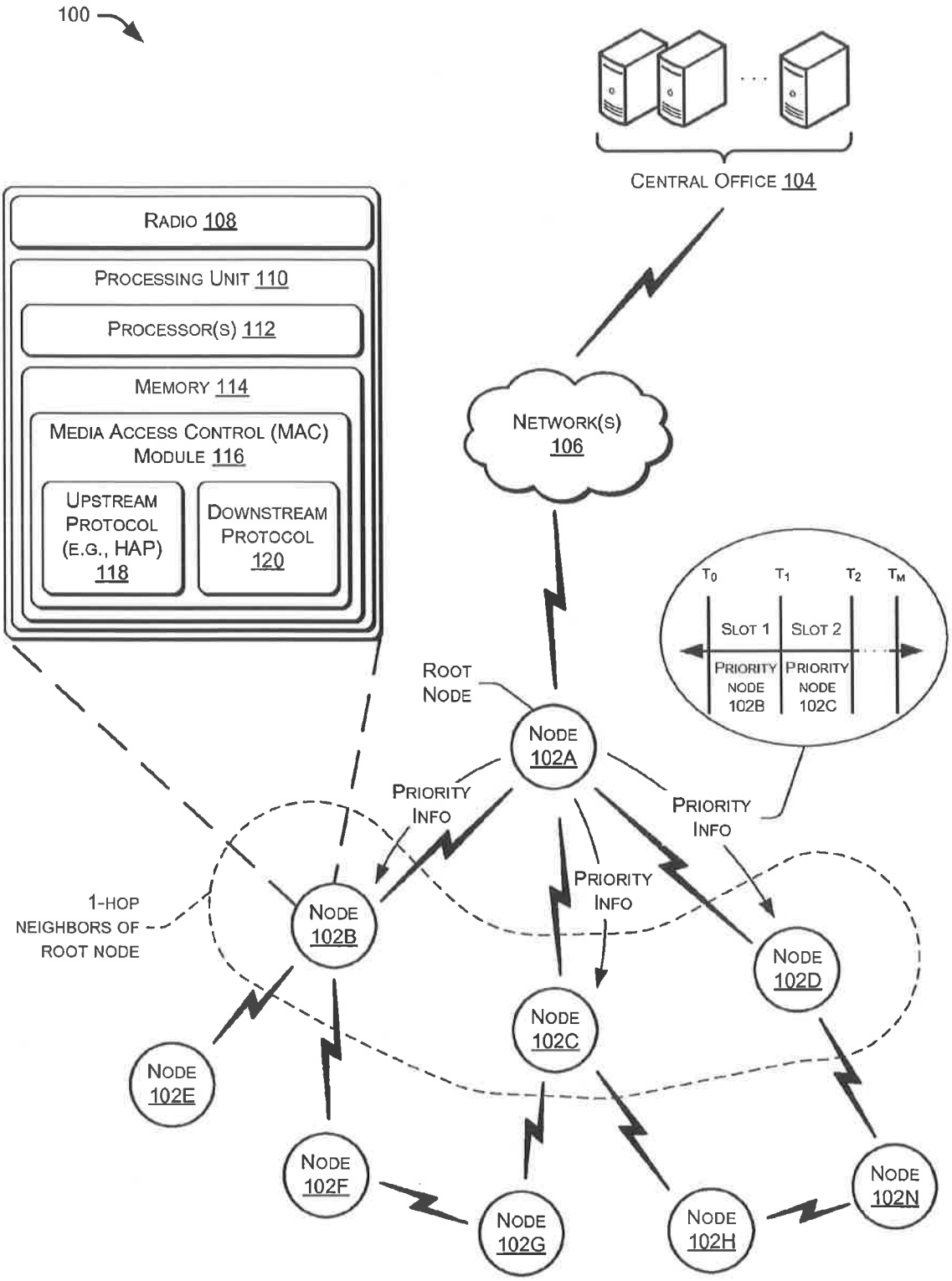

100
CENTRAL OFFICE 104
RADIO 108
PROCESSING UNIT 110
PROCESSOR(S) 112
MEMORY 114
MEDIA ACCESS CONTROL (MAC) MODULE 116
UPSTREAM PROTOCOL (E.G., HAP) 118
DOWNSTREAM PROTOCOL 120
NETWORK(S) 106
T_0 T_1 T_2 T_M
SLOT 1
SLOT 2
PRIORITY NODE 102B
PRIORITY NODE 102C
ROOT NODE
NODE 102A
PRIORITY INFO
PRIORITY INFO
PRIORITY INFO
1-HOP NEIGHBORS OF ROOT NODE
NODE 102B
NODE 102C
NODE 102D
NODE 102E
NODE 102F
NODE 102G
NODE 102H
NODE 102N

FIG. 1

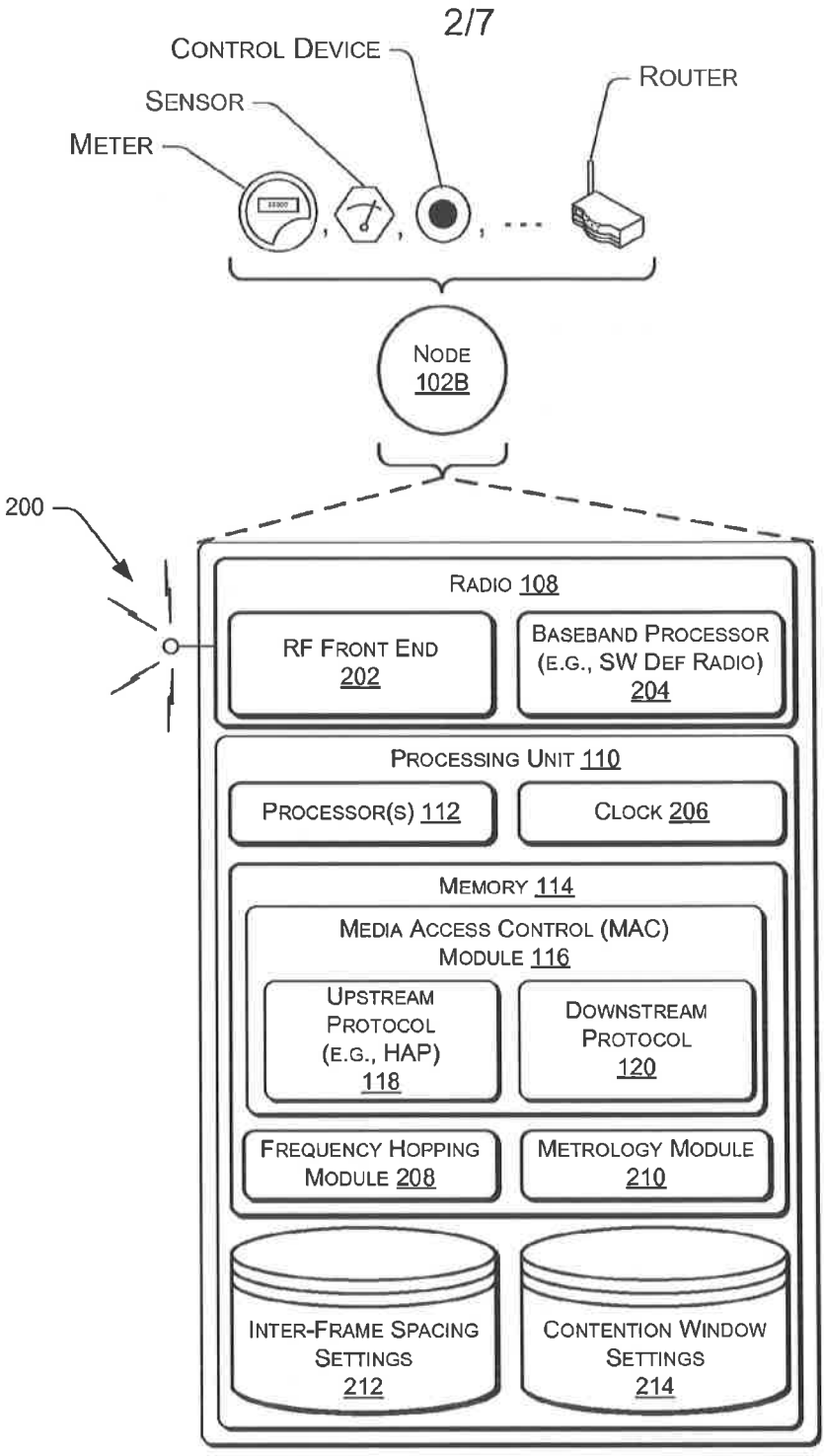

CONTROL DEVICE
SENSOR
METER
ROUTER
NODE
102B
200
RADIO 108
RF FRONT END
202
BASEBAND PROCESSOR
(E.G., SW DEF RADIO)
204
PROCESSING UNIT 110
PROCESSOR(S) 112
CLOCK 206
MEMORY 114
MEDIA ACCESS CONTROL (MAC)
MODULE 116
UPSTREAM
PROTOCOL
(E.G., HAP)
118
DOWNSTREAM
PROTOCOL
120
FREQUENCY HOPPING
MODULE 208
METROLOGY MODULE
210
INTER-FRAME SPACING
SETTINGS
212
CONTENTION WINDOW
SETTINGS
214

FIG. 2

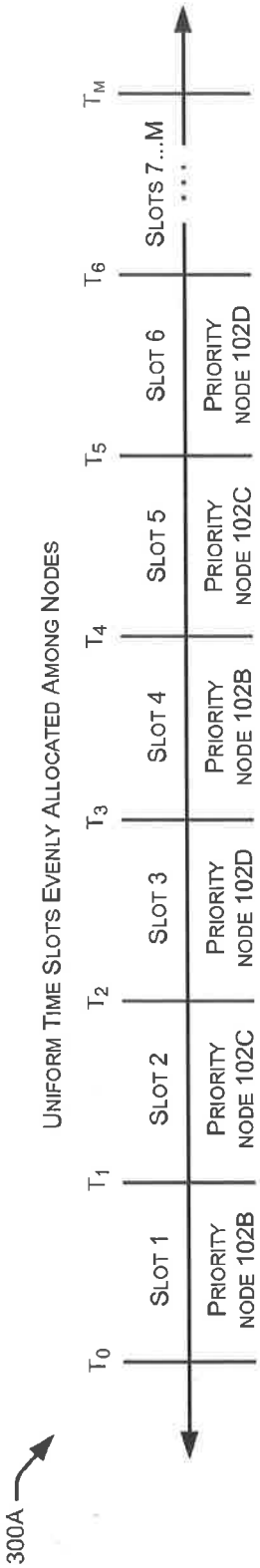


FIG. 3A

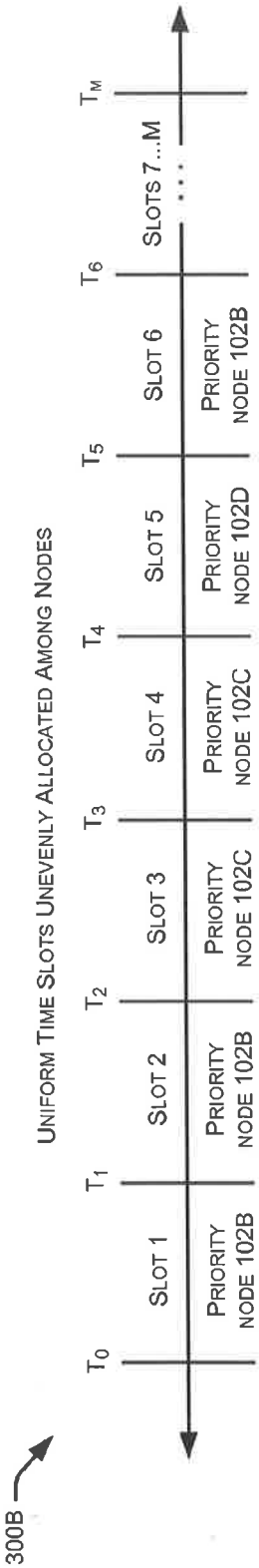


FIG. 3B

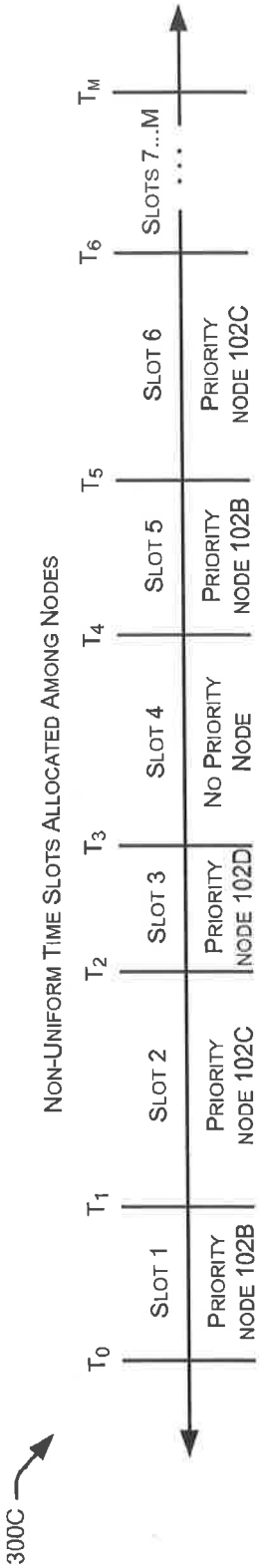


FIG. 3C

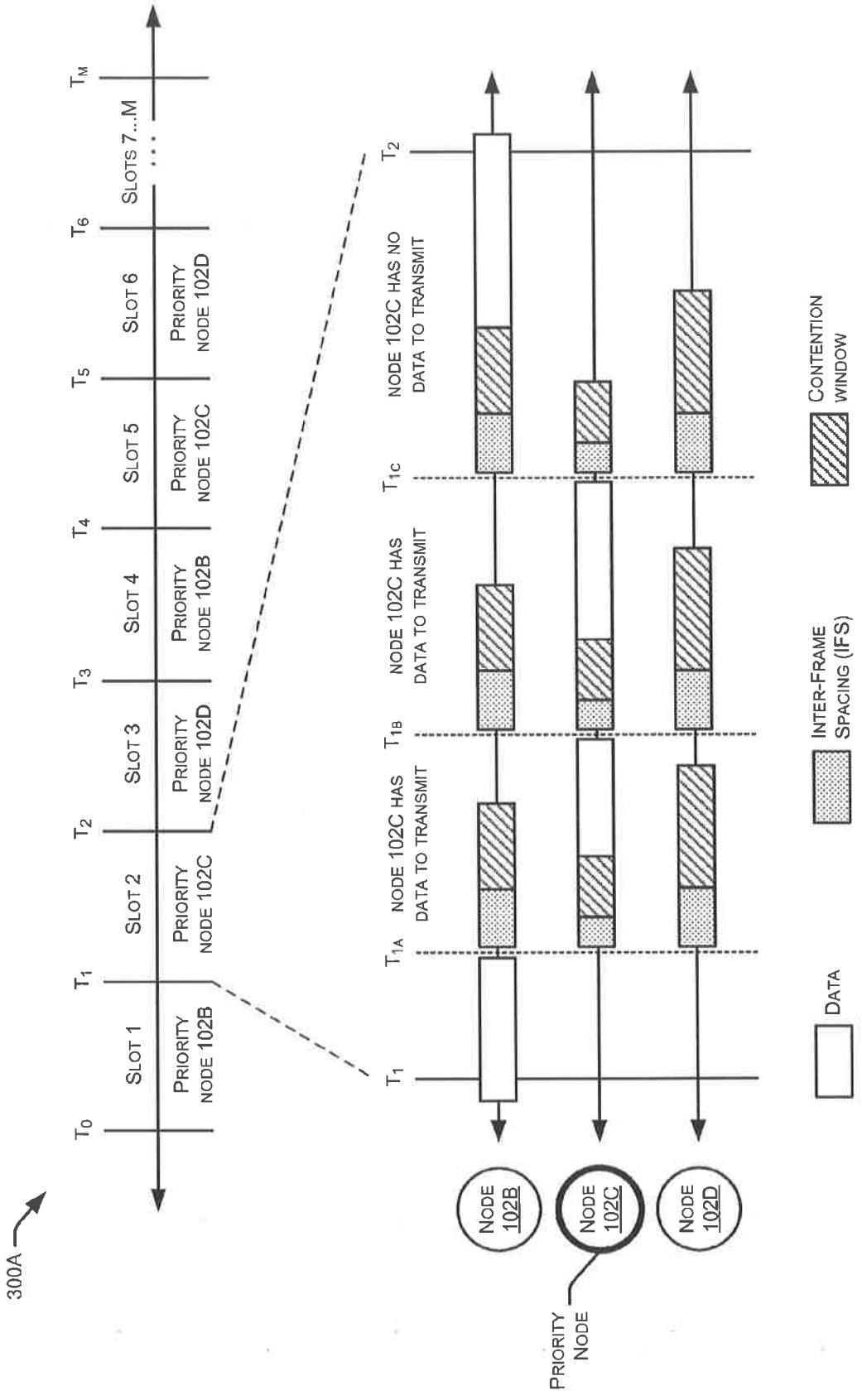

300A
T0
T1
T2
T3
T4
T5
T6
TM
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
SLOT 6
SLOTS 7...M
PRIORITY NODE 102B
PRIORITY NODE 102C
PRIORITY NODE 102D
PRIORITY NODE 102B
PRIORITY NODE 102C
PRIORITY NODE 102D
T1
T1A
T1B
T1C
T2
NODE 102C HAS DATA TO TRANSMIT
NODE 102C HAS DATA TO TRANSMIT
NODE 102C HAS NO DATA TO TRANSMIT
NODE 102B
NODE 102C
NODE 102D
PRIORITY NODE
DATA
INTER-FRAME SPACING (IFS)
CONTENTION WINDOW

FIG. 4A

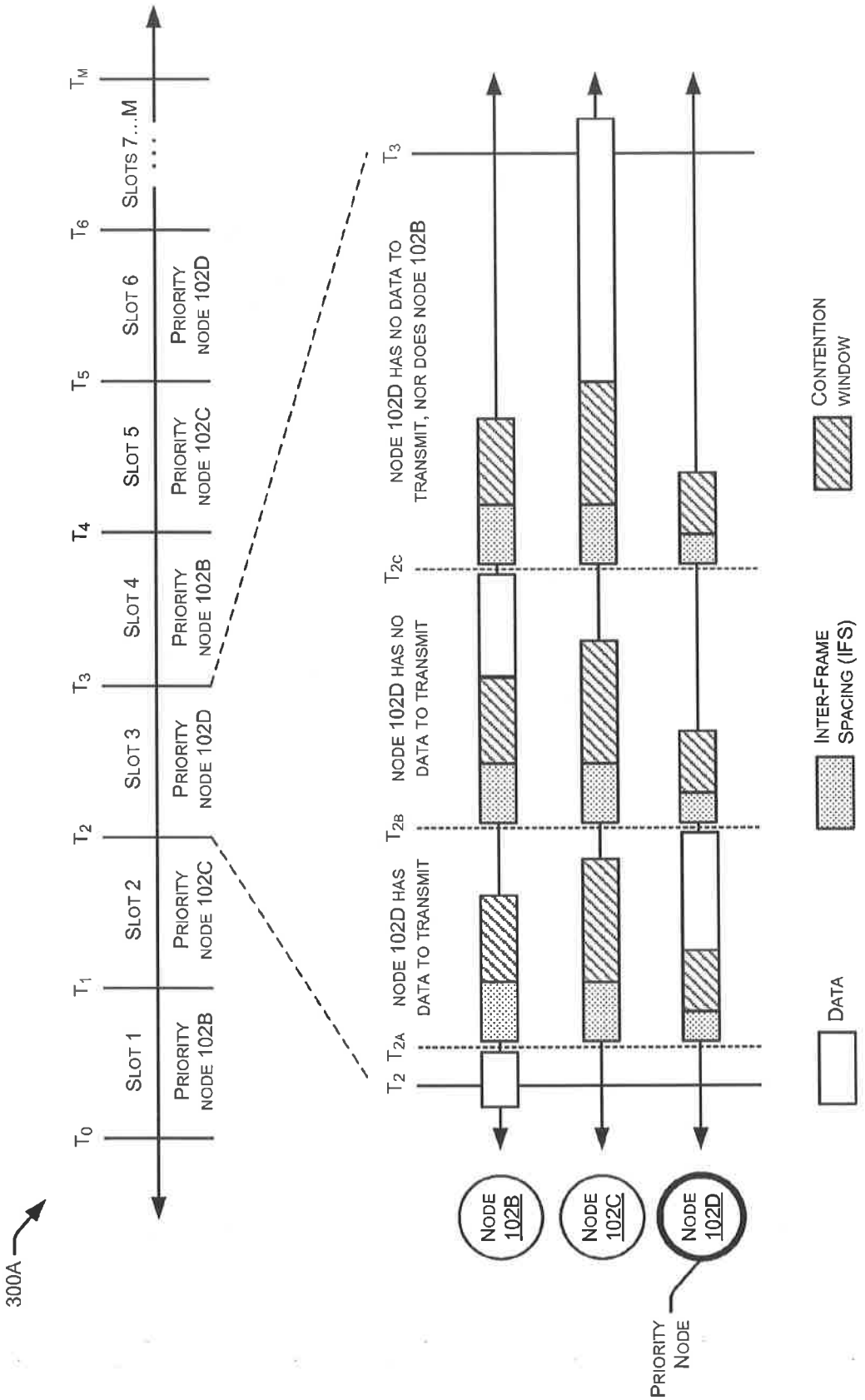

300A
T0
T1
T2
T3
T4
T5
T6
TM
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
SLOT 6
SLOTS 7...M
PRIORITY NODE 102B
PRIORITY NODE 102C
PRIORITY NODE 102D
PRIORITY NODE 102B
PRIORITY NODE 102C
PRIORITY NODE 102D
T2 T2A NODE 102D HAS DATA TO TRANSMIT
T2B NODE 102D HAS NO DATA TO TRANSMIT
T2C NODE 102D HAS NO DATA TO TRANSMIT, NOR DOES NODE 102B
T3
NODE 102B
NODE 102C
NODE 102D
PRIORITY NODE
DATA
INTER-FRAME SPACING (IFS)
CONTENTION WINDOW

FIG. 4B

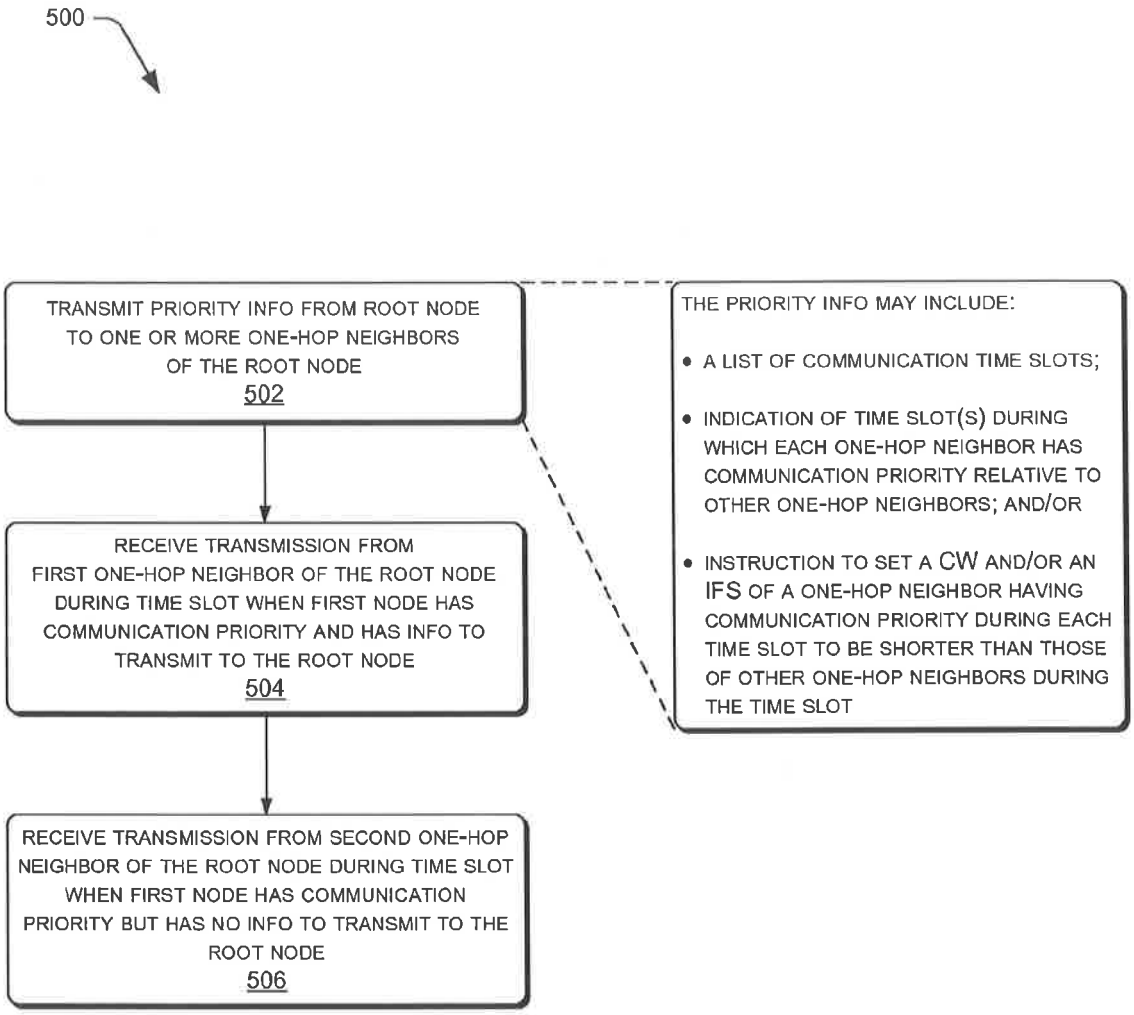

500
TRANSMIT PRIORITY INFO FROM ROOT NODE TO ONE OR MORE ONE-HOP NEIGHBORS OF THE ROOT NODE
502
RECEIVE TRANSMISSION FROM FIRST ONE-HOP NEIGHBOR OF THE ROOT NODE DURING TIME SLOT WHEN FIRST NODE HAS COMMUNICATION PRIORITY AND HAS INFO TO TRANSMIT TO THE ROOT NODE
504
RECEIVE TRANSMISSION FROM SECOND ONE-HOP NEIGHBOR OF THE ROOT NODE DURING TIME SLOT WHEN FIRST NODE HAS COMMUNICATION PRIORITY BUT HAS NO INFO TO TRANSMIT TO THE ROOT NODE
506
THE PRIORITY INFO MAY INCLUDE:
• A LIST OF COMMUNICATION TIME SLOTS;
• INDICATION OF TIME SLOT(S) DURING WHICH EACH ONE-HOP NEIGHBOR HAS COMMUNICATION PRIORITY RELATIVE TO OTHER ONE-HOP NEIGHBORS; AND/OR
• INSTRUCTION TO SET A CW AND/OR AN IFS OF A ONE-HOP NEIGHBOR HAVING COMMUNICATION PRIORITY DURING EACH TIME SLOT TO BE SHORTER THAN THOSE OF OTHER ONE-HOP NEIGHBORS DURING THE TIME SLOT

FIG. 5

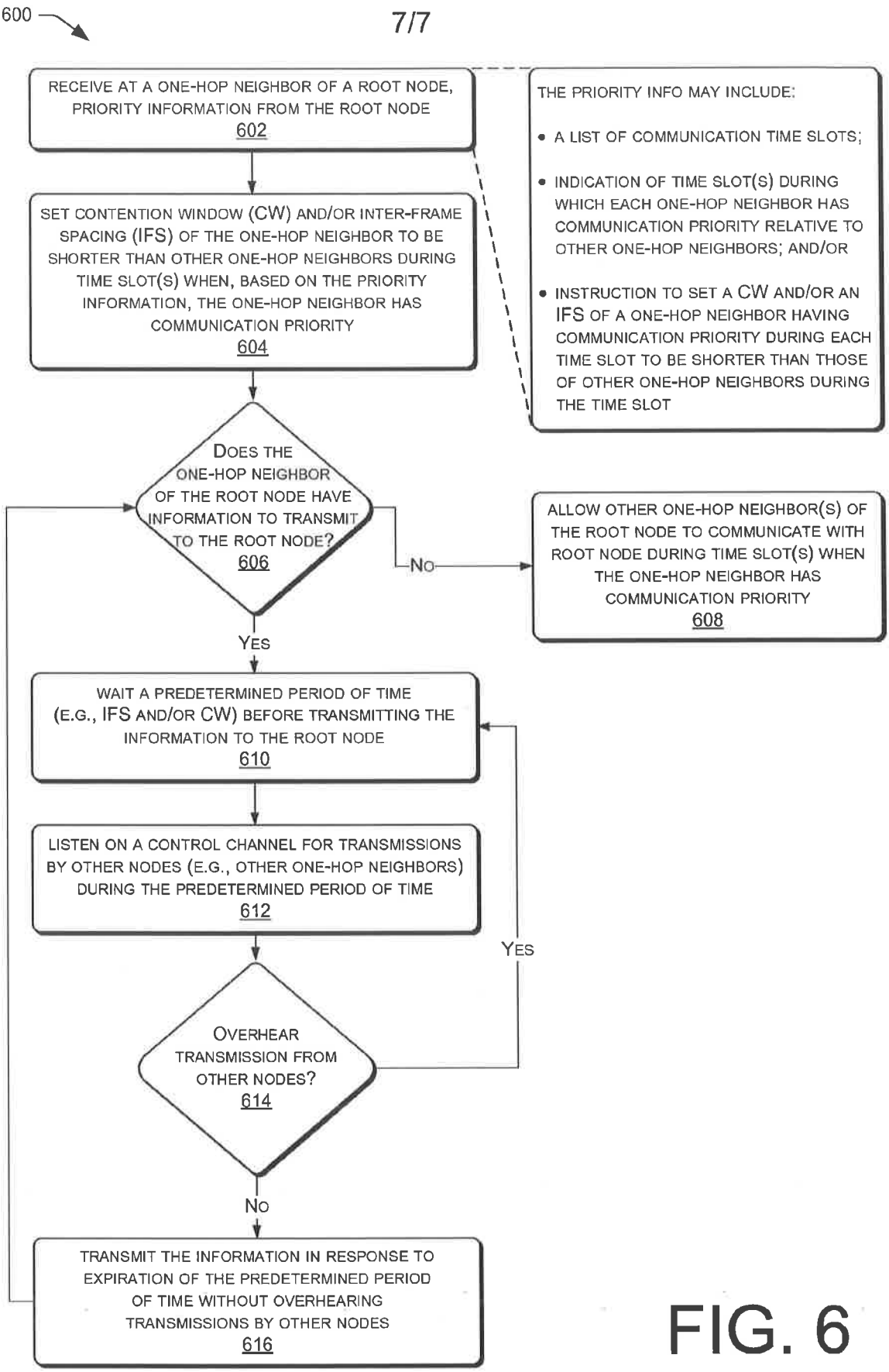

600
RECEIVE AT A ONE-HOP NEIGHBOR OF A ROOT NODE, PRIORITY INFORMATION FROM THE ROOT NODE
602
THE PRIORITY INFO MAY INCLUDE:
• A LIST OF COMMUNICATION TIME SLOTS;
• INDICATION OF TIME SLOT(S) DURING WHICH EACH ONE-HOP NEIGHBOR HAS COMMUNICATION PRIORITY RELATIVE TO OTHER ONE-HOP NEIGHBORS; AND/OR
• INSTRUCTION TO SET A CW AND/OR AN IFS OF A ONE-HOP NEIGHBOR HAVING COMMUNICATION PRIORITY DURING EACH TIME SLOT TO BE SHORTER THAN THOSE OF OTHER ONE-HOP NEIGHBORS DURING THE TIME SLOT
SET CONTENTION WINDOW (CW) AND/OR INTER-FRAME SPACING (IFS) OF THE ONE-HOP NEIGHBOR TO BE SHORTER THAN OTHER ONE-HOP NEIGHBORS DURING TIME SLOT(S) WHEN, BASED ON THE PRIORITY INFORMATION, THE ONE-HOP NEIGHBOR HAS COMMUNICATION PRIORITY
604
DOES THE ONE-HOP NEIGHBOR OF THE ROOT NODE HAVE INFORMATION TO TRANSMIT TO THE ROOT NODE?
606
NO
ALLOW OTHER ONE-HOP NEIGHBOR(S) OF THE ROOT NODE TO COMMUNICATE WITH ROOT NODE DURING TIME SLOT(S) WHEN THE ONE-HOP NEIGHBOR HAS COMMUNICATION PRIORITY
608
YES
WAIT A PREDETERMINED PERIOD OF TIME (E.G., IFS AND/OR CW) BEFORE TRANSMITTING THE INFORMATION TO THE ROOT NODE
610
LISTEN ON A CONTROL CHANNEL FOR TRANSMISSIONS BY OTHER NODES (E.G., OTHER ONE-HOP NEIGHBORS) DURING THE PREDETERMINED PERIOD OF TIME
612
YES
OVERHEAR TRANSMISSION FROM OTHER NODES?
614
NO
TRANSMIT THE INFORMATION IN RESPONSE TO EXPIRATION OF THE PREDETERMINED PERIOD OF TIME WITHOUT OVERHEARING TRANSMISSIONS BY OTHER NODES
616

FIG. 6