

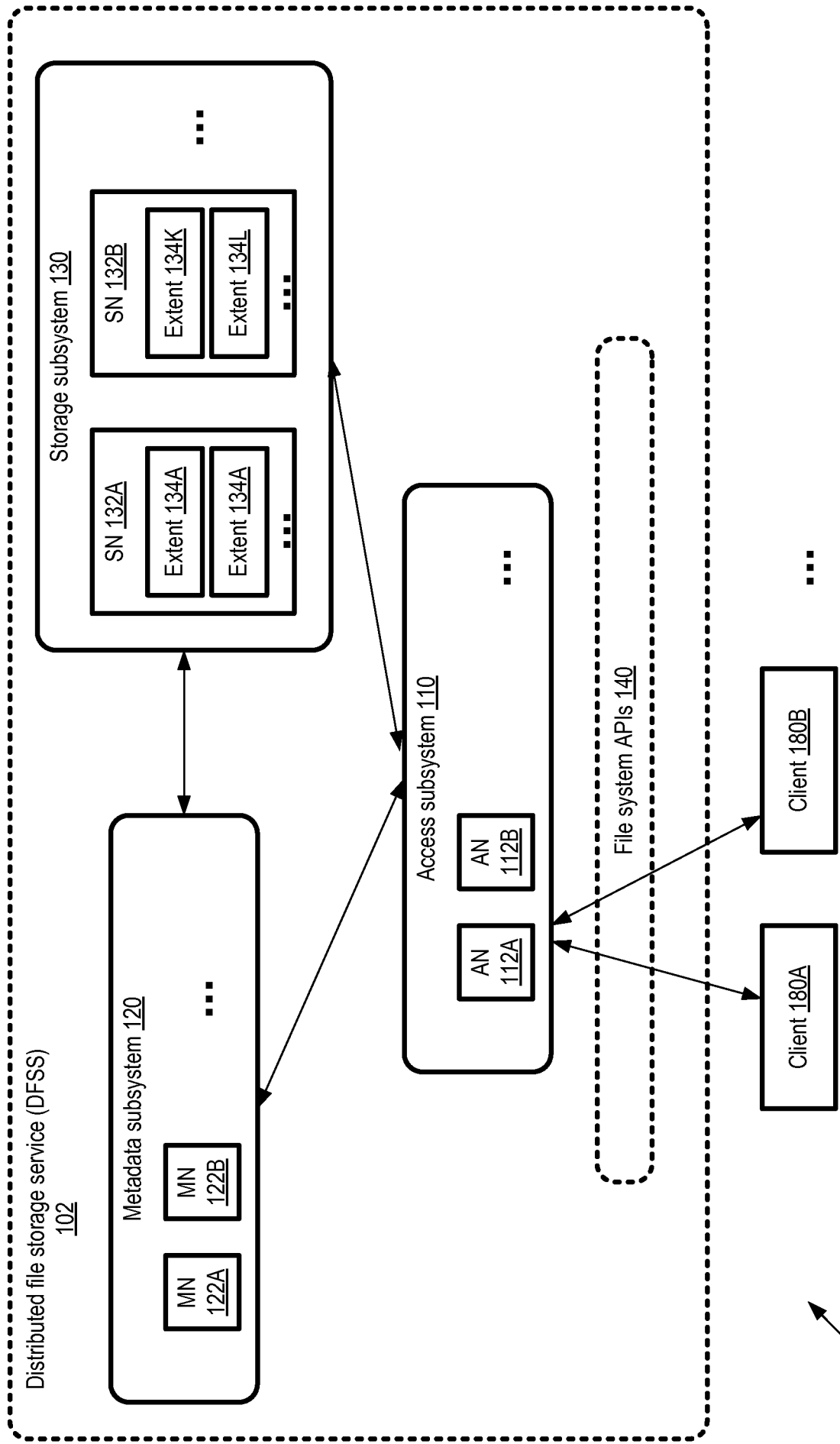


FIG. 1

System 100

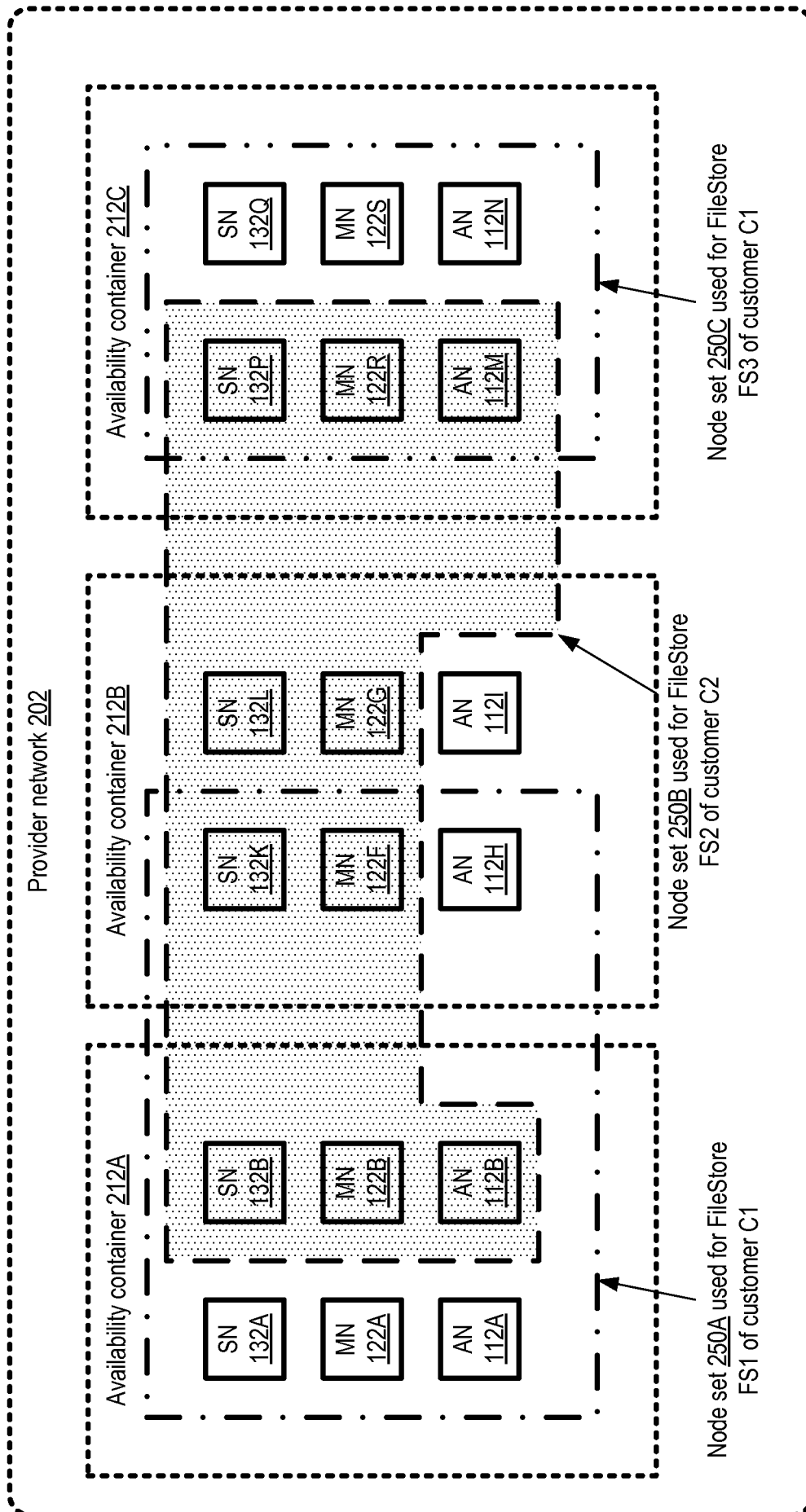


FIG. 2

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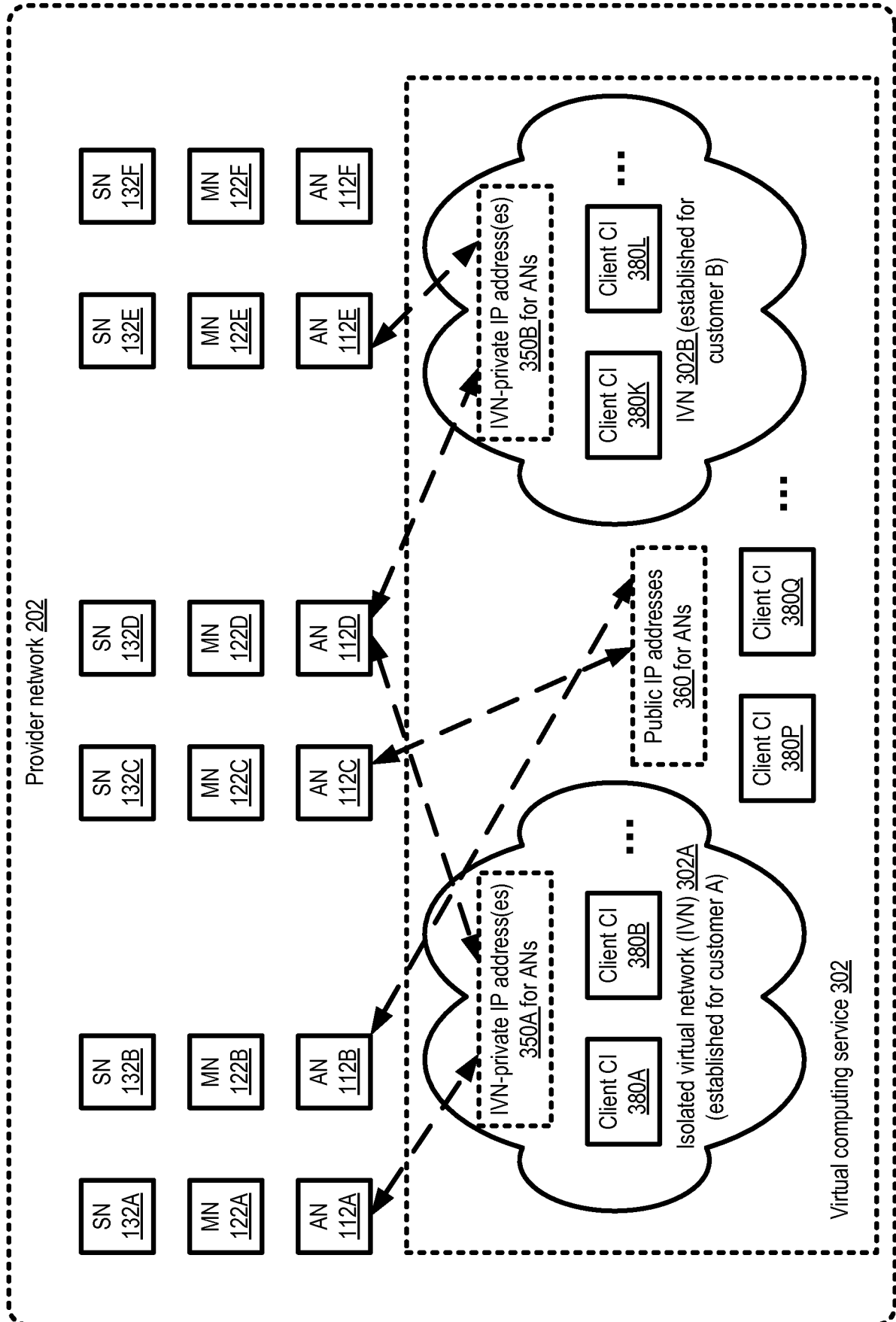


FIG. 3

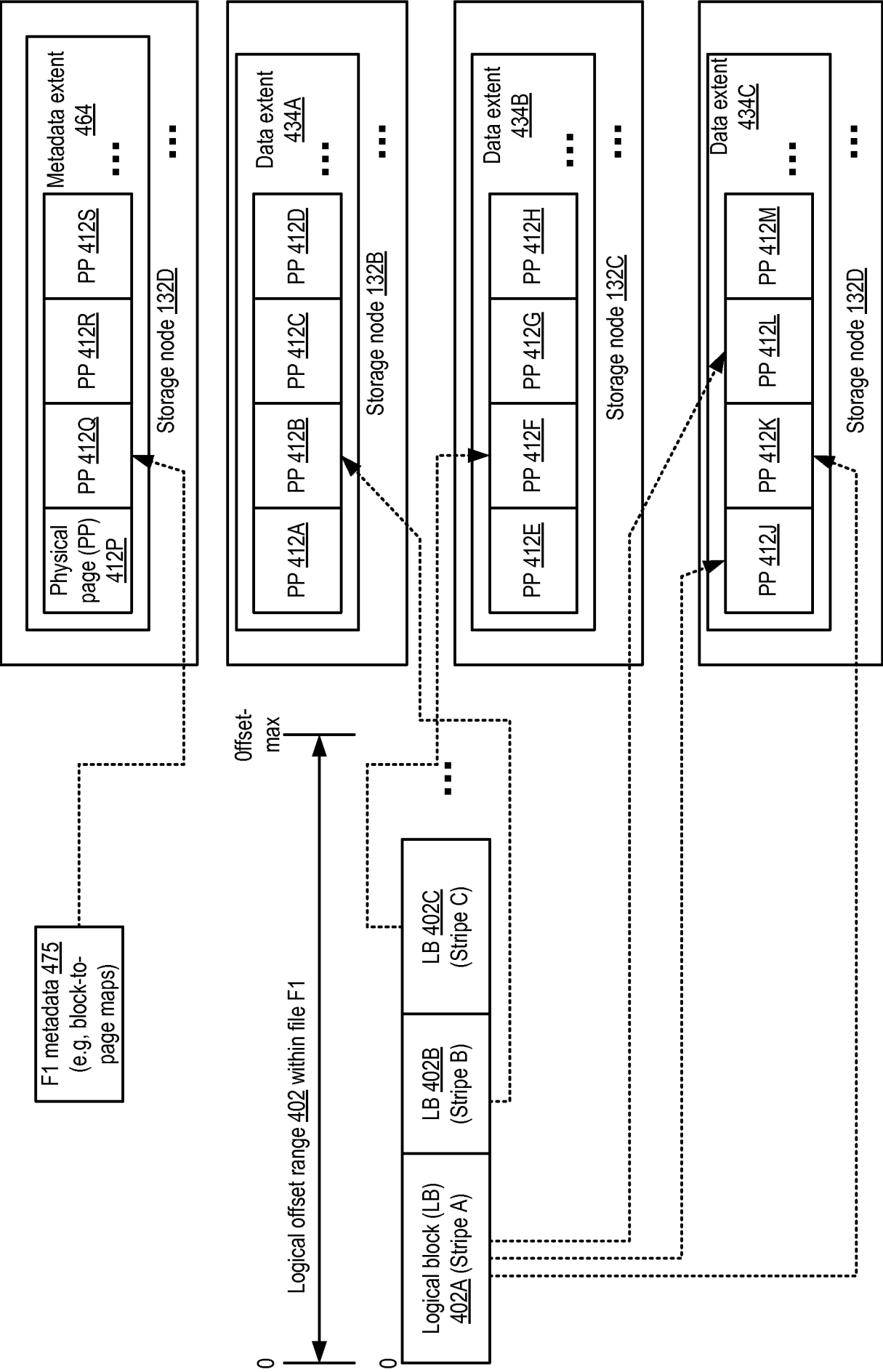


FIG. 4

...

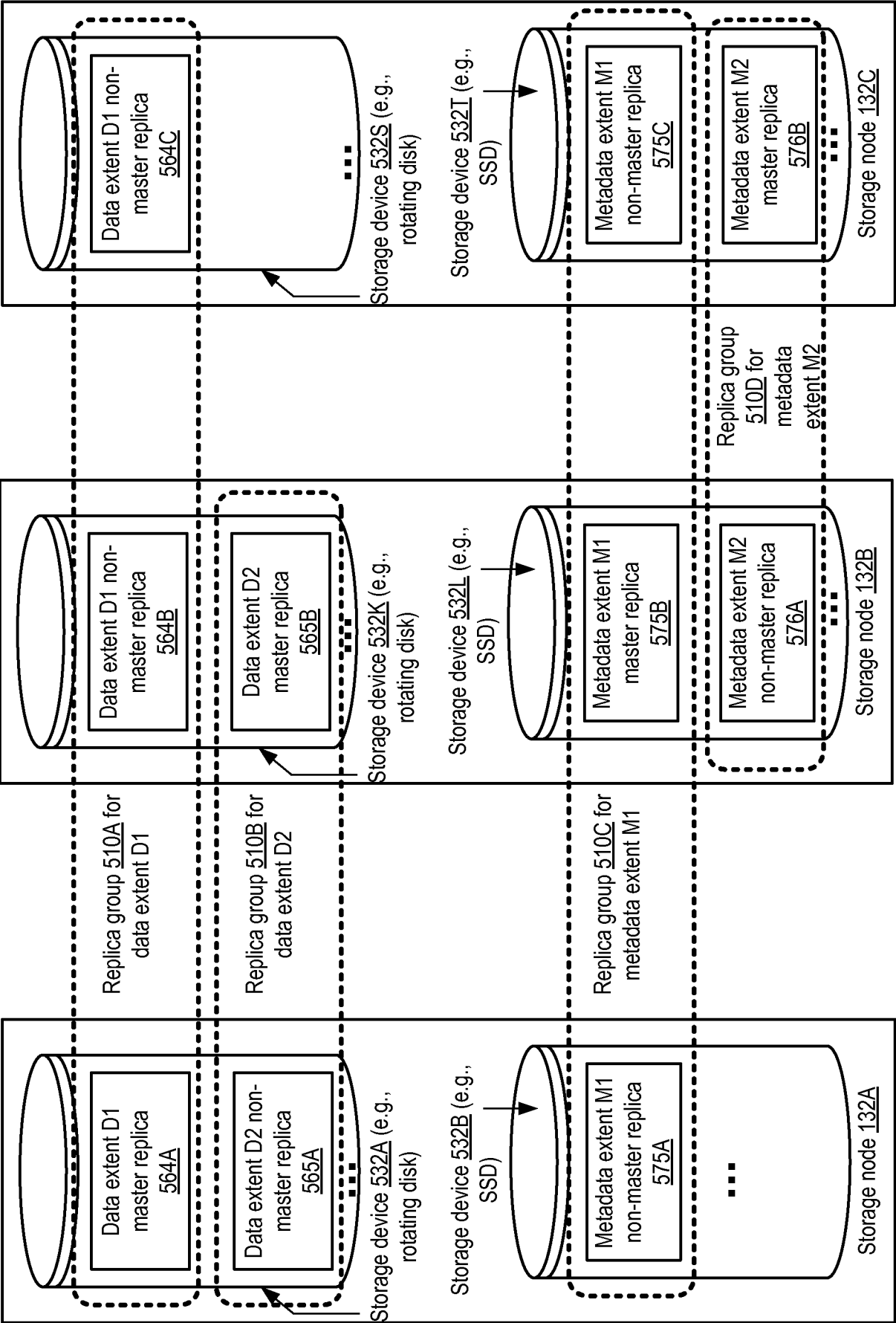


FIG. 5

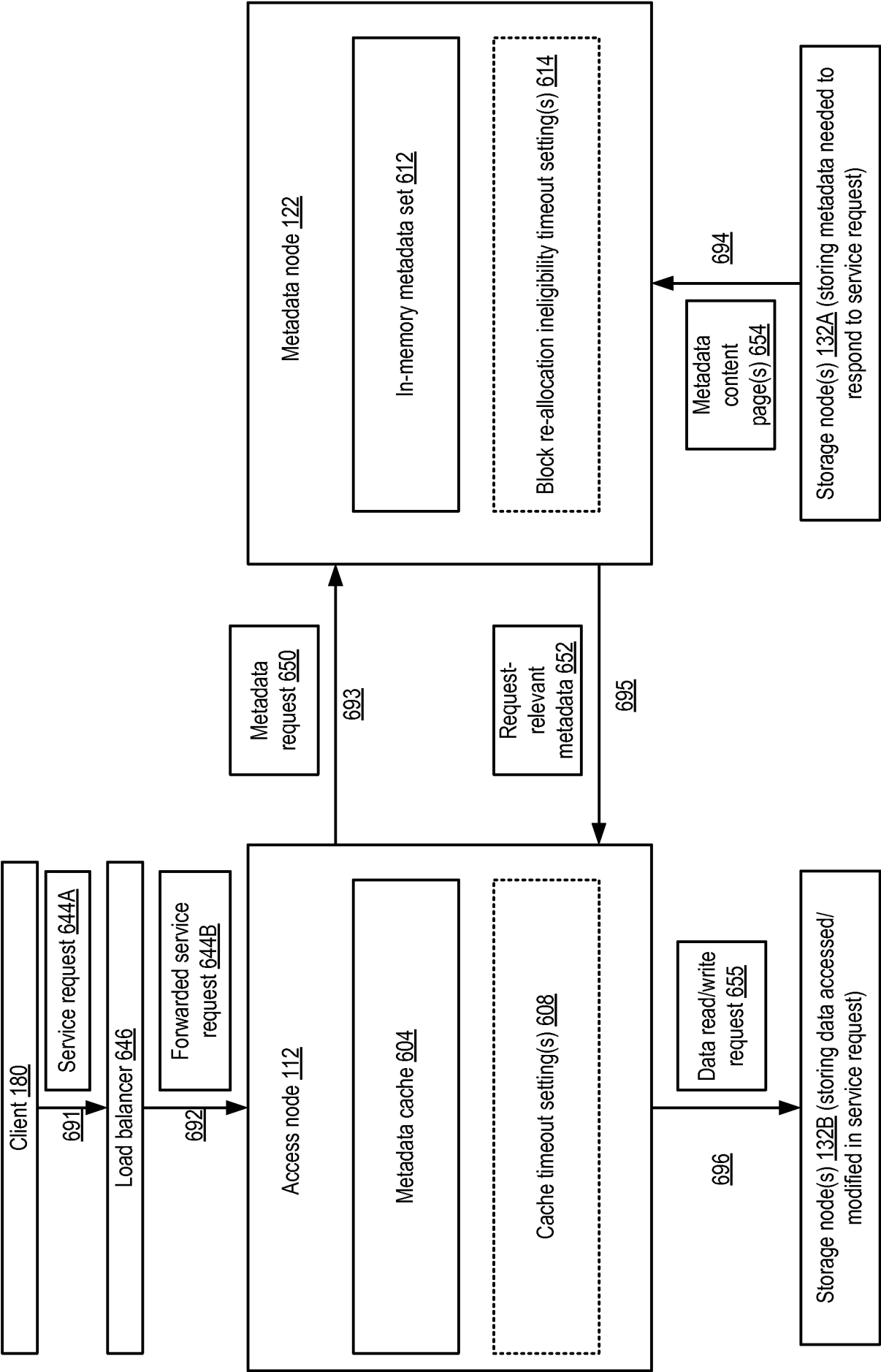


FIG. 6

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File store name <u>702</u>	Metadata durability policy <u>704</u>	Metadata performance targets <u>706</u>	Metadata logical block policy <u>708</u>	Metadata physical page policy <u>710</u>	Metadata caching policy <u>712</u>	Data durability policy <u>714</u>	Data performance targets <u>716</u>	Data logical block policy <u>718</u>	Data physical page policy <u>720</u>
FS1	10-way full replication	W resp time < T1; R resp time < T2	Fixed LB size = 512KB, dynamic allocation	Fixed pp size = 8KB	Cache timeout = C1; block realloc ineligibility timeout = BR1	12/6 erasure coding	W resp time < T3; R resp time < T4; W tput > Y1; R tput > Z1	Dynamic LB sizes = 1K, 1K, 2K, 2K, 4K,...; static allocation	PP size = LB size
FS2	3-way full replication	R resp time < T7	Fixed LB size = 1MB, static allocation	Fixed pp size = 16KB	Cache timeout = C2; block realloc ineligibility timeout = BR2	6/4 erasure coding	W tput > Y2; R tput > Z2	Fixed LB size = 4MB, static allocation	PP size = 32KB
...									

FIG. 7

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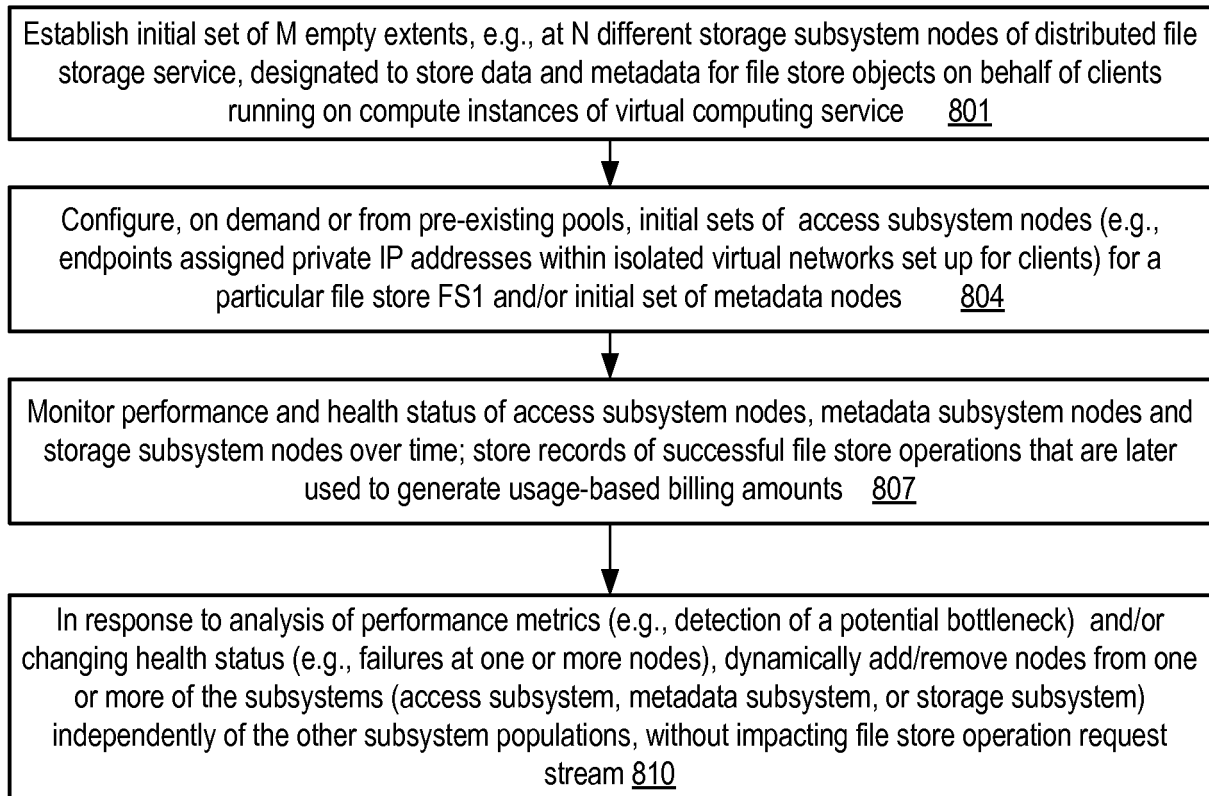


FIG. 8a

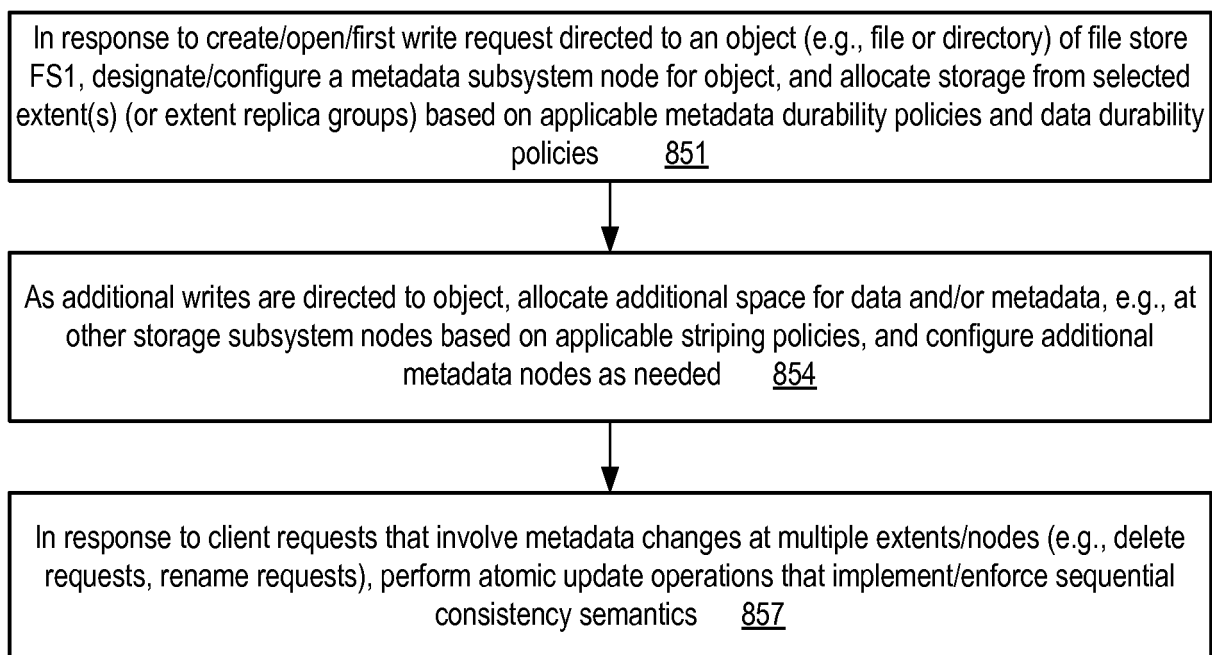


FIG. 8b

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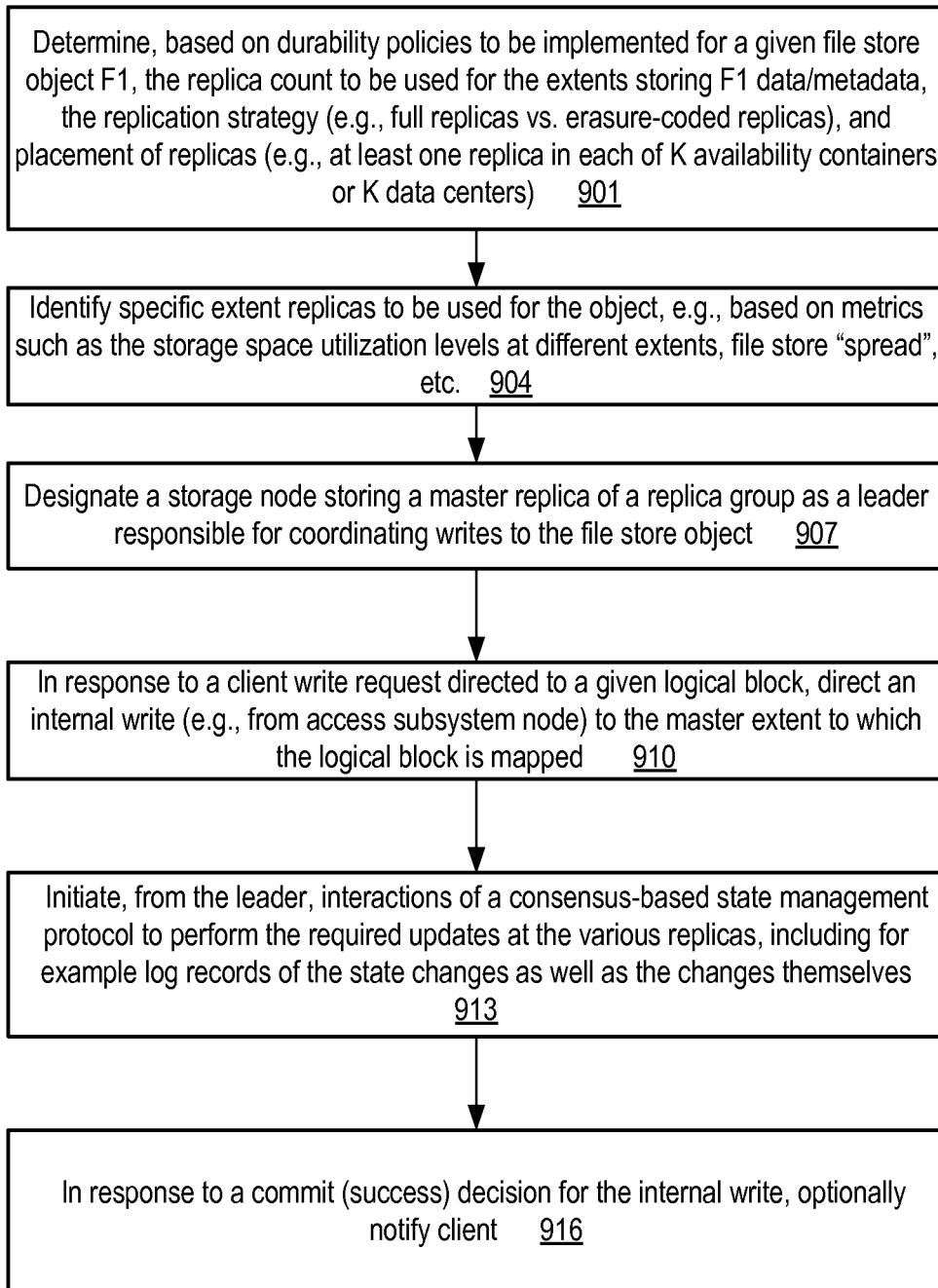


FIG. 9

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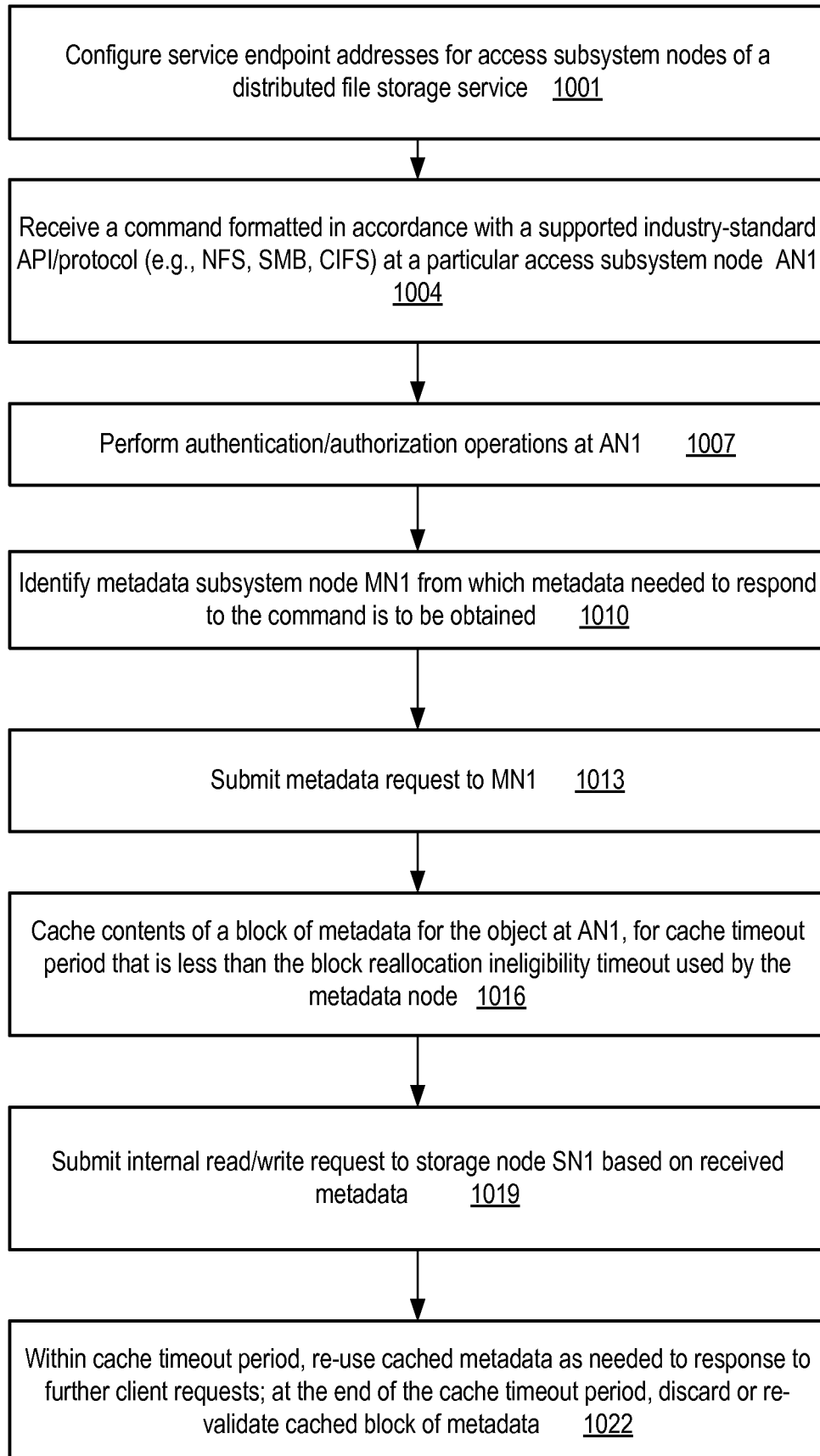


FIG. 10

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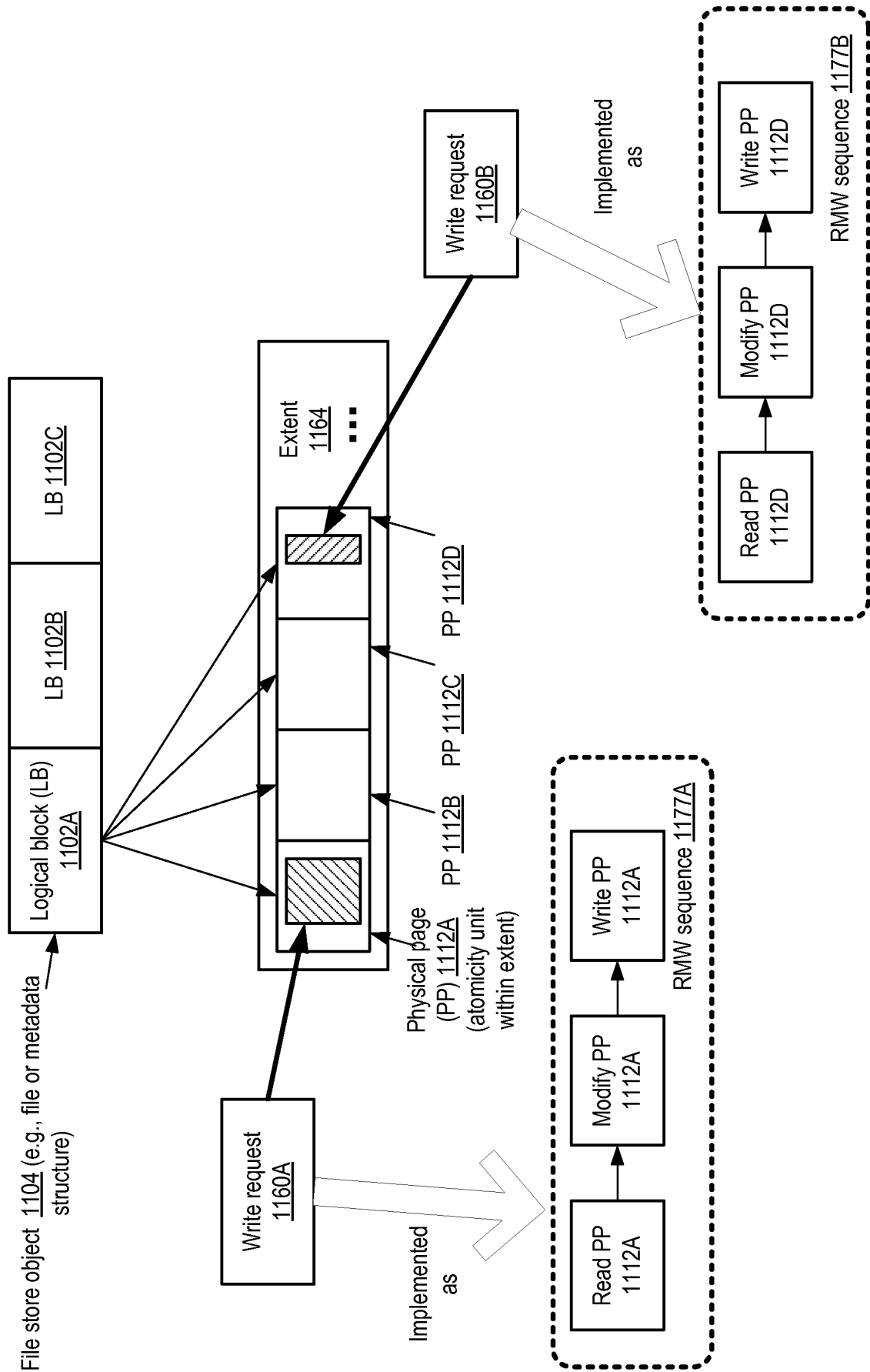


FIG. 11

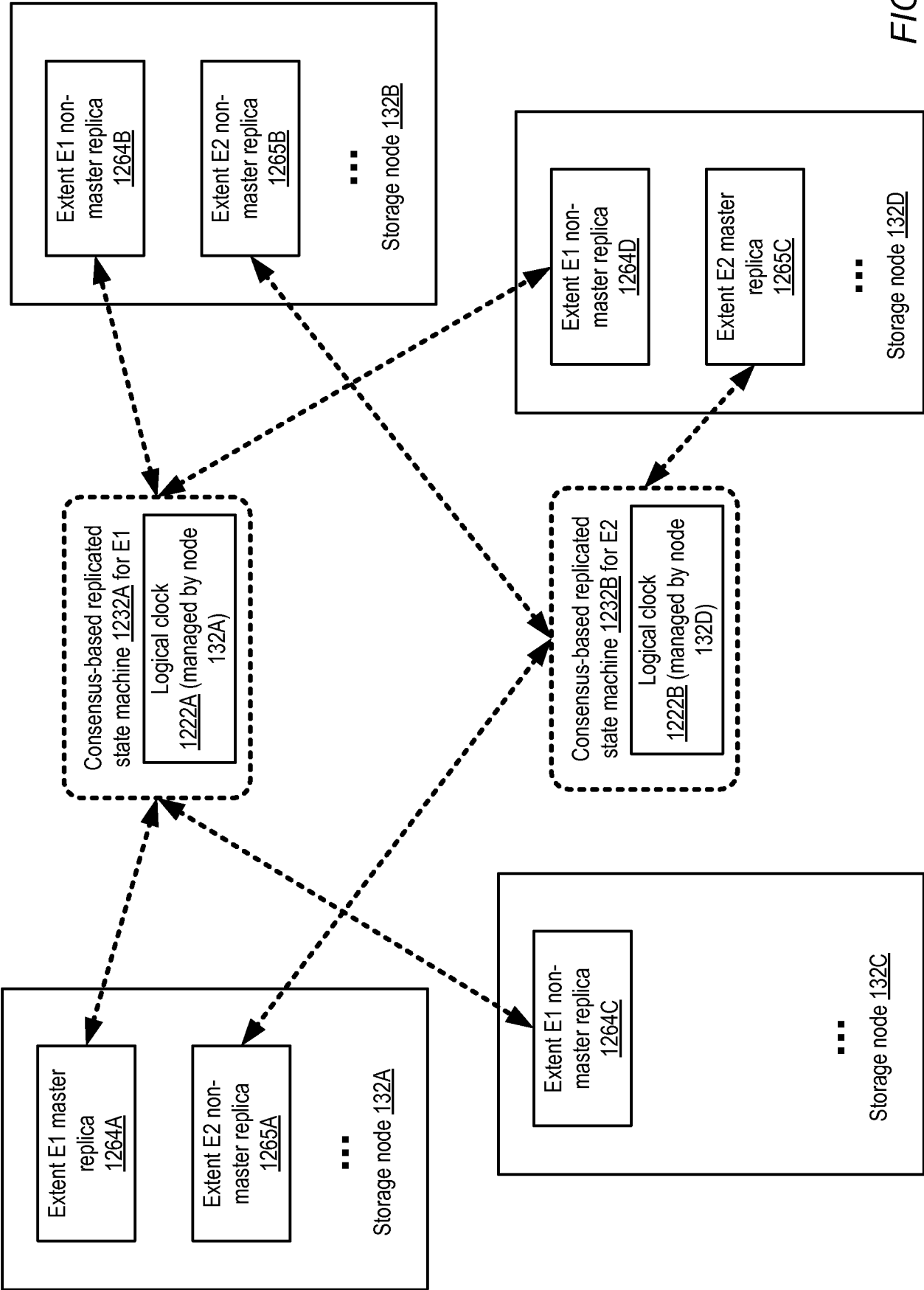


FIG. 12

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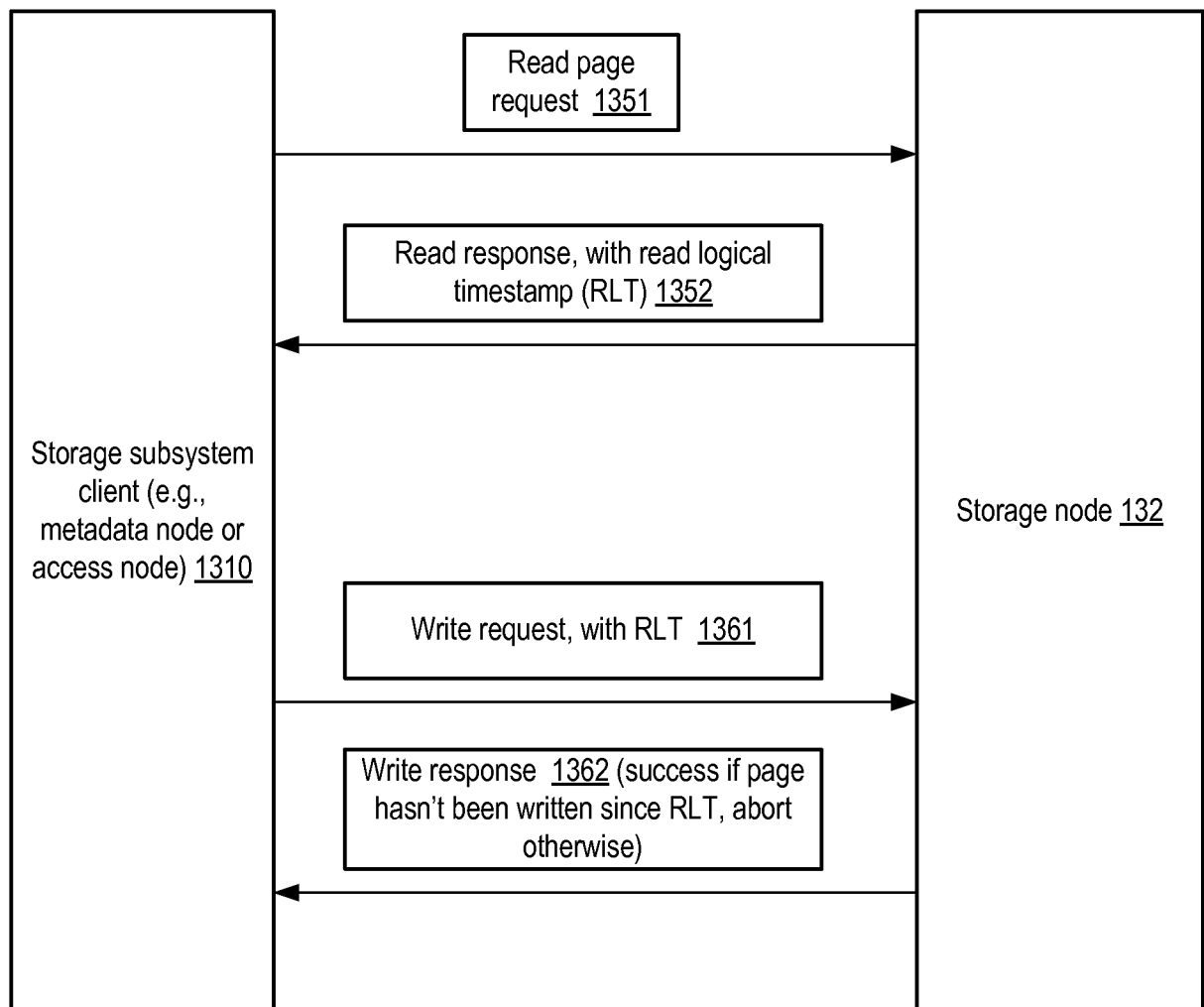


FIG. 13

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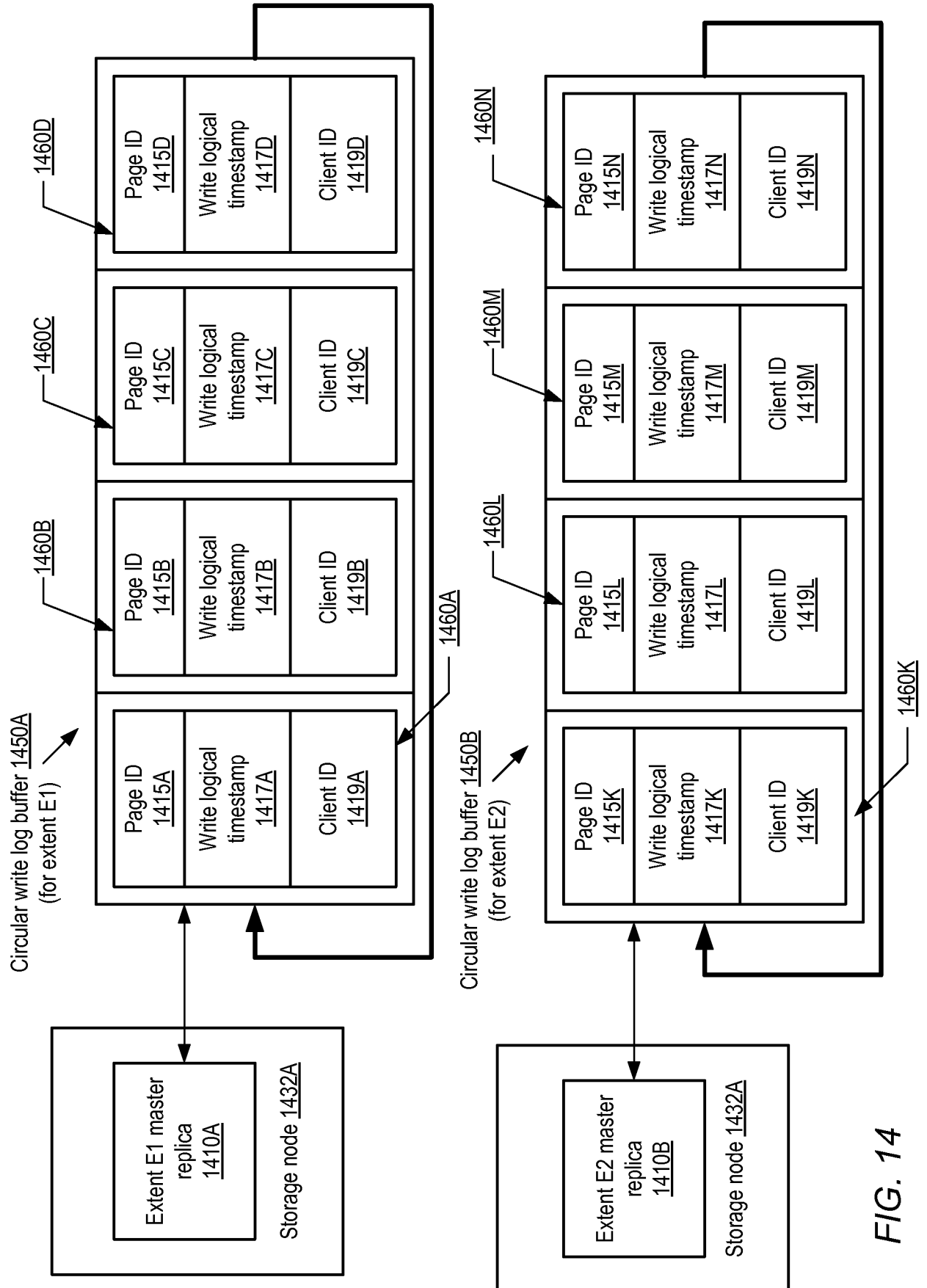


FIG. 14

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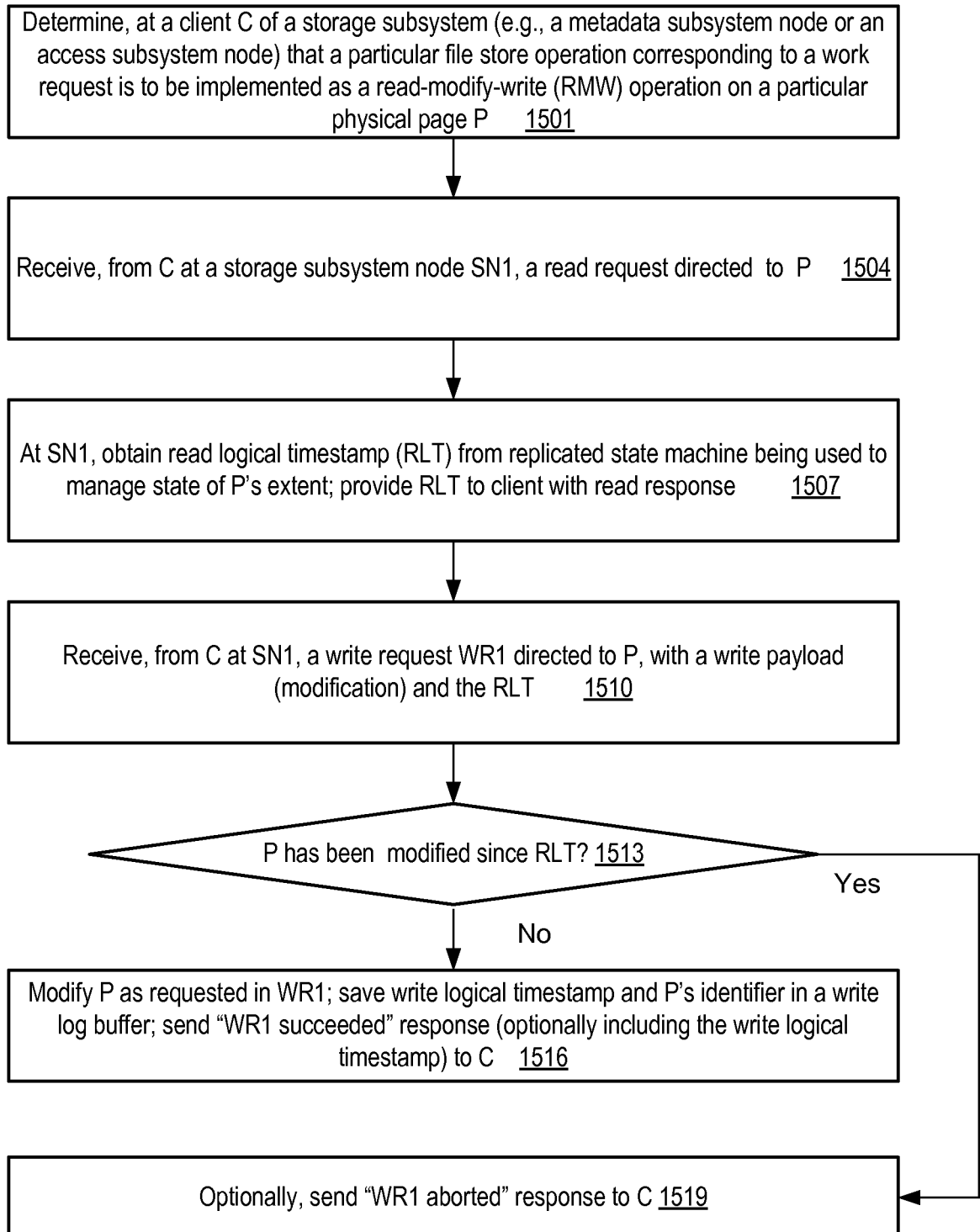


FIG. 15

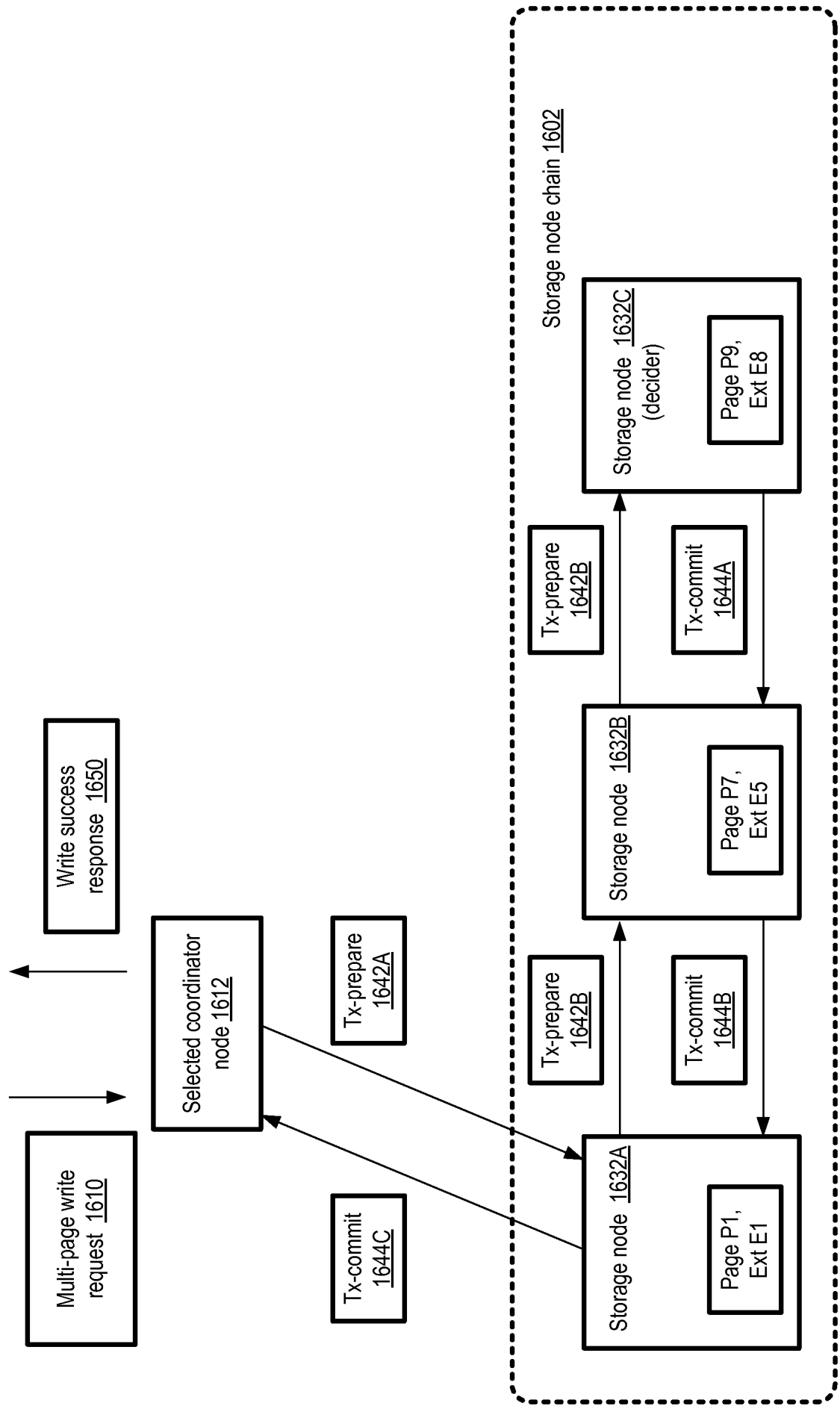


FIG. 16

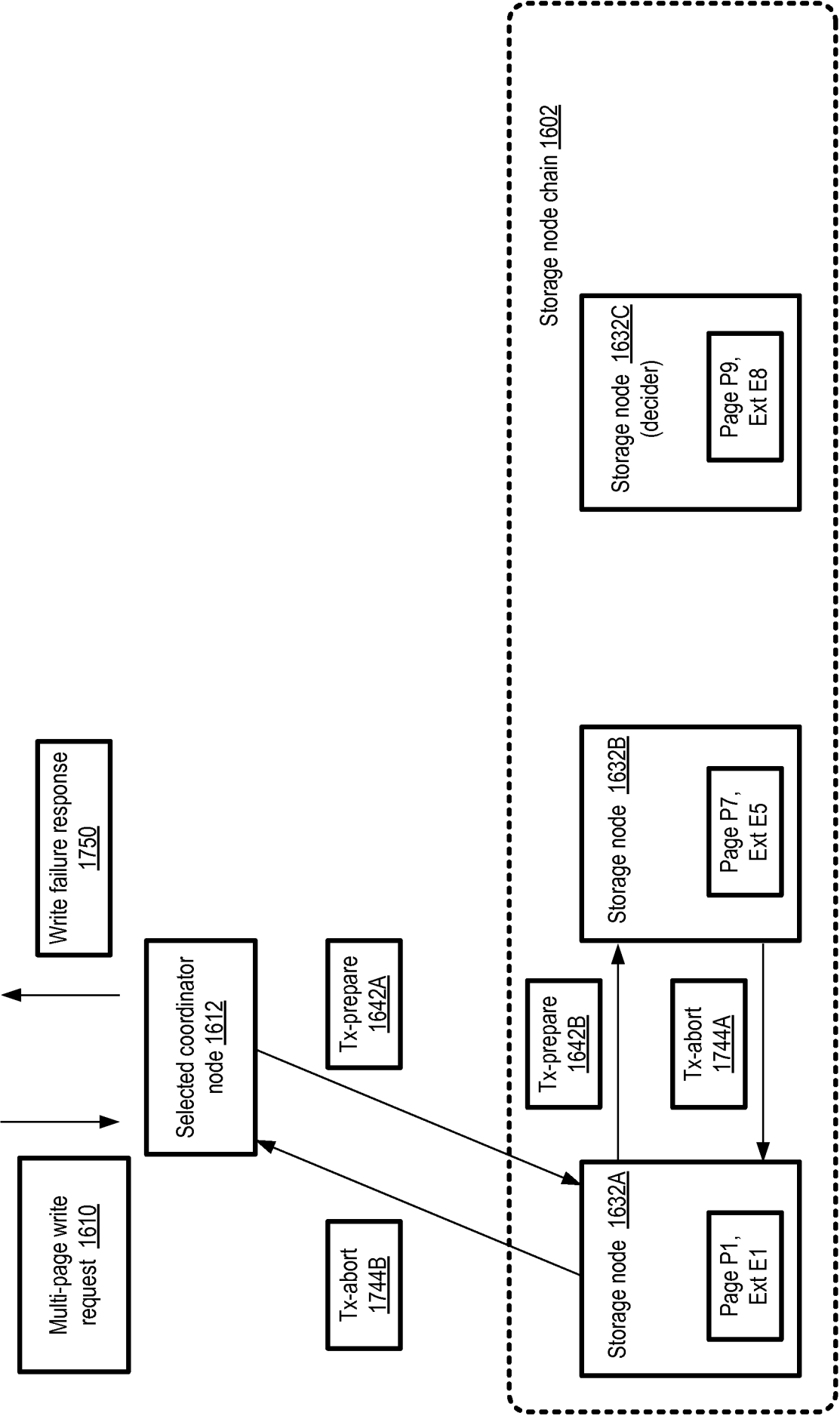


FIG. 17

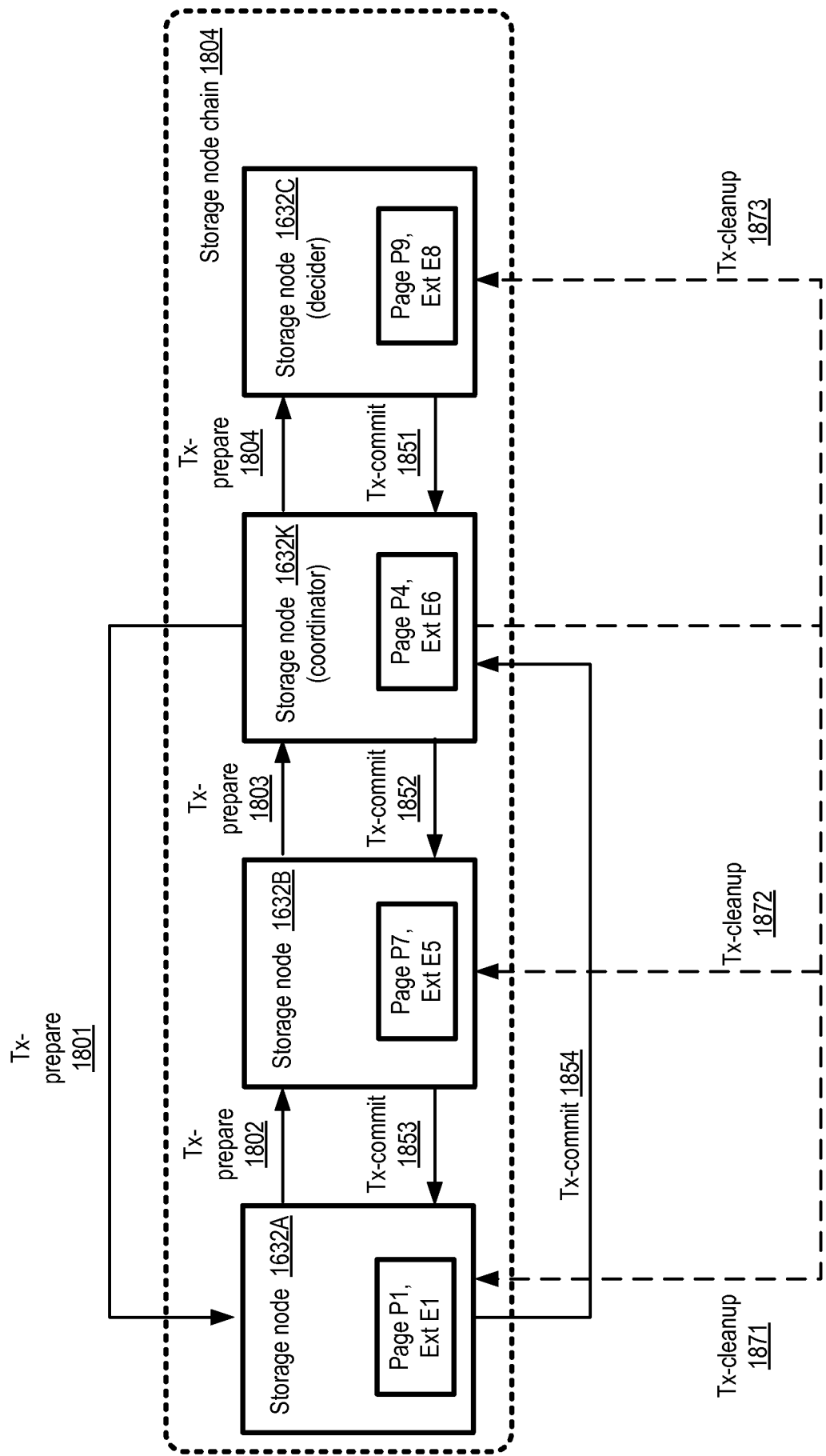


FIG. 18

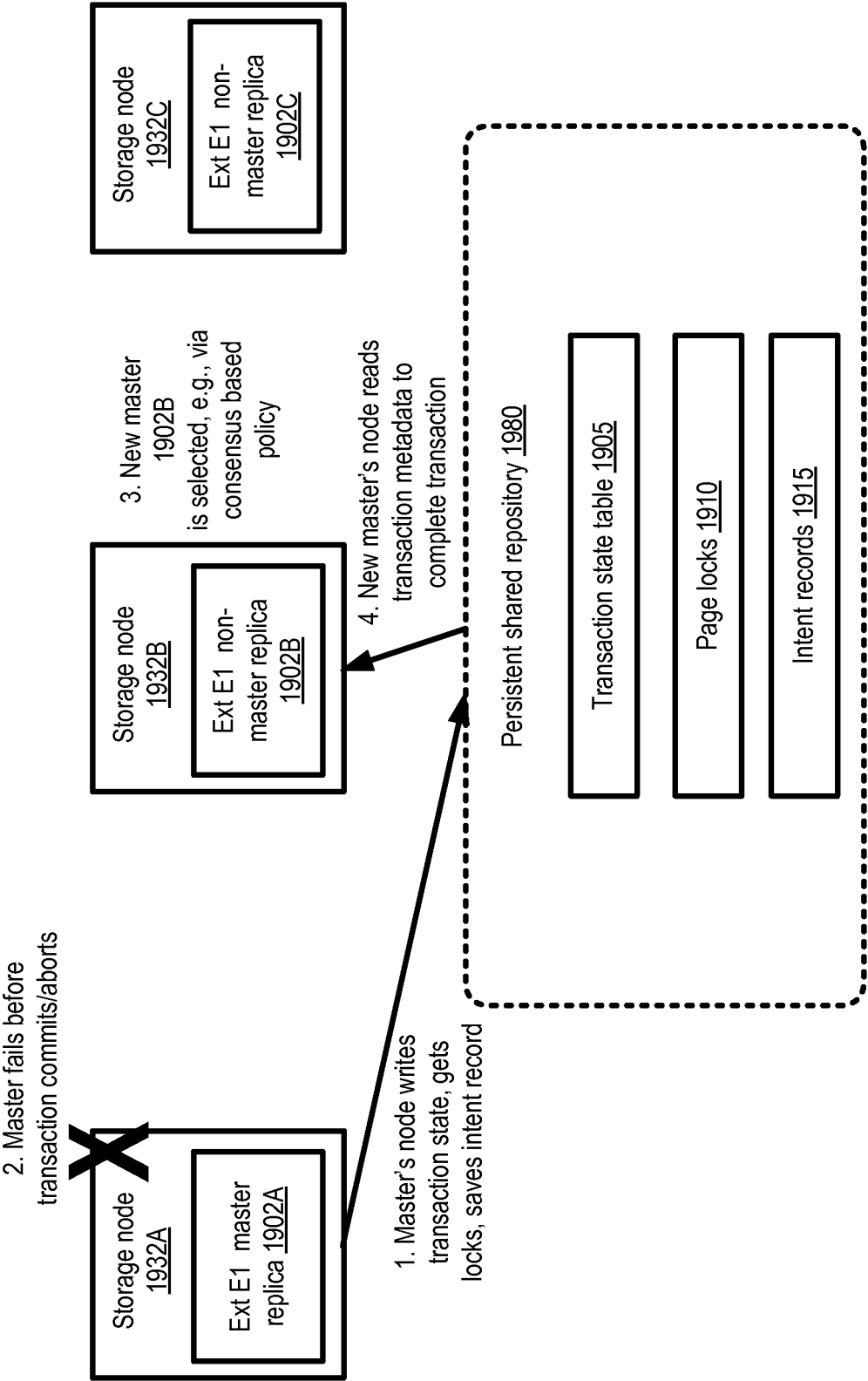


FIG. 19

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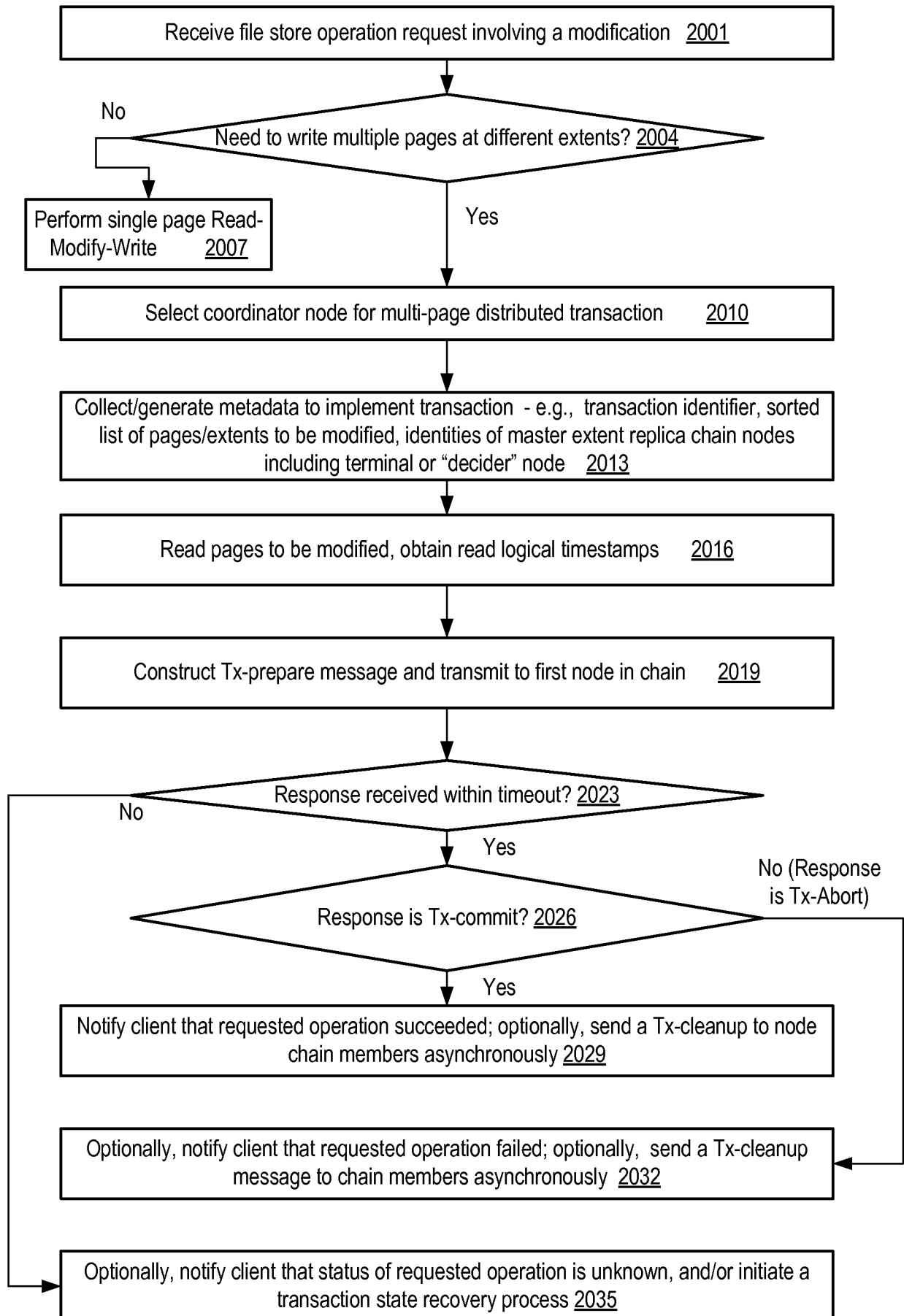


FIG. 20

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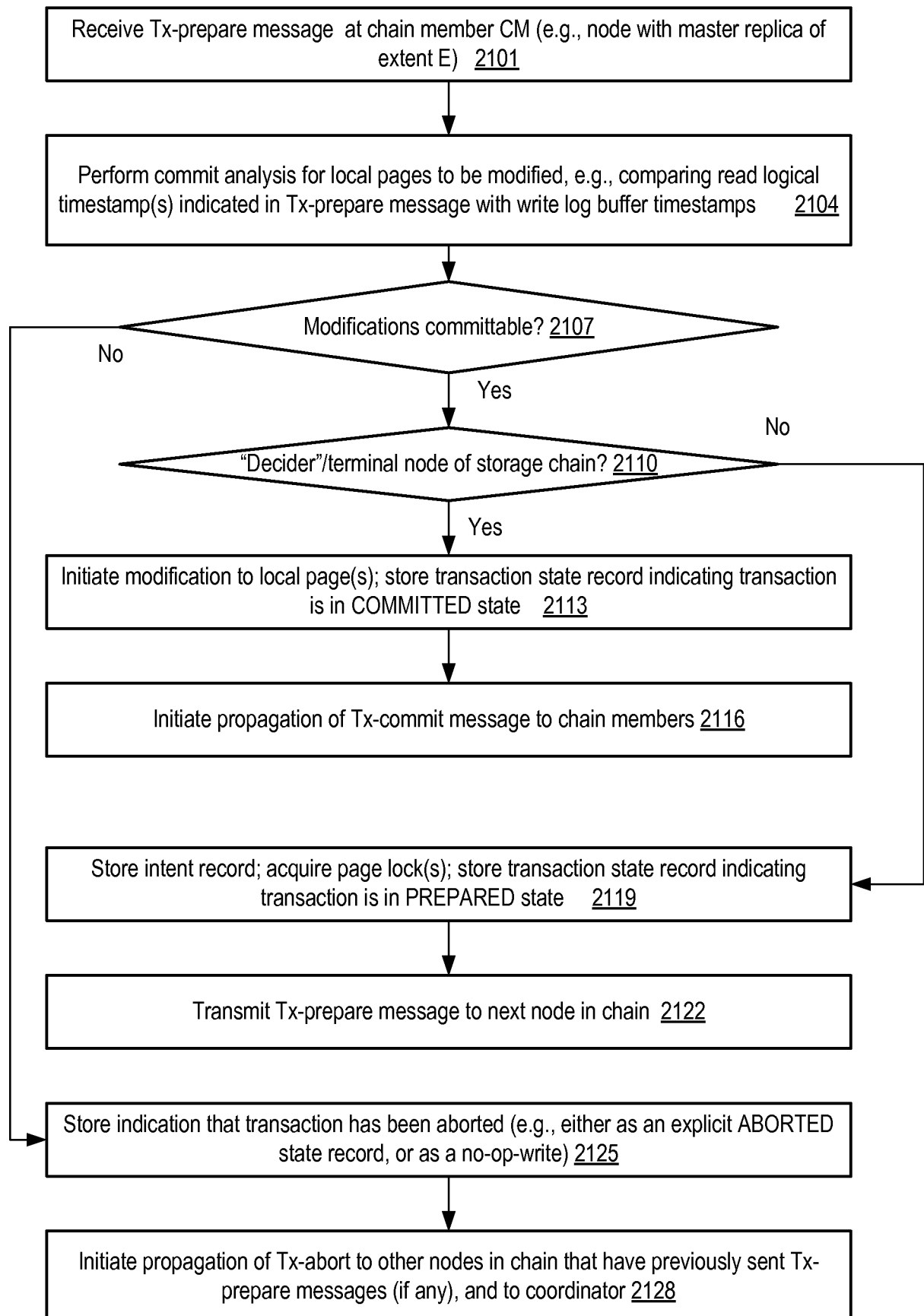


FIG. 21

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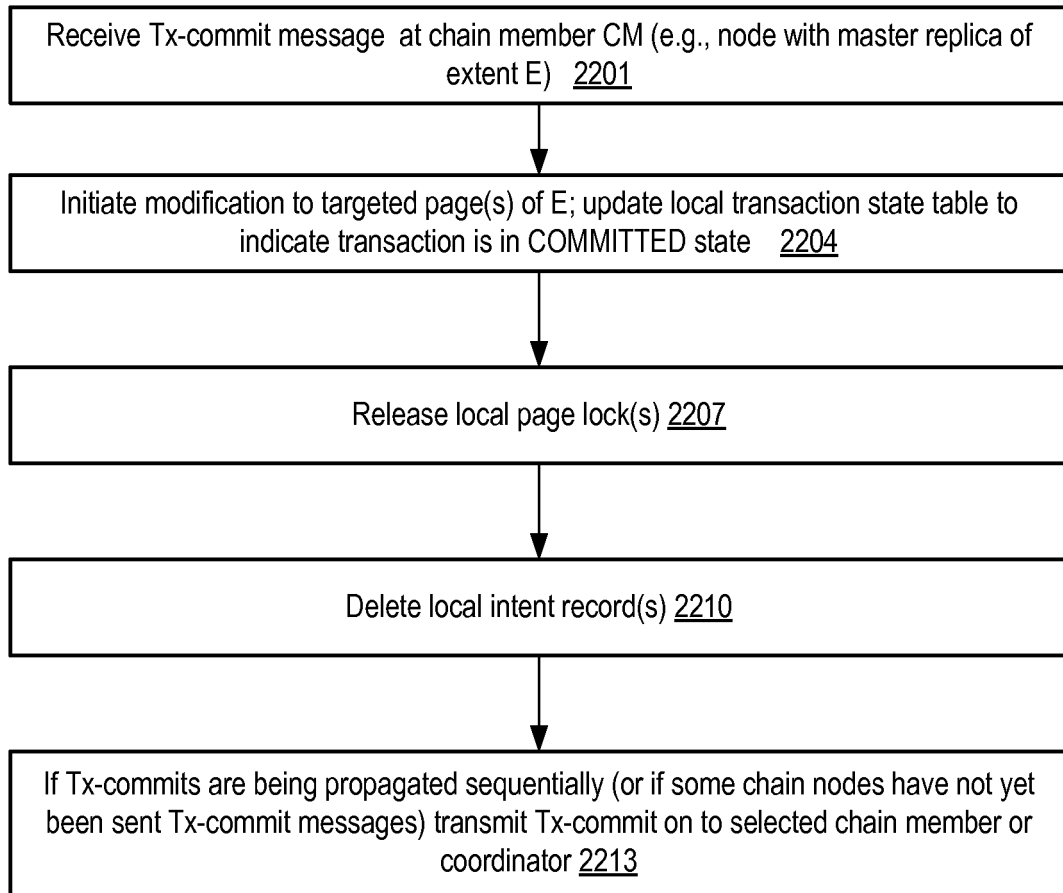


FIG. 22

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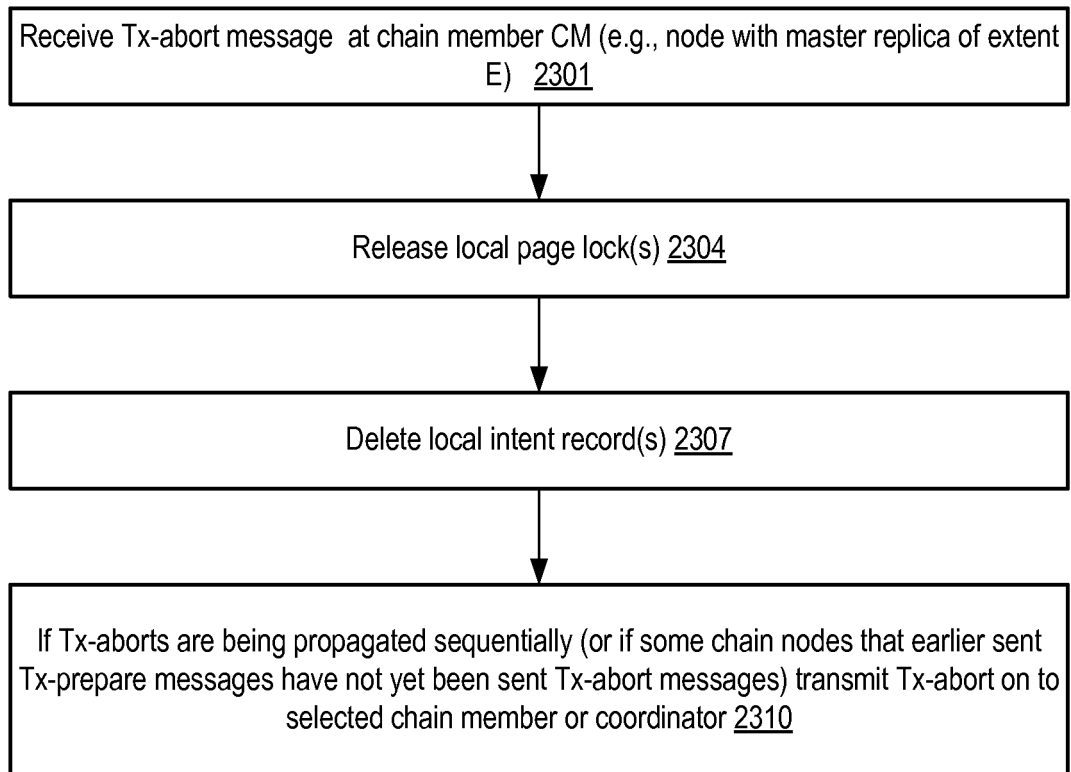


FIG. 23

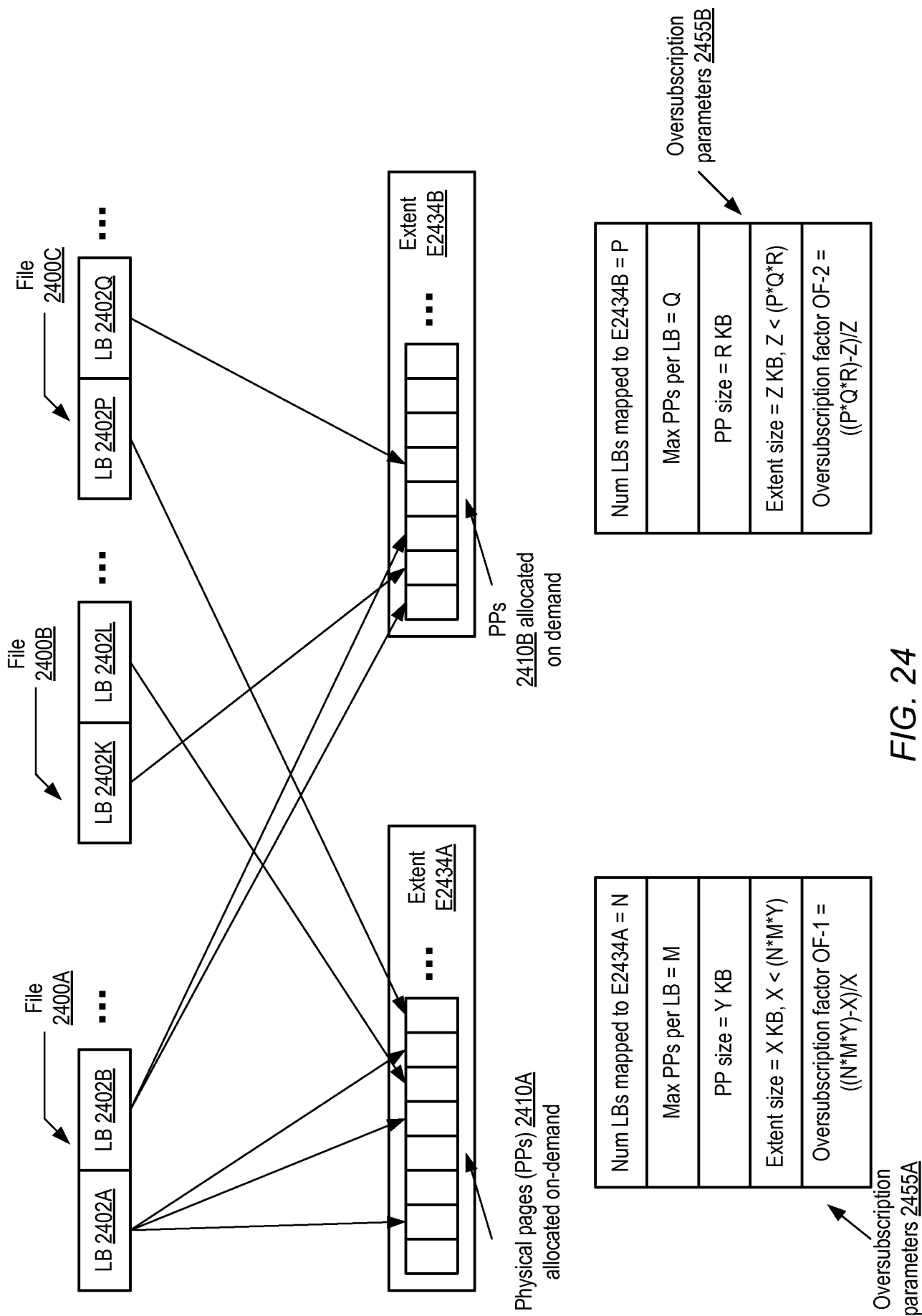


FIG. 24

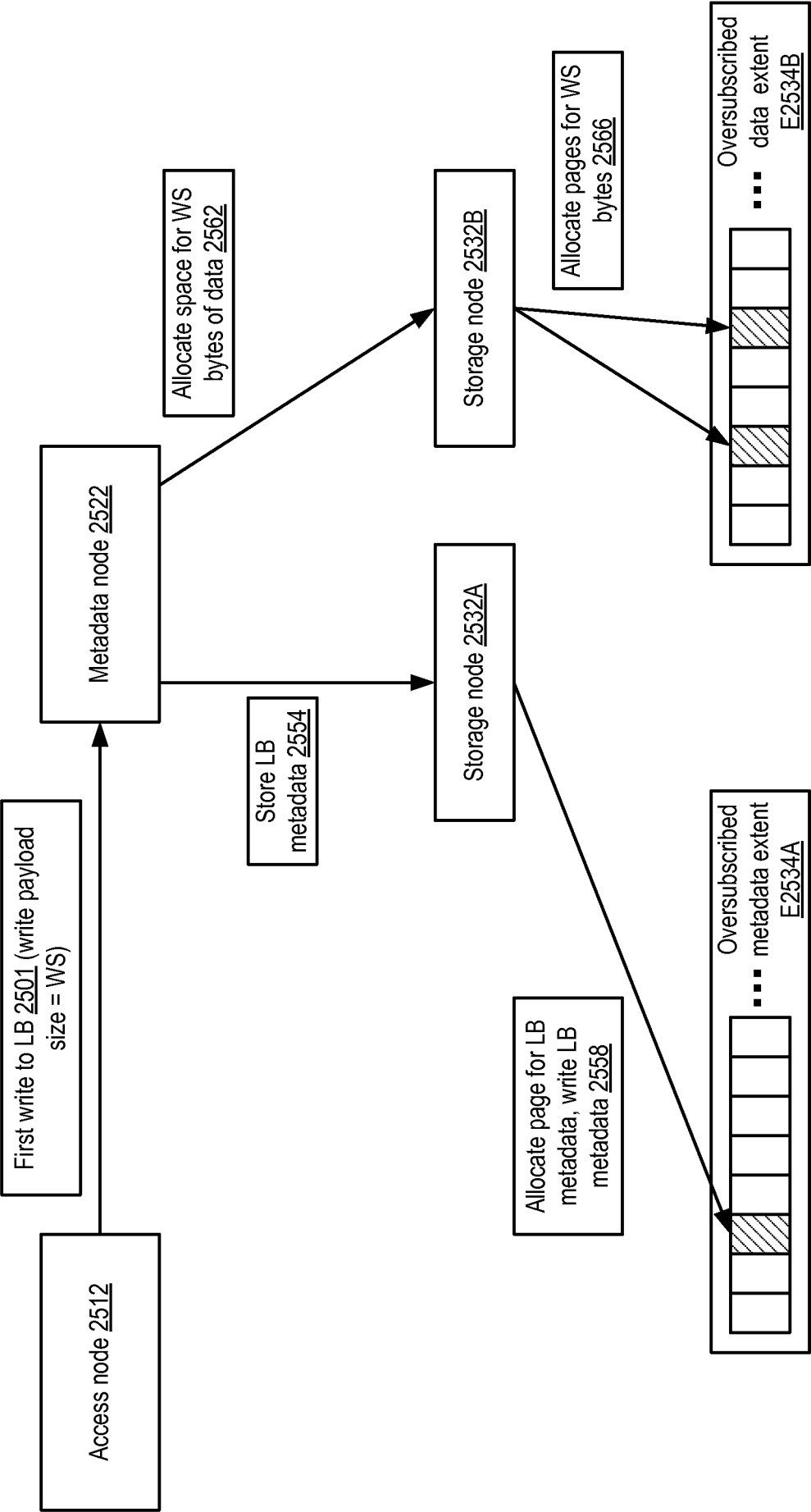


FIG. 25

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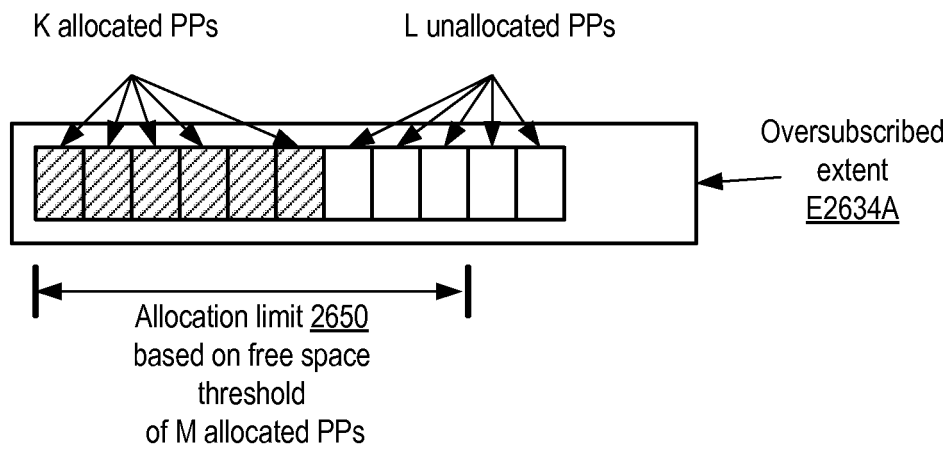


FIG. 26a

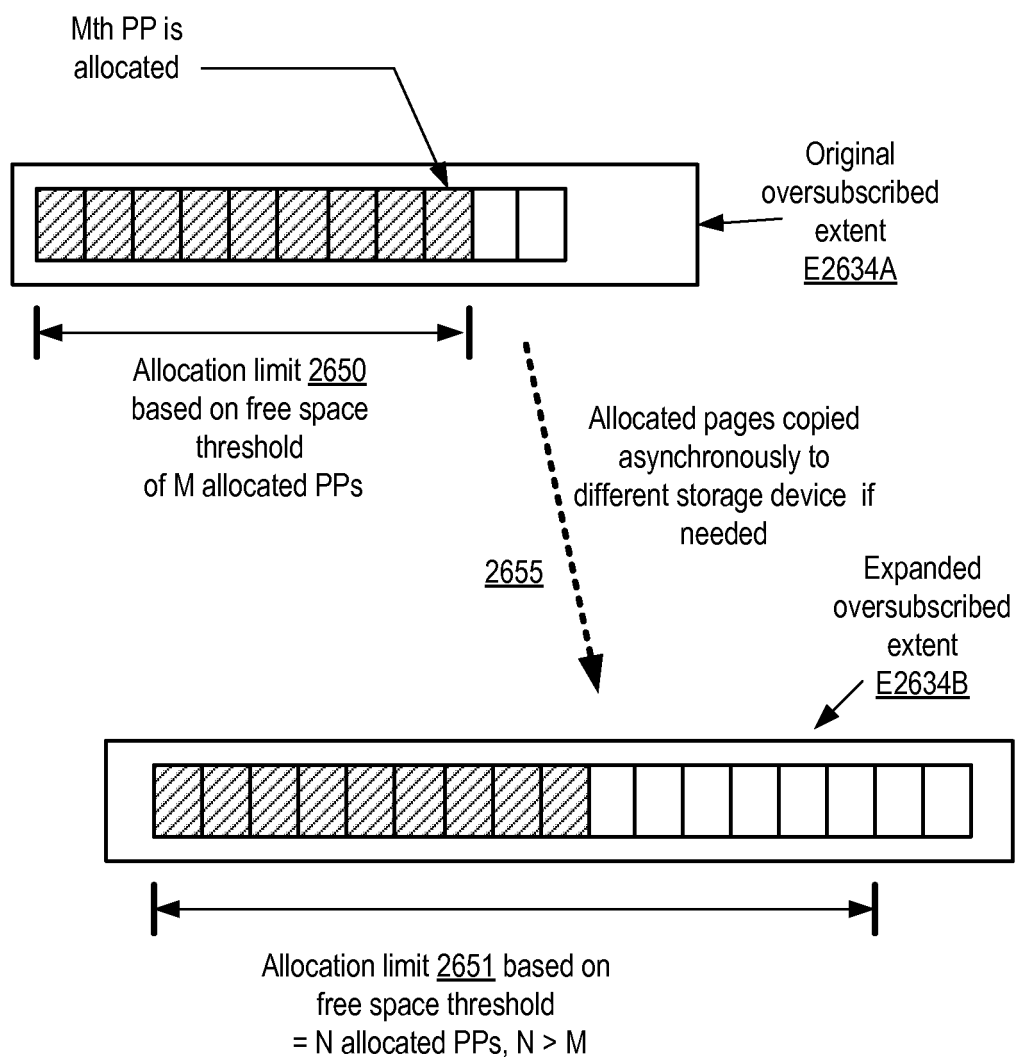


FIG. 26b

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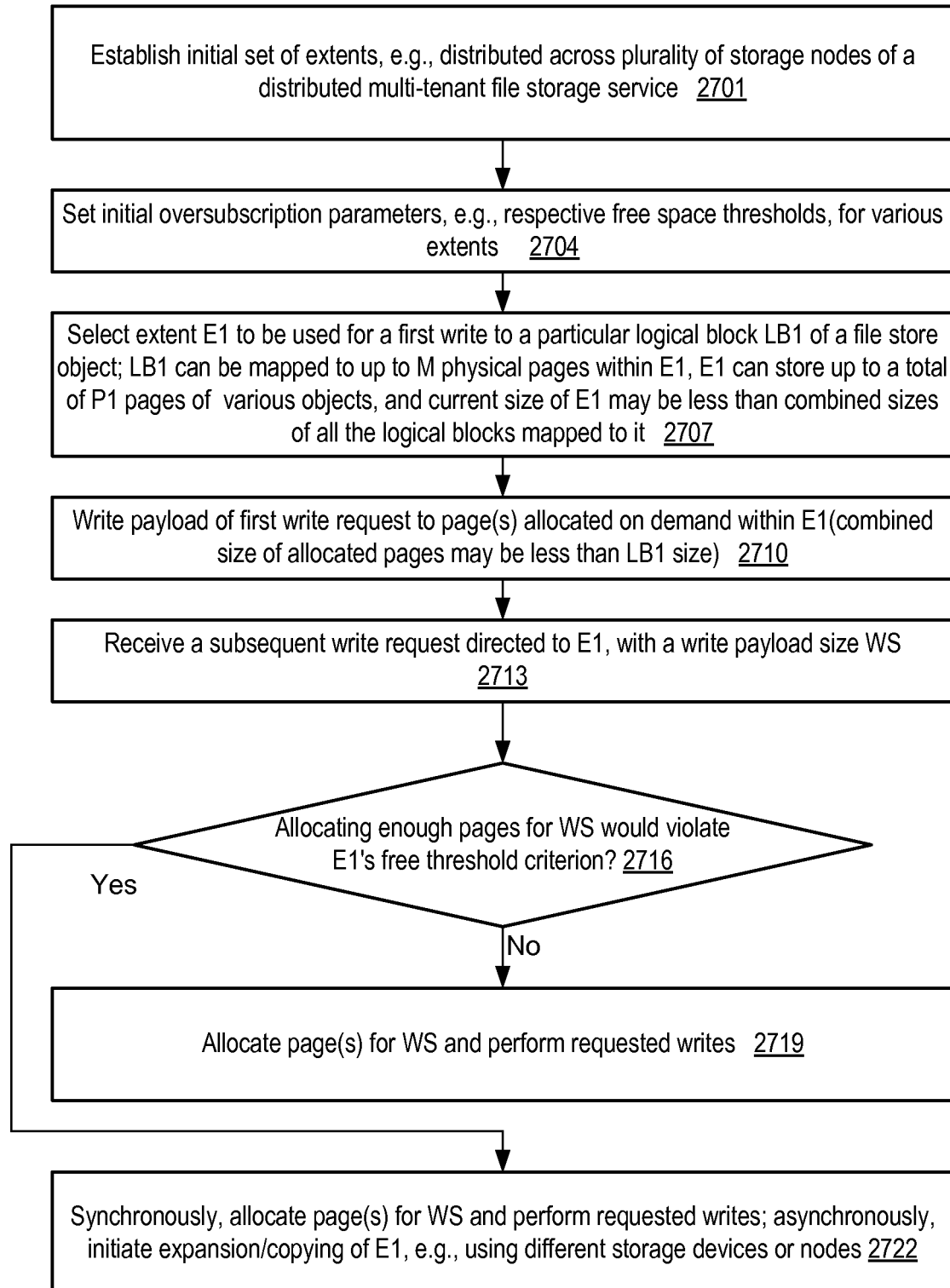


FIG. 27

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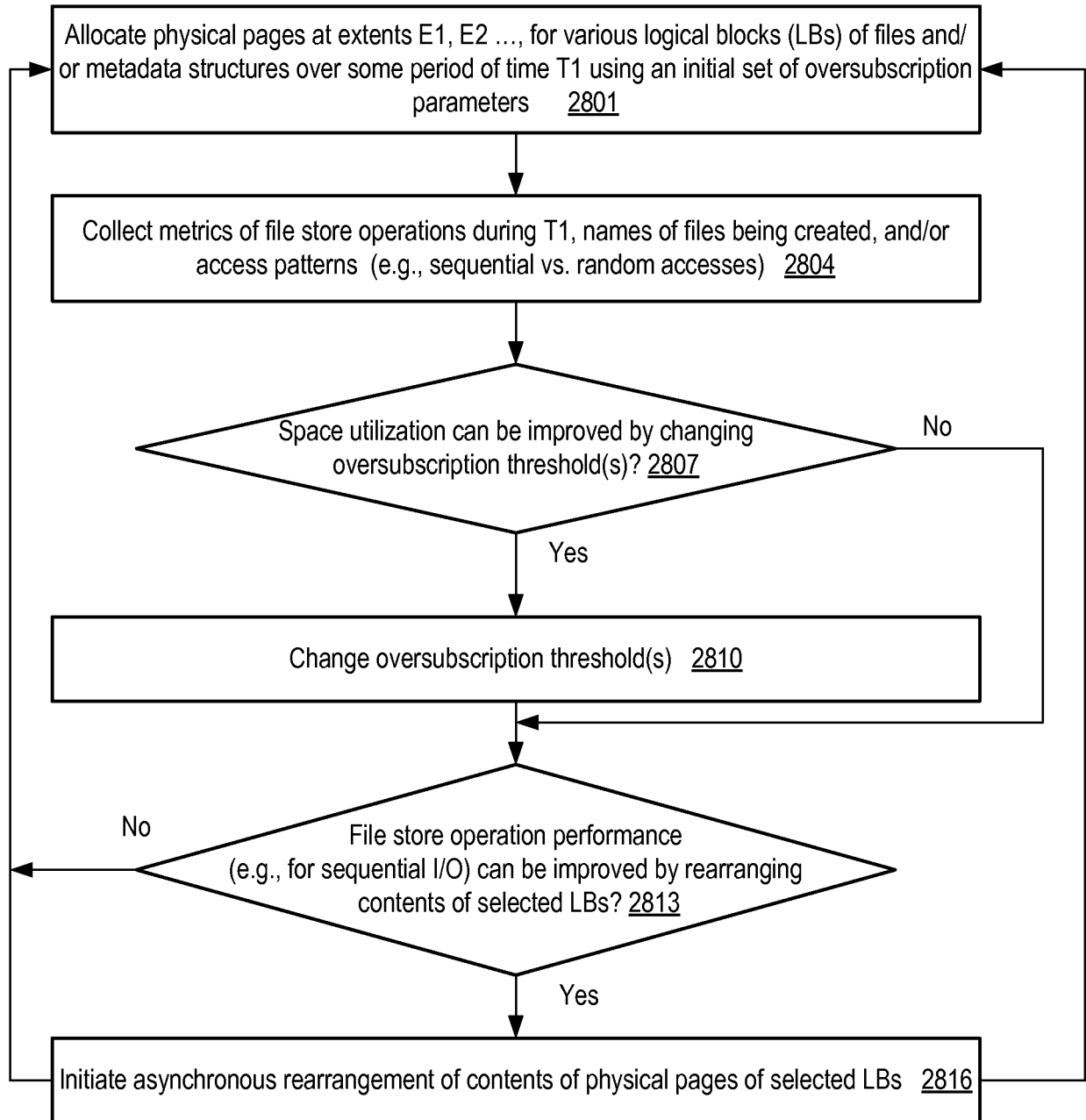


FIG. 28

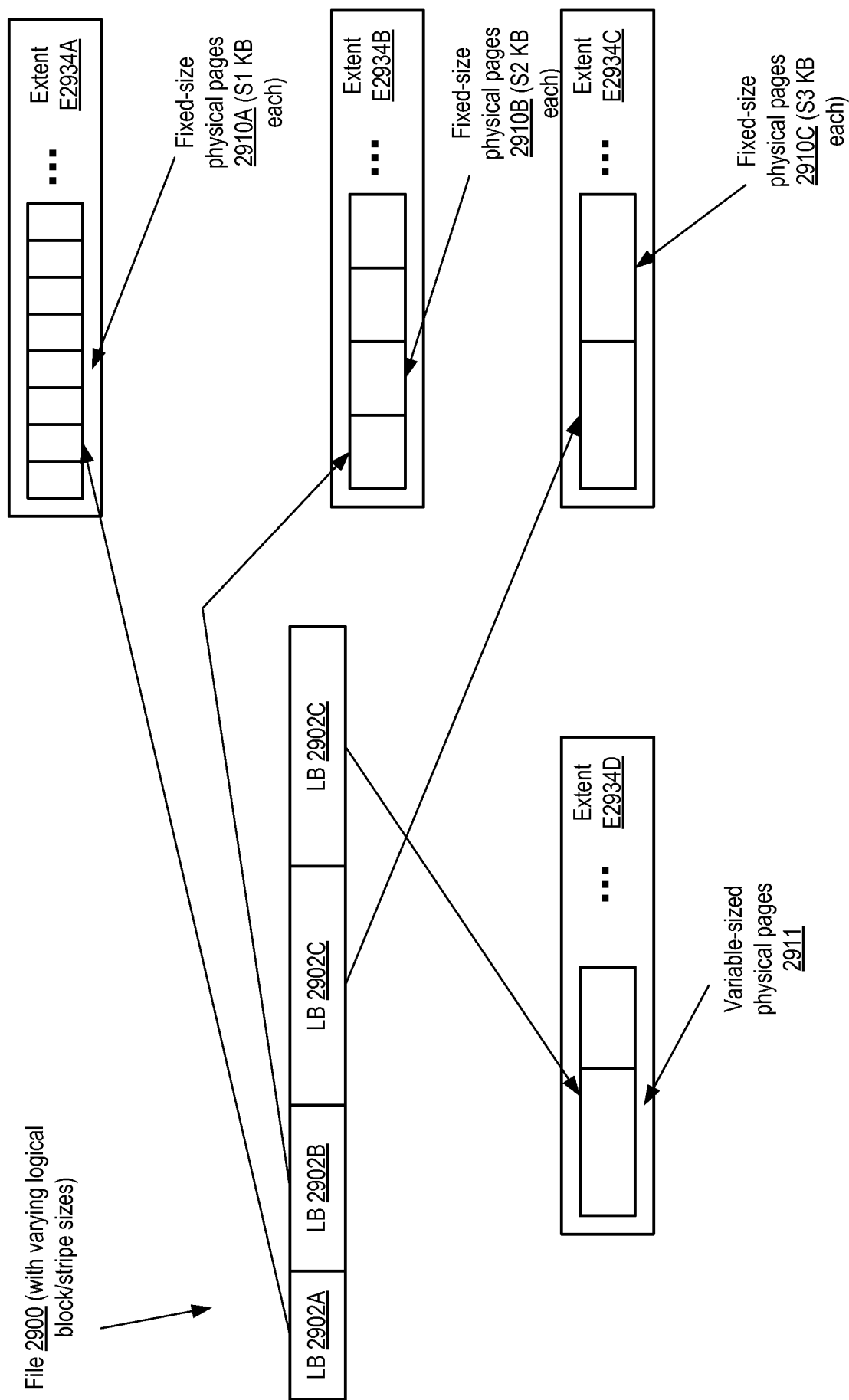


FIG. 29

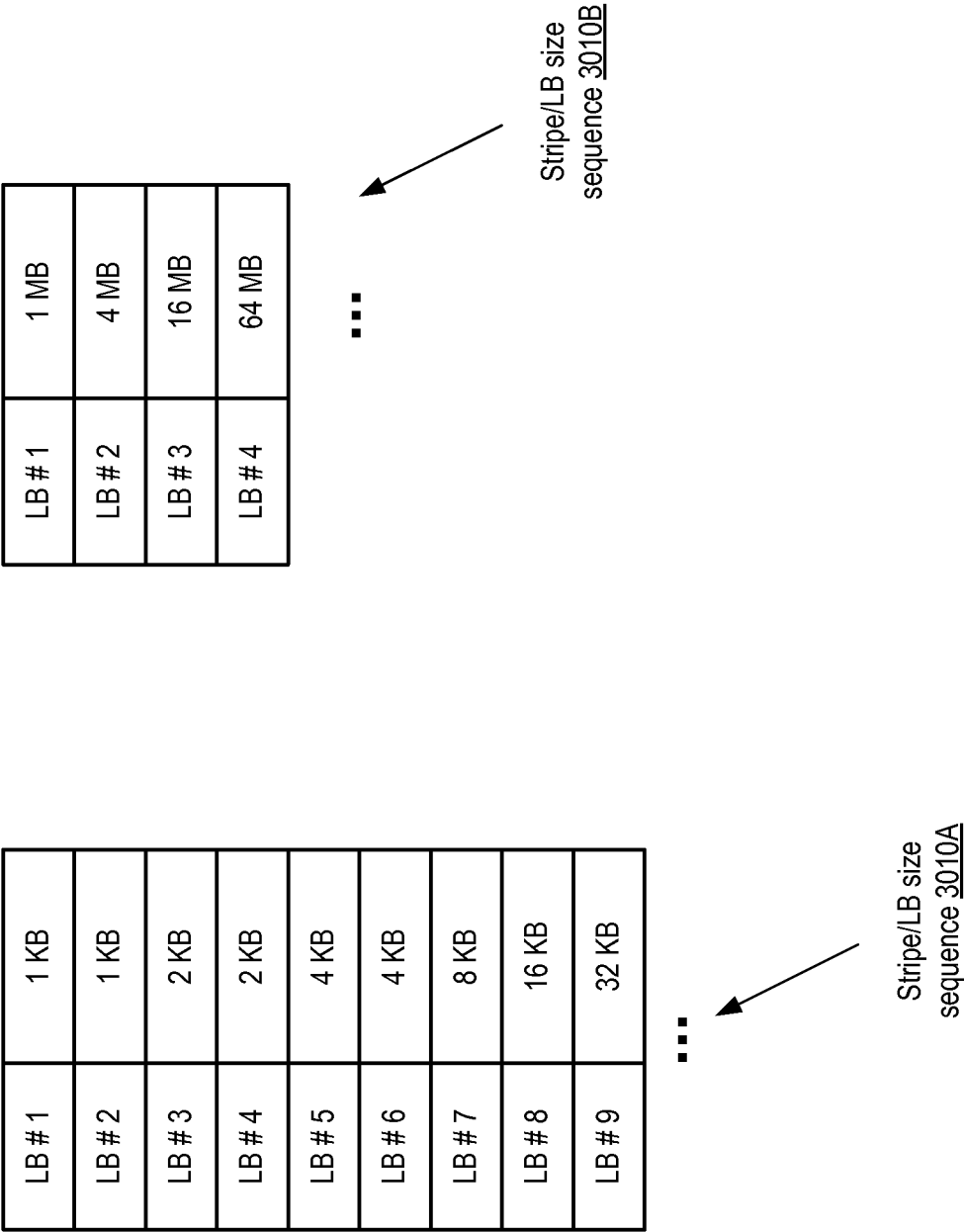


FIG. 30

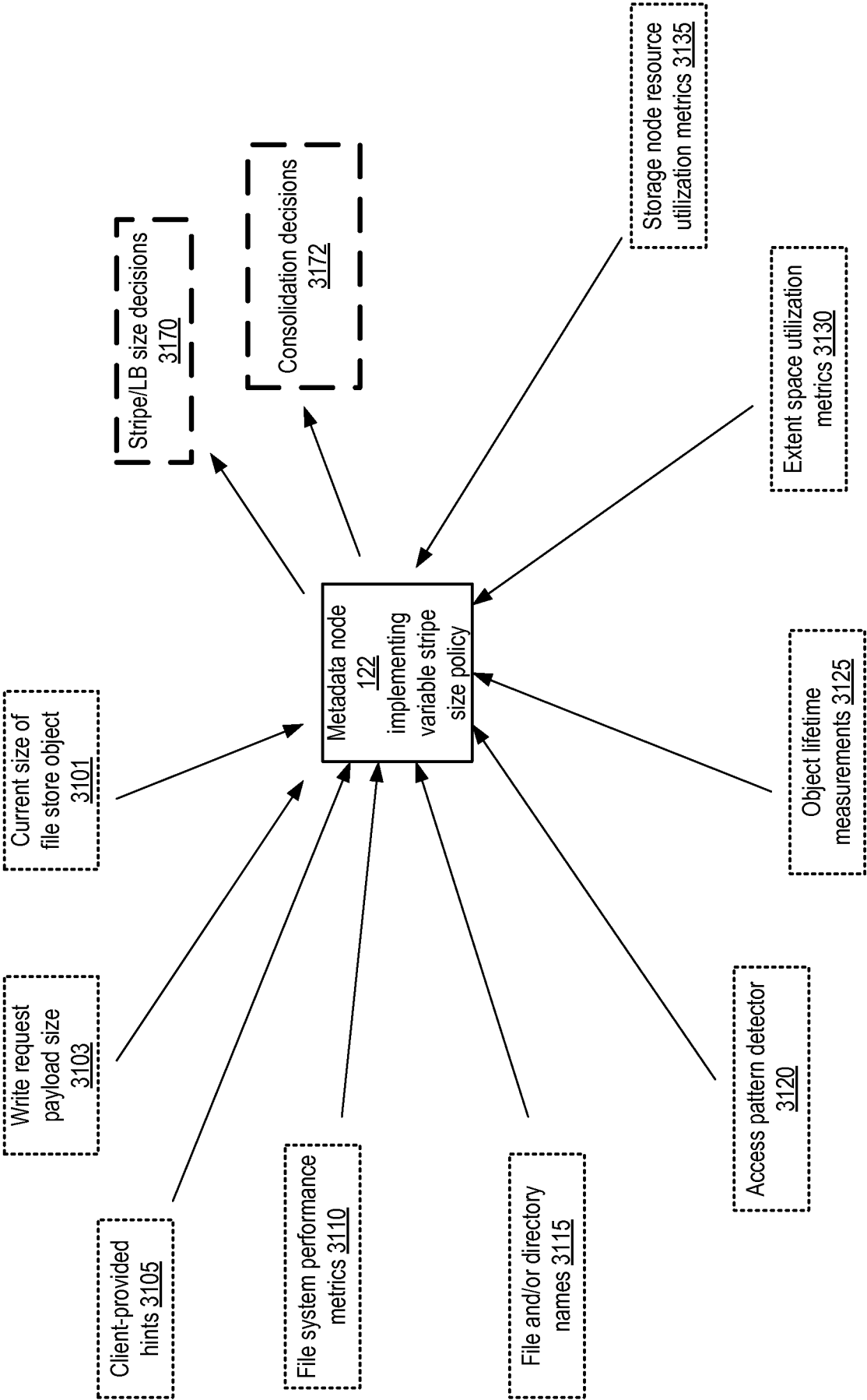


FIG. 31

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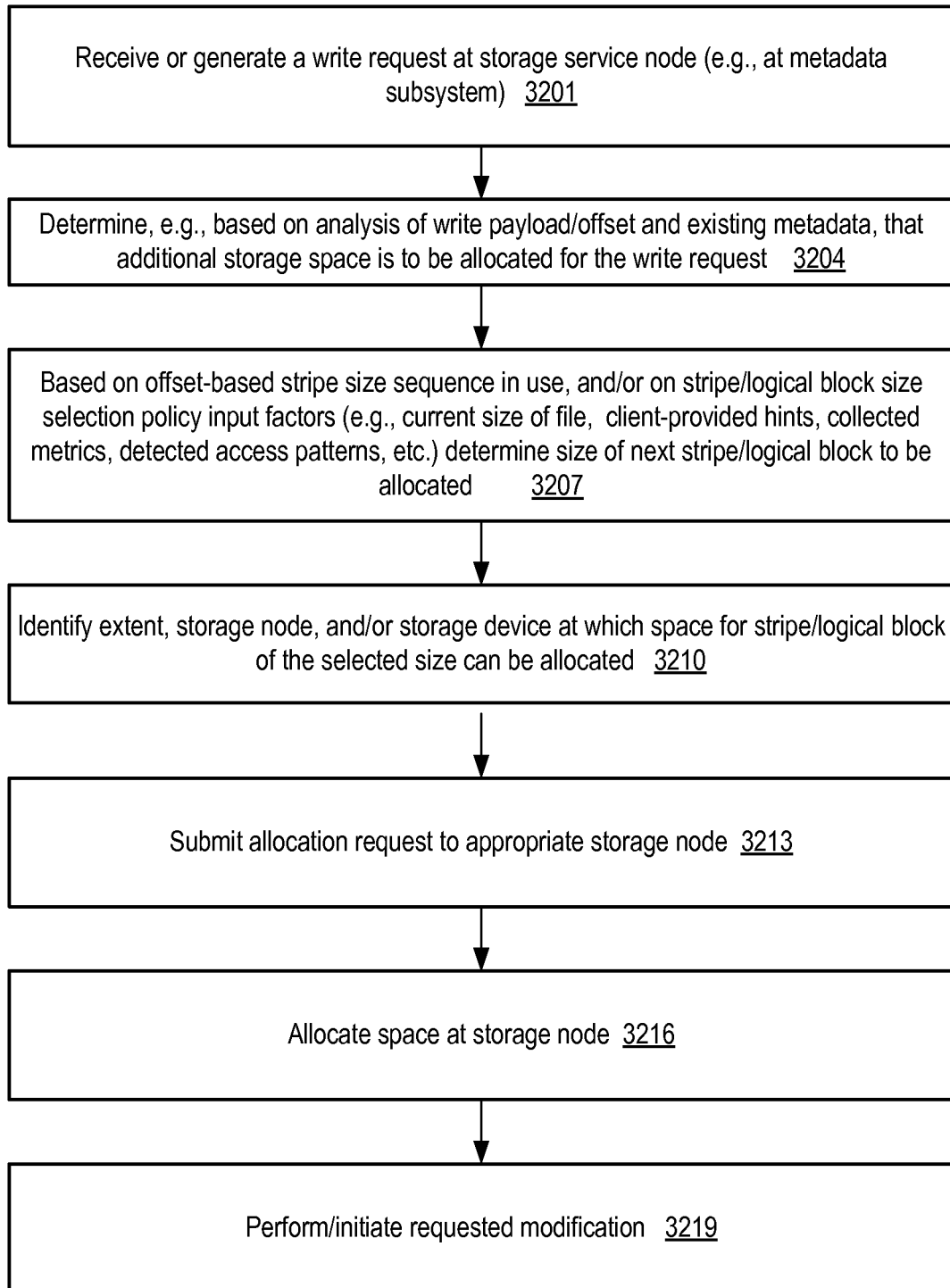


FIG. 32

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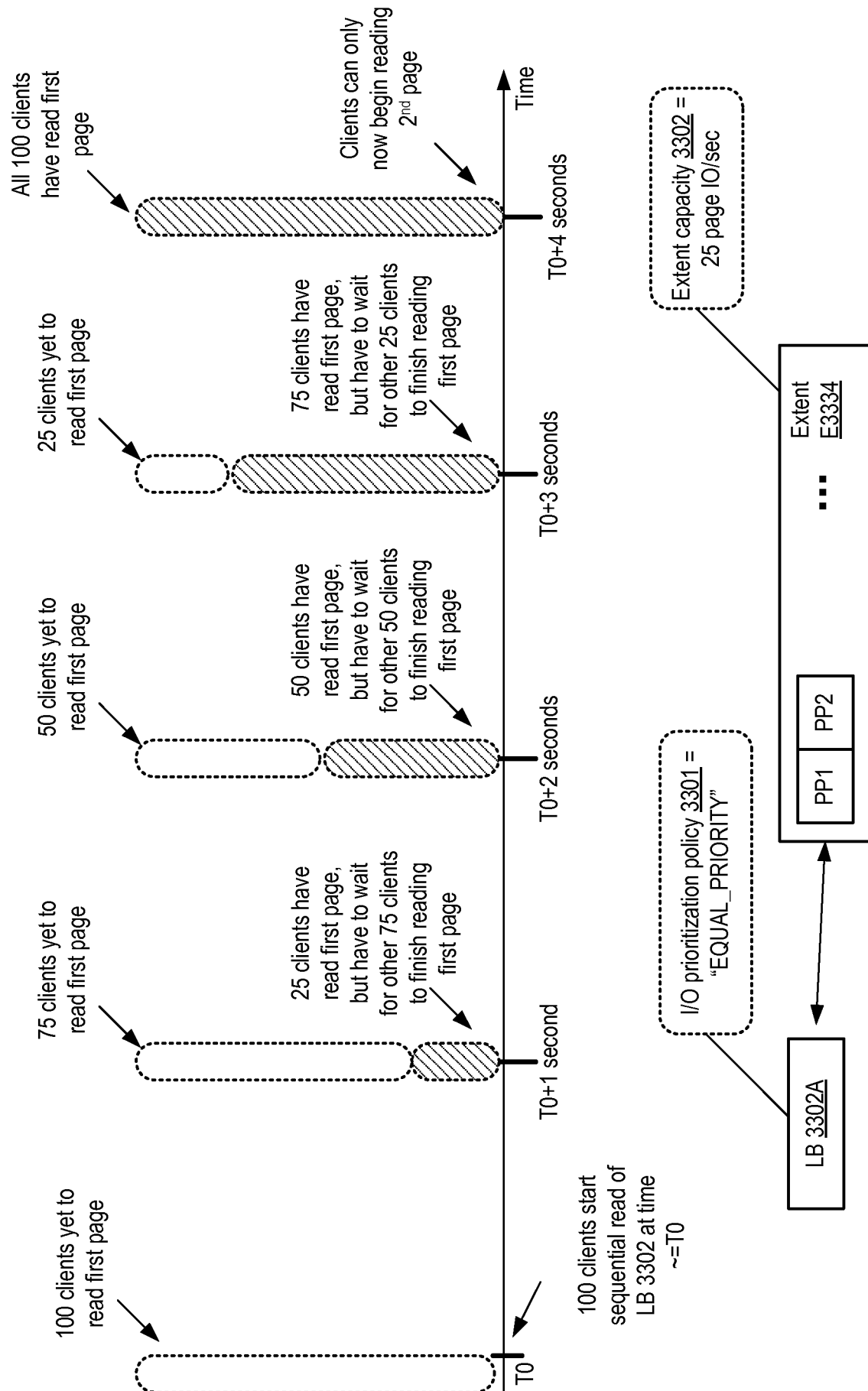


FIG. 33

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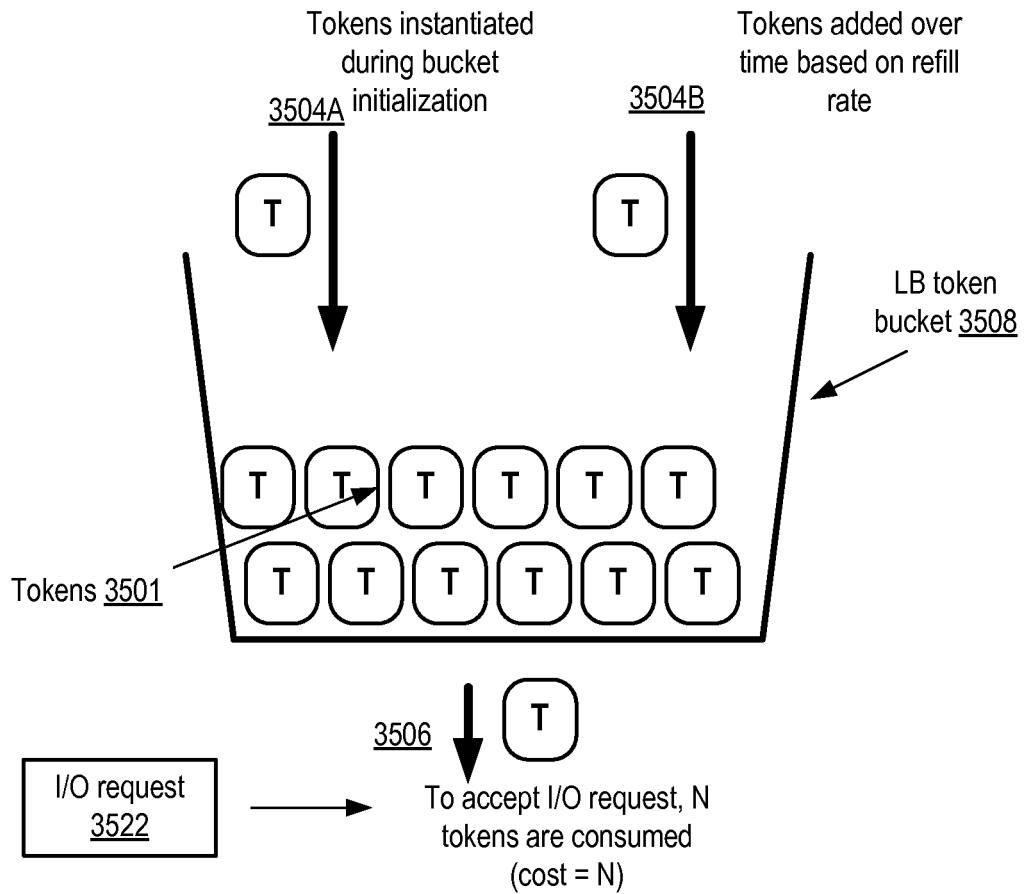
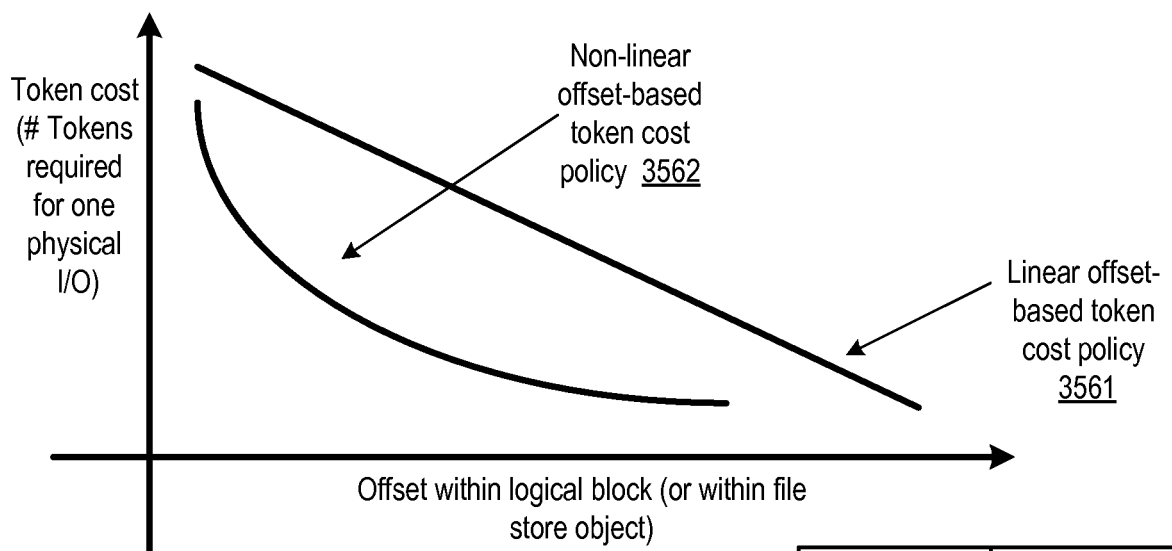


FIG. 35a



Token cost policy 3576

Offset	Tokens
0 – 64KB	10
64KB – 256KB	5
> 256KB	1

FIG. 35b

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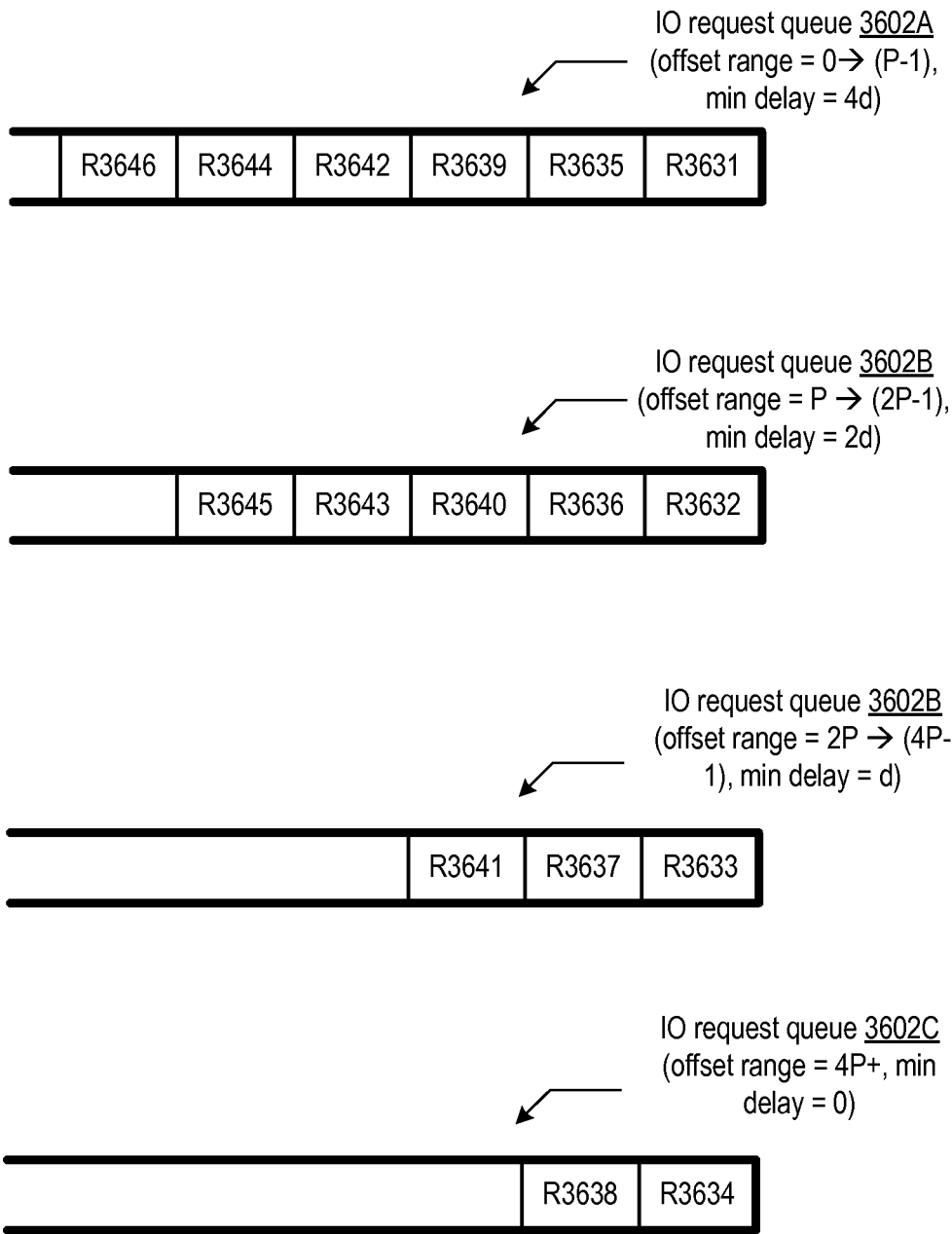


FIG. 36

3780

Content type <u>3702</u>	I/O type <u>3704</u>	Access pattern <u>3706</u>	I/O payload size <u>3708</u>	Object size <u>3710</u>	Congestion control parameter settings <u>3710</u>
Metadata	Read	Sequential	< 4KB	0 to S1 MB	Offset-dependent priority, linear
Metadata	Write	Random	Any	Any	Equal priority
Data	Read	Sequential	> 64KB	> 128MB	Offset-dependent priority, exponential decay

...

FIG. 37

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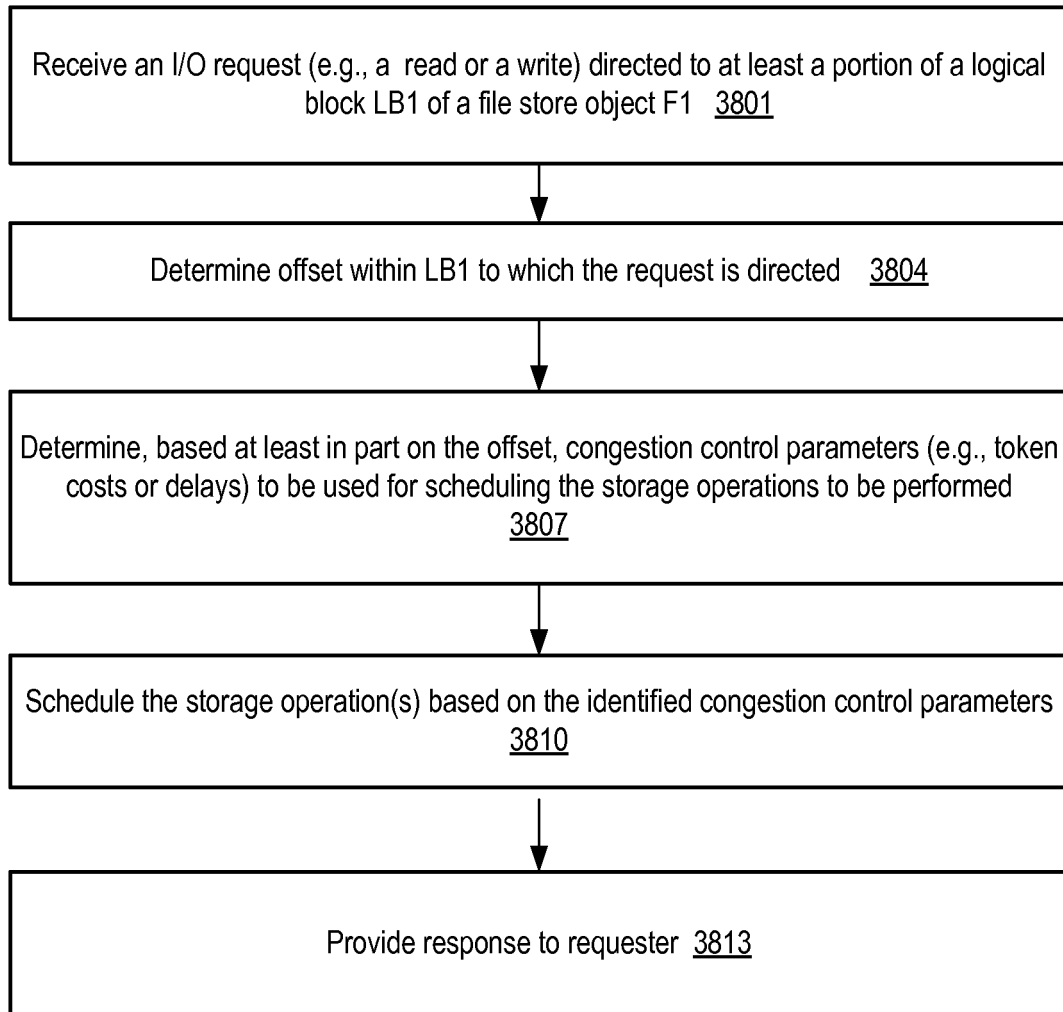


FIG. 38

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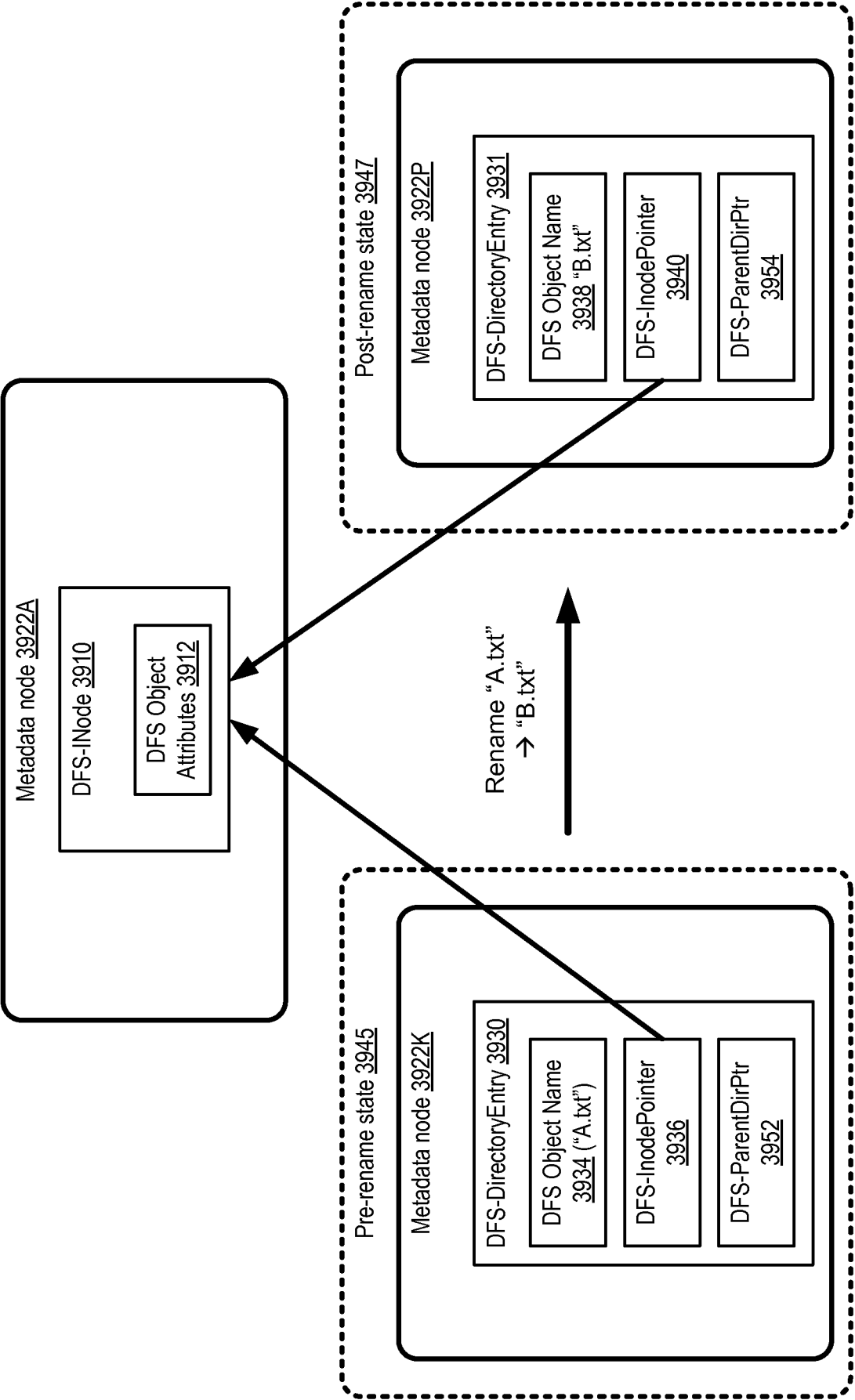


FIG. 39

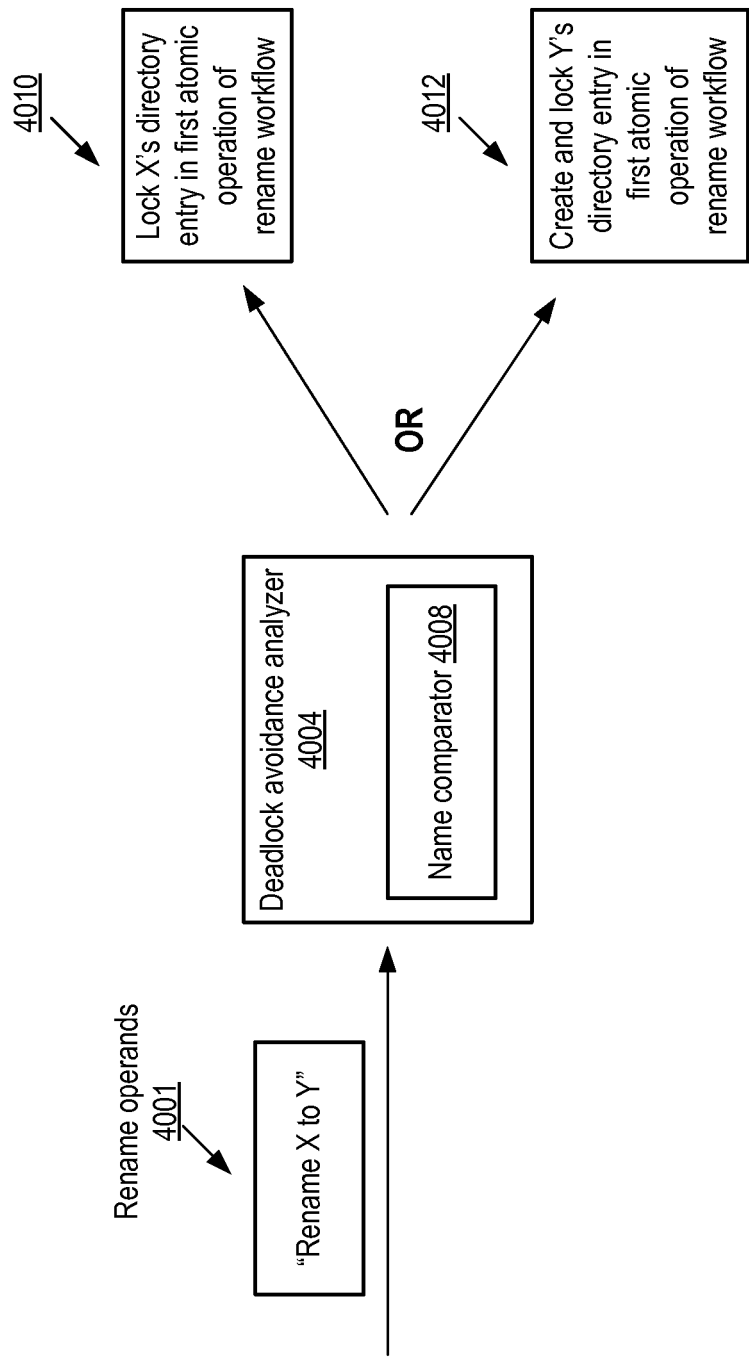


FIG. 40

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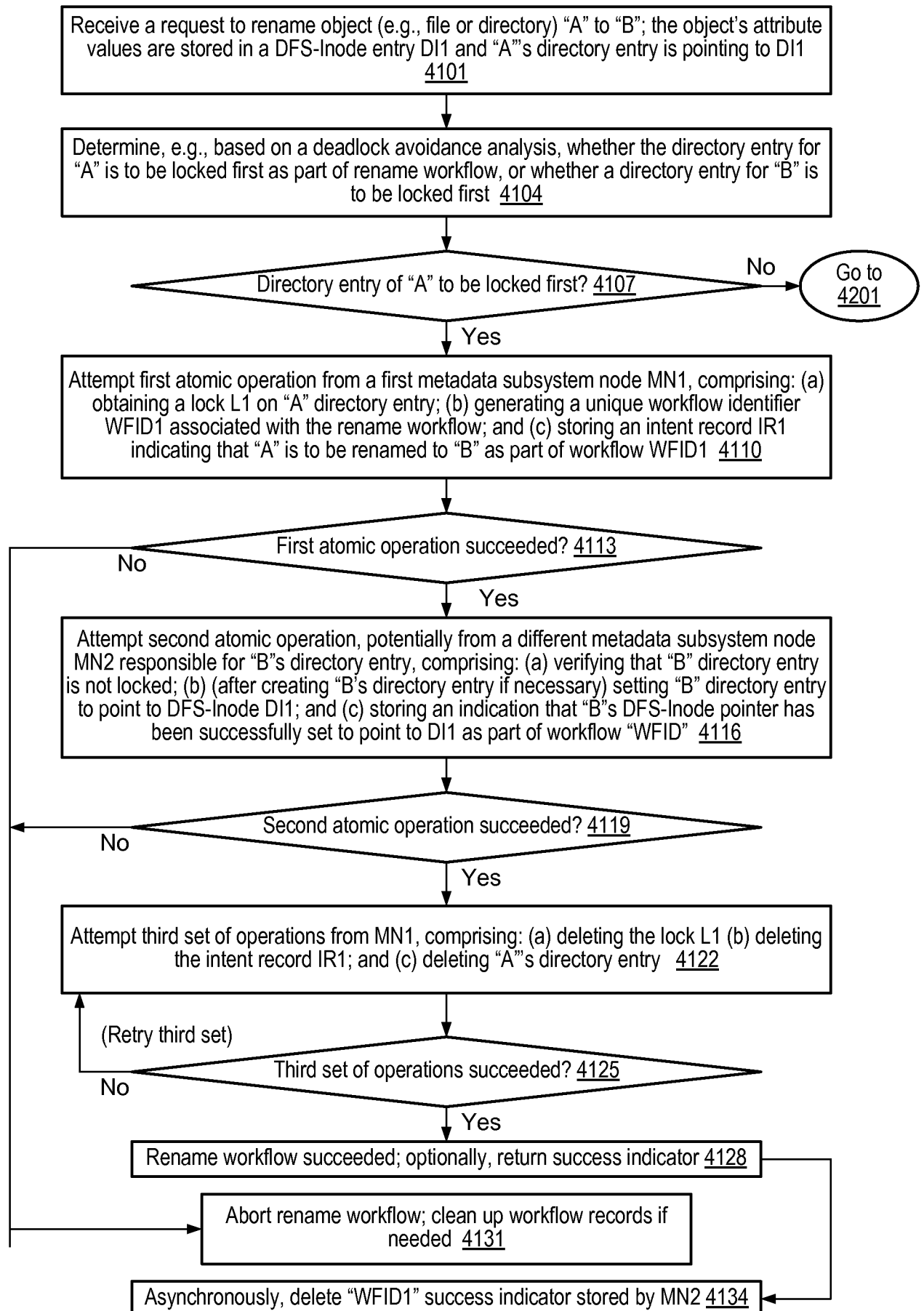


FIG. 41

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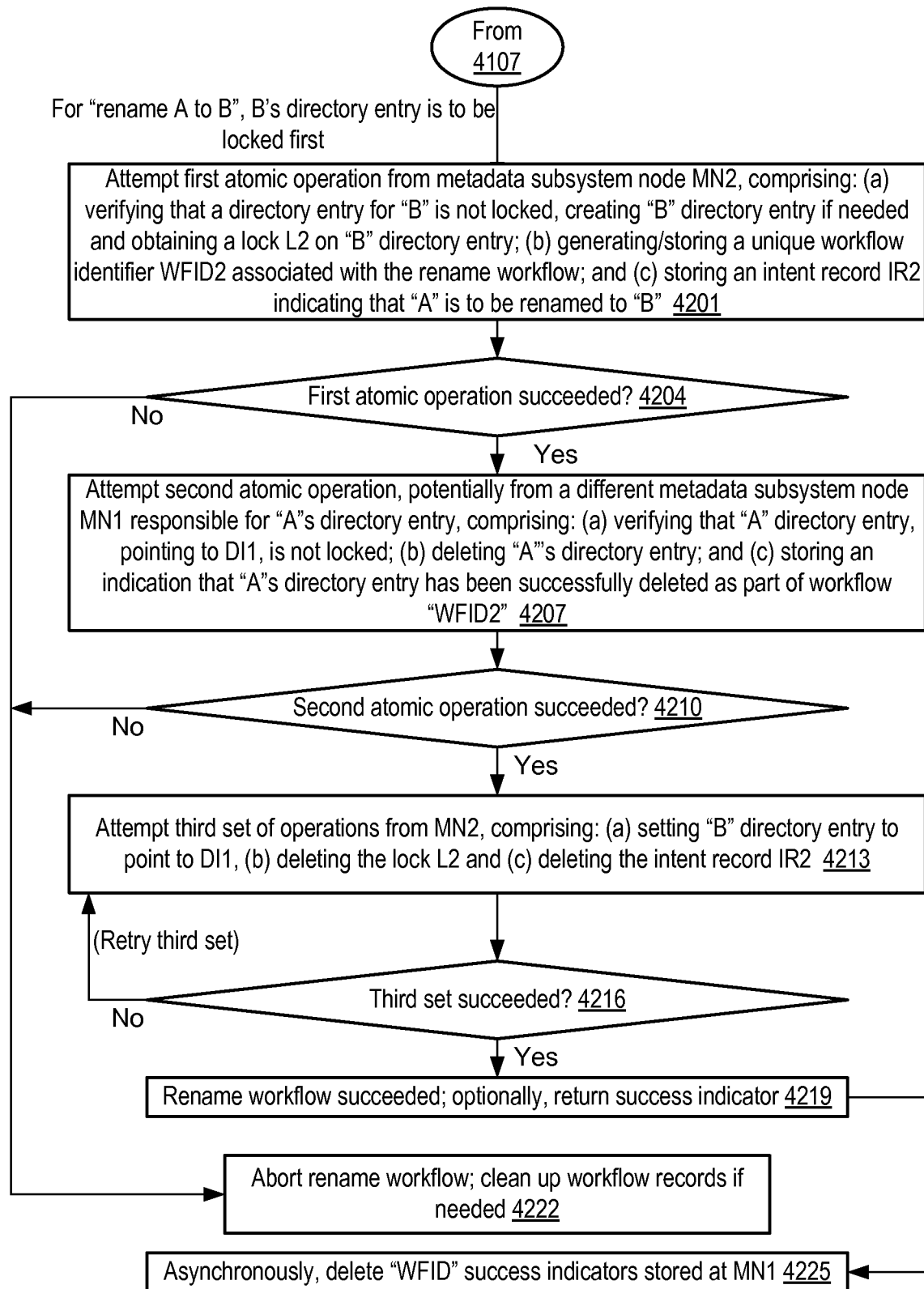


FIG. 42

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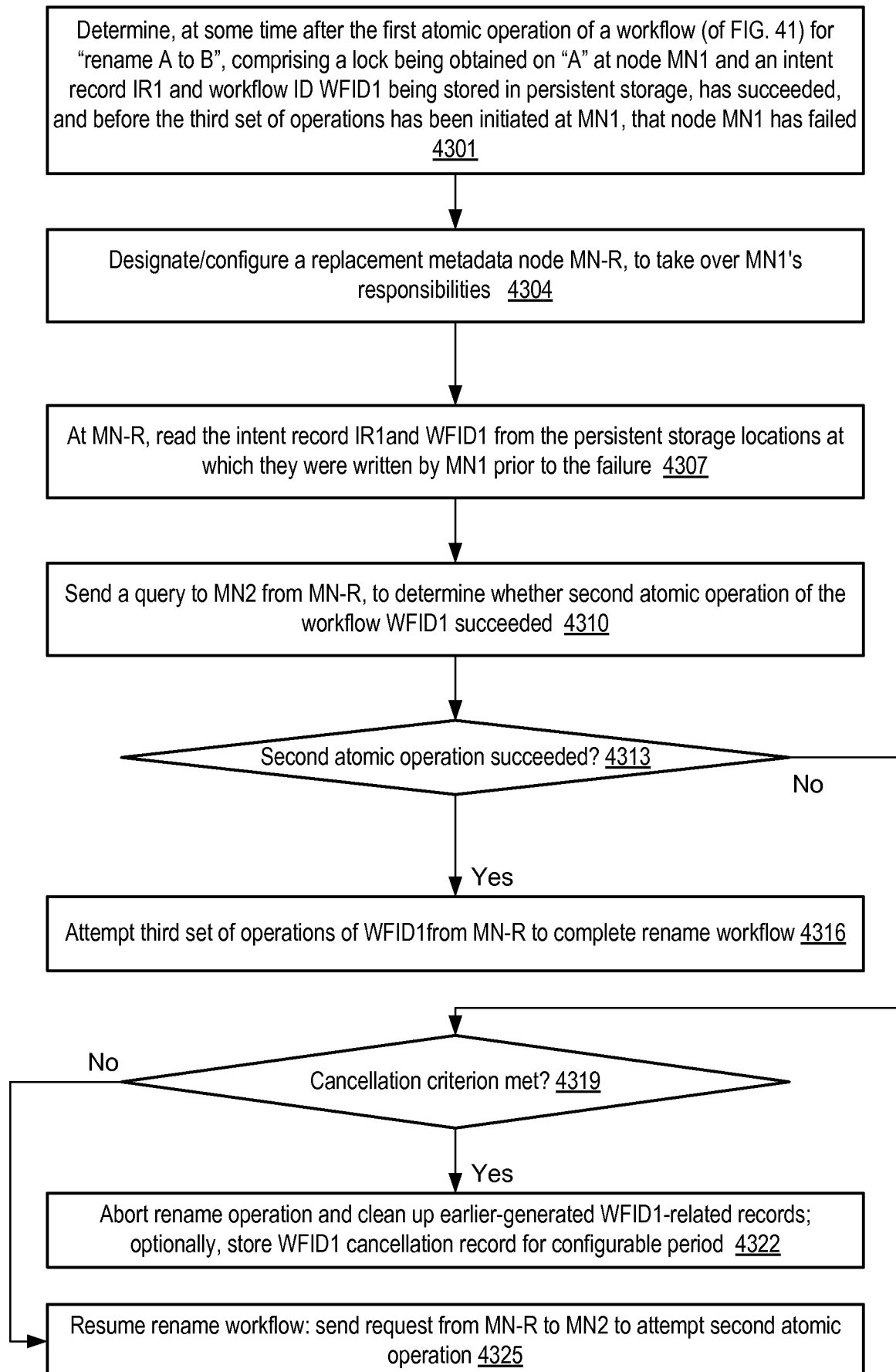


FIG. 43

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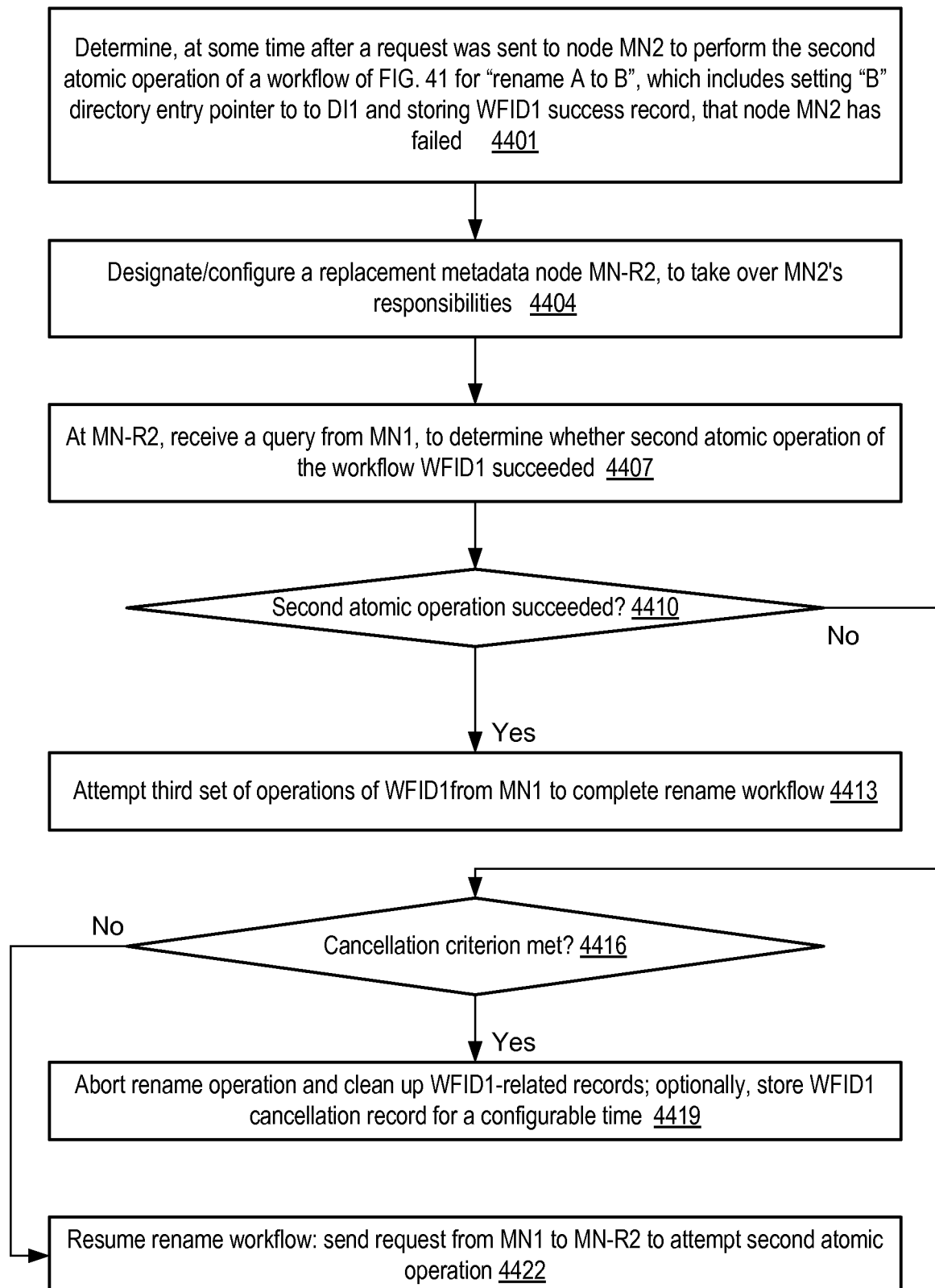
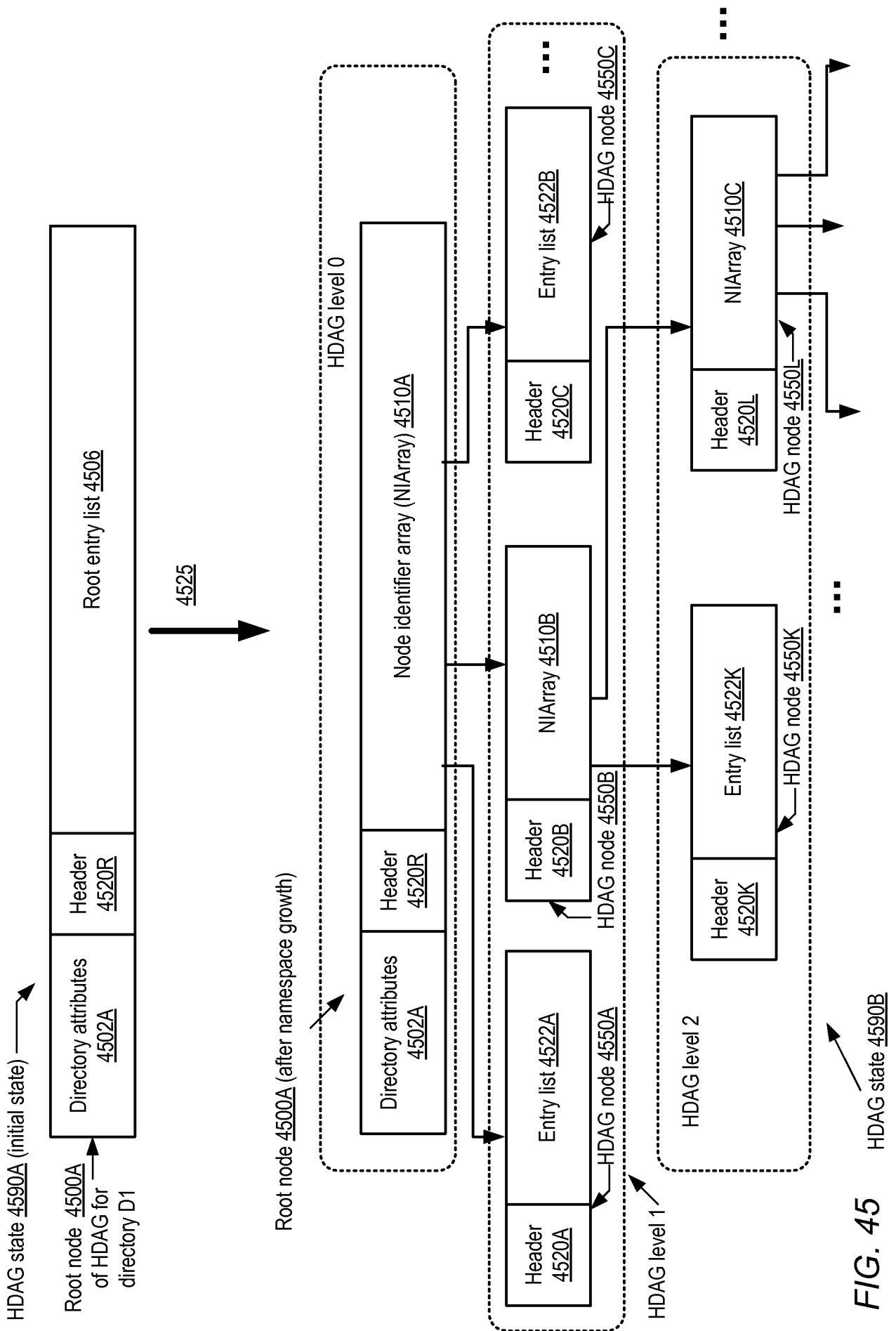


FIG. 44

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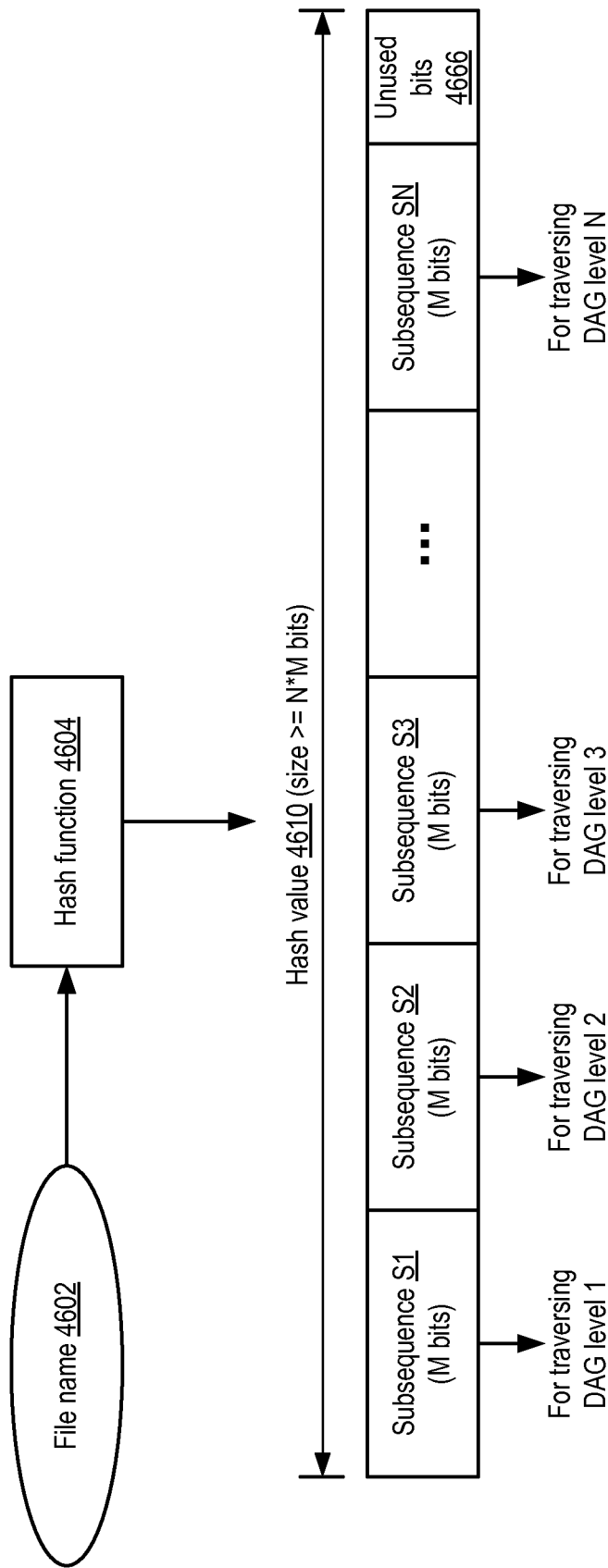


FIG. 46

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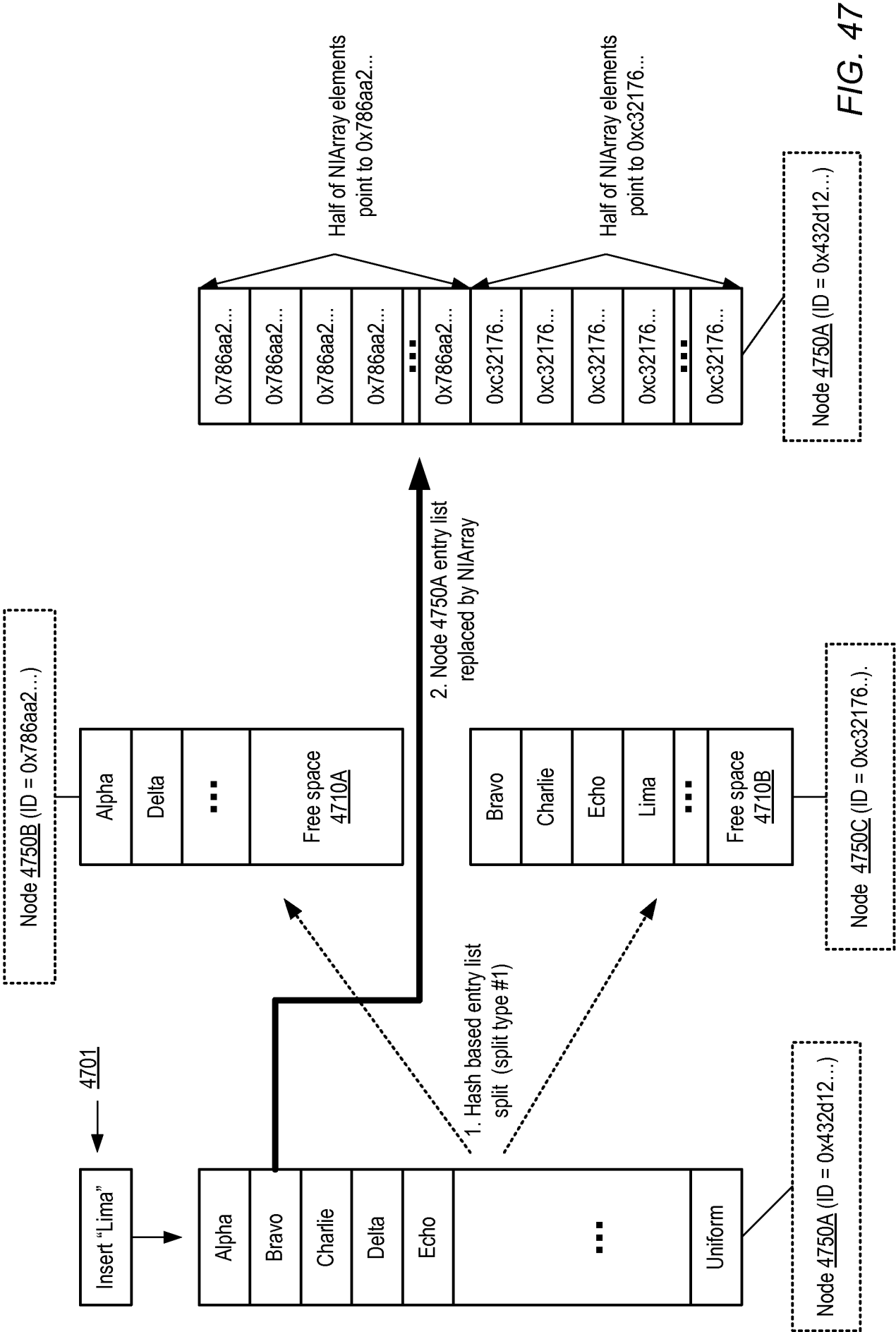
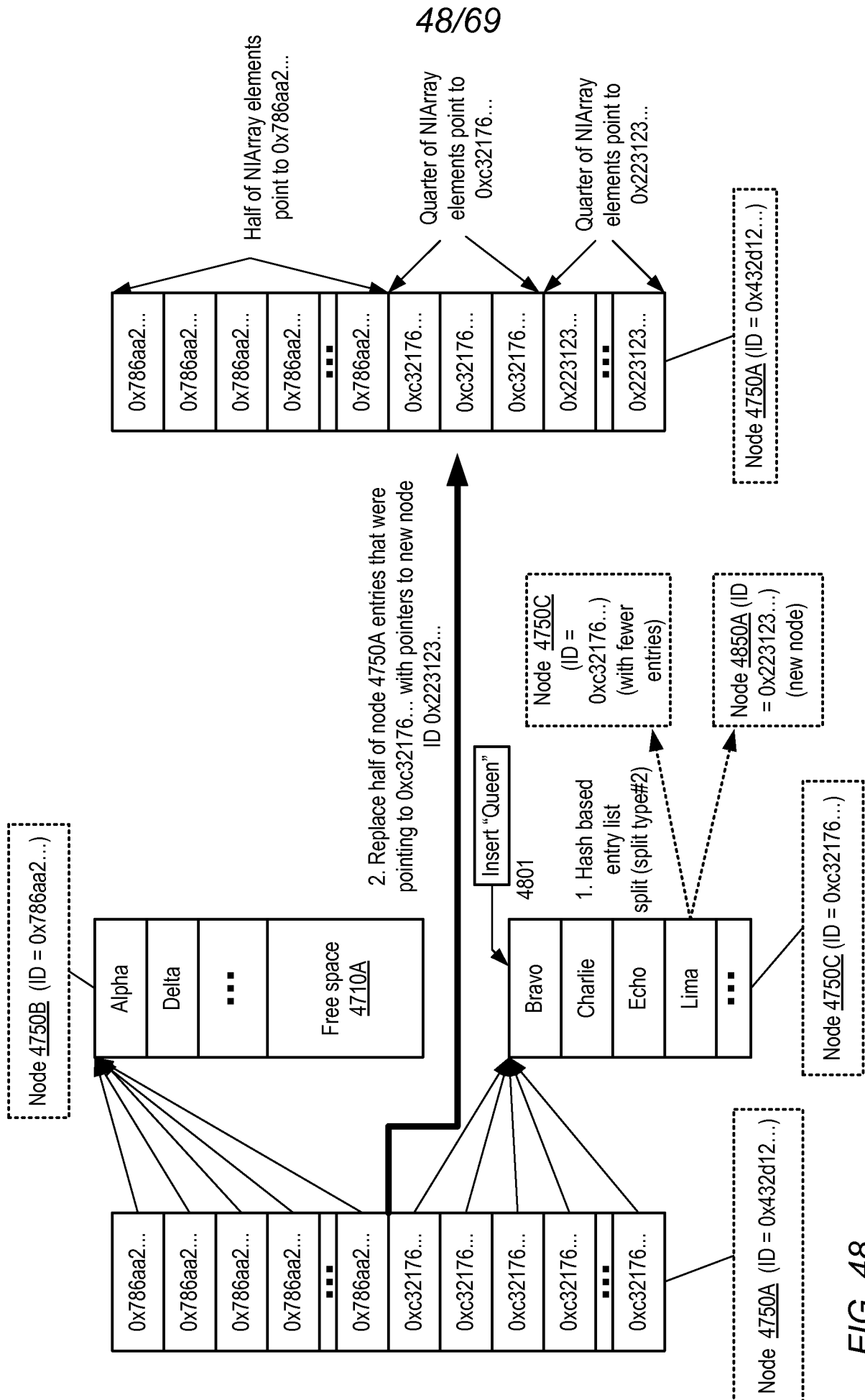
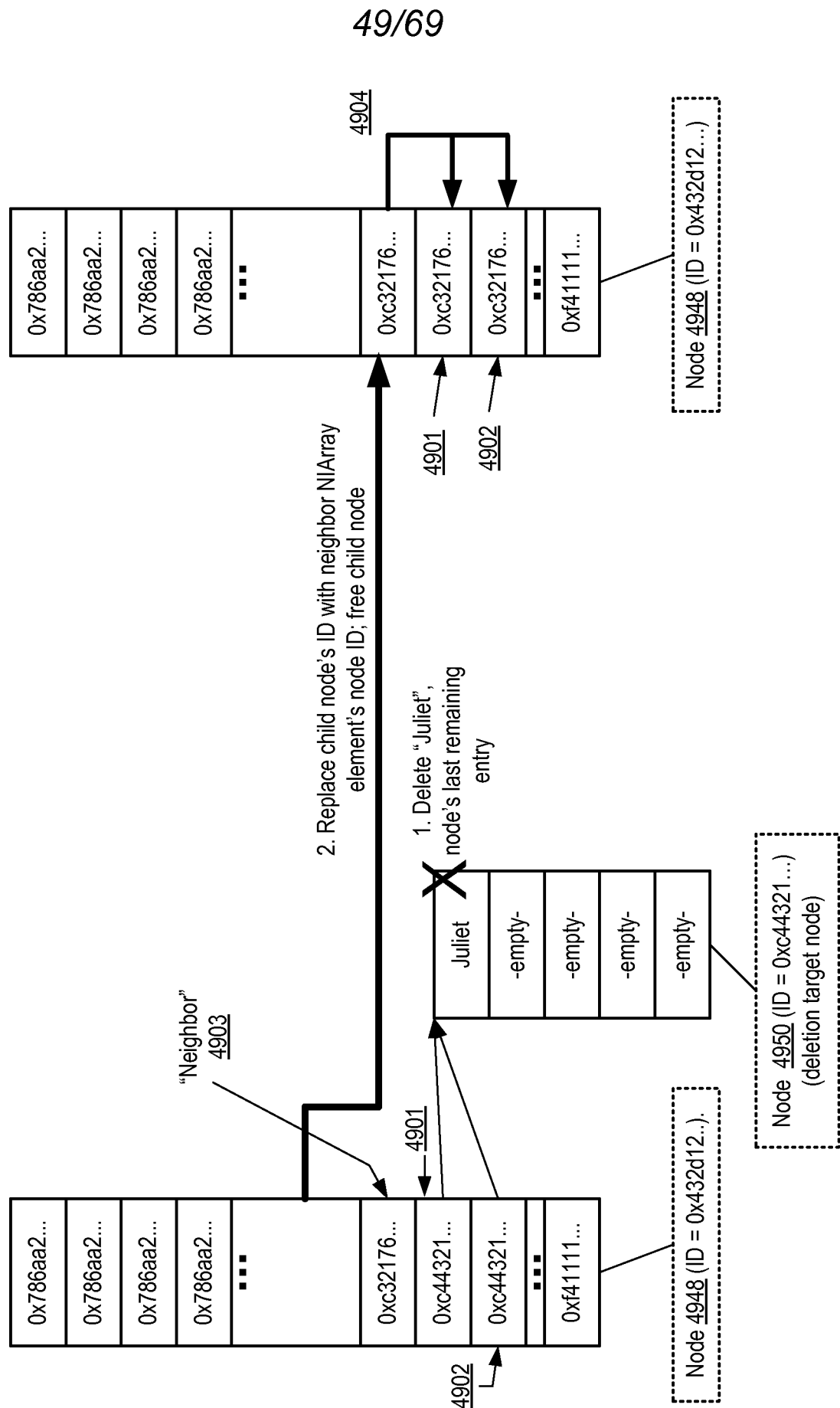


FIG. 47





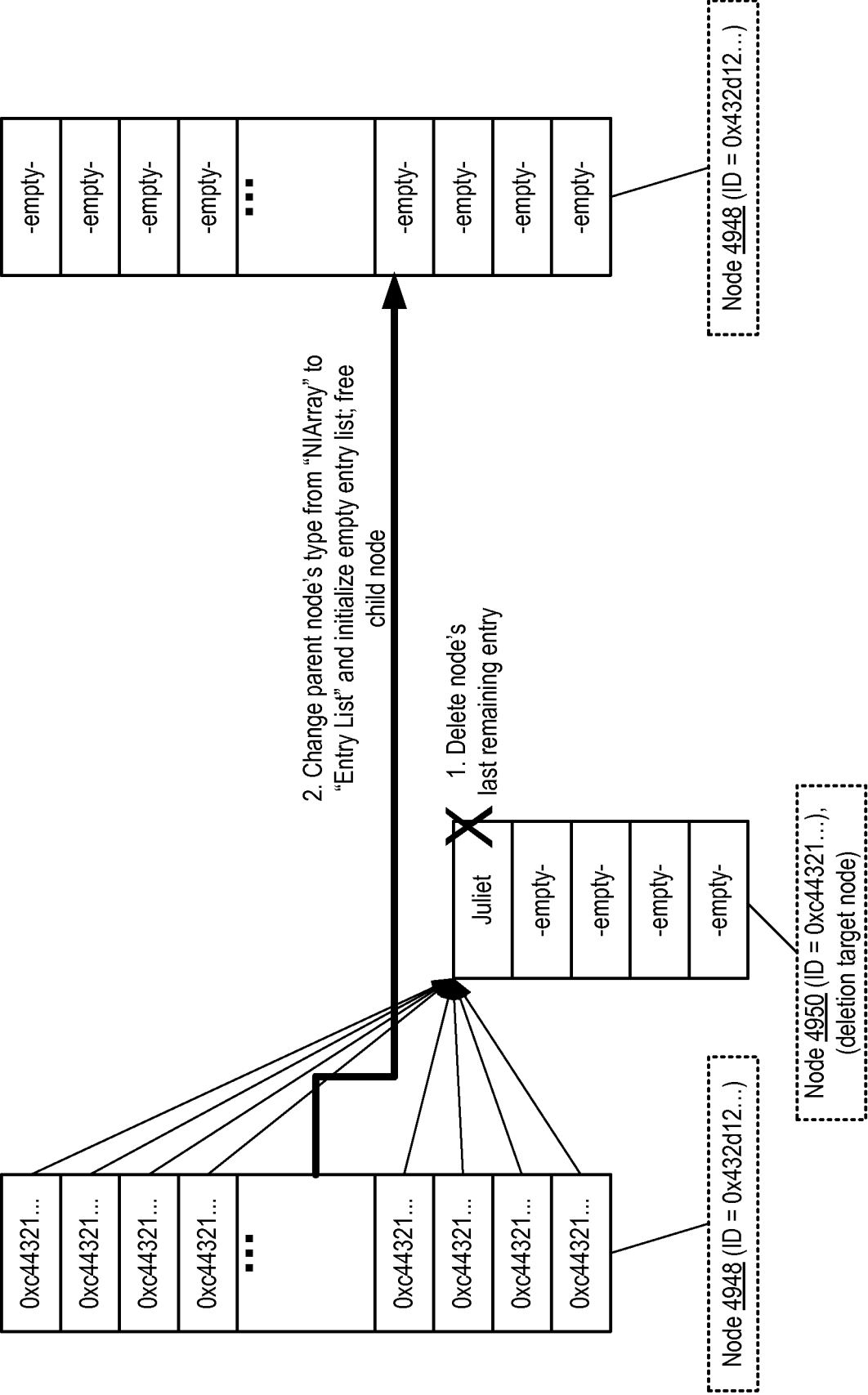


FIG. 50

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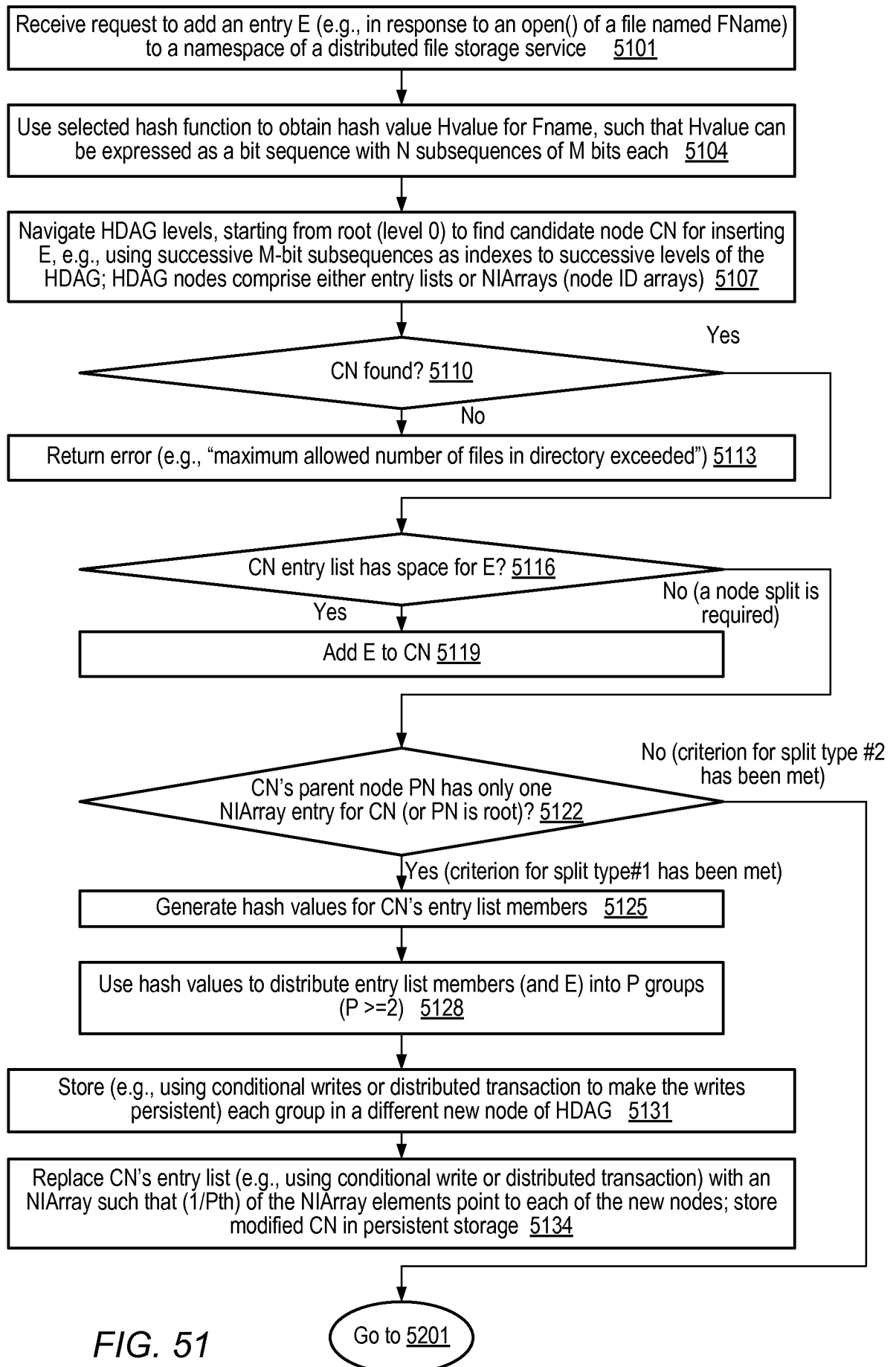


FIG. 51

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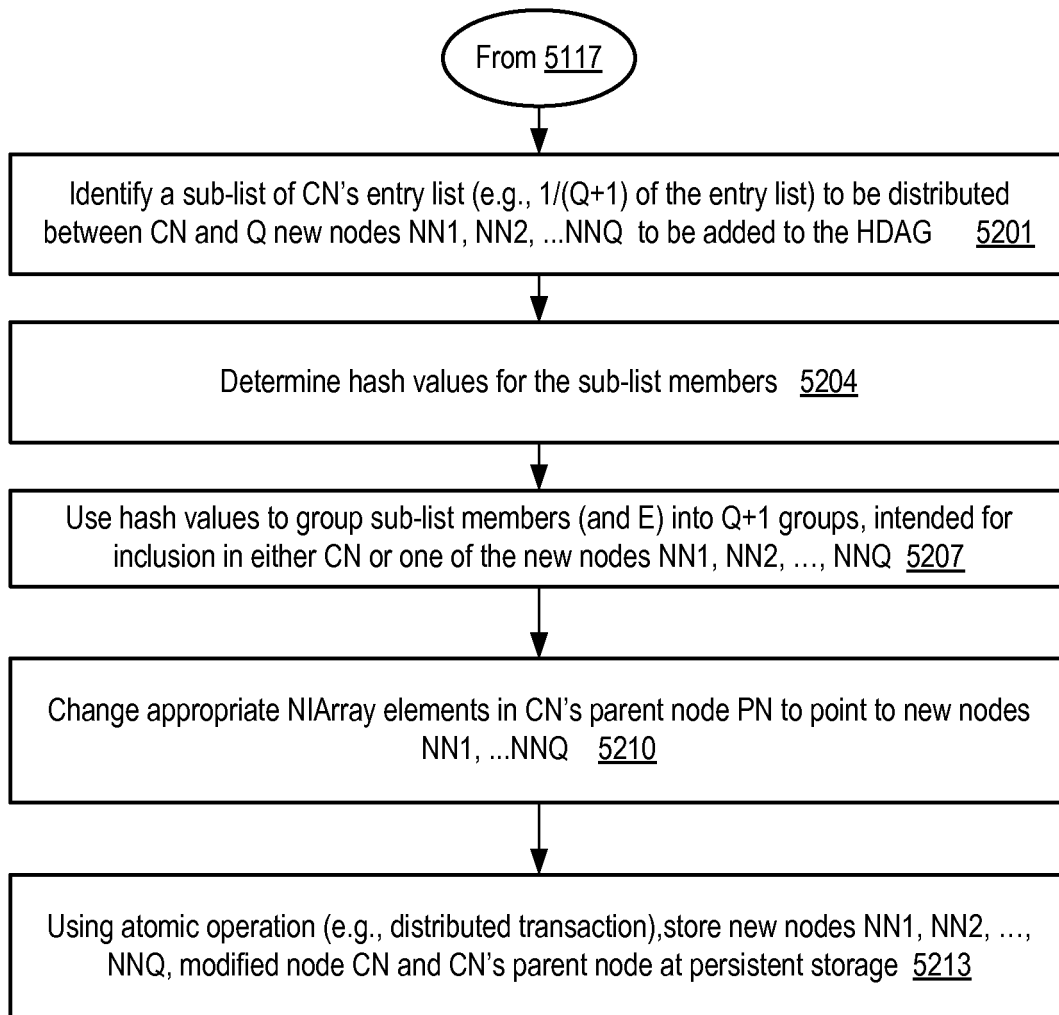


FIG. 52

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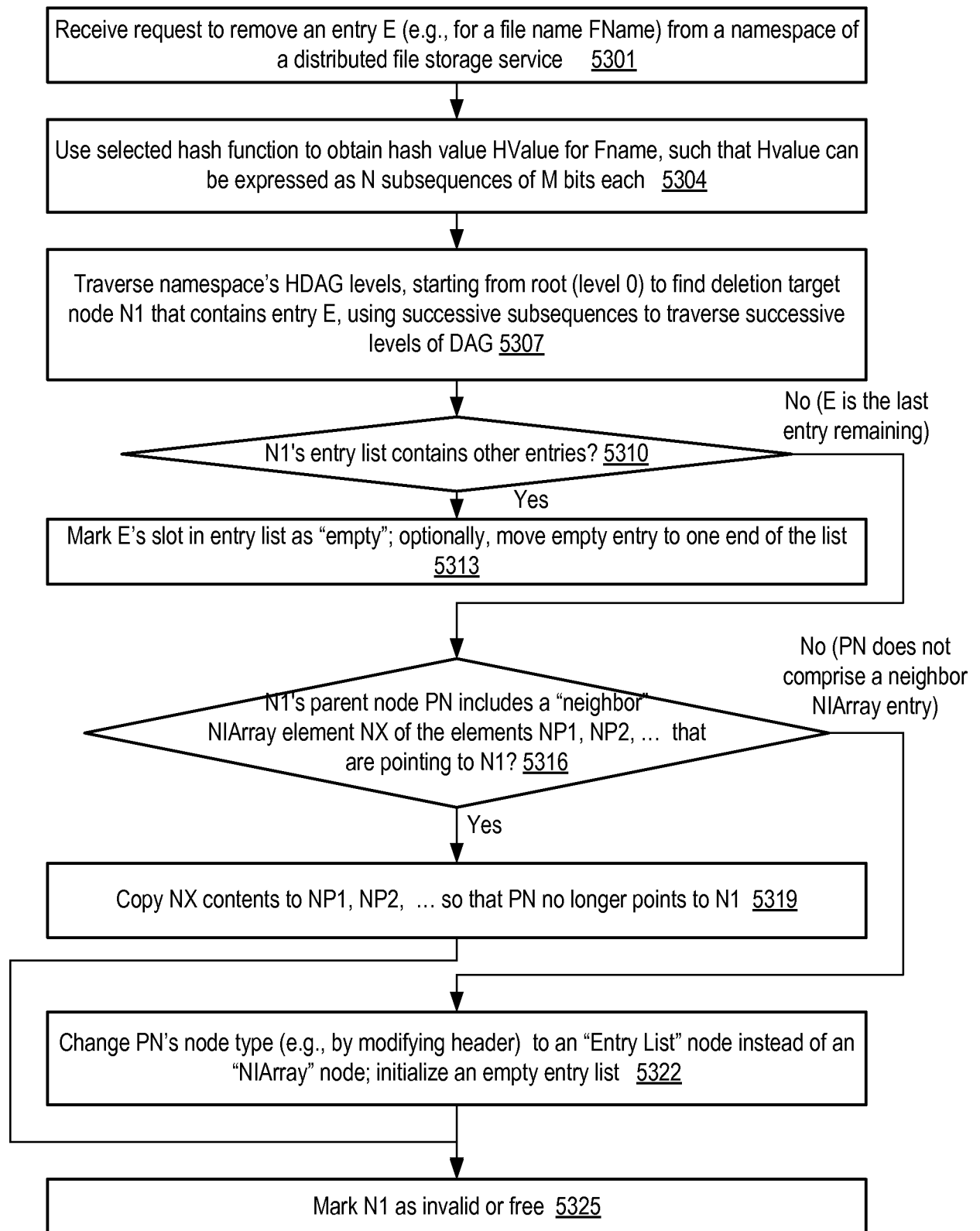


FIG. 53

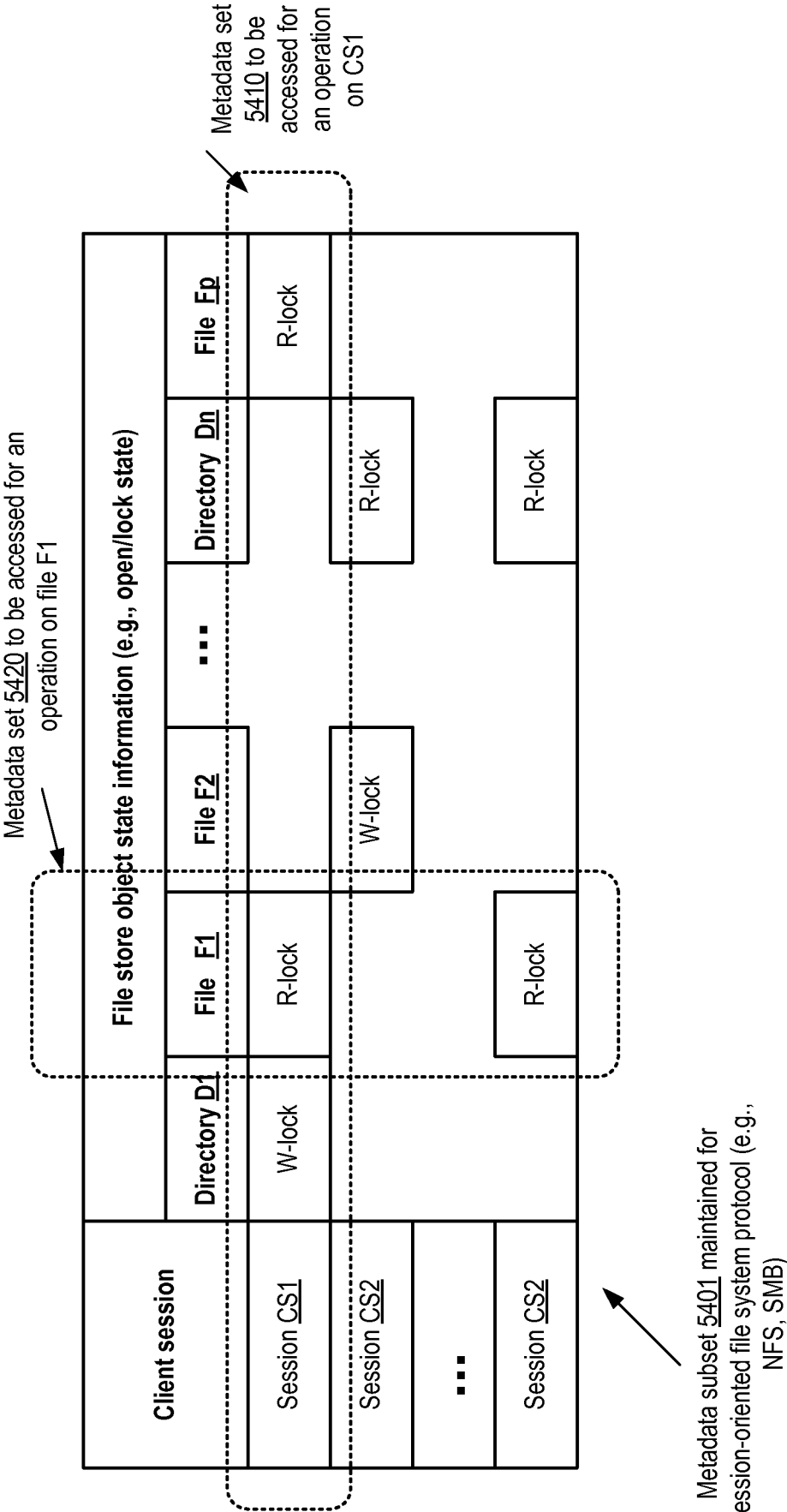


FIG. 54

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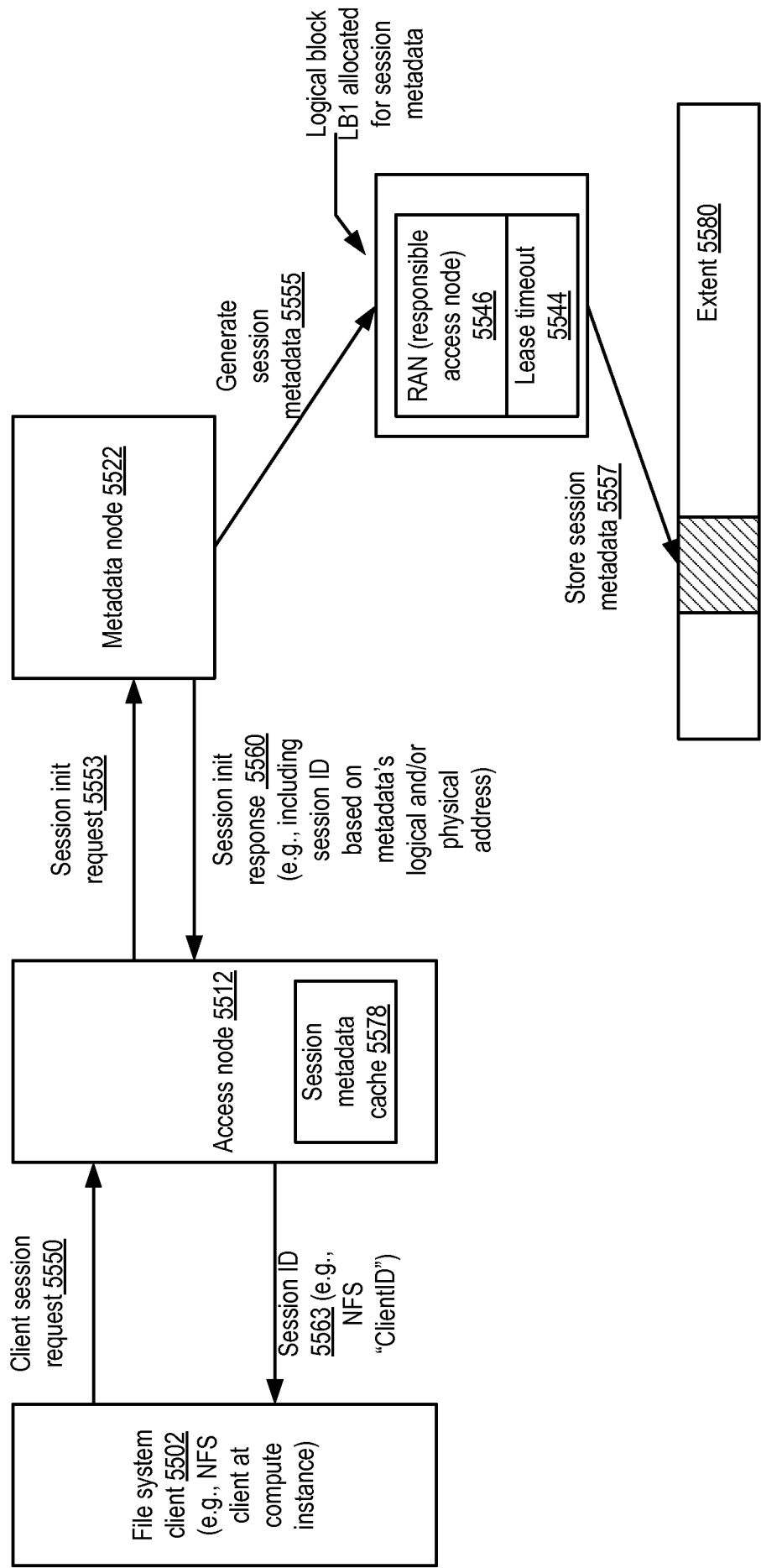


FIG. 55

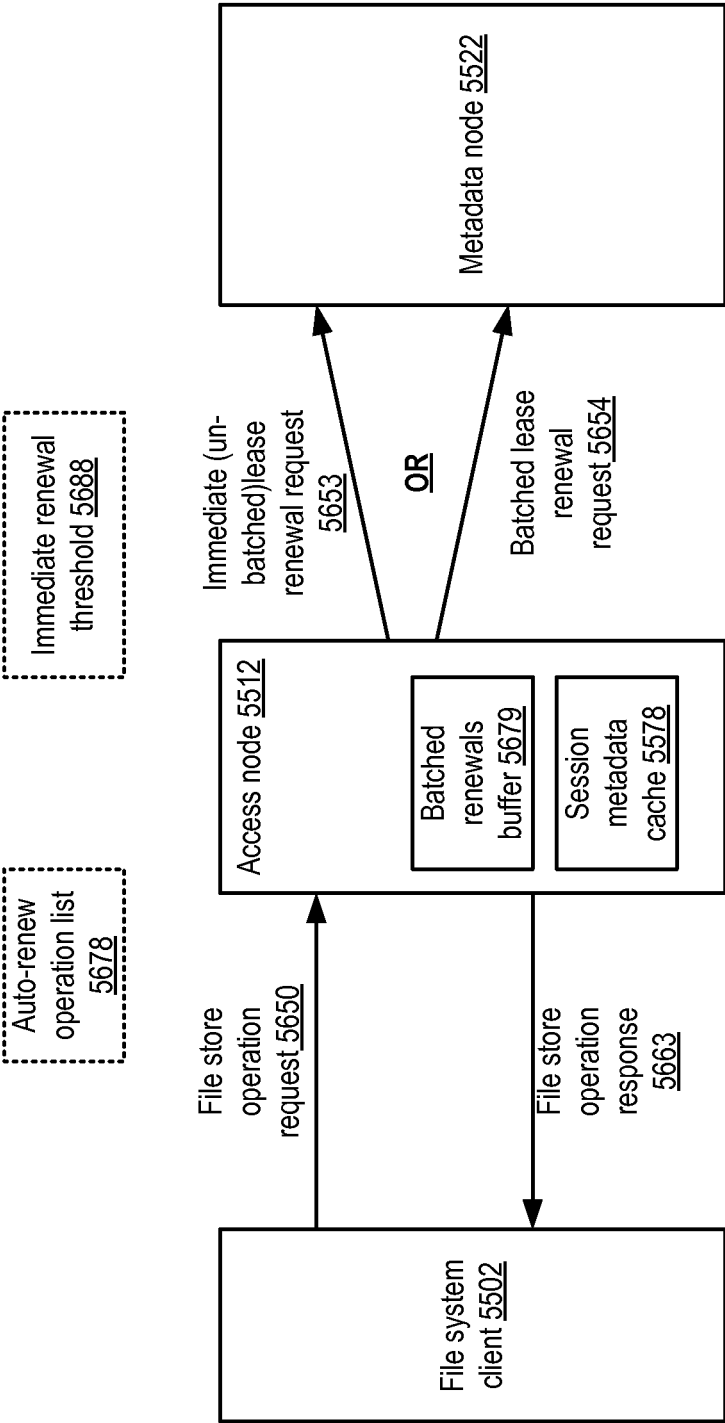


FIG. 56

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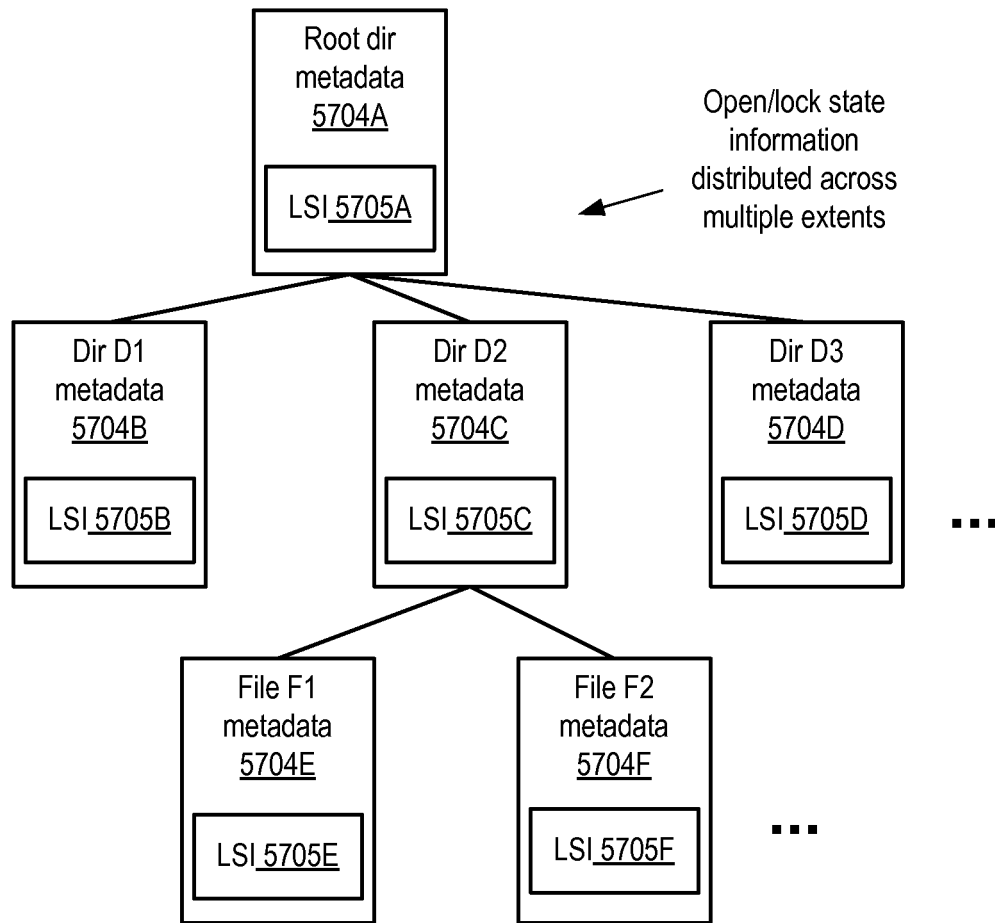


FIG. 57a

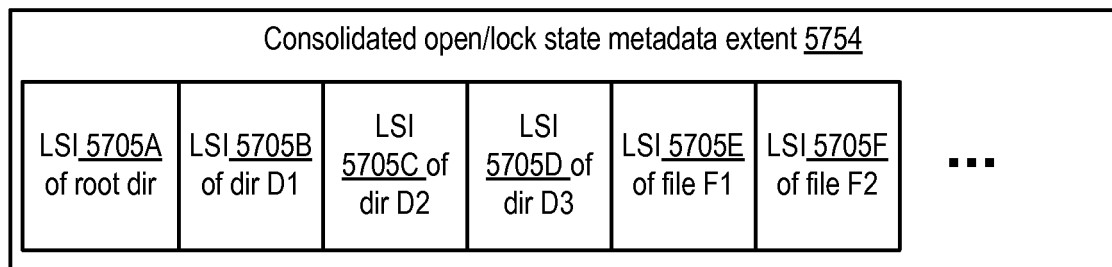


FIG. 57b

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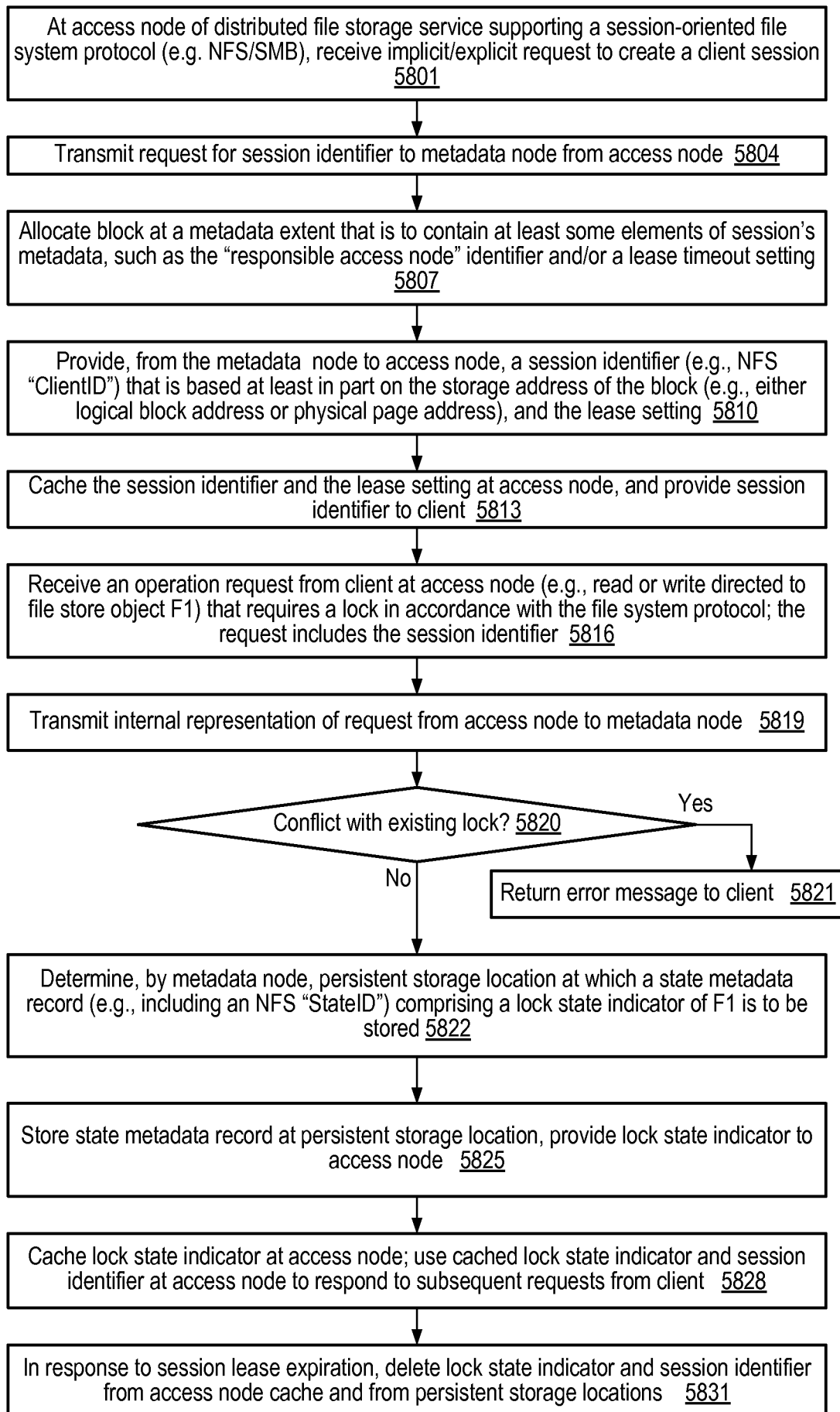


FIG. 58

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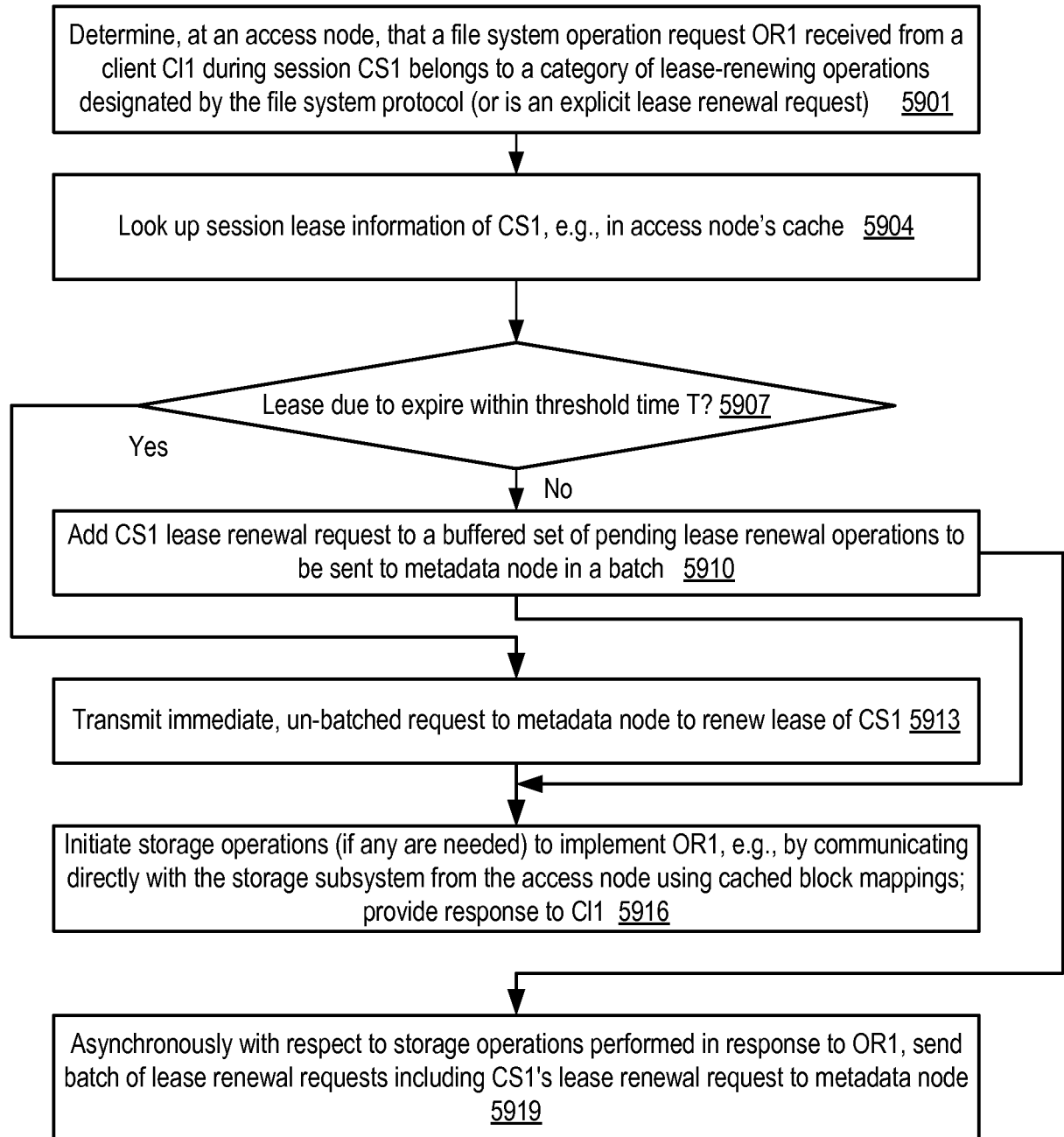


FIG. 59

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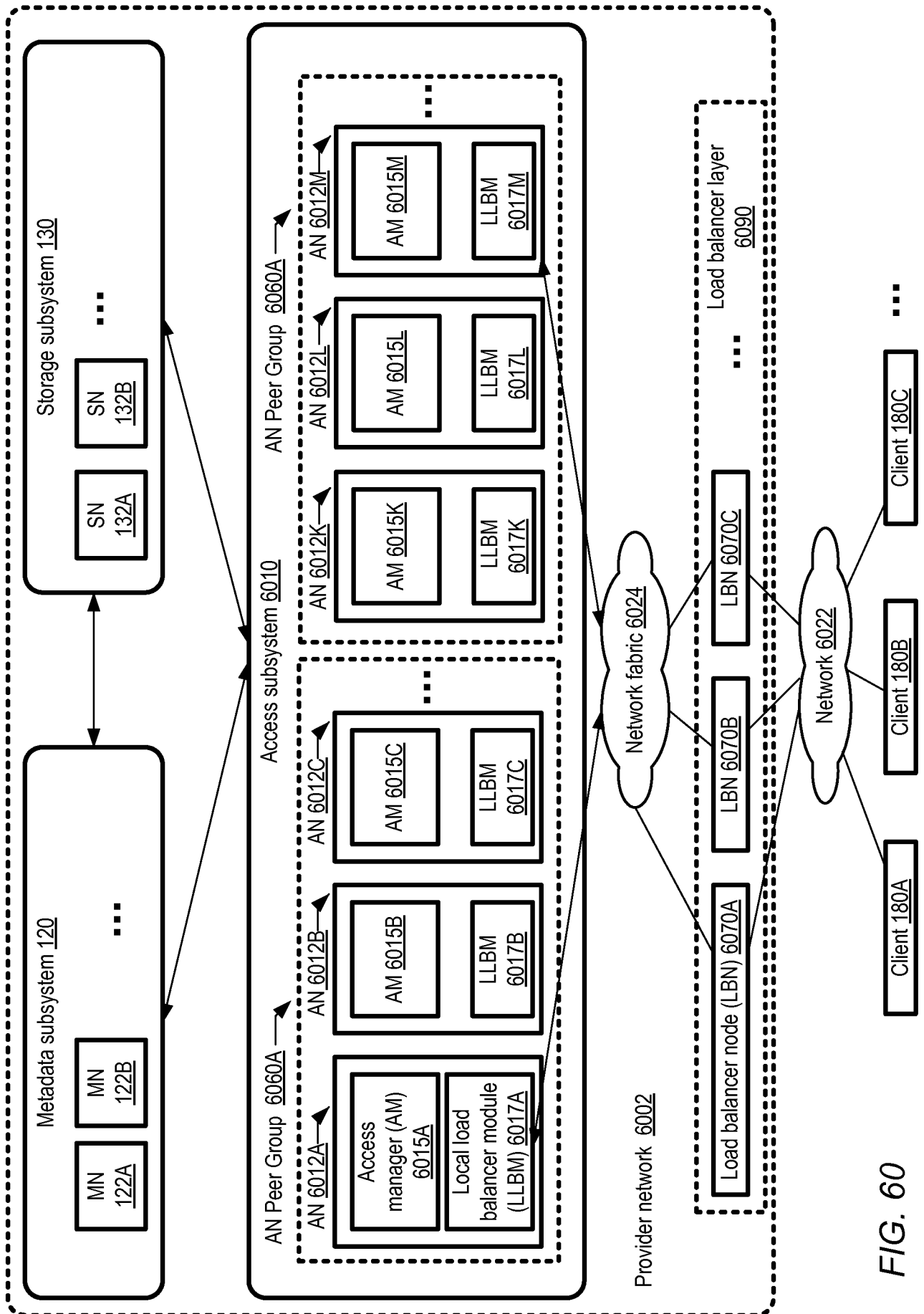


FIG. 60

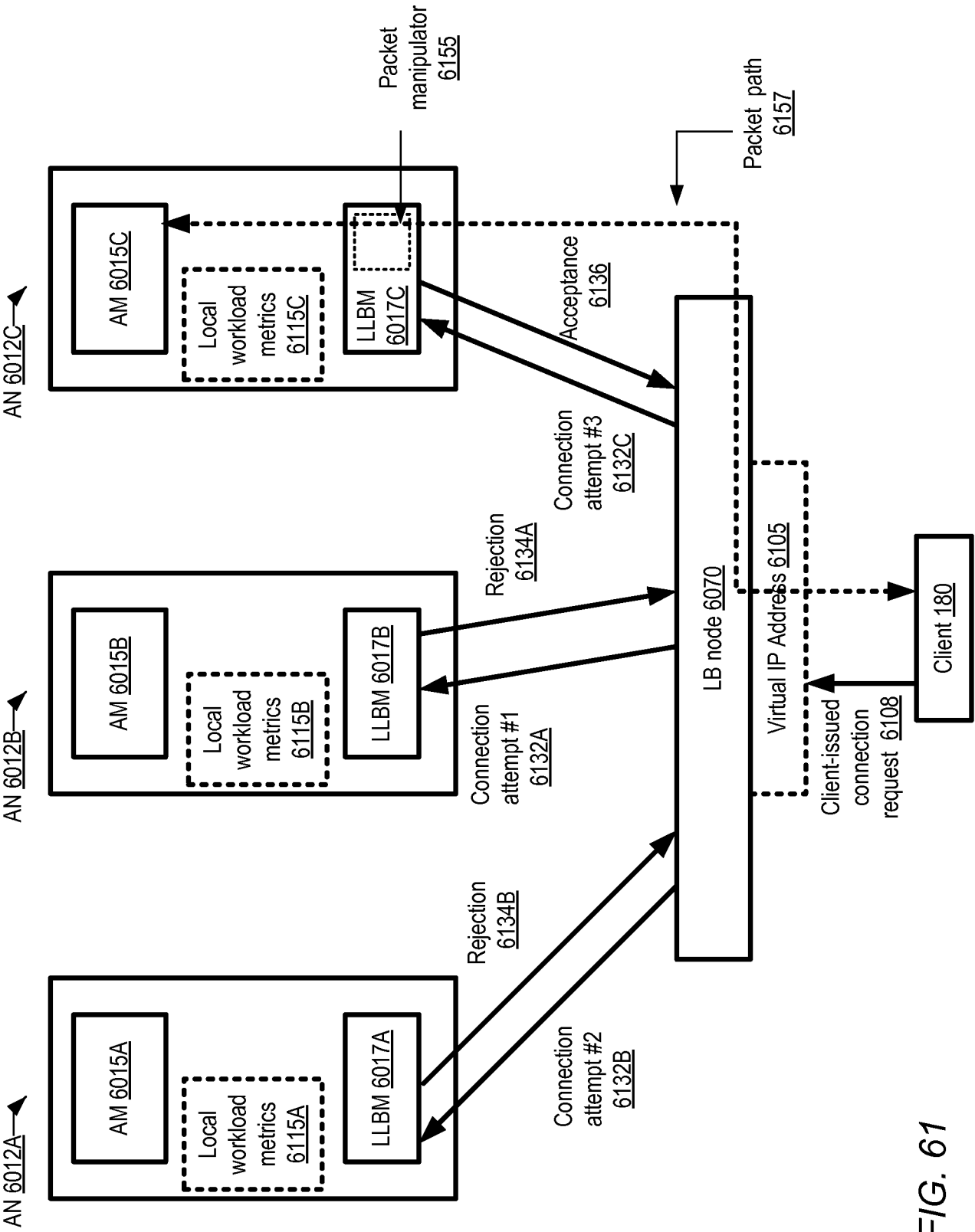


FIG. 61

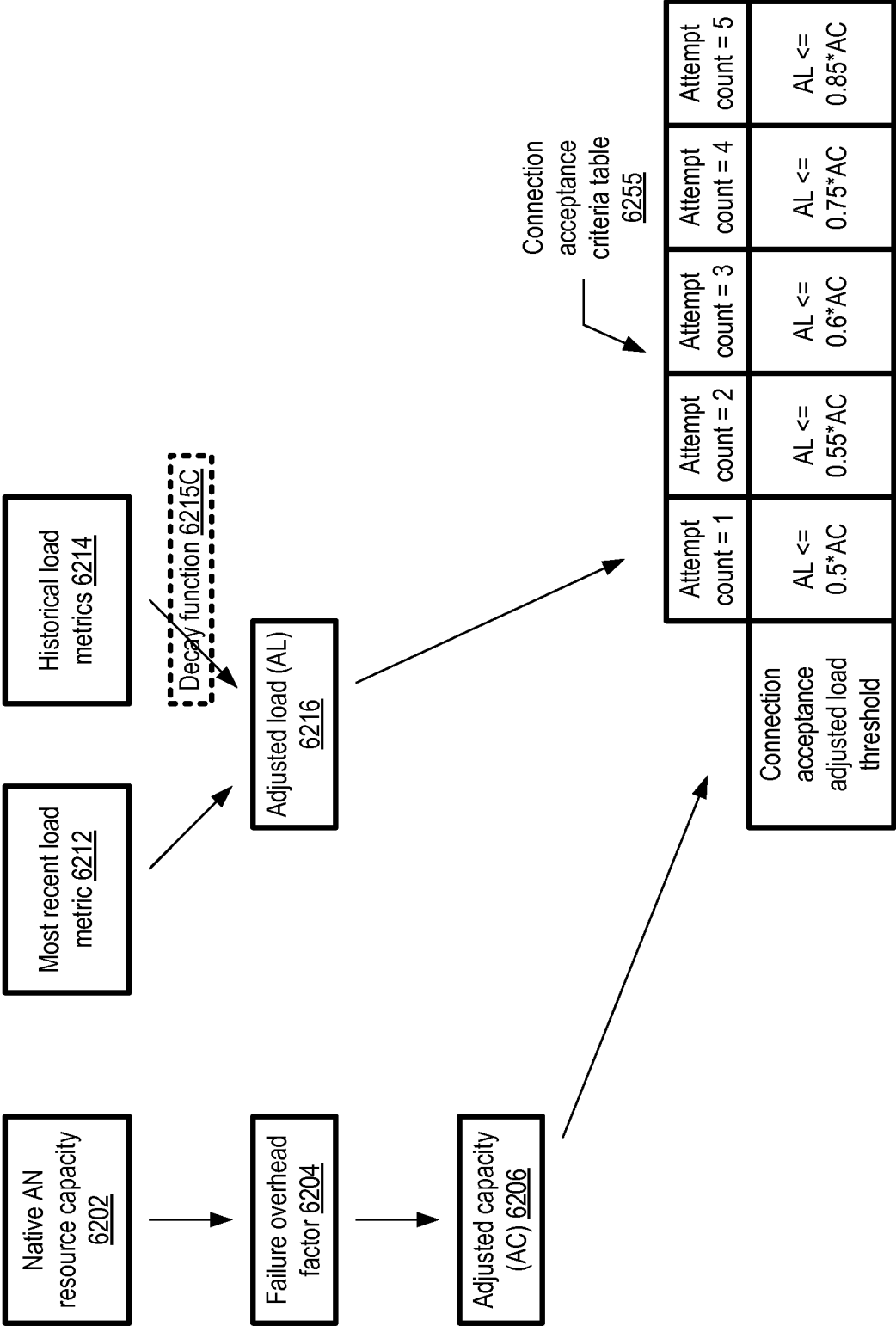


FIG. 62

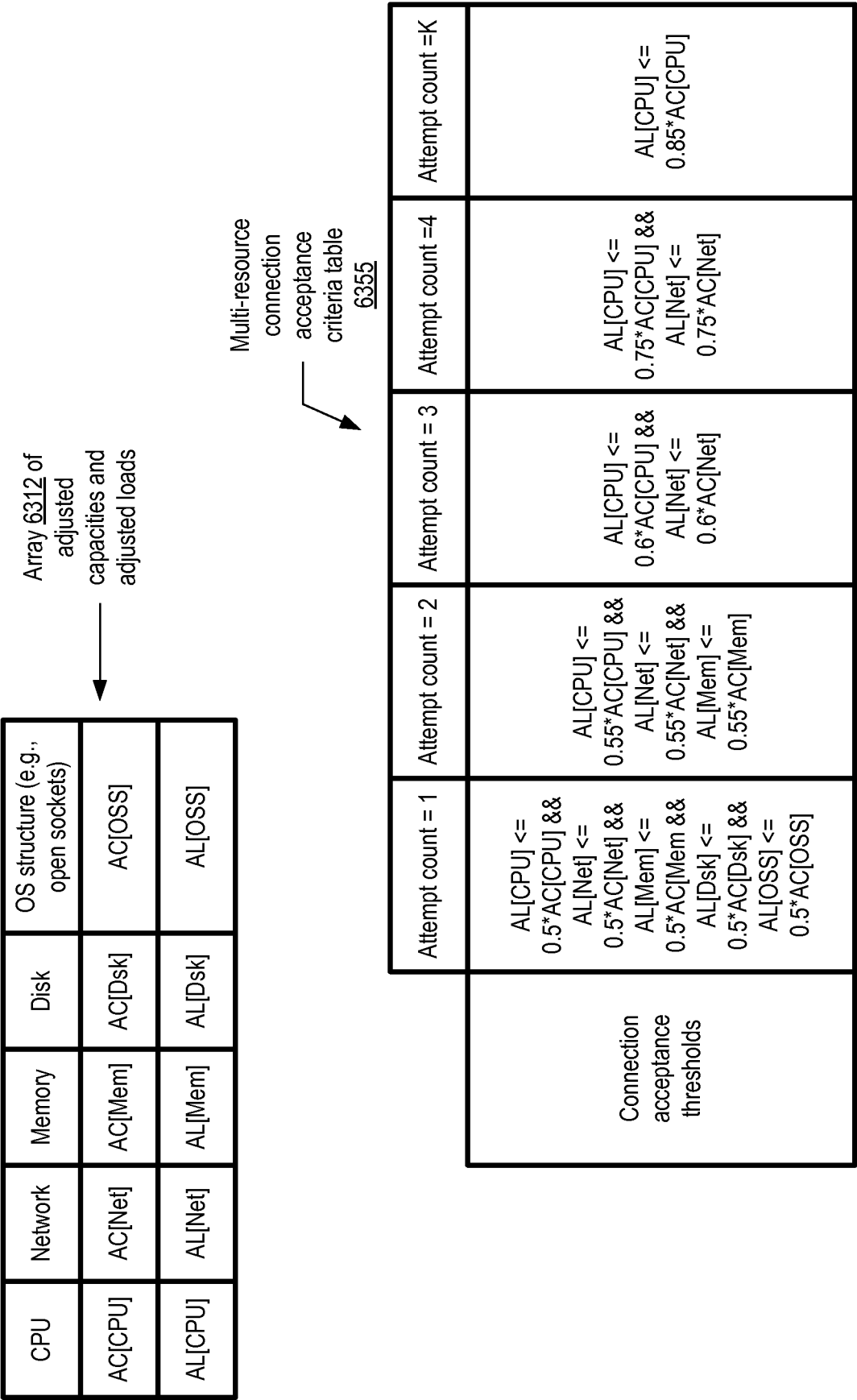


FIG. 63

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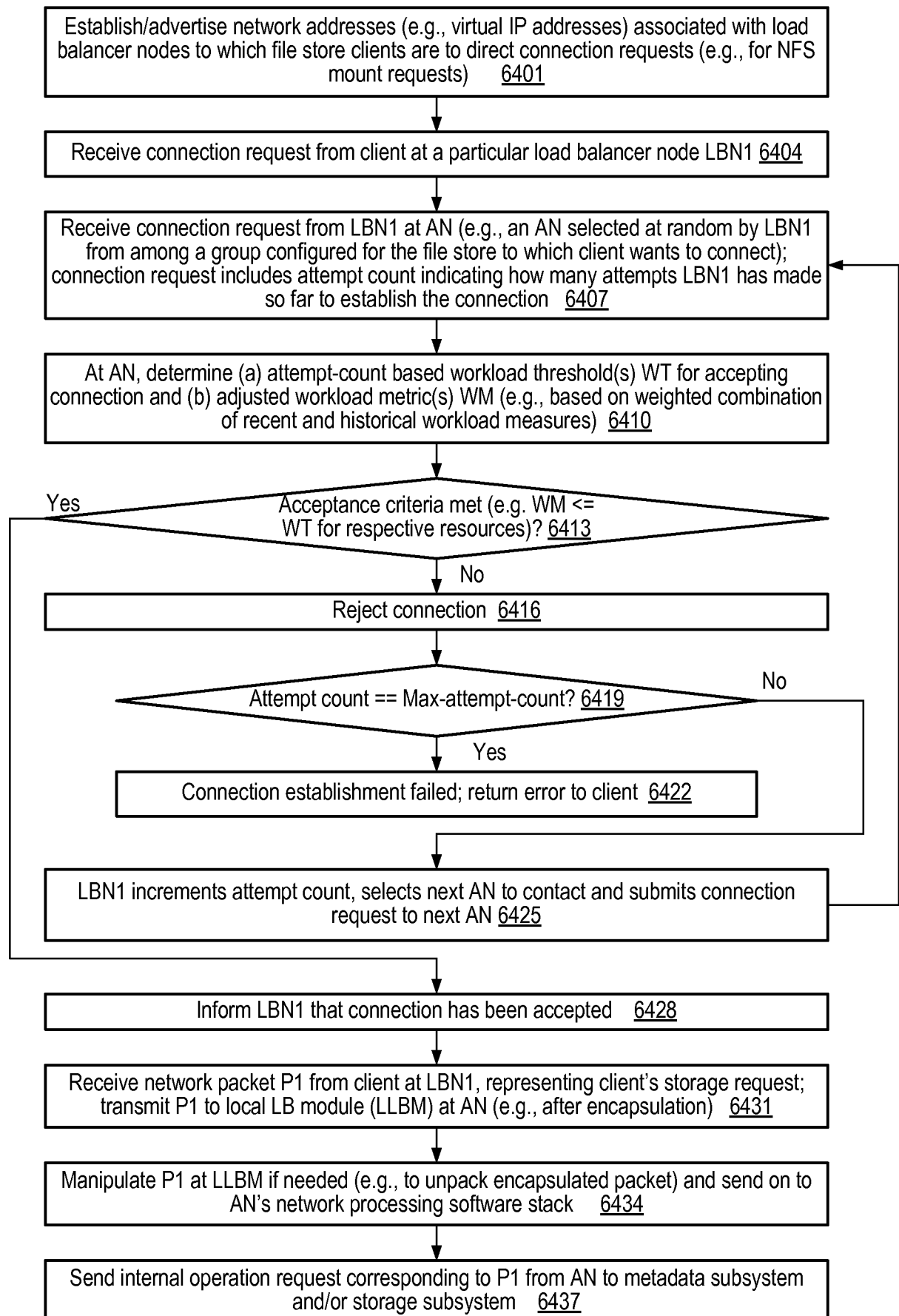


FIG. 64

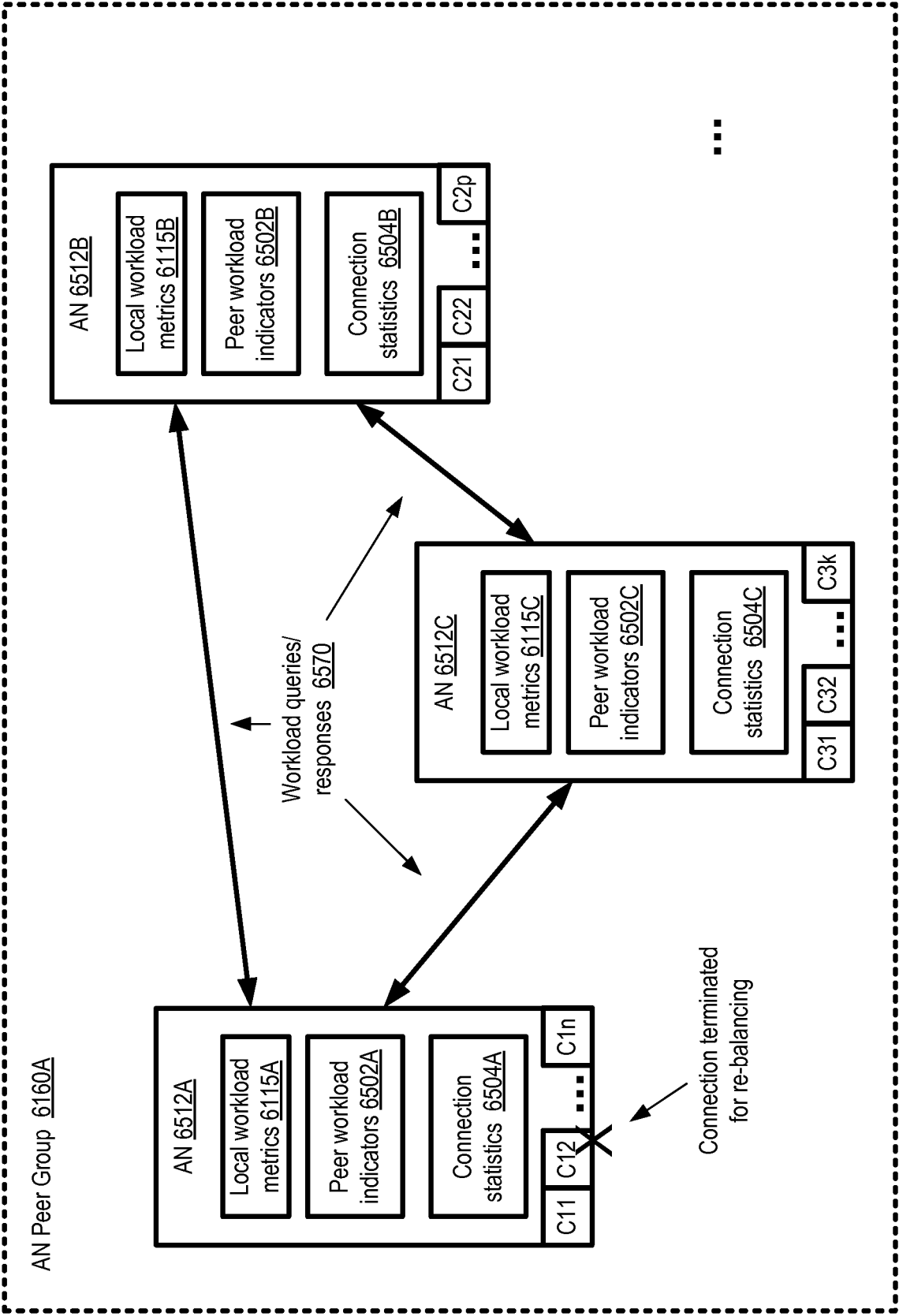


FIG. 65

Connection
acceptance and
rebalancing
criteria table
6655

Attempt count = 1	Attempt count = 2	Attempt count = 3	Attempt count = 4	Rebalancing
$\begin{aligned} &AL[CPU] \leq 0.5 * AC[CPU] \ \&\& \\ &AL[Net] \leq 0.5 * AC[Net] \ \&\& \\ &AL[Mem] \leq 0.5 * AC[Mem] \ \&\& \\ &AL[Dsk] \leq 0.5 * AC[Dsk] \ \&\& \\ &AL[OSS] \leq 0.5 * AC[OSS] \end{aligned}$	$\begin{aligned} &AL[CPU] \leq 0.55 * AC[CPU] \ \&\& \\ &AL[Net] \leq 0.55 * AC[Net] \ \&\& \\ &AL[Mem] \leq 0.55 * AC[Mem] \end{aligned}$	$\begin{aligned} &AL[CPU] \leq 0.6 * AC[CPU] \ \&\& \\ &AL[Net] \leq 0.6 * AC[Net] \end{aligned}$	$\begin{aligned} &AL[CPU] \leq 0.8 * AC[CPU] \ \&\& \\ &AL[Net] \leq 0.8 * AC[Net] \end{aligned}$	$\begin{aligned} &(AL[CPU] \geq 0.85 * AC[CPU] \\ &\quad \parallel \\ &AL[Net] \geq 0.85 * AC[Net]) \\ &\quad \&\& \\ &AL[Mem] \geq 0.85 * AC[Mem] \\ &\quad \&\& \\ &Seconds-since-last-rebalance > 600 \\ &\quad \&\& \\ &Estimated-peer-node-connection- \\ &acceptance-probability > 70\% \end{aligned}$

FIG. 66

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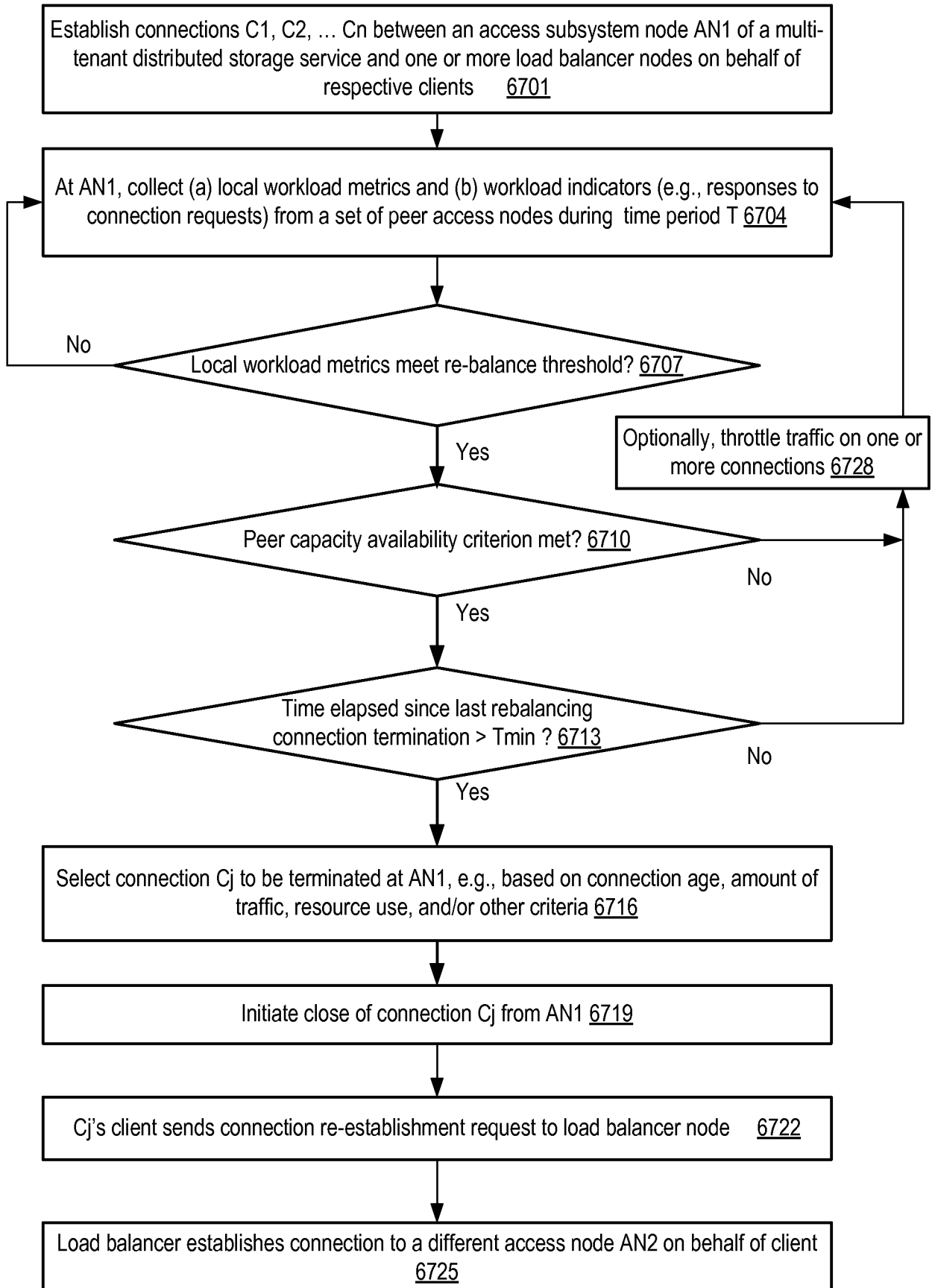


FIG. 67

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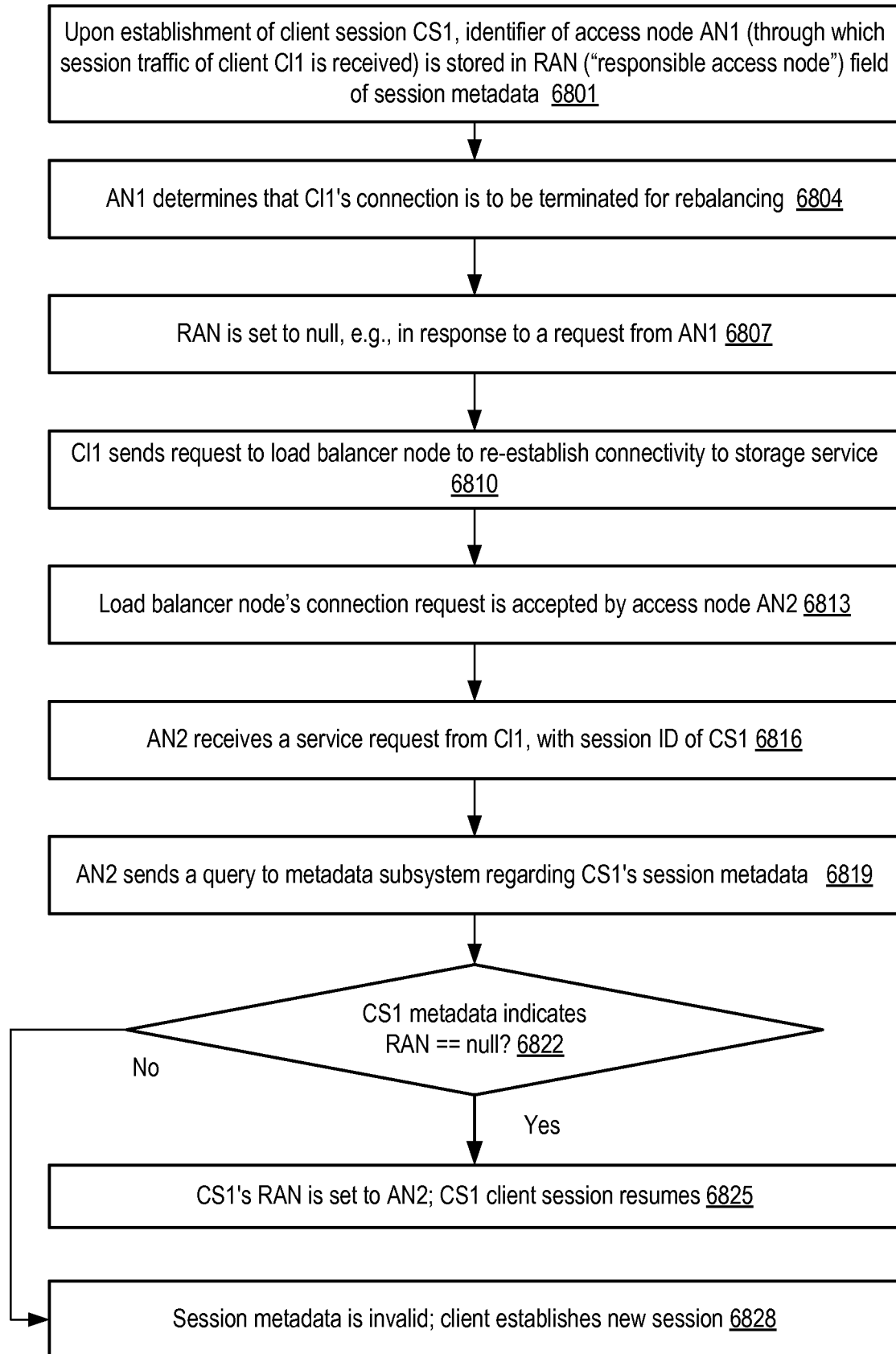


FIG. 68

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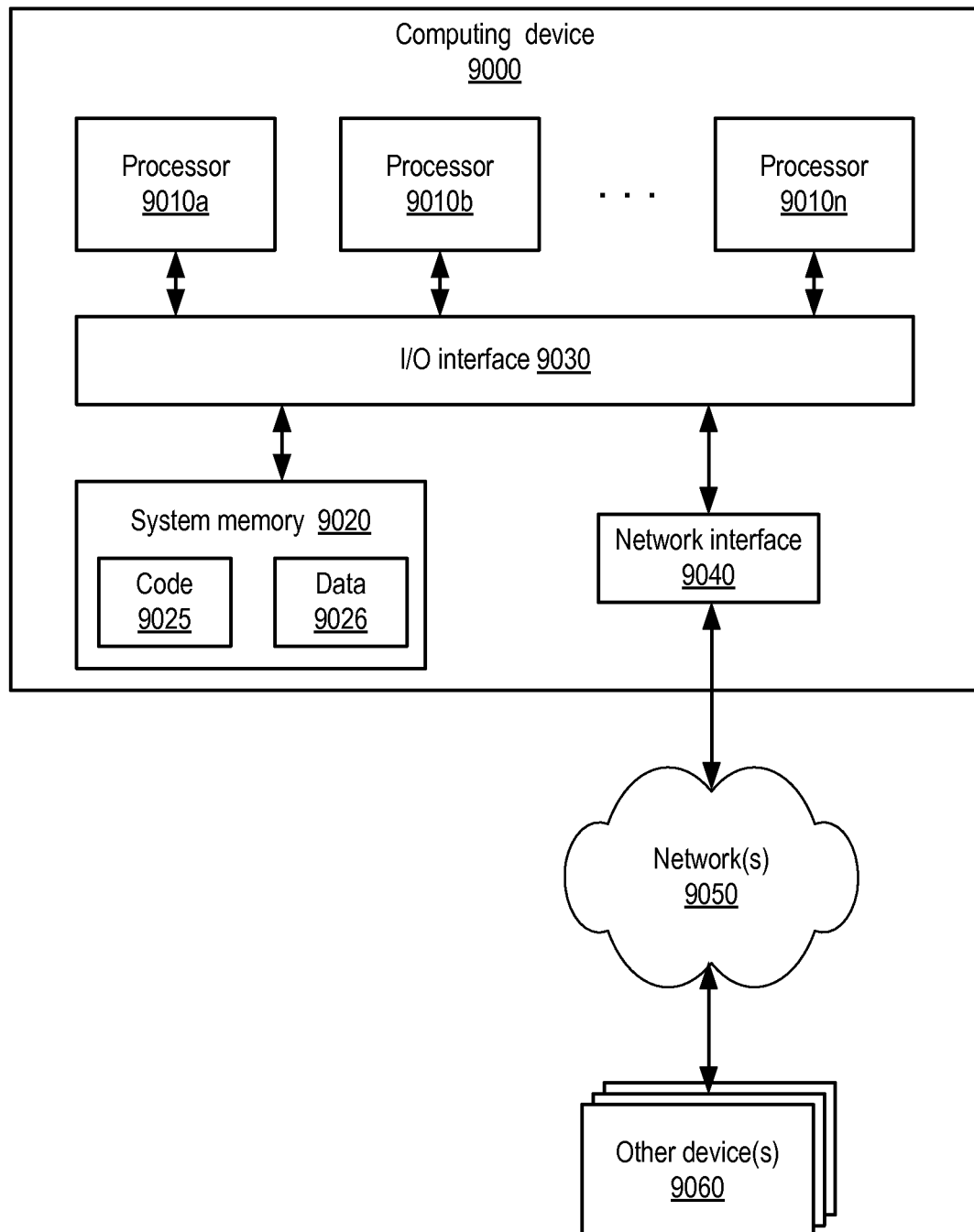


FIG. 69