accompanying drawings, wherein like elements have like numerals throughout the several drawings described below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] FIG. **1** is an overview representation of an XML document fragmentation process performed by various embodiments of the present invention;

[0022] FIG. **2** is visual example of one embodiment of XML fragmentation implemented by the present invention;

[0023] FIG. **3** shows the identification of a packet in the event of packet loss during one embodiment of XML fragmentation implemented by the present invention;

[0024] FIG. **4** shows the identification of a group of packets in the event of packet loss during one embodiment of XML fragmentation implemented by the present invention;

[0025] FIG. **5***a* is a representation of a conventional SVG RTP packet;

[0026] FIG. **5***b* is a representation of an SVG RTP packet containing fragmentation units utilized by various embodiments of the present invention;

[0027] FIG. **6***a* is a representation showing a first option for the syntax of a fragment header utilized in one embodiment of the present invention;

[0028] FIG. **6***b* is a representation showing a second option for the syntax of a fragment header utilized in one embodiment of the present invention;

[0029] FIG. **6***c* is a representation showing a third option for the syntax of a fragment header utilized in one embodiment of the present invention;

[0030] FIG. **7** shows a visual representation of the nesting rules for XML content utilized in various embodiments of the present invention;

[0031] FIG. **8** is a representation of a nesting ID system for an XML document utilized by various embodiments of the present invention;

[0032] FIG. **9** shows one example of the identification of a group of packets in the event of pack loss during the second embodiment of XML fragmentation implemented by the present invention;

[0033] FIG. **10** shows a second example of the identification of a group of packets in the event of pack loss during the second embodiment of XML fragmentation implemented by the present invention;

[0034] FIG. **11** shows a third example of the identification of a group of packets in the event of pack loss during the second embodiment of XML fragmentation implemented by the present invention;

[0035] FIG. **12** shows a fourth example of the identification of a group of packets in the event of pack loss during the second embodiment of XML fragmentation implemented by the present invention;

[0036] FIG. **13***a* is a representation showing a first option for the syntax of a fragment header utilized in the second embodiment of the present invention;

[0037] FIG. **13***b* is a representation showing a second option for the syntax of a fragment header utilized in the second embodiment of the present invention;

[0038] FIG. **14** is an overview diagram of a system within which the present invention may be implemented;

[0039] FIG. **15** is a perspective view of a mobile device that can be used in the implementation of the present invention; and

[0040] FIG. **16** is a schematic representation of the circuitry of the mobile device of FIG. **15**.

DETAILED DESCRIPTION OF THE VARIOUS EMBODIMENTS

[0041] Various embodiments of the present invention describe a method of fragmenting XML-based data, as for example, in an XML document, at a server or similar network element, and the subsequent formation and transport of this fragmented data from the server to a receiver. These embodiments of the present invention include two types of XML fragmentation techniques, i.e., Brute Force and Syntactic Based. Brute force based fragmentation fragmentation involves an arbitrary splitting of XML data based on MTU size without taking into consideration the syntactic structure of the XML content. Syntactic based fragmentation involves the splitting of XML data based on MTU size taking the underlying syntactic structure of the XML content into consideration. In addition, the payload representations for each of these techniques are described herein. A generalized overview of this process is illustrated in FIG. **1**. A timestamp **100** is shown as being associated with an original XML document **110**. The original XML document **110** is partitioned into two fragments, **120** and **130**, each fragment having the original timestamp **100** associated therewith. It should be noted that fragments **120** and **130** have each been fragmented to fit into a defined network MTU. In addition, RTP packets are generated for each of the fragments **120** and **130**. For example, RTP packet **128** is generated to contain an RTP header **122**, a payload header **124**, and payload data **126**, where the payload data **126** comprises the data contained in the fragment **120**. Likewise, RTP packet **138** is generated to contain its own RTP header **132**, payload header **134**, and payload data **136**, where the payload data **136** comprises the data contained in the fragment **130**. It should also be noted that other appropriate transport protocols may be used to transmit the fragments **120** and **130**. It should be noted that if a given XML document does not fit a specified network's MTU, the XML document is fragmented into several fragments such that each fragment satisfies the given MTU size. These fragments are then encapsulated as RTP packets for transmission.

[0042] The various embodiments of the present invention also provide different methodologies and rules for fragmenting XML data and for subsequent representations of the payload format that define and describe such fragments. The rules define the manner in which the XML data can be split, i.e., at the appropriate places, along with payload headers to help a receiver of the fragmented XML data to still be able to use the data in the event that one or more fragments are lost before reaching the receiver.

[0043] Several common use cases for which the fragmentation of XML-based content can be utilized for streaming purposes are described below. It should be noted, however, that there are a plurality of other uses for which the fragmentation of XML-based content could be performed. One such common use involves Interactive TV (iTV) Mobile services. The iTV Mobile service is understood as having the ability to provide a deterministic rendering and behavior of rich media content, which includes audio-video content, text, images, XML based content such as SVG, together with TV and radio channels in an end user interface. The iTV Mobile service provides convenient navigation through content in a single application or service and allows synchro-