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VIA ECFS

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: Comments – NBP Public Notice #27
GN Docket Nos. 09-47, 09-51, 09-137
CS Docket No. 97-80
Comments of Sony Electronics Inc.

Sony Electronics Inc. (“Sony”) submits the following in response to the questions posed by the Commission in the Public Notice referenced above:

A. What technological and market-based limitations keep retail video devices from accessing all forms of video content that consumers want to watch?

1. What limitations prevent consumer electronics manufacturers from developing a true “plug-and-play” device that is network agnostic?

Technical differences among video services represent the primary obstacle to the development of a true “plug-and-play” device that is network agnostic. The four to five¹ video services available to a typical U.S. household transmit their signals over different physical mediums, on different frequencies, using different techniques for modulation, transport, compression and encoding, and where applicable, multiplexing. Most video services broadcast their signals, but some use a switched architecture for a portion or all of the service, thus requiring upstream communication from the device into the network to enable basic functionality – for example, changing channels. Services use different methods for identifying available content to the end user, either per channel or across the service on an electronic program guide, and different methods for meeting regulatory requirements relating to closed captioning, parental controls and emergency alerts. Each subscription-based video service uses a different conditional access system to prevent signal theft and enable tiered or premium services.

Although standardized for transport over Internet Protocol (“IP”), the other technical characteristics of Internet-delivered video services also vary significantly. Different services may, and often do, offer the same movie or television show using different encoding and compression. These services take advantage of the inherently two-way nature of IP

¹ Over-the-air broadcast television, one incumbent cable operator, two direct-broadcast satellite services and, in some instances, one cable overbuilder.

communications to allow end users to actively search for and select among available programming choices, but typically enable this search and selection functionality in different ways. To the extent that an Internet video service protects content from unauthorized copying or redistribution, most use different rights management tools, many of which are proprietary.

2. *What technical or market limitations keep certain video devices from accessing video services to which a consumer has subscribed?*

Three primary factors limit the ability of manufacturers to design retail devices that can access a particular subscription video service: 1) proprietary conditional access systems; 2) the lack of adequate discovery and access information for a given service; and 3) implementation costs that preclude competition between retail devices and service-provider leased offerings.

As noted above, most major subscription video services incorporate proprietary conditional access systems to prevent signal theft and enable tiered or premium service access. The proprietary nature of these systems, however, has the additional effect of impeding the development of devices by unaffiliated manufacturers that can access these services. Some video service providers do not license their conditional access technologies for implementation in retail products, thus placing retail devices at a competitive disadvantage against service-provider leased devices.

Access to a subscription video service, however, requires more than just confirming authorized use of the service. It also requires that the device, at a minimum, can identify the content available on the service to the end user, and then tune, select or otherwise request particular content from the service in response to an end-user input. Devices leased by service providers perform the first function by means of an electronic program guide. This guide is populated by data that is specific to the service, and typically varies from system to system for those service providers with less than a national deployment footprint. Access to data that accurately reflects the content available to a consumer over the service provider network is fundamental to the development of a competitive device market. Then, in response to a selection by the consumer from the electronic program guide, or to any other channel change activity, a competitive device must know where to find the requested program stream in the overall service provider data stream.

Finally, any costs of implementing any network-specific technologies into a consumer product must be low enough, and spread across a sufficient number of devices to allow manufacturers to realize the economies of scale necessary to compete with operator-provided devices. As a practical matter, this requirement makes it difficult for manufacturers to bring technologically complex interface solutions to market, given the high bill-of-materials, licensing and integration costs that such solutions generate.

3. *With respect to Internet access, consumers can purchase or lease interface devices (for example, cable modems) that perform all of the network-specific functions and connect via Ethernet ports to a multitude of competitively provided consumer devices including computers, printers, game consoles, digital media devices, wireless routers, refrigerators,*

network storage devices, and more. What technical or market limitations prevent video content distributors from providing similar devices that allow for innovation in the navigation device market?

Adapting the network “gateway” model described in the question above to the video navigation device market would require the adoption of a nationwide standard interface between the gateway and the end-user device. Although similar to the role played by Ethernet in a home network connected to an Internet access service, this gateway interface would need to support additional functionality beyond the mere addressing and transport of data packets, and should include protections against theft of the MVPD service and the illegal copying or redistribution of copyrighted content.

B. Would a retail market for network agnostic video devices spur broadband use and adoption and achieve Section 629’s goal of a competitive navigation device market for all MVPDs?

1. *How could the Commission develop a standard that would achieve a retail market for devices that can attach to all MVPD networks and access Internet-based video sources?*

A user experience that integrates Internet-delivered video content with MVPD-delivered video content would increase the value of and demand for not just broadband Internet access, but also for the MVPD services, video content and end-user devices that together comprise the video service ecosystem. If achieved, this integration would both enable access to a broader and more open-ended variety of content, but would also simplify consumer access to this content. The challenge, as noted above, involves reconciling the various video delivery technologies used by MVPDs with each other, and with the even greater variety of technologies used to deliver video content over the Internet.

Several architectures could meet this challenge. One method is the network “gateway” model, which involves, as addressed above: 1) the termination of the MVPD service at a network gateway device; and 2) adoption of a common interface between that gateway device and the end-user device. Alternatively, the Commission could adopt a network standardization model, whereby each MVPD would transmit video content using a single, nationwide standard, much like multiple over-the-air broadcast stations transmit video content using the ATSC digital television standard today. Finally, the Commission could require end-user devices to include all of the technologies necessary to tune, decrypt, decompress and decode every current and future MVPD service. Under each model, the end-user devices would then incorporate Internet-delivered content with MVPD-delivered content in a single user-interface.

2. *What are the pros and cons of each of these types of solutions, and which one would do the most to promote broadband adoption and utilization? Would any inhibit broadband adoption and utilization?*

Integration of Internet-delivered video content with MVPD-delivered video content is the key to using video services to promote broadband adoption and utilization. Provided that such

integration occurs, the three models described above would offer roughly equal benefits. The models differ, however, in the size and scope of costs imposed to achieve standardization.

The network gateway model resolves some of the most-significant challenges, because it permits technological variety in MVPD networks, while allowing end-user devices to access these services through a single, standardized interface. This model would require an interface solution for accessing the MVPD content, protecting against signal theft, unauthorized copying and retransmission, and minimizing constraints on MVPD-network innovation. This solution should permit the easy integration of other sources of video content, particularly Internet-delivered video content and, to ensure the widest possible adoption, should be robust, relatively easy to implement, and relatively inexpensive. This model would also require a compliance and certification mechanism for ensuring that network gateway devices meet the technical specifications of the interface.

C. Can the home broadband service model be adapted to allow video networks to connect and interact with home video network devices such as televisions, DVRs, and Home Theater PCs via a multimedia home networking standard?

1. *Are DLNA and HANA the only home networking standards that the Commission should consider in reviewing this model? If not, which other standards should the Commission consider?*

Sony has been closely involved with the Digital Living Network Alliance (“DLNA”) since the inception of that organization, and believes that the DLNA Interoperability Guidelines represent the best multimedia home networking solution available today.²

2. *What are the strengths and weaknesses of each home networking standard?*

DLNA Interoperability Guidelines provide a comprehensive and flexible framework for enabling consumers to manage the acquisition, storage, transfer and playback of all forms of digital content, including Internet-delivered and MVPD-delivered video content. The Guidelines identify a set of stable, widely accepted and independently developed standards that, as a group, enable device interoperability across multiple networking layers.³ Examples of these standards include: IEEE 802.3 Ethernet, MoCA and IEEE 802.11 for wired and wireless connectivity; the hypertext transfer protocol (HTTP) for media transport; the IPv4 protocol suite for IP networking; DTCP/IP for link protection and retransmission control; and the MPEG-2, MPEG-4, AVC/H.264, LPCM, MP-3, AAC LC, JPEG, and XHTML-Print standards to ensure media format compatibility. To minimize implementation cost and complexity, the Guidelines identify

² The High Definition A-V Network Alliance (“HANA”) dissolved, effective September 2009, and has transferred its assets to the 1394 Trade Association. See <http://www.hanaalliance.org/about/HANA/MemoFromThePresident.pdf> (visited December 15, 2009).

³ Although DLNA is not a standards development organization, Version 1.5 of the Interoperability Guidelines has been ratified as an international standard by the International Electrotechnical Commission (“IEC”). See IEC 62481-1, 62481-2 (2007).

a small set of mandatory standards that devices must support, and thereby offer manufacturers substantial opportunity to innovate and differentiate products with additional functionality.

3. *Would any of these standards allow consumers to use existing technology? For example, many devices already in consumers' homes can accept firmware upgrades and are already DLNA or HANA certified. Could the Commission adopt a network interface standard that allows those devices to connect to an MVPD network?*

The DLNA Interoperability Guidelines place no limits on upgrades that provide additional functionality to DLNA-enabled devices, including firmware upgrades. Sony has already, for example, provided a firmware upgrade to the PlayStation 3 game console that enabled DLNA functionality, and could presumably offer additional upgrades to take advantage of future developments of the DLNA specification. Personal computers require no firmware upgrades, and can meet DLNA certification obligations with software. Notably, Microsoft's Windows 7 operating systems incorporates DLNA functionality as a standard feature.

D. What obstacles stand in the way of video convergence?

1. *Given the flood of video content that is now available from a multitude of sources, what obstacles stand in the way of allowing consumers to navigate those sources? What can the Commission do to eliminate those obstacles?*

The single most important obstacle to video convergence today is the threat of discrimination by network operators that provide both an MVPD service and an Internet access service to consumers. Internet-delivered video represents the single best approach for enabling consumers to gain legal access to video content, whenever, wherever, and however, they wish to do so. The flexibility and absence of arbitrary service boundaries that Internet-delivered video offers, however, make it a direct threat to incumbent MVPD services. Network operators that provide, and therefore exert control over, both services have an overwhelming incentive to undermine Internet-delivered video and diminish its competitive threat. This threat of discriminatory treatment hampers the development of Internet-delivered video by diminishing the quality of available services and deterring investment. Moreover, artificial limits on Internet use, such as monthly "usage caps", can have the same effect on the competitive impact of Internet-delivered video services. To overcome these obstacles, it is critical that the Commission enact into regulation the six net neutrality principles proposed in the recent Open Internet Notice of Proposed Rule Making,⁴ particularly the fifth, "non-discrimination" principle. Failure to do so will almost certainly consign Internet-delivered video to second-class status for consumers.

Network non-discrimination obligations alone, however, will not eliminate every structural obstacle to competition among Internet-delivered and MVPD-delivered video services. In most instances, consumers cannot integrate video services and aggregate available content

⁴ *Preserving the Open Internet; Broadband Industry Practices*, Notice of Proposed Rulemaking, 24 FCC Rcd 13064, 74 FR 62638 (2009).

choices irrespective of source. Thus, video convergence requires that consumers have the ability to access all authorized video services through a common user interface. This integration would enable consumers to compare content offerings across service platforms, and would help eliminate confusion and redundancy. Simplifying access to more content from more sources will enhance the value of the entire ecosystem and all of its components, thus driving consumer demand for Internet access and MVPD services, but also for end-user devices and content.

2. *Is there a solution that would allow MVPDs to continue innovating without making navigation devices obsolete when MVPDs adopt incompatible delivery methods?*

Any future innovation that might occur within an MVPD network would affect only those devices that connect directly to that network. The network interface device model offers service providers as much flexibility to innovate as the current set-top box model provides. Service providers could, for example, design the network interface for their service to be easily upgradeable over time. Alternatively, if network innovation proceeds at such a pace that an installed base of interface devices becomes obsolete, the service provider could replace older devices with new models, much as it must do with set-top boxes today.

3. *Would a network interface solution address the concerns raised regarding cost and complexity of device certification and approval? Why or why not?*

A network interface solution would mitigate device certification and approval concerns to some degree. These concerns arise when unaffiliated parties are permitted to manufacture the network interface device and sell it at retail. Under this approach, it is important that the certification process be transparent, fair, and expeditious.

Respectfully Submitted,

/s/

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