Testing and Integration Group

Deploying Alteon NG with Citrix XenDesktop

Version 1.0
September 24, 2015
Author – Elad Kurzweil
# TABLE OF CONTENTS

**INTRODUCTION** ........................................................................................................................................................................... 3
**CITRIX XENDESKTOP** ........................................................................................................................................................................ 3
**ALTEON NEXT GENERATION ADC** .................................................................................................................................................. 3
**ALTEON NG: COMPLETE APPLICATION SLA ASSURANCE** ........................................................................................................... 4
**ARCHITECTURALLY DESIGNED TO ENSURE APPLICATION SLA** .................................................................................................. 4
**FULL APPLICATION SLA VISIBILITY WITH RADWARE’S APPLICATION PERFORMANCE MONITORING (APM)** ............................... 4
**FASTVIEW™ WEB PERFORMANCE OPTIMIZATION (WPO)** ............................................................................................................ 5
**UNIQUE ATTACK MITIGATION ARCHITECTURE** ............................................................................................................................. 5

**COMPLETE LAYER 4-7 FEATURE SET** ............................................................................................................................................. 5

<table>
<thead>
<tr>
<th>SOFTWARE AND HARDWARE</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIGURATION OVERVIEW</td>
<td>6</td>
</tr>
<tr>
<td>IMPORTANT NOTES</td>
<td>7</td>
</tr>
</tbody>
</table>

**INSTALLATION AND CONFIGURATION** ............................................................................................................................................... 8

<table>
<thead>
<tr>
<th>ALTEON NG ACTIVE</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Configuration</td>
<td>8</td>
</tr>
<tr>
<td>VRRP Configuration</td>
<td>9</td>
</tr>
<tr>
<td>Compression Configuration</td>
<td>10</td>
</tr>
<tr>
<td>SSL Configuration</td>
<td>10</td>
</tr>
<tr>
<td>SLB Configuration</td>
<td>12</td>
</tr>
<tr>
<td>Proxy NAT Configuration</td>
<td>15</td>
</tr>
<tr>
<td>Sync Configuration</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ALTEON NG BACKUP</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Configuration</td>
<td>16</td>
</tr>
<tr>
<td>VRRP Configuration</td>
<td>17</td>
</tr>
<tr>
<td>Sync Configuration</td>
<td>17</td>
</tr>
<tr>
<td>PIP Configuration</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CITRIX STOREFRONT SERVERS CONFIGURATION</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITRIX DDC SERVERS CONFIGURATION</td>
<td>20</td>
</tr>
</tbody>
</table>

**TECHNICAL SUPPORT** ...................................................................................................................................................................... 22
Introduction

This document contains best practice information about the setup, configuration, and customization of Alteon NG Application Delivery Controller (ADC) with Citrix XenDesktop.

Citrix XenDesktop lets you create virtualized desktops quickly and easily and then make them available to users on demand through any device.

Alteon NG ADC provides mission critical availability, enhanced security, simple scalability, and high operational resiliency.

Alteon NG ADC provides hardware acceleration SSL offloading to enhance performance by reducing the SSL load on Citrix servers. Additionally, Alteon NG boosts performance by enabling Content-Intelligent Connection Management, which multiplexes client and server connections, and improves service throughput by reducing Citrix server loads.

In a Citrix XenDesktop environment, Alteon NG provides high availability and smart traffic management, and also keeps persistence records for certain connections to always be directed to the same server for a specified period of time, ensuring that the work flow in the XenDesktop environment is fully preserved.

Citrix XenDesktop

Citrix XenDesktop delivers virtual Windows apps and desktops as secure mobile services. With XenDesktop, IT can mobilize a business while reducing costs by centralizing control and security of intellectual property. XenDesktop can deliver full desktops or just the apps to any device. XenDesktop enables the delivery of a native touch-enabled mobile experience that is optimized for the type of device, as well as the network. XenDesktop is built on a 3rd-generation FlexCast Management Architecture (FMA), and is the only hybrid cloud-ready platform that separates the management plane from the workload to enable IT to securely deliver published apps on-premises, and manage workers and mobile workspaces either on-premises or in the cloud.

Alteon Next Generation ADC

Alteon NG is Radware’s next generation application delivery controller (ADC) and the only load balancer that guarantees application SLA. It provides advanced, end-to-end local and global load balancing capabilities for all Web, cloud, and mobile based applications. The Alteon NG load balancer combines best-of-breed application delivery plus advanced services to companies with key application infrastructure challenges affecting Web applications such as heavier, more complex Web content; mobility, and BYOD, and the migration to the cloud.
Alteon NG: Complete Application SLA Assurance

The Alteon next generation (NG) ADC solution is the industry’s only ADC built from the ground up to ensure application SLA at all times. It innovatively leverages several next-generation services that are not available in any other ADC on the market:

- Alteon NG is architecturally designed to ensure application SLA by delivering full resource isolation between different applications, while eliminating resources from being maxed-out.
- Alteon NG incorporates application performance monitoring (APM) capabilities that provide full visibility into application SLA that can be broken down by application, transaction, or location.
- Alteon NG integrates FastView, the industry’s most advanced Web performance optimization (WPO) technology, which accelerates application response for higher conversion rates, revenues, and productivity.
- Alteon NG is part of unique attack mitigation architecture, allowing accurate detection and mitigation of the most advanced cyber-attacks.

Architecturally Designed to Ensure Application SLA

Alteon NG enables companies to flexibly allocate a separate virtual ADC (vADC) instance per application, service, or department. Each vADC instance is fully isolated from neighboring instances and has independent CPU cores, memory, network stack, management control, and operating system versions. As a result, the Alteon ADC ensures complete fault isolation and predictable application SLA for all delivered Web applications at all times. In addition, next-generation services can be quickly and safely enabled without impacting the performance of other service applications.

Alteon NG is designed to dynamically scale when necessary. It can scale up on-demand, meaning you can add more throughput, services, and vADCs with no hardware modifications. It can also scale out-of-the-box on demand by leveraging an external, extensible resource pool (such as server infrastructure) for computational intensive NG services. As a result, Alteon NG allows for cost-effective consolidation, eliminating the purchase of additional ADC units. It provides easy, fast provisioning of additional vADC instances with no service interruption at a fraction of the cost of buying a physical ADC.

Full Application SLA Visibility with Radware’s Application Performance Monitoring (APM)

Radware’s Application Performance Monitoring (APM) module provides real-time tracking of application SLA by measuring real-user transactions, including real errors. Embedded in Alteon NG, Radware’s APM is an out-of-the-box solution that does not require synthetic
transaction scripting or additional installation, thereby reducing deployment time and costs. Radware’s APM intuitively tracks SLA by location, user, and application and transaction type, to expedite root cause analysis. In addition, it provides historical reports based on user-defined SLA that feature granular analysis allowing the measurement of the delay per transaction phase, including data center time, network latency, and browser rendering time.

**FastView™ Web Performance Optimization (WPO)**

Radware’s FastView™ technology, part of Alteon NG, is the most advanced application acceleration technology in the industry. By adding Web performance optimization (WPO) capabilities on top of the standard application acceleration features, it accelerates application response time up to 40%. FastView acceleration treatments are optimized according to each user, end-user device, and browser, with specific optimization for mobile devices. As a result, FastView increases conversion rates and revenues and also improves productivity and customer loyalty.

In addition, FastView™ automatically optimizes new applications, new application versions, and new application modules, reducing manual code optimization while letting you focus on core business competence.

**Unique Attack Mitigation Architecture**

A key component of Radware’s Attack Mitigation Network (AMN), Alteon NG delivers the best Web application security coverage. It leverages a unique Defense Messaging mechanism that efficiently mitigates attacks by signaling attack information to Radware’s DefensePipe cloud service and DefensePro, a data center attack mitigator located at the network perimeter.

The integration of advanced Web Application Firewall (WAF) capabilities, such as a unique out-of-path WAF deployment mode and auto-policy generation features, enable risk free implementation. In addition, full instance isolation and resource reservation ensures ADC resources. Even when WAF policies are updated, there is no impact on application availability and performance. This results in a secured Web application with guaranteed SLA. Finally, Alteon NG features a built-in authentication gateway that provides single sign-on (SSO) capabilities by supporting RADIUS, Active Directory, LDAP, and RSA SecurID, and simplifies the user experience without compromising application security.

**Complete Layer 4-7 Feature Set**

Alteon NG delivers a complete set of Layer 4-7 services to ensure the availability, performance, and security of mission-critical applications in the local and cloud data centers. These extend to traffic redirection, content modification, persistency, redundancy, advanced health monitoring, and global server load balancing (GSLB). In addition, Alteon NG integrates advanced modules
such as bandwidth management and link load balancing, reducing data center footprint and simplifying deployment.

**Software and Hardware**

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

- Alteon version 30.2/Alteon VA 30.2
- Citrix XenDesktop v.7.6 FP2
- Windows Server 2008 r2

**Configuration Overview**

The following example illustrates a configuration of the Alteon NG load balancer to manage and monitor the Citrix XenDesktop environment using StoreFront and DDC (Desktop Delivery Controller) servers. In this implementation, client traffic goes to the StoreFront, and in the back-end from the StoreFront to DDC servers. All traffic is managed by the Alteon NG load balancer to ensure client persistency all the way to the StoreFront and DDC servers. The Alteon NG terminates the SSL sessions in order to offload the CPU processing of the StoreFront servers.
Important Notes

- HTTP compression should be activated on the Alteon platform
- The persistency mechanism on the Citrix StoreFront servers is performed by the Alteon Insert Cookie mechanism (which is Radware’s recommendation for Citrix load balancing)
- The URL for the StoreFront server for this example is storefront.ctradware.com, pointing to 192.168.141.200 (StoreFront VIP).
- The URL for the DDC server for this example is deliver.ctradware.com, pointing to 192.168.141.205 (StoreFront VIP).
- In this scenario, client NAT is enabled on the Alteon platform. Citrix XenDesktop requires having the Client IP address to be fully functional. To do this, you use X-Forwarded-For (the HTTP header field is a de facto standard for identifying the originating IP address of a client connecting to a Web server through an HTTP proxy or load balancer).
- Citrix XenDesktop requires session timeout for 20 minutes. Ensure that the aging time on the Alteon platform is set to 20 minutes.
• To sync the configuration, after configuring the active Alteon platform, run the command /oper/slb/sync to copy the configuration.

    **Note:** You must configure the Layer 2 and Layer 3 network configuration on the Alteon standby device before applying the sync command.

• Throughout this document, reference is made to the **Radware** pre-configured certificate, but you can import a certificate or create a new certificate in Alteon. For more information on exporting, importing, or creating a certificate, see the *Alteon Application Switch Operating System Application Guide*.

**Installation and Configuration**

This section describes how to install and configure the solution.

**Alteon NG Active**

**Network Configuration**

```
/c/sys/mmgmt
dhcp disabled
addr 192.168.142.3
mask 255.255.255.0
broad 192.168.142.255
gw 192.168.142.254
ena
/c/sys/access
tnet ena
/c/port 1
pvid 5
/c/l2/vlan 1
    learn ena
def 0
/c/l2/vlan 5
    ena
    name "VLAN 5"
    learn ena
def 1
/c/l2/stg 1/clear
/c/l2/stg 1/add 1 2 5
```
/c/sys/access/sshd/ena
/c/sys/access/sshd/sshv1 dis
/c/sys/access/sshd/on
/c/l3/if 1
  ena
  ipver v4
  addr 192.168.141.3
  vlan 5
/c/l3/gw 1
  ena
  ipver v4
  addr 192.168.141.254

VRRP Configuration

/c/l3/vrrp/vr 11
  ena
  ipver v4
  vrid 11
  if 1
  prio 250
  addr 192.168.141.4
/c/l3/vrrp/vr 12
  ena
  ipver v4
  vrid 12
  if 1
  prio 250
  addr 192.168.141.200
/c/l3/vrrp/vr 13
  ena
  ipver v4
  vrid 13
  if 1
  prio 250
  addr 192.168.141.205
Compression Configuration

/c/slb/accel/compress
on
/c/slb/accel/compress/comppol 1
  minsize 1
  ena

SSL Configuration

/c/slb/certs/key 1
/c/slb/certs/import key "1" text
-----BEGIN RSA PRIVATE KEY-----
Proc-Type: 4,ENCRYPTED
DEK-Info: DES-EDE3-CBC,1D470BDDA99ECEF1
YVGgPQA6k0SS2K9DDA4MFPt9k7an7FKX1VSW5uVY+2LvkE1FzcedeG8UKiVH5Dj/o xo/Ak9kzD/X/Zh1M0CuPi5VzPiaJrbpS0XFy+h2o/o/23MuAjn8a7m3Sa4BcaAP+
gQw5xOs+PLZYBsDkHh7tlp7ND8S+J0VZH9wV+5CTkJuIoC/I/t9/XPhNYG10bdZM lAmeE5xV13YyEr5KF8ONFyQvL6WyIr31CpzMbae2E60me9WSofFgyayD WuVBa0LM IYQm8srttUWTx+8CUQPtS3abGBMv5WcZx1aAQNyZRMRe1cLAM3rC8GqKB1l1x59w 1KTjsAm6yVz7lszp7fDxscD8KxkRizdaTa0SznGoVPEeCT2DiYvG07CpKOwAgVv IcQ0/gEmM34r0sWeZ0sIMjWflgVyFzUH/3V1QHLs65mh04Lmx6UWhVURmsIMXPr BqDLHJYXAm0Wm0wjcgju5XTK5Ja+HeR4wEmZqBEXYpbOTEytoPVEgq0vN8NvJGF QQp62b85/1UfWwK1+zluqI34unF50eb3fjko0VUq90Q7F7N2xznRAK52nx1WYND q3qIWvcUIIpiVEI7czznKF8GFT7pWtKrQxClEgg/sp491SnyP3kPTxvgBcsQGd ERA1GvxeEg12rMCsGyT0Xzdd+A1sXb48viKXNV0V47fvPPp3MLQXzpU5mKZBM PVPLkL34OQ/qb8K1sOS6IC+j32dRGrxY6SIamYQNu6c9ex/9n+dMT2ynAZgxsAdP R15QRbsB1ljd6svAxWvHvujORrmDGfNhRmsgjNbSxdFTW16XosGagG4E6uPjX2/ S+SmoxIfZbdwyc908JDU4iJM+7vOBIWyt8YuD/UVkHiCrbGCYLnYO+aUPyPpMb hswMZ75j4hkvcRi87BLVM2x6Ax5i1vFwKaeJRLQrCl3cBlsv7GxX2RoyM5Z2X2e AMjvV6IZvS6e6hSgXlnnWiqv3M3jNrzQ2sy4lwSzrW071Zd5jrB2y9jrd/016d6 u+S1rNDuV7h4yIYAXEcPlvcc4VAe0DWhI0qy6T6gF8T8131UFT54sAI/sQPDdm9 J9SpWN4xURGLX9rlxr8eGWKe1Rj0GR/sp27Q5zxsNiE5Xj83HVI3VJykJm04NC+X rchx5f6i9Oyaaw0Wa4NkPEhTou8uGhiXmQtommmSAO8OjadDVkcJca6nx4yRjdi4 uVoepod2cJFzb18/zeP0LAF+4cT1gag8iaTf0ccBNvPhsHuXp9RuYdfvgMMUobRj XXAEtNIDs961QUUjf2Mr6rog3qxNCtnHbQe6/6uZdhvYzH4dbbviWhR4YohbVef
Deploying Alteon NG with Citrix XenDesktop

September 24, 2015

Page 11
PMU/s44lyVVLxQfBgcQ06HPLEk3zwIkkxeFDPoVi4pgolN7Cr6GtpwKk+nYqLoL
XyIOJPEWZdyZ9mVaZZphcW7QoLXfgdmfPMhH8z2xNCu6hYMHN/af26FY5KjTED
N++k+2FamLtBuXUCAwEAAaOB9jCB8zAPBgNVHRMBAf8EBTADAQH/MBEGCWCSSAGG
+EIBAQQEAwICRDAyBglghkgBhvhCAQ0EJRYjQWx0ZW9uL05vcnRlbCBHZW5lc2Nf0
ZWoqQ2VydGlmaWNhdGUwHQYDVR0OBYEFJUnsHFT6ZERI8o8fd32FMZU/2NtMG0G
A1UdIwRmMGSAFJUnsHFT6ZERI8o8fd32FMZU/2NtoUakRDBCMSeWydVQQDBhzedG9y
ZWZyb250LmN0cmFk2FyZS5jb20/xCzAJBngNBAYTAklMMRAwDgYDVQQKDAdS
YWR3YXJlggRV4sZAMAsgGA1UdDwQEAwIC5DANBgkqhkiG9w0BAQsFAAOCAQEARkDX
LVOpO8G5wy1vW2TKARUDRy0QYt1kMZj+GWZddL5Rpm9s1CKZSOrNEV7QllkcvGor
jFfdNcbvf2i3PqrbbV22EVGBUc3Qkusu8kgq8zibxnsyGEJIc1Inbunc7FsFw7
hTq0LgvXso/8v0rzJHPw16pY6VLag1mnwFlsLm1AckQo/psvkxt1iMt7CF2HsEA
E+PB0qtNd8DTNT5zsITT2/G7sMZWfG6wqVUbq5uch/Besm3ISvWqfrrzzDrDlm1
HiLlr2bSdSHOW91y6x2z3OFjV110JEVeIrKkrKbOU/F7FoxAB7+ZneGr6jaLx
HW05M5jcI0p8Zr5vg==
------END CERTIFICATE------

/c/slb/ssl
  on
/c/slb/ssl/sslpol 1
    name "SSL.Policy"
    ena

SLB Configuration

/c/slb/accel/caching
  on
/c/slb
  on
/c/slb/adv
  direct ena
  vstat ena
  submac "ena"
/c/slb/real 1
  ena
  ipver v4
  rip 192.168.141.21
  name "Citrix.WebAPP1"
/c/slb/real 2
    ena
    ipver v4
    rip 192.168.141.22
    name "Citrix.WebAPP2"
/c/slb/real 3
    ena
    ipver v4
    rip 192.168.141.34
    name "DDC.1"
/c/slb/real 4
    ena
    ipver v4
    rip 192.168.141.37
    name "DDC.2"
/c/slb/group 1
    ipver v4
    metric roundrobin
    add 1
    add 2
    name "xenDesktop.group"
/c/slb/group 2
    ipver v4
    metric roundrobin
    add 3
    add 4
    name "xenDesktop.DDC.Group"
/c/slb/port "1"
    client ena
    server ena
    proxy ena
/c/slb/port "2"
    client ena
    server ena
    proxy ena
/c/slb/virt 1
ena
ipver v4
vip 192.168.141.200
vname "StoreFront.VIP"
/c/slб/virt 1/service 443 https
group 1
rport 80
dbind forceproxy
tmout 20
ptmout 20
/c/slб/virt 1/service 443 https/http
comppol 1
xforward ena
connmgt ena 20
/c/slб/virt 1/service 443 https/ssl
srvrcert cert 1
sslpol 1
/c/slб/virt 2
ena
ipver v4
vip 192.168.141.205
vname "DDC.VIP"
/c/slб/virt 2/service 80 http
group 2
rport 80
pbind clientip norport
dbind forceproxy
tmout 20
ptmout 20
/c/l3/hamode vrrp
/c/slб/virt 1/service 443 https/pbind cookie insert
/c/slб/virt 1/service 443 https/http/rcount 1
/c/slб/layer7/httpmod 1
/c/slб/gslb
off
hostlk ena
Proxy NAT Configuration

/c/slb/pip/type port
/c/slb/pip/add 192.168.141.201 1

Sync Configuration

/c/slb/sync
  prios d
  certs e
/c/slb/sync/peer 1
  ena
  addr 192.168.141.5
Alteon NG Backup

Note: To enable Alteon configuration sync, use the command /cfg/slb/sync (run this command on the primary Alteon device once configuration of the backup device is completed as described below). Otherwise, SLB configuration on the backup device should be done manually, the same as on the active device.

Network Configuration

```
/c/sys/mmgmt
  dhcp disabled
  addr 192.168.142.5
  mask 255.255.255.0
  broad 192.168.142.255
  gw 192.168.142.254
  ena
/c/sys/access
  tnet ena
/c/port 1
  pvid 5
/c/l2/vlan 1
  learn ena
  def 0
/c/l2/vlan 5
  ena
  name "VLAN 5"
  learn ena
  def 1
/c/l2/stg 1/clear
/c/l2/stg 1/add 1 2 5
/c/sys/access/sshd/ena
/c/sys/access/sshd/sshv1 dis
/c/sys/access/sshd/on
/c/l3/if 1
  ena
  ipver v4
  addr 192.168.141.5
```
vlan 5
/c/l3/gw 1
ten
ipver v4
addr 192.168.141.254

**VRRP Configuration**

/c/l3/vrrp/vr 11
ten
ipver v4
vrid 11
if 1
addr 192.168.141.4
/c/l3/vrrp/vr 12
ten
ipver v4
vrid 12
if 1
addr 192.168.141.200
/c/l3/vrrp/vr 13
ten
ipver v4
vrid 13
if 1
addr 192.168.141.205

**Sync Configuration**

/c/slb/sync
    prios d
certs e
/c/slb/sync/peer 1
ten
addr 192.168.141.3
**PIP Configuration**

`/c/slb/pip/type port`
`/c/slb/pip/add 192.168.141.202 1`

**Citrix StoreFront Servers Configuration**

1. Add the domain storefront.ctradware.com to the hosts file in each storefront server pointing to 192.168.141.21, and for the second StoreFront server 192.168.141.22.

   ![Hosts File](image.png)

2. Open the Citrix StoreFront management console
   a. Go to **Server Group** and change the Base URL to [http://storefronnt.ctradware.com](http://storefronnt.ctradware.com).
b. Go to Stores, click Manage Delivery Controllers, and click Edit to add the Delivery controller server (the Alteon VIP 192.168.141.205, deliver.ctradware.com).
Citrix DDC Servers configuration

- Add the domain deliver.cradware.com to the hosts file on each DDC server pointing to 192.168.141.34, and for the second StoreFront server 192.168.141.37.
# Copyright (c) 1993-2009 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each entry should be kept
# on an individual line. The IP address should be placed in the first column followed by the
# corresponding host name. The IP address and the host name should be separated by at least
# one space.
#
# Additionally, comments (such as these) may be inserted on individual lines or following
# the machine name denoted by a '# symbol.'
#
# For example:
#
# # 102.54.94.97 rhino.acme.com # source server
# 38.25.63.10 x.acme.com # x client host

# localhost name resolution is handled within DNS itself.
# 127.0.0.1 localhost
# ::1 localhost

192.168.141.34 deliver.ctradware.com
Technical Support


For more information, your Radware Sales representative or:
U.S. and Americas: (866) 234-5763
International: +972(3) 766-8666