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Baber et al.

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(54) **METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR DIFFERENCING DATA COMMUNICATIONS USING A MESSAGE QUEUE**

(75) Inventors: **Stephen B. Baber**, Raleigh; **Kathryn H. Britton**, Chapel Hill; **John R. Hind**, Raleigh; **Barron C. Housel, III**, Chapel Hill; **Ajamu Akinwunmi Wesley**, Raleigh, all of NC (US)

(73) Assignee: **International Business Machines Corporation**, Armonk, NY (US)

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(51) **Int. Cl.**⁷ **G06F 15/16**

(52) **U.S. Cl.** **709/232; 709/230; 709/231; 709/247; 370/235**

(58) **Field of Search** **709/247, 232, 709/231, 230; 370/235, 229**

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Primary Examiner—Moustafa M. Meky

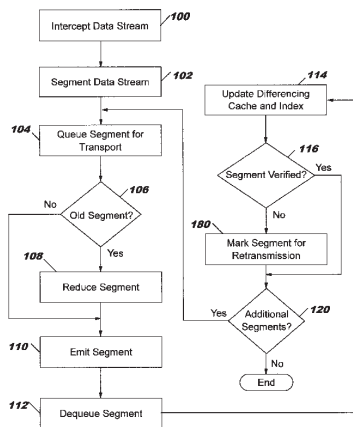
Assistant Examiner—Bradley Edelman

(74) *Attorney, Agent, or Firm*—Jeanine S. Ray-Yarletts; Myers Bigel Sibley & Sajovec

(57) **ABSTRACT**

Method, apparatus and program products for increasing the performance of communications using differencing data communications over a message queue supporting asynchronous communications from a variety of applications executing on a source device over a shared external communication link to destination devices are provided. A data stream between the source device and the destination device is segmented based on the type of the data stream to provide a logical segmentation which increases the occurrence of repeated transmissions of a segment. The segments are then placed in the message queue as a message for transport to a destination computer. Differencing is provided by replacing the segment with an associated identifier for segments which have previously been transported to provide a reduced volume of data for transmittal based on recognition and replacement of data segments which have previously been transmitted by the source device. The destination device receives the transmitted reduced segments as messages in a receive message queue and reconstructs the data stream. Synchronization between the differencing caches of the devices is not required as the communication is asynchronous through a message queue and, if a reduced segment is not recognized, retransmission of the complete segment instead of the associated identifier may be requested and the source device creates and queues the segment as a message.

60 Claims, 9 Drawing Sheets



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FIG. 1

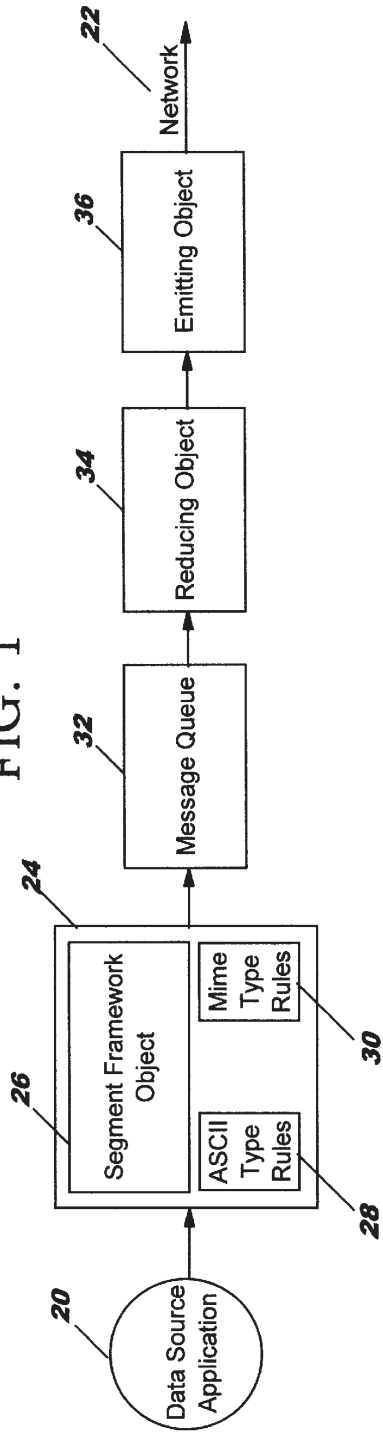


FIG. 2

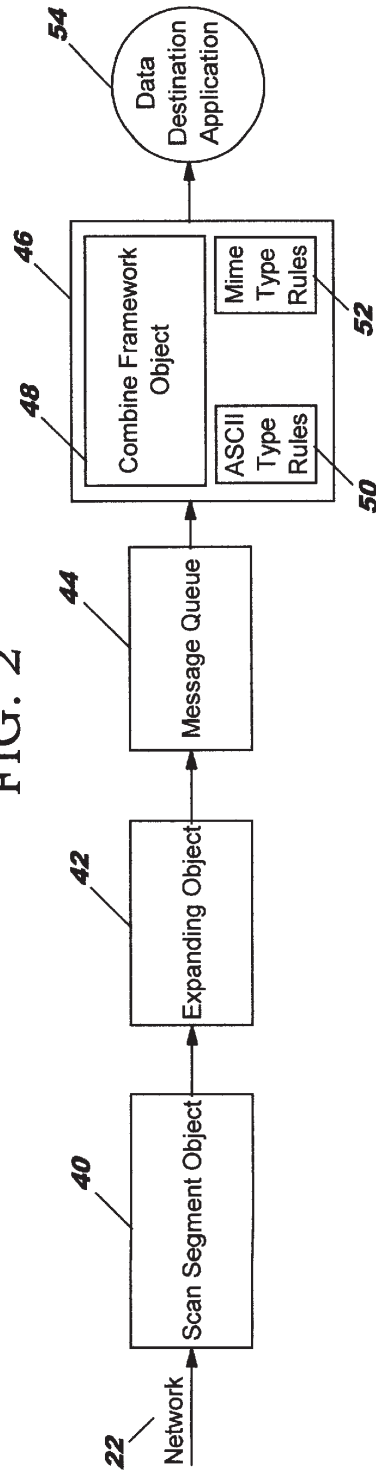


FIG. 3

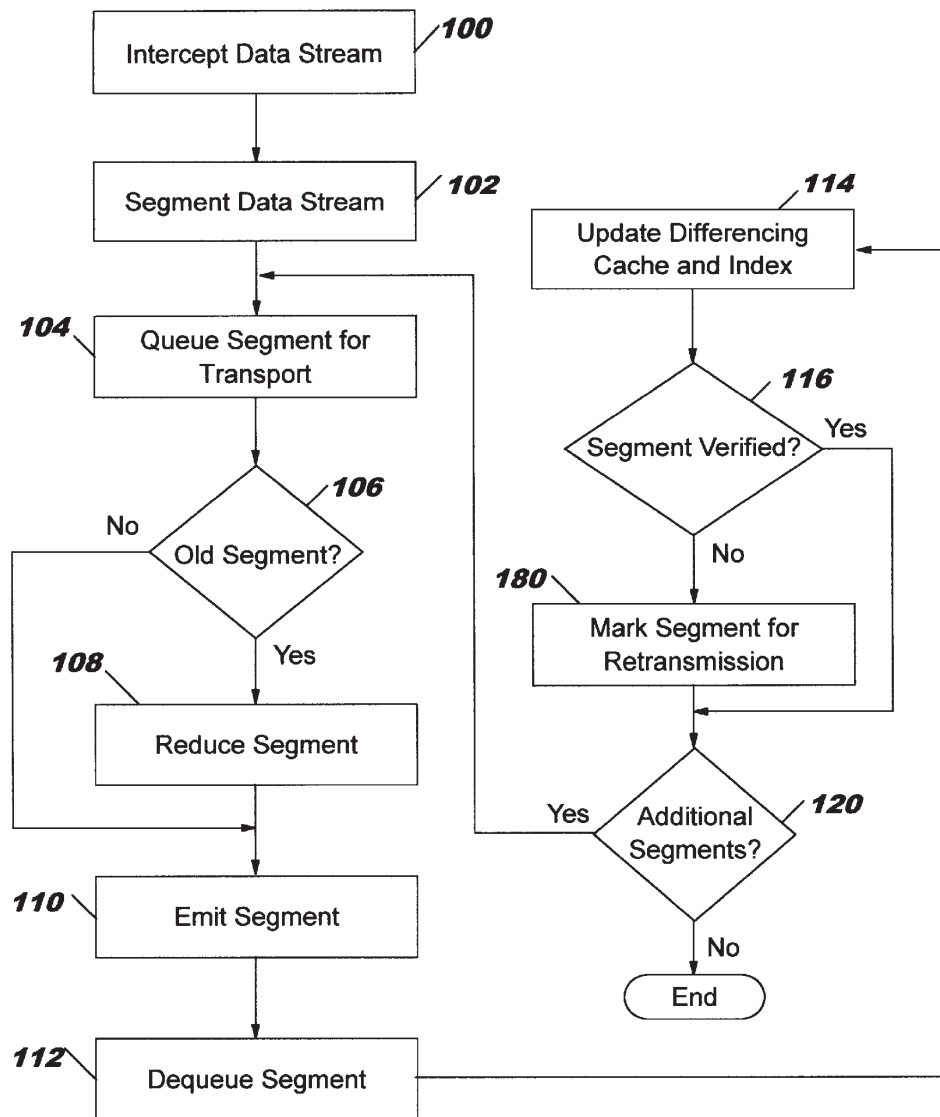
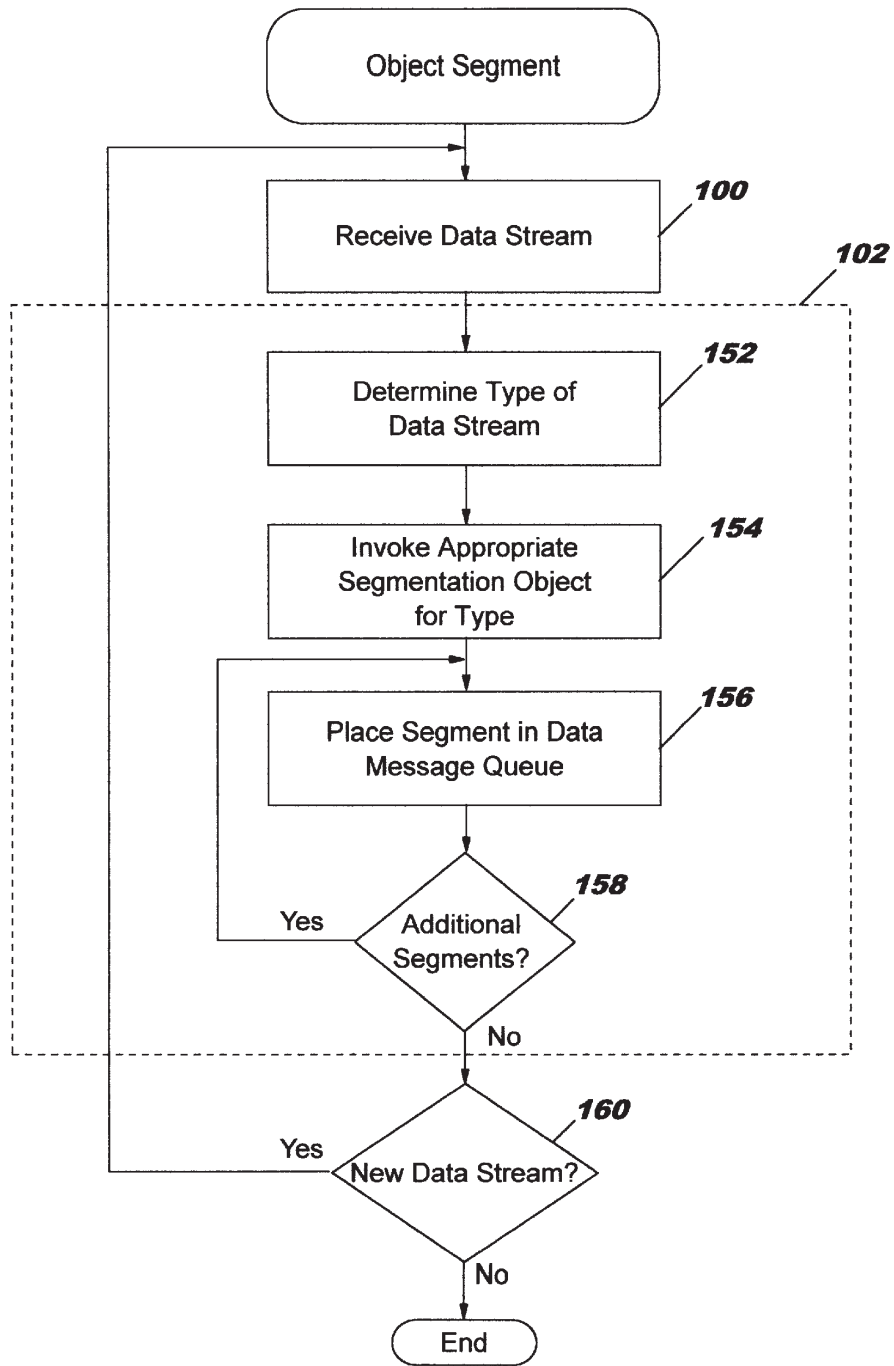


FIG. 4



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