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TESTING & INTEGRATION GROUP  
SOLUTION GUIDE

Alteon Application Switch (AAS) Optimizing the Delivery of  
Blackboard Learn™ 9.1 servers

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## **Introduction**

Blackboard Learn is a powerful learning and knowledge transfer environment, enabling educational innovations everywhere by connecting people and technology. Millions of people use Blackboard every day at academic institutions around the globe, including colleges, universities, K-12 schools, and other education providers, as well as textbook publishers and student-focused merchants that serve education providers and their students. Additionally, the Blackboard Learn System makes online learning environments easier to manage and administer.

This document contains best practice information about the set-up, configuration, and customization of a Blackboard Learn system integrated with an Alteon Next Generation (NG) ADC platform.

## Blackboard Learn

A learning management system (LMS) should make teaching and learning easier, not more complicated. Blackboard Learn is your foundation for a rich education experience, delivering the technology, services, and support you expect in an LMS.

### Student-Centered LMS

Blackboard Learn is designed with the student in mind. It delivers the tools you need, the way you want:

- **Global navigation** puts your grades and assignments at your fingertips.
- **Updates and notifications** keep you informed of due dates and events.
- **Collaborative spaces** keep you in touch with your academic community.
- **Mobile capabilities** let you learn on your terms—anywhere, anytime.

### Efficient Teaching Tasks

Blackboard Learn enhances basic teaching tasks such as grading and creating assessments. And with an intuitive design, this is one LMS that will save you time in and out of the classroom:

- **Give real-time feedback** with student-preferred communication such as texts and posts.
- **Share, create, and manage engaging content**—no coding skills required.
- **Easily create and grade assessments**—and evaluate their effectiveness.
- **Analyze data** and turn it into actionable information.

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## Alteon Next Generation (NG) 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 migration to the cloud.

### Alteon NG: Complete Application SLA Assurance

The Alteon 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 ADCs in the market:

- Alteon NG is architecturally designed to ensure application SLA by delivering full resource isolation between different applications, while avoiding resources from being maxed-out.
- Alteon NG incorporates application performance monitoring (APM) capabilities that provide full visibility for an application's SLA, breaking it down by application, transaction, or location.
- Alteon NG integrates FastView (the industry's most advanced Web performance optimization [WPO] technology), which accelerates application responses 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 a 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, such as adding more throughput, services, and vADCs with no hardware modifications. It can also scale out-of-the-box on demand by leveraging external, extensible resource pools (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.

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## **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, APM is an out-of-the box solution that does not require synthetic transaction scripting or additional installation, reducing deployment time and costs. 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 SLAs that feature granular analysis, allowing for the measurement of 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, enables 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, which provides single sign-on (SSO) capabilities by supporting RADIUS, Active Directory, LDAP, and RSA SecurID, and simplifies the user experience without compromising application security.

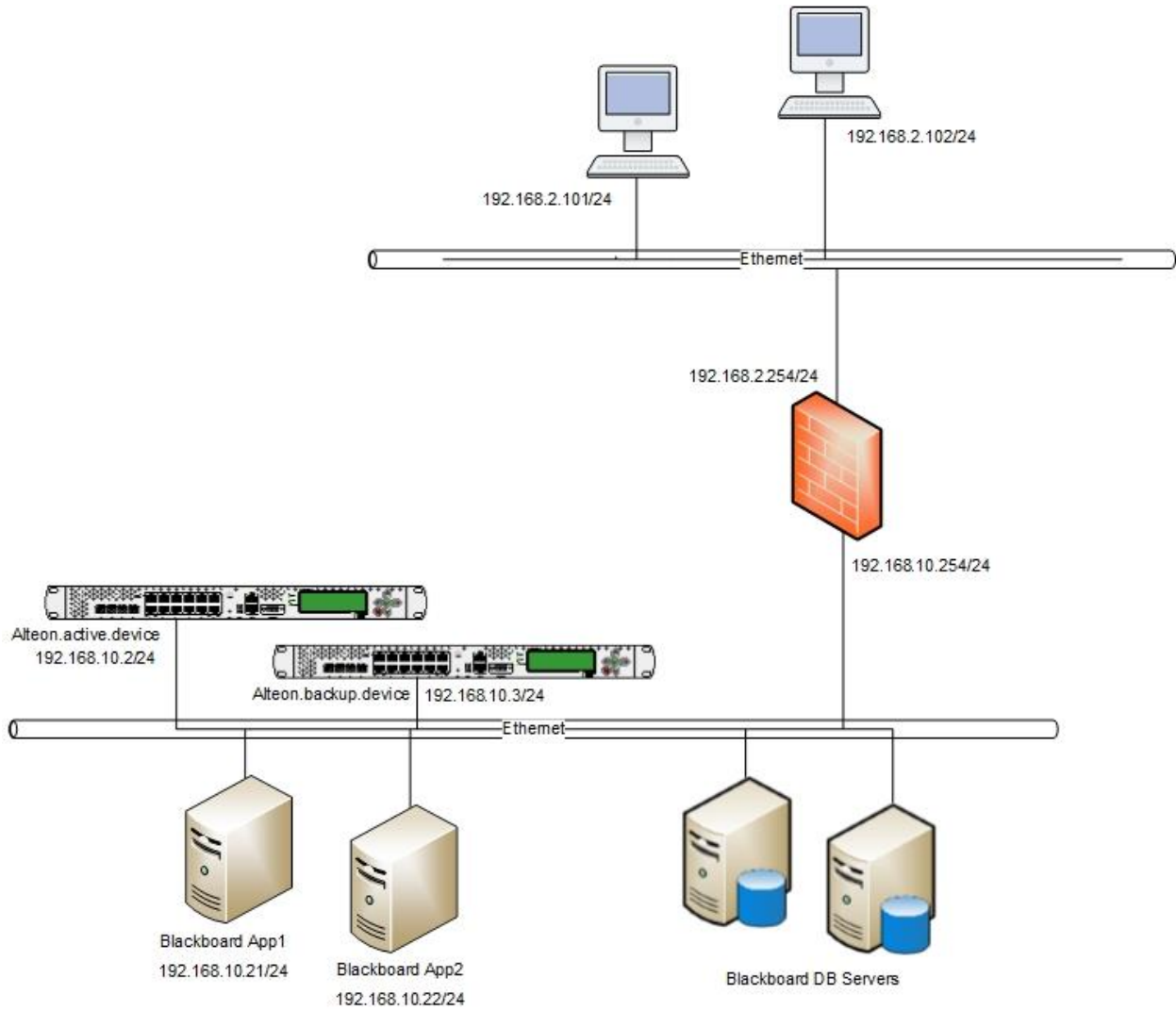
## **Complete Layer 4 to 7 Feature Set**

Alteon NG delivers a complete set of Layer 4 to 7 services to ensure the availability, performance and security of mission-critical applications in 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.

# Alteon NG and Blackboard Learn Architecture

**FIGURE 1: TESTED ALTEON NG NETWORK ARCHITECTURE**





## Important Implementation Notes

1. Blackboard Learn requires session timeout for 5 hours. Ensure that the aging time on the Alteon is set to 300 minutes.
2. To sync the configuration after configuring the active Alteon, 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.

3. HTTP VIP is used for redirect traffic to HTTPS.
4. Persistency is used by the Alteon insert cookie mechanism.
5. Health monitoring is performed by checking port 8085 (the default HTTP port for BB servers is 8080; the tested network uses port 8085), and checking the **/webapps/portal/healthCheck** path.
6. HTTP modification must be used because the Blackboard servers in the return traffic header and body links are marked as HTTP:// instead of HTTPS://.
7. Compression must be used not only for performance but for informing the Blackboard server not to use compression on the payload. If the traffic is compressed, Alteon cannot perform the HTTP modification.
8. X-Forwarded-For is used for the Blackboard server's statistics.

## Software and Hardware

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

- Windows 2008R2 x64
- Radware's Alteon VA, version 30.3 (2 VMs)
- Blackboard Learn v.9.1

## Configuration

### Alteon Active Configuration

#### Network Configuration

```
/c/port 1
    pvid 101
/c/l2/vlan 1
    learn ena
    def 0
/c/l2/vlan 101
    ena
    name "servers.net"
    learn ena
    def 1
/c/l2/stg 1/clear
/c/l2/stg 1/add 1 2 101
/c/sys/access/sshd/ena
/c/sys/access/sshd/sshv1 dis
/c/sys/access/sshd/on
/c/l3/if 1
    ena
    ipver v4
    addr 192.168.10.2
    vlan 101
/c/l3/gw 1
    ena
    ipver v4
    addr 192.168.10.254
```

#### Sync Configuration

```
/c/slb/sync/passphrs
c40193f980009051a7e2dab472a32092c3a666dc9c96dee38a7a5fb3f197d4cb

/c/slb/sync
    prios d
    certs e
/c/slb/sync/peer 1
    ena
    addr 192.168.10.3
```

#### Compression Configuration

```
/c/slb/accel/compress
    on
/c/slb/accel/compress/comppol 1
    name "comp1"
    minsize 1
    ena
```

## **SSL Configuration**

```
/c/slb/ssl/certs/srvrcert 1
    name "bb.bbradware.com"
/c/slb/ssl/certs/import srvrcert "1" text
/c/slb/ssl
    on
/c/slb/ssl/sslpol 1
    name "Blackboard"
    ena
```

## **Health Monitoring Configuration**

```
/c/slb/advhc/health Blackboard_HM HTTP
    name "HM Blackboard"
    dport 8085
    inter 15
/c/slb/advhc/health Blackboard_HM HTTP/http
    path "/webapps/portal/healthCheck"
```

## **PIP Configuration**

```
/c/slb/pip/type vlan
/c/slb/pip/type port
/c/slb/pip/add 192.168.10.201 1
```

## **Real Servers Configuration**

```
/c/slb/real 1
    ena
    ipver v4
    rip 192.168.10.21
    name "Blackboard.server.1"
/c/slb/real 2
    ena
    ipver v4
    rip 192.168.10.22
    name "Blackboard.server.2"
```

## **Server Groups Configuration**

```
/c/slb/group 1
    ipver v4
    metric roundrobin
    health Blackboard_HM
    add 1
    add 2
    name "Blackboard.group"
```

## **Alteon process directions**

```
/c/slb/port "1"
    client ena
    server ena
    proxy ena
```

---

## **Virtual Servers and Services Configuration**

```
/c/slb/virt 1
  ena
  ipver v4
  vip 192.168.10.200
  vname "Blackboard.vip"
/c/slb/virt 1/service 443 https
  name "SSL Offloading"
  group 1
  rport 8085
  dbind forceproxy
  ptmout 300
/c/slb/virt 1/service 443 https/http
  compol 1
  xforward ena
  httpmod 2
/c/slb/virt 1/service 443 https/ssl
  svrcert cert 1
  sslpol 1
/c/slb/virt 1/service 80 http
  action redirect
  group 1
  rport 0
  redirect "https://$HOST/$PATH/"
  dbind ena
/c/slb/layer7/slb
/c/slb/virt 1/service 443 https/pbind cookie insert "sessionid"
300:0:0
/c/slb/virt 1/service 443 https/http/rcount 1
/c/slb/layer7/httpmod 2
  ena
  name "http to https"
/c/slb/layer7/httpmod 2/rule 1 text
  ena
  name "http to https"
  directn resp
  body include
  action replace "FROMTEXT=http://" "TOTEXT=https://"
```

## **VRRP Configuration**

```
/c/l3/vrrp/on
/c/l3/vrrp/vr 11
  ena
  ipver v4
  vrid 11
  if 1
  prio 250
  addr 192.168.10.1
/c/l3/vrrp/vr 12
  ena
  ipver v4
  vrid 12
  if 1
  prio 250
  addr 192.168.10.200
```

## **Alteon Backup Configuration**

### **Network Configuration**

```
/c/port 1
    pvid 101
/c/l2/vlan 1
    learn ena
    def 0
/c/l2/vlan 101
    ena
    name "servers.net"
    learn ena
    def 1
/c/l2/stg 1/clear
/c/l2/stg 1/add 1 2 101
/c/sys/access/sshd/ena
/c/sys/access/sshd/sshv1 dis
/c/sys/access/sshd/on
/c/l3/if 1
    ena
    ipver v4
    addr 192.168.10.3
    vlan 101
/c/l3/gw 1
    ena
    ipver v4
    addr 192.168.10.254
```

### **Sync Configuration**

```
/c/slb/sync/passphrs
a7a3ba41a2a2b241e6e2b2be500102822fe33bad001cf4987b6c68aa7ebdc95d

/c/slb/sync
    prios d
    certs e
/c/slb/sync/peer 1
    ena
    addr 192.168.10.2
```

### **PIP Configuration**

```
/c/slb/pip/type vlan
/c/slb/pip/type port
/c/slb/pip/add 192.168.10.202 1
```

**VRRP Configuration**

```
/c/13/vrrp/on
/c/13/vrrp/on
/c/13/vrrp/vr 11
    ena
    ipver v4
    vrid 11
    if 1
    prio 101
    addr 192.168.10.1
/c/13/vrrp/vr 12
    ena
    ipver v4
    vrid 12
    if 1
    prio 101
    addr 192.168.10.200
```

## Appendix A

### Alteon Active Configuration Script

```
script start "Alteon Application Switch VA" 4 /**** DO NOT EDIT
THIS LINE!
/* Configuration dump taken 08:14:22 Thu Jan 29, 2015
/* Configuration last applied at 08:08:26 Thu Jan 29, 2015
/* Configuration last save at 08:08:39 Thu Jan 29, 2015
/* Version 30.0.3.0, Mgmt MAC address 00:50:56:90:7d:1b
/* To restore SSL Offloading configuration and management HTTPS
access,
/* it is recommended to include the private keys in the dump.
/c/sys/mgmt
    tftp mgmt
/c/sys
    idle 10080
/c/sys/access
    tnet ena
/c/port 1
    pvid 101
/c/12/vlan 1
    learn ena
    def 0
/c/12/vlan 101
    ena
    name "servers.net"
    learn ena
    def 1
/c/12/stg 1/clear
/c/12/stg 1/add 1 2 101
/c/sys/access/sshd/ena
/c/sys/access/sshd/sshv1 dis
/c/sys/access/sshd/on
/c/13/if 1
    ena
    ipver v4
    addr 192.168.10.2
    vlan 101
/c/13/gw 1
    ena
    ipver v4
    addr 192.168.10.254
/c/13/vrrp/on
/c/13/vrrp/vr 11
    ena
    ipver v4
    vrid 11
    if 1
    prio 250
    addr 192.168.10.1
/c/13/vrrp/vr 12
    ena
    ipver v4
    vrid 12
    if 1
    prio 250
    addr 192.168.10.200
/c/slb/accel/compress
```

```

on
/c/slb/accel/compress/comppol 1
  name "comp1"
  minsize 1
  ena
/c/slb/ssl/certs/key 1
  name "bb.bbradware.com"
/c/slb/ssl/certs/key WebManagementCert
/c/slb/ssl/certs/request 1
/c/slb/ssl/certs/import request "1" text
-----BEGIN CERTIFICATE REQUEST-----
MIIBWjCBxAIBADAbMRkwFwYDVQQDDDBBiYi5iYnJhZHdhcmUuY29tMIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQDKuRrvGbt40fEqKNYu8cQb/kYPwVmZXDxCa7rd
v47a81KjFaS2U6MZlG/x97To+2/cYqsfvqH01vkGJx08/KfZ+DEl0cFgud31louq
8iR76UIRjgmtHXcxknMkXjRumxvIhzJinAbE9onod0lMfaH1clq6PHTVTtm8u2Fv
cmAv2wIDAQABoAAwDQYJKoZIhvcNAQEFBQADgYEAKwry8inQI98gchADkwQlaBWj
siuqqrYV0qjJ1McGebImz+DlGpTk/nv4Oinp5uoL4x5p5pxFwJBEp6bd+K4ymxbS
cVLPn1Rtttp2y+Zir+EAYoA99XoKni4NAyqQkLfuvb+5mYqRW8Gz9XnvhVVk6UWPa
/V8AySW+vsqrmkQYzns=
-----END CERTIFICATE REQUEST-----

/c/slb/ssl/certs/request WebManagementCert
/c/slb/ssl/certs/import request "WebManagementCert" text
-----BEGIN CERTIFICATE REQUEST-----
MIIBazCB1QIBADAsMSowKAYDVQQDDCFEZWZhdWx0X0dlbmVyYXRlZF9BbHRlb25f
QkJKX0NlcnQwgZ8wDQYJKoZIhvcNAQEBBQADgY0AMIGJAoGBAOeKyNJa49egHLqA
Z0uLCpOJea3NdVuiRm+ArhzJd40y/W/YaPgWhbmQTeQhpYrgnEDnwIXJahmrlUHb
jcmNNHb+UruGPYk0et8phz9hBhFAAL111LrcrmgRkF0el2antbABENOUHlpe5kl
J1MVBdktWUpBOTdSR2+L1/jxPYsDAGMBAAGgADANBqkqhkiG9w0BAQQFAAOBgQC+
KARedk4AenbV59p2evgCKOKXQkhmcMNCvXa6Jq3KdFYl6LLAPPnPv/APcFw5pICS
KVabQWEp1NxJ3FOJIMR7Kv3EfeEqLMgeJEaxXte7AjufkH9/fliD9HwitEykmG00Z
sNKFB5zBupXomeKG7rgc+59C3PgiModXDahuC6wcdA==
-----END CERTIFICATE REQUEST-----

/c/slb/ssl/certs/srvrcert 1
  name "bb.bbradware.com"
/c/slb/ssl/certs/import srvrcert "1" text
-----BEGIN CERTIFICATE-----
MIICfzCCAeigAwIBAgIEVMI+nzANBgkqhkiG9w0BAQUFADAbMRkwFwYDVQQDDDBBi
Yi5iYnJhZHdhcmUuY29tMjB4XDTE1MDEyODExMjAyN1oXDTI1MDEyNTEyMjAyN1ow
GzEZMBcGA1UEAwQYmIuYmJyYWR3YXJlLmNvbTCBnzANBgkqhkiG9w0BAQEFAAOB
jQAwGykCgYEAYrka74AbeDnxKijWLVHEG/5GD8FZmVw8Qmu63b+O2vNSoxWkt1Oj
GZRv8fe06Ptv3GKrH76hztb5BicTvPyn2fgxJTnBYLnd9ZaLqvIke+lCEY4JrR13
MZJzJF40bpsbyIcyYpGxPaJ6HdJTH2h9XJaujx01U7ZvLthb3JgL9sCAwEAAaOB
zzCBzDAPBgNVHRMBAf8EBTADAQH/MBEGCWCsSAGG+EIBAQQEAWICRDAYBglghkgB
hvhCAQ0EJRYjQWx0ZW9uL05vcnRlbCBhZAG51cmF0ZWQgQ2VydGlmawNhdGUwHQYD
VR0OBBYEF0Xn4iDMiXSwxj0SAGuYX0AwLc9KMEYGA1UdIwQ/MD2AF0Xn4iDMiXSw
xj0SAGuYX0AwLc9Kor+kHTAbMRkwFwYDVQQDDDBBiYi5iYnJhZHdhcmUuY29tggRU
yL6fMAsGA1UdDwQEAwIC5DANBgkqhkiG9w0BAQUFAAOBgQAQhRQpMspGmKgwHpG5
DrVhdagx2obJj1yr8v6uyxscuPPbPlskvgSF+Ua/fw2nZWpfejKES0dgQ6EttUPT
GlvumHPYFNMQ7Jk9ZdhsMGxcM9KQf7DqfT36417i106nJOPsB4sbi1Me3SPZyote
gikIovBbktcGIkAx2zs0We/iOA==
-----END CERTIFICATE-----

/c/slb/ssl/certs/srvrcert WebManagementCert
/c/slb/ssl/certs/import srvrcert "WebManagementCert" text
-----BEGIN CERTIFICATE-----
MIICsjCAhugAwIBAgIEVMI+njANBgkqhkiG9w0BAQQFAADAsMSowKAYDVQQDDCFE
ZWZhdWx0X0dlbmVyYXRlZF9BbHRlb25fQkJKX0NlcnQwHhcNMTUwMTI4MTA0OTAY
WhcNMTYwMTI4MTA0OTAYWjAsMSowKAYDVQQDDCFEZWZhdWx0X0dlbmVyYXRlZF9B

```



```
bHR1b25fQkJJX0NlcnQwgZ8wDQYJKoZIhvcNAQEBBQADgY0AMIGJAoGBAOeKyNJa
49egHLqAZ0uLCPoJea3NdVuiRm+ArhzJd40y/W/YaPgWhbmQTeQhpYrgnEDnwIXJ
ahmrlUHBjcmNNHb+UruGPyYk0et8phz9hBhFAAL111LrccrmgRkF0e12antbABENO
UHlpE5k1J1MVBdkTWUpBOTdSR2+L1/jxPYSdAgMBAAGjgeAwgd0wDwYDVR0TAQH/
BAUwAwEB/zARBglghkgBhvhCAQEEBAMCAkQwMgYJYIZIAyb4QgENBCUWI0FsdGVv
bi9Ob3J0ZWwgR2VuZXJhdGVkIENlcnRpZmljYXRlMm0GA1UdDgQWBmBTM2j/ZusyL
qx+ZUdRcQZkraUw40jBxBgNVHSMEUDBOgBTM2j/ZusyLqx+ZUdRcQZkraUw40qEw
pC4wLDEqMCGA1UEAwwhRGVmYXVsdF9HZW51cmF0ZWVfQWx0ZW9uX0JCSV9DZXJ0
ggRUyL6eMAsGA1UdDwQEAwIC5DANBgkqhkiG9w0BAQQFAAOBqQBQ7Xh2Wh0M51zy
+zm6Mn8xG647G67SICUwjsIFvKpWNOkbt5JOeKjtenkGKwKcZ+8R8i/3DWpo0FW4
S+2reauaNiUpAPGJjNYT455Blb+XGBm9pqqoKNQCfEZG8zLqYbY58BxK/qXh1kAj
jBpD8vRPU5FDfk/xbk+EuKj9gDFtfw==
-----END CERTIFICATE-----
```

```
/c/slb/sync/passphrs
c40193f980009051a7e2dab472a32092c3a666dc9c96dee38a7a5fb3f197d4cb
/c/slb/ssl
    on
/c/slb/ssl/sslpol 1
    name "Blackboard"
    ena
/c/slb/accel/caching
    on
/c/slb/advhc/health Blackboard_HM HTTP
    name "HM Blackboard"
    dport 8085
    inter 15
/c/slb/advhc/health Blackboard_HM HTTP/http
    path "/webapps/portal/healthCheck"
/c/slb
    on
/c/slb/adv
    direct ena
    vstat ena
    submac "ena"
/c/slb/sync
    prios d
    certs e
/c/slb/sync/peer 1
    ena
    addr 192.168.10.3
/c/slb/real 1
    ena
    ipver v4
    rip 192.168.10.21
    name "Blackboard.server.1"
/c/slb/real 2
    ena
    ipver v4
    rip 192.168.10.22
    name "Blackboard.server.2"
/c/slb/group 1
    ipver v4
    metric roundrobin
    health Blackboard_HM
    add 1
    add 2
    name "Blackboard.group"
/c/slb/pip/type vlan
/c/slb/pip/type port
```

```
/c/slb/pip/add 192.168.10.201 1
/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 192.168.10.200
    vname "Blackboard.vip"
/c/slb/virt 1/service 443 https
    name "SSL Offloading"
    group 1
    rport 8085
    dbind forceproxy
    ptmout 300
/c/slb/virt 1/service 443 https/http
    compol 1
    xforward ena
    httpmod 2
/c/slb/virt 1/service 443 https/ssl
    srvcert cert 1
    sslpol 1
/c/slb/virt 1/service 80 http
    action redirect
    group 1
    rport 0
    redirect "https://$HOST/$PATH/"
    dbind ena
/c/slb/layer7/slb
/c/slb/virt 1/service 443 https/pbind cookie insert "sessionid"
300:0:0
/c/slb/virt 1/service 443 https/http/rcount 1
/c/slb/layer7/httpmod 2
    ena
    name "http to https"
/c/slb/layer7/httpmod 2/rule 1 text
    ena
    name "http to https"
    directn resp
    body include
    action replace "FROMTEXT=http://" "TOTEXT=https://"
/c/slb/gslb
    off
    hostlk ena
/c/sys/access/https/cert WebManagementCert
/c/sys/access/https/https e
/
script end /**** DO NOT EDIT THIS LINE!
```

## Alteon Backup Configuration Script

```
script start "Alteon Application Switch VA" 4 /**** DO NOT EDIT
THIS LINE!
/* Configuration dump taken 08:27:08 Thu Jan 29, 2015
/* Configuration last applied at 08:08:35 Thu Jan 29, 2015
```

```
/* Configuration last save at 08:08:35 Thu Jan 29, 2015
/* Version 30.0.3.0, Mgmt MAC address 00:50:56:90:7d:1f
/* To restore SSL Offloading configuration and management HTTPS
access,
/* it is recommended to include the private keys in the dump.
/c/sys/mgmt
    tftp mgmt
/c/sys
    idle 10080
/c/sys/access
    tnet ena
/c/port 1
    pvid 101
/c/l2/vlan 1
    learn ena
    def 0
/c/l2/vlan 101
    ena
    name "servers.net"
    learn ena
    def 1
/c/l2/stg 1/clear
/c/l2/stg 1/add 1 2 101
/c/sys/access/sshd/ena
/c/sys/access/sshd/sshv1 dis
/c/sys/access/sshd/on
/c/l3/if 1
    ena
    ipver v4
    addr 192.168.10.3
    vlan 101
/c/l3/gw 1
    ena
    ipver v4
    addr 192.168.10.254
/c/l3/vrrp/on
/c/l3/vrrp/vr 11
    ena
    ipver v4
    vrid 11
    if 1
    prio 101
    addr 192.168.10.1
/c/l3/vrrp/vr 12
    ena
    ipver v4
    vrid 12
    if 1
    prio 101
    addr 192.168.10.200
/c/slb/accel/compress
    on
/c/slb/accel/compress/comppol 1
    name "comp1"
    minsize 1
    ena
/c/slb/ssl/certs/key 1
    name "bb.bbradware.com"
/c/slb/ssl/certs/key WebManagementCert
/c/slb/ssl/certs/request 1
```

```

/c/slb/ssl/certs/import request "1" text
-----BEGIN CERTIFICATE REQUEST-----
MIIBWjCBxAIBADAbMRkwFwYDVQQDDDBBiYi5iYnJhZHdhcmUuY29tMIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQDKuRrvGbt40fEqKNYu8cQb/kYPwVmZXDxCa7rd
v47a81KjFaS2U6MZlG/x97To+2/cYqsfvqH01vkGJx08/KfZ+DElOcFgud31louq
8iR76UIRjgmtHXcxknMkXjRumxvIhzJinAbE9onod0lMfaH1clq6PHTVTtm8u2Fv
cmAv2wIDAQABOAAwDQYJKoZIhvcNAQEFBQADgYEAKwry8inQI98gchADkwQlaBWj
siuqqrYV0qjJ1McGebImz+DlGpTk/nv4Oinp5uoL4x5p5pxFwJBEP6bd+K4ymxbS
cVLPn1Rtttp2y+Zir+EAYoA99XoKni4NAYqQkLfuvb+5mYqRW8Gz9XnvhVvK6UWPa
/V8AySW+vsqrmkQYZns=
-----END CERTIFICATE REQUEST-----

```

```

/c/slb/ssl/certs/request WebManagementCert
/c/slb/ssl/certs/import request "WebManagementCert" text
-----BEGIN CERTIFICATE REQUEST-----
MIIBazCB1QIBADAsMSowKAYDVQQDDDCFEZwZhdWx0X0dlbmVyYXRlZF9BbHRlb25f
QkJKX0NlcnQwZ8wDQYJKoZIhvcNAQEBBQADgY0AMIGJAoGBAOeKyNJa49egHLqA
Z0uLCPoJea3NdVuiRm+ArhzJd40y/W/YaPgWhbmQTeQhpYrgnEDnwIXJahmrlUHb
jcmNNHb+UruGPYk0et8phz9hBhFAAL111LrcrmgRkF0el2antbABENOUHlpE5kl
J1MVBdkTWUpBOTdSR2+L1/jxPYsDAgMBAAGgADANBqkqhkiG9w0BAQQFAAOBGC+
KARedk4AenbV59p2evgCKOKXQkhmCMNcVXA6Jq3KdFY16LLAPPnPV/APcFw5pICS
KVabQWEp1Nj3FOJIMR7Kv3EfeEqLMgeJEaxXte7AjufkH9/flid9HwitEykmG00Z
sNKFB5zBupXomeKG7rgc+59C3PgiModXDahuC6wcdA==
-----END CERTIFICATE REQUEST-----

```

```

/c/slb/ssl/certs/srvrcert 1
    name "bb.bbradware.com"
/c/slb/ssl/certs/import srvrcert "1" text
-----BEGIN CERTIFICATE-----
MIICfzCCAeigAwIBAgIEVMI+nzANBgkqhkiG9w0BAQUFADAbMRkwFwYDVQQDDDBBi
Yi5iYnJhZHdhcmUuY29tMjB4XDTElMDEyODEyMjAyN1owGzEZMBcGA1UEAwQYmIu
YmJyYWR3YXJlLmNvbTCBnzANBgkqhkiG9w0BAQEFAAOB
jQAwGykCgYEAyrka74AbeDnxKijWlvHEG/5GD8FZmVw8Qmu63b+O2vNSoxWktlOj
GZRv8fe06Ptv3GKrH76hztb5BicTvPyn2fgxJTnBYLnd9ZaLqvIke+lCEY4JrR13
MZJzJF40bpsbyIcyYpwGxPaJ6HdJTH2h9XJaujx01U7ZvLthb3JgL9sCAwEAAaOB
zzCBzDAPBgNVHRMBAf8EBTADAQH/MBEGCWCsSAGG+EIBAQQEAWICRDAYBglghkgB
hvhCAQ0EJRYjQWx0ZW9uL05vcnRlbCBHZW51cmF0ZWQgQ2VydGlmawNhdGUwHQYD
VR0OBBYEFoxn4idMiXSwxj0SAGuYXOAwLc9KMEYGA1UdIwQ/MD2AFOXn4idMiXSw
xj0SAGuYXOAwLc9Kor+kHTAbMRkwFwYDVQQDDDBBiYi5iYnJhZHdhcmUuY29tggRU
yL6fMAsGA1UdDwQEAwIC5DANBgkqhkiG9w0BAQUFAAOBQAQhRQpMspGmKgwHpG5
DrVhdagx2obJj1yr8v6uyxscuPPbPlskvgSF+Ua/fw2nZWpfejKES0dgQ6EttUPT
GlvumHPYFNMQ7Jk9ZdhsMGxcm9KQf7DqfT36417i106nJOPsB4sbi1Me3SPZyote
gikIovBbktcGIkAx2zs0We/iOA==
-----END CERTIFICATE-----

```

```

/c/slb/ssl/certs/srvrcert WebManagementCert
/c/slb/ssl/certs/import srvrcert "WebManagementCert" text
-----BEGIN CERTIFICATE-----
MIICsjCAhugAwIBAgIEVMI+njANBgkqhkiG9w0BAQQFADAsMSowKAYDVQQDDDCFE
ZwZhdWx0X0dlbmVyYXRlZF9BbHRlb25fQkJKX0NlcnQwHhcNMTUwMTI4MTA0OTAY
WhcNMTYwMTI4MTA0OTAYWjAsMSowKAYDVQQDDDCFEZwZhdWx0X0dlbmVyYXRlZF9B
bHRlb25fQkJKX0NlcnQwZ8wDQYJKoZIhvcNAQEBBQADgY0AMIGJAoGBAOeKyNJa
49egHLqAZ0uLCPoJea3NdVuiRm+ArhzJd40y/W/YaPgWhbmQTeQhpYrgnEDnwIXJ
ahmrlUHbjcmNNHb+UruGPYk0et8phz9hBhFAAL111LrcrmgRkF0el2antbABENO
UHlpE5klJ1MVBdkTWUpBOTdSR2+L1/jxPYsDAgMBAAGjgeAwgd0wDwYDVR0TAQH/
BAUwAwEB/zARBglghkgBhvhCAQEEBAMCAkQwMgYJYIZIAYb4QgENBCUWI0FsdGvV
bi90b3J0ZWwgR2VuZXJhdGVkIENlcnRpZmljYXRlMB0GA1UdDgQWBbTM2j/ZusyL
qx+ZUdRcqZkraUw40jBxBgNVHSMEUDB0GtBM2j/ZusyLqx+ZUdRcqZkraUw40qEw
pC4wLDEqMCgGA1UEAwhRGVmYXVsdF9HZW51cmF0ZWRFQWx0ZW9uX0JCSV9DZXJ0
ggRUyL6eMAsGA1UdDwQEAwIC5DANBgkqhkiG9w0BAQQFAAOBQBQ7Xh2Wh0M51zy

```

```
+zm6Mn8xG647G67SICUwjsIFvKpWNOKbt5JOeKjtenkGKWKcZ+8R8i/3DWpo0FW4
S+2reauaNiUpAPGJjNYT455Blb+XGBm9pqqyoKNQCFEZG8zLqYbY58BxK/qXHlkAj
jBpD8vRPU5FDfk/xbk+EuKj9gDFtfw==
-----END CERTIFICATE-----
```

```
/c/slb/sync/passphrs
a7a3ba41a2a2b241e6e2b2be500102822fe33bad001cf4987b6c68aa7ebdc95d
/c/slb/ssl
    on
/c/slb/ssl/sslpol 1
    name "Blackboard"
    ena
/c/slb/accel/caching
    on
/c/slb/accel/fastview/fvrevision 5
/c/slb/advhc/health Blackboard_HM HTTP
    name "HM Blackboard"
    dport 8085
    inter 15
/c/slb/advhc/health Blackboard_HM HTTP/http
    path "/webapps/portal/healthCheck"
/c/slb
    on
/c/slb/adv
    direct ena
    vstat ena
    submac "ena"
/c/slb/sync
    prios d
    certs e
/c/slb/sync/peer 1
    ena
    addr 192.168.10.2
/c/slb/real 1
    ena
    ipver v4
    rip 192.168.10.21
    name "Blackboard.server.1"
/c/slb/real 2
    ena
    ipver v4
    rip 192.168.10.22
    name "Blackboard.server.2"
/c/slb/group 1
    ipver v4
    metric roundrobin
    health Blackboard_HM
    add 1
    add 2
    name "Blackboard.group"
/c/slb/pip/type vlan
/c/slb/pip/type port
/c/slb/pip/add 192.168.10.202 1
/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 192.168.10.200
    vname "Blackboard.vip"
/c/slb/virt 1/service 443 https
    name "SSL Offloading"
    group 1
    rport 8085
    dbind forceproxy
    ptmout 300
/c/slb/virt 1/service 443 https/http
    compool 1
    xforward ena
    httpmod 2
/c/slb/virt 1/service 443 https/ssl
    svrcert cert 1
    sslpol 1
/c/slb/virt 1/service 80 http
    action redirect
    group 1
    rport 0
    redirect "https://$HOST/$PATH/"
    dbind ena
/c/slb/virt 1/service 443 https/pbind cookie insert "sessionid"
300:0:0
/c/slb/virt 1/service 443 https/http/rcount 1
/c/slb/layer7/httpmod 2
    ena
    name "http to https"
/c/slb/layer7/httpmod 2/rule 1 text
    ena
    name "http to https"
    directn resp
    body include
    action replace "FROMTEXT=http://" "TOTEXT=https://"
/c/slb/gslb
    off
    hostlk ena
/c/sys/access/https/cert WebManagementCert
/c/sys/access/https/https e
/
script end  /**** DO NOT EDIT THIS LINE!
```

## Technical Support

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U.S. and Americas: (866) 234-5763

International: +972(3) 766-8666

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North America  
Radware Inc.  
575 Corporate Drive  
Mahwah, NJ 07430  
Tel: +1-888-234-5763

International  
Radware Ltd.  
22 Raoul Wallenberg St.  
Tel Aviv 69710, Israel  
Tel: 972 3 766 8666