SERVICE LOOSE COUPLING

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Motivation

- Software maintenance and reuse
- Fault tolerance and scalable execution
- Governance and trust
  - Cf Sony Rootkit
- Avoid technological lock-in
  - IT economics: suppliers want lock-in!
- Decoupled Contract

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Loose Coupling Patterns

- Key patterns: Service Façade
  - Encapsulate and abstract internal services
  - Coarsen grain of interaction

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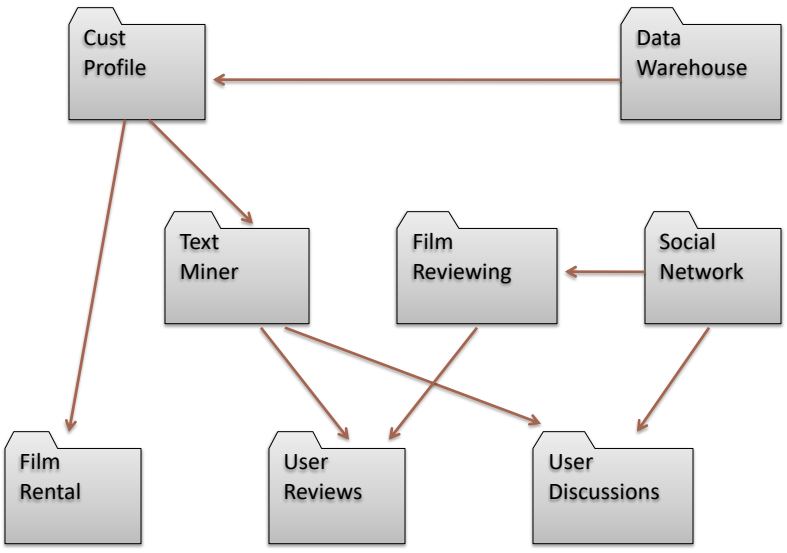

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Loose Coupling Patterns

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- Concurrent Contracts

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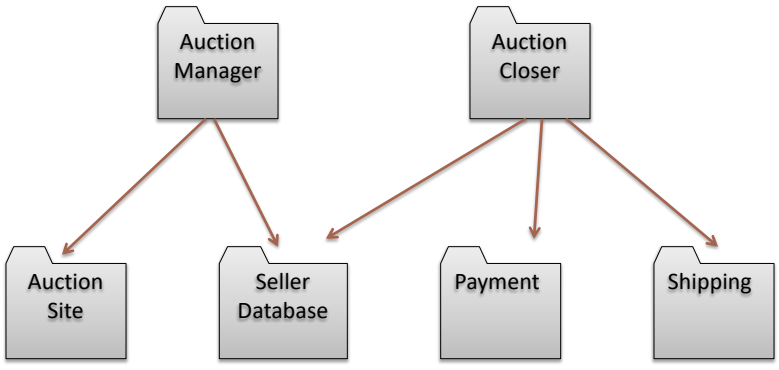
Concurrent Contracts



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Loose Coupling Patterns

- Key patterns: Service Façade
  - Encapsulate and abstract internal services
  - Coarsen grain of interaction
- Concurrent Contracts
- Legacy Wrapper
  - DDD: Anti-corruption layer
  - Typically combines façade and adapter patterns

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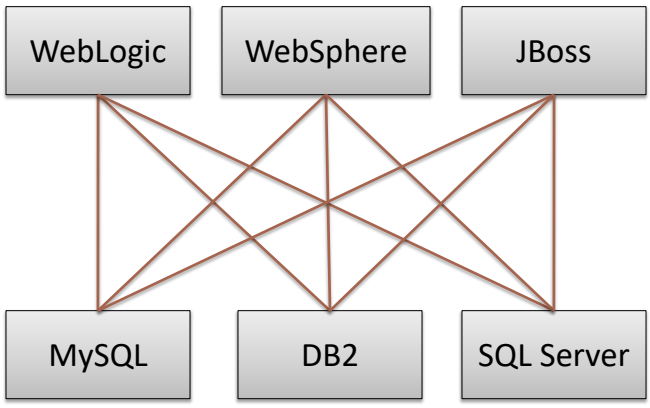
Legacy Integration



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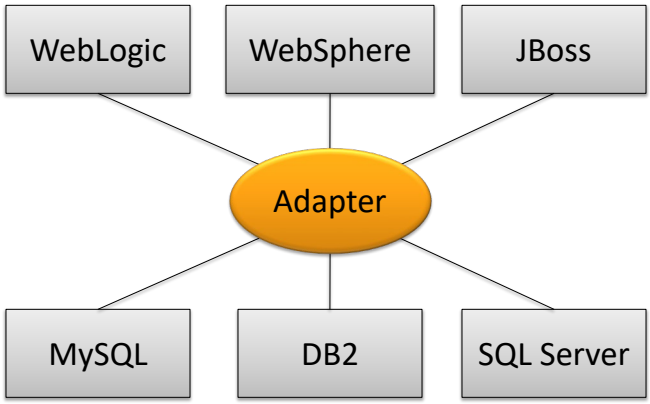
Legacy Adapter



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Cost of Loose Coupling

- Cost of transitioning between layers
  - Remapping network buffers between layers
  - Direct controller-to-application communication
  - Filter fusion
- Reliable failure-handling
  - RPC stack: tight coupling for reliability

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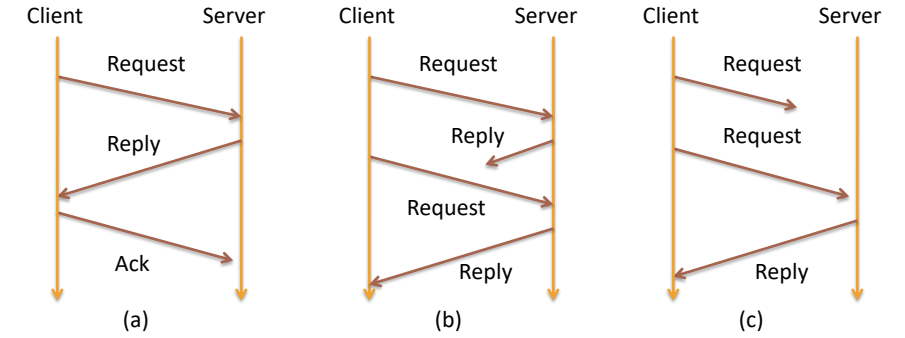
Tight Coupling in RPC Stack



Req #: 17 | Req #: 17 | Req #: 17 | Req #: 17 | Req #: 17 | Req #: 16

Cost of Loose Coupling

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```
interface AddQ {
  int getRequestNum();
  void append(int reqNum, Object data);
}
```