

EXHIBIT S-1

United States Patent [19]
Christie

[11] **Patent Number:** 5,991,301
 [45] **Date of Patent:** *Nov. 23, 1999

[54] **BROADBAND TELECOMMUNICATIONS SYSTEM**

92307752 8/1992 European Pat. Off. .

(List continued on next page.)

[75] **Inventor:** Joseph Michael Christie, San Bruno, Calif.

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[73] **Assignee:** Sprint Communications Co. L.P., K.C., Mo.

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[*] **Notice:** This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

[63] Continuation-in-part of application No. 08/238,605, May 5, 1994, abandoned.

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[51] **Int. Cl.⁶** H04L 12/56; H04L 12/28
 [52] **U.S. Cl.** 370/395; 370/410; 370/466
 [58] **Field of Search** 370/17, 24, 58.2, 370/68.1, 110.1, 60, 60.1, 94.1, 94.2, 79, 84, 85.13, 351, 352-360, 395, 396, 397, 398, 399, 465, 466, 467, 410, 389; 379/220, 229, 230

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Primary Examiner—Ajit Patel
Attorney, Agent, or Firm—Harley R. Ball; Bruce C. McClelland

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[57] **ABSTRACT**

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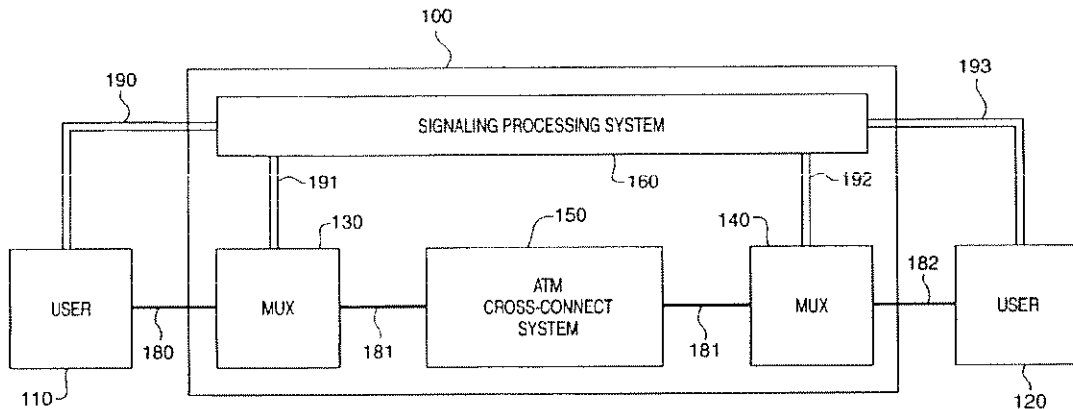
The invention is a system for providing virtual connections through an ATM interworking multiplexer on a call-by-call basis. A signaling processor receives signaling for a call and selects the virtual connection for the call. The signaling processor generates new signaling that identifies the selection and transfers the new signaling to the ATM interworking multiplexer that accepted the access connection for the call. The multiplexer converts user information from the access connection into ATM cells for transmission over the virtual connection in accord with the new signaling.

(List continued on next page.)

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47 Claims, 12 Drawing Sheets



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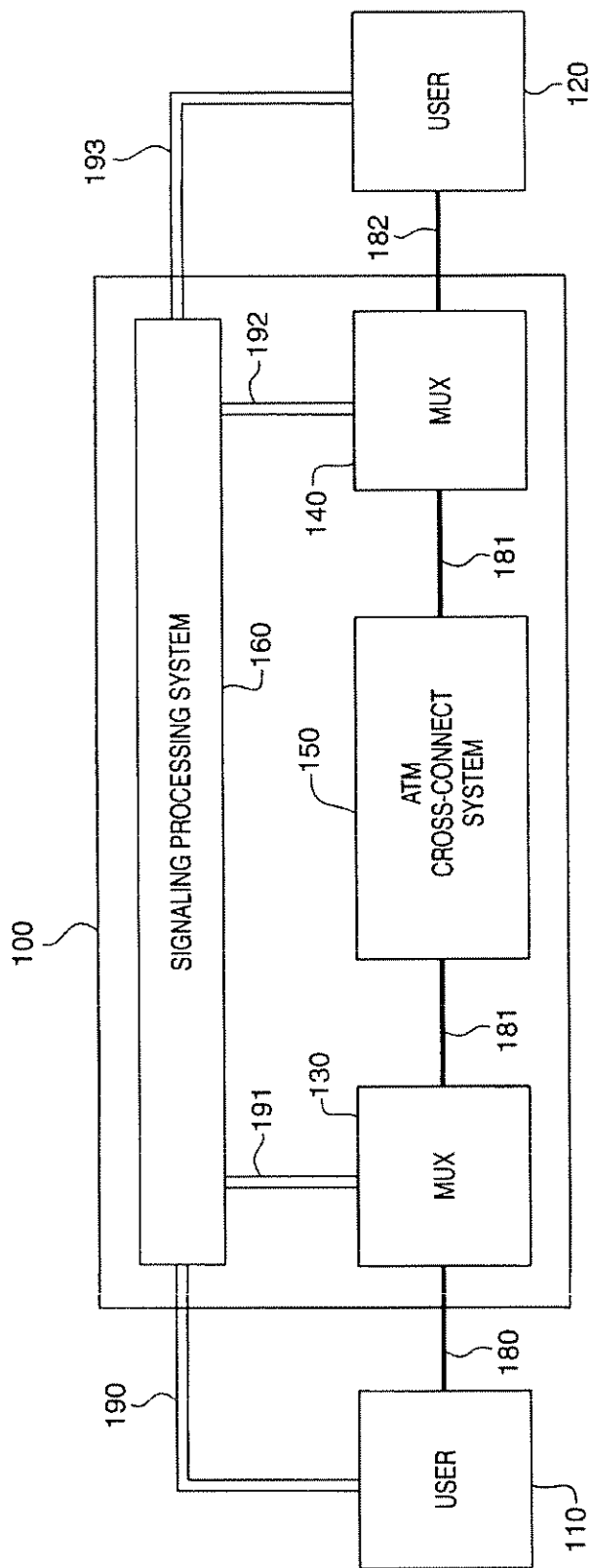


FIG. 1

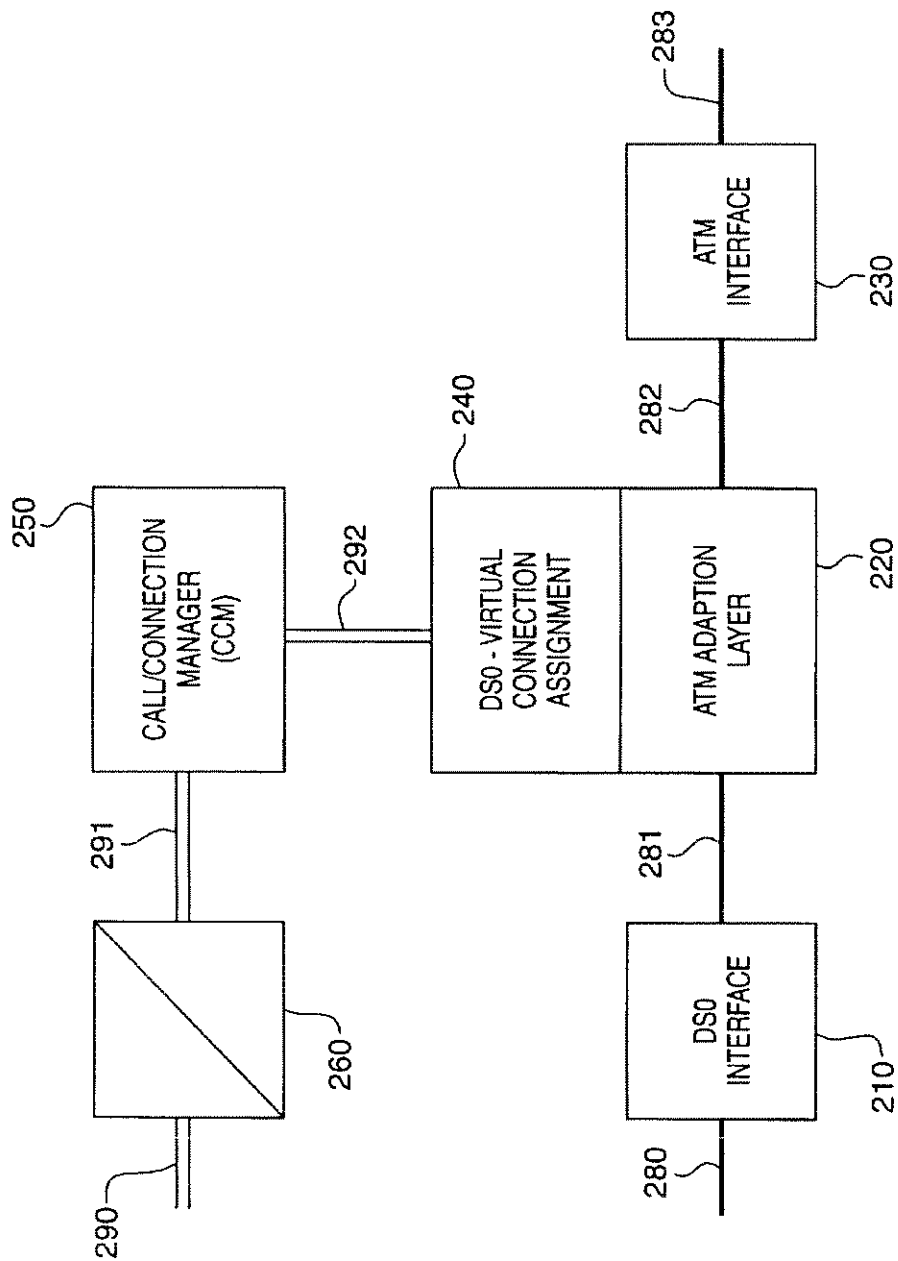


FIG. 2

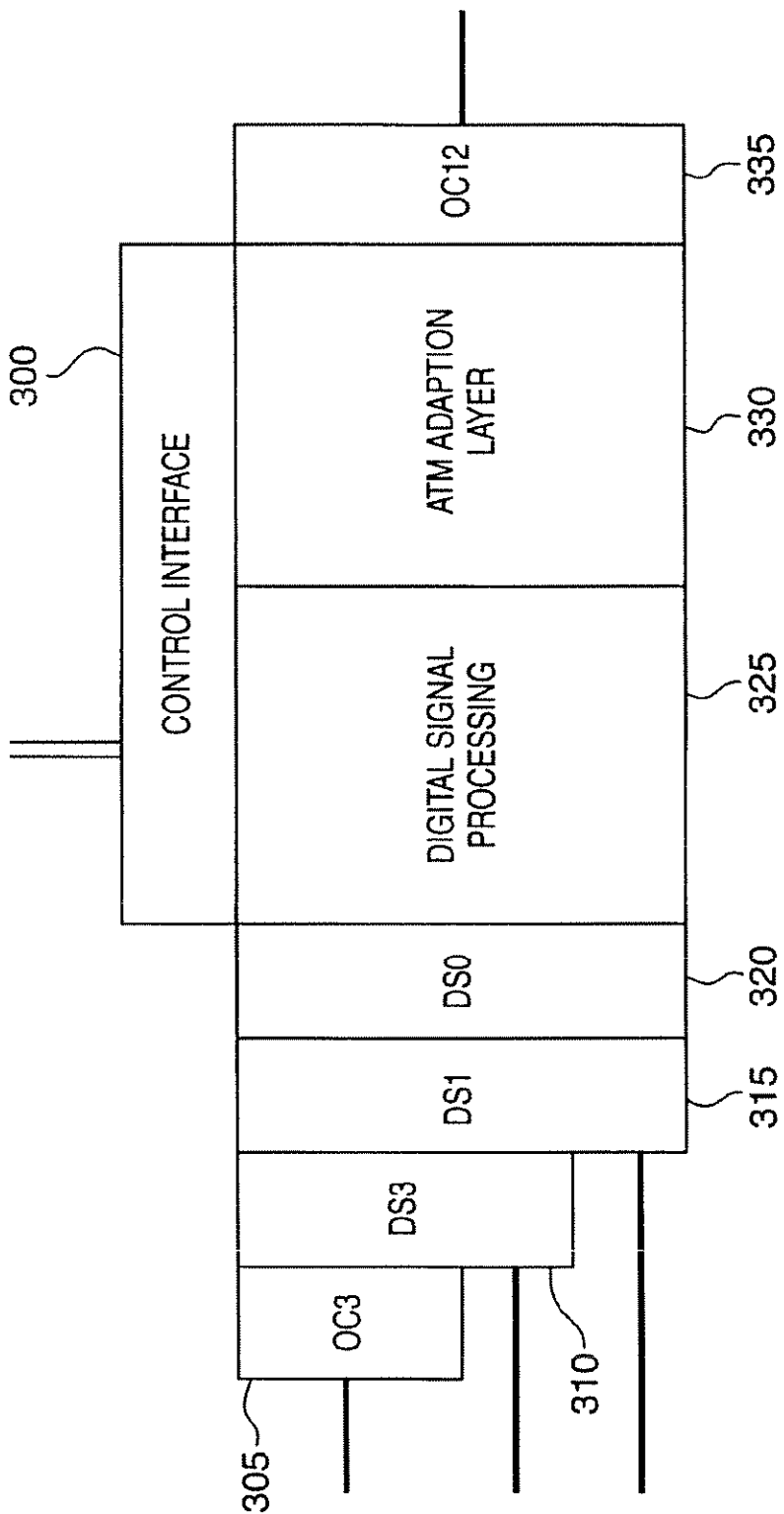


FIG. 3

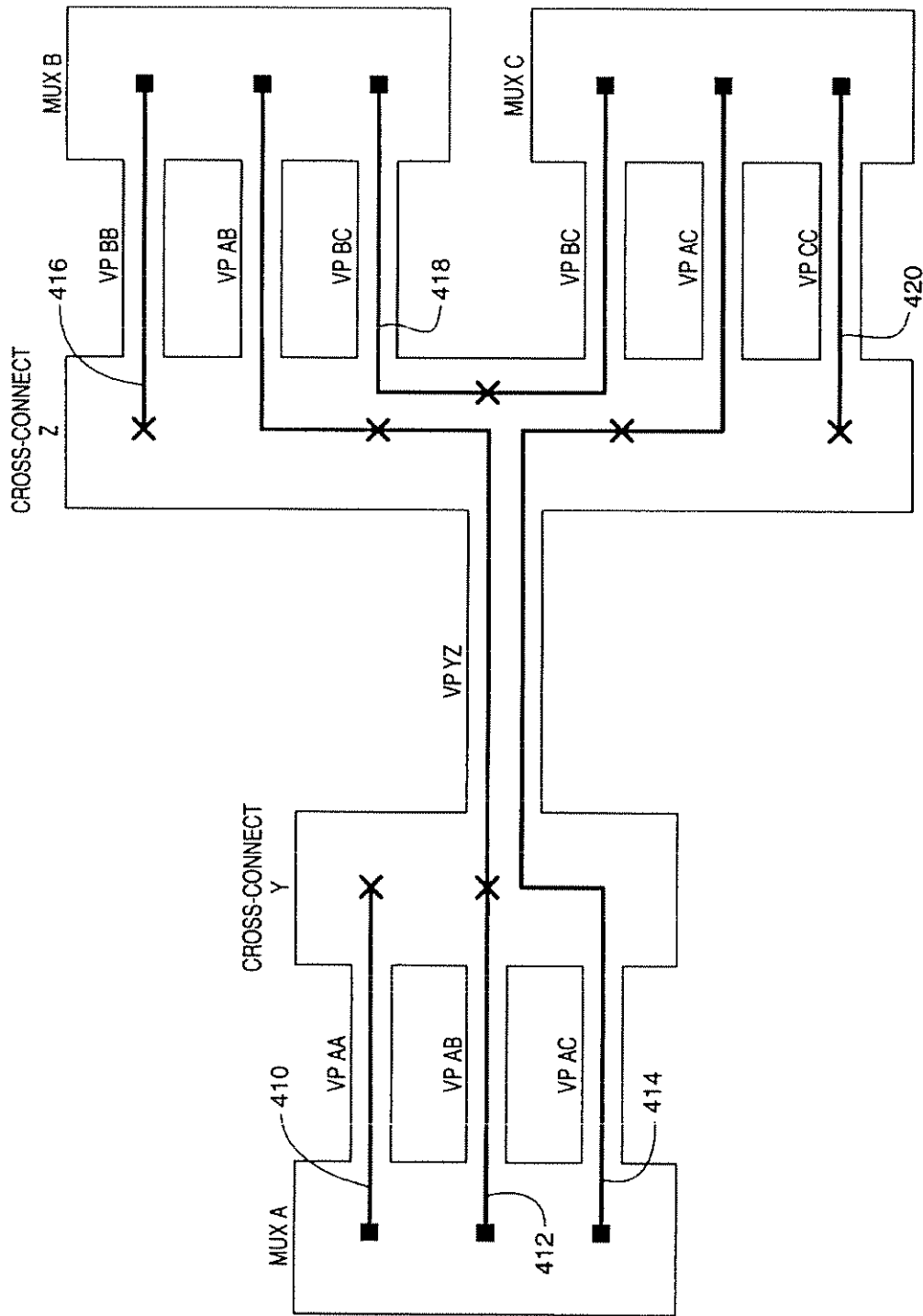


FIG. 4

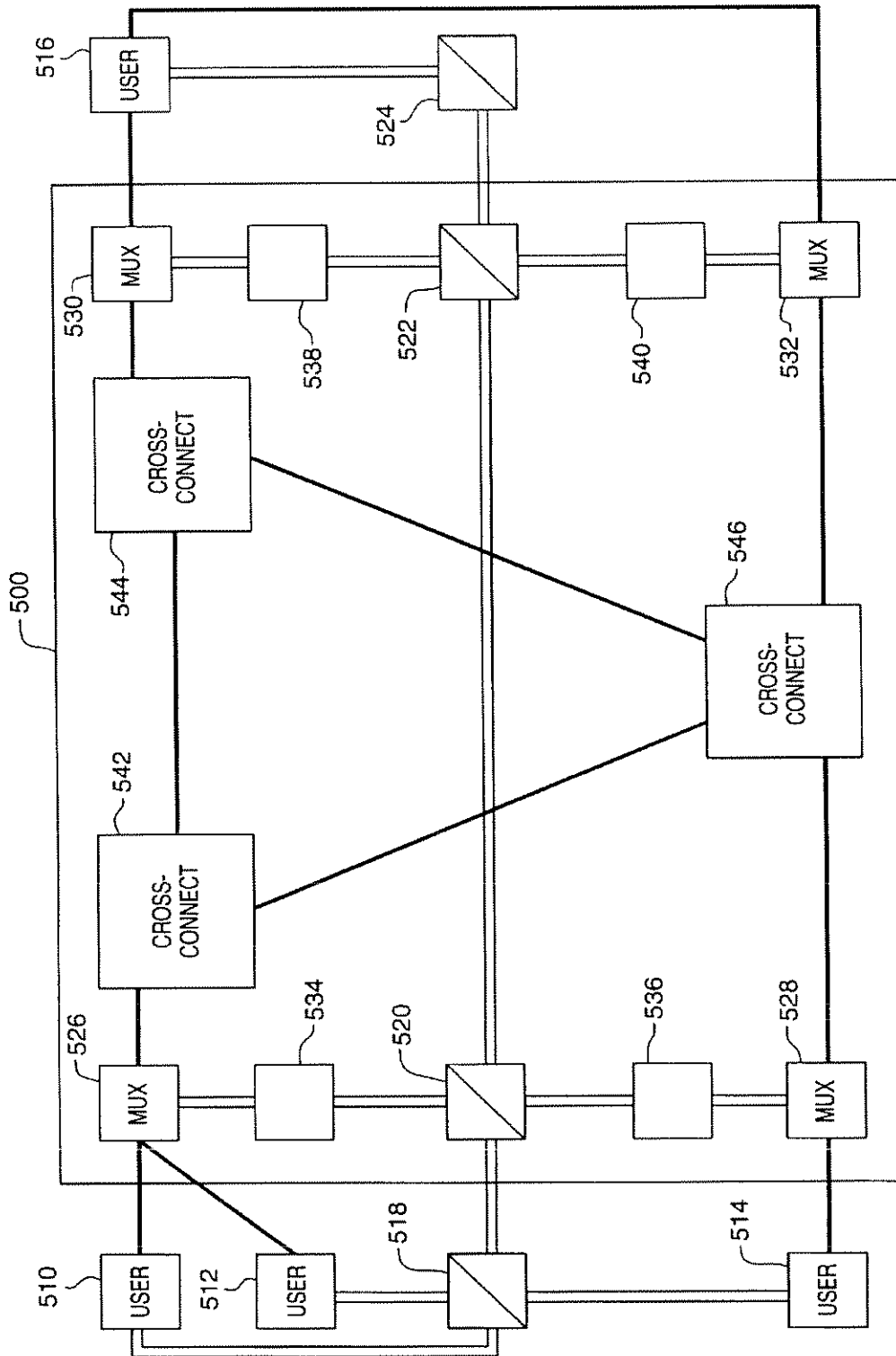


FIG. 5

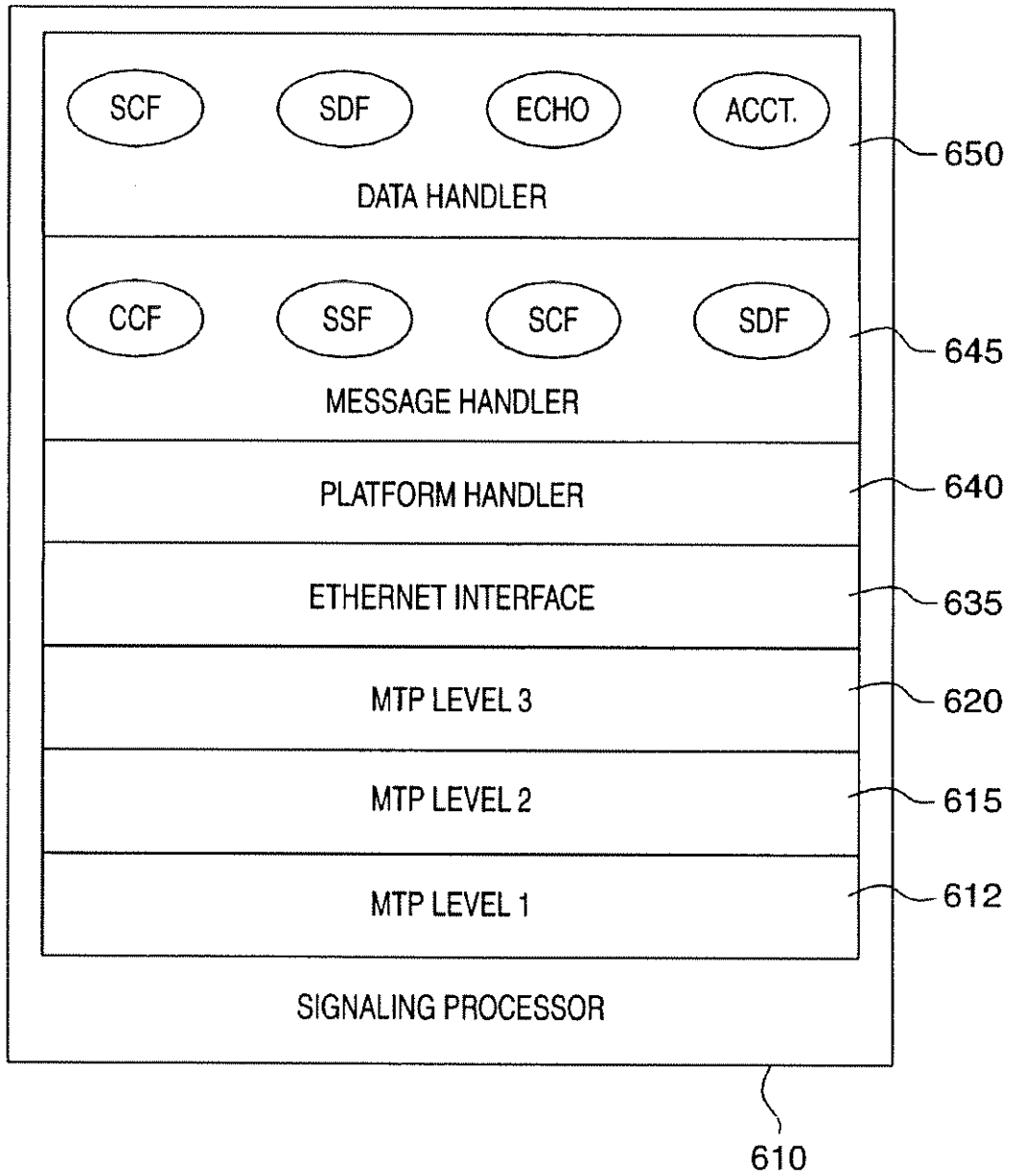


FIG. 6

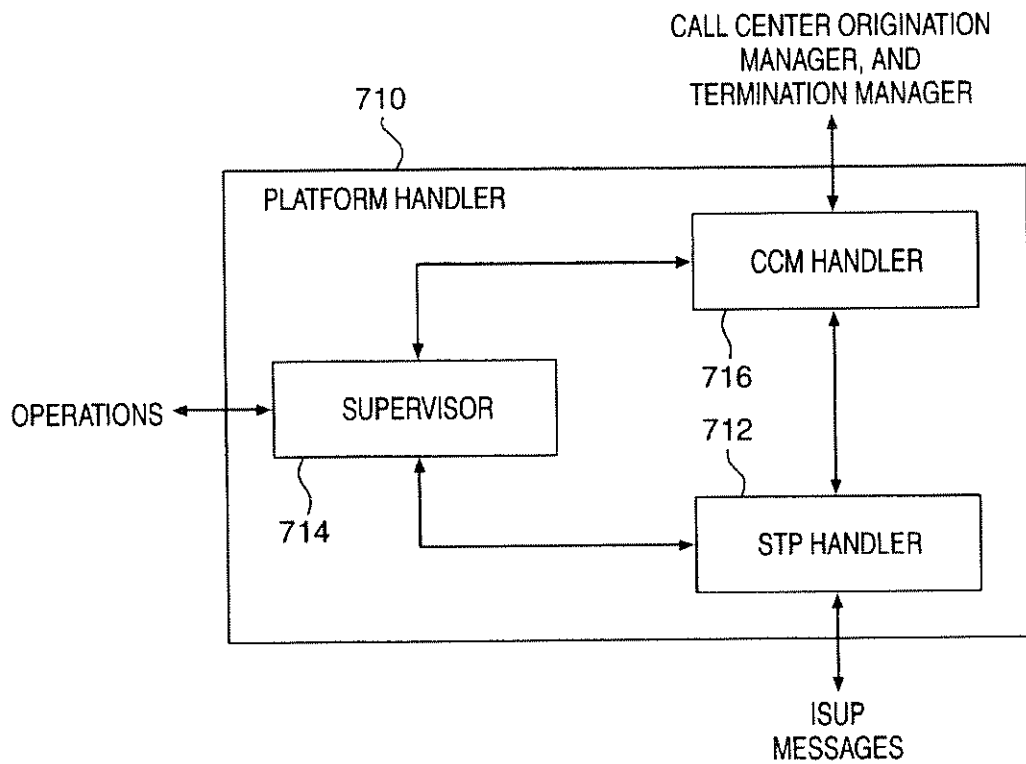


FIG. 7

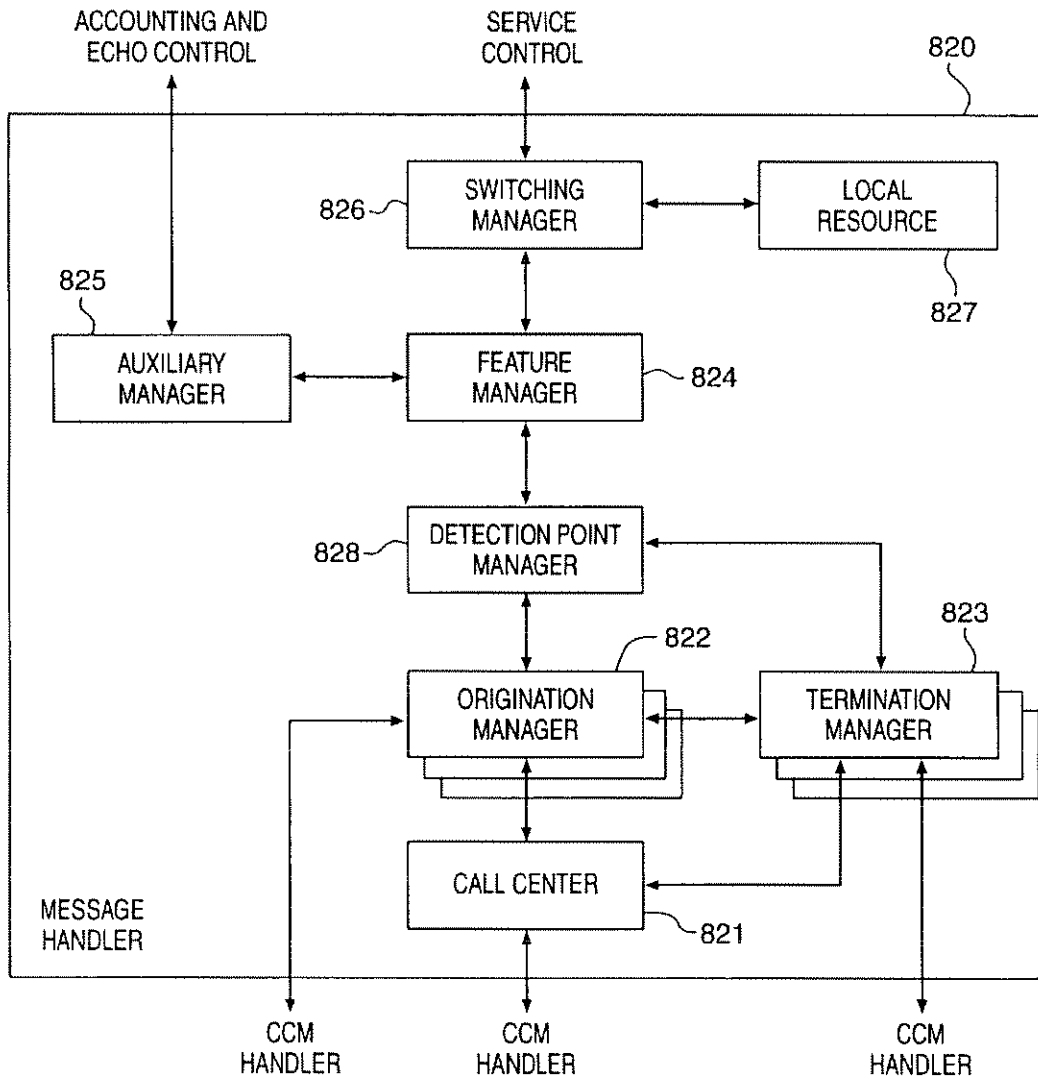


FIG. 8

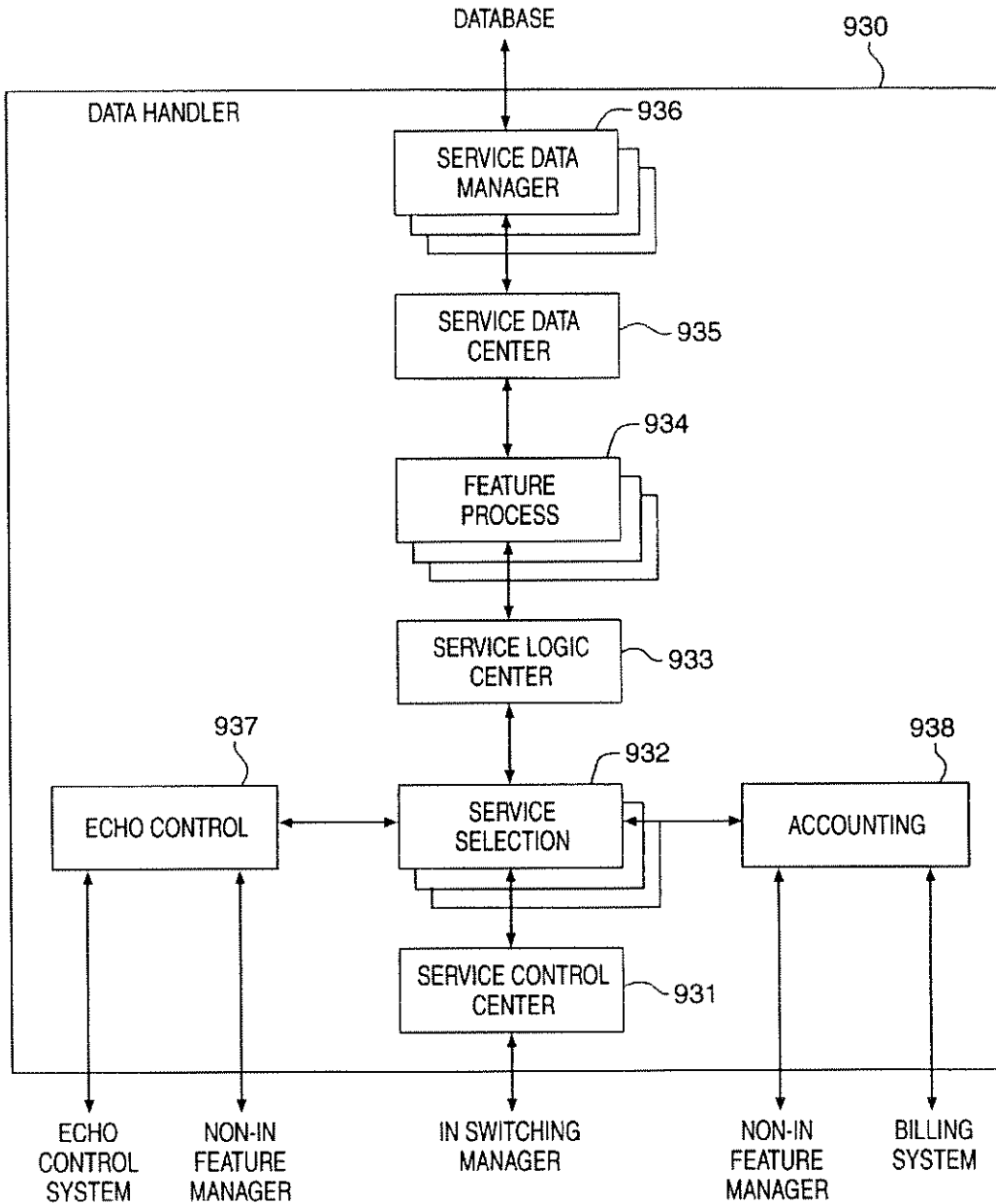


FIG. 9

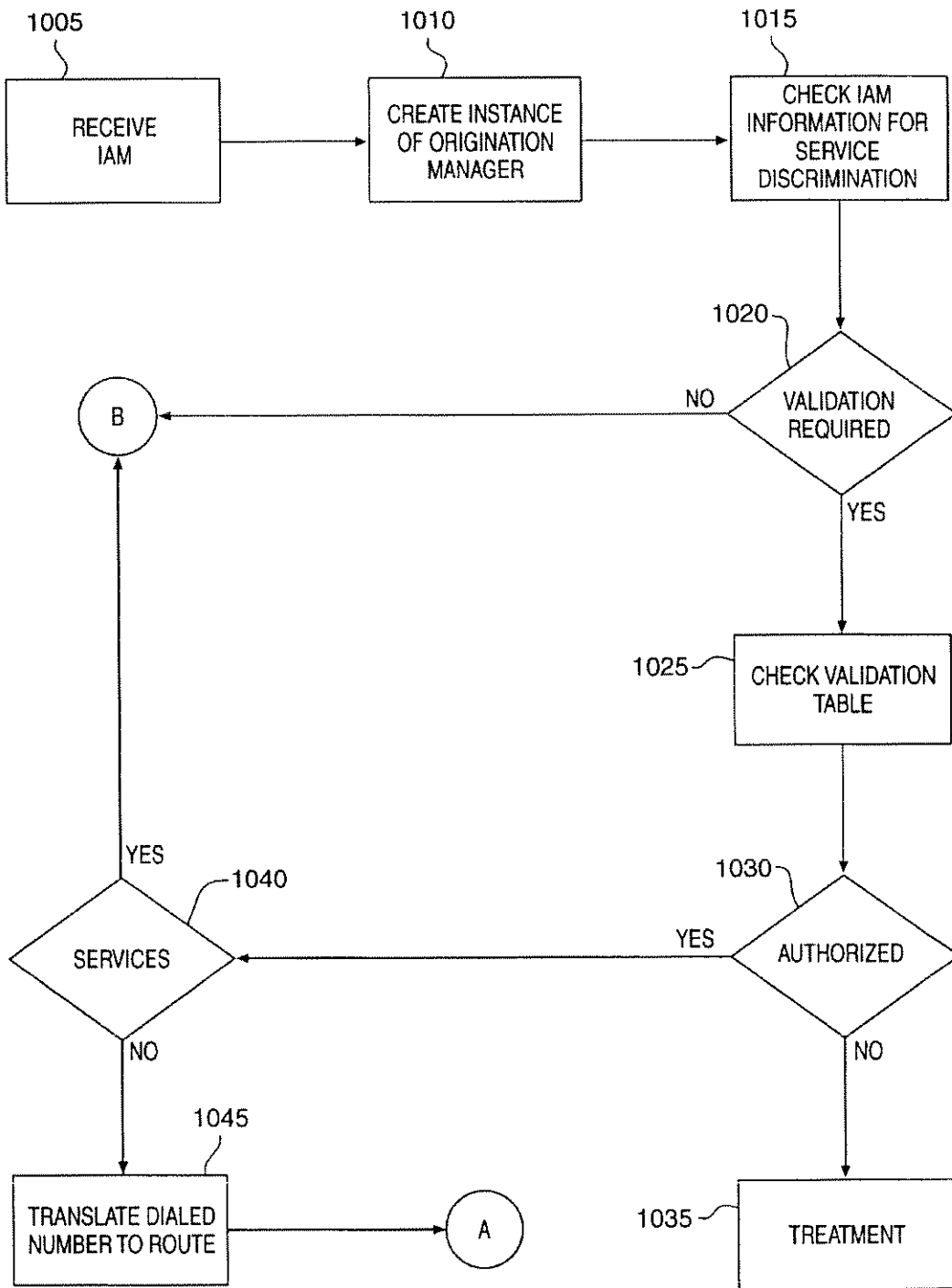


FIG. 10

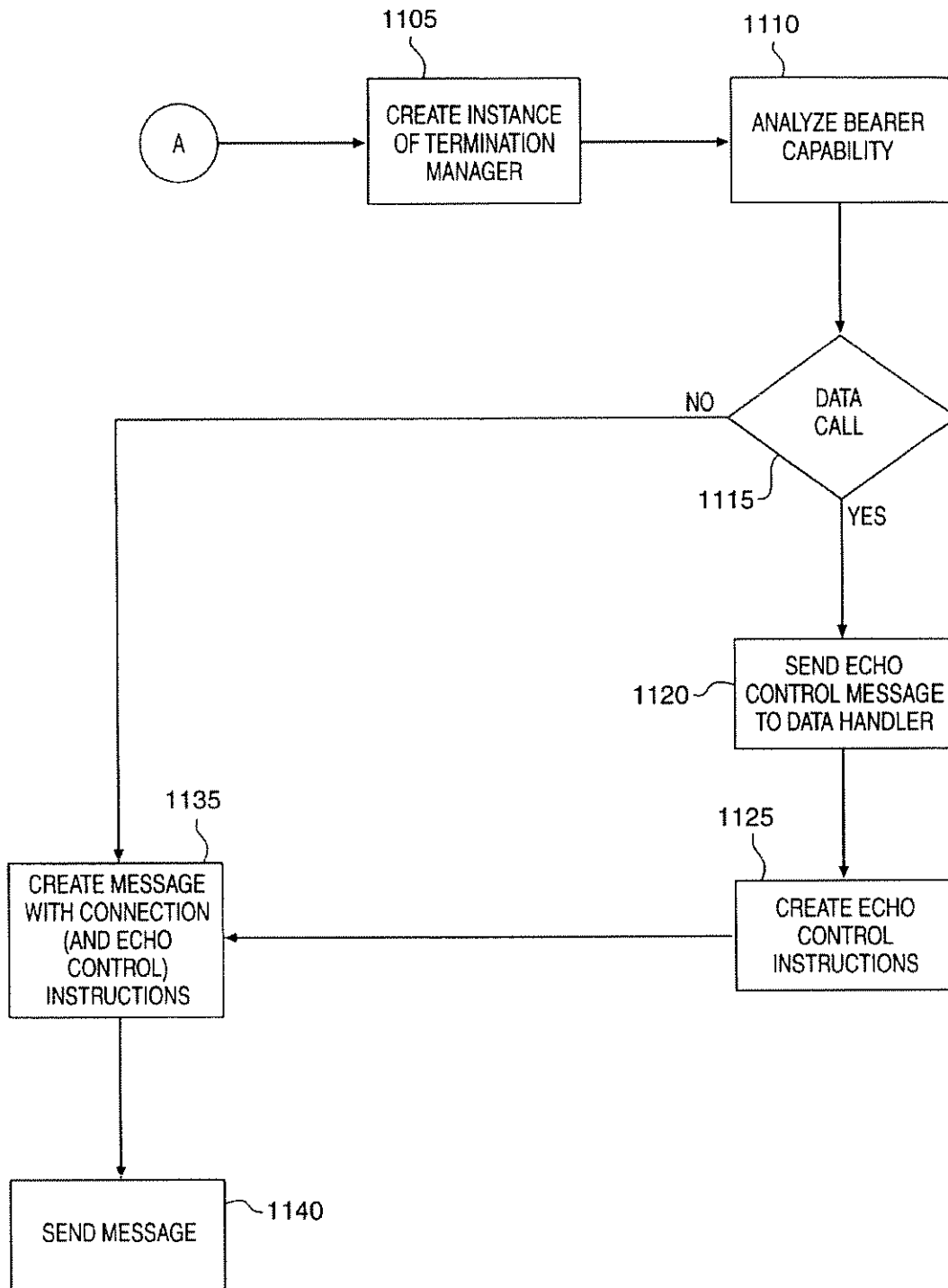


FIG. 11