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La Porta et al.

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[54] **METHOD AND SYSTEM FOR DISTRIBUTED CONTROL IN WIRELESS CELLULAR AND PERSONAL COMMUNICATION SYSTEMS**

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[22] Filed: **Mar. 18, 1997**

Related U.S. Application Data

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[51] **Int. Cl.**[7] **H04Q 7/20**; H04Q 7/22

[52] **U.S. Cl.** **455/445**; 455/445; 455/432; 455/433; 455/434; 455/435; 370/312; 370/331; 370/338; 370/390

[58] **Field of Search** 455/445, 432, 455/433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 550, 561, 552, 422; 370/312, 331, 338, 390, 396, 522

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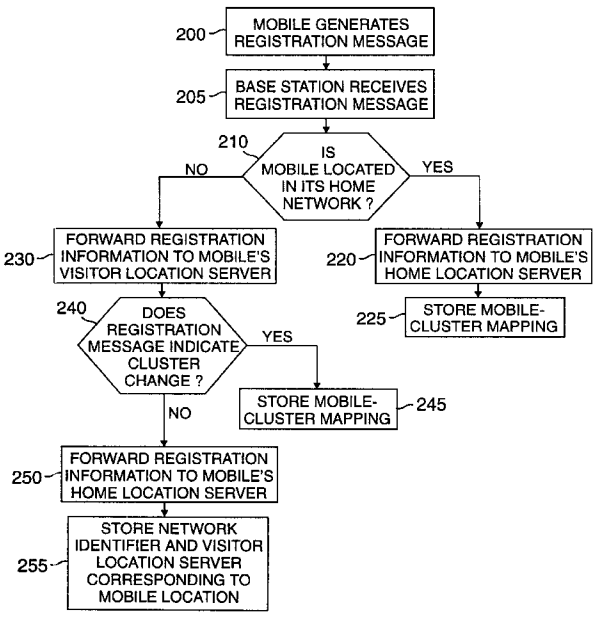
[57] **ABSTRACT**

A system for distributed control in wireless cellular and personal communication systems includes separate servers for performing call control and connection control functions, thereby obviating the need for a mobile switching or other switch to be anchored for the duration of a call. During a registration procedure, visiting location servers track only roaming mobiles, rather than tracking both roaming mobiles as well as mobiles located in their home network. Direct signalling links between servers and base stations, or other servers, located in different networks allow roaming mobiles to contact their home networks for service at all times, thereby obviating the need for passing signalling information for mobiles when they are not involved in a call. The use of multicast signalling with asynchronous transfer mode switches, permits specified channel control functions to take place concurrently in channel servers associated with base station and switches that form a segment of the route for a call. Similarly, specified call control functions are performed concurrently with mobile location functions, thereby decreasing the delays in setting up a call.

17 Claims, 12 Drawing Sheets



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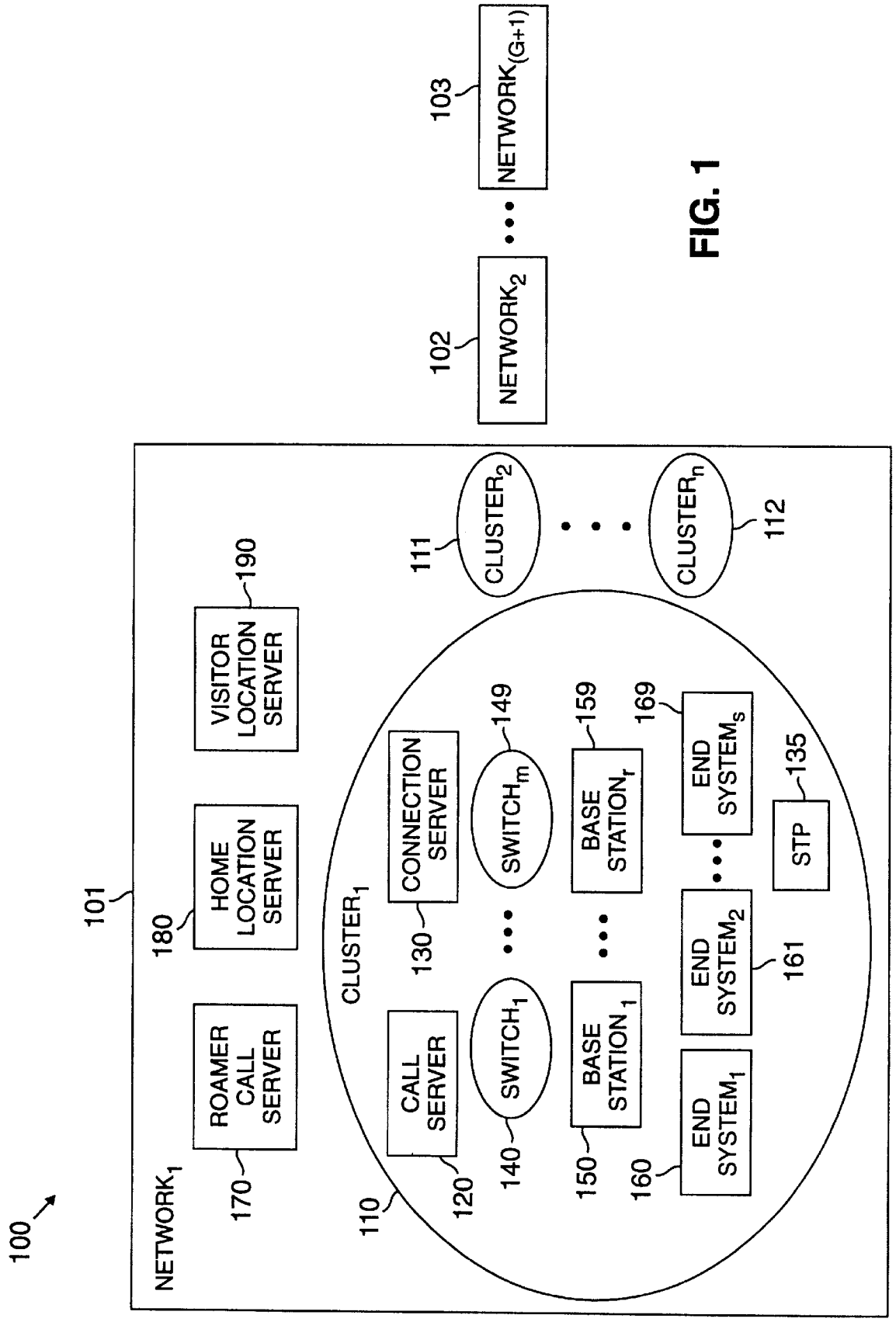

FIG. 1

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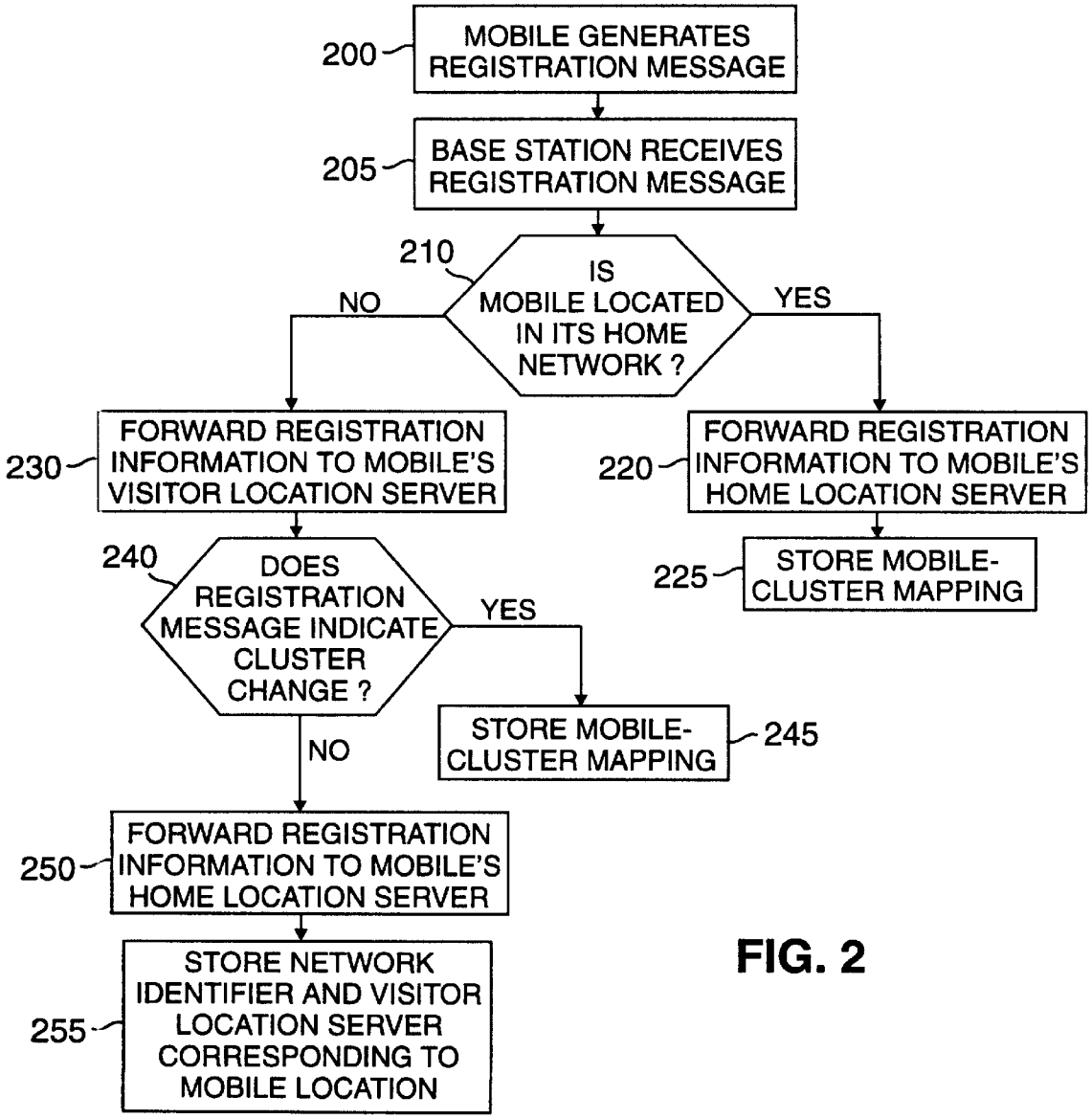

FIG. 2

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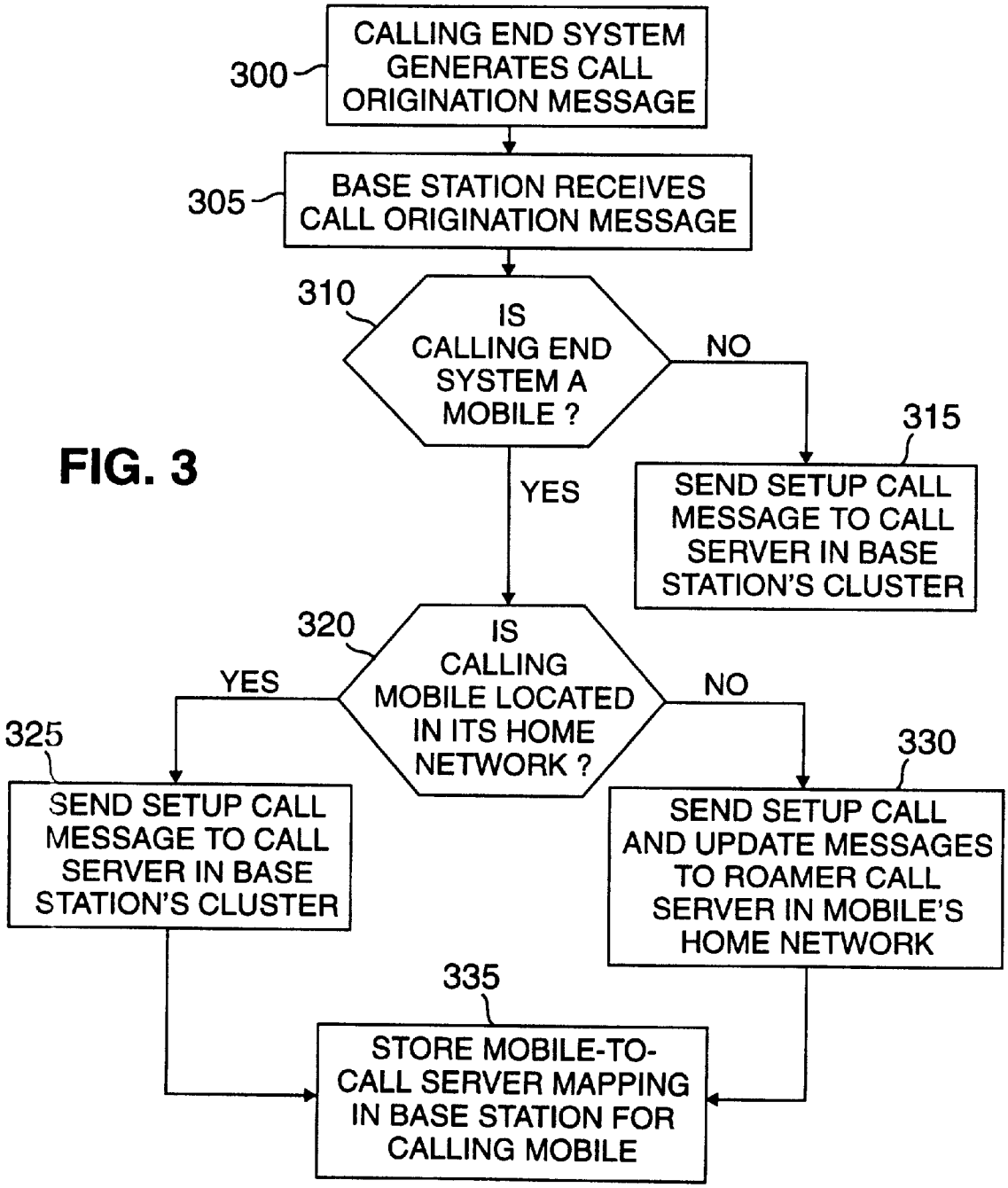

FIG. 3

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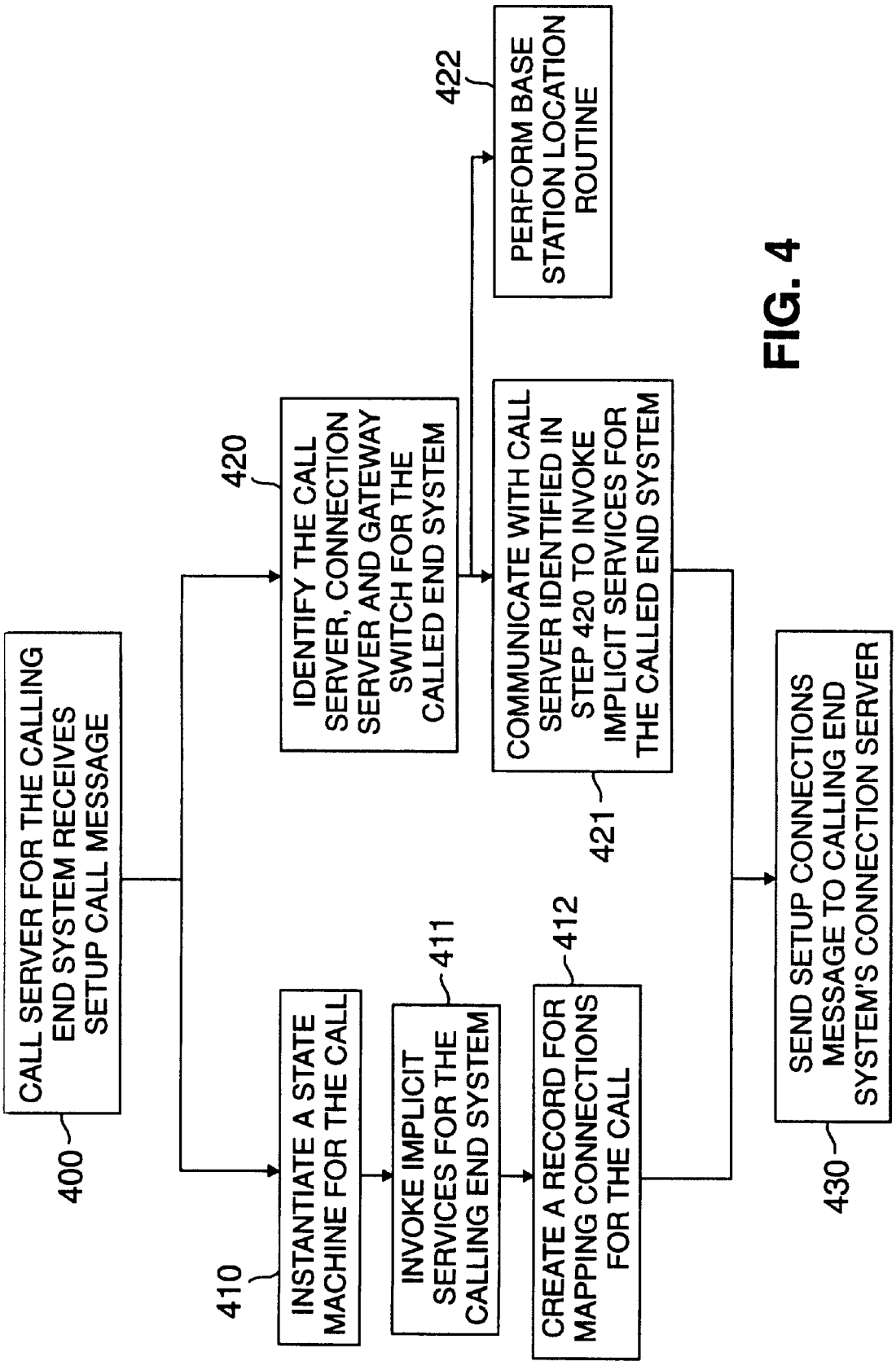

FIG. 4

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