CTA Standard

A User Interface Specification for Home Networks Using Web-based Protocols

CTA-2027-B

(Formerly CEA-2027-B)

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(Formulated under the cognizance of the CTA **R7 Home Networks Committee**.)

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FOREWORD

The current version of this standard was developed under the auspices of the Consumer Electronics Association (CEA) R7 Home Network Committee.

Warning: CEA-2027-B requirements are not a backward compatible extension of those in the CEA-2027-A specification.

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CEA-2027-B: A User Interface Specification for Home Networks Using Web-based Protocols

1 Scope

This standard addresses user control of remote A/V devices on home networks.

It defines mechanisms that allow the A/V devices to present status and control user interfaces on a network-attached renderer, and specifies a method for encapsulating this UI data using Web and Internet protocols.

User control is exerted through a browser and graphical user interface that is contained in the rendering device. The design of these graphical and user interfaces is determined solely by the implementers of this standard, and may utilize any content design up to and including the full capability of the devices and network technology.

Annex A is normative for implementations utilizing IEEE 1394. Future versions of this standard are expected to address other home networking technologies in additional Annexes.

This specification describes the minimum capabilities of the client browser and the controller/server. A compliant browser may have additional capabilities for worldwide web surfing, E-Commerce, or Enhanced TV applications, but that is out of scope for this standard.

A renderer in the current version of this standard may be a DTV or a PC, but other rendering devices are anticipated. A/V devices may include a source of home-network content, such as a cable or terrestrial set-top box, digital VCR, or DTV.

Warning: CEA-2027-B requirements are not a backward compatible extension of those in the CEA-2027-A specification.

1.1 Revision History

August 2004: Publication of CEA-2027.

July 2006: Publication of CEA-2027-A.

October 24, 2006: CEA-2027-B version 2 draft is released.

All references in this standard to CEA-2027 and 2027 shall apply to CEA-2027-B. Changes from CEA-2027-A to CEA-2027-B:

1. The Browser specifications in Section 4.4 were changed from full RFC compliance to subset itemized in Annex B.
2. The HNCP method of IP address resolution in Annex A was deleted and has been replaced with Bonjour methods described in Section 4.3.
3. New sections in Annex A on 1394 describe the relationship of AV/C commands to CEA-2027-B specification.
4. A new Section 4.8 was added to describe 6 new IP-level commands that apply normatively to all Logical Units that are either controllers or actually make media connections. These commands assist in establishing, allocating resources for, and resolving some conflicts related to media connections between "sink" and "source" "logical units". These IP connect and reservation commands plus the addition of Bonjour IP-based IP address resolution and 2027 Service Discovery establish the operation of 2027 completely at the IP level with the AV/C discovery on 1394 being at the AV/C / 1394 level.
5. The previously defined push method was eliminated in favor of a new client server based "Notification" system for logical units. The need for transparent frame is eliminated as a result of the notification system. This notification system replaces the need for the Frame Exit Status Return of Section 4.7. So the Frame Exit Status Return command has been removed.
6. An HDTV profile for a web browser/controller attribute is established which require the new relaxed browser specifications and limit the range of screen sizes to 4 which are supported in HDTV web Browsers. Within the HDTV profile the size of the initial control frame is the full screen size.
7. As a result of the control frame for a device always being full screen this eliminates the need to request a size for that object. Also, this precludes maintaining the status frame stack on screen with a control frame, so the example that was in Section 6 will not be consistent with the specification and is removed.
8. Since not all HDTVs display 100% of the video data, the generated On Screen Display should provide an allowance for over-scan in HDTVs.
9. The Proxy mechanism remains approximately the same, but the AV/C legacy device association has changed to make the process robust. There is now a "waiting period" before the expiration of which the device must observe all 2027 Files for proxies which have already attached that device. Also, any proxy capable device must remember which 2027 Devices have proxied AV/C devices which it is capable of proxying. The "waiting period" for taking over a previously proxied AV/C device is much longer. This proxy method utilizes 2027 File descriptions which are advertised via Bonjour and does not require neither config ROM storage nor additional bus resets.
10. The manufacturer's name is now an attribute of each Logical Unit in addition to that of the IP addressable device that serves the 2027 File. Another addition to the 2027 File requirement is an indication that the LU has recording capabilities.
11. Since the addition of logical unit concept in the first CEA-2027 specification we have always intended that CEA-931-C commands will be sent from one logical unit to another.