

**TIME-BOUNDED DATA FRAGMENTATION WITH AUTOMATIC EXPIRY SYSTEM**

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graph TD; DFC[DATA FRAGMENTATION CONTROLLER<br/>• XOR Secret Sharing<br/>• 5-fragment threshold scheme<br/>(10)] --- CMLM[CRYPTOGRAPHIC TIME LOCK MANAGER<br/>• Sequential Squaring<br/>• Verifiable Delay Functions<br/>(20)]; CMLM --- FEEN[FRAGMENT EXPIRY ENFORCEMENT ENGINE<br/>• 7-Pass DOD Deletion<br/>• Automatic Monitoring<br/>(30)]; FEEN -.-> TFD[TEMPORAL FRAGMENT DISTRIBUTION (5-MINUTE EXPIRY WINDOW)]; TFD -.-> RGC[RECONSTRUCTION GATE CONTROLLER<br/>• Time-Bounded Assembly<br/>• Threshold Validation<br/>(50)]; RGC --- TVN[TEMPORAL VALIDATION NETWORK<br/>• Distributed Consensus<br/>• Freshness Validation<br/>(40)]; TVN -.-> DFC; DFC -.-> TFD; CMLM -.-> TFD; FEEN -.-> TFD; RGC -.-> TFD; TFD -.-> RGC; TFD -.-> TVN; TFD -.-> DFC;
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**DATA FRAGMENTATION CONTROLLER**

- XOR Secret Sharing
- 5-fragment threshold scheme (10)

**CRYPTOGRAPHIC TIME LOCK MANAGER**

- Sequential Squaring
- Verifiable Delay Functions (20)

**FRAGMENT EXPIRY ENFORCEMENT ENGINE**

- 7-Pass DOD Deletion
- Automatic Monitoring (30)

**TEMPORAL VALIDATION NETWORK**

- Distributed Consensus
- Freshness Validation (40)

**RECONSTRUCTION GATE CONTROLLER**

- Time-Bounded Assembly
- Threshold Validation (50)

**TEMPORAL FRAGMENT DISTRIBUTION (5-MINUTE EXPIRY WINDOW)**

Fragment ID	Expiry	Size
FRAGMENT 1	Expires: T+5m	(100)
FRAGMENT 2	Expires: T+5m	(200)
FRAGMENT 3	Expires: T+5m	(300)
FRAGMENT 4	Expires: T+5m	(400)
FRAGMENT 5	Expires: T+5m	(500)

**QUANTUM-RESISTANT SECURITY FEATURES**

- Time-Bounded Attack Windows (5 minutes maximum)
- Information-Theoretic Fragment Security
- Automatic Secure Deletion (7-Pass DOD Standard) (600)

**SYSTEM PERFORMANCE METRICS**

- Fragmentation Time: 12ms (1MB data → 5 fragments)
- Expiry Accuracy: 100% (10,000+ test cycles)
- Secure Deletion: 150ms per fragment (700)

**ATTACK WINDOW:** Limited to fragment expiry time regardless of computational complexity