

P2200

Submitter Email: bfisher@quicksilver.com

Type of Project: Modify Existing Approved PAR

PAR Request Date: 26-Jul-2017

PAR Approval Date: 28-Sep-2017

PAR Expiration Date: 31-Dec-2019

Status: Modification to a Previously Approved PAR for the Revision of a Standard

Root PAR: P2200 **Approved on:** 14-Jun-2013

Root Project: 2200-2012

1.1 Project Number: P2200

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Standard Protocol for Stream Management in Media Client Devices

3.1 Working Group: High Quality Mobile Experience Working Group (C/MS/HCQMEWG)

Contact Information for Working Group Chair

Name: William Fisher

Email Address: bfisher@quicksilver.com

Phone: 949-474-2150

Contact Information for Working Group Vice-Chair

Name: Minsoo Lee

Email Address: minsoolee76@gmail.com

Phone: +82-10-7602-1152

3.2 Sponsoring Society and Committee: IEEE Computer Society/Microprocessor Standards Committee (C/MS/CS)

Contact Information for Sponsor Chair

Name: Ralph Kearfott

Email Address: rbk@louisiana.edu

Phone: 337-993-1827

Contact Information for Standards Representative

None

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 03/2018

4.3 Projected Completion Date for Submittal to RevCom

Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 10/2018

5.1 Approximate number of people expected to be actively involved in the development of this project: 5

5.2 Scope: This standard will define interfaces for intelligently routing and replicating content over heterogeneous networks and communications protocols to devices with local storage. It will also define and refine definitions and protocols for the intermediate caching and forwarding of such content.

Changes in scope: This standard will define interfaces for intelligently routing and replicating content over heterogeneous networks and communications protocols to devices with local storage. **It will also define and refine definitions and protocols for the intermediate caching and forwarding of such content.**

5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: The purpose is to optimize the delivery of media content to consumer devices containing local storage, taking into account network and content policies, network capabilities, storage capabilities, and bandwidth utilization.

5.5 Need for the Project: The capability to deliver rich media (such as high definition or 3D content) into consumer devices today is limited to available network bandwidth. Devices today typically initiate their own streaming requests to remote servers for content consumption and do not share content within the home network.

Services wishing to leverage client-side caches need to write client applications for each environment, and may compete with each other over space, without any clear way for a user to arbitrate or manage client resource consumption. IEEE Std 2200-2018 defines a standardized mechanism by which online services could enable an option to queue content for later delivery rather than initiate the stream immediately, and

to schedule content delivery such that it is not dependent on the network conditions available at the time of the request, as well as arbitrating cache usage among applications.

This project extends IEEE Std 2200-2012 with additional support for devices to be able to queue and deliver content to each other within a local network and ensure that content is cached and can be found when needed, thus enabling implementations to provide a superior user experience.

5.6 Stakeholders for the Standard: Stakeholders include mobile carriers, cloud services, content owners and distribution services, application developers, storage device manufacturers, mobile and desktop operating system vendors, chipset vendors, entertainment device manufacturers, and security/DRM providers.

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes: Section 5 is revised to extend IEEE 2200 1.0 specification for its broad adoption while meeting stakeholders' needs.

Modified PAR:

4.1: The project is moving to individual because under the current entity model the WG membership doesn't exist anymore. Corporations were not willing to pay the corporate membership fee.

5.2 Following the successful release of the original P2200 standard, the committee wanted to address certain elements that had been considered but not incorporated into the original standard for timing purposes.

Chief among these was a desire to support what we refer to as "intermediate devices". These include Network Attached Storage (NAS) units, Digital Video Recorders (DVRs) and similar local computing devices with large amounts of internal storage. With the current and projected drops in cost and increases in size of storage of such devices, we wanted to include the ability to cache content at a small-office/home level and distribute that content to many devices within the local network.

The committee saw this as a natural evolution of the existing standard and also as a strongly desirable optimization of the capabilities of the standard. If the total amount of bandwidth consumed by downloading of identical content through WAN links could be reduced by 5X simply by having a copy of the content located on premises, that would provide a great deal of relief to the peak demands on the network.

This capability will be especially useful for content such as video games, where updates often require multiple gigabytes of data but are only made available officially on a particular date. The downloading of such large files in very large numbers in a very narrow time frame places extreme burdens on cloud services and on delivery systems. If significant amounts of such content could be staged in advance on large numbers of intermediate devices within homes or businesses, the peak demand requirements would be far lower and the end-user experience would be significantly improved.

Similar challenges are now being faced by augmented reality and virtual reality developers, who require large amounts of geospatial data and could also benefit from caching of such content in advance of its activation.

A third potential market for this capability is the automotive field. With cars becoming more connected and containing large amounts of storage space for audiovisual content, some intermediate sourcing of large data files would make the setup of content within the vehicle faster and more reliable and provide a high-quality A/V experience to users (i.e. no hitching of playback). This seamless playback was one of the key goals of the original standard, to be achieved through smart caching. Enabling rapid transfer of large data files from a local intermediate device to the vehicle would improve the end-user experience by making the setup process as quick and painless as practical.