TESTING & INTEGRATION GROUP

SOLUTION GUIDE

# Microsoft Windows 2008 Media Server Load Balancing with Radware AppDirector.

## Contents



TECHNICAL SOLUTION GUIDE

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## Solution Overview

The Radware and Microsoft Windows 2008 Media Services solution ensures Microsoft Windows 2008 Media Services customers solution resilience, efficiency and scale. Radware's AppDirector guarantees Windows 2008 Media Services maximum availability, scalability, performance and security. AppDirector 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, AppDirector ensures long term investment protection facilitating incremental growth demanded by today's business.

## Radware AppDirector Overview

Radware's AppDirector is an intelligent application delivery controller (ADC) which provides scalability and application-level security for service infrastructure optimization, fault tolerance and redundancy. Radware combined its next-generation, OnDemand Switch multi-gigabit hardware platform with the powerful capabilities of the company's APSolute™ operating system. The result – AppDirector – enables accelerated application performance; local and global server availability; and application security and infrastructure scalability for fast, reliable and secure delivery of applications over IP networks.

AppDirector is powered by the innovative OnDemand Switch platform. OnDemand Switch, which has established a new price/performance standard in the industry, delivers breakthrough performance and superior scalability to meet evolving network and business requirements. Based on its on demand, "pay-as-you-grow" approach, no forklift upgrade is required even when new business requirements arise. This helps companies guarantee short-term and long-term savings on CAPEX and OPEX for full investment protection. Radware's OnDemand Switch enables customers to pay for the exact capacity currently required, while allowing them to scale their ADC throughput capacity and add advanced application-aware services or application acceleration services on demand to meet new or changing application and infrastructure needs. And it does it without compromising on performance.

AppDirector lets you get the most out of your service investments by maximizing the utilization of service infrastructure resources and enabling seamless consolidation and high scalability. AppDirector's throughput licensing options allows pay as you grow investment protection. Make your network adaptive and more responsive to your dynamic services and business needs with AppDirector's fully integrated traffic classification and flow management, health monitoring and failure bypassing, traffic redirection, application acceleration, bandwidth management, intrusion prevention and DoS protection.
For more information, please visit: http://www.radware.com/

## Microsoft Windows Media Services 2008

Windows Media Services 2008 is an industrial-strength platform for streaming live or on-demand audio and video content to clients over the Internet or an intranet. Use Windows Media Services 2008 to configure and manage one or more Windows Media servers running on the Windows Server 2008 operating system.

Your clients can be:

- Computers or devices that play the content using a player, such as Windows Media Player.
- Computers running Windows Media Services that are proxying, caching, or redistributing your content.
- Custom applications that have been developed using the Windows Media Software Development Kit (SDK).

Windows Media Services 2008 contains a new, built-in cache/proxy plug-in that you can use to configure your Windows Media server either as a cache/proxy server or a reverse-proxy server. Also, Windows Media Services is a supported installation optior for Server Core installations of Windows Server 2008.

For more information, please visit:
http://www.microsoft.com/windows/windowsmedia/forpros/server/server.aspx

## Solution Details

The suggested solution uses 2 Media services 2008 servers for the streaming media. The 2 AppDirectors are installed in the front of the Media services 2008 servers in order to provide availability, acceleration and protection:

- AppDirector continuously monitors the operational availability of the Media services 2008 servers
- AppDirector intelligently distributes the application transactions between the Media services 2008 servers, making sure that all the transactions that belong to the same application session will reach the same Media services 2008 servers.
- The dual AppDirector are providing a highly available solution with no single point of failure

## How it works

The client opens RTSP or HTTP (RTSP over HTTP) session to IP 10.1.82.200 (AppDirector VIP). The AppDirector chooses one of the Windows Media Services 2008 servers and forwards the connection to that media server. The media server establishes the connection to get the request from the client.
On the response, the Server is answering with the VIP IP (loopback adapter) back to the client saving the route through the AppDirecotor.

## Important Notes:

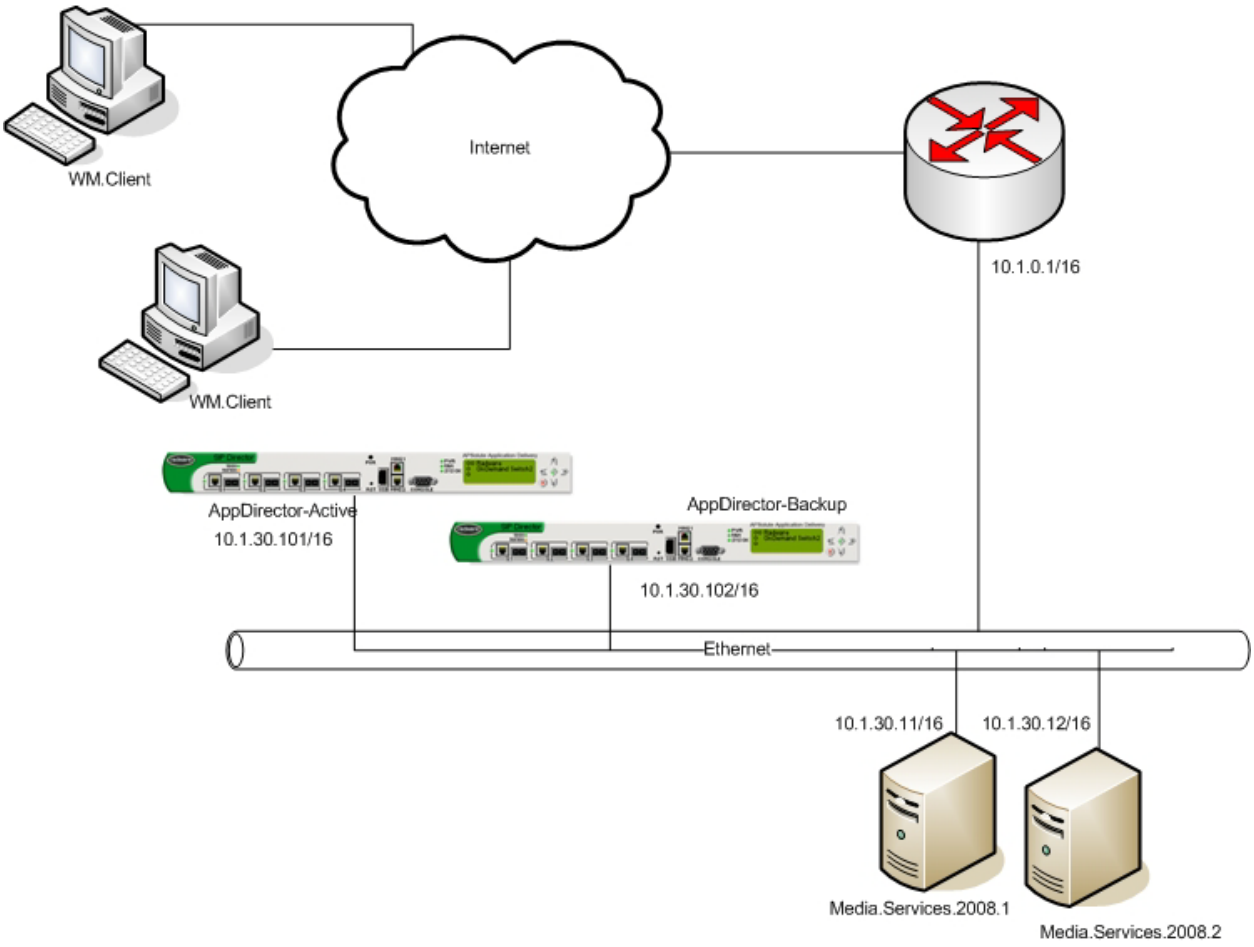
- **The solution can be easily extended to support additional Windows 2008 Media servers for higher capacity**
- **The setup can be installed as a global solution with many sites.**
- **Always use Regular session mode in the farm when using Windows MMS servers. The live stream changes the source ports in the middle of a session.**
- **All Servers are configured with loopback adaptor that represents the AppDirector VIP IP (AppDirector Local Triangulation mechanism). This way the return traffic, including all media traffic, is going directly to the client without passing through the AppDirector.**
- **This solution can be done in a global environment when the customer has 2 or more sites.**

## Software and Hardware

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

Radware's Appdirector v.2.11
Video Streaming Server : Windows media services 2008
Streaming video Client: Windows Media Player v.11 and Real Player v.11

## Tested network overview




***Network Diagram***

# Configuration

## Radware Devices

APPDIRECTOR ACTIVE CONFIGURATION

### Network Configuration

- Create IP 10.1.30.101/16 on port 1
- Create default route to 10.1.0.1

### Farm Configuration

- Create Farm named "Win.2008.Media.Services.RTSP.farm" in **AppDirector -> Farms -> Farm Table** with these parameters
    - Farm Name – Win.2008.Media.Services.RTSP.farm
    - Session mode – Regular mode
    - Connectivity checks – No Checks
    - Leave all other fields as default

### Farm Configuration

- Create Farm named "Win.2008.Media.Services.HTTP.farm" in **AppDirector -> Farms -> Farm Table** with these parameters
    - Farm Name – Win.2008.Media.Services.HTTP.farm
    - Session mode – Regular mode
    - Connectivity checks – No Checks
    - Leave all other fields as default

### Servers Configuration

- Create Server named "Win.2008.WMS.RTSP.1" and attach it to Farm "Win.2008.Media.Services.RTSP.farm" in **AppDirector -> Servers -> Server Table** with these parameters
    - Server Name - Win.2008.WMS.RTSP.1
    - Farm Name – Win.2008.Media.Services.RTSP.farm
    - Server Address – 10.1.30.11
    - Type - Local Triangulation
    - Leave all other fields as default

- Create Server named "Win.2008.WMS.RTSP.2" and attach it to Farm "Win.2008.Media.Services.RTSP.farm" in **AppDirector -> Servers -> Server Table** with these parameters
    - Server Name - Win.2008.WMS.RTSP.2
    - Farm Name – Win.2008.Media.Services.RTSP.farm
    - Server Address – 10.1.30.12
    - Type - Local Triangulation
    - Leave all other fields as default

- Create Server named "Win.2008.WMS.HTTP.1" and attach it to Farm "Win.2008.Media.Services.HTTP.farm" in **AppDirector -> Servers -> Server Table** with these parameters
    - Server Name - Win.2008.WMS.HTTP.1
    - Farm Name – Win.2008.Media.Services.HTTP.farm
    - Server Address – 10.1.30.11
    - Type - Local Triangulation
    - Leave all other fields as default

- Create Server named "Win.2008.WMS.HTTP.2" and attach it to Farm "Win.2008.Media.Services.HTTP.farm" in **AppDirector -> Servers -> Server Table** with these parameters
    - Server Name - Win.2008.WMS.HTTP.2
    - Farm Name – Win.2008.Media.Services.HTTP.farm
    - Server Address – 10.1.30.12
    - Type - Local Triangulation
    - Leave all other fields as default

**Layer 4 Configuration**

- Create L4 Policy for RTSP Traffic named "RTSP.TCP.LB.L4.rule" in **AppDirector -> Servers -> Server Table** with these parameters
    - L4 Policy Name – RTSP.TCP.LB.L4.rule
    - Virtual IP – 10.1.82.200
    - L4 Protocol – TCP
    - L4 Port – 554
    - Application - RTSP
    - Farm Name – Win.2008.Media.Services.RTSP.farm
    - Leave all other fields as default

- Create L4 Policy for RTSP Traffic named "RTSP.UDP.LB.L4.rule" in **AppDirector -> Servers -> Server Table** with these parameters
    - L4 Policy Name – RTSP.UDP.LB.L4.rule
    - Virtual IP – 10.1.82.200
    - L4 Protocol – UDP
    - L4 Port – 554
    - Application - RTSP
    - Farm Name – Win.2008.Media.Services.RTSP.farm
    - Leave all other fields as default

- Create L4 Policy for RTSP Traffic named "RTSP.Over.HTTP.LB.L4.rule" in **AppDirector -> Servers -> Server Table** with these parameters
    - L4 Policy Name – RTSP.Over.HTTP.LB.L4.rule
    - Virtual IP – 10.1.82.200
    - L4 Protocol – TCP
    - L4 Port – 80
    - Application - HTTP
    - Farm Name – Win.2008.Media.Services.HTTP.farm
    - Leave all other fields as default

**AppDirector Health Monitoring**

- Enable Health Monitoring in **Health Monitoring -> Global Parameters**

- Create a Check for RTSP on server 10.1.30.11 in **Health Monitoring -> Check Table**
  - Check name – WMS.2008.Server.RTSP.1
  - Method – RTSP
    - HOST=10.1.30.11 |PATH=/check.wmv|
  - Dest IP – 10.1.30.11
  - Dest Port – 554

- Create a Check for RTSP on server 10.1.30.12 in **Health Monitoring -> Check Table**
  - Check name – WMS.2008.Server.RTSP.2
  - Method – RTSP
    - HOST=10.1.30.12 |PATH=/check.wmv|
  - Dest IP – 10.1.30.12
  - Dest Port – 554

- Create a Check for UDP (RTSP UDP) on server 10.1.30.11 in **Health Monitoring -> Check Table**
  - Check name – WMS.2008.Server.RTSP.UDP.1
  - Method – UDP Port
  - Dest IP – 10.1.30.11
  - Dest Port – 554

- Create a Check for UDP (RTSP UDP) on server 10.1.30.12 in **Health Monitoring -> Check Table**
  - Check name – WMS.2008.Server.RTSP.UDP.2
  - Method – UDP Port
  - Dest IP – 10.1.30.12
  - Dest Port – 554

- Create a Check for HTTP on server 10.1.30.11 in **Health Monitoring -> Check Table**
  - Check name – WMS.2008.Server.HTTP.1
  - Method – HTTP
  - Dest IP – 10.1.30.11
  - Dest Port – 80

- Create a Check for HTTP on server 10.1.30.12 in **Health Monitoring -> Check Table**
  - Check name – WMS.2008.Server.HTTP.2
  - Method – HTTP
  - Dest IP – 10.1.30.12
  - Dest Port – 80
-

- Bind the RTSP check WMS.2008.Server.RTSP.1 to Server Farm Win.2008.Media.Services.RTSP.farm 10.1.30.11 in **Health Monitoring -> Binding Table**

- Bind the RTSP check WMS.2008.Server.RTSP.2 to Server Farm Win.2008.Media.Services.RTSP.farm 10.1.30.12 in **Health Monitoring -> Binding Table**

- Bind the RTSP check WMS.2008.Server.RTSP.UDP.1 to Server Farm Win.2008.Media.Services.RTSP.farm 10.1.30.11 in **Health Monitoring -> Binding Table**

- Bind the RTSP check WMS.2008.Server.RTSP.UDP.2 to Server Farm Win.2008.Media.Services.RTSP.farm 10.1.30.12 in **Health Monitoring -> Binding Table**

- Bind the RTSP check WMS.2008.Server.HTTP.1 to Server Farm Win.2008.Media.Services.HTTP.farm 10.1.30.11 in **Health Monitoring -> Binding Table**

- Bind the RTSP check WMS.2008.Server.HTTP.2 to Server Farm Win.2008.Media.Services.HTTP.farm 10.1.30.12 in **Health Monitoring -> Binding Table**

**VRRP Configuration**

- Enable VRRP in **AppDirector -> Redundancy -> Global Configuration**
    - IP Redundancy Admin Status – VRRP
    - Interface Grouping – Enable
    - ARP with interface grouping – Send
    - VLAN Redundancy – Active
    - Backup Fake ARP – Enable
    - Backup Interface Grouping – Enable

- Create Virtual Router interfaces in **AppDirector -> Redundancy -> VRRP -> VR Table**
    - IF Index – 1
    - VR ID – 1
    - Priority – 255 (Highest number is Active device)
    - Primary IP – 10.1.30.101
    - Leave all other options as default

Create Associated IP Addresses in **AppDirector -> Redundancy -> VRRP -> Associated IP Addresses**

- IF Index – 17, VR ID – 1, Associated IP 10.1.30.101
- IF Index – 17, VR ID – 1, Associated IP 10.1.82.200

## APPDIRECTOR BACKUP CONFIGURATION

### Network Configuration

- Create IP 10.1.30.102/16 on port 1
- Create default route to 10.1.0.1

- Copy all configuration from the Active AppDirector device

### Auto Generating the Backup Configuration from the Primary AppDirector

1. From the web interface menu of the Primary AppDirector, select **File -> Configuration -> Receive from Device** and choose Backup (Active-Backup) save the file on your computer and call it AppDirector.backup.txt.
2. Open the browser on the AppDirector backup device and upload the saved configuration (AppDirector.backup.txt) in **File -> Configuration -> Send to Device**
3. Reboot the AppDirector Backup device

### VRRP Configuration

- Enable VRRP in **AppDirector -> Redundancy -> Global Configuration**
    - IP Redundancy Admin Status – VRRP
    - Interface Grouping – Enable
    - ARP with interface grouping – Send
    - VLAN Redundancy – Active
    - Backup Fake ARP – Enable
    - Backup Interface Grouping – Enable

- Create Virtual Router interfaces in **AppDirector -> Redundancy -> VRRP -> VR Table**
    - IF Index – 1
    - VR ID – 1
    - Priority – 100 (Highest number is Active device)
    - Primary IP – 10.1.30.102
    - Leave all other options as default

Create Associated IP Addresses in **AppDirector -> Redundancy -> VRRP -> Associated IP Addresses**

- IF Index – 17, VR ID – 1, Associated IP 10.1.30.101
- IF Index – 17, VR ID – 1, Associated IP 10.1.82.200

WINDOWS 2008 MEDIA SERVER-1

- Create IP 10.1.30.11 on network interface
- Create Default GW to 10.1.0.1/16

Add LoopBack adaptor and configure IP 10.1.82.200 (Please see appendix 1 for more information on the configuration the loopback adaptor)

WINDOWS 2008 MEDIA SERVER-2

- Create IP 10.1.30.12 on network interface
- Create Default GW to 10.1.0.1/16
- Add LoopBack adaptor and configure IP 10.1.82.200 (Please see appendix 1 for more information on the configuration the loopback adaptor)

## APPENDIX 1

On Microsoft Windows, you must first install the loopback adapter as it is not installed by default.

To manually install the Microsoft Loopback adapter in Windows XP, follow these steps:

1. Click **Start,** and then click **Control Panel**.
2. If you are in Classic view, click **Switch to Category View** under **Control Panel** in the left pane.
3. Double-click **Printers and Other Hardware**, and then click **Next**.
4. Under **See Also** in the left pane, click **Add Hardware**,and then click **Next**.
5. Click **Yes**, **I have already connected the hardware**, and then click Next.
6. At the bottom of the list, click **Add a new hardware device**, and then click **Next**.
7. Click **Install the hardware that I manually select from a list**, and then click **Next**.
8. Click **Network adapters**, and then click **Next**.
9. In the **Manufacturer** box, click **Microsoft**.
10. In the **Network Adapter** box, click **Microsoft Loopback Adapter**, and then click **Next**.
11. Click **Finish**.

To configure the loopback with the VIP IP please do the following procedures,

1. Run ipconfig /all command and find the Loopback adaptor For example:
   Ethernet adapter Local Area Connection 4:
   Description ...Microsoft Loopback Adapter

2. Add the VIP IP to the loopback using the following netsh command :
   netsh interface ipv4 add address "Local Area Connection 4" 10.1.82.200 netmask 255.255.0.0
3. Enable forwarding for all of the interfaces on the machine. For example:
   netsh interface ipv4
   set interface "Local Area Connection" forwarding=enabled
   set interface "Local Area Connection 2" forwarding=enabled

   set interface "Local Area Connection 3" forwarding=enabled

set interface "Local Area Connection 4" forwarding=enabled

After each command, you should receive an "OK" message.

# 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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