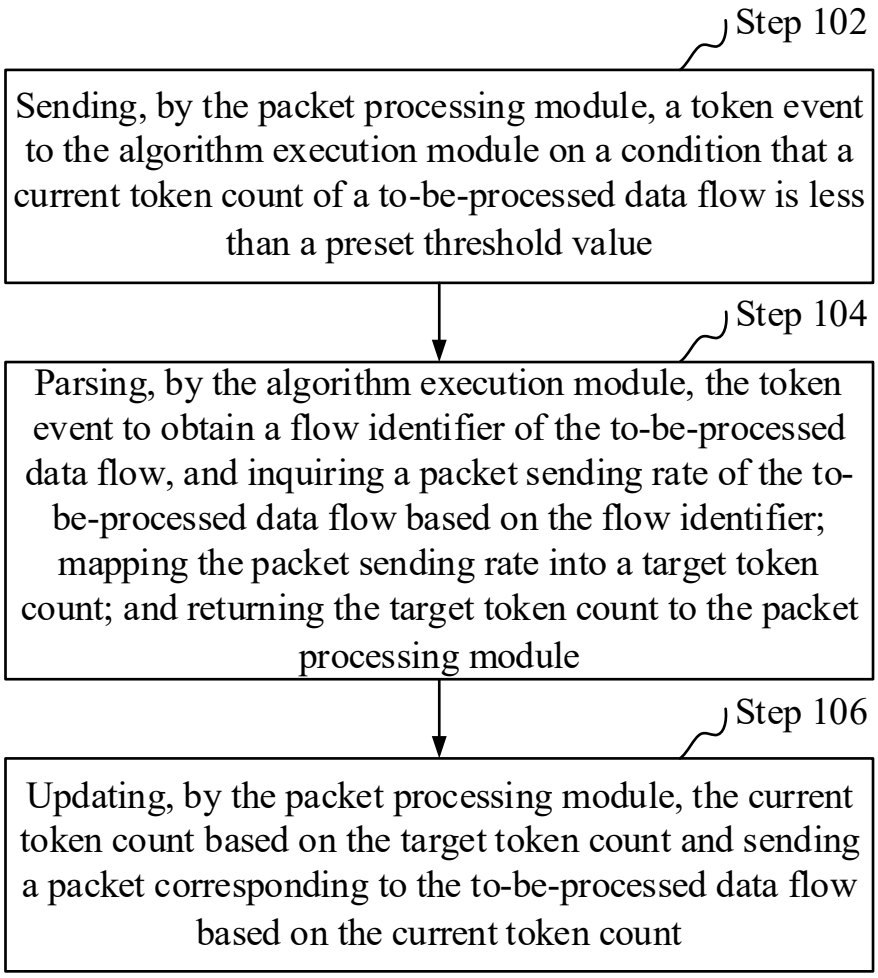

Step 102
Sending, by the packet processing module, a token event to the algorithm execution module on a condition that a current token count of a to-be-processed data flow is less than a preset threshold value
Step 104
Parsing, by the algorithm execution module, the token event to obtain a flow identifier of the to-be-processed data flow, and inquiring a packet sending rate of the to-be-processed data flow based on the flow identifier; mapping the packet sending rate into a target token count; and returning the target token count to the packet processing module
Step 106
Updating, by the packet processing module, the current token count based on the target token count and sending a packet corresponding to the to-be-processed data flow based on the current token count

FIG. 1

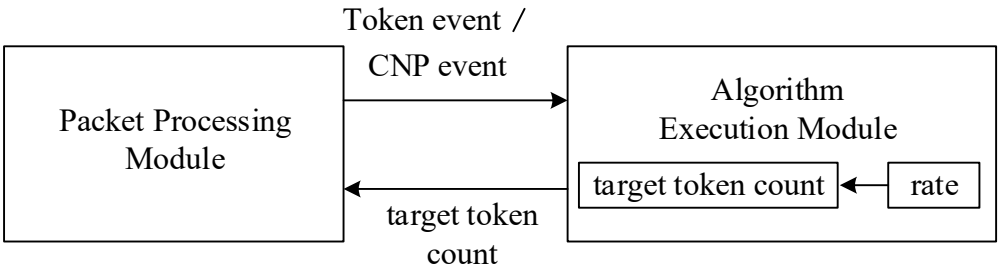

Token event / CNP event
Packet Processing Module
Algorithm Execution Module
target token count
rate
target token count

FIG. 2

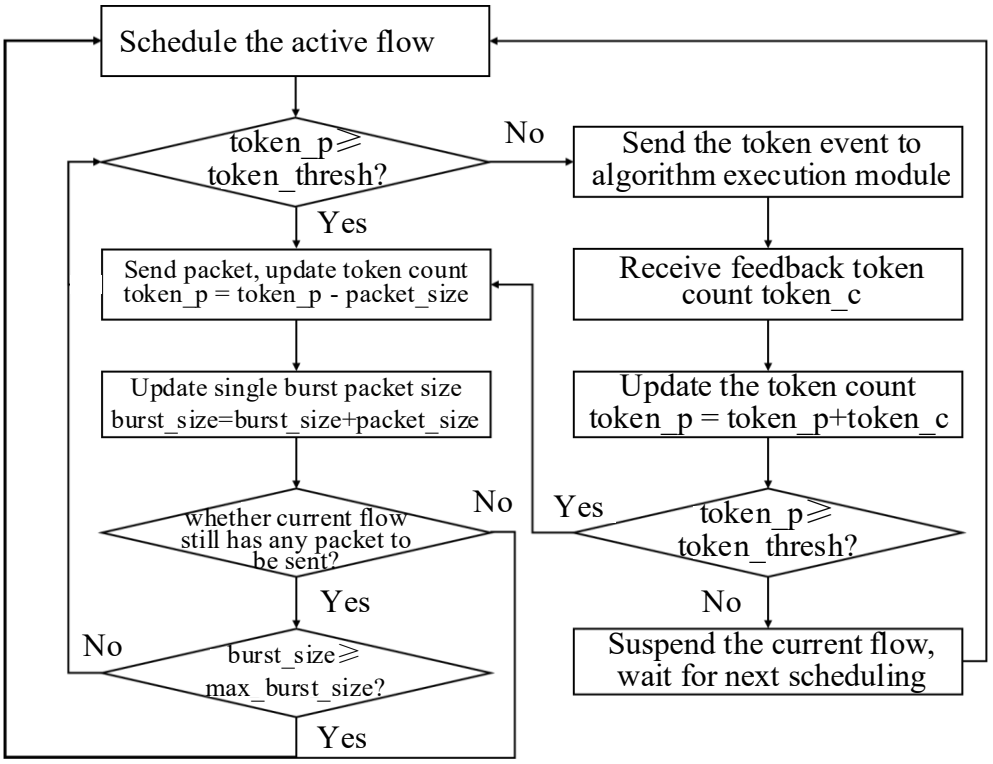

Schedule the active flow
token_p≥ token_thresh?
No
Send the token event to algorithm execution module
Yes
Send packet, update token count token_p = token_p - packet_size
Receive feedback token count token_c
Update single burst packet size burst_size=burst_size+packet_size
Update the token count token_p = token_p+token_c
whether current flow still has any packet to be sent?
No
Yes
token_p≥ token_thresh?
Yes
No
No
burst_size≥ max_burst_size?
Suspend the current flow, wait for next scheduling
Yes

FIG. 3

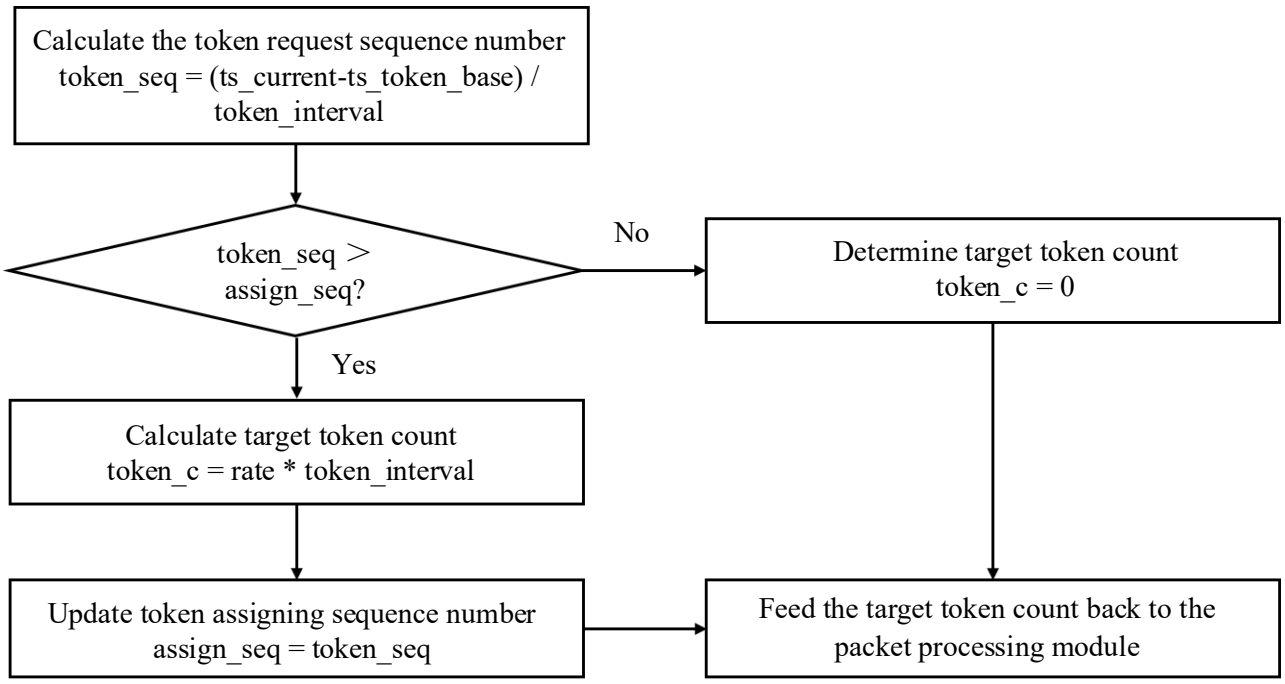

Calculate the token request sequence number token_seq = (ts_current-ts_token_base) / token_interval
token_seq > assign_seq?
No
Determine target token count token_c = 0
Yes
Calculate target token count token_c = rate * token_interval
Update token assigning sequence number assign_seq = token_seq
Feed the target token count back to the packet processing module

FIG. 4

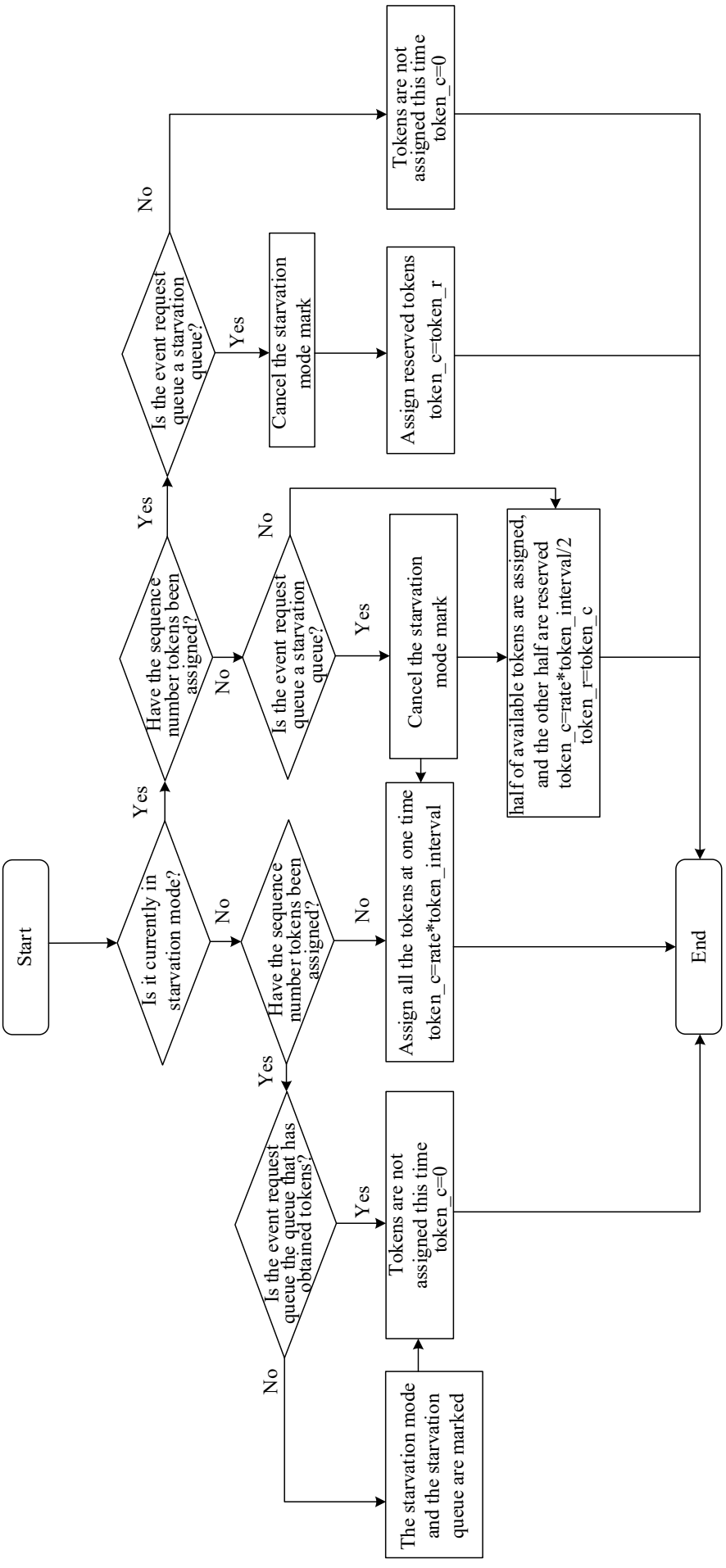

Start
Is it currently in starvation mode?
Yes
No
Have the sequence number tokens been assigned?
Yes
No
Is the event request queue the queue that has obtained tokens?
Yes
No
Tokens are not assigned this time token_c=0
The starvation mode and the starvation queue are marked
Assign all the tokens at one time token_c=rate*token_interval
Have the sequence number tokens been assigned?
Yes
No
Is the event request queue a starvation queue?
Yes
No
Cancel the starvation mode mark
half of available tokens are assigned, and the other half are reserved token_c=rate*token_interval/2 token_r=token_c
Is the event request queue a starvation queue?
Yes
No
Cancel the starvation mode mark
Assign reserved tokens token_c=token_r
Tokens are not assigned this time token_c=0
End

FIG. 5

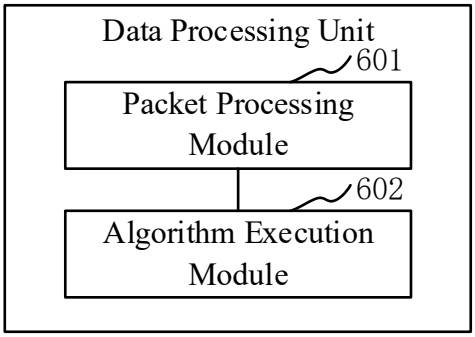

Data Processing Unit
601
Packet Processing Module
602
Algorithm Execution Module

FIG. 6

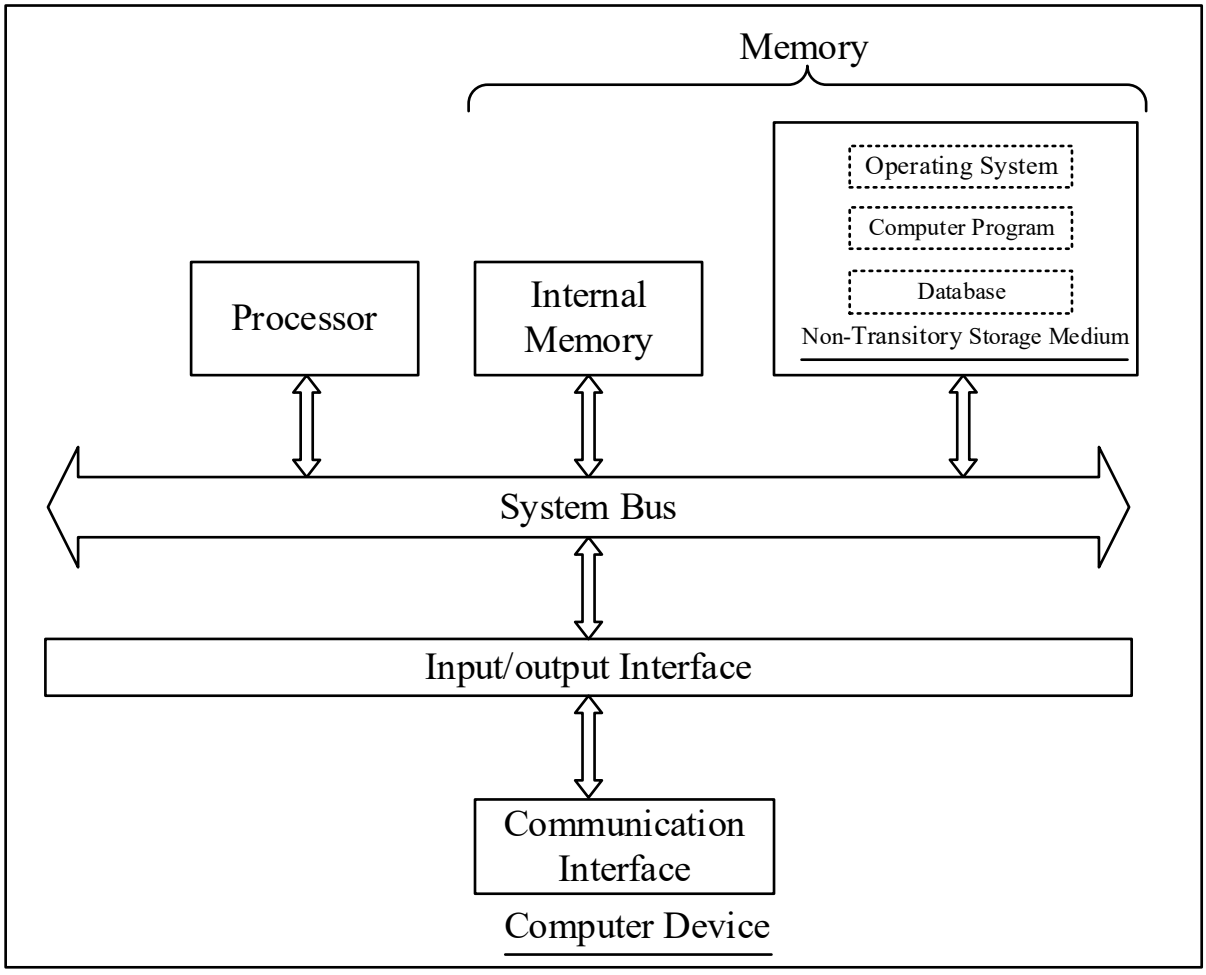

Memory
Operating System
Computer Program
Database
Non-Transitory Storage Medium
Processor
Internal Memory
System Bus
Input/output Interface
Communication Interface
Computer Device

FIG. 7