



Concrete Architecture of Bitcoin Core

Presented by group 14, “Kryptic”

<https://youtu.be/ljLX8Adxd6Q>

Team Kryptic

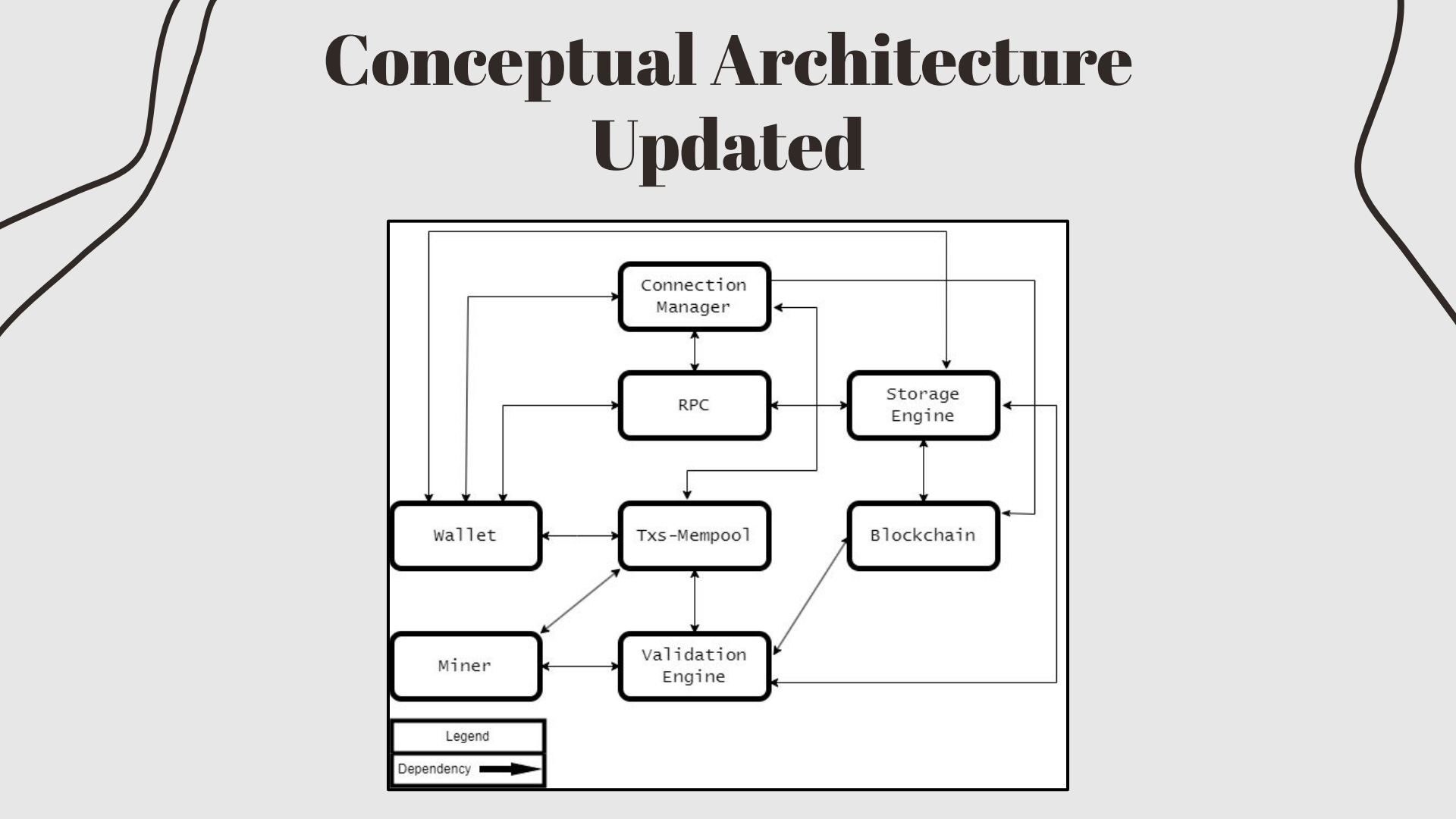
- Eric Lam – 20229013 (Leader)
 - Andrew Zhang – 20210066 (Presenter)
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 - Amy Hong – 20219853
 - Sueyeon Han – 20217002
 - Asher Song – 20112257
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Derivation Process

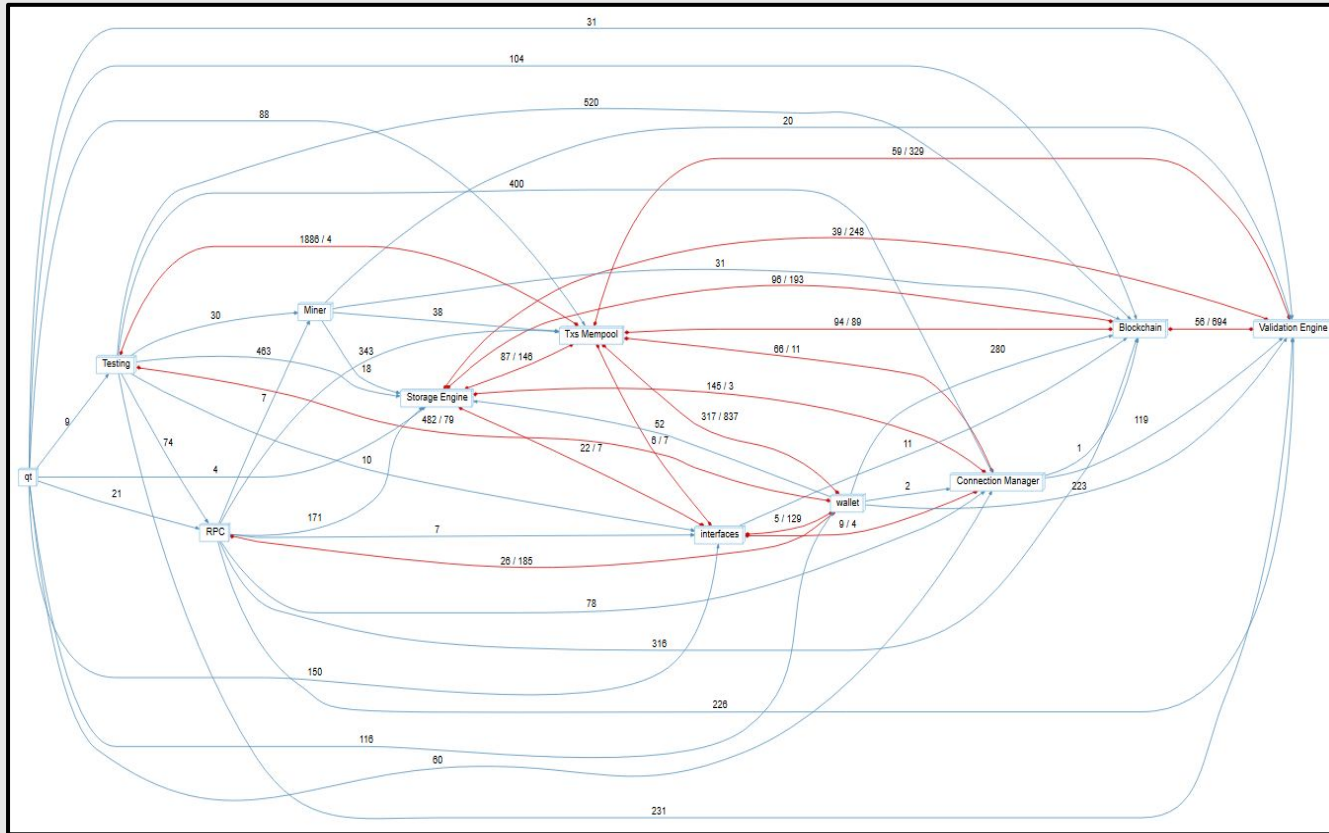
- Updating the conceptual Architecture
 - Using Understand to analyse our options for concrete architecture
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Conceptual Architecture Updated

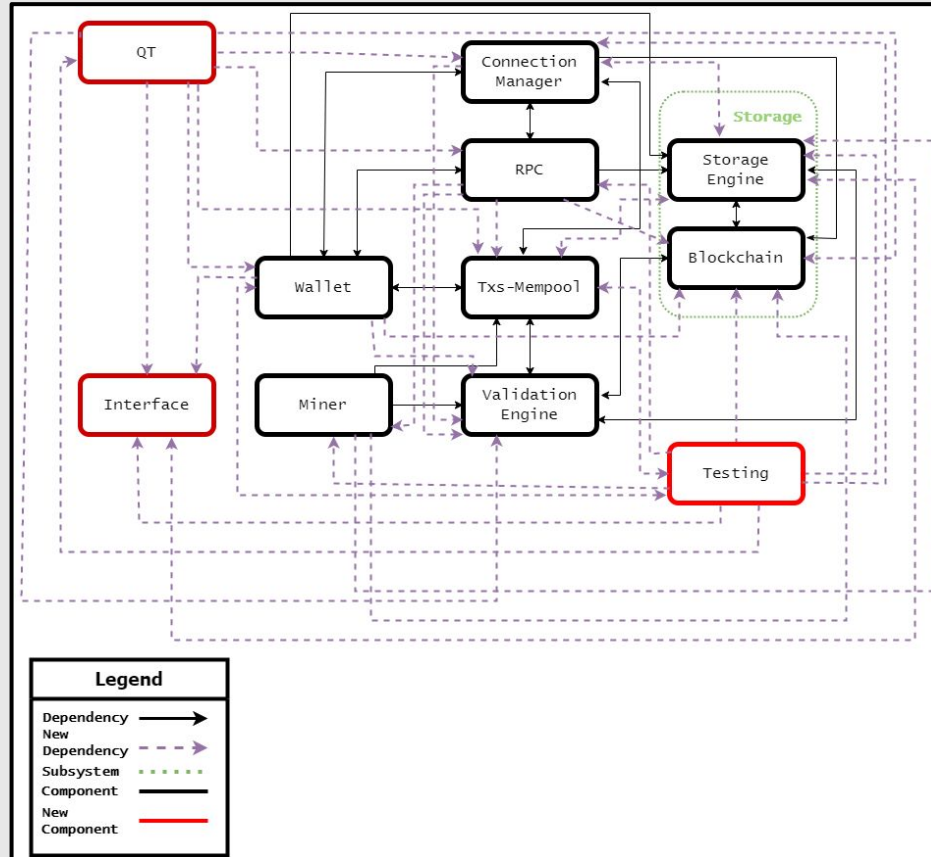
The diagram illustrates a conceptual architecture update. It features a central box labeled 'Connection Manager'. Arrows indicate connections from this manager to other components, which are partially visible as rectangular boxes on the left and right sides of the frame. The overall layout suggests a flow or data exchange between the central manager and the peripheral components.



Understand Analysis Diagram



Concrete Architecture



Divergences at the High Level

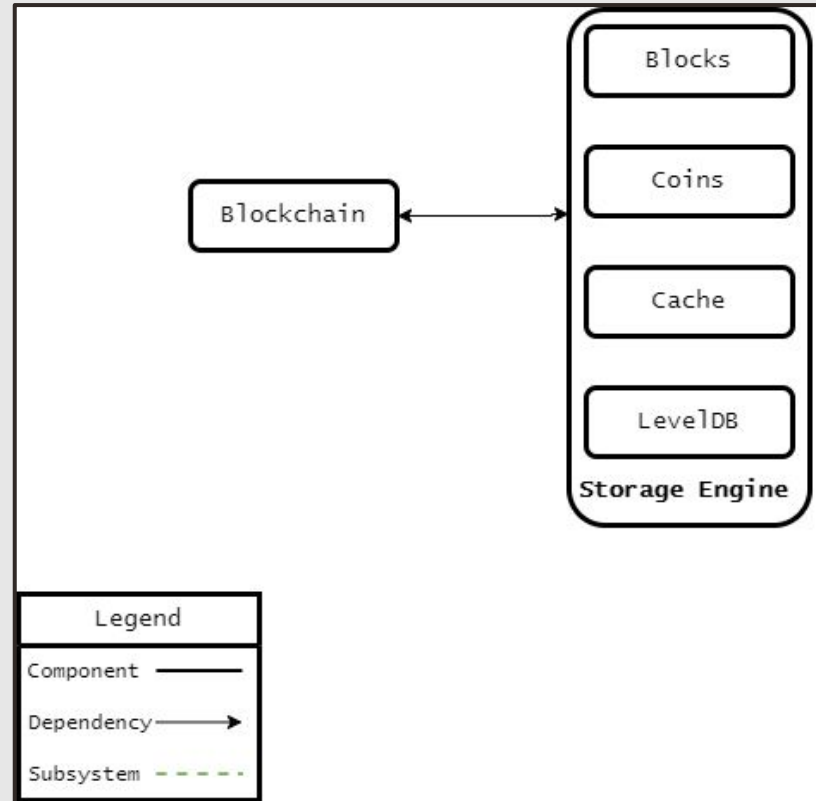
Dependency Changes:

- Testing (added)
 - Storage Engine ↔ Tx & Mempool
 - Wallet → Validation Engine
 - Storage Engine ↔ Connection Manager
 - Connection Manager → Validation Engine
 - Miner, Wallet → Storage Engine
 - RPC → Miner, Tx & Mempool, Blockchain, Validation Engine, Storage Engine
 - Miner → Tx & Mempool (not ↔)
 - Miner → Validation Engine (not ↔)
 - Wallet, Miner → Blockchain
-

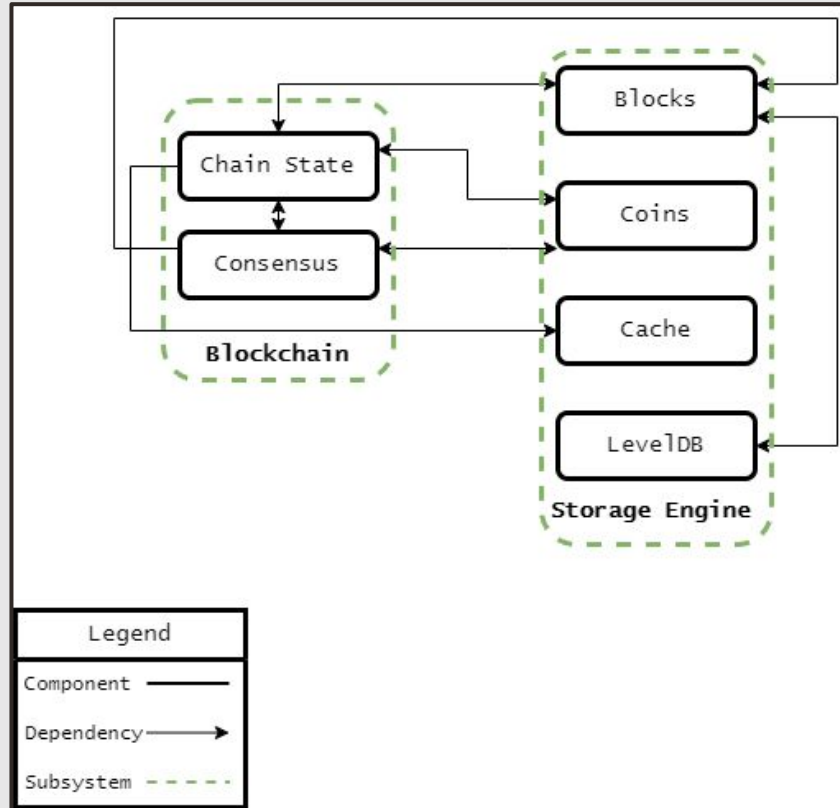
The Storage of the Blockchain

- Peer to Peer style
 - no central database
 - Components (blocks, chainstates, coins, etc...)
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Conceptual Architecture of 2nd level subsystem



Concrete Architecture of 2nd level subsystem

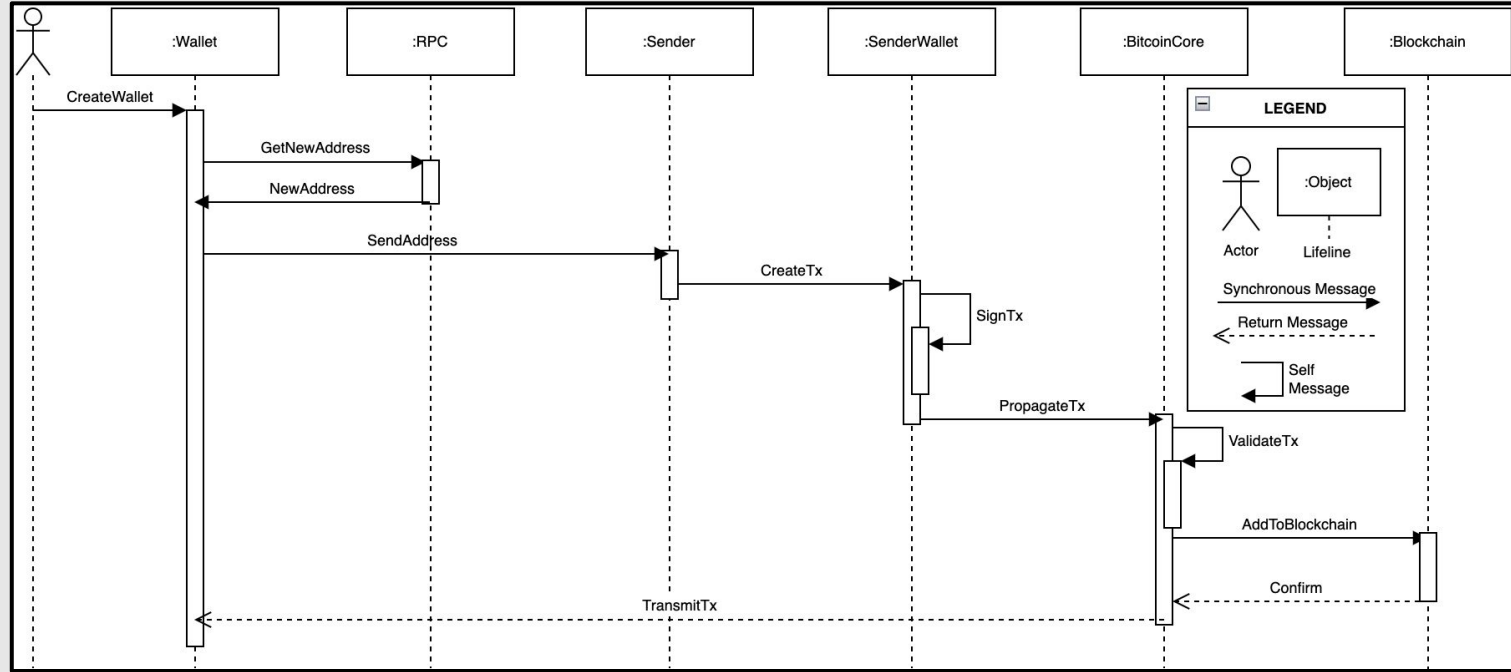


Divergences at the 2nd Level

Added Dependencies:

- Chainstate database
 - LevelDB (block storage)
 - UTXO (coins)
 - Cache
 - Consensus
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Use Case Scenario



Concurrency and team issues

- The RPC is used in almost all cases
 - Bitcoin core's subsystems are very complex
 - Assignment timing with the team was difficult
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Lessons Learned

- We understood why conceptual architecture and concrete architecture do not match
 - Translating the understand diagram to concrete architecture
 - Importance of the report organization and structure
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Conclusion
