Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Video Device Competition	)	MB Docket No. 10-91
	)	
Implementation of Section 304 of the Telecommunications Act of 1996	)	
	)	
	)	
Commercial Availability of Navigation Devices	)	CS Docket No. 97-80
	)	
	)	
Compatibility Between Cable Systems and Consumer Electronics Equipment	)	PP Docket No. 00-67
	)	

COMMENTS OF CISCO SYSTEMS, INC.

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SUMMARY

The AllVid approach proposed in the Notice of Inquiry ("NOI"), although well-intentioned, risks repeating the errors of the CableCARD regime and falls short of important Commission goals. To successfully establish a regime to replace CableCARD, the Commission must look critically at its past regulatory efforts in this area and the resulting market conditions. The cable and consumer electronics industries spent countless hours and millions of dollars negotiating and implementing a complex interoperability standard for one-way video services, yet video distribution technologies evolved so rapidly that the standard was out-of-step with current technology almost as soon as it was completed. As the CableCARD experience shows, regulatory flexibility is critical; neither government nor industry can effectively predict technology "winners."

Given the importance of flexibility, the primary flaw of the AllVid proposal is its limitation on the capabilities of AllVid adapters. This ceiling on device functionality is unnecessary, would harm consumers, and would thwart key Commission goals. Specifically, such a limitation would: increase cost, compared to a single home gateway device for voice, video, broadband, and wireless services; stifle innovation that would be beneficial to retail smart video devices; discourage broadband adoption; weaken MVPD competition; hamper infrastructure upgrades; complicate use and maintenance; and impair home network performance. It also should be emphasized that AllVid as a whole is unnecessary. It is premised on a disregard for consumer preference with respect to the leased set-top box model, as well as unfounded assumptions that lack of access to MVPD services serves as a significant barrier to entry for over-the-top Internet video devices and services. The Commission should not base any new policy mandate on so shaky a foundation.

With today's explosive innovation in home networking and service convergence, AllVid's linear video-centric focus is too narrow. For example, it fails to take into account the ongoing market transition to converged video, data and, voice services. AllVid thus is incompatible with forward-looking, convergence-based industry initiatives such as Cisco's Next Generation IP Video Platform, which treats video as one integral part of the services to a consumer's personal network of various devices. Cisco's Next Generation IP Video Platform provides expansive consumer choice in the video device retail market, stimulates broadband adoption, promotes a competitive MVPD marketplace, and creates economic growth and jobs. Accordingly, Cisco's efforts and other similar industry initiatives demonstrate that the goals of the AllVid regime can be achieved without regulation.

In the event the Commission nevertheless pursues AllVid, it could require a basic AllVid gateway to be available but must also allow use of a single AllVid device that would connect and manage voice, data, video, and wireless services. In addition to cost savings, managing all incoming services in a single, combined device (including modem and router) creates significant technical advantages, including:

- Improved coordination of home network resources for video, data, and voice traffic;
- Straightforward employment and enforcement of Quality of Experience (QoE) rules;
- Greater efficiencies than parallel data, voice, and video home networks;
- Enablement of powerful cross-service applications such as caller ID and visual voicemail on the TV, telepresence applications, on-screen social networking to discover and share content, content portability among consumer devices; and
- Simplified consumer access to multiple service providers (for example, selecting video service from one provider and broadband data service from another), and facilitated switching between such providers.

Advanced AllVid functionality will not undermine the Commission's goals because the rationale for adopting "common reliance" in the CableCARD context is inapplicable in the AllVid context. Moreover, allowing additional functionality in the AllVid gateway also will help preserve and promote the existing competitive MVPD environment.

In addition to allowing increased AllVid functionality in the event of a mandated AllVid regime, the Commission should recognize the challenges of AllVid and should take several additional measures to preserve flexibility. AllVid standards will require a cross-industry, international, flexible standards-setting process. This process must be guided by a capable organization, yet none of the existing standards bodies individually address the full spectrum of AllVid technology and functionality. The AllVid standards body will face some unique complications in standardizing AllVid, including the complexity of multiple layers and the need to satisfy any international requirements. Importantly, if the Commission decides to embrace the AllVid approach, it must set realistic timing expectations; the National Broadband Plan's goal of providing AllVid-compatible equipment to all new subscribers and with all replacement set-tops after December 31, 2012 is very optimistic.

Finally, whether the Commission adopts AllVid rules or encourages industry to establish standards, the Commission should establish intellectual property guidelines that ensure the regime is based on open standards available for licensing by any party, at a cost that was evaluated during the standards-setting process.

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COMMENTS OF CISCO SYSTEMS, INC.

I. INTRODUCTION

Cisco Systems, Inc. ("Cisco")[1] submits these comments in response to the Commission's above-captioned Notice of Inquiry ("NOI"), which seeks comment on a proposal to replace the existing CableCARD regime with an all-video ("AllVid") solution.[2] The AllVid approach, as proposed, risks repeating the errors of the CableCARD regime and falls short of important

[1] Cisco is the worldwide leader in networking that transforms how people connect, communicate, and collaborate (see www.cisco.com). Cisco customer premises solutions provide powerful home-networking and content-sharing options that allow subscribers to live the "Connected Life" with simple, affordable tools to enjoy and interact with content in new ways. These solutions draw on Cisco's rich experience in providing more than 40 million set-top boxes worldwide.

[2] *In the Matter of Video Device Competition; Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, MB Docket No. 10-91; CS Docket No. 97-80; PP Docket No. 00-67, Notice of Inquiry, FCC 10-60 (rel. Apr. 21, 2010) ("NOI").

Commission goals. The proposal, although well-intentioned, does not consider the impact of the impending convergence of consumer voice, data, and video networks. If implemented as proposed, AllVid could undermine the best opportunity to reach many of the Commission's broadband and innovation goals. Industry research and development, as illustrated by Cisco's Next Generation IP Video Platform, is focused on convergence technology that transcends (and thus is fundamentally incompatible with) the linear video-centric AllVid proposal. Rather than repeating the mistakes of CableCARD by imposing a technology mandate, the Commission should reject the AllVid proposal in favor of policies that will truly foster innovation in provider networks, accommodate convergence in home networks, and unleash entire new markets of choice and competition in devices and services for the consumer.

If the Commission chooses to move forward with AllVid, however, it is vital that the Commission identify the baseline, essential functionality of an AllVid gateway, permit flexibility in the implementation of those functions, and, most critically, allow additional functionality to be included in the device. This will allow a multichannel video programming distributor ("MVPD") customer to access cross-platform and cross-service applications/services, according to best functionality and cost.

There are strong technical and consumer benefits to incorporating additional functionality in the AllVid gateway, and none of the CableCARD "common reliance" concerns would apply in the AllVid context to warrant an integration ban. The Commission should ensure any AllVid mandate remains as flexible as possible, in part by relying on and encouraging AllVid standards to be established by cross-industry standards bodies. The Commission should also establish guidelines for intellectual property rights in any AllVid standards, to avoid unduly hindering AllVid implementation due to hidden intellectual property expenses. Finally, if the Commission embraces the AllVid approach, it must set a realistic timetable for deployment.

II. ANY SUCCESSOR TECHNOLOGY TO CABLECARD MUST DRAW ON LESSONS LEARNED

To successfully establish a regime to replace CableCARD, the Commission must look critically at its past regulatory efforts in this area and the resulting market conditions in the set-top box and smart video device ("SVD") marketplace. Past experience demonstrates that the Commission is quite successful in achieving its goals when it offers industry regulatory flexibility.[3] For example, in wireless services (which the Commission considers a model of broadband device innovation[4]), the Commission "has long supported flexibility in the standards-setting process, and [does] not anticipate altering this overall approach."[5] Additionally, the Commission cannot disregard the realities of consumer choice. Consumers generally prefer to lease set-top boxes, and consumer welfare is the touchstone of good regulation. The

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[3] For example, in the mobile wireless services, "[t]he Commission has largely adopted flexible licensing policies that do not mandate any particular technology or network standard for commercial mobile wireless licensees. Mobile wireless service providers have the flexibility to deploy the network technologies and services they choose as long as they abide by certain technical parameters designed to avoid radiofrequency interference with adjacent licensees." *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, WT Docket No. 09-66, Fourteenth Report, FCC 10-81 at ¶ 108 (rel. May 20, 2010) ("Fourteenth Wireless Competition Report"). Chairman Genachowski has characterized the deregulatory approach taken to mobile wireless services as "highly successful." *Framework for Broadband Internet Service*, GN Docket No. 10-127, Notice of Inquiry, FCC 10-114 at 51 (rel. June 17, 2010) (Statement of Chairman Julius Genachowski).

[4] Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 49 (Mar. 16, 2010) ("National Broadband Plan" or "NBP").

[5] *Fostering Innovation and Investment in the Wireless Communications Market; A National Broadband Plan For Our Future*, GN Docket Nos. 09-157, 09-51, Notice of Inquiry, 24 FCC Rcd 11322, 11342 ¶ 60 (2009); *see also Year 2000 Biennial Regulatory Review--Amendment of Part 22 of the Commission's Rules to Modify or Eliminate Outdated Rules Affecting the Cellular Radiotelephone Service and other Commercial Mobile Radio Services*, Report and Order, 17 FCC Rcd 18401, 18421 ¶ 37 (2002) ("[O]ur general policy is to allow market forces to determine technical standards wherever possible and, accordingly, we refrain from adopting rules mandating detailed hardware design requirements, unless doing so is necessary to achieve a specific public interest goal.").

Commission must also narrow its focus to the applicable lessons from the past; comparisons between MVPD devices on one hand, and wireless and broadband devices on the other, provide limited utility. Finally the Commission should take note of the growing success of over-the-top video services as it evaluates the regulatory path forward for MVPDs.

A. Regulatory Flexibility is Critical, Since Neither Government Nor Industry Can Effectively Predict Technology "Winners" Ahead of Time

Perhaps the key lesson from the CableCARD regime is that, despite good intentions and best efforts, neither the government nor industry is particularly accurate in predicting technological winners years in advance. The CableCARD regime, an expensive, time-consuming inter-industry effort subsequently adopted and mandated by the Commission,[6] was quickly out of step with the services consumers wanted and the new technologies MVPDs were deploying. As the Commission evaluates how to replace the CableCARD regime, it should avoid mandating specific standards that would similarly lock in a particular implementation, hindering innovation and preventing consumers from accessing new products and services.

The cable and consumer electronics industries spent countless hours and millions of dollars negotiating and implementing a complex interoperability standard for one-way video services.[7] Yet video distribution technologies evolved so rapidly that the standard has aged poorly. Indeed, the standard was out-of-step with current technology almost as soon as it was completed. Perhaps most significantly, two-way services were not initially included in the scope

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[6] *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, CS Docket No. 97-80, Second Report and Order, 20 FCC Rcd 6794 (2005) ("*Second R&O*").

[7] Comments of the National Cable & Telecommunications Association on NBP Public Notice #27, GN Docket No. 09-47 *et al.*, at i-ii, 3 (filed Dec. 4, 2009).

of the agreement because the market for such services was still developing.[8] Yet today, access to two-way services is a primary driver of the Commission's policy efforts.[9] Similarly, multi-stream cards ("M-Cards") were not an initial part of the specification, although they were later developed.[10] Another example of CableCARD's limitations is the circa-1991 PCMCIA form factor of the cards themselves. On the infrastructure side, cable operators have continued to upgrade their networks using technologies such as switched digital video to offer subscribers more content and services. The side effects of these enormously beneficial upgrades were not anticipated by the CableCARD standard and have required work-arounds and Commission waivers.[11]

An AllVid mandate faces the same race against progress that CableCARD could not win. In a rapidly developing industry, standards that take too long to establish are likely to be obsolete upon completion. (Indeed, as discussed below, the AllVid proposal is already a step behind the

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[8] NOI ¶ 8.

[9] NOI ¶ 15 (describing inability to access MVPD services as a "fundamental defect" of the CableCARD regime).

[10] Comments of Comcast, CS Docket No. 97-80, at 24 (filed June 14, 2010).

[11] *See generally, In the Matter of Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, CS Docket No. 97-80; PP Docket No. 00-67, Fourth Further Notice of Proposed Rulemaking, FCC 10-61 ¶ 14 (rel. Apr. 21, 2010) ("CableCARD FNPRM") (discussing switched digital and subsequent market-based work-arounds). Similarly, the Commission has recently waived the requirement that all cable operator-leased HD set-top boxes include a functional IEEE 1394 interface, permitting the use of Internet Protocol ("IP") connectors which would serve the same purpose. *See Intel Corporation, Motorola, Inc., TiVo, Inc. Requests for Waiver of Section 76.640(b)(4)(ii) of the Commission's Rules*, CSR-8229-Z *et al.*, Memorandum Opinion and Order, DA 10-1094 ¶ 1 (rel. June 18, 2010). Waiver could have been avoided in that case if the Commission, rather than selecting IEEE 1394 as a technology mandate, would have established a functional floor for connectivity. Then, when market conditions and consumer usage dictated, manufacturers and operators could have moved to other solutions, such as Ethernet, without the duplicative costs of meeting market demand and, separately, the Commission's rules.

industry on the path to full home network convergence.) The CableCARD effort – which involved only one subset of MVPD technologies – took more than six years to complete. Establishing an all-MVPD standard could take even longer. The Commission should consider how it can adopt flexible rules to ensure it does not repeat the CableCARD (or IEEE 1394) mistake of solidifying a near-obsolete standard, which would only impose costs on consumers without benefits.

B. Consumers Continue to Prefer the Leased Model Over Up-Front Retail Costs

Another key lesson of CableCARD is that the leased model offers many benefits that consumers consciously and affirmatively choose. The Commission, in order to properly fulfill its Section 629 obligations, must recognize this practical and economic reality. Many consumers prefer leased set-top boxes due to numerous benefits of the arrangement (discussed in detail below). Some consumers, however, prefer to purchase a video device. A true competitive market should accommodate both preferences, affording consumers maximum choice. The Commission should acknowledge that Section 629 itself recognizes the value MVPDs can bring customers by offering set-top boxes, and that Congress never contemplated a purely retail market for set-top boxes.

The leased business model has many benefits of which consumers are fully aware and which retail set-top box manufacturers acknowledge. These benefits do not preclude the development of a retail market, but they do demonstrate why consumers may prefer to lease, rather than purchase, their video devices. First, leased set-top boxes allow consumers to avoid incurring significant up-front costs. The typical hardware cost of a digital set-top box in large volume ranges from $150 to $300. As is common in the wireless handset industry (see discussion below), consumers often prefer to avoid the up-front cost of equipment. The leasing

model enables consumers to pay a low monthly fee over the term of service rather than making a sizable up-front payment. Leasing also makes it easy to switch providers without concern about device compatibility. Importantly, given ever-evolving video distribution technology, the leasing model makes it easy for consumers to upgrade their service or equipment (for example, adding a DVR) without losing the sunk cost of already-purchased equipment. Similarly, the leased model permits MVPDs to upgrade their networks without forcing consumers to purchase new equipment, a benefit the Commission hopes to replicate in the AllVid proposal.[12] Retail set-top manufacturer TiVo Inc. ("TiVo") has noted that, all else equal, consumers prefer to lease devices.[13]

Section 629 never contemplated a purely retail market for set-top boxes. Nevertheless (and not withstanding the many benefits of the leased model), the Commission's approach appears to ignore Congress's recognition of the value of MVPD provision of devices. Section 629 directs the Commission to "assure the commercial availability… [of] equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems."[14] Section 629 further notes that "[s]uch regulations shall not prohibit any multichannel video programming distributor from also offering" the same equipment, provided such equipment is charged separately and not subsidized by service fees.[15]

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[12] NOI ¶ 16 ("Innovations in a MVPDs' delivery technology might require substitution of a new adapter but would not require the consumer to replace her smart video device or other in-home equipment.").
[13] Comments of TiVo Inc. on NBP Public Notice #27, GN Docket No. 09-47 *et al.*, at 12 (filed Dec. 22, 2009).
[14] 47 U.S.C. § 549.
[15] *Id.*

Thus, Congress not only did not contemplate a completely retail model for set-top boxes, but in fact explicitly recognized the value of MVPD provision of equipment to consumers.

The NOI never acknowledges Congress's endorsement of MVPD equipment distribution, and incorrectly characterizes the fact that "[m]ost cable subscribers continue to use the traditional set-top boxes leased from their cable operator" as a sign that the Commission's efforts to implement Section 629 have failed.[16] The NOI also describes one of the benefits of the leasing model – the ability to upgrade networks without impacting subscriber-owned equipment – as a "disparity" that will "perpetuate reliance on cable operators' set-top leasing model and undermine development of a vigorous retail market in navigation devices."[17] This denigration of the MVPD equipment lease model is at odds with Congress's directive in Section 629, which clearly envisions a positive role for MVPD provision of equipment. Moreover, this approach is completely contrary to the Commission's statements championing consumer choice. The fact that some consumers may prefer the ability to upgrade their devices for a newer leased model does not preclude others from deciding that retail device capabilities are more important to them. The Commission – and the marketplace – should accommodate both options.

C. Comparisons Between Set-Top Boxes and Mobile and Computing Devices are Limited in Their Utility

The National Broadband Plan ("NBP") and the AllVid NOI both compare MVPD video devices to wired broadband and wireless communications devices, characterizing this trio as "the three main types of devices that connect to broadband service provider networks."[18] This

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[16] NOI ¶ 10.
[17] NOI ¶ 13.
[18] National Broadband Plan at 49; *see also* NOI ¶ 18-22 (comparing telephone and broadband standardization efforts.).

description is largely inaccurate for today's set-top boxes, although Cisco and others are working to bring more capability to the set-top box. As of now, however, the analogies between the MVPD market and the wireless or broadband markets are of limited use in informing the Commission's policies toward MVPD networks.

Unlike home computers and smartphones, set-top boxes today do not, as a primary function, access "broadband," as the Commission has used that term to mean access to the Internet.[19] No cable set-top boxes today access the Internet as a primary function. To the extent that some set-top boxes do access the Internet, it is to provide functionality that is separate from MVPD video services. Indeed, the NOI acknowledges the distinction between broadband Internet and MVPD networks when discussing how to integrate Internet video with MVPD video.[20] Thus, to consider video devices to be "broadband devices" is, at best, aspirational.

Given that set-top boxes generally are not broadband devices today, it should not be surprising that differences would appear when comparing set-top boxes with two types of broadband devices. First, computers and mobile devices are general purpose devices, and as such are designed to execute a wide range of capabilities. Innovation in such general purpose devices is sure to look dramatically larger in scale than for the much more limited-purpose set-top box. The NBP notes that "mobile devices are rapidly incorporating technology such as Global Positioning System, accelerometers, Bluetooth, Wi-Fi, enhanced graphics and multi-

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[19] *See* "What is Broadband?," http://www.broadband.gov/about_broadband.html ("broadband commonly refers to high-speed Internet access that is always on and faster than the traditional dial-up access … Broadband provides access to the highest quality Internet services—streaming media, VoIP (Internet phone), gaming, and interactive services.") (last visited July 13, 2010).

[20] NOI ¶ 17 (discussing "combining MVPD content with over-the-top video services").

touch screens."[21] Almost none of these features would be appropriate for a special purpose set-top device optimized for providing video services. The Commission mistakenly views this as a sign that the set-top box market is stagnant, when in actuality this is a sign that the set-top box market is fundamentally different. The difference lies in the fact that MVPD networks have historically provided only one type of service: video. In comparison, the Internet offers countless services, including video. It therefore makes sense that there is a wider range of devices and innovation in the general purpose Internet space.

Yet set-top boxes are hardly a stagnant technology. Twenty years ago cable service was a one-way network of thirty analog channels delivered through a rudimentary device that expanded the range of frequencies which a television could access. Today's set-top boxes deliver hundreds of channels and are "sophisticated two-way digital devices that can support high-definition programming, digital video recording, interactive program guides, interactive television applications, and other innovative services."[22] Manufacturers have constantly refined and enhanced the primary video delivery function of set-top boxes, while continuing to add new functions.

If the Commission's ultimate goal is to transform the set-top box into a general purpose broadband device more similar to a computer or a smartphone, the NOI's timeframe is insufficient and its focus on video alone is inadequate. As discussed below, the future of video and home networking is typified by Cisco's Next Generation IP Video Platform, which envisions integrating voice, video, and data services, thereby enabling every video device to be a

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[21] National Broadband Plan at 49.

[22] Comments of Motorola, Inc. on NBP Public Notice #27, GN Docket No. 09-51 *et al.*, at 9 (filed Dec. 22, 2009).

broadband device. The NOI's exclusive focus on video threatens to derail this convergence of consumer services by mandating a video-only "solution" that cannot evolve with the times.

We also note that the Commission errs in suggesting that the mobile device market is a pure retail model on which the video device marketplace should be modeled. In fact, expensive mobile devices are often highly subsidized by wireless carriers to remove or reduce the up-front cost to the consumer.[23] In this way, the wireless market is actually similar to the MVPD set-top leasing market in that both offer customers the option to reduce up-front hardware costs associated with the full retail price of consumer electronics devices.

D. The National Broadband Plan and the NOI Incorrectly Assume that Over-the-Top Internet Video Devices' Lack of Access to MVPD Content is a Significant Barrier to Entry

Both the NBP and the NOI assume without evidence that lack of access to MVPD services is a significant barrier to entry for over-the-top Internet video devices and services. Yet there is evidence to the contrary that suggests such devices and services are succeeding, not failing. For example, there has been an explosion in the number and use of over-the-top video devices and services over the past several years. Today, consumers can stream Internet video (in many cases, in HD) direct to their television from their TiVo, Xbox 360, PlayStation 3, Roku, AppleTV, Sezmi, Boxee, Windows Media Center PC, and many Blu-ray Disc players. There are also a growing number of Internet-enabled HDTVs by Samsung, Panasonic, and Sony that can connect to Internet video sources directly. Using such devices, consumers can access a multitude of over-the-top video sources including Hulu, YouTube, Netflix, Amazon Unbox, and more.

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[23] Fourteenth Wireless Competition Report, FCC 10-81 at ¶¶ 94-97, 312-15 (discussing the post-paid handset subsidy model).

The trend shows no sign of stopping, as search engine giant Google has announced its GoogleTV platform, the first implementations of which are expected to hit markets this fall.[24]

The National Broadband Plan acknowledges Cisco's forecast that video consumption on fixed and mobile networks will grow between 40% and 120% per year through 2013.[25] Yet the Plan fails to explain how, given this mighty demand, "seamless integration" with traditional TV viewing is the lone obstacle to success for over-the-top devices.[26] Indeed, the plethora of devices and services emerging belie that conclusion. There is no significant barrier to successful deployment of over-the-top video devices.

Nothing can underscore this point more than that MVPDs increasingly are recognizing the viability of over-the-top distribution of content to the TV screen and other platforms. The "TV Everywhere" initiative aims to allow cable subscribers to view MVPD content over the Internet from platforms other than the traditional television screen.[27] But MVPDs are also exploring providing content to retail over-the-top set-top boxes, as recent announcements by cable technology firms suggest. Specifically, Clearleap, a company that provides video-on-demand ("VOD") backend services for cable operators, announced that it will work with Roku to

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[24] *See* Google, "GoogleTV," http://www.google.com/tv/ (last visited July 8, 2010); *see also*, Erica Ogg, First Google TV gadgets from Sony, Dish, Logitech, CNET.NEWS, May 20, 2010, http://news.cnet.com/8301-31021_3-20005510-260.html (last visited July 12, 2010).

[25] National Broadband Plan at 17.

[26] *See* National Broadband Plan at 51 ("Without the ability to seamlessly integrate Internet video with traditional TV viewing, Internet video devices like Apple TV and Roku have struggled to gain a foothold in U.S. homes.").

[27] Wayne Friedman, Bewkes Upbeat: TV Everywhere on Pace, VOD Growing, MEDIADAILYNEWS, June 17, 2010, http://www.mediapost.com/publications/?fa=Articles.showArticle&art_aid=130417 (noting that TV Everywhere is on pace to arrive in 50 million TV homes by 2012).

enable cable operators to deliver VOD movies to Roku's set-top device.[28] Similarly, Comcast subsidiary thePlatform, which manages distribution of audio and video content for large cable networks and operators, announced that it will provide content to devices from a range of companies, including Boxee, Free Stream Media, Mitsubishi, LG Electronics, Roku, Samsung, TiVo, Toshiba, and Wal-Mart's Vudu.[29]

Given the explosive activity in the over-the-top video space, it is premature for the Commission to conclude that over-the-top video requires integration with MVPD video services to succeed. Even if that were true, market developments strongly suggest that such integration is taking place without regulatory intervention. The Commission should not base new policy mandates on so shaky a foundation.

III. CISCO'S NEXT GENERATION IP VIDEO PLATFORM AND OTHER SIMILAR INDUSTRY INITIATIVES WILL INTEGRATE VIDEO INTO CONSUMER HOME NETWORKS WITHOUT NEED FOR REGULATION

As an illustrative example to support the argument (below) that AllVid is unnecessary and potentially harmful, this section provides details on Cisco's forward-looking, convergence-based Next Generation IP Video Platform. It may be helpful to the Commission to understand the Next Generation IP Video Platform and Cisco's vision of the future as the Commission considers whether AllVid, as proposed, will foster or hinder innovation. Cisco, a key technology company deeply involved in the networks that comprise the Internet, has been on the front lines as networks of all kinds (voice, data, video, and other) converge into IP-based communications.

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[28] Glen Dickson, Connected Devices: Boon for Cable?, BROADCASTING & CABLE, June 28, 2010, http://www.broadcastingcable.com/article/454247-Connected_Devices_Boon_for_Cable_.php.

[29] Todd Spangler, Comcast's ThePlatform Reaches for IP-Connected TV Devices, MULTICHANNEL NEWS, June 23, 2010, http://www.multichannel.com/article/454113-Comcast_s_ThePlatform_Reaches_For_IP_Connected_TV_Devices.php.

Not surprisingly, Cisco has been working with major MVPDs, software developers, industry standards groups, and major retail consumer electronics manufacturers to bring that kind of integrated content experience into homes as part of the Cisco Next Generation IP Video Platform. The Cisco Next Generation IP Video Platform focuses on the future of consumer networks, where video will not be a separate service but one integral part of the services to a consumer's personal network of entertainment, information, and communications devices. Similar convergence efforts are underway by other telecom equipment suppliers.[30]

The goal of the Cisco Next Generation IP Video Platform is to cost-effectively merge on a single platform MVPD managed video, managed and unmanaged broadband video, high speed data services, in-home routing, and wired and wireless voice services both at the hardware/software layer and at the services layer. This platform would enable access to content by a wide range of IP-capable consumer electronics devices, wired and wireless, available at retail and from MVPDs. The platform would enable these devices to connect to a host of MVPD- and third party-provided services.

The Cisco Next Generation IP Video Platform uses the power of Internet Protocol ("IP") routing, together with open source hardware and software standards, to enable today's discrete video, voice, and data services to converge into a new generation of entertainment, information and communications services. Such services would include MVPDs and third-party sources, and would be available to all manner of IP-capable consumer electronics devices. The Cisco Next Generation IP Video Platform offers consumers a host of in-home networking options, such as

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[30] *See, e.g.*, Mari Silbey, The Transport Gateway – IP and QAM in One Box, http://connectedhome2go.com/2009/09/15/the-transport-gateway-ip-and-qam-in-one-box/ (last visited July 8, 2010).

100BT/1000BT Ethernet, MoCA, HPNA, Wi-Fi, Zigbee, Z-Wave, and femtocell along with advanced IP routing technologies to enable access by the full range of communications and navigation devices. Cisco's platform also embraces existing and emerging industry standards such as DLNA, DECE, UPnP, CEA-2014, RVU, Broadband Forum and others focused upon connecting consumer electronic video devices to a host of wired and wireless networks and services.

Cisco's vision for the Next Generation IP Video Platform includes a residential gateway that is the connection point within the home for MPVD and other services, including, but not limited to, data, voice, and video services. The Cisco Next Generation IP Video Platform Gateway translates the protocol used on an MPVD's access network and converts MVPD and other services into open standard IP level interfaces within the home. The Cisco Next Generation IP Video Platform Gateway thereby enables a new generation of IP-based services that are independent of the MPVD access network and speeds deployment of a variety of services (including video) to more devices. As elaborated below, this approach would bring true convergence of consumer networks into the home.

A. Cisco's Next Generation IP Video Platform Demonstrates that Industry Can Meet the Commission's Goals

As discussed in Section IV below, the Commission should refrain from adopting AllVid rules. However, the goals of the AllVid regime can be achieved with industry initiatives such as Cisco's Next Generation IP Video Platform.[31] Specifically, the Cisco Next Generation IP Video Platform:

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[31] As discussed below, initiatives such as the Cisco Next Generation IP Video Platform would minimize the costs, architectural limitations, MVPD competitive market disruption, and potential consumer confusion inherent in the Commission's AllVid proposal.

Provides expansive consumer choice in the video device retail market. The Cisco Next Generation IP Video Platform would provide the open interfaces necessary for any third-party retail manufacturer to access MVPD services. However, the Cisco Next Generation IP Video Platform expands beyond set-top boxes (as originally envisioned by Section 629) to include entertainment, information and communications devices. In essence, it would enable a wide variety of consumer devices to serve as set-top boxes, dramatically expanding consumer choices on how to access MVPD services.

Stimulates broadband adoption. The convergence of video, voice, and data services will drive greater broadband adoption through a set of a compelling consumer information, entertainment, and communications services. This is similar in kind to the Commission's own reasoning that mandating integration of over-the-top video with MVPD services would boost broadband adoption, but is far more compelling.[32] Whereas relatively few individuals currently use over-the-top video, the vast majority of consumers has wired or wireless phones[33] and would benefit from integrating such devices into a home network with broadband.

Promotes a competitive MVPD marketplace. Unlike the AllVid proposal, the Cisco Next Generation IP Video Platform would permit centralized video caching and storage and integration with cloud-based services, ensuring the continued vibrancy of the United States MVPD market by enabling DBS and telephone companies to continue to compete by differentiating their services within the home.

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[32] National Broadband Plan at 50.

[33] Fourteenth Wireless Competition Report, FCC 10-81 ¶ 155 ("[W]e find that mobile wireless subscribership increased six percent in 2008 to 277.6 million subscribers, which translates into a nationwide penetration rates of 90 percent.").

Creates economic growth and jobs within the U.S. technology sector. The platform provides an open software operating system and open network interfaces that will promote the development of MVPD and third party applications and services, creating thousands of U.S.-based high technology jobs.

IV. AS PROPOSED, ALLVID WOULD DETER INNOVATION, HARM CONSUMERS, AND UNDERMINE IMPORTANT COMMISSION GOALS

Building on the lessons learned from CableCARD and based on the evidence of explosive innovation in home networking and service convergence, the Commission should not adopt the AllVid proposal. Forward-looking industry initiatives with great promise are incompatible with AllVid's narrow, linear video-centric focus. By limiting the functionality of the AllVid device, the NOI would impose a mandate that would harm consumers and constrain innovation.

A. The NOI's Narrow Focus on Video Networks Ignores the Policy Consequences of Converging Technologies

The AllVid proposal recognizes and attempts to address one particular form of convergence, that between over-the-top Internet video and MVPD video. However, the proposal fails to recognize the larger ongoing market transition to converged video, data and voice services. If the Commission treats video content in isolation, AllVid, like CableCARD before it, will be outdated upon adoption.

The Commission should not adopt rules that limit the functionality of the AllVid adapter to converting video content. The NOI proposes that AllVid devices be limited to performing "only the functions necessary to support devices connected to the home network."[34] The NBP, which precipitated the NOI, is more explicit, stating that the AllVid devices' "*sole* function

[34] NOI ¶ 24.

should be to bridge the proprietary or unique elements of the MVPD network (e.g., conditional access, tuning and reception functions) to widely used and accessible open networking and communications standards," and the device "should be equipped with only those components and functionality required to perform network-specific functions and translate them into open, standard protocols."[35]

This limit on the functionality of any device implementing the AllVid approach is *the* significant flaw in the AllVid proposal. This unjustified limit would effectively "silo" video content away from voice and data content, hampering the very convergence the Commission desires. The functional limit would also unnecessarily prohibit capabilities that, for excellent technical and consumer welfare reasons, should be included in a central location. Importantly, the restrictions on functionality do not actually further the policy goals of AllVid.

B. Any Ceiling on AllVid Adapter Functionality Would Undermine Important Commission Goals

The NOI proposes that AllVid adapters have limited capabilities. This ceiling on AllVid device functionality is unnecessary, would harm consumers, and would thwart key Commission goals. Specifically, such a limitation would:

Increase cost. The proposed system, which would use a limited functionality AllVid adapter, would be expensive, requiring a consumer to purchase or rent the AllVid device and buy a new high-capacity router, broadband modem, cabling, and other networking equipment. Far more cost effective would be a single home gateway device combining the adapters/modems for voice, video, broadband, and wireless services, a router, and other networking hardware into a

[35] National Broadband Plan at 51.

single device. Cisco estimates that such a combined approach would be roughly half as expensive as the total cost of the AllVid approach.[36]

Stifle innovation beneficial to retail smart video devices. The Commission asserts in the NOI that the goal of the proceeding is "to better effectuate the intent of Congress as set forth in Section 629" by exploring means to "foster a competitive retail market in smart video devices…"[37] As proposed, the AllVid adapter could conceivably improve short-term set-top box retail sales. However, in the longer run, the prohibition on additional functionality in the AllVid gateway would foreclose development of a much more diverse ecosystem of services available to set-top boxes.

In a fully converged home network, set-top boxes would have access to video, broadband, telephone and wireless network information. In addition, retail set-top boxes would benefit greatly from the technological enhancements to the AllVid gateway that would enable the home network to run faster and more dependably. We describe these benefits in full detail in Section V.

Discourage broadband adoption. The Commission notes in the NOI that it believes that the AllVid proposal could "encourage wider broadband use and adoption."[38] Similarly, the NBP concludes that "further innovation in set-top boxes could lead to… higher broadband

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[36] The Cisco Next Generation IP Video Platform approach discussed above would be less expensive because it collapses the proposed three-device (AllVid adapter, video router and modem/MTA) AllVid regime into a single device that shares common processing, memory, storage, software, power supply, and standards-based communications interfaces supporting all video, data and voice services and devices. *See infra* at 25-26. Additionally, by combining multiple electronics devices into a single device with a shared power supply and processor, Cisco's Next Generation IP Video Platform would save as much as $4 billion dollars annually in consumer energy expenses as compared to the AllVid regime.

[37] NOI ¶ 1.

[38] NOI ¶ 1.

utilization."[39] Likewise, in an earlier public notice leading up to the NBP, the Commission sought comment on whether "a retail market for network-agnostic video devices could spur broadband use and adoption."[40] However, the AllVid proposal threatens to raise prices for consumers.[41] Cost is one of the primary barriers the Commission has identified for broadband adoption.[42] Raising household expenses is therefore likely to discourage broadband adoption, all other matters remaining equal.

Weaken MVPD competition. The NBP concludes that set-top box market innovation could lead to "[m]ore competition among companies offering video content (MVPDs)."[43] Competition in the MVPD marketplace is a major goal of the Commission.[44] Yet the AllVid proposal would harm the existing state of competition in the U.S. MVPD market by hindering DBS and telephone companies' continued ability to compete. As proposed, the AllVid functionality limit would make it impossible or prohibitively expensive for DBS to offer VOD. [45] Also, AllVid's required six streams of video are not possible on AT&T's U-Verse service.[46]

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[39] National Broadband Plan at 50.

[40] *Comment Sought on Video Device Innovation*, Public Notice, 24 FCC Rcd 14280 (2009) ("NBP Public Notice #27"); *see also* NOI ¶ 14.

[41] *See supra* at 18.

[42] National Broadband Plan at 168.

[43] National Broadband Plan at 50.

[44] *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, MB Docket No. 06-189, Thirteenth Annual Report, 24 FCC Rcd 542, 543 ¶ 1 (rel. Jan. 16, 2009) ("Thirteenth Video Competition Report") (describing the Commission's obligation to report to Congress on the competitive status of the video delivery market).

[45] *See The National Broadband Plan: Competitive Availability of Navigation Devices, Hearing Before the Committee on Energy and Commerce, Subcommittee on Communications, Technology, and the Internet*, 111th Cong. 3-4 (Written Testimony of Eric Shanks, Executive Vice President, DIRECTV, Inc.); *see also infra* at 28-30.

Given that DBS and telephone company service providers are four of the top ten MVPDs, with nearly 40% of all MVPD subscribers,[47] the Commission should carefully consider any policy that would undercut their ability to compete.

Hamper infrastructure upgrades. The AllVid proposal would likely slow migration to all-IP based service delivery (and the accompanying high-speed broadband deployment) by forcing MVPDs to implement short-term investments in infrastructure with limited long-term utility simply to comply with the short-sighted rules.

Complicate use and maintenance. Installing, configuring, and troubleshooting separate AllVid adapter, broadband adapter, and home router equipment would be vastly more complicated than installing, configuring, and troubleshooting a single gateway device.[48]

Impair home network performance. Cisco is not aware of a consumer-grade router that can manage the level of traffic the NOI proposes.[49] Yet the proposed AllVid adapter would simply "translate" video services and dump the data into the consumer's home network. Indeed, it appears the adapter would be prohibited from doing sophisticated networking for the home

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[46] Todd Spangler, AT&T U-verse TV Would Not Meet FCC's AllVid Gateway Requirement, MULTICHANNELNEWS, April 23, 2010, http://www.multichannel.com/article/451835-AT_T_U_verse_TV_Would_Not_Meet_FCC_s_AllVid_Gateway_Requirement.

[47] *See* Comments of Comcast Corporation, CS Docket No. 97-80; PP Docket No. 00-67, at 10 (filed June 14, 2010).

[48] For example, the Cisco Next Generation IP Video Platform would provide a common in-home network management solution to enable easy device installation, service enablement, and management. This solution would also enable MVPDs to better test, isolate and correct many network and device problems both remotely and within the home, minimizing service interruption, consumer confusion and unnecessary costs.

[49] *See infra* at 23.

user.[50] With AllVid, consumers may for the first time have their broadband Internet access slowed down by someone watching TV.

V. IF ADOPTED, ALLVID RULES SHOULD ESTABLISH BASELINE INTEROPERABLE FUNCTIONALITY FOR THE GATEWAY AND CLIENTS AND SHOULD PERMIT INCLUSION OF ADDITIONAL CAPABILITIES

As discussed above, Cisco respectfully disagrees with the Commission's AllVid concept as proposed in the NOI, and urges the Commission to reject that approach. In the event the Commission pursues AllVid, however, it should not preclude MVPDs from offering AllVid devices with additional capabilities. Such flexibility would support, not undermine, the Commission's AllVid goals and Section 629, and would create substantial benefits to consumers.

A. The Commission Could Require a Basic AllVid Gateway to be Available

If the Commission determines that an AllVid gateway is an appropriate solution, the mandate should set specific minimums that must be provided.[51] Any MVPD subscriber would be entitled to obtain a basic AllVid gateway for use with any leased or retail device of her choice.

B. Permitting Additional Functionality in the AllVid Gateway Will Benefit Consumers and Meet the Commission's Goals

If the Commission determines to move ahead with the AllVid proposal, it is critical that the most fundamental flaw in the proposal be addressed. Use of a single device – prohibited under the current proposal – that would connect and manage voice, data, video, and wireless services would greatly simplify and enhance the consumers' experience.

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[50] NOI ¶ 24.

[51] One such minimum, for example, should be the inclusion of a 100BaseTX Ethernet port; but other physical network interfaces should be permitted, particularly given 100BaseTX's capacity constraints. *See infra* at 23.

1. Managing all incoming services in a single, combined device (including modem and router) creates significant technical advantages

As discussed in Section IV, above, the AllVid proposal ignores the impending convergence of networks that enter consumers' homes. To address this flaw, the Commission should permit AllVid gateways to process all incoming communications services. Benefits of such enhanced functionality include simplified and more efficient networking, better performance, and enhanced services, all of which would benefit SVDs and their users.

First, an enhanced AllVid gateway for video, data, and voice services over cable, phone lines, and wireless could more easily coordinate use of the home network resources. Video, data, and voice traffic each place different demands on home network resources, and these demands can conflict. Without sophisticated routing equipment and techniques, consumers could experience degraded service quality and adverse interactions between services. For example, watching TV could slow apparent Internet responsiveness, or downloading a large file could cause visual defects in a streaming VOD movie.

As previously noted, Cisco is not aware of a commercially available consumer-level router sufficiently powerful to handle the Commission's proposed six video streams of data[52] while maintaining quality levels of other home-networked services. Part of the challenge for a separate router is identifying the types of traffic within each incoming stream of IP traffic. This problem would not apply to a central gateway, which would easily be able to identify each incoming network by virtue of knowing which physical connection (i.e., cable) contains what traffic (i.e., linear video). A central gateway is best situated to monitor the different needs of

[52] NOI ¶ 25.

each incoming network's traffic and could best coordinate the consumer's network resources to meet these needs.

Second, a centralized gateway device would be able to employ and enforce Quality of Experience ("QoE") rules in a straightforward manner. These rules could, for example, prioritize video or voice traffic over data traffic in order to decrease latency and ensure a clear, uninterrupted video experience. This sort of network enhancement would ensure that SVDs receive the best network performance possible, directly benefiting consumers who use these devices.

Third, a centralized home gateway would be far preferable to parallel data, voice, and video networks throughout the home. A particularly obvious efficiency gained from a central gateway approach is in Wi-Fi networks. A central Gateway would provide a simple means for consumers to consolidate separate wireless networks (for example, video and broadband) into a single Wi-Fi channel, shrinking the bandwidth consumption of the home network and reducing the likelihood of interference.

Fourth, by providing a single central manager for voice, video, and broadband services, a central gateway would enable powerful cross-service applications such as caller ID and visual voicemail on the TV, telepresence applications, on-screen social networking to discover and share content, and content portability among consumer devices. This cross-service "agility" will also facilitate the creation and integration of smart-grid applications.

Fifth, an expanded AllVid gateway that supports connectivity for voice, video, and broadband services could simplify consumer access to multiple service providers, and facilitate switching between such providers. For example, an expanded AllVid gateway could support advanced IP routing techniques needed to allow the consumer to easily select "video service"

from one service provider and "broadband data service" from an alternate service provider *to the same in-home client devices*.

2. There are significant consumer advantages to handling all home networking in a single device

Superior network performance, as described above, is an obvious consumer benefit of a central gateway for all incoming services, but there are other, less obvious benefits as well. A single central gateway could serve as an intelligent device for managing the in-home network which would be simple to configure and maintain, and would be able to provide a seamless view of content to all SVDs.

For example, a single central gateway would reduce the number of devices and cables consumers would have to deploy, configure, and maintain. Rather than two "adapters" (a restrictively simply AllVid device and a broadband/VoIP modem) and cables connecting these devices to a central router, these three boxes would be combined into a single device that would act as an interface between the home network and all outside networks. Rather than establish and troubleshoot connections between three separate boxes, a single set-up wizard could walk consumers through installation of their whole network. If network issues later arose, a centralized gateway would reduce the number of connections to troubleshoot and would make remote troubleshooting easier, since a single box would be responsible for all networking functions.

Finally, a centralized solution would be lower in cost than three separate devices and cabling. Cisco estimates that the cost of separate AllVid adapter, new home router, and a broadband modem could be 1.8 to 2 times more expensive than a single sophisticated device, possibly costing consumers $20-40 billion dollars in incremental costs over five years. This is not even the worst-case home networking scenario, where a consumer might have to establish

three separate, parallel networks throughout their home for each of the three services. Such scenarios could develop if the proposed rudimentary gateways are the only choice permitted.

3. Other additional functionality is most efficiently provided to SVDs and other devices from the AllVid gateway's central location

Other than networking, there are other services that would be most efficiently provided from a central location. Providing such services from a central location would be in consumers' interest due to increased efficiency and functionality, and would be available to all SVDs. Therefore any rules by the Commission should permit such functionality to be provided by the AllVid gateway.

The AllVid gateway would be the logical location to store video. Many users consume their video content at a time other than when it was initially broadcast. This requires the system to store the video and make it available for later playback. Providing video caching and stored video from a central location would minimize traffic across the network.[53] Such a configuration would also enable "fast channel change" technology. Storing video in a central repository could also simplify the location of stored content, which could be accessed and streamed to any SVD when appropriate.

In order to efficiently deliver popular content (such as the Super Bowl) to a large audience, multicast methods can be used on the last mile network. However, most customer premises equipment is designed to use unicast HTTP methods. A central gateway device is the ideal platform to provide the desirable unicast-to-multicast transformation.

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[53] Efficient placement of storage is particularly important because the proposed 100BaseTX standard would supply insufficient bandwidth to provide, in the majority of households, the Commission's recommended simultaneous six streams of video with any quality of service guarantees.

C. Advanced AllVid Functionality Will Not Undermine the Commission's Goals

1. None of the CableCARD "common reliance" concerns exist

The rationale for adopting CableCARD "common reliance," thereby requiring cable operators to use CableCARDs in their own set-top boxes, is inapplicable in the AllVid context. Because the AllVid standard would define a network interface, it is fundamentally different from the CableCARD standard. Additionally, the support and installation concerns set forth in the Commission's CableCARD orders are not an issue here.

a. Advanced AllVid devices would still interface with the home network in the required manner, providing all the required services to SVDs

Unlike the CableCARD standard, which specified only a common interface with a single device (the set-top box), AllVid would establish a standard for interfacing with a network of devices. Using this standard, enhanced AllVid gateways would provide services to other devices on the network. These services would be identical to those provided by the simple gateways proposed in the NOI. Indeed, as discussed above, advanced devices could provide *additional* services and capabilities that would enhance the performance and functionality of SVDs. Enhanced AllVid gateways would be as subject to the AllVid standard as more rudimentary implementations.

b. Since the home-facing interface will be a well-defined, well-known, commonly used network interface and protocol, installation and support should be comparable to home broadband installation

The Commission has reasoned that common reliance would "align MVPDs' incentives" to insure sufficient technical and operational support since cable operators would be required to

use the technology as well.[54] This does not apply to AllVid because AllVid's interface to subscribers' home networks will rely on a "stable interface"[55] based on "open standards widely used in home communications protocols."[56] This means manufacturers, operators, and consumers are likely to *already* be familiar with the technologies and equipment involved, and large amounts of existing support will be available for use of the technologies. In contrast, CableCARD defined a new, never-before-implemented interface between cable networks and set-top boxes. Manufacturing, training, and support in that situation were challenging because none of the parties involved had a base of experience with the standard.

Additionally, MVPDs' interests are already aligned with home networking efforts. Operators have "bought in" to home networking, pouring millions of dollars into research and standardization efforts such as DLNA and MoCA. And in a sense, cable operators who offer broadband Internet service already "commonly rely" on the homeward-facing AllVid technology since they facilitate the creation and operation of home networks every day. Because operators face strong incentives to make home networking successful and AllVid promises to be built on well-established technologies, the support and installation issues that motivated common reliance in the CableCARD context are inapplicable here.

2. Allowing Additional Functionality in the AllVid Gateway Will Preserve the Existing Competitive MVPD Environment

In order to maintain a level playing field for MVPDs and avoid a major mistake of the CableCARD regime, the Commission should set the same rules for all MVPDs by allowing additional functionality in the AllVid device. This additional functionality is essential to DBS

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[54] Second R&O, 20 FCC Rcd at 6807-10 ¶¶ 27, 30.
[55] NOI ¶ 17.
[56] NOI ¶ 22.

providers who will need to place additional functionality in the AllVid gateway in order to meet the Commission's AllVid goals while maintaining service to their customers.

a. Given their one-way networks, DBS providers will require the ability to include additional functionality in their AllVid gateways

As a satellite service, DBS can offer large downstream capacity into the home, but has a much smaller upstream capacity than available to cable and telephone company MVPDs. Thus DBS providers currently offer services such as Video On Demand by caching large amounts of content on the subscriber's set-top box, by streaming the video over the subscriber's broadband Internet connection, or by some combination of both. AllVid seeks to create an adapter that abstracts away the security and MVPD network details for all providers. But to do so without eliminating services, DBS operators will need to include additional functionality, such as recording and broadband connectivity, in the AllVid adapter itself.[57]

b. To promote a level playing field, all MVPDs should be permitted to include additional functionality in their AllVid gateways

The Commission should seek to maintain the fierce competition between DBS and other MVPDs by ensuring that the AllVid rules do not advantage one category of MVPD over another. Because DBS will require the ability to include additional AllVid functionality, and given the numerous benefits of allowing enhancement to the AllVid gateway, the best way for the Commission to ensure continued competition between MVPDs is to set baseline requirements for the AllVid gateway and permit all MVPDs to offer enhanced gateways with additional

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[57] *See The National Broadband Plan: Competitive Availability of Navigation Devices, Hearing Before the Committee on Energy and Commerce, Subcommittee on Communications, Technology, and the Internet*, 111th Cong., 2nd Sess. 3-4 (Apr. 29, 2010) (Written Testimony of Eric Shanks, Executive Vice President, DIRECTV, Inc.).

functionality as necessary or convenient. Not only will this help achieve the Commission's AllVid goals, it will also help meet the Commission's goals of competition in the provision of video services.[58]

VI. THE COMMISSION SHOULD TAKE ADDITIONAL MEASURES TO PRESERVE FLEXIBILITY IN IMPLEMENTATION OF THE ALLVID GATEWAY REQUREMENT

If the Commission chooses the AllVid approach (which is unnecessary), there are several additional measures that should be taken to preserve the flexibility necessary to maximize AllVid's chance of success. First, the Commission should facilitate a cross-industry, flexible standards-setting process that will seek to accommodate international standardization concerns. Second, the Commission must ensure that any rules, as adopted, will enable rapid updating of any mandatory standards to prevent obsolescence. Third, the Commission should specifically exempt from the AllVid requirement any MVPD who provides equivalent functionality without a hardware device. Finally, the Commission must set realistic timetables to avoid repeated extensions.

A. AllVid Standards Will Require a Cross-Industry, International, Flexible Standards-Setting Process

Standard setting for the AllVid device will be complex and time consuming, and should include recognition of the technology developments of the Standards Developing Organizations ("SDOs") and Special Interest Groups ("SIGs") worldwide. Ensuring the standardization process is guided by a capable organization is critical to the success of any rules the Commission may adopt, and the Commission must address this issue. However, there are no existing standards or standards bodies that individually address the full spectrum of AllVid technology

[58] *See* Thirteenth Video Competition Report, 24 FCC Rcd at 543 ¶ 2.

and functionality. Collectively, existing SIGs and SDOs do represent the full repertoire of technical and functional elements necessary to implement the AllVid proposal, but there is no single authority. The set of requirements perhaps closest to the device-specific requirements of the AllVid proposal have been developed by the DLNA; however, DLNA is an industry consortium, not an accredited standards body.

In addition to the work being done by DLNA, there are several other organizations working in parallel to develop different elements of the overall spectrum of standards and requirements that would be required to implement the AllVid proposal, as well as a fully functional Internet Protocol Television platform. These include Universal Plug and Play ("UPnP"); Consumer Electronics Association ("CEA"); Digital Video Broadcasting ("DVB"); Internet Engineering Task Force ("IETF"); European Technology Standards Institute ("ETSI"); Advanced Television Systems Committee ("ATSC"); Society of Cable Telecommunication Engineers ("SCTE"); BroadBand Forum; and CableLabs.

Over the past several years, service providers and vendors worldwide have invested significant resources to develop an overall architecture (assimilating the above mentioned technical elements) capable of delivering a full portfolio of currently converged Internet Protocol services and applications, and able to evolve with future developments. Two examples of such activity include the work of the ITU-T (International Telecommunications Union – Telecommunication Sector) and ATIS (Alliance for Telecommunication Industry Solutions). These two major SDOs have been working in concert to develop the best possible standards and requirements for an end-to-end platform that will enable not only the Internet Protocol services/applications which motivate the AllVid proposal, but also the convergence of delivery mechanisms and devices from any vendor, and any provider – for years to come. These efforts are the result of years of investments by companies all around the world, and have progressed

significantly. Recently an International Internet Protocol Television Interoperability Event occurred in Singapore, and another is to be held in Geneva at the end of July. Service providers and manufacturers from all over the world are participating. An effort to pursue the AllVid proposal at this time would disengage the United States from the rest of the world and could raise significant future international interoperability issues.

An additional reason for a cross-industry standards body, *e.g.*, ATIS and ITU-T, is to enable nimble adjustment of any established standard to accommodated new services and technologies. Due to the rapid evolution of video services and delivery networks, the Commission should rely primarily on cross-industry standards bodies rather than regulatory mandates to establish the details of any AllVid requirements. Standards bodies can adjust much more quickly to incorporate new services and technological developments than can regulatory standards. Similarly, any adopted standard – whether by a standards body or embodied in Commission rules – must permit new compatible standards to be incorporated, so that operators using new standards to achieve identical goals will remain in compliance with the Commission's AllVid rules.

However, any standards body will face some unique complications in standardizing AllVid. First, the AllVid standard is far more complex that the CableCARD standard because the AllVid standard involves the application layer as well as the physical and network layers. One public interest group estimated that AllVid requires five separate categories of standardization.[59] The DLNA standard mentioned above comes closest to addressing these requirements, but there are several important application-layer issues that remain unaddressed by

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[59] Public Knowledge *et al.* Petition for Rulemaking, CS Docket No. 97-80 *et al*., at 35 (filed Dec. 19, 2009); s*ee also* NOI ¶ 24.

that standard. These include advertisement of and accounting for pay-per-view services, as well as how to advertise large on-demand catalogs.

Second, any AllVid standards-setting body must recognize that such standards need to satisfy international requirements or risk isolating North American consumers and industry. Such technology balkanization would raise prices for goods and services and erect a barrier to participating in the global market. This suggests that world-wide standards bodies may be the appropriate forum for the AllVid design.

B. Any Adopted Rules Must Permit Incorporation of New Standards to Meet AllVid Requirements

If the Commission's rules mandate specific standards for implementing the AllVid device, these rules must be readily extendable in order to accommodate rapid change. The Commission recognized this, seeking methods which would "enable evolution of the AllVid system … in order to accommodate technological innovation over time."[60] Preferably, the Commission would define the functionality of the AllVid device in the rules while relying on a cross-industry standardization body to establish the specific implementation details. Alternatively, the Commission could explicitly allow equivalent but superior standards to comply with the rules with no need for additional proceedings. Another option could be for the Commission to provide an expedited waiver process by which equivalent technologies could be permitted under the rules. In all cases, the Commission's guiding principle should be to permit continued innovation without penalty.

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[60] NOI ¶ 36.

C. MVPDs that Provide Service Functionally Equivalent to the AllVid Gateway Should be Considered Compliant with the AllVid Requirement

If the Commission adopts the AllVid approach, it should consider compliant any MVPD that grants retail devices full access to MVPD services, even if that MVPD does so without any particular mandated AllVid adapter. For example, an MVPD may choose to employ full IP delivery or use cloud content services that require only minimal set-top boxes. Such approaches could possibly fully accommodate retail devices without the need for a particular hardware device. To the extent that retail devices can still access the agreed-upon interface, such approaches should be considered to comply with the Commission's AllVid rules.

D. Any AllVid Mandate Must Have a Realistic, Flexible Timetable for Implementation

Given the complexity of the AllVid standardization process as described above, if the Commission decides to embrace the AllVid approach, it must establish realistic timelines for standardization and implementation. There is significant standards-setting work to be done here, as well as challenging manufacturing and implementation issues. Importantly, the AllVid standard is significantly more complex than the CableCARD standard, which took more than six years to establish.

The National Broadband Plan's goal of providing AllVid-compatible equipment to all new subscribers and with all replacement set-tops after December 31, 2012 is very optimistic. Cisco estimates that the standardization process alone could take between 24 and 36 months, with manufacturing adding at least an additional 18 to 24 months, depending on the number of AllVid device variants required.

VII. THE COMMISSION SHOULD ESTABLISH INTELLECTUAL PROPERTY GUIDELINES FOR ANY STANDARD-SETTING EFFORTS RELATED TO THE ALLVID PROPOSAL

The NOI seeks comment on intellectual property issues related to proposed AllVid rules.[61] Whether the Commission adopts AllVid rules or encourages industry to establish standards, any AllVid (or similar) regime must be based on standards that are open and available for licensing by any party, at a cost that was evaluated during the standards-setting process.

The development and implementation of open standards have been key drivers of Cisco's success over the course of the history of our company. More broadly, open standards underlie the explosive development of the Internet by enabling competing companies' equipment to interoperate. Open standards contribute to Cisco's business success across a range of technologies including routing, switching, VoIP, wireless, and video among others.

In Cisco's extensive experience in developing and implementing open standards, intellectual property rights ("IPR") play a critical role. Standards-setting organizations need the valuable contributions of companies that hold intellectual property rights. However, standards can become encumbered by the inclusion of numerous "essential technology" patents that implementers must license. Additionally, during the standardization process, there is often little or no transparency regarding the potential cost of securing such licenses. These issues may become particularly acute where a government requirement imposes a particular standard, since this could greatly increase the bargaining position of the holder of the IPR implicated by that standard. The net result of this state of affairs can be to deter investment and entry into the marketplace and raise costs for end users.

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[61] NOI ¶ 32.

In this proceeding, the Commission's goal should be to facilitate the establishment of standards that fully consider the payments required to license essential intellectual property, thereby avoiding a situation where the implementation of AllVid is unduly hindered by hidden costs. To achieve that goal, whether the Commission or industry ultimately establishes the standards, the Commission should encourage standards-setting participants that hold IPR for essential technologies to:

Disclose all essential IPR. All participants in AllVid standards development should be required to disclose their essential patents and pending applications on their own contributions, on the contributions of others, and on successive drafts of the standard. These disclosures should be made early in the standards development process while the merits of alternative contributions are being considered.

License IPR at reasonable and non-discriminatory terms that reflect the actual value of patented technology. Unless there is an early, explicit, and public refusal to license specific identified patents, each standards development participant should commit to license its essential patents, even ones unrelated to its own contributions, on reasonable and non-discriminatory terms.[62]

Transparently discuss royalty costs during standard-setting proceedings. Anticipated royalty costs should be a factor in deliberations over which technologies to include

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[62] These reasonable and non-discriminatory terms can either not require payment or require payment where such payment must 1) be reasonable in view of the *ex ante* value of the patented technology to the overall standard (i.e., the value of the technology deemed in relation to the value of the alternatives available at the time the technology was selected) and 2) be reasonable in view of the overall value of patented and unpatented technology in the standard. These requirements would constrain patent royalties to economically realistic figures and avoid awarding excessive bargaining power to patent owners where it is not justified by the commercial and technical merits of the patented technology.

in a standard. Commercially realistic decisions about technology must take into account both the cost of implementation and the cost of securing needed patent licenses. Participants should be encouraged to discuss this information up-front during the standardization process.

Ensure that IPR licensing commitments are irrevocable and transferable. Licensing commitments should be irrevocable and binding on subsequent transferees of the patents. For patents subject to the disclosure obligation, the owners should be obligated to notify the subsequent transferees of the licensing commitment. Absent binding licensing commitments, the increasing tendency for patents to be sold off to entities focused on patent monetization will tend to negate the effect of the other proposed standards IPR guidelines.

Develop patent pools. Beyond setting benchmarks for IPR policies, the Commission may also play a productive role in encouraging holders of essential patents on AllVid standards to make their intellectual property available for licensing through patent pools. This would have the beneficial effects of both reducing the total cost of patent licenses for the pooled patents and setting a reasonable benchmark to guide private parties and courts in valuing patents that are licensed outside the pool.

VIII. CONCLUSION

For the reasons discussed above, the Commission should reject the AllVid proposal in favor of policies that will truly foster innovation in provider networks, accommodate convergence in home networks, and unleash entire new markets of choice and competition in devices and services. If the Commission chooses to move forward with AllVid, however, it is vital that the Commission require only the baseline, essential functionality of an AllVid gateway, permit flexibility in the implementation of those functions, and, most critically, allow additional functionality to be included in the device so that an MVPD customer may lease a single device if she so chooses. The Commission should also establish guidelines for intellectual property rights

in any AllVid standards, to avoid unduly hindering AllVid implementation due to hidden intellectual property expenses.

Respectfully submitted,

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