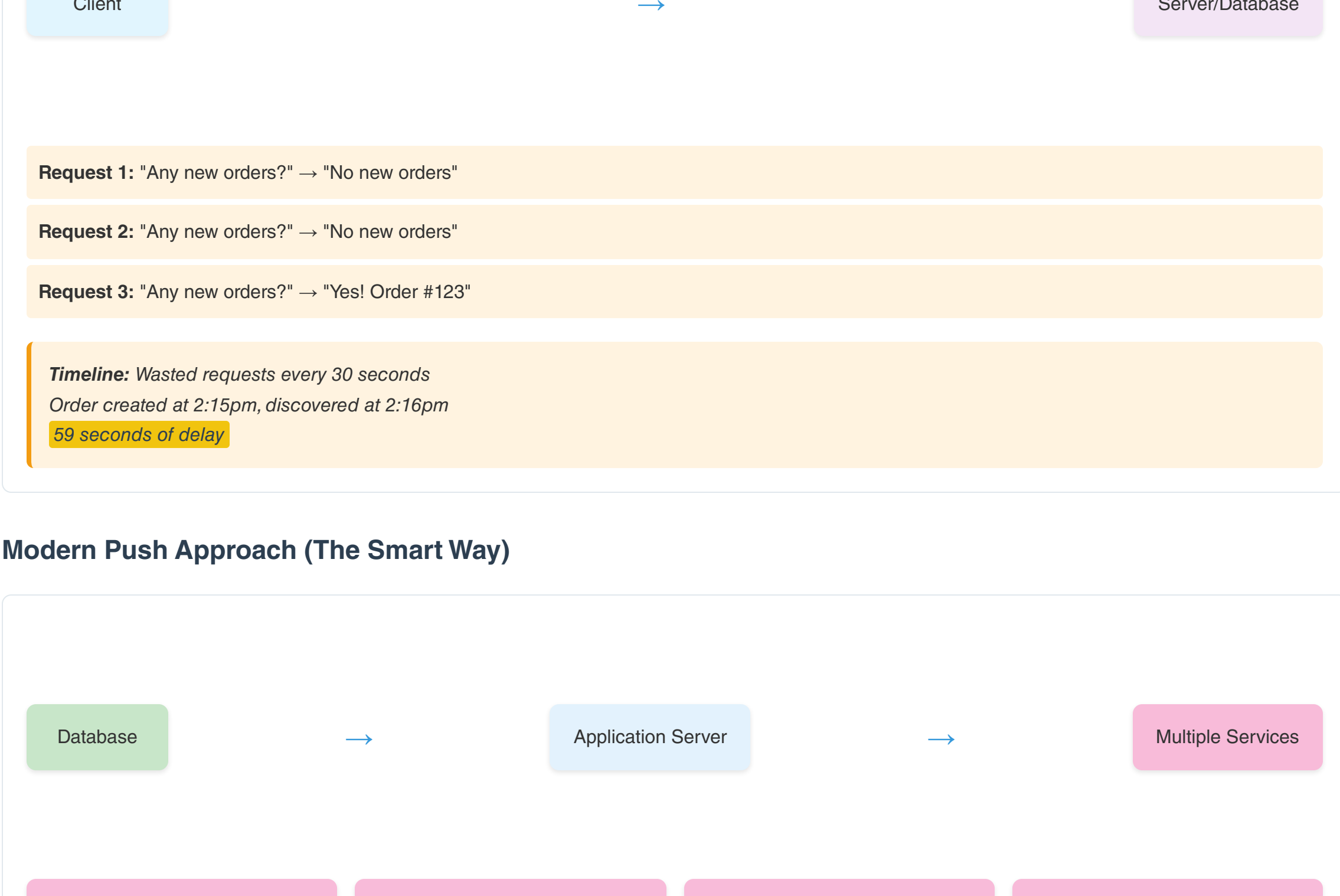


Push Notifications & Real-Time Communication

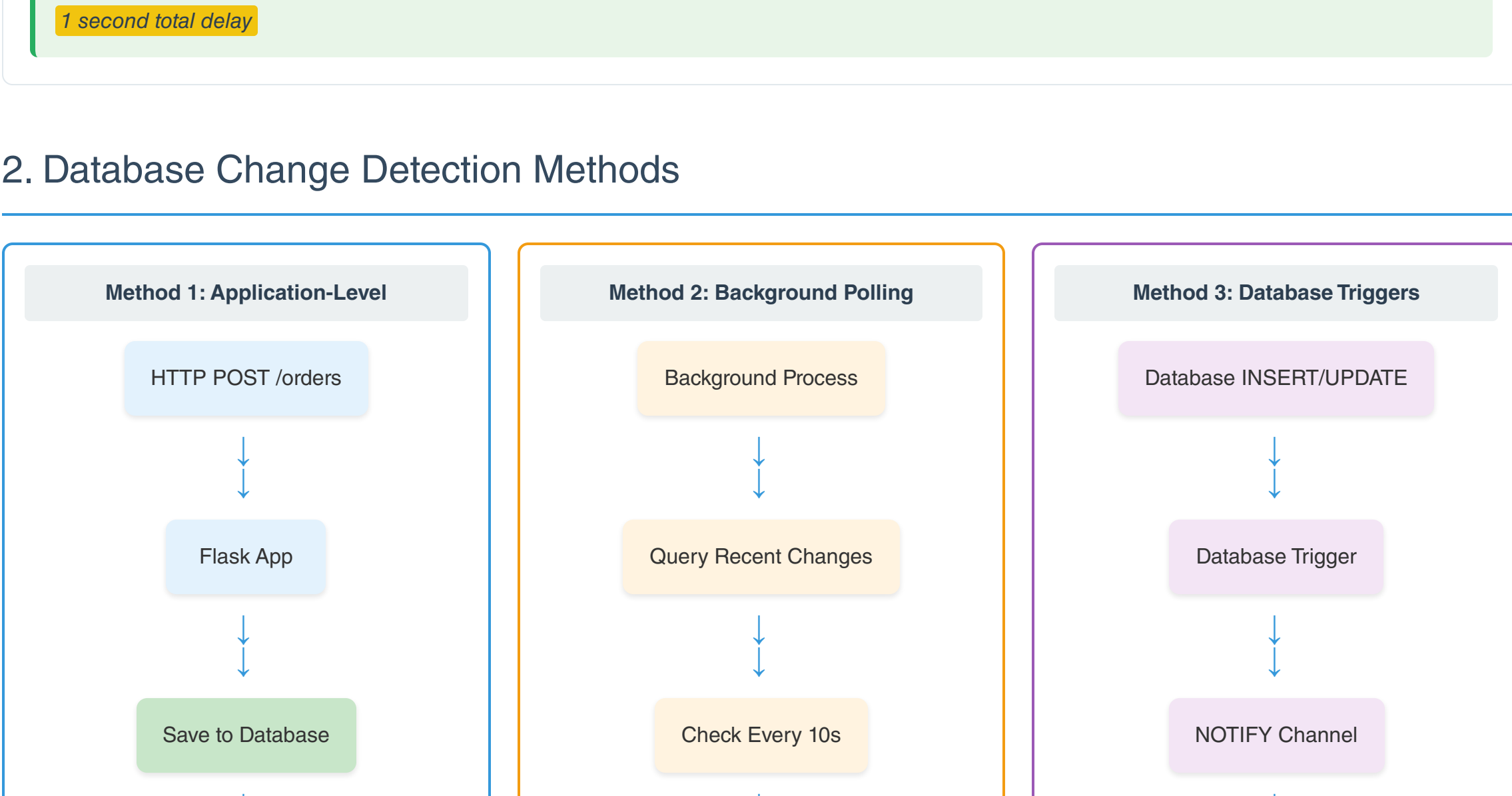
Visual Guide to Modern Event-Driven Architecture

1. The Fundamental Problem: Polling vs Push

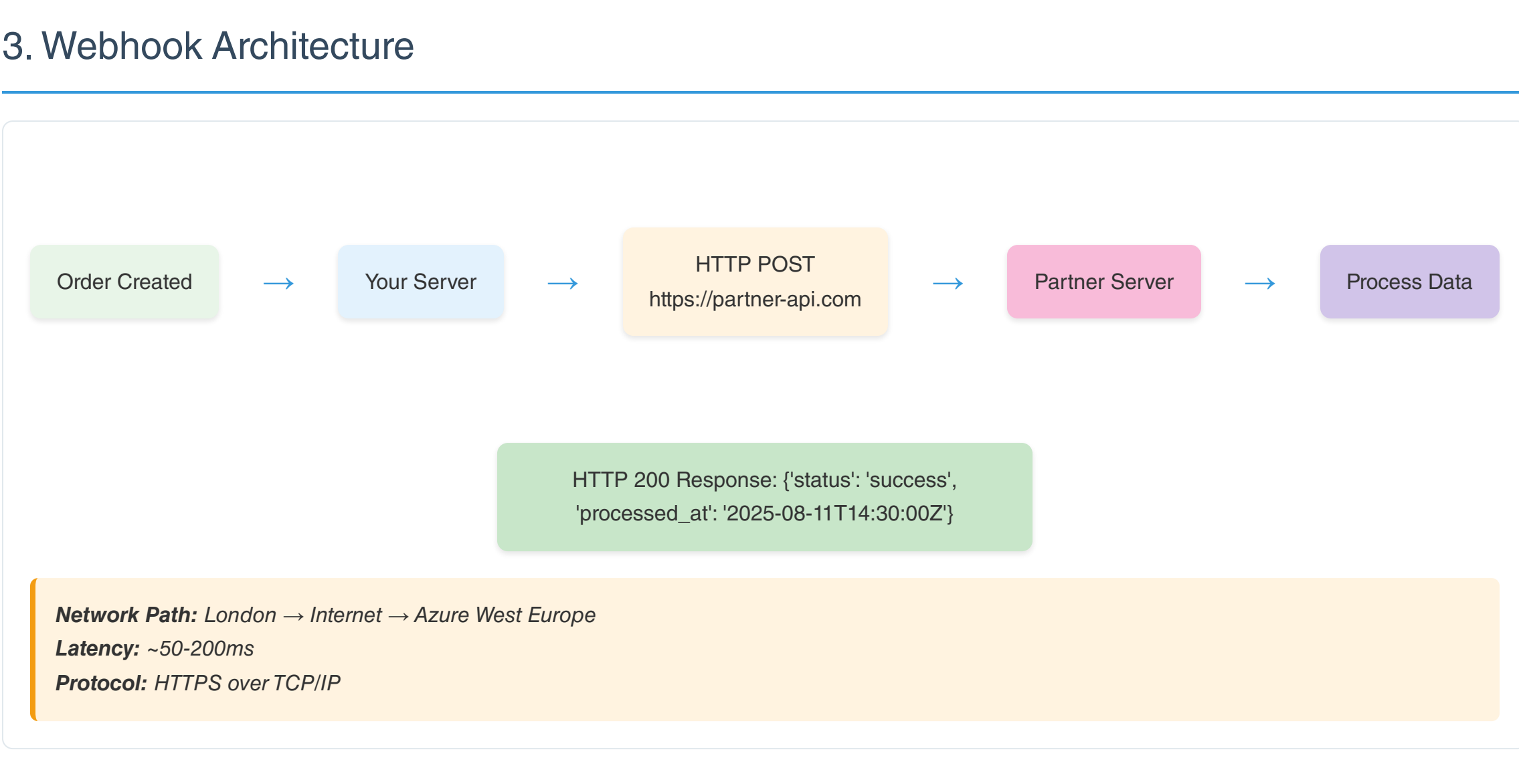
Traditional Polling Approach (The Hard Way)



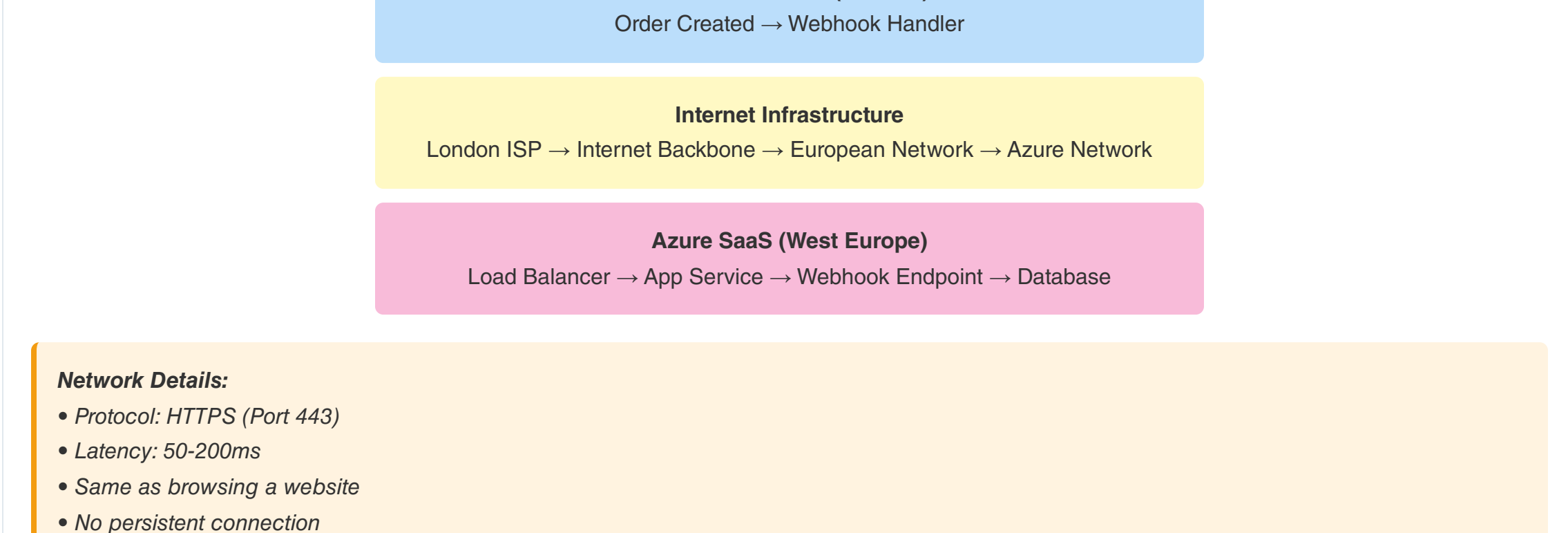
Modern Push Approach (The Smart Way)



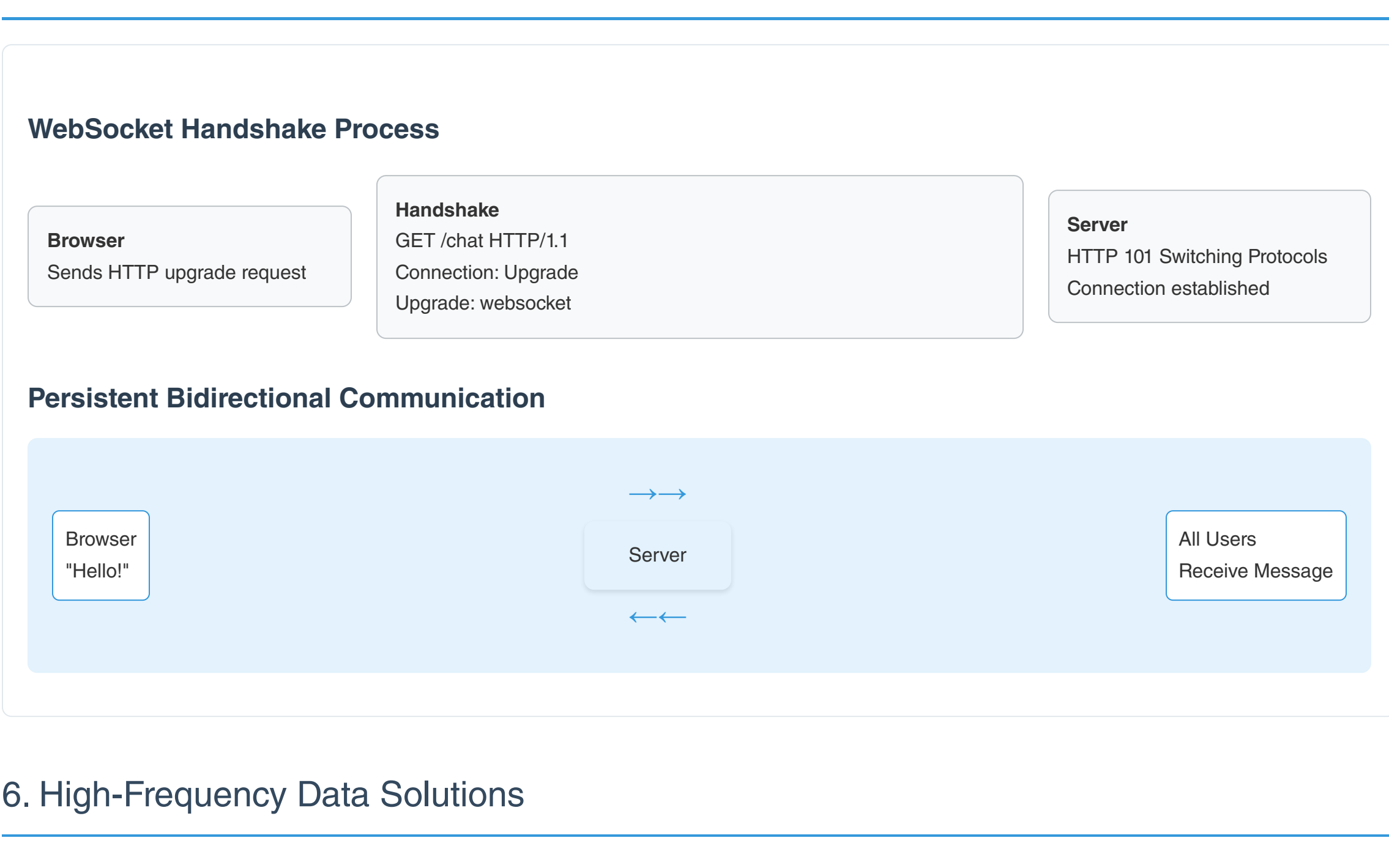
2. Database Change Detection Methods



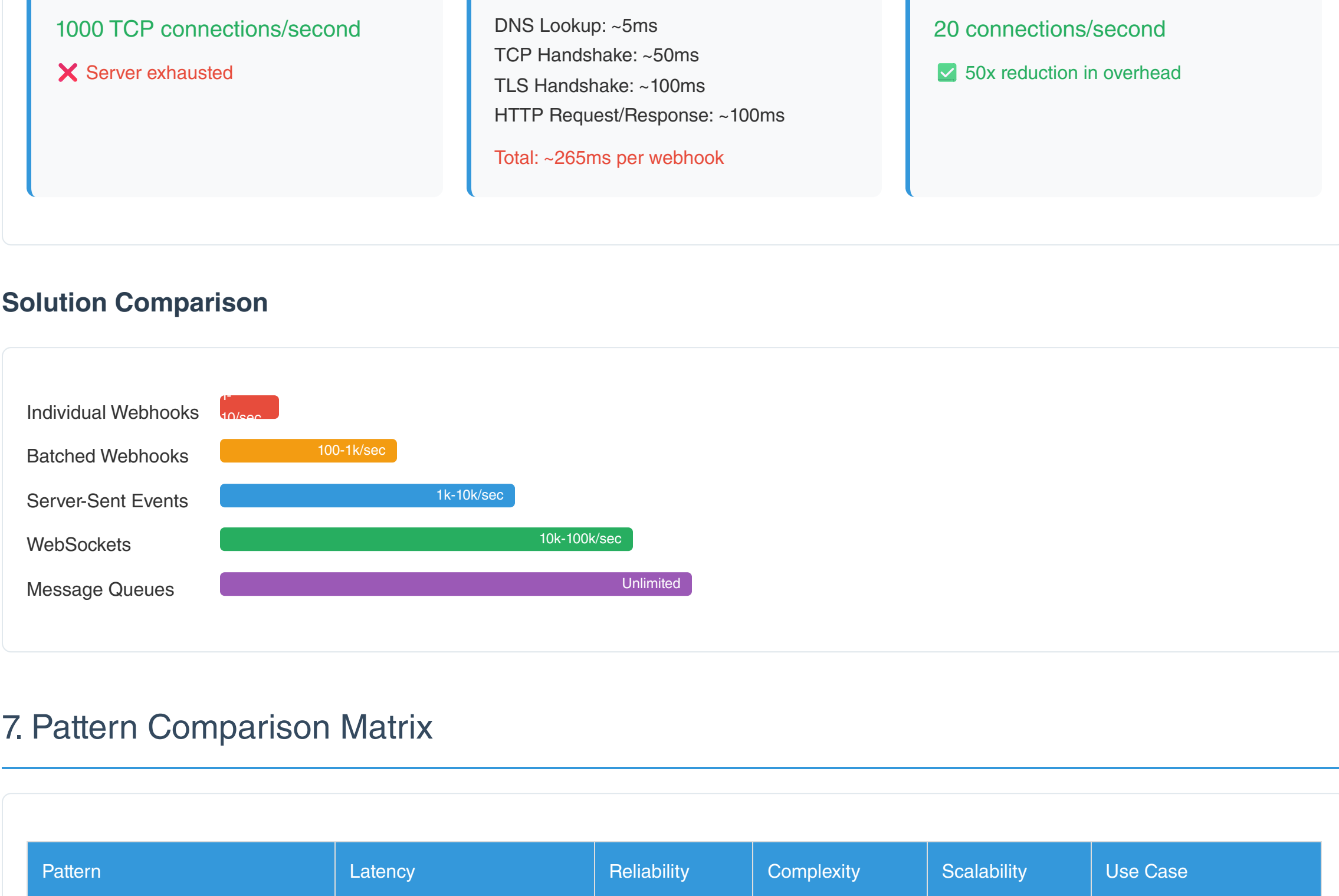
3. Webhook Architecture



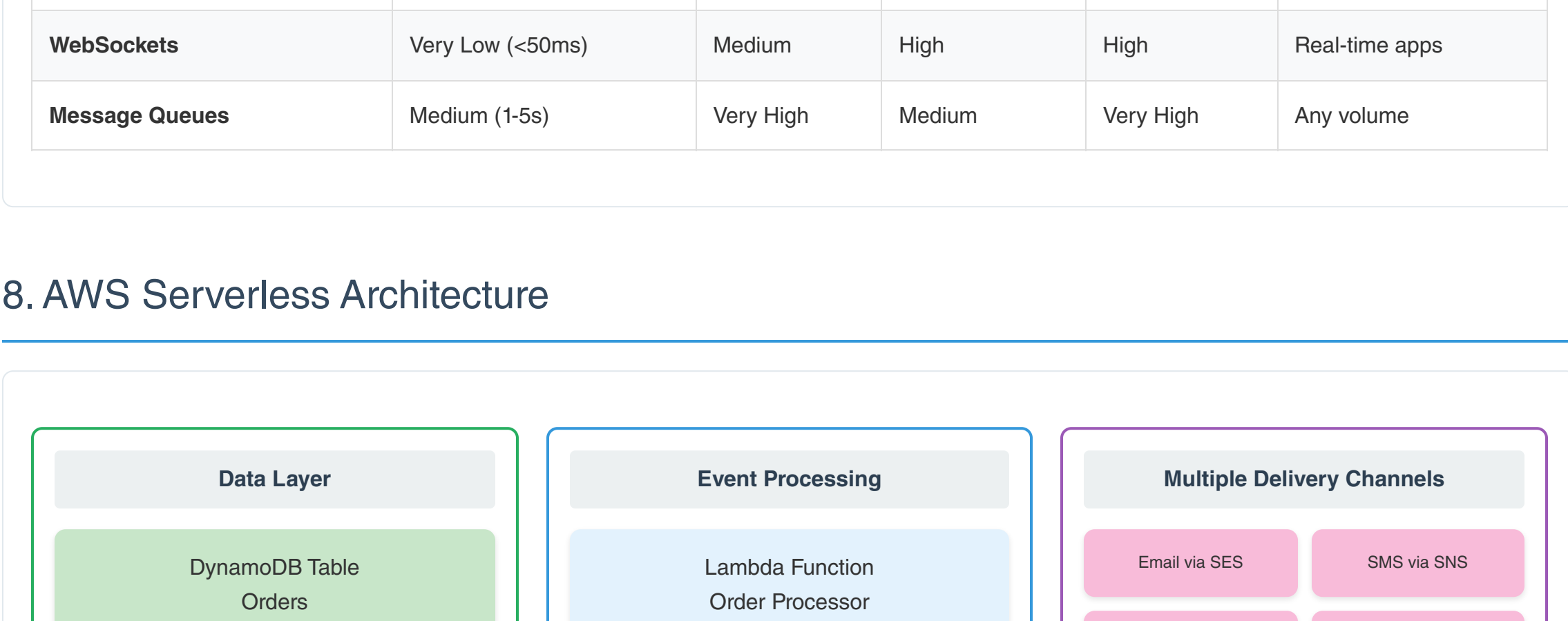
4. Network Level Understanding



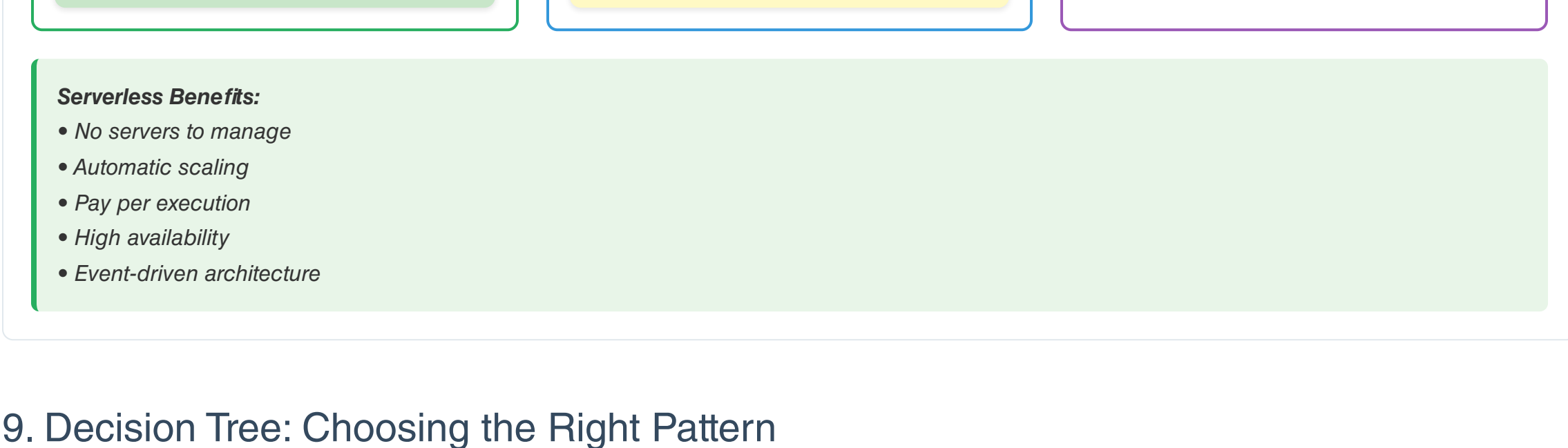
5. WebSockets for Real-Time Chat



6. High-Frequency Data Solutions



Solution Comparison



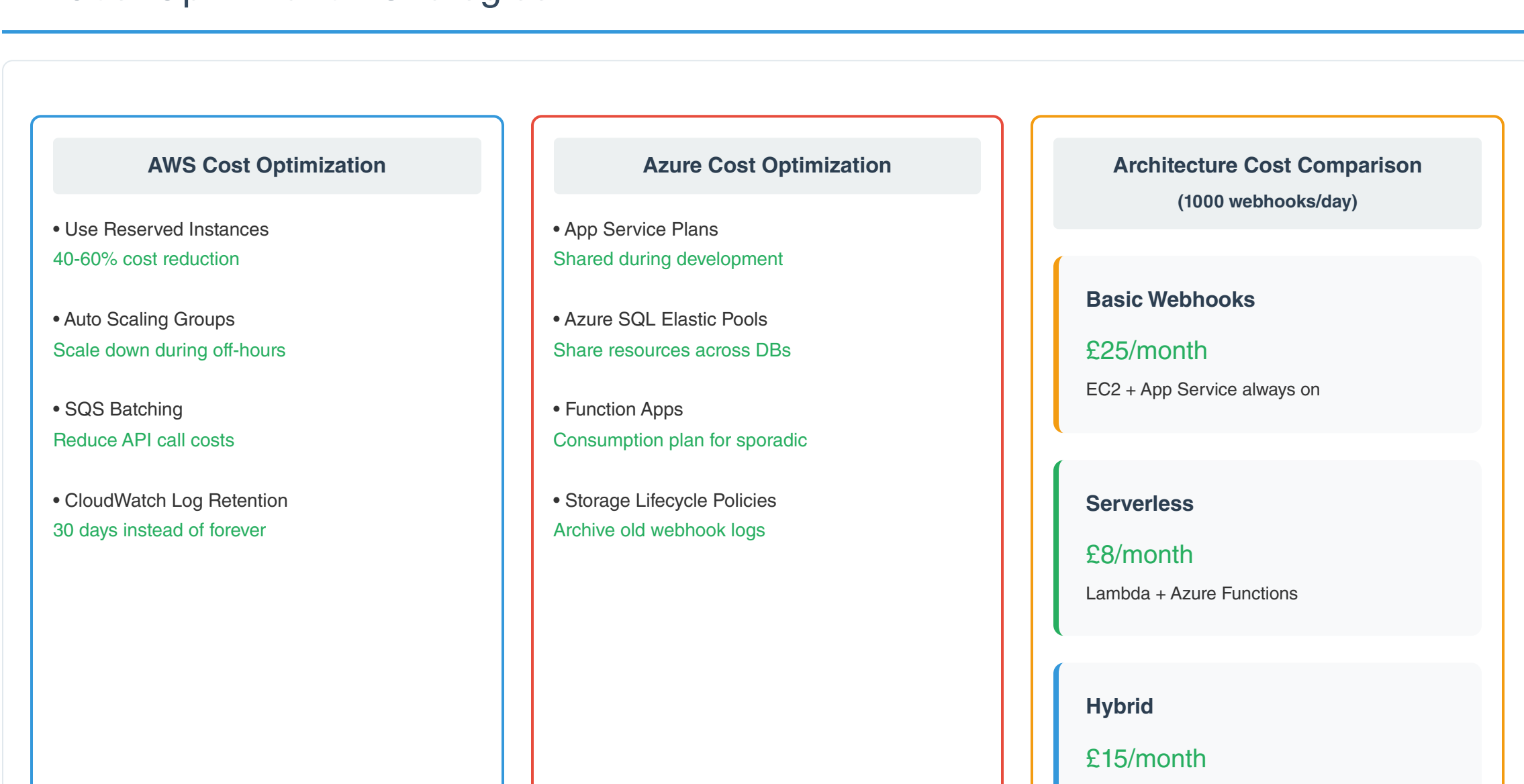
7. Pattern Comparison Matrix

Pattern	Latency	Reliability	Complexity	Scalability	Use Case
Individual Webhooks	Low (50-200ms)	Medium	Low	Low	< 10/second
Batched Webhooks	Medium (1-2s)	Medium	Low	Medium	10-500/second
Server-Sent Events	Low (50-200ms)	Medium	Medium	High	100-10k/second
WebSockets	Very Low (<50ms)	Medium	High	High	Real-time apps
Message Queues	Medium (1-5s)	Very High	Medium	Very High	Any volume

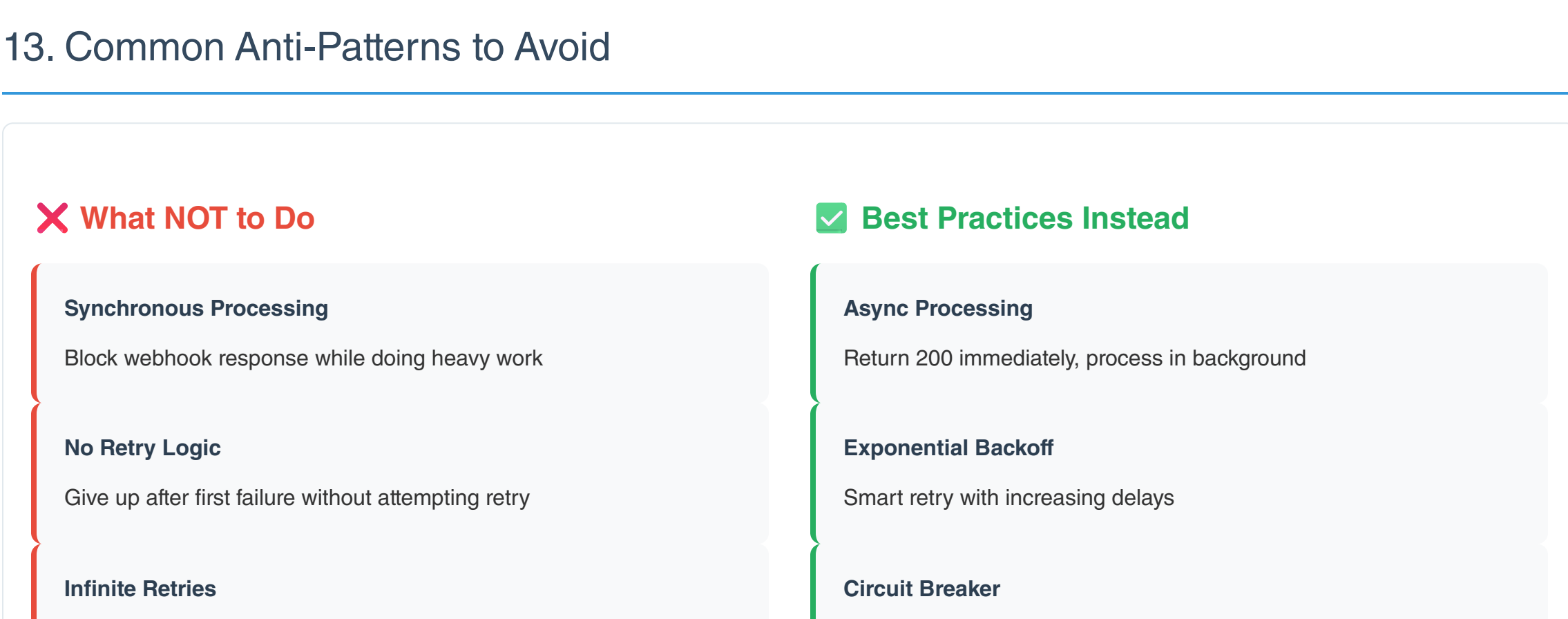
8. AWS Serverless Architecture



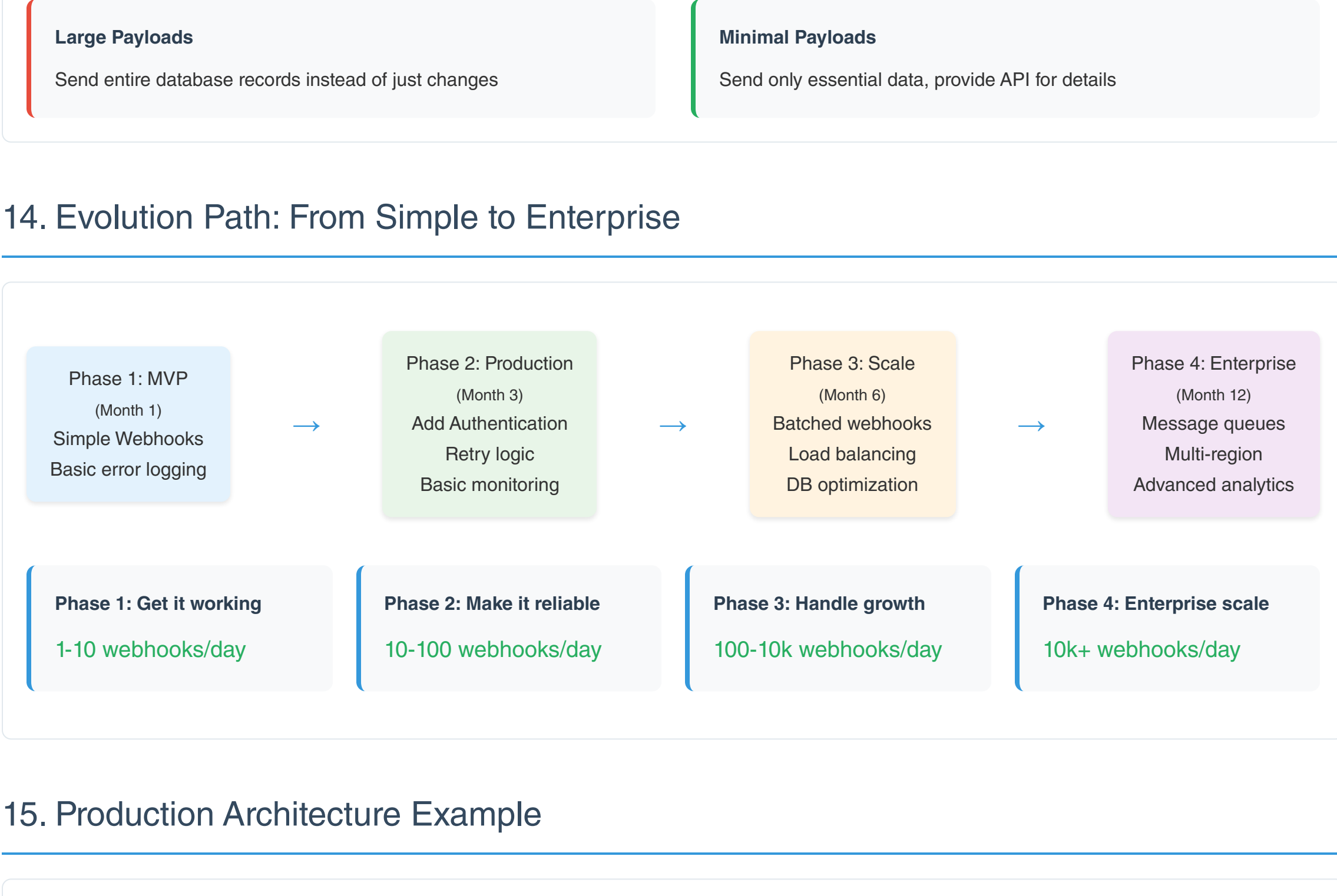
9. Decision Tree: Choosing the Right Pattern



10. Security Architecture Patterns



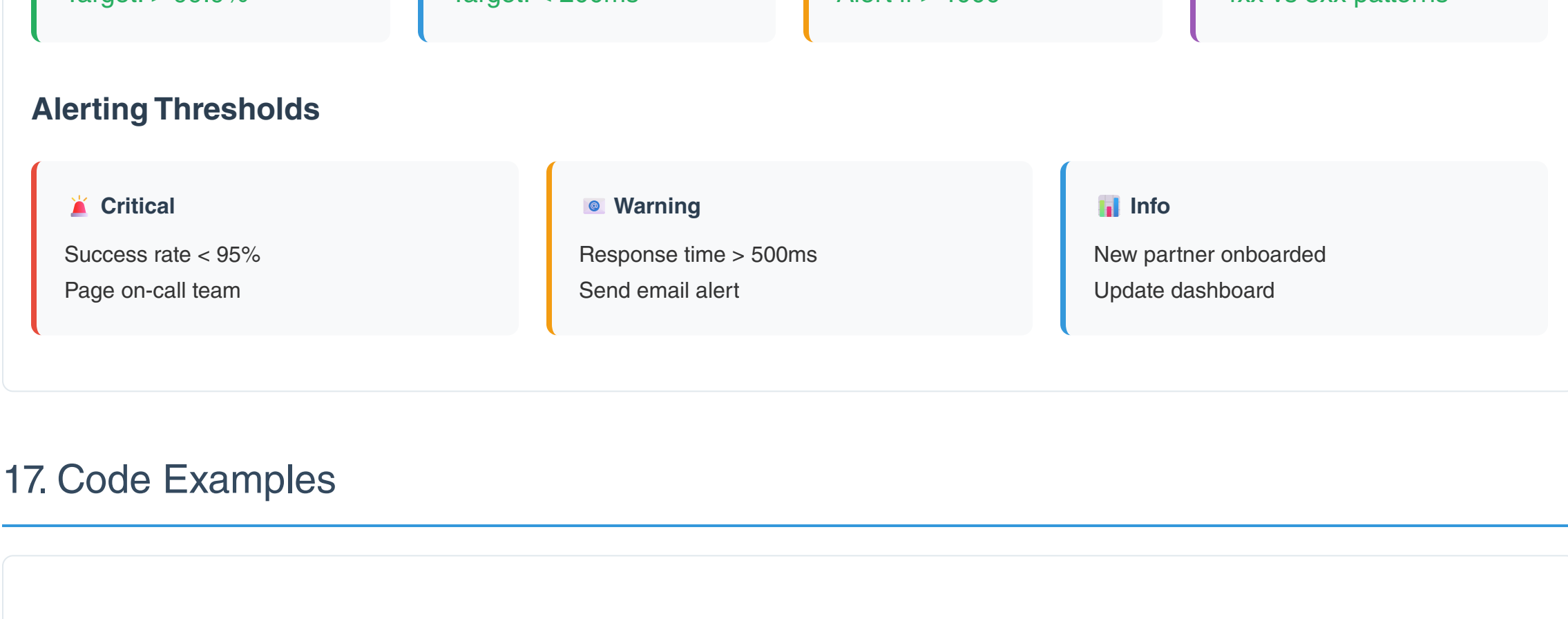
11. Error Handling and Retry Patterns



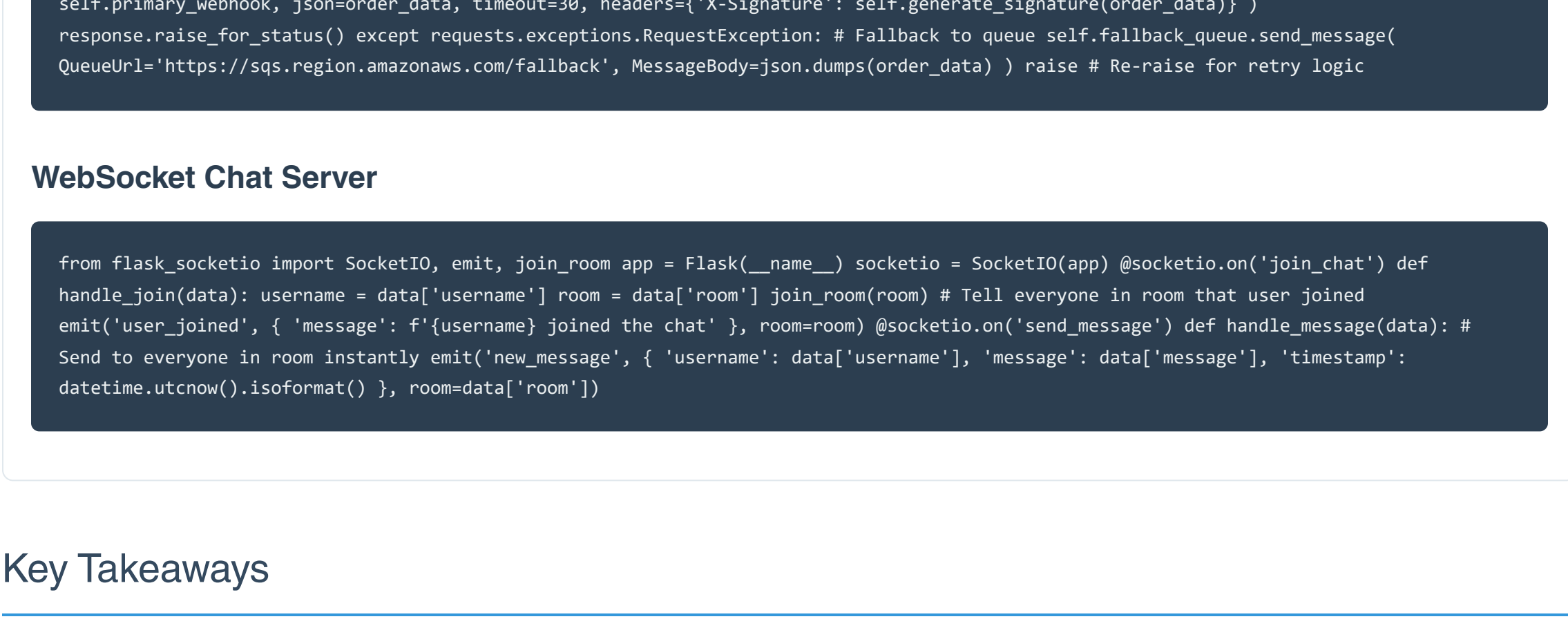
12. Cost Optimization Strategies



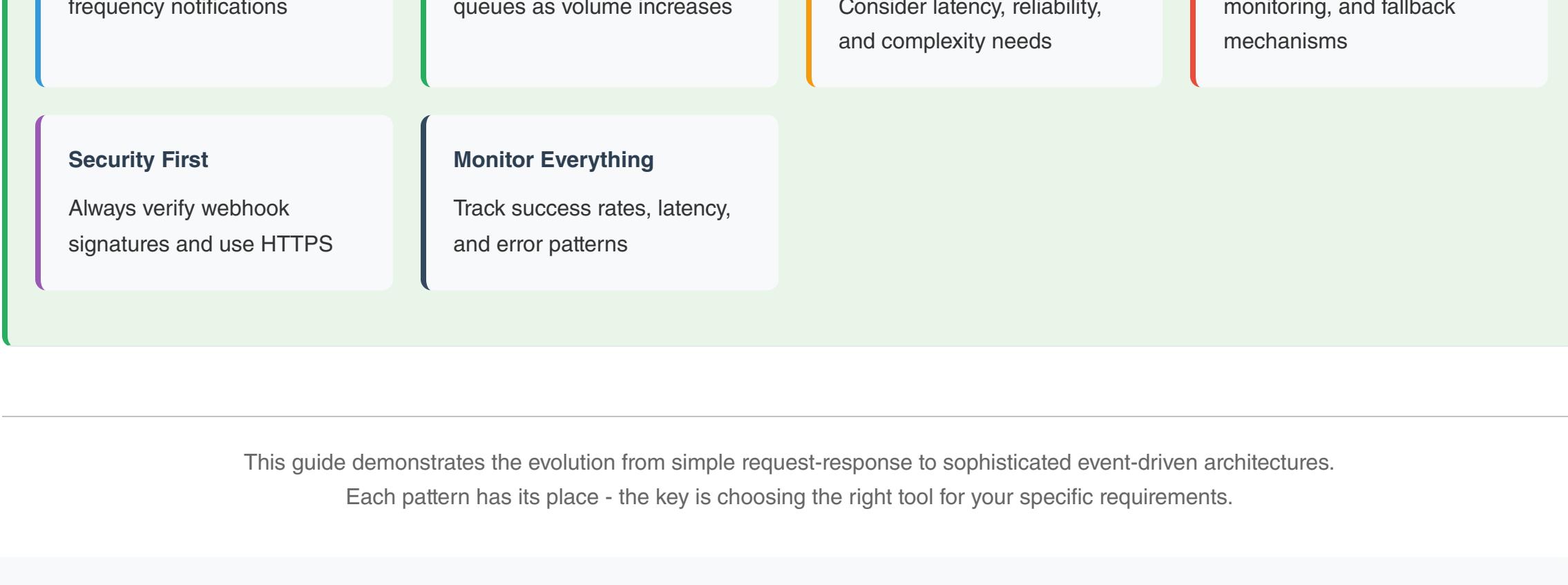
13. Common Anti-Patterns to Avoid



14. Evolution Path: From Simple to Enterprise



15. Production Architecture Example



16. Monitoring and Observability

17. Code Examples

Key Takeaways

This guide demonstrates the evolution from simple request-response to sophisticated event-driven architectures. Each pattern has its place - the key is choosing the right tool for your specific requirements.