

TSG-SA4#33 meeting  
November 22-26, 2004, Helsinki, Finland

***Tdoc S4 (04)0631***

Agenda Item: 4.2

TSG-SA4 PSM Ad-hoc meeting#6  
Newbury, UK, October 11-13, 2004

***Tdoc S4 AHP185***

**Title:** Liaison Statement on Reception Acknowledgement for MBMS  
**Release:** Rel-6  
**Work Item:** MBMS

**Source:** TSG SA WG4  
**To:** 3GPP TSG SA WG3, 3GPP TSG SA WG5, 3GPP TSG SA WG2  
**CC:** 3GPP TSG SA WG1

**Contact Person:**  
**Name:** Meir Fuchs  
**Company:** Bamboo MediaCasting Ltd.  
**Tel. Number:** +972 54 4470374  
**E-mail Address:** [meir@bamboomc.com](mailto:meir@bamboomc.com)

**Attachments:** S4-AHP174

---

## **1. Overall Description:**

SA4 is in the process of specifying a reception reporting mechanism that can be used for acknowledging reception of file-objects over MBMS. This procedure is one of several post-delivery procedures used by MBMS user services after the MBMS-bearer-based delivery. With reception reporting an HTTP POST request is used to report to the BM-SC that a file has been successfully received by the UE. The report is encoded in XML format. The capability of providing several reception reports in one HTTP POST request is being considered as well. S4-AHP174 attached provides a list of agreed principles for future SA4 work on reception reporting.

SA4 sees reception reports being used for both statistical purposes (i.e. collecting information on service performance from a sub-set of the UEs) and for acknowledgement collection. A reception acknowledgement could be used, for example, by the BM-SC to compile a list of receivers that have successfully received the content using MBMS. This list's complement is then used to take corrective action towards those receivers that could not receive the MBMS content (e.g. send the content using MMS).

SA4 has also discussed the possibility of using delivery acknowledgements for charging purposes. In this case, the acknowledgement would be used to charge the user for the delivery of a file. However, it is clear that in this case the UE might refrain from sending a reception report in order to avoid the associated charge.

## **2. Actions:**

### **SA3:**

SA3 are kindly asked to consider the implications of using reception reports for acknowledgement collection noting that acknowledgement collection may be used by the BM-SC to take further action.

Further SA3 are kindly asked to consider the feasibility of extending the delivery acknowledgement mechanism for charging purposes and to report back to SA4 on whether this is possible

### **SA5:**

SA5 are kindly asked to consider the possibility of using the acknowledgement mechanism for charging purposes and provide feedback on charging options for MBMS

**SA2:**

SA2 are kindly asked to consider the possibility of using acknowledgement for charging purposes and to provide feedback on whether alternative mechanisms exist or if the proposed mechanism can be enhanced.

**3. Dates of Next TSG SA WG4 Meetings:**

TSG-SA WG4 Meeting #33

22-26 November 2004

Helsinki, Finland

**Source:** Nokia<sup>1</sup>, Ericsson<sup>2</sup>, Bamboo Mediacasting<sup>3</sup>  
**Title:** **Content Reception Reporting**  
**Document for:** Discussion & Approval  
**Agenda Item:** 4.4.1

---

## 1. Introduction

Three contributions were presented at the 3GPP TSG-SA4 PSM SWG #6 ad-hoc Meeting [1] which described reception reporting issues and mechanisms. This contribution combines the methods into a general approach by describing the basic features of the reception reporting procedure. (It is assumed that a reader is familiar with the background provided in [9]).

The approach below is proposed for approval for the MBMS TS 26.346. Specification text is subsequently expected.

### 1.1 Motivation

The following text is copied from Chapter "5 High level requirements" of TS22.246 v6.1.0 [2]:

## 5.3 Delivery verification

For some MBMS user services it is required that the operator can verify that the content conveyed by the service has been received by the UE.

The UE shall provide a secure means to provide such delivery verification transmitted over a point-to-point connection to the home/visited network. This delivery verification may be relayed to the service provider.

Note: Delivery verification by point-to-point mechanisms partially reduces the resource-efficiency of the underlying broadcast services. Sacrificing resource-efficiency due to requirements of UE reporting may be necessary but should be kept as minimal as possible to minimize congestion.

---

<sup>1</sup> Rod Walsh, Nokia Research Center, P.O. Box 100, 33721 Tampere, Finland, Email: rod.walsh@nokia.com.

Igor D.D Curcio, Nokia Corporation, P.O. Box 88, 33721 Tampere (Finland), Tel. +358 71 800 8000, Email: igor.curcio@nokia.com.

<sup>2</sup> Thorsten Lohmar, Ericsson Eurolab Deutschland GmbH, Herzogenrath, Tel. +49 2407 575-7816, Email: thorsten.lohmar@ericsson.com

<sup>3</sup> Meir Fuchs, Bamboo MediaCasting, Tel. +972-9-7464676 x 111, Email: meir.fuchs@bambooc.com

## 1.2 General System

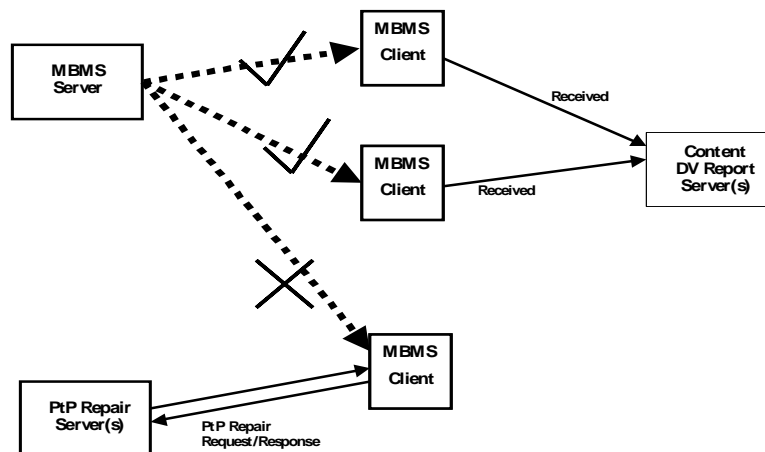


Figure 1: MBMS Session, PtP Repair, Content DV Report

## 2. Features and Functioning of the Proposal

The following list are features and functions of the reception reporting solution proposed. Items in angular brackets (e.g. *<item>*) are FFS and are in this section to show the context.

- Reception reports use HTTP POST
- A reception report is described as an XML object (contained in the HTTP POST)
- Multiple “associated delivery procedure” instances per session are (already) allowed
- Methods for delivering the associated delivery procedure description are (already) provided – same as for other metadata fragments
- The “Reception Reporting” can be used for two use cases:
  - Reception Acknowledgement (RAck) – the UE gives the server the minimal info (URI)
  - Statistical Reporting (StaR) – the UE gives the server additional interesting information (this provides the RAck usage too)
  - *<extensible to application-specific behaviour (e.g. installation notification) but this may be beyond release 6 scope - ffs>*
- An attribute in the associated delivery procedure description distinguishes between “StaR” and “RAck” - to specify UE behaviour
- An optional attribute in the associated delivery procedure description says “also report failed reception” (*reportFailed*)
  - For use with StaR, not RAck
  - Thus an operator may gather more detailed statistics on delivery experiences
  - The absence of this attribute indicates that reception reports are sent for only correctly received content
- Reception reports are random dispersed across time and servers
  - According to associated delivery procedure descriptions parameters (using the same XML as for the existing postFileRepair procedure)
  - A new “*postReceptionReporting*” procedure is used (in that XML) for reception reporting procedure instance descriptions
  - A new “*samplePercentage*” attribute is added (optional for reception reporting, must not be used for file repair) – a percentage number in a string
  - Reception report operations can use different offset and window times for randomising uplink messages (e.g., longer period of time) compared to file repair
  - A new “*forceTimingIndependence*” attribute is added which ensures statistical independence of the timing of reception reports from repair messaging – i.e. different back-off timers are used to avoid correlation of uplink signalling

- [Except where “*forceTimingIndependence*” is used] Once a UE does a (successful) file repair, it immediately sends the reception report (using the same PDP activation + radio bearer as the file repair messaging)
    - This incorporates the rule for sending all reception reports in the same connection (i.e. the same PDP + radio for all the reports)
- Set of parameters to be sent as part of reception reporting
  - Mandatory: Content identification
    - FileURI (1 or more)
    - <OR: IP flow based (e.g. in time + out time + user session id)>
  - Optional: Report context
    - FLUTE session ID: TSI + IP source address
    - (Selected) Report server IP address
    - UE id <format tbd>
    - User Service ID <format tbd>
    - QoE metrics <selection tbd>
    - ...
- Aggregation of several reception reports into one object shall be allowed for signalling efficiency
  - <Multipart MIME -OR- single XML object>
- Report per file; timer initiation at end of delivery session
  - <Grouping (e.g. for archives) or a threshold (e.g. 10) of files to initiate timers as an alternative to waiting for complete session end>

### 3. UE Behaviour According to Different Cases of Associated Delivery Procedure Knowledge

The UE shall behave in one of three ways:

- If no reception reporting associated delivery procedure is described for a session, UEs shall not send reception reports for data for that session.
- If reception reporting associated delivery procedure is described for a session and a sample percentage value is given, UEs shall randomly calculate whether or not they belong to the set of sample UEs. UEs which belong to the set of sample UEs for that session shall send reception reports for data from that session. Other UEs shall not send reception reports for data from that session.
- If reception reporting associated delivery procedure is described for a session and no sample percentage value is given (for 100% sample percentage value is given), all UEs shall send reception reports for data from that session.

Note, “Data for that session” are files for that session. <other options are ffs>

Each UE discovers if a reception reporting associated delivery procedure is described for a session by the normal MBMS Service Description and Announcement procedures.

Transport errors can prevent a UE from deterministically discovering whether the reception reporting associated delivery procedure is described for a session, and even if this is successful whether a sample percentage is described. A UE shall behave according the information it has even when it is aware that this may be incomplete. <This description may need updating after all metadata fragment definitions are agreed>

Note, for a BM-SC, receiving only one delivery report demonstrates that the content was correctly transmitted from the BM-SC. In any case, the procedures above for making no, all or a percentage of UEs send reception reports are used and no method for attracting only a single specific UE report is described here.

#### **4. Related Issues (FYI, not part of the proposal):**

- Use for charging - LS needed from SA4 to SA2, SA3 & SA5
- <Reports for “other not yet timed out sessions” using same radio bearer set-up is ffs>
- <Checksum of correct download may be verified if available in FDT>
- Securing a reception report – maybe LS to SA1, SA3

#### **5. Conclusion**

In this document, we propose an approach for reception reporting.

We propose that this approach (as described in sections 2 and 3) be approved for MBMS Rel. 6.

#### **6. References**

[1] S4-AHP152, S4-AHP158, S4-AHP170

[2] TS22.246 v6.1.0