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Federal Communications Commission
445 12th Street SW
Washington, DC 20554

RE: Proceeding 10-91, In the Matter of Video Device Competition

Having read the AllVid Notice of Inquiry and substantial portions of several responses filed by various entities I submit my comments regarding issues and possibilities presented by this initiative. My background in local area networks and software engineering allows me to present a viewpoint of a technically proficient consumer not involved with the media production, distribution, or presentation industries. The comments below are by subject but are not in any particular order.

1. Gateway vs. Adapter

I see very little utility in production of an AllVid "adapter". The technical requirements of the adapter vs. the gateway are so close that an adapter can be viewed as simply a gateway supporting fewer streams. It would be more productive to concentrate efforts on development of the gateway specifications only.

2. ATSC

I do not see inclusion of ATSC in the gateway device as being beneficial. Most people who subscribe to a MVPD (cable, satellite, etc) do not rely on over the air ATSC transmissions. Also, most current televisions already include the ability to receive ATSC broadcasts so inclusion in a gateway would be redundant.

There may be a market for a separate ATSC gateway device. Such a device would work like any other AllVid gateway but would be connected to an antenna rather than a delivery service. This device would be useful for those instances where a television is not easily tied directly to an external antenna or where a consumer does desire access to over the air programming in addition to other delivery services. Such a device would

be sold by multiple consumer electronics manufacturers and benefit from market price competition.

3. Open Standards

Open and extensible standards must be used to allow future innovation of AllVid systems. This will be especially critical at the higher level protocols for content browsing, selection, and payment.

A good analog to how open standards can work is seen in the evolution of the Internet. When the Internet was first developed there was no concept of a “web browser”. The layered, extensible nature of the Internet protocols allowed this new capability to be developed and then continue to evolve. Organizations such as the Internet Engineering Task Force have aided the evolution of the Internet by providing a standardization process for new protocols.

A new body needs to be established or an existing body empowered to act as a hub for standardization of new and extension to existing AllVid standards. This will allow new concepts to be incorporated with the maximum amount of compatibility between products and providers. MVPDs, consumer electronics manufacturers, and software development companies should have a presence in the process and no one group should be able to dominate or impede the work of such a body.

4. 100BaseTX and MoCA

Unshielded twisted pair cabling is a great standard for data transmission being cost effective to implement and relatively easy to maintain. Using a standard such as 100BaseTX is great for integration into existing home network architectures. Unfortunately, being limited to 100Mbps could prove problematic in cases where six high-definition video streams are in use at one time. For this reason I would recommend requiring gateway devices to support 1000BaseT, also known as Gigabit Ethernet. The cost of gigabit network interface chips, adapters, and switches has come down to the point that they are only marginally more expensive than 100Mbps interfaces. Also, due to the speed negotiation present in most interfaces, a gigabit network port can still connect to 100Mbps equipment. Support of Gigabit Ethernet will provide far better support at only slightly higher cost.

Although twisted pair is more cost effective, most homes today do not have Cat5e or better cabling installed throughout the structure. One type of cable which is likely installed to every existing point where a MVPD connected television is present is RG-6

(or in older installations RG-59) coax. Because of this existing infrastructure I would highly recommend that AllVid gateways be encouraged if not required to support Multimedia over Coax (MoCA) as a data transmission medium. MoCA allows for the movement of high-speed data over coax cable which means that AllVid service can be provided to every location in a home where existing MVPD connected televisions are located. With MoCA, retrofitting an existing coax connected home for AllVid only requires installing the MVPD provided gateway at the entry point of the home with the cable outside connected to one side of the gateway and the coax inside the home connected to the other. No other rewiring should be required.

I do not believe it would be wise to mandate or even recommend any type of wireless connection. My experience has been that in-home wireless connections do not maintain a consistent speed or latency which can cause issues for streaming video services. Of course there is nothing to stop a consumer from having wireless service as part of their home network infrastructure but no guarantee should be made as to the quality or reliability of video delivery over a wireless home network.

5. Content Selection

Once a gateway is in place the ability to select content from that gateway is critical. I want to see an open meta-data and control standard preferably based on XML. Such meta-data should provide a list of channels available for channelized content and methods for browsing and searching for on-demand content. Control commands must support functions such as start, pause, and stop for VOD content.

The meta-data should provide specifications for handling program guide information but I'm undecided if the MVPD should be required to provide that channel guide data. Other providers such as TiVo have been using alternate sources of program guide data for years and my experience has been that their data is often more accurate than what is being provided by the MVPD. If the MVPD does choose to distribute program guide data through the meta-data structure it should be required to be unencrypted in order to avoid biasing the MVPD provided set-top boxes over 3rd party devices.

Any channel and program information distributed should include non-MVPD specific unique identification per channel, per program, and per episode to allow 3rd party devices the ability to choose from alternate providers for the same program if more than one gateway is present (such as an ATSC gateway and a MVPD gateway).

The gateway should not include a presentation layer. Presenting program data should be the function of an AllVid receiving device (television, DVR, or computer).

6. Ordering and payment

Ordering of on-demand services should be possible via an application programming interface (API) rather than requiring screens generated by the gateway. As long as there is a clear standard for data formats there is no reason why the end user device cannot handle the presentation of order and payment screens.

If it is decided to allow the MVPD to generate their own content ordering screens then an open standard such as HTML5 should be used for formatting the screens in order to allow the end device to frame the content as desired by that devices interface developers.

7. Multiple gateways

The AllVid specification should allow for multiple gateway devices within a home. There are several uses for this ability.

Multiple service providers may be needed in one home at one time. As an example, a residence may utilize both satellite and over the air ATSC services. If a gateway for each is present in the home it should be possible for an AllVid capable receiving device (television, digital video recorder, or personal computer) to aggregate content from both gateways as well as use an alternate gateway when a channel is available via more than one gateway.

Some households will require more than six simultaneous streams. In this case it should be possible to rent an additional gateway from the MVPD to provide another six streams. The device discovery and meta-data protocols should work to allow seamless integration of these additional gateways so that the end user does not need to be aware of the additional devices.

Other devices may act as a gateway. A digital video recorder (DVR) may act as a gateway to distribute content to televisions. A home computer may act as a gateway to stream locally stored or Internet video content to televisions. In both of these cases it should be possible to detect the gateway devices from an AllVid capable television.

8. Gateway provided by MVPD

As implied in comments above I strongly believe the AllVid gateway should be provided by the MVPD and should not be a one size fits all device. As long as the gateway

supports the full suite of AllVid protocols on the home side it should be allowed to use any technology needed on the provider side.

This will ease the transition to AllVid for the MVPD. The MVPD will be able to tailor the outside interface of their gateway device to mimic that if their existing set-top boxes. To the central office system there should be no difference between an AllVid gateway and a legacy set-top box other than the number of simultaneous video streams supported.

9. Device Authorization

It is critical that device authorization be software based and automatic. Two of the great failings of the CableCARD standard are first that it required a physical device to be installed and second that this device has to be manually configured into the MVPD infrastructure. This led to great expense in deployment CableCARD technology and considerable frustration for both consumers and support personnel.

Public key infrastructure and electronic key exchange have been used for years to secure Internet communications. There is no reason why AllVid cannot use the same capabilities. Any AllVid device or application can be assigned a private security key. That key can be a child of a root certificate authority. Any key from that root authority should be trusted unless it is in a certificate revocation list.

Certificates may contain attributes and those attributes can be used to determine the trust level of a device. For consumer electronics devices and major vendor applications (such as Microsoft's Windows Media Center) which have been tested to comply with copy protection and distribution requirements a full trust attribute should be present. For open source projects or revoked certificates a limited trust should be present allowing for use of "copy freely" content such as ATSC over the air or must-carry channels currently carried in "ClearQAM" by MVPDs. Other in-between levels of trust may also be established.

10. Digital Outlet Fees

Per device digital outlet fees should be prohibited. This would have a negative effect on innovation such as consumer devices and software applications able to receive AllVid programming. The service point fee should only be for a number of simultaneous streams. This would determine the number of gateways required in a home and the rental fee for additional gateways will provide the MVPD with revenue for high-usage households.

11. Digital Video Recorder

This is not so much a requirement as a look into what is possible. A digital video recorder (DVR) is in a somewhat unique position with the AllVid infrastructure. A DVR, or a software program running on a PC to act as a DVR, can be both an AllVid receiver for the purpose of recording programming and an AllVid gateway for the purpose of providing that programming back to televisions. To the television a DVR is going to look like a gateway which only has video on demand content. Done correctly, any DVR has the potential to be a whole home DVR with one recorder feeding multiple televisions.

TiVo users have been frustrated for years over the use of the Copy Control Information (CCI) feature of television broadcasts. Most content is delivered with one of three modes: “copy freely”, “copy once”, and “copy never”. “Copy never” is used for special events or pay-per-view to make sure it is not recorded by other devices. “Copy freely” is preferred on programs which may be recorded, but many providers are flagging programming as “copy once”. This allows a program to be recorded and played back but prevents transfer to another device. In homes with more than one TiVo (or other type of DVR) it is not possible to move a program from one DVR to another when “copy once” is flagged.

If a DVR can act as an AllVid gateway then “copy once” is no longer an issue when it comes to recording a program at one location in a house and watching it in another. The DVR will be able to record directly from the gateway and stream the video back out to any other device capable of receiving AllVid video. In cases where the source content is flagged as “copy once” it should be flagged as “copy never” when being played back to prevent other devices without a household from rerecording the program.

12. Timing

If it is the FCC’s intent to have AllVid available to consumers by the end of 2012 then I believe it is critical that the standards be formalized by the end of 2011. The hardware for AllVid will be reasonably straight forward but the software will require significant development and testing. To come up with a working standard within 15 months will require an extremely ambitious effort. Although I would very much like to see AllVid sooner rather than later I have doubts that it will be possible to meet such a timeline.

13. Set-top Box Features

I do not believe the MVPD should be prevented from bundling functions (such as a DVR) into their set-top box offerings provided they do not use any proprietary functions of the MVPD infrastructure not available to competitive consumer offerings. This would allow many MVPDs to repurpose existing equipment for use in an AllVid home. As an example, Verizon FiOS uses a Motorola set-top box and DVR which has both 100BaseT and MoCA network capability and already receives VOD services via TCP/IP. This device could act as an AllVid set-top box with replacement software.

14. Conclusion

Thank you for your consideration of these comments in regards to issues involving AllVid.

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