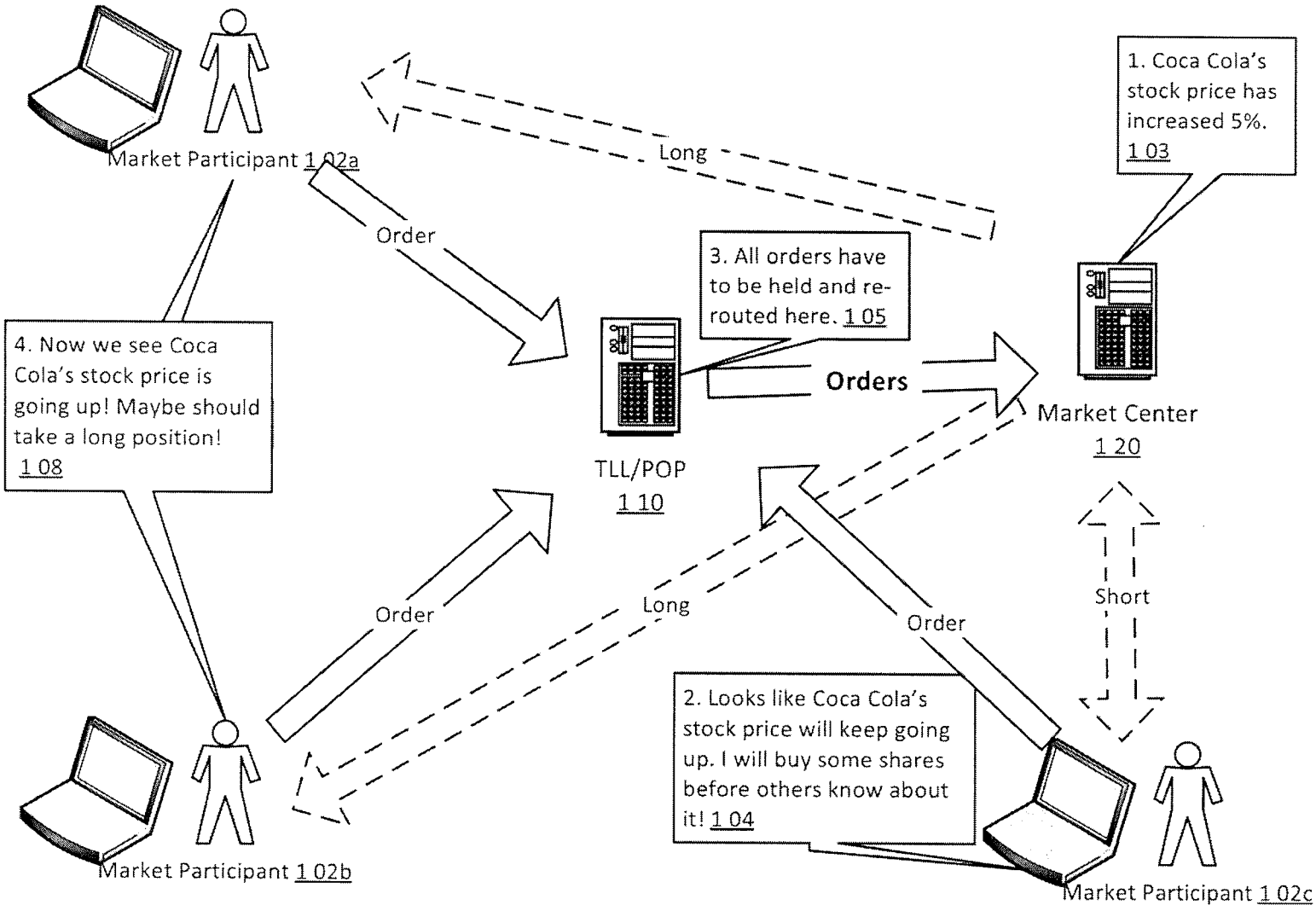


FIGURE 1A

TLL Example: Point-of-Presence Order Delaying

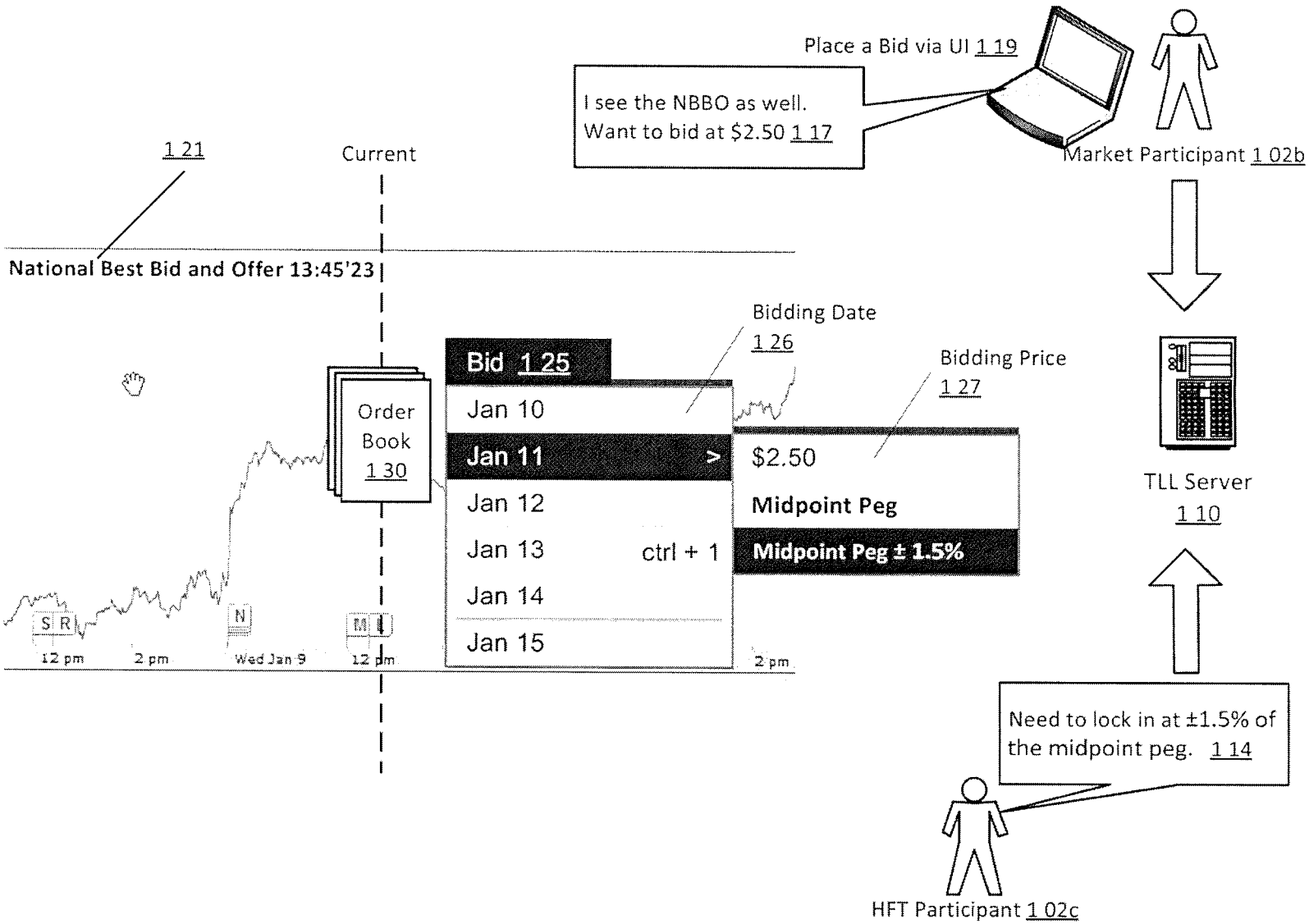
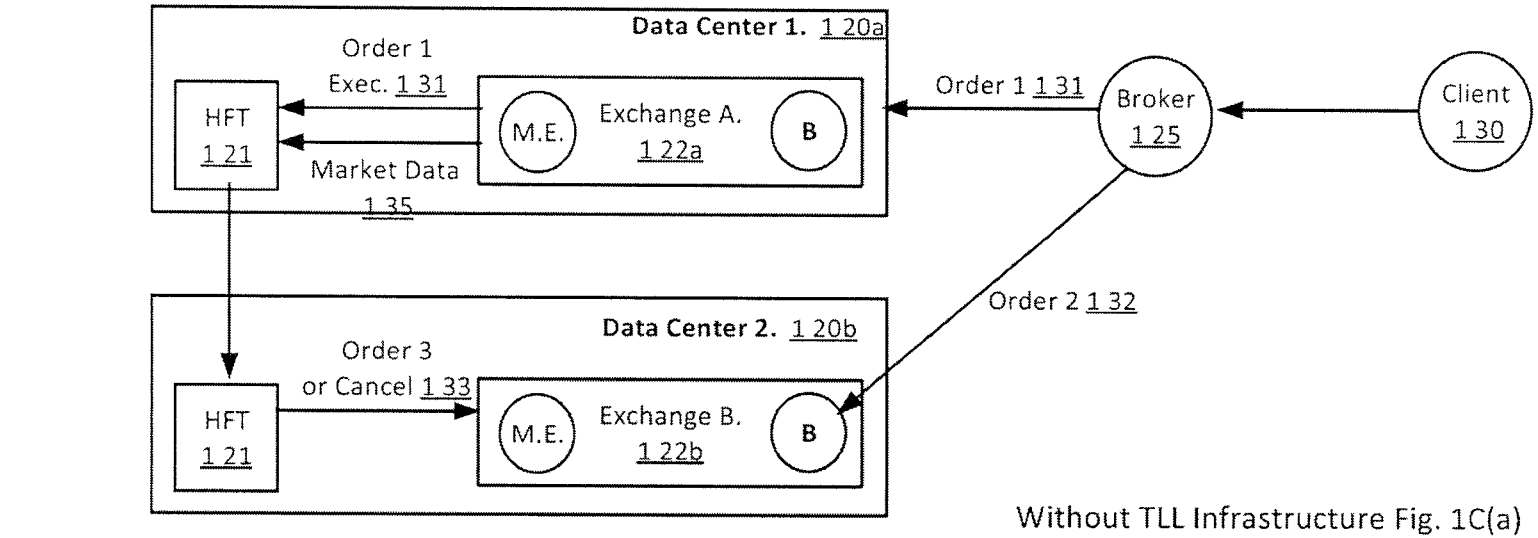
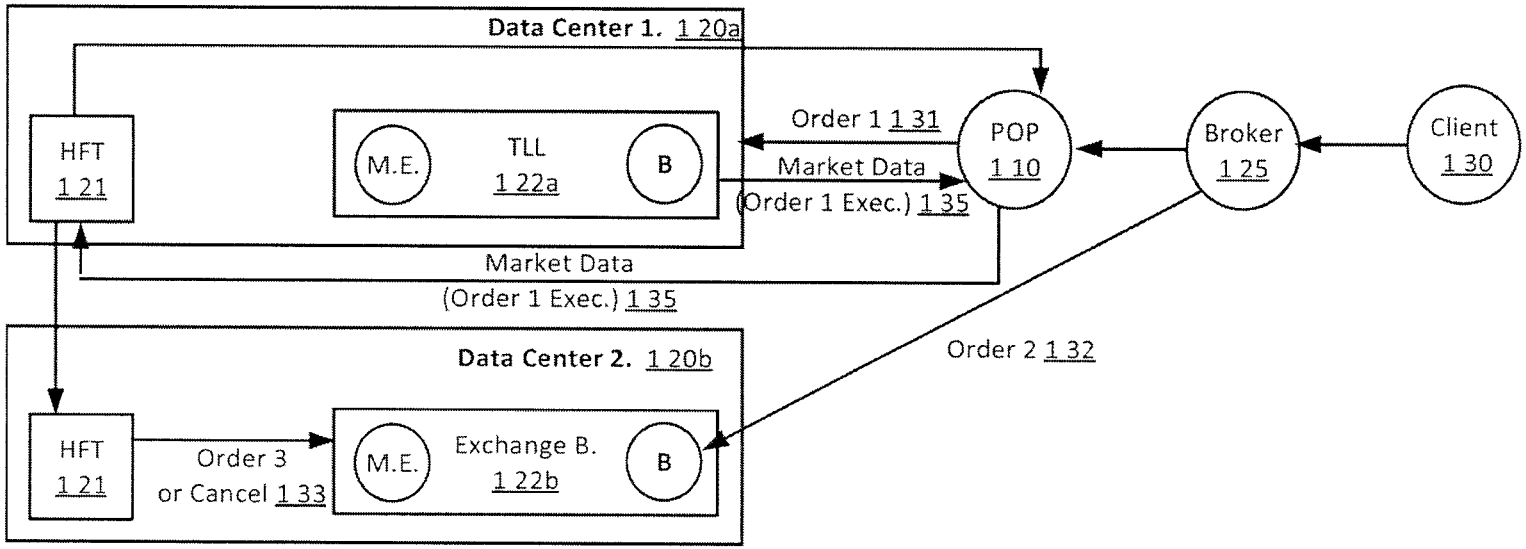


FIGURE 1B

TLL Example: Reducing Order Book Arbitrage



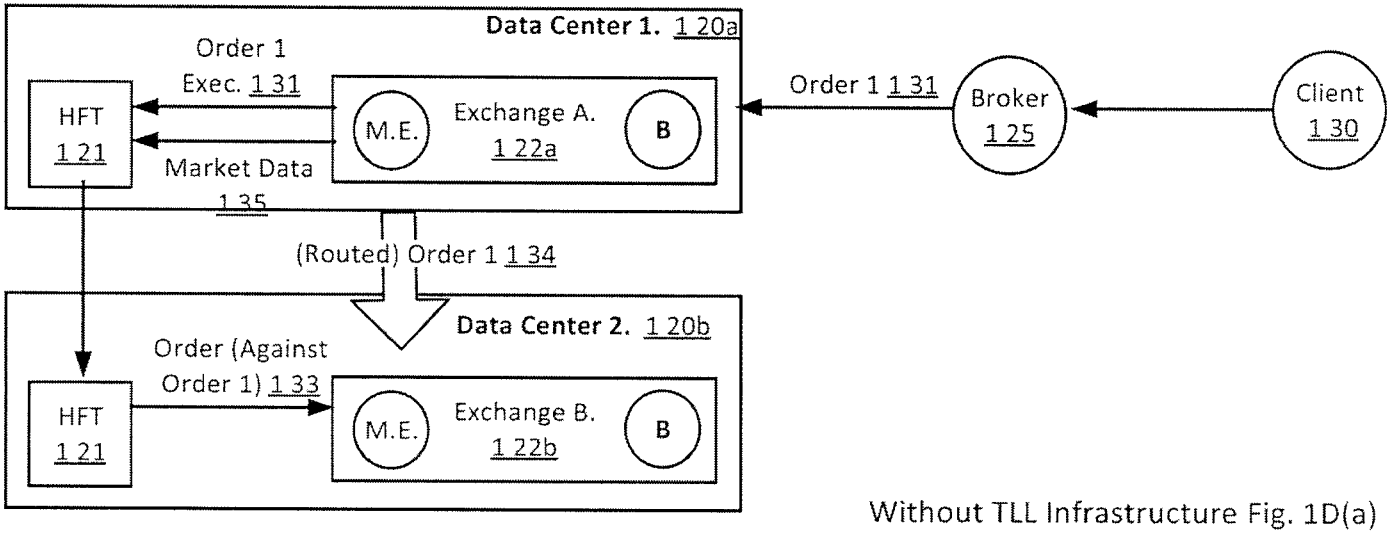
Without TLL Infrastructure Fig. 1C(a)



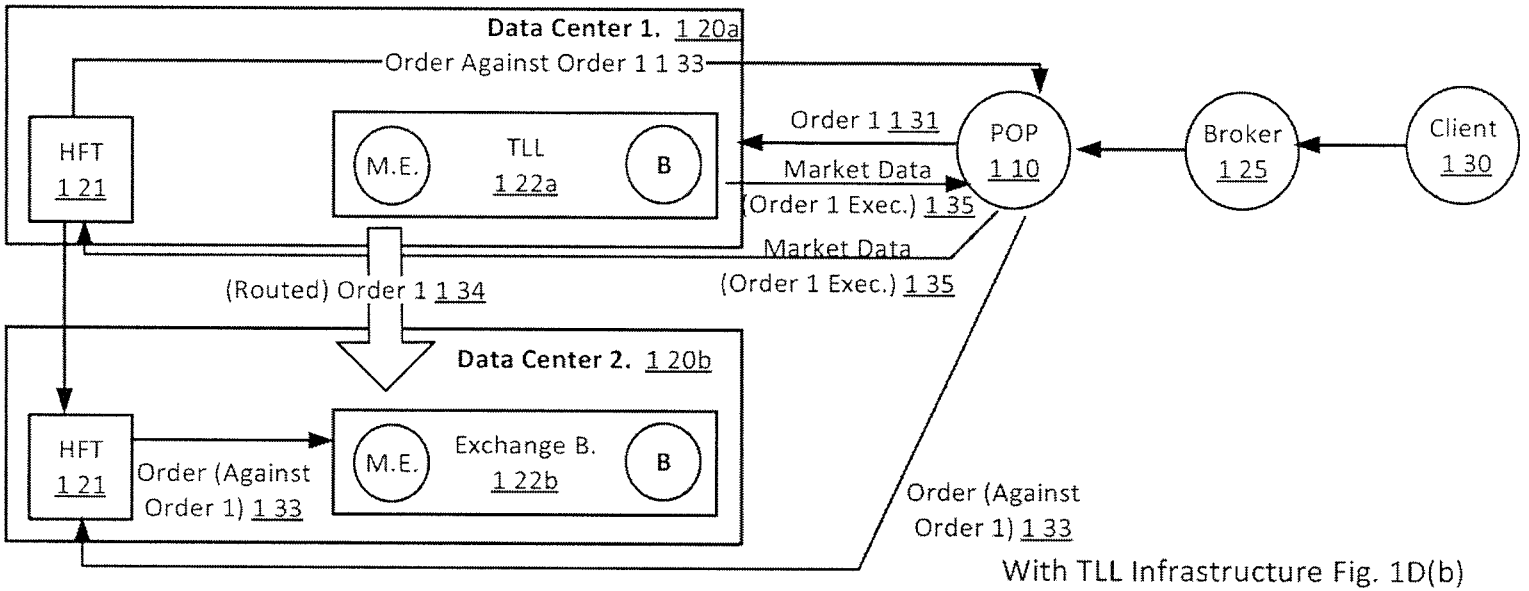
With TLL Infrastructure Fig. 1C(b)

FIGURE 1C

TLL Example: Reducing Latency Arbitrage



Without TLL Infrastructure Fig. 1D(a)



With TLL Infrastructure Fig. 1D(b)

FIGURE 1D

TLL Example: Reducing Arbitrage (Order Anticipation)

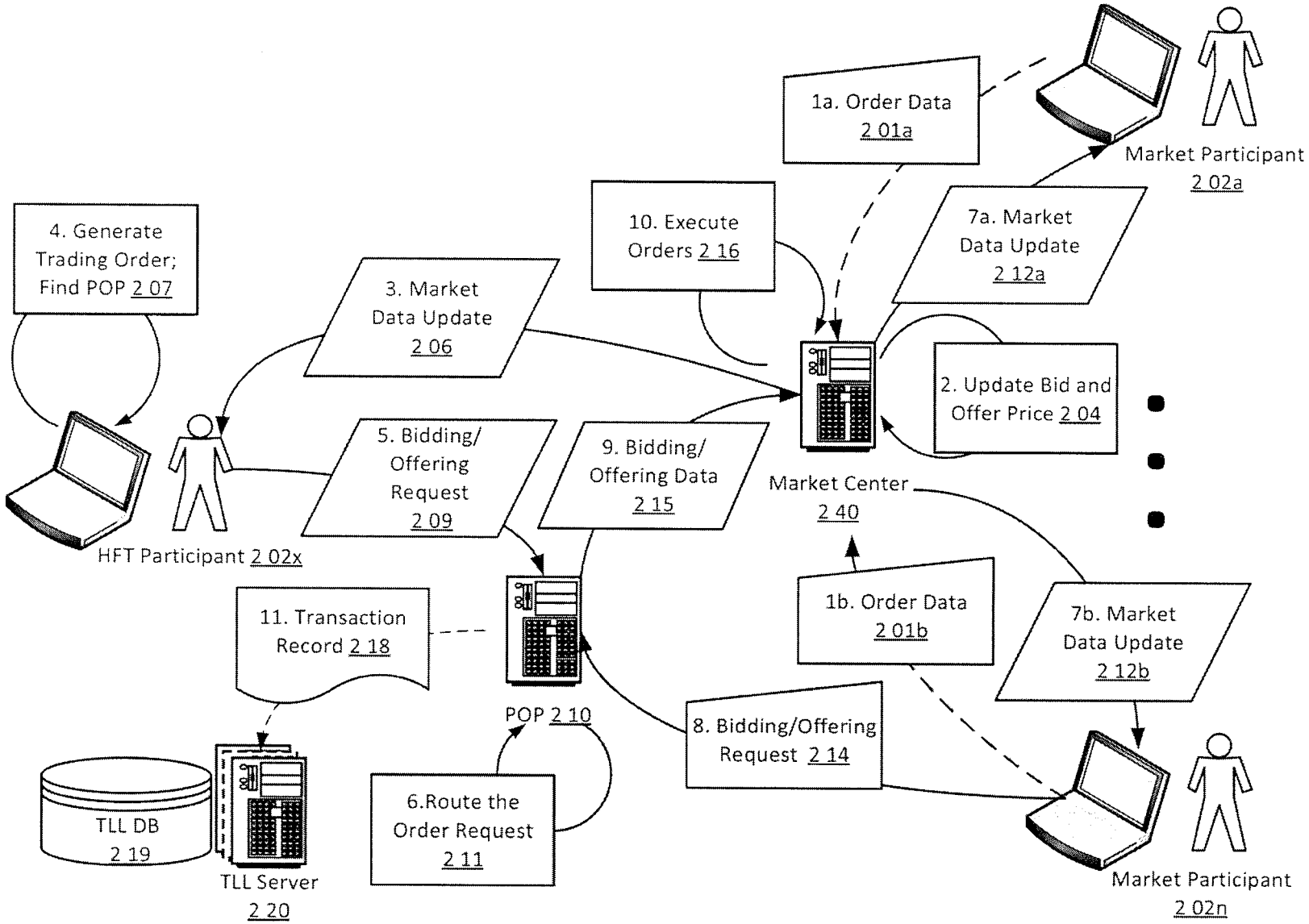


FIGURE 2

Example Data Flow: TLL Point-of-Presence (POP)

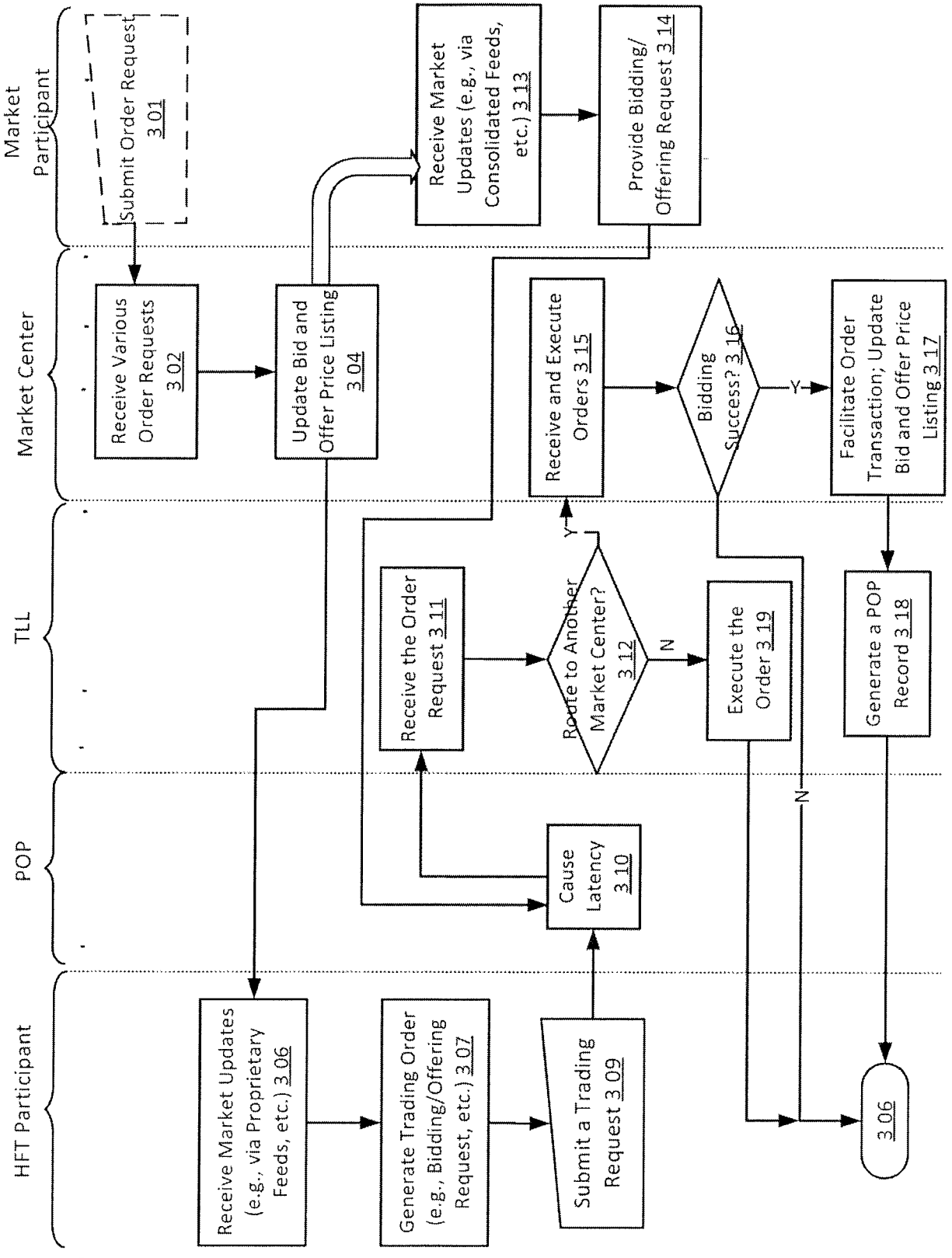


FIGURE 3 Example TLL Logic Flow: Reducing Arbitrage

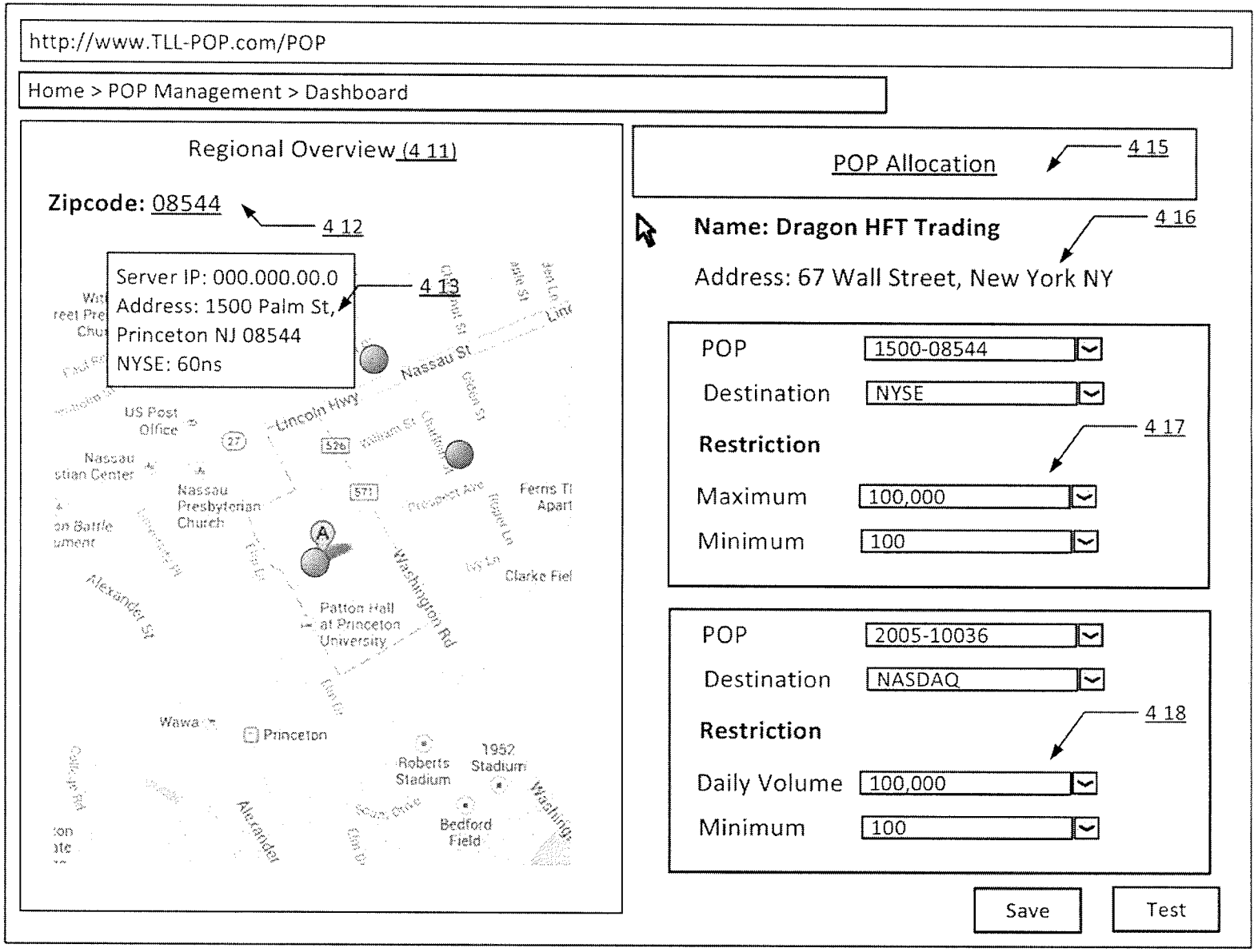


FIGURE 4A

Example TLL UI: POP Routing

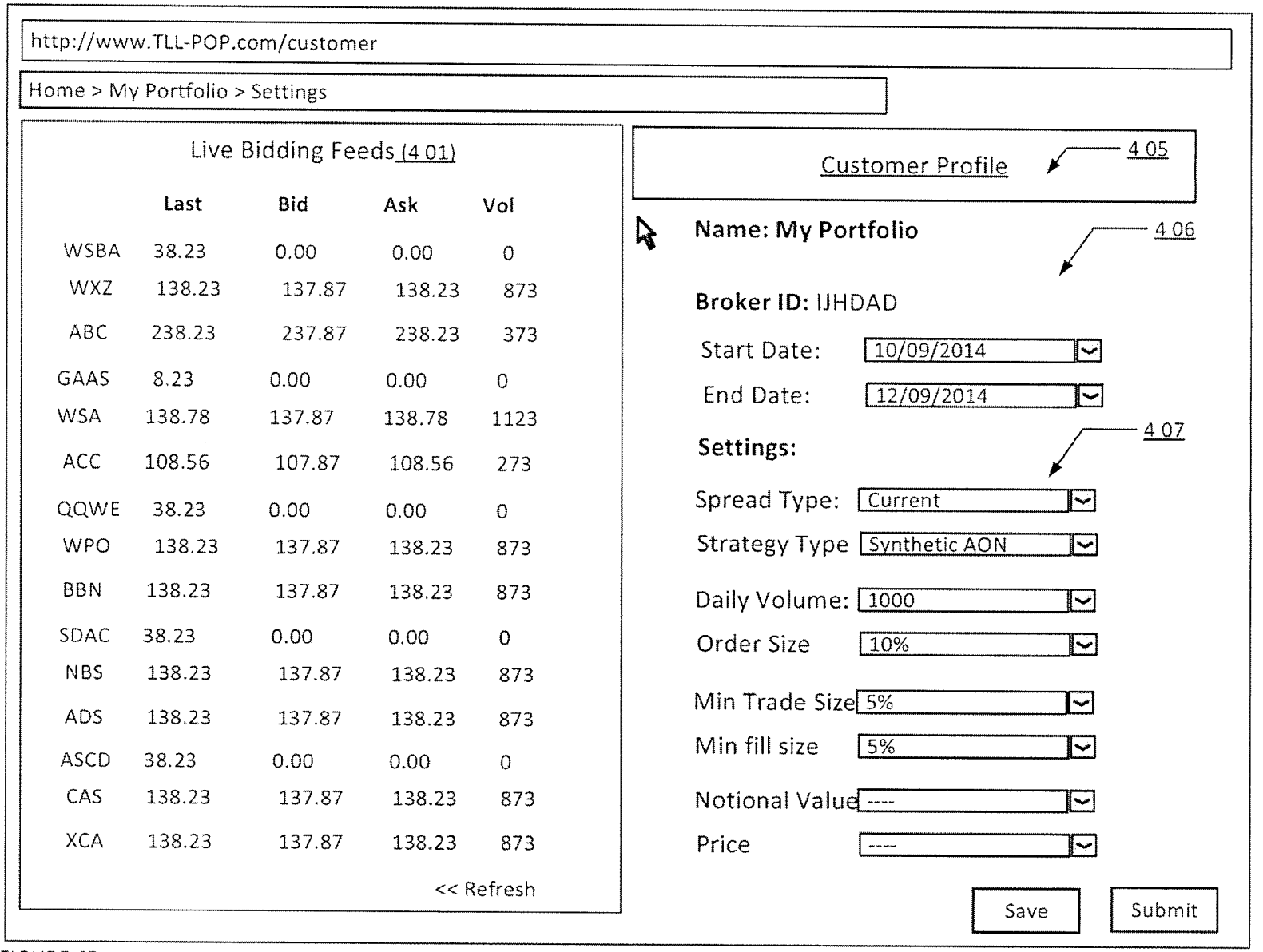


FIGURE 4B

Example TLL UI: Customer Settings

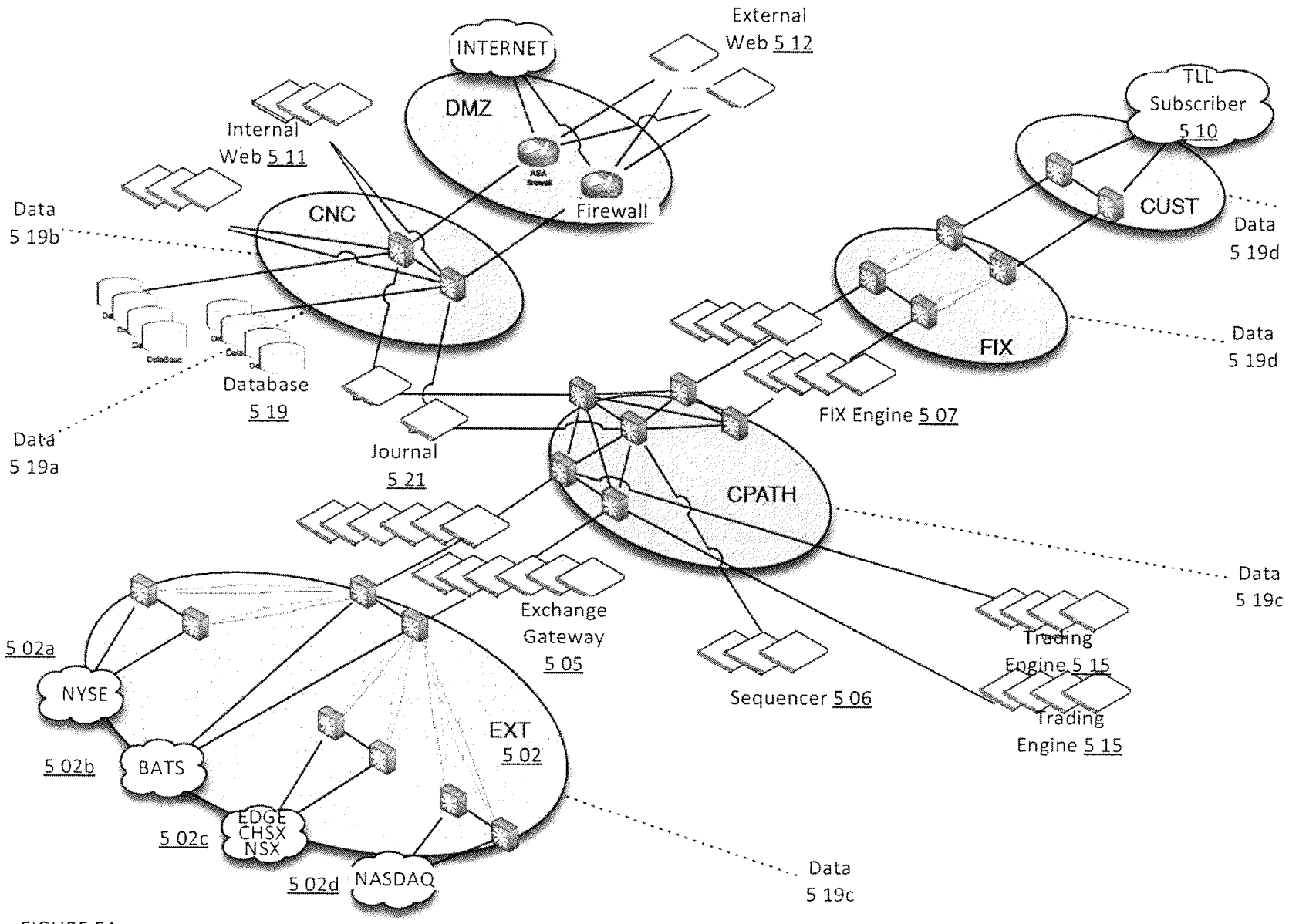
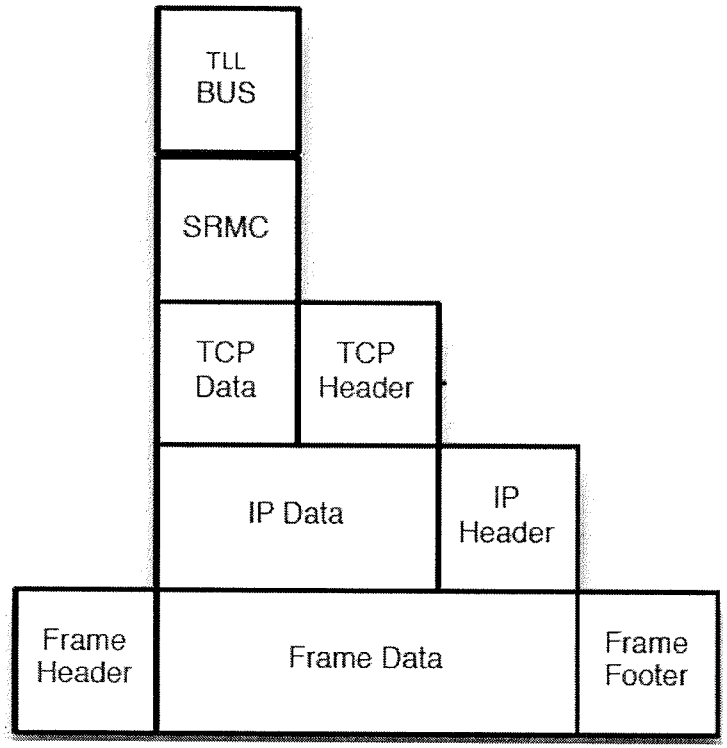
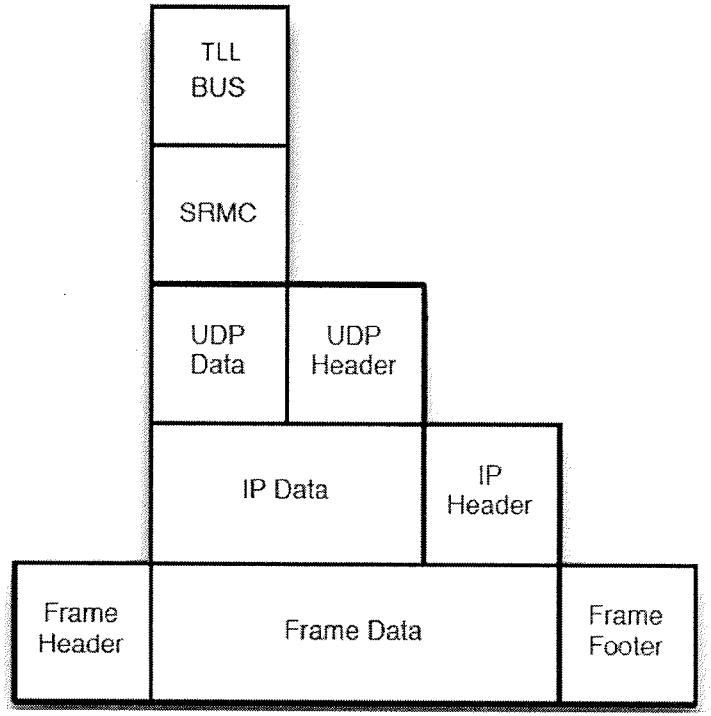


FIGURE 5A

Example TLL Infrastructure



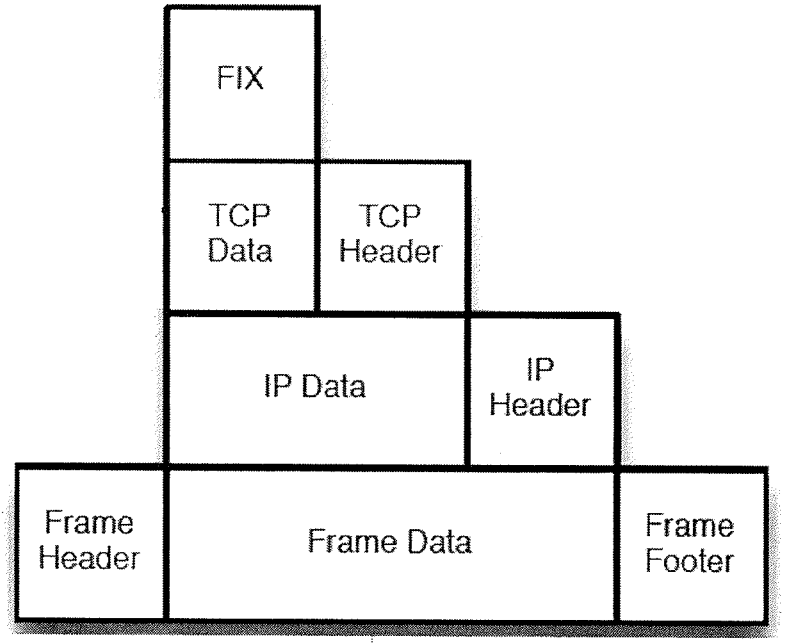
Data 5 19b



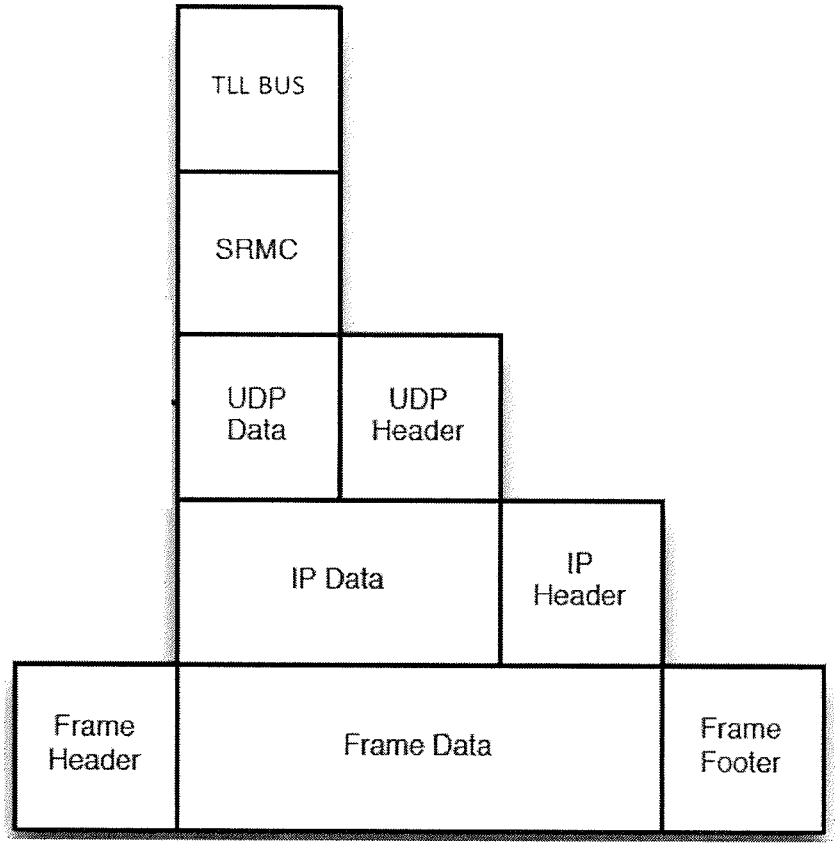
Data 5 19a

FIGURE 5B

Example TLL Data Packet



Data 5 19c



Data 5 19d

FIGURE 5C

Example TLL Data Packet

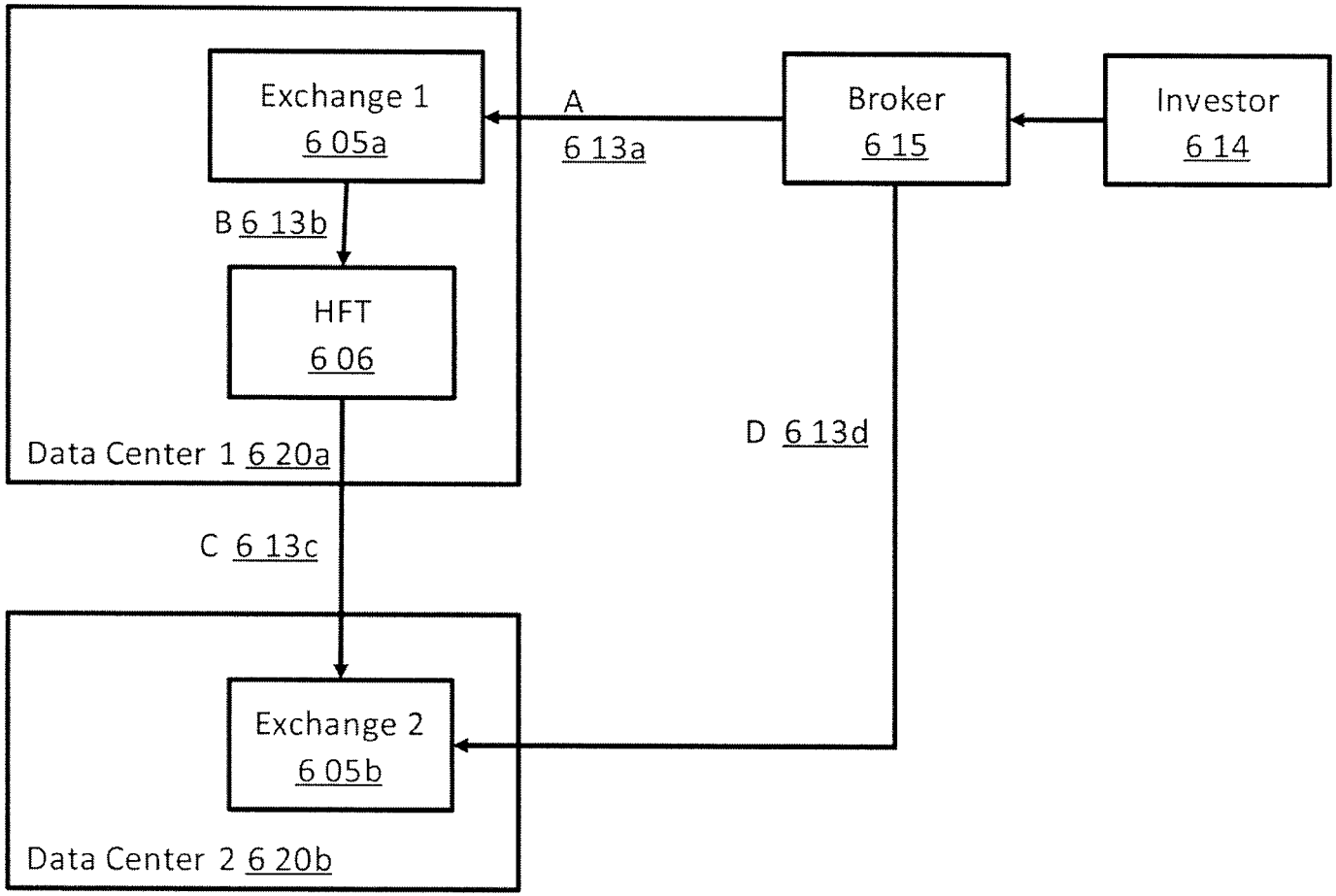


FIGURE 6A

Example TLL Diagram: Latency Arbitrage vs. Broker SOR

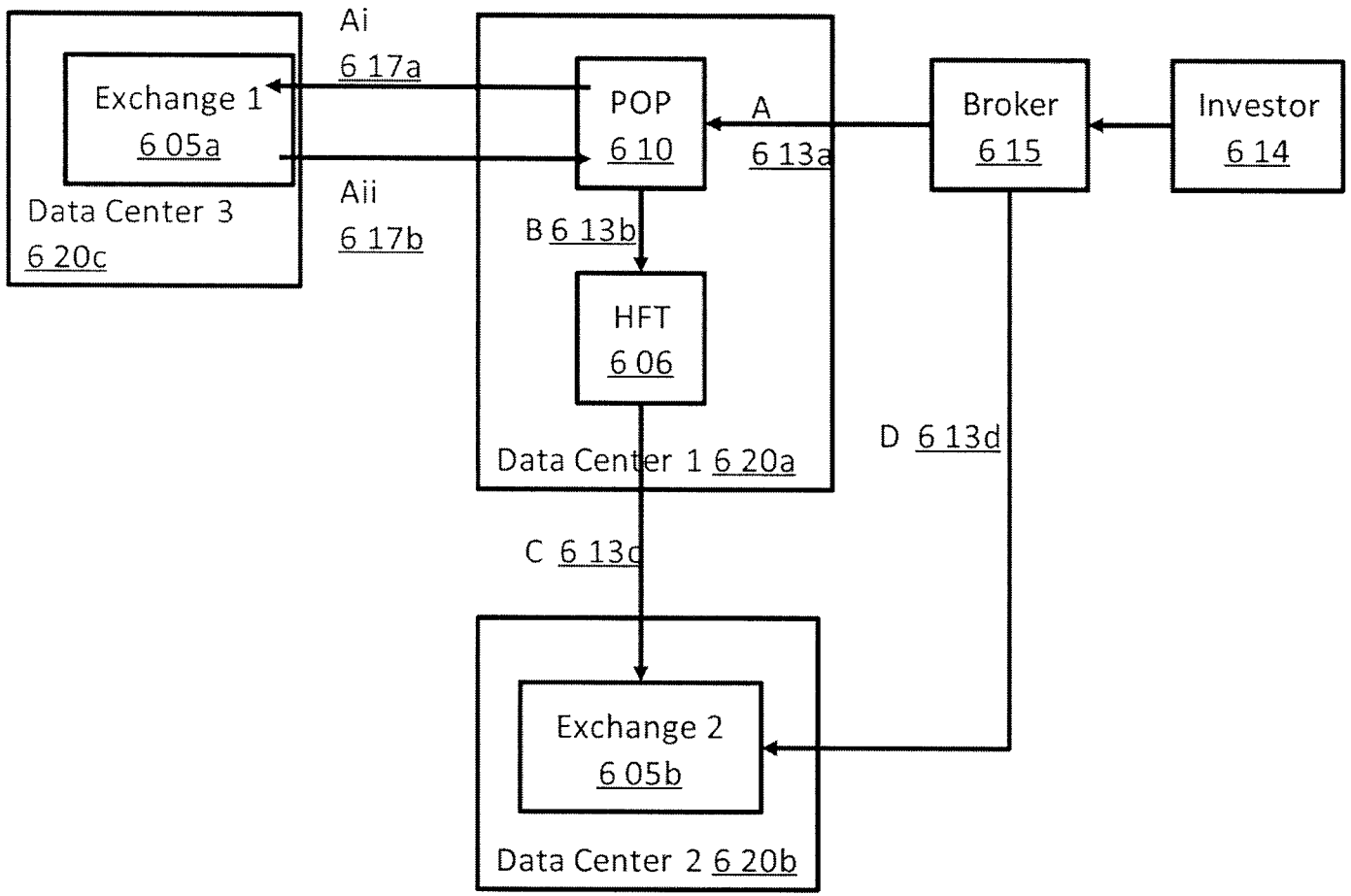


FIGURE 6B

TLL Example:Latency Arbitrage vs. Broker Smart Order Routers Inoculated with POP

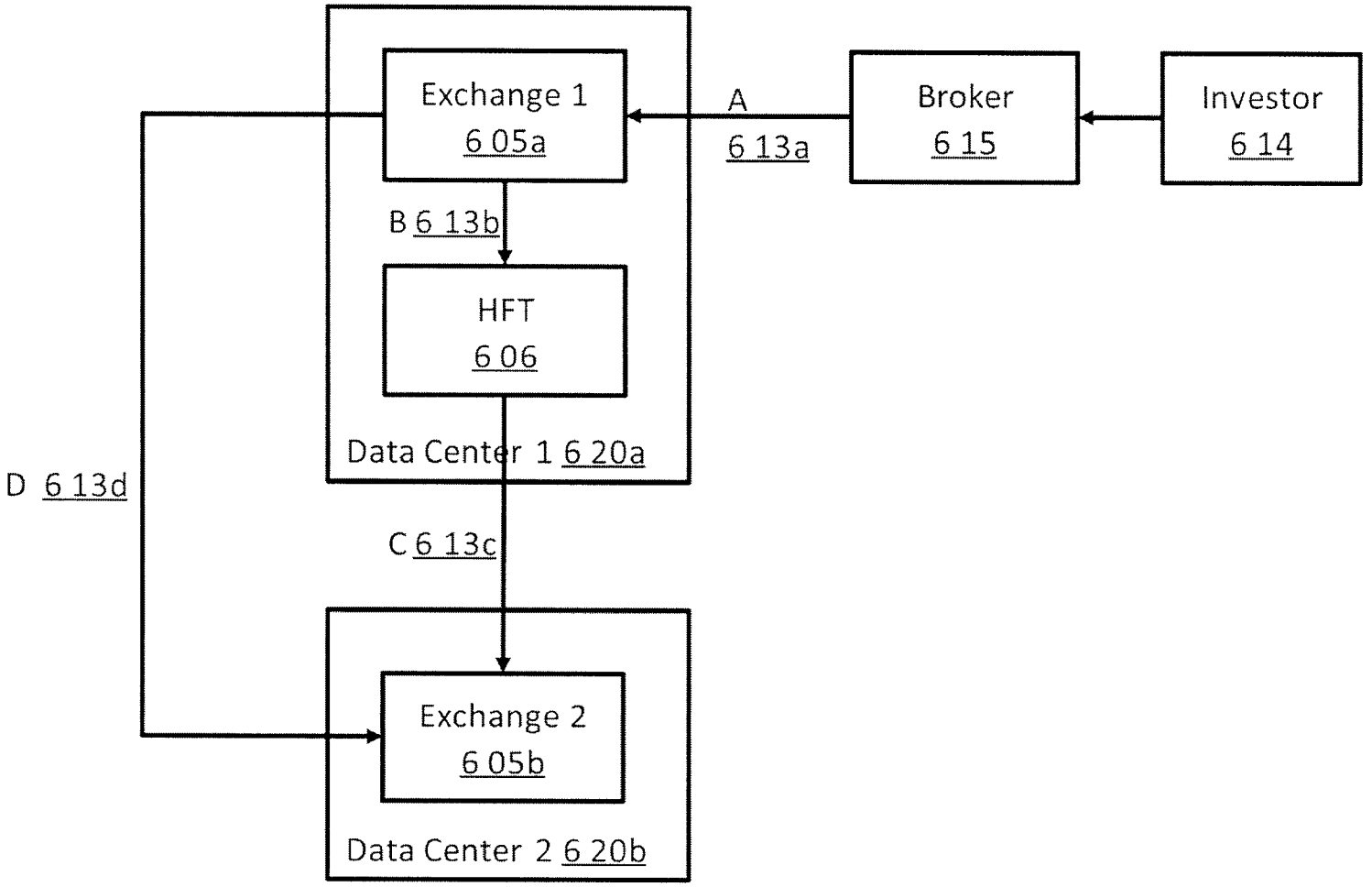


FIGURE 6C

TLL Example:Latency Arbitrage vs. Exchange SOR

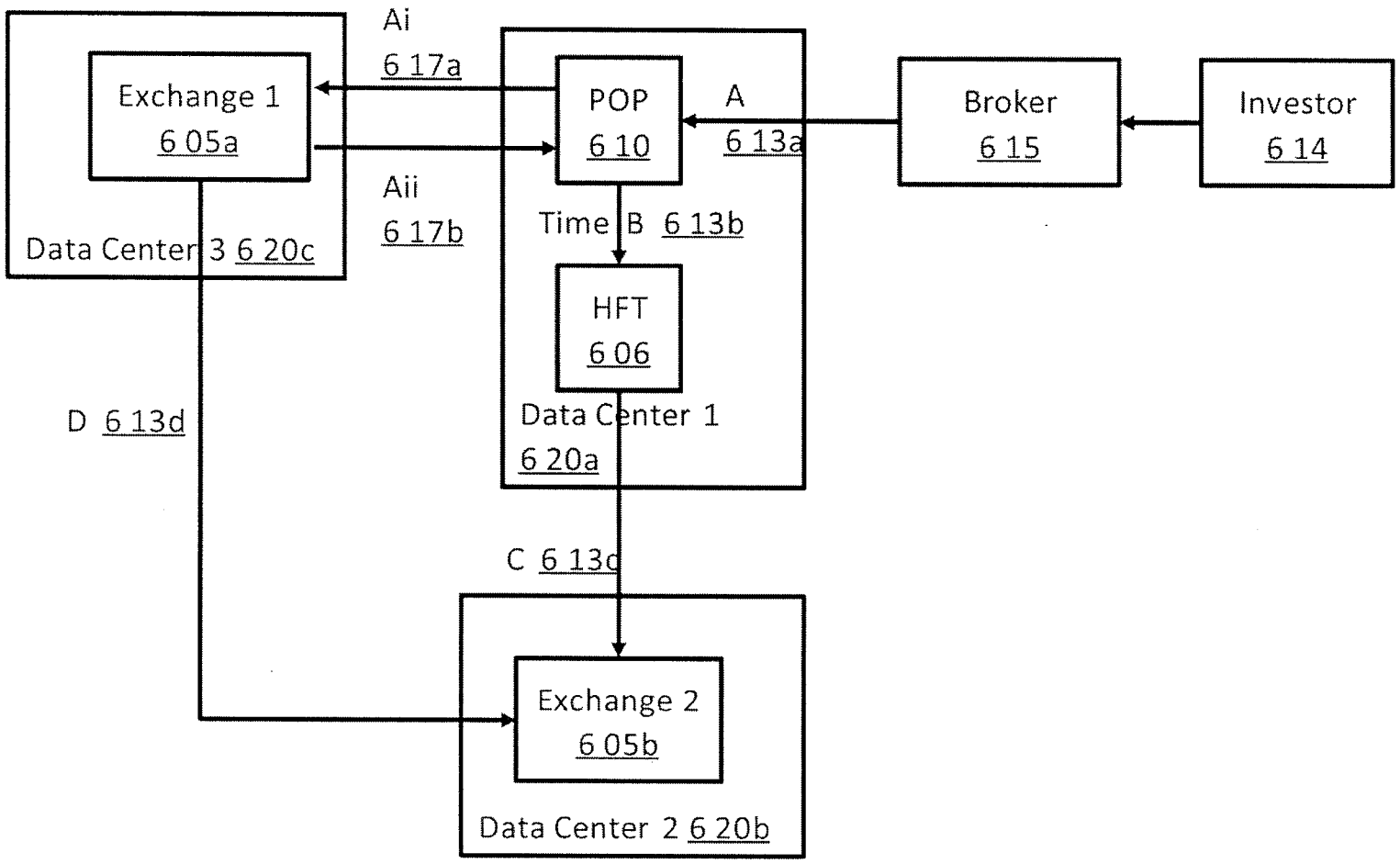


FIGURE 6D

TLL Example: Latency Arbitrage vs. Exchange SOR Inoculated

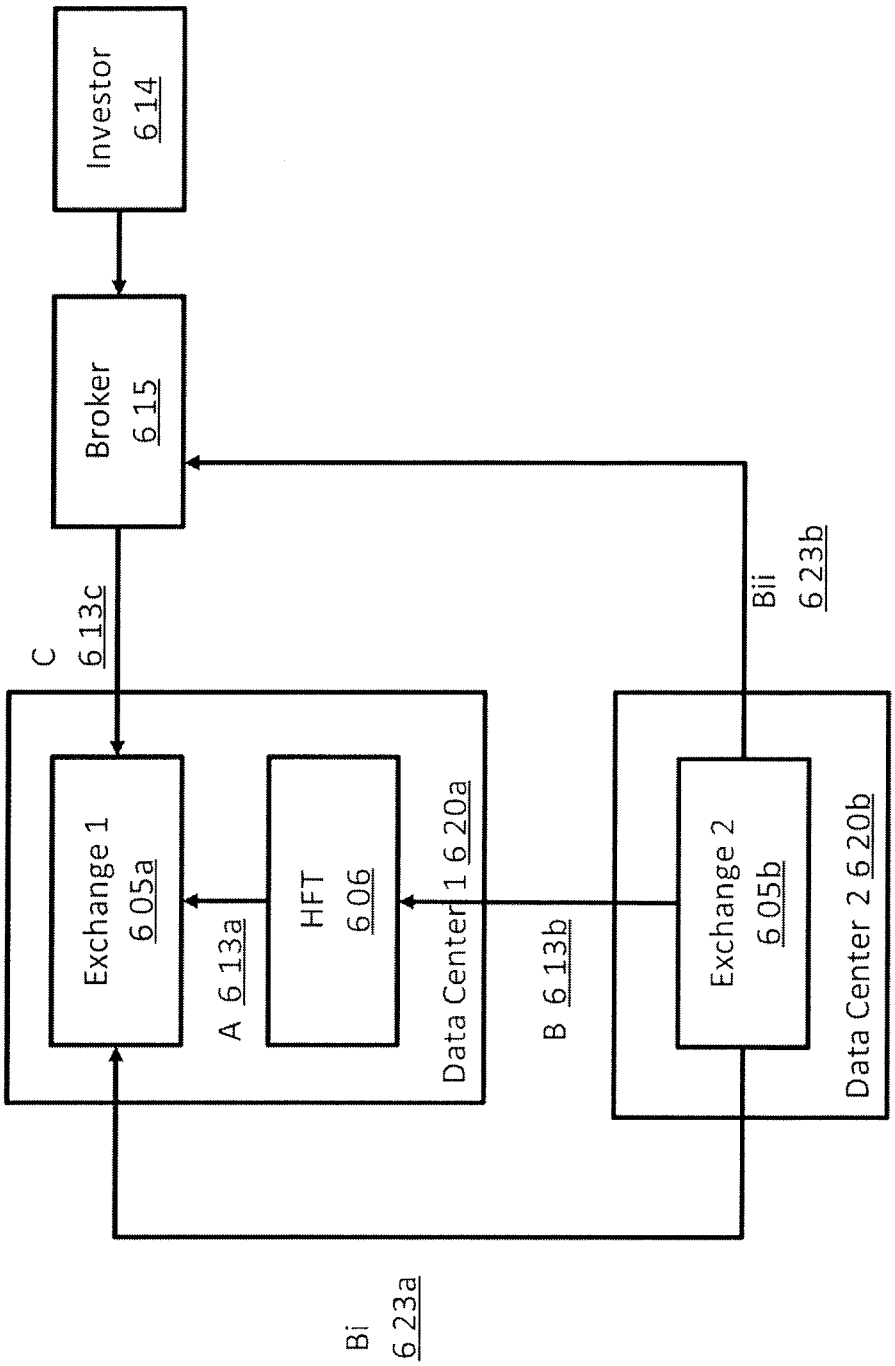


FIGURE 6E

TLL Example: Order Book Arbitrage (Passive)

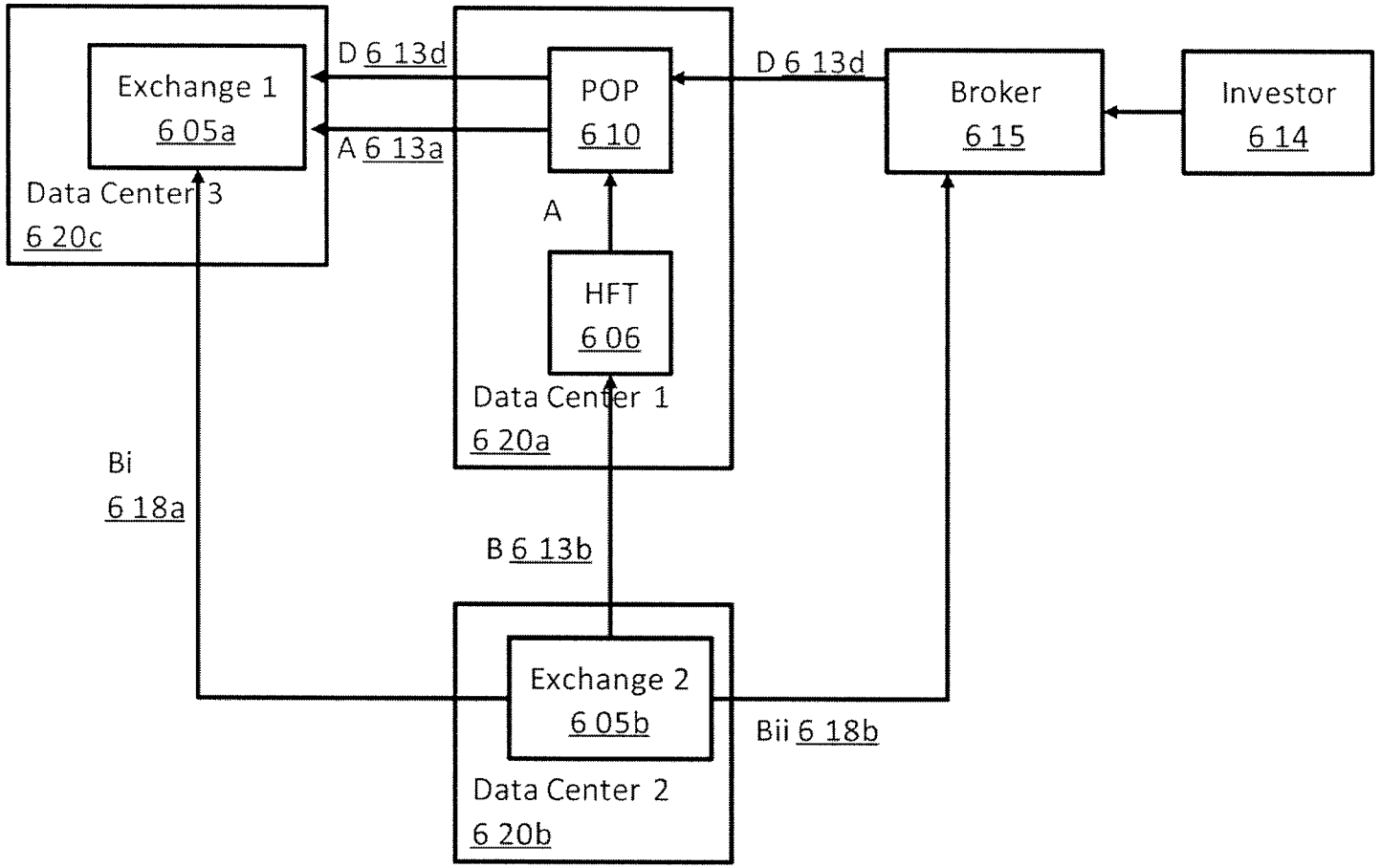


FIGURE 6F

TLL Example: Order Book Arbitrage (Passive Inoculated)

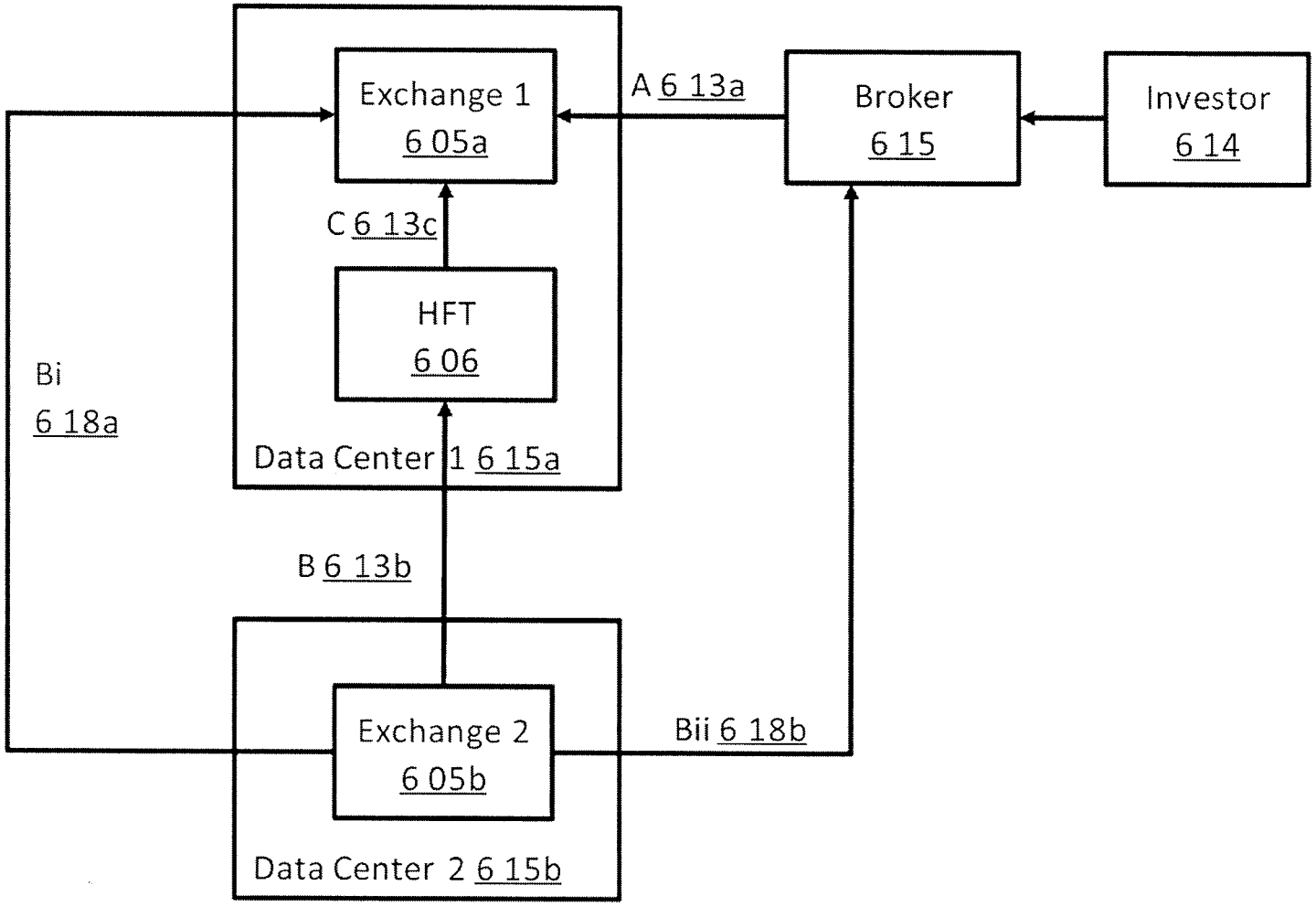


FIGURE 6G

TLL Example: Order Book Arbitrage (Aggressive)

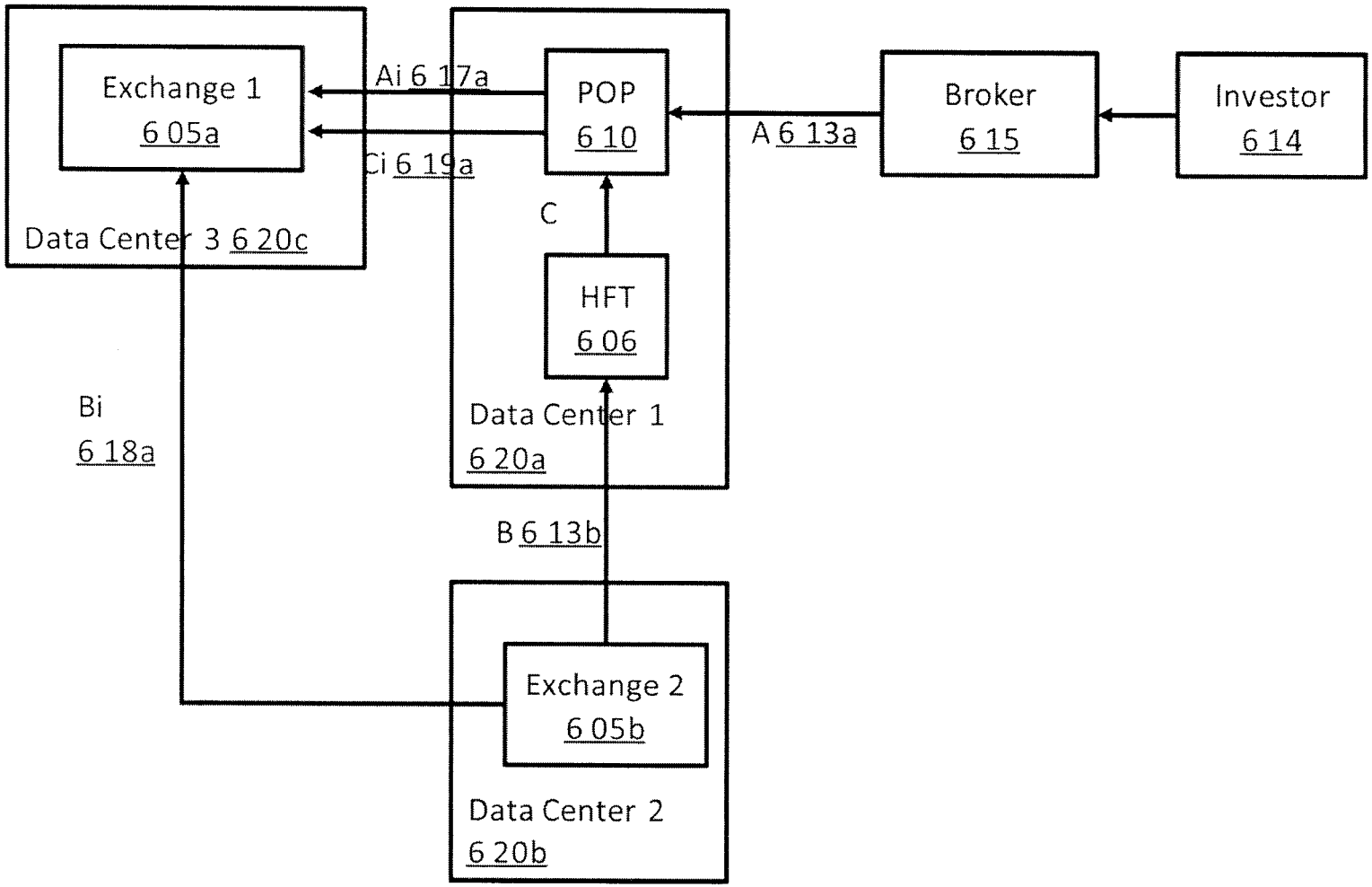


FIGURE 6H

TLL Example: Order Book Arbitrage (Aggressive Inoculated)

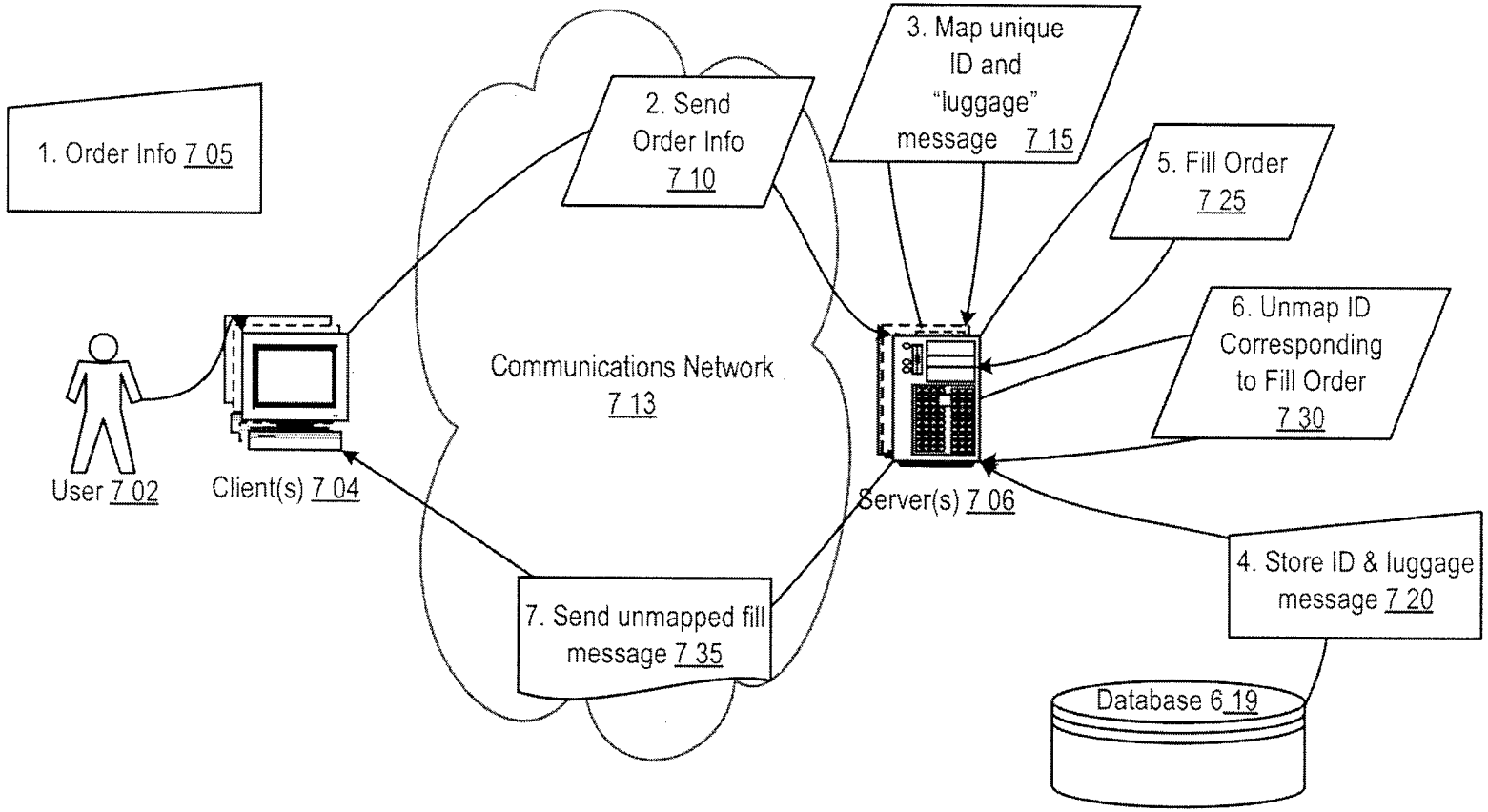

1. Order Info 7 05
2. Send Order Info 7 10
3. Map unique ID and "luggage" message 7 15
5. Fill Order 7 25
6. Unmap ID Corresponding to Fill Order 7 30
Communications Network 7 13
User 7 02
Client(s) 7 04
Server(s) 7 06
4. Store ID & luggage message 7 20
7. Send unmapped fill message 7 35
Database 6 19
ID Mapping and Management Component 7 01

Figure 7

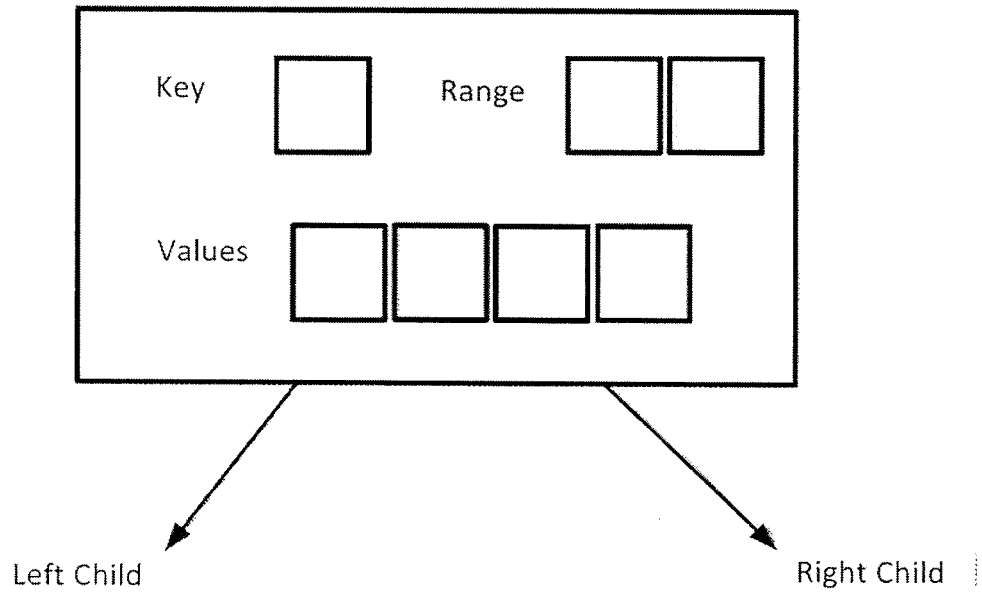


FIGURE 8A

TLL Example: Binary Search Tree

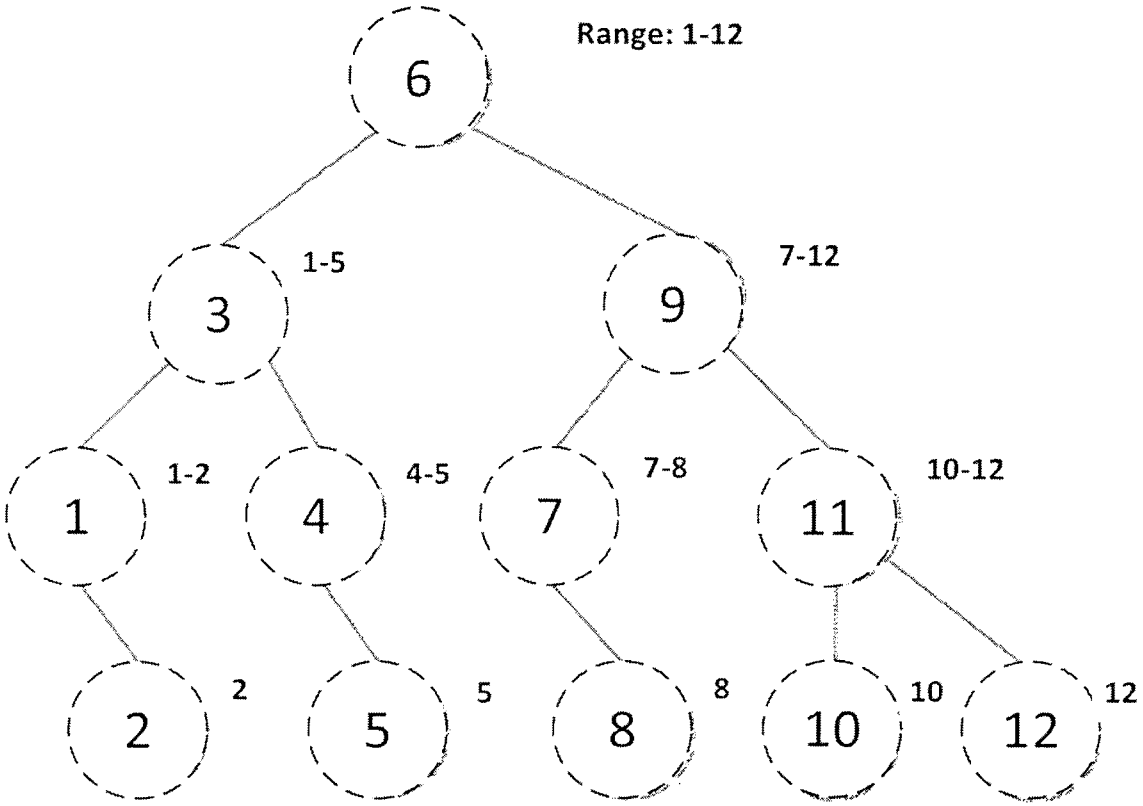


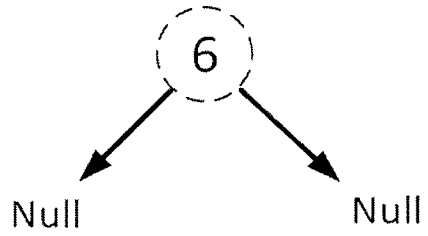
FIGURE 8B

TLL Example: Binary Search Tree

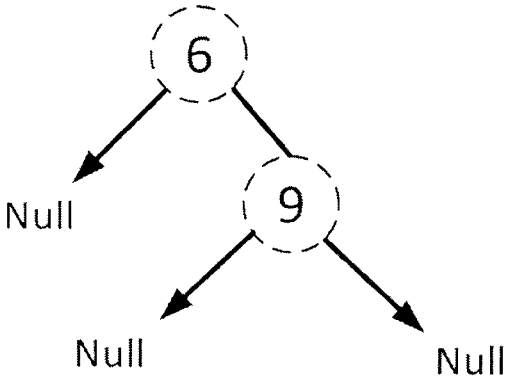
a.



b.



c.



d.

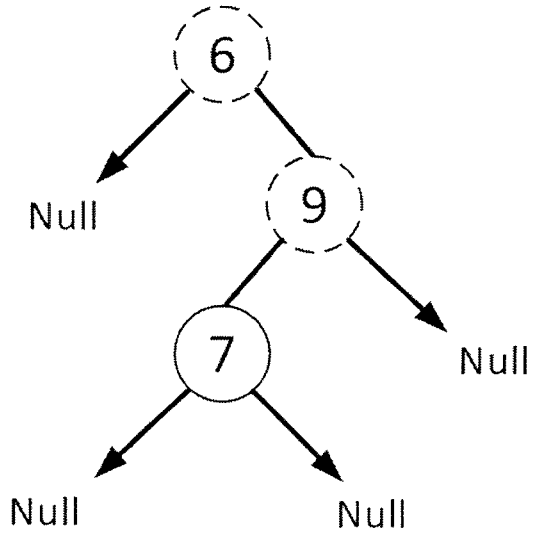
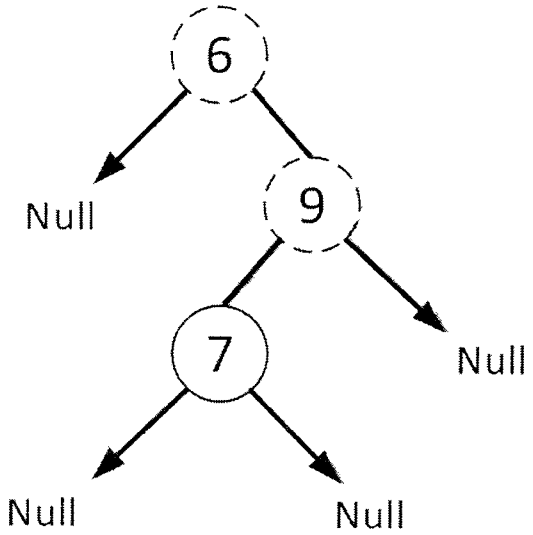


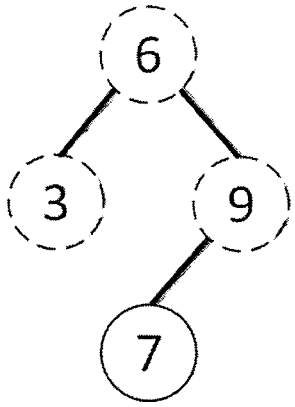
FIGURE 8C

TLL Example: Binary Search Tree

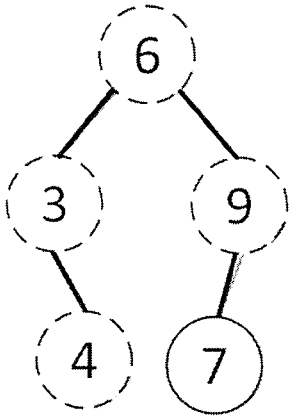
a.



b.



c.



d.

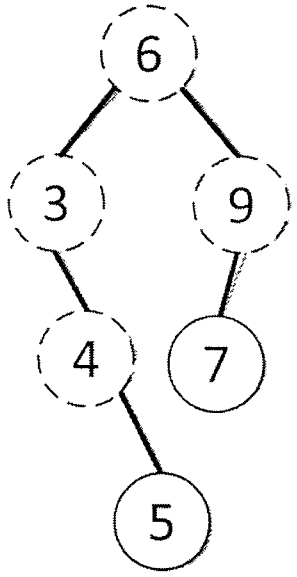
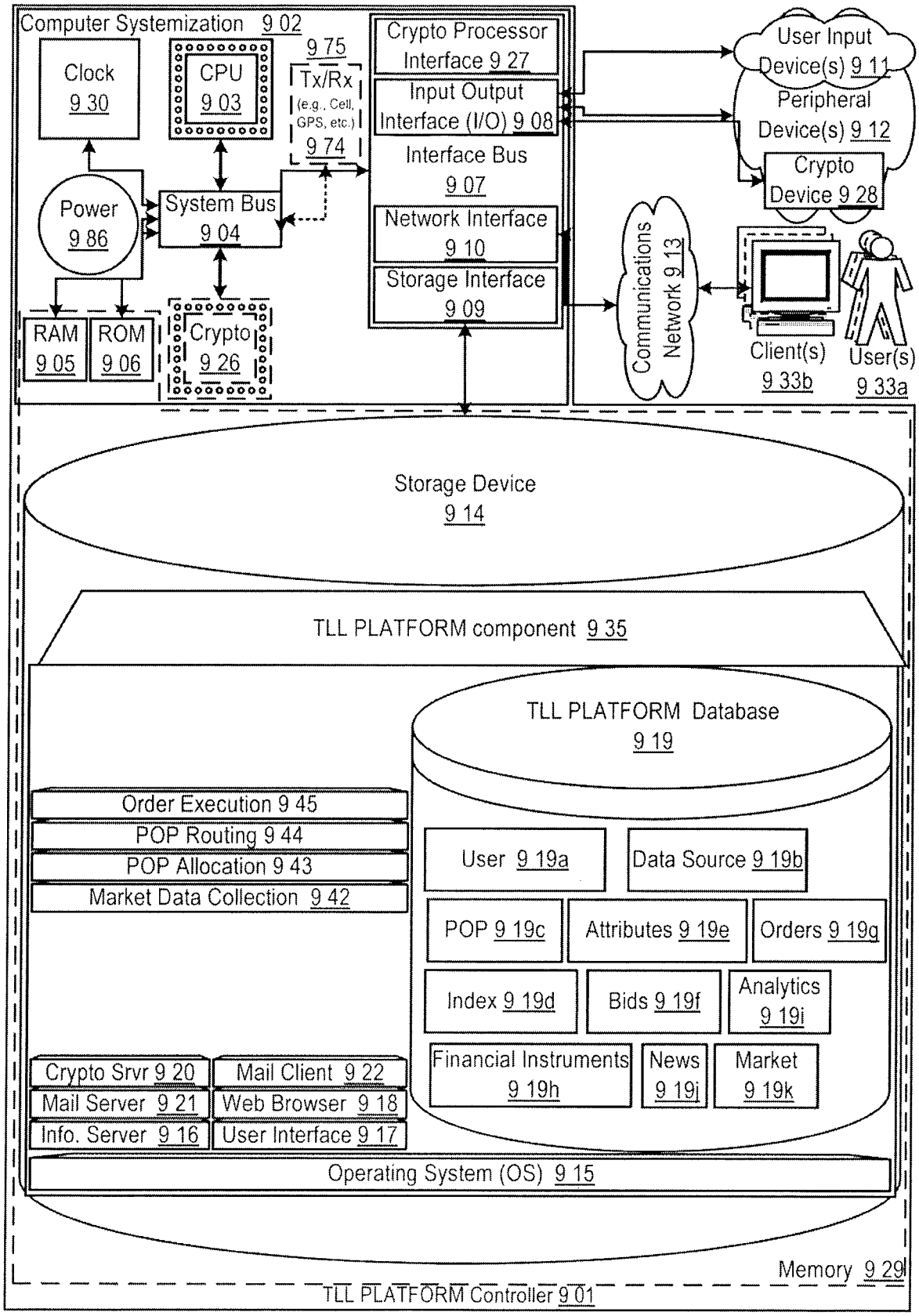


FIGURE 8D

TLL Example: Binary Search Tree

FIGURE 9


Computer Systemization 9 02
Clock 9 30
CPU 9 03
9 75
Tx/Rx (e.g., Cell, GPS, etc.) 9 74
Power 9 86
System Bus 9 04
RAM 9 05
ROM 9 06
Crypto 9 26
Crypto Processor Interface 9 27
Input Output Interface (I/O) 9 08
Interface Bus 9 07
Network Interface 9 10
Storage Interface 9 09
User Input Device(s) 9 11
Peripheral Device(s) 9 12
Crypto Device 9 28
Communications Network 9 13
Client(s) 9 33b
User(s) 9 33a
Storage Device 9 14
TLL PLATFORM component 9 35
TLL PLATFORM Database 9 19
Order Execution 9 45
POP Routing 9 44
POP Allocation 9 43
Market Data Collection 9 42
User 9 19a
Data Source 9 19b
POP 9 19c
Attributes 9 19e
Orders 9 19g
Index 9 19d
Bids 9 19f
Analytics 9 19i
Financial Instruments 9 19h
News 9 19j
Market 9 19k
Crypto Srvr 9 20
Mail Client 9 22
Mail Server 9 21
Web Browser 9 18
Info. Server 9 16
User Interface 9 17
Operating System (OS) 9 15
Memory 9 29
TLL PLATFORM Controller 9 01