



Rationale for MBMS FLUTE Enhancements

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Document for Discussion



Topics

- Download Service Examples
- Current Definition
- Constraints
- Goals

Download Service Examples

End-User services

- Sport scores & news updates
 - File requirements
 - Size: Few kBytes (textual/formatting data, icons, thumbnail, etc.)
 - Latency: Seconds to minutes
- Catch-up TV
 - Mobile version of TV episodes and news clips
 - Providers: ABC, CBS, CNN, etc.
 - File requirements
 - Size: From a few MBytes (5min news clip) to tens of MBytes (20min episodes)
 - Latency: Typically minutes to hours
- Media distribution (newspaper/magazine)

Auxiliary content

- Targeted Ads
 - Ads delivered as files and targeted to user profiles
 - Ads rendered on device from local cache
 - File requirements
 - Size: Few MBytes (30sec ads)
 - Latency: Typically few minutes to hours
- User interactivity support
 - Files that promote user interaction
 - Click-to-SMS / Vote / Web / etc.
 - File requirements
 - Size: Few kBytes (icons, buttons, text)
 - Latency: Second to minutes
 - Software/Firmware upgrades
- Software/Firmware upgrades

Download delivery framework should support diverse application requirements, efficiently utilize network resources and battery power, and minimize provisioning effort

Download Delivery as Defined in TS 26.346

- As mainly designed to support multicast delivery of files over the Internet, FLUTE is not inherently optimized for mobile devices and battery efficiency
- Key characteristics of MBMS download delivery
 - A single FLUTE session may carry one or more user services
 - Single FLUTE channel per FLUTE session
 - Duration of the session is indicated by the session description (SDP)
 - FDT Instances are interspersed with file content
 - The location of an individual FDT Instance and/or content within a session is not known a-priori

Constraints of Current Download Delivery Scheme

- If a FLUTE session carries a single user service:
 - Generally less efficient utilization of allocated bandwidth
 - Unless transmission is continuous throughout session
 - Need to generate and process as many SDPs as there are sessions
 - Additional state maintenance and memory load on Ues
 - Mis-application of session description (use as configuration data rather than support for dynamic scheduling)
- If a FLUTE session carries multiple user services:
 - While enabling better resource utilization, UE must stay connected for as long as while any active service has an incomplete file
 - Power consumption is higher than it might need to be
- Potentially inefficient use of FEC protection due to inadequate time diversity
 - Trivial interleaving of files can increase time diversity, but incurs additional power consumption due to reception of undesired content

Goals for Improved Scheme

- Update download delivery protocol to allow:
 - More efficient network resource utilization in supporting diverse download delivery applications
 - Improved robustness of transmission of FDTs and file contents regardless of their size
 - Minimal session state maintenance at network and device
 - Efficient UE battery power consumption