

**Before the
Federal Communications Commission
Washington, D.C. 20554**

International Comparison and Consumer)	
Survey Requirements in the Broadband)	
Data Improvement Act)	GN Docket No. 09-47
)	
A National Broadband Plan for Our Future)	GN Docket No. 09-51
)	
Development of Advanced)	
Telecommunications Capability to)	
All Americans in a Reasonable and Timely)	
Fashion and Possible Steps to Accelerate Such)	
Deployment Pursuant to Section 706 of the)	
Telecommunications Act)	GN Docket No. 09-137
)	
Implementation of Section 304 of the)	
Telecommunications Act of 1996)	CS Docket No. 97-80

INTEL CORPORATION COMMENTS -- NBP PUBLIC NOTICE # 27

Pursuant to the December 3, 2009, Commission Public Notice #27, Intel Corporation provides these comments in response to certain of the questions posed by the Commission. Intel Corporation is a major U.S. manufacturer of semiconductor chip devices for use in a variety of digital processing environments. Intel's advanced CPU and graphics processors power hundreds of millions of computers and consumer electronics products in the United States. Since the mid-1990's, Intel has worked closely with members of the motion picture, cable, telecommunications, and satellite television services, consumer electronics, and information technology industries to bring to fruition a true digital networked home and personal environment.

In Intel's vision, consumers access, anywhere and anytime, content to which they have lawful rights of access, using digital devices that seamlessly and transparently store and share media from all sources: television, Internet, physical prerecorded media,

physical storage, and live streaming. It should not matter to the home consumer that these various media may be accessed or acquired from multiple MVPDs, or may arrive to the home over different wired or wireless “pipes.” Consumers should be able to enjoy content they have lawfully acquired, through any means, throughout the home and personal network across multiple platforms. That products have in the past been characterized as “consumer electronics” or “computing” devices should matter as little as whether the content is categorized as “entertainment,” “information,” or “consumer-generated.” Simply put, all digital audio and video can and should converge within the home on a network connecting all products capable of rendering and storing it.

Intel identifies with the Comments of the Consumer Electronics Association regarding the importance of reliable CableCARDs, industry standards, home gateways, and other solutions to achieve a competitive market at retail for cable navigation devices. To that end, Intel is working hard with the Cable industry to promote innovation and converged IP services both in voluntary industry standards bodies like the DLNA and in private business engagements. In these Comments, Intel wishes to focus, in response to questions C and D, on what it believes to be more concrete solutions to promote home networking across “broadband” and “broadcast” content.

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?

Intel believes that DLNA provides the best available approach to enable interoperability and seamless distribution of broadband and service-provider content within the home.

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

DLNA provides consumers and manufacturers with an inexpensive and interoperable networking solution based on Internet Protocol (“IP”) that is highly flexible yet easy to use. Given the proliferation of IP in the marketplace over just the last few years, Intel believes that IP-based solutions will provide the maximum interoperability among devices that receive content from a multitude of sources. Standards-based IP networking will encourage dissemination throughout the home of content from multiple video services (cable, satellite, IPTV) to a full range of service-provider and retail devices. Devices that currently rely on IP networking include existing, high-end IP-capable set-top boxes, digital televisions, Blu-ray players, gaming consoles, as well as personal computers, laptops and Netbooks.

DTCP-IP and UPnP, both mandated as part of the DLNA guidelines, work together to ensure the flow of content from all sources on the home network. The availability of DTCP-IP for content protection ensures that audiovisual material that is intended only for home use will remain in the home, and can be treated as recordable or display-only in accordance with the set of rules accepted by the Commission in Section 76.1901 *et seq.* Thus, protected and unrestricted content will flow over the same network in a consistent manner from a consumer’s perspective, and can be secured, when necessary, according to content owner requirements. UPnP enables devices to discover and make resources including content available to each other.

One of DLNA’s major strengths comes from its broad acceptance in industry and the marketplace. DLNA members and promoters include not only leaders in the consumer electronics and information technology industries, but also include leading

MVPDs such as Comcast, Time Warner Cable and DirecTV. The breadth of participation and support for the DLNA solution ensures that home networking using DLNA will interface seamlessly with content received from MVPD services, packaged media, and broadband and internet content. Intel understands that currently more than 6000 devices have been certified by DLNA, and more than 115 million DLNA products have been shipped. In contrast with the marketplace acceptance of DLNA and the thousands of devices currently on the market that support the DLNA guidelines, HANA never was successfully deployed in consumer home devices, and never gained the inter-industry support and momentum of DLNA.¹

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?

Because millions of devices already in consumer homes implement the DLNA guidelines, DLNA provides consumers with the means to reliably share across the home network audiovisual content received from a multitude of sources including MVPD services. However, Intel believes that the Commission first must address and remove certain impediments to the interconnection of current DLNA devices to MVPD-supplied content.

¹ Upon the recent dissolution of HANA, the former HANA President noted that HANA “may not have achieved the goal of placing these devices in homes.” <http://www.hanaalliance.org/about/HANA/MemoFromThePresident.pdf>, dated October 1, 2009.

First, the Commission should approve Intel's Petition to Waive the 1394 interface requirement of Section 76.640(b)(4)(ii).² The requested waiver would make available to set-top box manufacturers the Intel "system-on-a-chip" advanced multimedia processors that were designed to be highly interoperable with existing IP-based home networks and networked devices. This first step could jump-start the delivery of IP networked STB capabilities to consumers faster than any other single action by the Commission.

Second, the Commission should support efforts to replace the existing 1394 mandate under Section 76.640(b)(4)(ii) with a an agreed industry standard for an IP-based network interface based on the DLNA guidelines.

Third, the Commission should encourage MVPDs to enable the use of IP-based networking capabilities where present in set-top boxes already in the field through updates of STB firmware and software. This would provide a rapid and inexpensive transition to IP networking for consumers who lease equipment from service providers.

Fourth, a standardized home network approach such as DLNA must be coupled with efforts to drive availability on the competitive market of inexpensive home services "gateways." Like today's broadband modems, these gateway devices will do no more than provide broadband modem functionality as well as serve as a termination point for non-broadband content services delivered to the home by MVPDs. This includes the MVPD's non-broadband video and its associated metadata and program guide information. Once the content and metadata/program guide information are received, the gateways can make this content and metadata available in a standardized manner

² *In the Matter of Intel Corporation Petition for Waiver of 47 C.F.R. § 76.640(b)(4), CSR-8229-Z, CS Docket No. 97-80.*

throughout the DLNA compliant home IP network, accessible by devices competitively available at retail or, if the consumer so chooses, leased from a MVPD.³

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?

Intel believes that the home services “gateway” solution described above would eliminate a key impediment to the free flow of non-broadband MVPD video content to and through the home by enabling service-independent consumption of video content within the home – but only through offering and integrating broadband delivered content, applications, and other services as a native complement to the existing service offerings on MVPD provisioned or retail navigation devices. Once video services and accompanying descriptive metadata and program guide information cannot be isolated within a proprietary “walled garden,” separated or treated differently from broadband or MVPD content, competition will spur innovation to develop better navigation capabilities for all available video services. Both retail competitors and MVPDs will have powerful incentives to enable their navigation devices to support discovery of all broadband services made available on the home network which the consumer is entitled to access. Increasingly, video services are enabled and/or augmented by downloaded applications. Down-the-wire provisioning, management, and integration of such applications with the rest of the consumer's device functions. These competitive incentives will enable device providers to deliver a consumer experience that integrates and maximizes the provisioned services and applications with the device's native capabilities.

³ The gateway solution also addresses the questions posed by the Commission at A.3 and B.1.

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

The proposed gateway-based solution provides the most future-proof solution to home networking of MVPD-provided and broadband-acquired content. What happens beyond the gateway from a technological perspective essentially remains invisible and irrelevant to the consumer. Regardless of how the data is delivered to consumer premises, the gateway provides the data to the home network in the same standard way. MVPDs thus may upgrade their delivery systems without obsoleting the consumer's investments in home networking and entertainment products.

Respectfully submitted,

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