

# Whitepaper **Ensuring Interoperability in the Microsoft Mediaroom Environment**

## *The Role of the Residential Gateway and the Need for Certification*

### Executive Summary

Microsoft Mediaroom is the most widely deployed IPTV platform. This whitepaper discusses the role of the residential gateway in the Mediaroom environment, as well as the leading role Actiontec has taken for the deployment and interoperability of Mediaroom compatible home gateways.

### Microsoft Mediaroom: An Overview

TV entertainment is no longer a passive experience. Over the past years, innovations have changed the way television content is distributed and consumed. Today's audience expects more flexibility and freedom when it comes to how they access their entertainment, what they watch, and where they watch it.



**“TV viewing options are increasing exponentially, and consumers are coming to expect their TV service providers to bring fresh new services and content-viewing options to the table.”**

— Michelle Abraham, principle analyst, In-Stat

Microsoft Mediaroom extends the TV experience across all screens in subscriber's lives. It enables the delivery of high-quality live TV and video on demand over IP network infrastructures. This middleware software platform is licensed to TV and video service providers, enabling them to deliver world-class TV and video services, along with enhanced content and interactive applications. Deployed at more than 6 million consumer households as of January 2011, Mediaroom represents the most widely deployed IPTV platform.

Mediaroom supports whole-home digital recording, on-demand capabilities, access to hosted and stored content, Internet TV, and interactive applications. Services and content are available on a range of screens including the TV via set-top box, Xbox 360, Windows PCs, Web browsers via Microsoft Silverlight and Windows Phone 7 smartphones.

## Mediaroom Features

Microsoft Mediaroom enables broadband service providers to offer a personalized TV experience. The platform is customizable and configurable for each market, so providers can offer the right set of television and video services to attract and retain subscribers in their market. Some key Microsoft Mediaroom features include:

### DVR Anywhere

With DVR Anywhere, users can watch and share DVR recordings on any TV in the home. Viewers can begin watching a movie in the living room, resume watching it in the kitchen, and then finish it on their bedroom TV. Recorded content is also available to watch on the PC or mobile phone for true content portability. Mediaroom lets users record up to four shows in HD at once, and set up recurring recordings for series.

### Video on Demand

Mediaroom supports individually purchased VOD assets, VOD packages, subscriptions, and free offers. Users can control their viewing experience in the same way they control a traditional DVD player, with multiple speeds for FF/REW, skip forward, skip backward, and pause. In addition, users can see previews and Picture in Pictures of VOD assets before purchase.

### Microsoft Mediaroom Anytime

Microsoft Mediaroom Anytime gives subscribers more control over their viewing experience, including:

**Live Anytime:** Live programming is recorded and stored as a VOD asset to be viewed on demand from the VOD server.

**Restart Anytime:** The past few hours of a live program are buffered to be viewed on demand.

**Download Anytime:** Subscribers can choose to download content in advance of viewing (instead of streaming at viewing time).

## Instant Channel Change (ICC)

Instant Channel Change delivers a richer viewing experience, by eliminating the 2-3 second delay that typically occurs when a user makes a channel change. ICC takes advantage of both multicast and unicast UDP. When a channel change is initiated by the user, a burst of unicast is sent to the client. To subscribers, the channel change appears instantaneous (and no 'black screen' effect between channels).

## Electronic Program Guide (EPG)

Mediaroom's program guide is a complete, modern guide application that leverages Microsoft's experience from Dishplayer, UltimateTV, and Media Center Edition PC. The guide contains imported listings data from multiple sources (including third-party listing providers, VOD content owners, and aggregators) and presents in a unified program guide. The guide is adaptable to any listings provider, and is customizable.

## Search

A handy search features lets Microsoft Mediaroom subscribers easily locate specific content they want whether it's live TV, Pay Per View, or VOD content. Subscribers can search by the program title, as well as the name of an actor or director.

## Application Environment

Service providers can deploy custom applications using the Microsoft Mediaroom application environment. The Microsoft Mediaroom Browser lets service providers create and deploy unique customer experiences and service offerings (the browser ships with the Microsoft Mediaroom client installed on the set top box and residential gateway). For example, providers can collaborate with one of their premium content providers to build an enhanced portal highlighting specific content offerings.

## Settings

Customizable settings give users the flexibility to control display settings, system sounds, notifications, program guide settings, as well as parental locking.

## Actiontec's Leadership and the Role of the Residential Gateway

### The Residential Gateway in Microsoft Mediaroom

While early focus on Microsoft Mediaroom in the home focused on the set top box, the residential gateway plays a critical role in extending Mediaroom services throughout the home, in particular, facilitating whole-home DVR across multiple set top boxes and sharing media between PCs and set top boxes.

Microsoft's vision for Mediaroom is content anywhere and everywhere. This means users can access all their live, recorded, or on demand programming on any device...for example you can start watching a show on the TV in the living room and then finish watching it on a cell phone or laptop by the pool. As content moves from device to device, **the home gateway will play an increasingly prominent role in connecting and managing content and devices.**

As a result, this home environment requires a residential gateway that:

- Is powerful enough to support demanding multimedia applications, including support for multiple HD streams
- Is intelligent enough to facilitate content routing and sharing across multiple devices
- Is tested with Microsoft Mediaroom in Actiontec labs

### Actiontec Paving the Way for Residential Gateways

Understanding the important role the residential gateway can play in a Mediaroom home, we have worked closely with Microsoft to ensure our solutions seamlessly integrate into a Mediaroom environment. **We have been a Microsoft Mediaroom Ecosystem partner since February 2010.** Our company has been on the leading edge of gateway vendors in the Mediaroom environment

### Actiontec Mediaroom Residential Gateways

Currently, the following residential gateways from Actiontec support Microsoft Mediaroom and are deployed today in Mediaroom environments:

**V1000H:** The Wireless N VDSL Modem Router is designed to fuel the next generation of xDSL, HDTV, IPTV, and Voice over IP services, the V1000H enables carriers to deploy ultra-broadband service via any access architecture.

**V2000H:** This ultra-fast VDSL Bonded Modem Router builds on the success of the V1000H by offering the latest VDSL2 bonded capabilities.



Mediaroom Enabled Home Gateway

**R1000H:** The Wireless N Gigabit Ethernet Router is designed for FTTH (Fiber-to-the-Home) high speed Internet offerings.

### Actiontec Interoperability Testing

We have built a state of the art Microsoft Mediaroom test environment at our corporate headquarters in Sunnyvale, California. This lab, dedicated to Mediaroom compatibility and testing, includes a Microsoft Mediaroom Personal Server, along with Mediaroom set top boxes from multiple vendors, including Motorola and Cisco. This test bed enables us to test IPTV in a real Mediaroom environment, in order to stress and verify the performance of our residential gateways in real Mediaroom environments. In particular, we can test the interoperability and performance of critical gateway functionality, including IGMP, Instant Channel Change (ICC), video QoS, and HPNA LAN STB networking.

*One of Actiontec's Microsoft Mediaroom Labs*



By testing our gateways in a controlled IPTV production environment, we can ensure seamless and smooth deployments in the field. In addition, we frequently send technical staff to receive Microsoft Mediaroom training.

### Snapshot: Testing Residential Gateway Features

To emphasize the importance of testing interoperability, the following snapshot highlights one example of the important role the residential gateway plays in a Mediaroom home. As mentioned earlier, Mediaroom's Instant Channel Change (ICC) is a unique feature that eliminates the annoying delay (or black screen) when changing channels.

From a technical standpoint, this is accomplished using both multicast UDP and unicast. Live TV is delivered to the client via multicast UDP. When a user changes the channel, a burst of unicast is sent, along with the help of IGMP. This burst of unicast is sent from Distribution Servers that maintain an updated buffer of the multicast streams. When the

user requests a channel change, the Distribution Server sends a unicast burst of this cached content. The first frame is an I-frame which is delivered at a higher rate. As a result, the channel change appears instantaneous to the user. Once enough cached data has been sent to the client, it returns to a multicast stream.

As shown, multiple steps are involved to make ICC work and ensure the end user experiences smooth, nearly instantaneous channel surfing. At the Actiontec test lab, we measure and analyze the performance of our gateways, including such metrics as ICC signaling, burst, throughput, latency and more. As a result, we can be certain our Mediaroom gateway products perform as expected and deliver a seamless Mediaroom experience.

## Conclusion

By selecting a residential gateway that is Mediaroom tested and certified, service providers can better position themselves to take advantage of all of Mediaroom's key features and offer a high quality entertainment experience to their subscribers. From early on, Actiontec has been actively involved in incorporating our gateway products in a Microsoft Mediaroom environment, through certification, in-house lab testing, and training. Through this experience, we can help our service provider customers offer great TV-anywhere experiences that grow subscriber loyalty.

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Product photo may differ from actual product, however functionality remains as stated above.

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