Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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

COMMENTS OF VERIZON

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TABLE OF CONTENTS

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	)	
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I. INTRODUCTION AND SUMMARY

As the Commission considers bidirectional compatibility issues in this proceeding,[2] it should endorse and encourage ongoing industry efforts that are open to participation by all providers to develop technology- and platform-agnostic technical standards for two-way devices. The resulting standards will be compatible with video providers of all types, and will not favor some providers over others. Moreover, while the Commission should encourage industry efforts to develop such standards rather than dictate any specific standard itself, in no event should the Commission codify the cable-centric standard presented by NCTA and incumbent cable operators. The cable-centric standards are designed to favor a particular type of incumbent

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[1] The Verizon companies participating in this filing ("Verizon") are the regulated, wholly owned subsidiaries of Verizon Communications Inc.

[2] *See Implementation of Section 304 of the Telecommunications Act of 1996*, Third Further Notice of Proposed Rulemaking, FCC 07-120 (rel. June 29, 2007)("*Two-Way NPRM*").

technology, and would serve to further entrench incumbent operators, inhibit continued technological innovation by competitive providers, and frustrate consumers interested in purchasing equipment that works equally well with all video providers, including those using advanced, new technologies and platforms.

II. ANY TWO-WAY PLUG-AND-PLAY STANDARD SHOULD BE COMPETITIVELY NEUTRAL AND ENCOURAGE INNOVATION AND CONSUMER CHOICE.

The Commission should endorse and encourage ongoing industry efforts, open to participation by all providers, to develop technical standards for two-way plug-and-play that are technology- and platform-agnostic and that do not advantage any type of video provider over any other. Although the Commission should not dictate any particular technical standards for two-way plug-and-play itself – and in no event should codify cable-centric standards – it should further innovation and competition by encouraging industry standards-setting efforts that will lead to standards for two-way devices that are compatible with all providers, regardless of their technological approach to delivering video services or their platform.

Today, many new entrants are bringing video competition to market using a variety of technological approaches, such as IPTV and Verizon's hybrid QAM/IP delivered over its FTTP network. However, if the Commission were to endorse a bidirectional standard that is not technology-neutral, consumer electronics manufacturers would be likely – particularly given the large embedded base of customers served by traditional cable technology – to build equipment that incorporates the cable-centric standards. In turn, consumers who purchase that equipment will be less likely to sign up for innovative video services offered over non-traditional technologies because their home electronics equipment may not work as well, or they may lose some functionalities, on the competitive provider's service. And the result would be that competitive providers would be inhibited from pursuing innovative technological approaches or

may have to reengineer their services or offer additional equipment in order to overcome the advantages for the incumbent provider. Thus, cable-centric two-way standards would make it more difficult for alternative providers to compete successfully.

In order to be technology-, and platform-neutral, any standard must have five basic characteristics. *First*, it must be transport agnostic. That is, it must not be dependent on the type of facilities used or the technology employed to deliver video or other services, whether it be traditional cable technology, fiber, satellite, xDSL, BPL, or some other transport technologies.

Second, it must be based on a common standard developed by an open industry group, with maximum visibility into development. Such a group must be open to video providers of all types, as well as to consumer electronics manufacturers, content providers, or any other interested stakeholders, and not be beholden to any particular part of the industry. A common standard developed in such a standards-setting forum must be based on a non-proprietary technology that allows for conditional access that works with all providers. Relatedly, any "root trust authority" responsible for maintaining the system and protecting proprietary provider information must not be beholden to any non-neutral industry sector. Allowing one industry sector or group of competitors to control either elements of the hardware design necessary to deploy the standard or the root trust authority would give these groups too much control over their competitors' ability to develop and deploy video services. It also could give that group access to competitively sensitive information about their competitors' subscriber base and technology.

Third, such a standard must be forward-looking and allow for new technological advancements and services while maintaining backwards equipment compatibility as necessary. Innovation in the deployment of video services is happening at a fantastic rate. The Commission

should not choose, at this juncture, to codify any particular technical standards, but it certainly should not adopt rules that favor legacy technologies and lock video service providers into specific means of delivery. The Commission should encourage and endorse industry efforts to develop technical standards for bidirectional compatibility that allow the maximum amount of flexibility and innovation, rather than serving as a barrier to the development of new technologies.

Fourth, bidirectional standards must utilize an industry-accepted physical interface and return path, such as IP over Ethernet. Standards such as IP over Ethernet are well understood and can be deployed without relying on proprietary hardware or software that increases the costs and complexity associated with deployment. Most importantly, IP over Ethernet can be supported by every provider that offers video and broadband Internet service, and the costs of utilizing Ethernet for the return path are similar regardless of the technology used to deliver these services, whether it is HFC, FTTP, xDSL, or some other platform. Further support for the fact that IP over Ethernet could work for incumbents and competitive providers alike comes with yesterday's announcement that CableLabs has reached an agreement with several consumer electronics manufacturers and movie studios on technical standards that will let cable set-top boxes send cable programming over home IP networks.[3] While Verizon is not yet familiar with the details of these standards and the announcement does not seem to indicate that CableLabs intends to replace its other cable-centric standards, such as DOCSIS with IP over Ethernet, this announcement does show that even CableLabs is able to work with IP. Thus, IP over Ethernet is

[3] Spangler, T., "CableLabs Reaches Deal to Let Devices Run IP Video," *Multichannel News* (Aug. 23, 2007) ("CableLabs, in conjunction with four major movie studios, approved a technical specification developed by five consumer-electronics makers that will let set-top boxes and other devices send cable programming – in an encrypted format – over Internet Protocol home networks.")

a well understood and commonly accepted standard that provides an appropriate and fair baseline for all video providers.

Finally, the standard must eliminate dependency on "middleware," such as the OpenCable Platform, that has little or no connection to legitimate baseline standards for bidirectional functionality. Basic two-way standards should maintain a tight focus on conditional access security and on ensuring that, regardless of provider, two-way devices will enable all basic two-way video services (*i.e.*, video-on-demand, electronic programming guide, impulse pay-per-view), but should not stray into other areas. There is no reason to allow a superfluous technology that favors a particular set of providers to piggyback its way into two-way plug-and-play standards.

Bidirectional standards that comply with these basic principles will promote the adoption of two-way devices, without inhibiting technological innovation or providing an undue and unneeded leg up for incumbent cable operators.

III. THE COMMISSION SHOULD ENCOURAGE AND SUPPORT THE STANDARDS BEING DEVELOPED BY ATIS FOR BIDIRECTIONAL FUNCTIONALITY.

Ongoing industry standards-setting efforts through the Alliance for Telecommunications Industry Solutions ("ATIS") comply with the basic principles set out above and, as a result, promise to deliver separable security and bidirectional solutions that work for all providers and that benefit consumers. ATIS is an ANSI-accredited, industry standards-setting body open to any party – video providers of all types, consumer electronics manufacturers, content providers, or other interested stakeholders. In fact, some cable operators, such as Comcast and Cox, are already members of ATIS, and numerous consumer electronics manufacturers participate in the standards-setting efforts performed through ATIS. ATIS has two separate but related efforts underway that are working toward technology-, and platform-agnostic solutions for bidirectional

compatibility and separable security standards, including a common standard approach to downloadable conditional access (DCAS). Verizon has taken leading roles in these efforts and believes that open forums such as these, which invite the participation of the entire industry, and not just one part of it, will lead to the best bidirectional solution for competition and for consumers. The Commission should endorse and encourage these efforts and the principles underlying them.

The first ATIS standards project focused on bidirectional standards is the IP-based Separable Security Incubator ("ISSI"). This group, chaired by Verizon, is focused on the fast-track development of a two-way, separable security standard that will work for all providers. Its current goal is the creation of a standard that builds upon the existing point-of-deployment module ("POD")/Host standards to enable the same form factor and electrical interface POD to service both existing CableCard systems that use radiofrequency ("RF") networks, such as those used by traditional cable operators, and on new IP networks. Unlike existing CableCards, this new POD would not depend on cable-centric technology or network architecture, such as the existence of an RF return path, and therefore will be compatible with both traditional cable providers' systems and with new technologies and platforms that utilize an IP return path. Such PODs would provide a significant degree of two-way functionality, particularly after the standards for additional elements of two-way plug-and-play are finalized. ISSI's current timeline is to finalize draft specifications for these PODs by the end of 2007 and to develop final specifications and prototype devices by the middle of 2008.

This fast-track approach to a technology-, and platform-neutral POD is possible because it will largely draw on existing interfaces and specifications, thus enabling ISSI and consumer equipment manufacturers to move quickly both in developing and in implementing this

approach. Once this initial phase is complete, ISSI will work with equipment manufacturers – many of whom are actively involved in the ISSI[4] – to implement the standard in their devices as soon as possible, although the inclusion of interfaces for these PODs by the end of 2008 may not be possible, given the time that it takes for electronics manufacturers to develop products incorporating new standards.

ISSI will also include a second phase – following the adoption of POD standards – that will work to develop common standards for DCAS. Given its complexity, a common DCAS approach that complies with the principles set out above will take somewhat longer to develop, although such an approach continues to promise significant cost savings and technological benefits over a POD solution. Moreover, a common DCAS approach has received significant support from numerous information technology companies such as Hewlett-Packard, Intel, Sony, and Dell, who have noted that a common DCAS standard "would meet the needs of service providers, device manufacturers and consumers."[5]

The second ATIS standards project, initiated in 2005 and also chaired by Verizon, is the IPTV Interoperability Forum (IIF). The IIF group is focused on a wider range of standards addressing most aspects of IPTV. This effort, however, will address numerous issues central to effective bidirectional standards, including standards related to channel mapping, network attachment, electronic program guides, and video-on-demand. These standards – which can be adopted by any video provider, including traditional cable providers, that utilizes IP – would provide a basis for CE manufacturers to create equipment that interacts with various video

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[4] The vice chairman of ISSI, for example, is an employee of Sony. Several other consumer electronics manufacturers are also actively involved in ISSI.

[5] Comments of Hewlett-Packard Company, Intel Corporation, Sony Electronics Inc and Dell Inc. Regarding Verizon's Request for Waiver of 47 C.F.R. § 76.1204(a)(1), CS Docket No. 97-80, CSR-7042-Z, at 5 (September 19, 2006) ("Information Technology Comments").

providers' systems and that provides more robust, bidirectional capabilities for consumers.

Several incumbent cable operators are members of ATIS, and they have the opportunity to become more actively involved in order to speed along these efforts and to ensure that any legitimate concerns they may have are addressed while standards are still being developed. The Commission should endorse and encourage these efforts – which promise standards that would work for all types of video providers and that could be developed relatively quickly.

IV. CABLE-CENTRIC STANDARDS FOR TWO-WAY PLUG-AND-PLAY WOULD INHIBIT COMPETITION AND HARM INNOVATION, TO THE DETRIMENT OF CONSUMERS.

As noted above, the Commission should encourage industry efforts to develop two-way standards that work for all providers, rather than codifying any specific standard itself. In no event, however, should it adopt two-way standards that would favor some providers over others, such as any cable-centric standard. The current proposals of NCTA and CEA are not technology- or platform-agnostic and incorporate cable-centric standards. Therefore, while there may be aspects of these proposals – and in particular the CEA proposal – that provide useful contributions, they do not provide an acceptable basis for a long-term, industry-wide solution to two-way plug-and-play.

A. NCTA's Proposal is Cable-Centric, Closed, and Designed to Further Entrench Incumbent Providers and Their Technology.

The Commission should reject NCTA's proposal. NCTA has advocated the adoption of a conditional access standard that has been developed by CableLabs and relies heavily on incumbent cable technology.[6] The adoption of such a solution would have serious negative

[6] *See Two-Way NPRM* at ¶ 6; *see also* Letter from Daniel L. Brenner, Senior Vice President, Law & Regulatory Policy, National Cable and Telecommunications Association, to Marlene H. Dortch, Secretary, Federal Communications Commission (Nov. 30, 2005) ("NCTA Letter").

impacts on the marketplace, as it would provide incumbent cable companies with an even greater competitive advantage and would further entrench the market position enjoyed by many cable operators today – most of whom still have never faced wireline video competition.

The fundamental flaw in NCTA's proposal is that it was designed and developed to work for one type of provider using a particular type of technology: incumbent cable providers utilizing legacy coaxial or hybrid fiber/coaxial ("HFC") systems to deliver video services. This is not an accident; as an exclusionary body beholden to incumbent providers,[7] CableLabs has every incentive to develop a standard that works only with the technology used by its members. Because the development of this proposal took the characteristics of these networks as a given, the result is a two-way standard that is incompatible with new, more advanced technologies. For example, NCTA's proposal requires the use of DOCSIS for upstream communications, which in turn relies on the existence of an RF return path. An RF return path requires that an electrically conductive wire or cable, such as coaxial cable, be utilized and, for systems that incorporate fiber, requires technology that translates the RF return information so that it can be transmitted over fiber-optic cable. For all-coaxial systems or HFC systems, either no additional equipment or limited additional equipment at each node is required for the implementation of the CableLabs proposal.

However, new technologies utilizing fiber-to-the-premises would require expensive equipment at each end-user location in order to implement DOCSIS over RF, because these systems currently utilize pure IP over fiber for upstream transmission. This standard would be a retrograde step, similar to requiring that all jet airplanes also be equipped with propellers. It

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[7] *See* discussion, *infra.* In fact, in stark contrast to ATIS, CableLabs only permits traditional cable operators to join, and specifically excludes not only competitive providers like Verizon or the DBS providers, but even consumer electronics manufacturers.

would unreasonably burden new entrants at a time when they are attempting to compete directly with the entrenched cable companies, and would harm consumers by slowing the rollout of advanced technologies or increasing the cost of these services.

An IP over Ethernet solution, in contrast, will work with existing and future systems, including incumbent cable systems, with readily available equipment. IP over Ethernet would allow any piece of consumer electronics equipment to output its IP return signal through the near-ubiquitous twisted pair Ethernet cable, which would then be translated using low cost technology by each provider at the customer premises for upstream transmission using the technology of choice, whether it be coaxial or optical cable. The technology to implement this solution is readily available for cable, xDSL, broadband over powerline, IPTV, hybrid QAM/IP or any other video systems capable of communicating in IP, and it has already been deployed by cable systems in all homes that receive cable modem service. As noted above, just yesterday CableLabs announced an agreement with several consumer electronics manufacturers and movie studios concerning technical standards to allow set-top boxes to send cable programming over home IP networks.[8] Moreover, the IP over Ethernet standard is widely embraced by equipment manufacturers of all types. Therefore, this standard provides an appropriate and readily available baseline that any bidirectional standards should incorporate.

NCTA's proposal also fails to meet the criteria necessary for a two-way solution because it relies on proprietary chipsets that require the adoption of a host of unrelated technologies, designed specifically for the cable incumbents, in order to work. Instead of a standard chipset as

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[8] *See supra* n.5. As noted above, this announcement does not seem to indicate that CableLabs currently intends to rely on IP over Ethernet in place of its cable-centric DOCSIS standard for interaction between set-top boxes and cable operators' systems. It does show, however, that IP over Ethernet is a standard that is compatible with cable operators' services.

proposed by Verizon, NCTA's proposal relies on a chipset that has been modified with proprietary technology. And in order to get a license for this proprietary chip, the manufacturer is required to use other CableLabs protocols, such as DOCSIS and OCAP. Requiring all providers to implement these technologies is both unreasonable and antithetical to competition. First, as shown above, DOCSIS is not a technology-neutral solution. Second, though OCAP is described by NCTA as the "foundation" for two-way digital ready products,[9] OCAP itself has nothing to do with conditional access or the underlying two-way capabilities. Rather, OCAP is the higher-level operating system or "middleware" for devices. Third, because CableLabs holds the power to issue licenses for necessary elements of the chipset, it gives incumbent operators, through CableLabs, a chokehold over their competitors. The Commission should reject the use of this anticompetitive technological approach.

Finally, NCTA's proposal fails because it has been developed in a closed manner with minimal input from the industry that it seeks to serve. NCTA's solution has been developed by CableLabs in close association with incumbent cable operators. Unlike other standard-setting organizations like ATIS, however, CableLabs is not open to all parts of the industry, or even to consumer electronics manufacturers that ultimately are expected to incorporate the standards into their products. CableLabs clearly states that its members:

> are exclusively cable system operators. They do not include competitive network platforms such as direct broadcast satellite (DBS), telephone companies delivering video services, electrical utilities delivering broadband services, multi-channel multipoint distribution systems (MMDS) or the like. Nor do they include manufacturers or content providers (such as cable programmers, broadcasters or movie studios).[10]

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9 NCTA Letter at 9.

10 "CableLabs Member Companies" at http://www.cablelabs.com/about/companies/ (last

While CableLabs likely has significant expertise that would be useful in an industry-wide standard setting body – such as ATIS – CableLabs is admittedly and proudly beholden to the incumbent cable industry. A conflict of interest is inherent in such a standard-setting body, as decisions it makes might favor the cable industry. The Commission should not rely on such a body to create an industry-wide standard.

NCTA's proposed solution would be bad for competition, bad for device manufacturers, bad for consumers, and would only benefit the entrenched, incumbent cable operators. Therefore, the Commission should reject NCTA's proposal and should encourage instead the speedy development of standards that work for all video providers.

B. CEA's Present Proposal, Though Promising, Should Not Be Adopted as a Long-Term Solution.

CEA has proposed the adoption of its own standard in order to implement two-way plug-and-play devices.[11] While CEA's basic approach to separable security is sound – including the basic elements of a provider's service that should be accessible to owners of bidirectional devices – its current proposal nonetheless will result in standards that fundamentally would not be compatible with Verizon's QAM/IP system or with pure IPTV, satellite, or other technological platforms. Therefore, although it contains several elements with which Verizon agrees, its embrace of cable-centric technology still raises significant consumer and competition concerns and, in its current form, should not be endorsed by the Commission as a solution to two-way plug-and-play.

Verizon supports CEA's efforts to give providers flexibility and to incorporate only those

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visited August 14, 2007).

[11] *See* Letter from Julie Kearney, Senior Director and Regulatory Counsel, Consumer Electronics Association, *et al.* to Marlene Dortch, Secretary, FCC, at 1 (Nov. 7, 2006).

standards that are necessary for the development of two-way functionality.[12] Verizon also agrees with elements of the CEA proposal that would define the core aspects of a provider's video service – such as the electronic program guide, video-on-demand, and impulse pay-per-view – that bidirectional devices should enable, and agrees with CEA that OCAP middleware should not be a prerequisite for basic interactive services. Moreover, Verizon agrees that bidirectional standards will need to coexist with the current one-way-based PODs that are already being used by consumers.

In an apparent effort to hasten the development of two-way plug-and-play devices, however, CEA relies on several cable-centric technological standards, such as DOCSIS and OCAP, for portions of its proposal. As explained above, DOCSIS is not an acceptable solution for non-traditional video providers that have not implemented an RF return path into their systems. In addition, though implementation of OCAP is not necessary for basic services under CEA's plan, providers would be required to implement at least a modified version of OCAP in order to provide advanced services to plug-and-play devices,[13] resulting in many of the same harms identified above. Verizon opposes any standard that requires the use of OCAP.

CEA's recent filings indicate that both CEA and its members may recognize the shortcomings of a proposal that is incompatible with certain providers' systems and that the ultimate solution for two-way plug-and-play should be technology neutral and network agnostic. Recently, CEA "applaud[ed]" the efforts of ISSI and noted that a "single national standard is needed."[14] Obviously, Verizon also supports such a result and continues to work closely with

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12 *Id.* at 1-2.

13 *Id.* at 4-9.

14 *See* Comments of the Consumer Electronics Association, CS Docket No. 97-80, CSR-

CEA and its members companies. CEA's current proposal, however, does not incorporate all of the criteria necessary to create consumer devices that will truly benefit consumers without inhibiting innovation and competition. Therefore, the Commission should not accept CEA's proposal, in its current form that relies on cable-centric standards, as the standard for the creation of bidirectional devices.[15] Instead, the Commission should endorse and encourage industry efforts, like those underway at ATIS, to develop technology- and network-agnostic solutions that do not favor some providers over others.

7407-Z, CSR-7408-Z, CSR-7409-Z, CSR-7410-Z (Aug. 13, 2007).

[15] As noted herein, Verizon believes that the Commission's endorsement of a cable-centric standard would harm consumers and competition, even if adopted as an interim solution. The Commission could endorse much of CEA's proposal if it substituted other standards that are not cable-centric, such as the use of IP over Ethernet and elimination of the OCAP requirements for advanced services. As noted above, the Commission should not codify any specific technical standard itself. However, if the Commission determines to do so and decides that CEA's proposal is appropriate as an interim solution for traditional cable providers, it should exempt providers that utilize transmission technologies that are incompatible with such a system and should encourage the speedy transition away from this interim solution and to common bidirectional standards.

V. CONCLUSION

For the reasons stated above, the Commission only should encourage and endorse industry efforts, open to all providers, to create technology- and platform- neutral bidirectional standards that incorporate the characteristics identified above and that would not favor some providers over others. Likewise, the Commission should reject proposals that rely on cable-centric technology.

Respectfully submitted,

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