



US006603757B1

(12) **United States Patent**
Locascio

(10) **Patent No.:** **US 6,603,757 B1**
(45) **Date of Patent:** **Aug. 5, 2003**

(54) **VOICE-DATA ACCESS CONCENTRATOR FOR NODE IN AN EXPANDABLE TELECOMMUNICATIONS SYSTEM**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/291,889**

(22) Filed: **Apr. 14, 1999**

(51) **Int. Cl.**⁷ **H04L 12/66**

(52) **U.S. Cl.** **370/352; 370/401**

(58) **Field of Search** **370/352, 353, 370/354, 355, 356, 465, 466**

(56) **References Cited**

U.S. PATENT DOCUMENTS

| | | | |
|---------------|---------|-------------------|----------|
| 4,903,261 A | 2/1990 | Baran et al. | 370/94.2 |
| 5,544,163 A | 8/1996 | Madonna | 370/60.1 |
| 6,005,841 A * | 12/1999 | Kicklighter | 370/217 |
| 6,026,087 A * | 2/2000 | Mirashrafi et al. | 370/352 |
| 6,134,235 A * | 10/2000 | Goldman et al. | 370/352 |
| 6,141,341 A * | 10/2000 | Jones et al. | 370/352 |

| | | | |
|----------------|---------|------------------|---------|
| 6,253,249 B1 * | 6/2001 | Belzile | 370/259 |
| 6,278,707 B1 * | 8/2001 | MacMillan et al. | 370/352 |
| 6,298,062 B1 * | 10/2001 | Gardell et al. | 370/401 |
| 6,333,931 B1 * | 12/2001 | LaPier et al. | 370/352 |
| 6,345,047 B1 * | 2/2002 | Regnier | 370/352 |
| 6,347,085 B2 * | 2/2002 | Kelly | 370/352 |
| 6,363,065 B1 * | 3/2002 | Thornton et al. | 370/352 |

FOREIGN PATENT DOCUMENTS

WO WO99/05830 2/1999

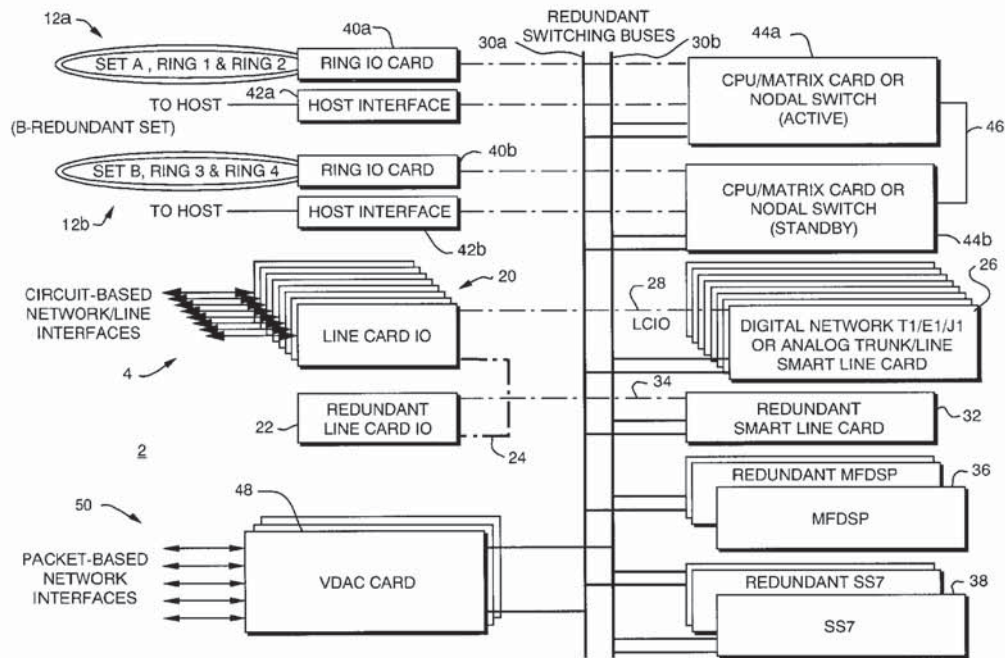
* cited by examiner

Primary Examiner—Chau Nguyen
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(57) **ABSTRACT**

Apparatus operable as a standalone, open programmable switch, a node an expandable telecommunications system, or a gateway includes a voice/data access concentrator (VDAC) card for providing voice over IP (Internet protocol) capability. The VDAC card includes an array of digital signal processors (DSPs) which may be programmed to perform desired protocol conversions between circuit-based protocols, such as T1, E1 or J1, and packet-based protocols, such as IP. The apparatus is scalable and may readily incorporate other cards which provide both subscriber supplementary services and network signalling as required to meet the needs of a particular application.

4 Claims, 4 Drawing Sheets



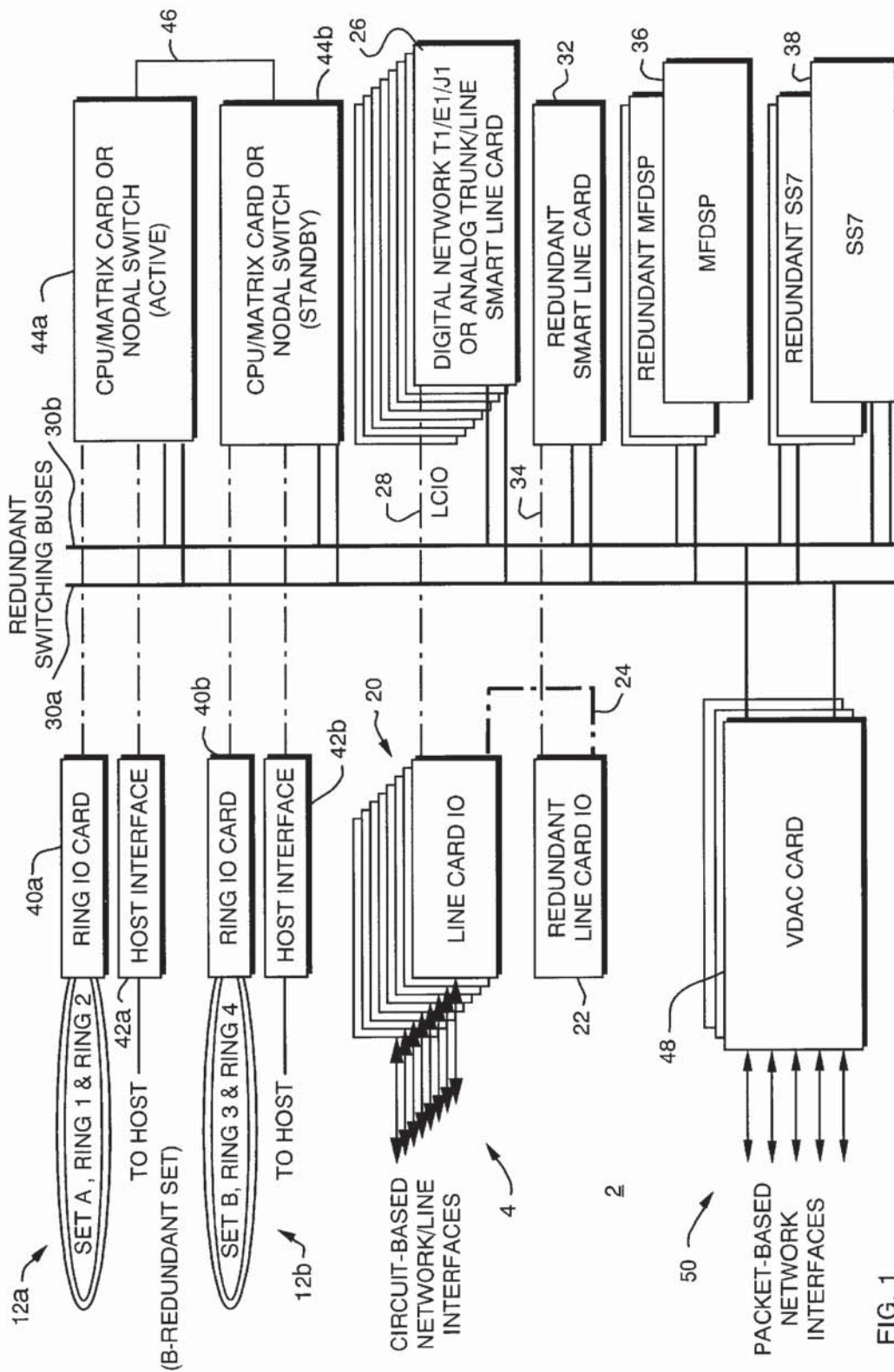


FIG. 1

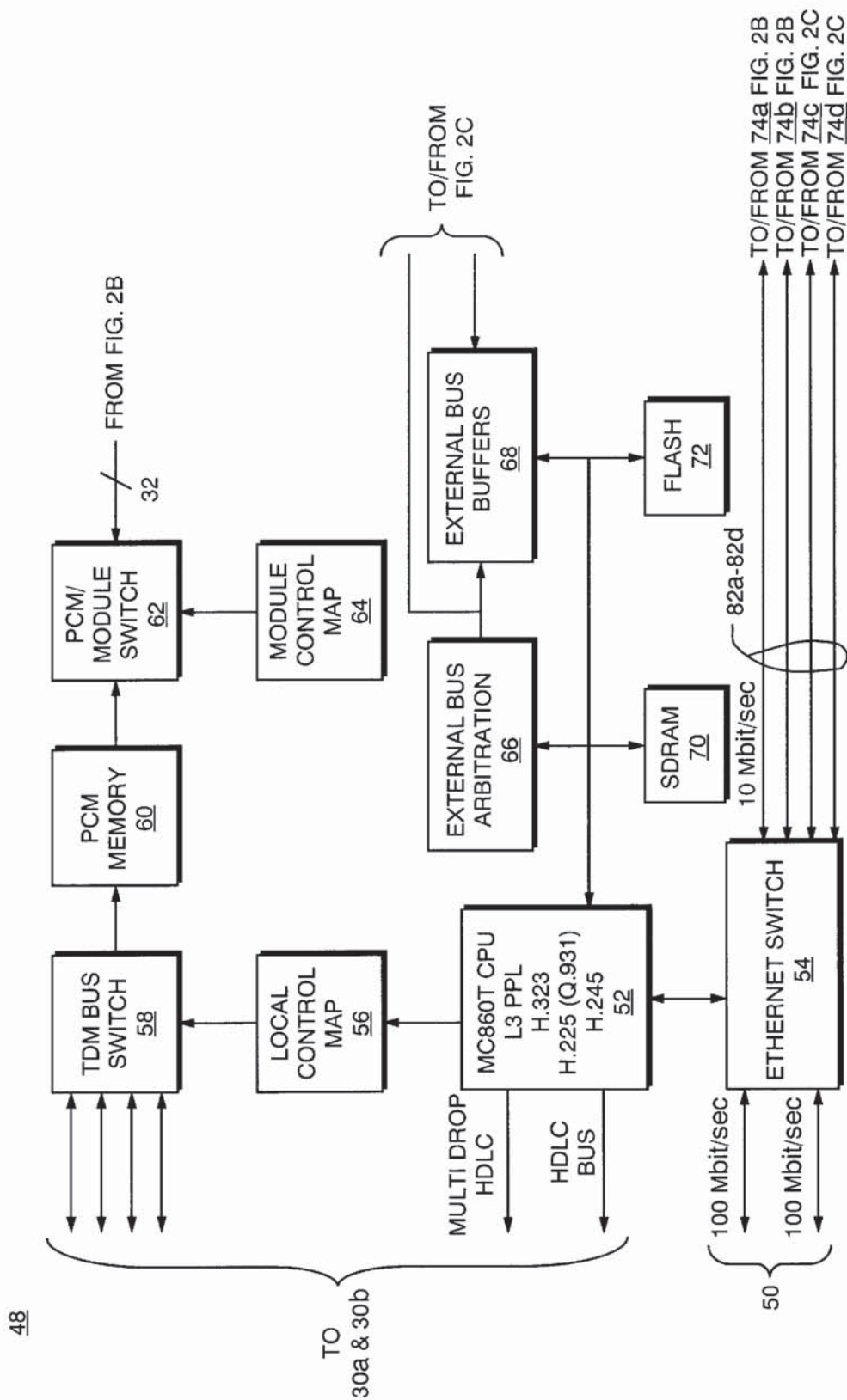
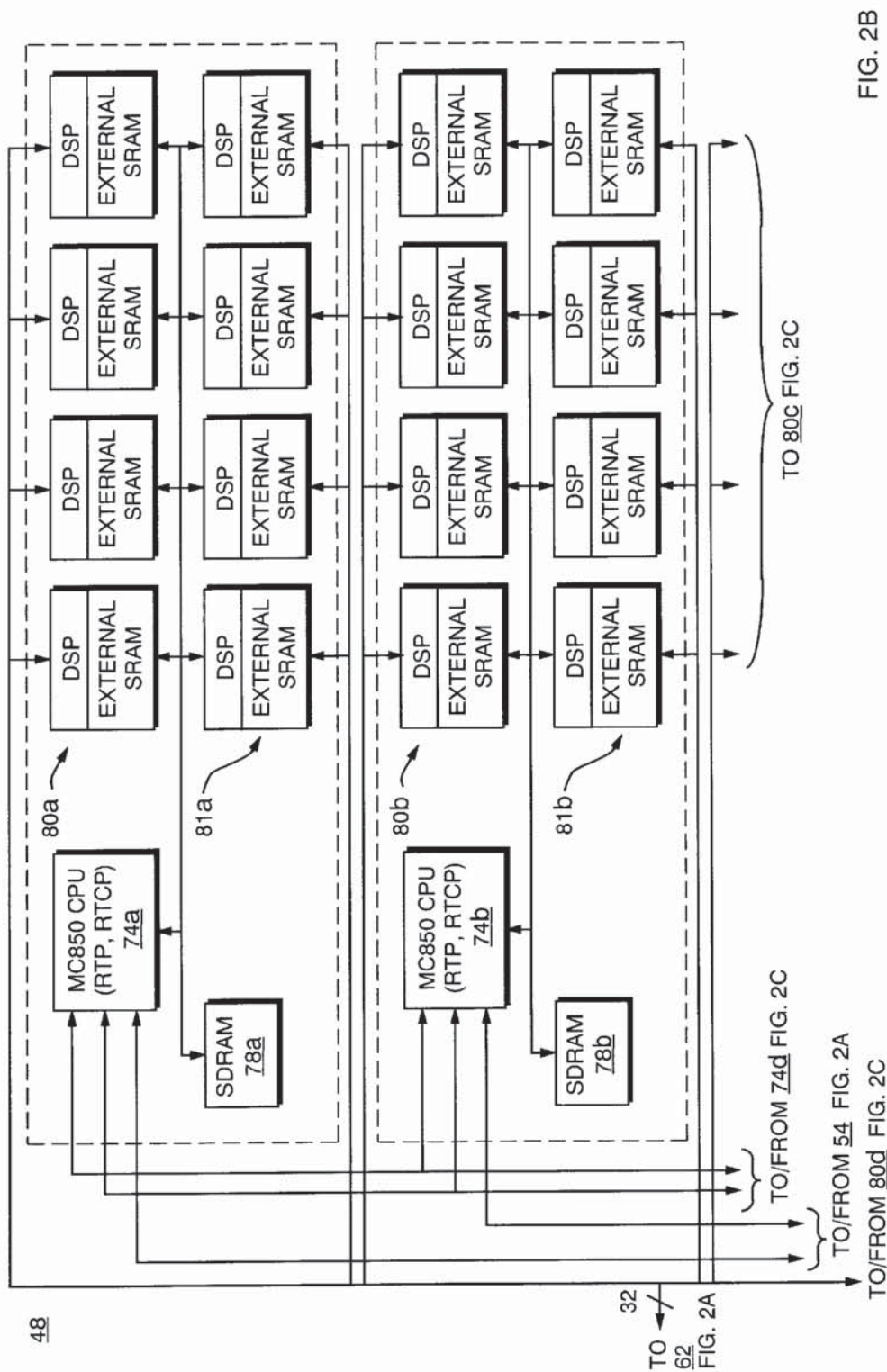
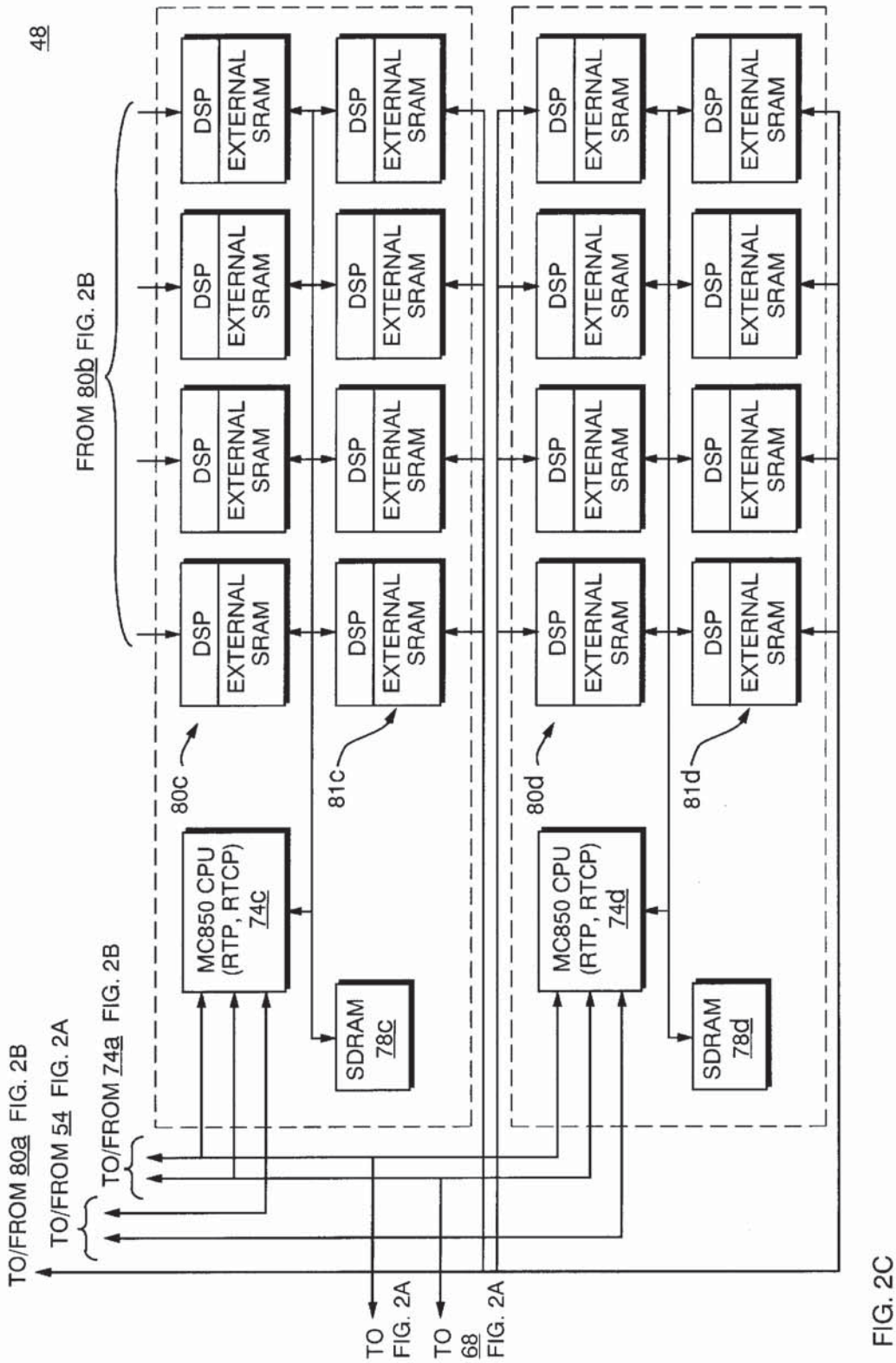


FIG. 2A





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