

Using Standards to Stand Out



As more providers introduce triple-play services, interoperability is becoming the real differentiator.

BY HEATHER KIRKSEY

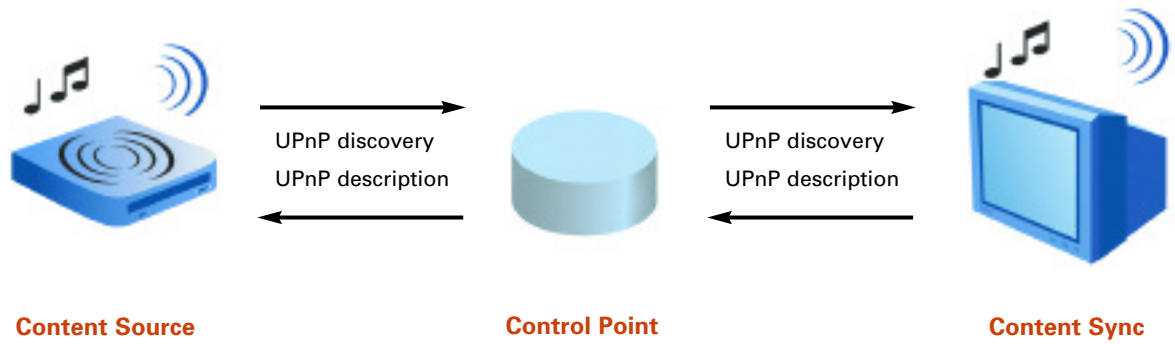
The strategy to deliver a triple play of voice, video and data services is being actively pursued by nearly all of the world's leading broadband service providers. As a result, the ability to deliver these bundled services is quickly transitioning from a competitive differentiator to a market requirement. Providers looking for a way to differentiate their offerings and distance themselves from their competitors

would do well to look at how their subscribers really want to consume these services.

Currently, most providers are focused on bandwidth requirements, home distribution technologies and quality of service issues. But as these capabilities grow more similar across providers, and broadband service bundles grow more common, what will differentiate new broadband services

from competitive offerings will be the customer's ability to interact with these services across multiple, disparate devices, in different areas of the home and beyond. The reality is that today's connected consumer may not know what a home network is, but they are used to networked content and devices, such as iPods that let them listen to music anywhere, and Tivo-style digital video recorders

FIGURE 1



Media Server

Connection Manager Service: determines how content can be transferred from UPnP media server to UPnP media renderer devices
Content Directory Service: itemizes the available content (such as an alphabetical list of files)
A/V Transport Service: prioritizes and controls the flow of content

A/V Control Point

Manages instances of services on the media server and renderer devices
 May be stand-alone or embedded on either type of device

Media Renderer

Connection Manager Service: determines how content can be transferred from UPnP media server to UPnP media renderer devices
Rendering Control: controls how content is played
A/V Transport Service: controls the flow of content

(DVRs) that let them choose when to view television programming.

Consider the impact this increasing “when I want it, where I want it” demand might have on a hypothetical service offered by a service provider. Say, for example, the service provider sends the subscriber a storage device on which the consumer can store media files, such as MP3s and photographs. Additionally, the provider supplies video content through a movie download service that can be accessed much like one would access content on a DVR. Such a service might certainly be interesting as-is, but imagine the various uses the consumer might want to make of that content. She might want to share a slideshow of her vacation photos with friends on her TV. She might want to listen to some of her MP3 collection on the stereo in her bedroom, and watch one of the videos in a small screen on her PC while paying bills in her home office. In these scenarios, the consumer weaves the content consumption into her routine and activities,

making it a part of her lifestyle.

Service providers need to be prepared for this greater level of engagement with content, as well as the expectation that consumer electronics devices from other channels will be integral to the way their subscribers consume their services. To help providers and device manufacturers meet this demand, two organizations, the Universal Plug and Play (UPnP) Forum and the Digital Living Network Alliance (DLNA), are developing standards and specifications designed to allow these devices to interact seamlessly with each other.

UPnP Defines Connectivity

The UPnP Forum is an industry initiative designed to enable simple and robust connectivity among stand-alone devices and PCs. Founded by Microsoft and Intel, the Forum has gained wide industry acceptance, and today consists of more than 800 vendors, including industry leaders in consumer electronics, computing, home automation, home security, appliances, printing,

photography, computer networking and mobile products.

The UPnP standard describes how intelligent software agents, called control points, can discover and interact with various types of devices, whether for device configuration and monitoring, or to set up connections between disparate devices. UPnP defines the overall architecture and protocol (called UPnP Device Architecture or UDA), as well as the information models, for numerous home networking applications and devices (called Device Control Protocols or DCPs) such as home automation, printer and digital camera discovery, and quality of service negotiation. The most widespread use of UPnP allows a control point to open NAT ports in gaming systems, such as Xbox Live, for online gaming.

The UPnP device architecture defines the general mechanisms by which control points can find devices on the network, discover capabilities of the device, control the device (configure settings, read statistics, and perform

actions such as “play,” “record” and “pause”) and register to be proactively notified about changes in the device’s state. The architecture is designed to be “ad hoc,” so that new devices added to the network can be automatically discovered and information learned about them by the control point.

UPnP A/V is a DCP that applies specifically to audio visual devices. It defines how content sources, (called media servers) and displays, such as a PC monitor or TV (called media renderers), are managed by the control points, as shown in Figure 1.

The control point facilitates the flow of content between the media servers and renderers. It can stand alone in a separate entity (such as an intelligent remote control) or be

point on the network would facilitate creating connections between that server and the various UPnP renderers in the house.

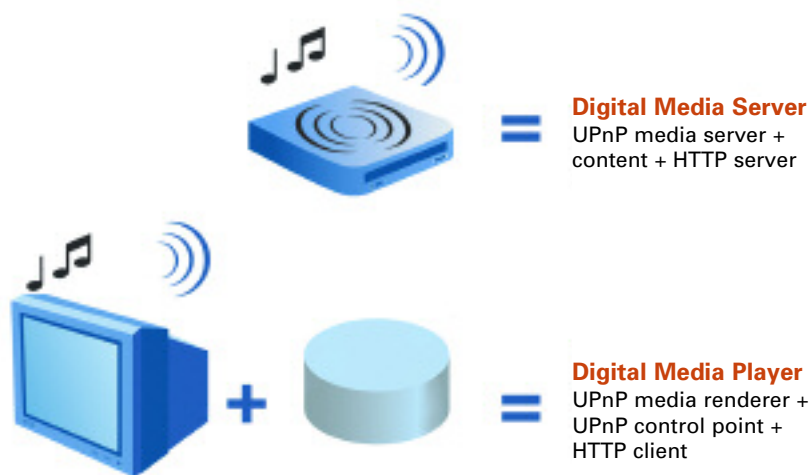
DLNA Simplifies Device Interoperability

The UPnP A/V spec provided a strong and flexible means to share content throughout the home, but because UPnP offered rather overwhelming flexibility in the choices vendors and providers could make in configuring their products and services, (push vs. pull, what types of video and audio file formats have to be supported, etc.) the DLNA developed its own interoperability guidelines to simplify the process. The result is the Home Networking Version 1 specification,

networking capabilities (Ethernet, WiFi) and expected usage scenarios. The organization also instituted a certification process to guarantee out-of-the-box interoperability among players and servers.

For example, if the storage device in our service provider’s content offering was a DLNA digital media server, any DLNA-certified display device—whether media adapter, IP-enabled TV, PC or audio player—would be able to find the storage device, peruse all the files on it and play those files. The provider could take care of provisioning the service, backing up the content and managing the file system (through, for example, TR-069 and WT-140), while the DLNA ad hoc capabilities would allow the user to interact with the movies, pictures and songs in whatever way she chose.

FIGURE 2



HOME NETWORKING V1 SPECIFICATION


embedded in either the media server (in a content “push” model) or in the media renderer (in a content “pull” model).

Returning to our hypothetical content offering, the storage device could play the role of the media server, storing content and making it available for browsing. A control

which clarifies and refines the guidelines for UPnP interoperability in an actual home network. DLNA defines two classes of devices, which are subsets of the allowed A/V devices.

DLNA simplified UPnP A/V to mandate that control points be embedded in display devices, and it further refined the required file formats, home

Delivering the Digital Lifestyle

The UPnP Forum and DLNA specifications help make it possible for service providers and their CPE partners to finally deliver on the vision for the consumer-driven connected digital home. Of course, some issues still remain to be solved. For example, proprietary digital rights management (DRM) schemes may still prevent certain content from being rendered on various devices, even if they’re capable of interacting at the UPnP layer. The role of content-capable mobile devices (such as picture or video phones) with capabilities that may be more limited is another active area of DLNA work. But by taking the first step towards interoperability, providers can add their voices to those of their consumers for products and services that work seamlessly together. 

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