td>Internal Edge authentication</td>
</tr>
<tr>
<td>Edge Servers Internal Leg</td>
<td>Load balancer for Edge Servers</td>
<td>3478</td>
<td>UDP</td>
<td>STUN/UDP for A/V service</td>
</tr>
</tbody>
</table>

## CWA Servers

<table>
<thead>
<tr>
<th>CWA Servers</th>
<th>Load balancer for CWA Servers</th>
<th>443</th>
<th>TCP</th>
<th>HTTPS Traffic (Alteon do SSL Offloading)</th>
</tr>
</thead>
</table>

### Table 1.0 – Office Communications Server Protocols load balanced by Alteon

For more information, please visit: [http://lync.microsoft.com/en-us/Pages/default.aspx](http://lync.microsoft.com/en-us/Pages/default.aspx)

## Radware Alteon

Alteon Application Switch Series 4-5 provide breakthrough performance, advanced application acceleration capabilities and on demand scalability needed to effectively meet contemporary network and business needs. Specifically designed for the majority of enterprises and carriers that operate in dynamic, ever-changing environments and face diverse requirements, the Alteon Application Switch provides the extendable throughput they need from 0 to 20Gbps for unparalleled scalability, business availability and performance.

### Breakthrough Performance Delivering best Quality of Experience

Powered by state-of-the-art, custom-designed hardware platforms, the Alteon Series 4-5 ensure the best user experience and fastest response time for your mission-critical applications, resulting in effective, continuous business operation. The Alteon 4008 & 4416 provide up to 4Gbps of scalable throughput capacity while delivering breakthrough performance including 215K Layer 4 and 135K Layer 7 Transactions per Second (TPS). The Alteon 5412, targeting large data centers and
carrier environments packed with four 10GE ports, supports up to 20Gbps of throughput capacity, 2.5 Million DNS queries per second, 535K Layer 4 and 300K Layer 7 Transactions per Second.

The beating heart of Alteon Series 4-5 is the Virtual Matrix Architecture (VMA), a one-of-a-kind technology that unleashes the power of Alteon’s next-generation proprietary platforms. VMA is a fast, robust, and flexible architecture that leverages the entire system’s capacity while providing the parallel performance of distributed processing.

**Integrated Application Acceleration Capabilities**

Alteon Application Switch Series 4-5 deliver a wide set of application acceleration capabilities including SSL offloading, web compression, caching, HTTP multiplexing and TCP optimization. These capabilities are designed to offload servers, address server performance issues, enhance response-time for best QoE and mitigate security risks. By offloading processor intensive operations from servers, Alteon frees the servers’ CPUs to handle additional requests, eliminating the need to buy additional hardware in order to support application processing requirements and reducing CAPEX and OPEX.

The Alteon Application Switch is validated and certified by leading application vendors such as Microsoft, Oracle, SAP, IBM and others. When operating Alteon Application Switch Series 4-5 with Microsoft SharePoint for example, the response time of SharePoint servers is accelerated by 350% and the servers’ CPU load is reduced by 40%. Similar benefits are achieved with other popular applications.

Application acceleration capabilities have greater importance in virtual data centers where applications suffer from increased latency caused by virtualization infrastructure. Alteon reduces applications latency and improves QoE of virtual applications.

**Intelligently Embedding Radware’s ‘On Demand’ Infrastructure Approach**

By embracing Radware’s “Pay-as-you-Grow” approach, you only pay for the exact capacity currently required and prevent over-spending on the initial solution. Throughput capacity, acceleration capabilities and application-aware services can be added on demand to meet new business requirements – with no forklift upgrade of the device and without even restarting it.

The “Pay-as-you-Grow” approach enables you to overcome capacity planning challenges and reduces the risk associated with data center growth for best investment protection. Thanks to platform standardization and simplicity, there are two platforms to cover all of your application needs resulting in fewer spare parts, and less training and operations, to dramatically reduce OPEX.
Radware Alteon and Microsoft Lync Architecture

Tested Network Drawing
Important Implementation Notes

1. There are two pairs of Alteon Application Switches configured for this deployment. A pair of Alteons configured in the DMZ for the Edge Servers and a pair of Alteons configured in the LAN for the Front-End Servers.

2. DNS SRV records for the appropriate domain are used to locate the Lync servers for client connectivity. DNS administration is required to bind an A record for the Lync FQDN, where the FQDN resolves the appropriate Alteon Virtual IP Address (VIP). Alteon has the ability to become the Authoritative responder for this FQDN, normally used in Disaster Recovery designs; in this case the DNS would use a name server record pointing to the Alteon for the authoritative response. Alteon would base the response on the availability, load and proximity information it uses to drive intelligent load distribution.

3. SSL traffic is (TCP.443) can be configured as persistent with SSLID tracking (not configured in this paper)

4. Other traffic is persistent with Source IP LB.

5. Internal legs of the Edge servers routing table for 192.168.1.0/24, 192.168.2.0/24 and 192.168.3.0/24 must be routed statically on the servers to IP 11.1.11.254. Windows command example: ‘route add 192.168.1.0 mask 255.255.255.0 11.1.11.254 –p’

6. Microsoft requires session timeout for 1800 second; Make sure that aging time on the Alteon is set to 30 minutes.

7. Internal Alteon leg route for 192.168.1.0/24 will go through 11.1.10.254 (for CWA, Online Meeting, ABS, dialing conferencing and Group Extensions services)

8. Import the Microsoft Lync certificate to the Alteons both internal and external, to understand how to import the Certificate please refer to the Alteons Manual.

9. To sync configuration after configure the active Alteon please run the command /oper/slb/sync to copy the configuration (L2 and L3 network configuration need to be configured one the Alteon standby device before applying the sync command)

10. The CWA server are doing compression to the web pages by default, the Alteon cannot do the header and body modification when compression is enabled by the CWA servers. To disable compression we use the compression mechanism that tells the servers not to add compression to the web pages.
Software and Hardware

The following is a list of hardware and software tested to verify the interoperability of the presented solution:

Microsoft Windows 2008 R2 x64bits
Radware’s Alteon ODS2 v.28.1.0 (4 units)
Microsoft Lync 2010 Enterprise
Microsoft SQL Server 2005
Microsoft Lync Front End and Edge servers

Configuration

Alteon Internal Active Configuration

Network Configuration

<table>
<thead>
<tr>
<th>Add</th>
<th>Delete</th>
<th>Search</th>
<th>Refresh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VLAN ID</td>
<td>Name</td>
<td>Ports</td>
<td>STG</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
<td>-------</td>
<td>-----</td>
</tr>
<tr>
<td>1</td>
<td>Default VLAN</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>205</td>
<td>TAG.192.168.1.x</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

```
/c/port 2
tag ena
pvid 205
/c/l2/vlan 1
learn ena
def 1
/c/l2/vlan 205
ena
name "205"
learn ena
def 2
/c/l2/stg 1/clear
/c/l2/stg 1/add 1 205
```

IP Interfaces

<table>
<thead>
<tr>
<th>Add</th>
<th>Delete</th>
<th>Search</th>
<th>Refresh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interface ID</td>
<td>IP Address</td>
<td>Mask/Prefix</td>
<td>Broadcast Address</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>--------------</td>
<td>------------------</td>
</tr>
<tr>
<td>2</td>
<td>192.168.1.2</td>
<td>255.255.255.0</td>
<td>192.168.1.256</td>
</tr>
</tbody>
</table>

```
/c/l3/if 2
ena
ipver v4
addr 192.168.1.2
vlan 205
/c/l3/gw 1
ena
ipver v4
addr 192.168.1.254
```
Sync Configuration

/c/slb/sync
  prios d
certs e
  state e
/c/slb/sync/peer 1
en
  addr 192.168.1.3

Real Servers Configuration

Real Servers Configuration Table

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>IP Version</th>
<th>IP Address</th>
<th>Max Connections</th>
<th>MAC Address</th>
<th>VLAN</th>
<th>Port</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lync.Server1</td>
<td>4</td>
<td>192.168.1.21</td>
<td>200000</td>
<td>00:50:56:b5:00:df</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Lync.Server2</td>
<td>4</td>
<td>192.168.1.22</td>
<td>200000</td>
<td>00:50:56:b5:00:e1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Lync.EDGE.Internal.1</td>
<td>4</td>
<td>11.1.11.1</td>
<td>200000</td>
<td>00:50:56:b5:01:e1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Lync.EDGE.Internal.1</td>
<td>4</td>
<td>11.1.11.2</td>
<td>200000</td>
<td>00:50:56:b5:01:e1</td>
<td>0</td>
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</tr>
<tr>
<td>14</td>
<td>Lync.Director.Server.1</td>
<td>4</td>
<td>192.168.1.23</td>
<td>200000</td>
<td>00:50:56:b5:00:e3</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Lync.Director.Server.2</td>
<td>4</td>
<td>192.168.1.24</td>
<td>200000</td>
<td>00:50:56:b5:00:e5</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Lync.CWA.Server.1</td>
<td>4</td>
<td>192.168.1.40</td>
<td>200000</td>
<td>00:50:56:b5:00:d1</td>
<td>0</td>
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<tr>
<td>17</td>
<td>Lync.CWA.Server.2</td>
<td>4</td>
<td>192.168.1.41</td>
<td>200000</td>
<td>00:50:56:b5:00:e6</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

/c/slb/real 1
  ena
  ipver v4
  rip 192.168.1.21
  name "Lync.Server1"
/c/slb/real 2
  ena
  ipver v4
  rip 192.168.1.22
  name "Lync.Server.2"
/c/slb/real 3
  ena
  ipver v4
  rip 11.1.11.1
  name "Lync.EDGE.Internal.1"
/c/slb/real 4
  ena
  ipver v4
  rip 11.1.11.2
  name "Lync.EDGE.Internal.1"
/c/slb/real 14
  ena
  ipver v4
  rip 192.168.1.23
  name "Lync.Director.Server.1"
/c/slb/real 15
  ena
Alteon Load balancing Microsoft Lync Servers

Thursday, January 05, 2012

ipver v4
rip 192.168.1.24
name "Lync.Director.Server.2"

/c/slb/real 16
ena
ipver v4
rip 192.168.1.40
name "Lync.CWA.Server.1"

/c/slb/real 17
ena
ipver v4
rip 192.168.1.41
name "Lync.CWA.Server.2"

Server Groups Configuration

```
<table>
<thead>
<tr>
<th>Server Group ID</th>
<th>Name</th>
<th>SLB Mode</th>
<th>Health Check</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lync.User.DOAP-0000</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Lync.User.DOAP-0001</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Lync.User.DOAP-0002</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Lync.User.DOAP-0003</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>Lync.User.DOAP-0004</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
<tr>
<td>6</td>
<td>Lync.User.DOAP-0005</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
<tr>
<td>7</td>
<td>Lync.User.DOAP-0006</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
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<tr>
<td>8</td>
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</tr>
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</tr>
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<td>10</td>
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<td>roundrobin</td>
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<td>14</td>
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</tr>
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<td>roundrobin</td>
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<td>21</td>
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<td>22</td>
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<td>roundrobin</td>
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<td>23</td>
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<td>24</td>
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<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
<tr>
<td>25</td>
<td>Lync.User.DOAP-0024</td>
<td>roundrobin</td>
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<td>None</td>
</tr>
<tr>
<td>26</td>
<td>Lync.User.DOAP-0025</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
<tr>
<td>27</td>
<td>Lync.User.DOAP-0026</td>
<td>roundrobin</td>
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<td>28</td>
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<td>29</td>
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<td>roundrobin</td>
<td>top</td>
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<tr>
<td>30</td>
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<td>roundrobin</td>
<td>top</td>
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<td>31</td>
<td>Lync.User.DOAP-0030</td>
<td>roundrobin</td>
<td>top</td>
<td>None</td>
</tr>
</tbody>
</table>
```

/c/slb/group 1
ipver v4
content "5060"
add 1
add 2
name "Lync.frontend.SIP.5060"
/c/slb/group 2
   ipver v4
   metric roundrobin
   content "444"
   add 1
   add 2
   name "Lync.frontend.HTTPS.conf.444"

/c/slb/group 3
   ipver v4
   metric roundrobin
   content "443"
   add 1
   add 2
   name "Lync.frontend.HTTPS.443"

/c/slb/group 4
   ipver v4
   metric roundrobin
   content "5061"
   add 1
   add 2
   name "Lync.frontend.MTLS.5061"

/c/slb/group 5
   ipver v4
   metric roundrobin
   content "135"
   add 1
   add 2
   name "Lync.frontend.DCOM.135"

/c/slb/group 7
   ipver v4
   metric roundrobin
   content "80"
   add 16
   add 17
   name "Lync.CWA.Group"

/c/slb/group 9
   ipver v4
   content "5061"
   add 14
   add 15
   name "Lync.Directors"

/c/slb/group 10
   ipver v4
   add 1
   add 2
   name "Proxy.to.FE.4443"

/c/slb/group 11
   ipver v4
   add 1
   add 2
   name "FE.IM.REQ.8057"

/c/slb/group 12
   ipver v4
   add 1
   add 2
   name "fe.web.service.8080"
/c/slb/group 14
  ipver v4
  add 1
  add 2
  name "FE.CALL.ADM.448"

/c/slb/group 15
  ipver v4
  add 1
  add 2
  name "FE.App.Share.5065"

/c/slb/group 16
  ipver v4
  add 1
  add 2
  name "FE.monitoring.5069"

/c/slb/group 17
  ipver v4
  add 1
  add 2
  name "FE.RES.GROUP.5071"

/c/slb/group 18
  ipver v4
  add 1
  add 2
  name "FE.SIP.REQ.5072"

/c/slb/group 19
  ipver v4
  add 1
  add 2
  name "FE.CONF.ANOUN.5073"

/c/slb/group 20
  ipver v4
  add 1
  add 2
  name "FE.SIP.REQ.CALL.PRK.5075"

/c/slb/group 21
  ipver v4
  add 1
  add 2
  name "FE.AUDIO.TEST.5076"

/c/slb/group 22
  ipver v4
  add 1
  add 2
  name "FE.AV.AGE.TURN.TRAFF.5080"

/c/slb/group 23
  ipver v4
  add 3
  add 4
  name "EDGE.Replication.4443"

/c/slb/group 24
  ipver v4
  add 3
  add 4
  name "EDGE.INT.443"

/c/slb/group 25
Alteon Load balancing Microsoft Lync Servers

```
ipver v4
add 3
add 4
name "EDGE.INT.5061"
/c/slb/group 26
   ipver v4
   add 3
   add 4
   name "EDGE.INT.5062"
/c/slb/group 27
   ipver v4
   add 3
   add 4
   name "GE.INT.UDP.STUN.3478"
/c/slb/group 30
   ipver v4
   add 3
   add 4
   name "EDGE.INT.8057"
/c/slb/group 31
   ipver v4
   add 14
   add 15
   name "Lync.Director.5060"
```

**Alteon process directions**

```
/c/slb/port 2
   client ena
   server ena
   proxy ena
```
## Virtual Servers and Services Configuration

### Virtual Servers

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>IP Address</th>
<th>Domain Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lync.frontend.DCOM: 135</td>
<td>192.168.1.200</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>2</td>
<td>Lync.frontend.HTTPS: 443</td>
<td>192.168.1.200</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>3</td>
<td>Lync.frontend.HTTPS.conf 444</td>
<td>192.168.1.200</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>4</td>
<td>Lync.frontend.SIP: 5060</td>
<td>192.168.1.200</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>5</td>
<td>Lync.frontend.MTLS: 5061</td>
<td>192.168.1.200</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>6</td>
<td>Lync.FE.SIP.app.sharing: 5065</td>
<td>192.168.1.200</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>7</td>
<td>Lync.edge.internal.UDP.STUN: 3478</td>
<td>192.168.1.230</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>8</td>
<td>Lync.edge.internal: 443</td>
<td>192.168.1.230</td>
<td></td>
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<tr>
<td>9</td>
<td>Lync.edge.internal: 5062</td>
<td>192.168.1.230</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>10</td>
<td>Lync.edge.internal: 8057</td>
<td>192.168.1.230</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>11</td>
<td>Lync.edge.internal: 5061</td>
<td>192.168.1.230</td>
<td></td>
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</tr>
<tr>
<td>12</td>
<td>Lync.proxy: 4443</td>
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<td>Service Name</td>
<td>VIP Address</td>
<td>Group</td>
<td>Protocol</td>
<td>Load Balancing Method</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>---------------------</td>
<td>-------</td>
<td>-----------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>FE.monitoring.5069</td>
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<td></td>
<td>enabled</td>
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<tr>
<td>EDGE.Replication.4443</td>
<td>192.168.1.230</td>
<td></td>
<td></td>
<td>disabled</td>
</tr>
<tr>
<td>Lync.IM.Request.8057</td>
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<td></td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Lync.call.admission.control</td>
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<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Lync.Responses.group</td>
<td>192.168.1.200</td>
<td></td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Lync.SIP.Request</td>
<td>192.168.1.200</td>
<td></td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Lync.Conferencing.animate</td>
<td>192.168.1.200</td>
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<td></td>
<td>enabled</td>
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<tr>
<td>Lync.SIP.Request.callpark</td>
<td>192.168.1.200</td>
<td></td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Lync.Audio.test.service</td>
<td>192.168.1.200</td>
<td></td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Lync.AV.traffic.turn</td>
<td>192.168.1.200</td>
<td></td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Lync.External.Web.services</td>
<td>192.168.1.200</td>
<td></td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>Lync.Directors.vip</td>
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</tr>
<tr>
<td>Lync.CWA.vip</td>
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</tr>
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</table>

```
/c/slb/virt 1
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.frontend.DCOM.135"
/c/slb/virt 1/service 135 basic-slb
  group 5
  pbind clientip norport
tmout 30
/c/slb/virt 2
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.frontend.HTTPS.443"
/c/slb/virt 2/service 443 https
  group 3
  pbind clientip norport
tmout 30
direct dis
/c/slb/virt 3
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.frontend.HTTPS.conf.444"
/c/slb/virt 3/service 444 basic-slb
  group 2
  pbind clientip norport
```
tmout 30
/c/slb/virt 4
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.frontend.SIP.5060"
/c/slb/virt 4/service 5060 sip
  group 1
  pbind clientip norport
  tmout 30
/c/slb/virt 5
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.frontend.MTLS.5061"
/c/slb/virt 5/service 5061 basic-slb
  group 4
  pbind clientip norport
  tmout 30
/c/slb/virt 6
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.FE.SIP.app.sharing.5065"
/c/slb/virt 6/service 5065 basic-slb
  group 15
  pbind clientip norport
  tmout 30
/c/slb/virt 7
  ena
  ipver v4
  vip 192.168.1.230
  vname "Lync.edge.internal.UDP.STUN.3478"
/c/slb/virt 7/service 3478 basic-slb
  group 27
  protocol udp
  pbind clientip norport
  tmout 30
/c/slb/virt 8
  ena
  ipver v4
  vip 192.168.1.230
  vname "Lync.Edge.internal.443"
/c/slb/virt 8/service 443 https
  group 24
  pbind clientip norport
  tmout 30
/c/slb/virt 9
  ena
  ipver v4
  vip 192.168.1.230
  vname "Lync.Edge.internal.5062"
/c/slb/virt 9/service 5062 basic-slb
  group 26
  pbind clientip norport
  tmout 30
/c/slb/virt 10
ena
ipver v4
vip 192.168.1.230
vname "Lync.Edge.internal.8057"
/c/slb/virt 10/service 8057 basic-slb
group 30
pbind clientip norport
tmout 30
/c/slb/virt 11
ena
ipver v4
vip 192.168.1.230
vname "Lync.Edge.Internal.5061"
/c/slb/virt 11/service 5061 basic-slb
group 25
pbind clientip norport
tmout 30
/c/slb/virt 12
ena
ipver v4
vip 192.168.1.200
vname "Lync.proxy.4443"
/c/slb/virt 12/service 4443 basic-slb
group 10
pbind clientip norport
/c/slb/virt 13
ena
ipver v4
vip 192.168.1.200
vname "FE.monitoring.5069"
/c/slb/virt 13/service 5069 basic-slb
group 16
pbind clientip norport
/c/slb/virt 15
ena
ipver v4
vip 192.168.1.230
vname "EDGE.Replication.4443"
/c/slb/virt 15/service 4443 basic-slb
group 23
pbind clientip norport
/c/slb/virt 31
ena
ipver v4
vip 192.168.1.200
vname "Lync.IM.Request.8057"
/c/slb/virt 31/service 8057 basic-slb
group 11
pbind clientip norport
tmout 30
/c/slb/virt 32
ena
ipver v4
vip 192.168.1.200
vname "Lync.call.admition.control"
/c/slb/virt 32/service 448 basic-slb
group 14
  pbind clientip norport
tmout 30
/c/slb/virt 33
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.Responese.group"
/c/slb/virt 33/service 5071 basic-slb
  group 17
  pbind clientip norport
/c/slb/virt 34
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.SIP.Request"
/c/slb/virt 34/service 5072 basic-slb
  group 18
  pbind clientip norport
/c/slb/virt 35
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.Conferencing.anoun"
/c/slb/virt 35/service 5073 basic-slb
  group 19
  pbind clientip norport
tmout 30
/c/slb/virt 36
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.SIP.Request.call.park"
/c/slb/virt 36/service 5075 basic-slb
  group 20
  pbind clientip norport
/c/slb/virt 37
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.Audio.test.service"
/c/slb/virt 37/service 5076 basic-slb
  group 21
  pbind clientip norport
/c/slb/virt 38
  ena
  ipver v4
  vip 192.168.1.200
  vname "Lync.AV.age.turn.traffic"
/c/slb/virt 38/service 5080 basic-slb
  group 22
  pbind clientip norport
/c/slb/virt 40
  ena
  ipver v4
vip 192.168.1.200
  vname "Lync.External.Web.services"
/c/slb/virt 40/service 8080 http
  group 12
  pbind clientip norport
/c/slb/virt 41
  ena
  ipver v4
  vip 192.168.1.160
  vname "Lync.Directors.vip"
/c/slb/virt 41/service 5061 basic-slb
  group 9
  pbind clientip norport
tmout 20
/c/slb/virt 41/service 5060 sip
  group 31
  pbind clientip norport
tmout 20
/c/slb/virt 43
  ena
  ipver v4
  vip 192.168.1.170
  vname "Lync.CWA.vip"
/c/slb/virt 43/service 443 https
  group 7
  rport 80
  dbind ena
/c/slb/virt 43/service 443 https/http
  comppol 2
  httpmod 2
/c/slb/virt 43/service 443 https/ssl
  srvrcert cert 7
  sslpol 6

Layer 7 Modification

/c/slb/layer7/httpmod 1
  ena
  name "http to https"
/c/slb/layer7/httpmod 1/rule 1 text
  ena
  name "htto.to.https"
  directn resp
  body include
  action replace "FROMTEXT=http://sp.r2radware.com"
  "TOTEXT=https://sp.r2radware.com"
/c/slb/layer7/httpmod 2
  ena
  name "htto.to.https.lync.cwa"
/c/slb/layer7/httpmod 2/rule 2 text
  ena
  name "htto.to.https.cwa"
  directn resp
  body include
  action replace "FROMTEXT=http://cwa.lyncradware.com"
  "TOTEXT=https://cwa.lyncradware.com"
VRRP Configuration

/c/l3/vrrp/on
/c/l3/vrrp/vr 2  
en
   ipver v4
   vrid 131
   if 2
   prio 150
   addr 192.168.1.1
   share dis
/c/l3/vrrp/vr 2/track
   l4pts e

/c/l3/vrrp/vr 3  
en
   ipver v4
   vrid 132
   if 2
   prio 150
   addr 192.168.1.200
   share dis
/c/l3/vrrp/vr 3/track
   l4pts e

/c/l3/vrrp/vr 4  
en
   ipver v4
   vrid 134
   if 2
   prio 150
   addr 192.168.1.230
   share dis
/c/l3/vrrp/vr 4/track
   l4pts e

/c/l3/vrrp/vr 5  
en
   ipver v4
   vrid 135
   if 2
   prio 150
   addr 192.168.1.160
   share dis
/c/l3/vrrp/vr 5/track
   l4pts e

/c/l3/vrrp/vr 6  
en
Alteon Load balancing Microsoft Lync Servers

Thursday, January 05, 2012

ipver v4
vrid 136
if 2
prio 150
addr 192.168.1.170
share dis
/c/l3/vrrp/vr 6/track
l4pts e
/c/l3/vrrp/group
ena
ipver v4
vrid 140
if 2
prio 200
share dis
/c/l3/vrrp/group/track
l4pts ena

PIP Configuration

/c/slb/pip/type vlan
/c/slb/pip/type port
/c/slb/pip/add 192.168.1.99 2

Compression Configuration

/c/slb/accel/compress
on
/c/slb/accel/compress/comppol 2
name "cwa"
minsize 1
ena

SSL Configuration

/c/slb/ssl/certs/key 7
/c/slb/ssl/certs/import key "7" text
-----BEGIN RSA PRIVATE KEY-----
Proc-Type: 4,ENCRYPTED
DEK-Info: DES-EDE3-CBC,B1AB1DB1C8EC9267
eSxvk7g7rRTUd+0w9/m3BdvN0Af0PT4bgI2jl/iQM6ELmttt6MuaXSRODxh2sS0F
EXQJi3BV9s9exOFomschkYyMDoM75GRy0xoG9atWb081nTFBPvHBND5xBXW2nydi7
/k5V5QZk7CtMaXjT9q7CCMaster2000/Pu2KtkXMpt4SZTeUskq9G4+6QQBBSJeGpjt
TPFkZ/jXnwplaGy/YW/Kl77TWmHCCrCTdsW0DRxwu8VcYe6YCe5aZIUm6gVo+eS
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MsqHOpBu37QYuGkgytBN1xv1kz00ICx605mncH3SaVcO2T7YcQ9bi/GKUWkGcMw
+i+YYUFF6rZtISAz6W5esLaW6Ps170NT+zIcjoKVNWRJ383f1qWdMaNpIctgr
MbyGZ+/k7mKeP9/TzzD59brXP50fWsdjFlfED4Y9HsmqkJNJQ4ElvAIXUrqu59d
9oCK5et54VfTdcgwxEFT2UBYPFb13e8z9qhiiKMSj02DesyVTkTgpRZWzo
ChNIEswaACoGtTqFysiezeneMEIGF0og4XQkqCI老太太26kBohnW05xzfB4gAIkU/7Hu
NauS/El5E2GAgjeVupg4atUYoKoOTz/7xUXV75dQnACxYRG+onjauimUpGF9fs
ql8mArHj8tsOU4xJ5LkCb1yK9oaHE1JnUytIs1atOwo=
----- RSA PRIVATE KEY -----

[/c/slb/ssl/certs/srvcert 7
/c/slb/ssl/certs/import srvcert "7" text

-----BEGIN CERTIFICATE-----
MIIFCTCBH2qAwIBAgIKEKQ/twAAAADANFDBgqkhkiG9w0BAQUFADBMSMrwEQYK
CZIimiZPyLQGBGRDY29zMRswGQKCZIimiZPyLQGBGRYLBHu3Y3HdhemcUxHJaC
BgNvBAMTFwM5bnNzYmR3YXJiLUxZTknENQy1DQTaeFw0xMTA4MDMzU0MDVaw0x
MzA4MDIxMzU0MDVamHUIxCzAIBgNVBAYTakIMMQwwCgYDVQQIEwNUTFYxEDA0BgNV
BAcTB1fiRbEF2aXYxEDA0BgNVBAtTB1hYXJzdcmcUxExZHZdhemcUxERBzNVBAQcT
ck9DU1NcZIcnMxHDAABAqNBVAMB2N3YS5seW5jcmFkd2FyZS5jbi2WZ8wDQYKhoZIhvcN
AQEBQAQg0AMIGJAgQBAk6MjUzODAEJj41MjUzODAEJj41MjUzODAExMTA5MDMxMzU0MDVa
-----BEGIN CERTIFICATE-----
/c/slb/ssl/sslpol 6
name "Lync.SSL.policy"

-----END CERTIFICATE-----
Alteon Internal Standby Configuration

**Network Configuration**

<table>
<thead>
<tr>
<th>VLAN ID</th>
<th>Name</th>
<th>Ports</th>
<th>STG</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Default VLAN</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>205</td>
<td>TAG.192.168.1.x</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

```
/c/port 1
  pvid 201
/c/port 2
  pvid 202
/c/l2/vlan 1
  learn ena
  def 0
/c/l2/vlan 101
  ena
  name "VLAN 101"
  learn ena
  def 0
/c/l2/vlan 201
  ena
  name "201"
  learn ena
  def 1
/c/l2/vlan 202
  ena
  name "202"
  learn ena
  def 2
```

**IP Interfaces**

```
/c/l3/if 2
  ena
  ipver v4
  addr 192.168.1.3
  vlan 205
/c/l3/gw 1
  ena
  ipver v4
  addr 192.168.1.254
```

**Sync Configuration**

```
/c/slb/sync
  prios d
certs e
state e
/c/slb/sync/peer 1
```
VRRP Configuration

/en/3/vrrp/on
/en/3/vrrp/vr 2
  ena
  ipver v4
  vrid 131
  if 2
  prio 150
  addr 192.168.1.1
  share dis
/en/3/vrrp/vr 2/track
  l4pts e
/en/3/vrrp/vr 3
  ena
  ipver v4
  vrid 132
  if 2
  prio 150
  addr 192.168.1.200
  share dis
/en/3/vrrp/vr 3/track
  l4pts e
/en/3/vrrp/vr 4
  ena
  ipver v4
  vrid 134
  if 2
  prio 150
  addr 192.168.1.230
  share dis
/en/3/vrrp/vr 4/track
  l4pts e
/en/3/vrrp/vr 5
  ena
  ipver v4
  vrid 135
  if 2
  prio 150
  addr 192.168.1.160
  share dis
/en/3/vrrp/vr 5/track
  l4pts e
/en/3/vrrp/vr 6
  ena
  ipver v4
  vrid 136
  if 2
  prio 150
  addr 192.168.1.170
  share dis
Alteon Load balancing Microsoft Lync Servers

Thursday, January 05, 2012

Alteon External Active Configuration

Network Configuration

<table>
<thead>
<tr>
<th>Add</th>
<th>Delete</th>
<th>Search</th>
<th>Refresh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VLAN ID</td>
<td>Name</td>
<td>Ports</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Default VLAN</td>
<td>2-16</td>
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<tr>
<td></td>
<td>99</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>201</td>
<td>TAG.11.1.21.x</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>202</td>
<td>TAG.11.1.10.x</td>
<td>1</td>
</tr>
</tbody>
</table>

/c/port 1
  tag ena
  pvid 201
/c/port 2
  tag ena
  pvid 202
/c/l2/vlan 1
  learn ena
  def 0
/c/l2/vlan 201
  ena
  name "201"
  learn ena
  def 1
/c/l2/vlan 202
  ena
  name "202"
  learn ena
  def 2
/c/l2/stg 1/clear
/c/l2/stg 1/add 1 201 202

IP Interfaces

<table>
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<tr>
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<tbody>
<tr>
<td></td>
<td>Interface ID</td>
<td>IP Address</td>
<td>Mask/Prefix</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11.1.21.11</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11.1.10.11</td>
<td>255.255.255.0</td>
</tr>
</tbody>
</table>

/c/l3/if 1
  ena
  ipver v4
  addr 11.1.21.11
  mask 255.255.255.0
  broad 11.1.21.255
Alteon Load balancing Microsoft Lync Servers

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vlan 201
/c/l3/if 2
  ena
  ipver v4
  addr 11.1.10.11
  mask 255.255.255.0
  broad 11.1.10.255
  vlan 202
/c/l3/gw 1
  ena
  ipver v4
  addr 11.1.21.254
/c/l3/route/ip4
  add 192.168.1.0 255.255.255.0 11.1.10.254 2

Real Server Configuration

Real Servers

<table>
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<tr>
<th>Add</th>
<th>Bulk Edit</th>
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<th>Search</th>
<th>Refresh</th>
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<td></td>
</tr>
<tr>
<td>ID</td>
<td>Name</td>
<td>IP Version</td>
<td>IP Address</td>
<td>Max Connections</td>
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<tr>
<td>-----</td>
<td>-----------</td>
<td>-------------</td>
<td>-------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>1</td>
<td>edge.server.1</td>
<td>4</td>
<td>11.1.10.1</td>
<td>200000</td>
</tr>
<tr>
<td>2</td>
<td>edge.server.2</td>
<td>4</td>
<td>11.1.10.2</td>
<td>200000</td>
</tr>
<tr>
<td>3</td>
<td>frontend.internal.Lync.vip</td>
<td>4</td>
<td>192.168.1.200</td>
<td>200000</td>
</tr>
<tr>
<td>4</td>
<td>meeting.Server.1</td>
<td>4</td>
<td>11.1.10.5</td>
<td>200000</td>
</tr>
<tr>
<td>5</td>
<td>meeting.Server.2</td>
<td>4</td>
<td>11.1.10.6</td>
<td>200000</td>
</tr>
<tr>
<td>6</td>
<td>av.server.1</td>
<td>4</td>
<td>11.1.10.3</td>
<td>200000</td>
</tr>
<tr>
<td>7</td>
<td>av.server.2</td>
<td>4</td>
<td>11.1.10.4</td>
<td>200000</td>
</tr>
</tbody>
</table>

/c/slb/real 1
  ena
  ipver v4
  rip 11.1.10.1
  name "edge.server.1"
/c/slb/real 2
  ena
  ipver v4
  rip 11.1.10.2
  name "edge.server.2"
/c/slb/real 5
  ena
  ipver v4
  rip 192.168.1.200
  name "frontend.internal.Lync.vip"
/c/slb/real 6
  ena
  ipver v4
  rip 11.1.10.5
  name "meeting.Server.1"
/c/slb/real 7
  ena
  ipver v4
  rip 11.1.10.6
name "meeting.Server.2"
/c/slb/real 8
  ena
  ipver v4
  rip 11.1.10.3
  name "av.server.1"
/c/slb/real 9
  ena
  ipver v4
  rip 11.1.10.4
  name "av.server.2"
/c/slb/real 10
  ena
  ipver v4
  rip 192.168.1.170
  name "CWA.Service"

Servers Group Configuration

![Server Groups Table]

/c/slb/group 1
  ipver v4
  add 1
  add 2
  name "Lync.edge.HTTPS.SIP.443"
/c/slb/group 3
  ipver v4
  add 5
  name "Lync.edge.lm.443"
/c/slb/group 4
  ipver v4
  add 6
  add 7
  name "Lync.edge.meeting.443"
/c/slb/group 5
  ipver v4
  add 8
  add 9
  name "Lync.edge.av.443"
/c/slb/group 6
  ipver v4
  add 10
  name "CWA.Service.group"

Alteon process directions

/c/slb/port 1
  client ena
Virtual Servers Configuration

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>IP Address</th>
<th>Domain Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lync.edge.SIP.HTTPS.443</td>
<td>11.1.21.200</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>2</td>
<td>Lync.edge.av.HTTPS.443</td>
<td>11.1.21.201</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>3</td>
<td>Lync.edge.STUN.3478</td>
<td>11.1.21.201</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>4</td>
<td>Lync.edge.meeting.HTTPS.443</td>
<td>11.1.21.202</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>5</td>
<td>Im.Proxy</td>
<td>11.1.21.203</td>
<td></td>
<td>enabled</td>
</tr>
<tr>
<td>6</td>
<td>CWA.Service.vip</td>
<td>11.1.21.170</td>
<td></td>
<td>enabled</td>
</tr>
</tbody>
</table>

/c/slb/virt 1
  ena
  ipver v4
  vip 11.1.21.200
  vname "Lync.edge.SIP.HTTPS.443"
/c/slb/virt 1/service 443 https
  group 1
  pbind clientip norport
tmout 30
/c/slb/virt 2
  ena
  ipver v4
  vip 11.1.21.201
  vname "Lync.edge.av.HTTPS.443"
/c/slb/virt 2/service 443 https
  group 5
  pbind clientip norport
tmout 30
/c/slb/virt 3
  ena
  ipver v4
  vip 11.1.21.201
  vname "Lync.edge.STUN.3478"
/c/slb/virt 3/service 3478 basic-slb
  group 5
protocol udp
pbind clientip norport
tmout 30

/c/slb/virt 4
  ena
  ipver v4
  vip 11.1.21.202
  vname "Lync.edge.meeting.HTTPS.443"

/c/slb/virt 4/service 443 https
group 4
  pbind clientip norport
tmout 30

/c/slb/virt 5
  ena
  ipver v4
  vip 11.1.21.203
  vname "lm.Proxy"

/c/slb/virt 5/service 443 https
group 3
  rport 4443
  pbind clientip norport
tmout 30

/c/slb/virt 6
  ena
  ipver v4
  vip 11.1.21.170
  vname "CWA.Service.vip"

/c/slb/virt 6/service 443 https
group 6
  pbind clientip norport
tmout 30

/c/slb/virt 6/service 443 https/ssl
/c/sys/access/https/cert WebManagementCert
/c/sys/access/https/https e

Sync Configuration

/c/slb/sync
  prios d
certs e
  state e
/c/slb/sync/peer 1
  ena
  addr 11.1.10.12

VRRP Configuration

/c/l3/vrrp/on
/c/l3/vrrp/vr 1
  ena
  ipver v4
  vrid 141
  if 1
  prio 200
  addr 11.1.21.10
/c/l3/vrrp/vr 1/track
  ifs e
  ports e
/c/l3/vrrp/vr 2
  ena
  ipver v4
  vrid 142
  if 2
  prio 200
  addr 11.1.10.10
/c/l3/vrrp/vr 2/track
  ifs e
  ports e
/c/l3/vrrp/vr 3
  ena
  ipver v4
  vrid 143
  if 1
  prio 200
  addr 11.1.21.200
/c/l3/vrrp/vr 3/track
  ifs e
  ports e
/c/l3/vrrp/vr 4
  ena
  ipver v4
  vrid 144
  if 1
  prio 200
  addr 11.1.21.201
/c/l3/vrrp/vr 4/track
  ifs e
  ports e
/c/l3/vrrp/vr 5
  ena
  ipver v4
  vrid 145
  if 1
  prio 200
  addr 11.1.21.202
/c/l3/vrrp/vr 5/track
  ifs e
  ports e
/c/l3/vrrp/vr 6
  ena
  ipver v4
  vrid 146
  if 1
  prio 200
  addr 11.1.21.203
/c/l3/vrrp/vr 6/track
  ifs e
  ports e
/c/l3/vrrp/vr 7
  ena
  ipver v4
vrid 1
if 1
prio 200
addr 11.1.21.170

**PIP Configuration**

/c/slb/pip/type vlan
/c/slb/pip/type port
/c/slb/pip/add 11.1.10.170 1

**Alteon External Standby Configuration**

**Network Configuration**

<table>
<thead>
<tr>
<th>Add</th>
<th>Delete</th>
<th>Search</th>
<th>Refresh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VLAN ID</td>
<td>Name</td>
<td>Ports</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Default VLAN</td>
<td>empty</td>
</tr>
<tr>
<td></td>
<td>201</td>
<td>TAG.11.1.21.x</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>202</td>
<td>TAG.11.1.10.x</td>
<td>2</td>
</tr>
</tbody>
</table>

/c/port 1
  pvid 201
/c/port 2
  pvid 202
/c/l2/vlan 1
  learn ena
def 0
/c/l2/vlan 201
  ena
  name "201"
  learn ena
def 1
/c/l2/vlan 202
  ena
  name "202"
  learn ena
def 2

**IP Interfaces**

<table>
<thead>
<tr>
<th>Add</th>
<th>Delete</th>
<th>Search</th>
<th>Refresh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Interface ID</td>
<td>IP Address</td>
<td>Mask/Prefix</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11.1.21.12</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11.1.10.12</td>
<td>255.255.255.0</td>
</tr>
</tbody>
</table>

/c/l3/if 1
  ena
  ipver v4
  addr 11.1.21.12
mask 255.255.255.0
broad 11.1.21.255
vlan 201
/c/l3/if 2
  ena
  ipver v4
  addr 11.1.10.12
  mask 255.255.255.0
  broad 11.1.10.255
  vlan 202
/c/l3/gw 1
  ena
  ipver v4
  addr 11.1.21.254
/c/l3/route/ip4
  add 192.168.1.0 255.255.255.0 11.1.10.254 2

VRRP Configuration

/c/l3/vrrp/vr 1
  ena
  ipver v4
  vrid 141
  if 1
  addr 11.1.21.10
/c/l3/vrrp/vr 1/track
  ifs e
  ports e
/c/l3/vrrp/vr 2
  ena
  ipver v4
  vrid 142
  if 2
  addr 11.1.10.10
/c/l3/vrrp/vr 2/track
  ifs e
  ports e
/c/l3/vrrp/vr 3
  ena
  ipver v4
  vrid 143
  if 1
  addr 11.1.21.200
/c/l3/vrrp/vr 3/track
  ifs e
  ports e
/c/l3/vrrp/vr 4
  ena
  ipver v4
  vrid 144
  if 1
  addr 11.1.21.201
/c/l3/vrrp/vr 4/track
  ifs e
  ports e
/c/l3/vrrp/vr 5
ena
ipver v4
vrid 145
if 1
addr 11.1.21.202
/c/l3/vrrp/vr 5/track
  ifs e
  ports e
/c/l3/vrrp/vr 6
ena
ipver v4
vrid 146
if 1
addr 11.1.21.203
/c/l3/vrrp/vr 6/track
  ifs e
  ports e
/c/l3/vrrp/vr 7
ena
ipver v4
vrid 1
if 1
addr 11.1.21.170
Technical Support

Radware offers technical support for all of its products through the Radware Certainty Support Program. Please refer to your Certainty Support contract, or the Radware Certainty Support Guide available at:
http://www.radware.com/content/support/supportprogram/default.asp.

For more information, please contact your Radware Sales representative or:
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International: +972(3) 766-8666