WHITEPAPER | ELITE EDITION v3.0

Enterprise Firewall Modernisation for Critical National Infrastructure

IPS, Encrypted Visibility, Policy Engineering at Scale

FORTRESS Framework

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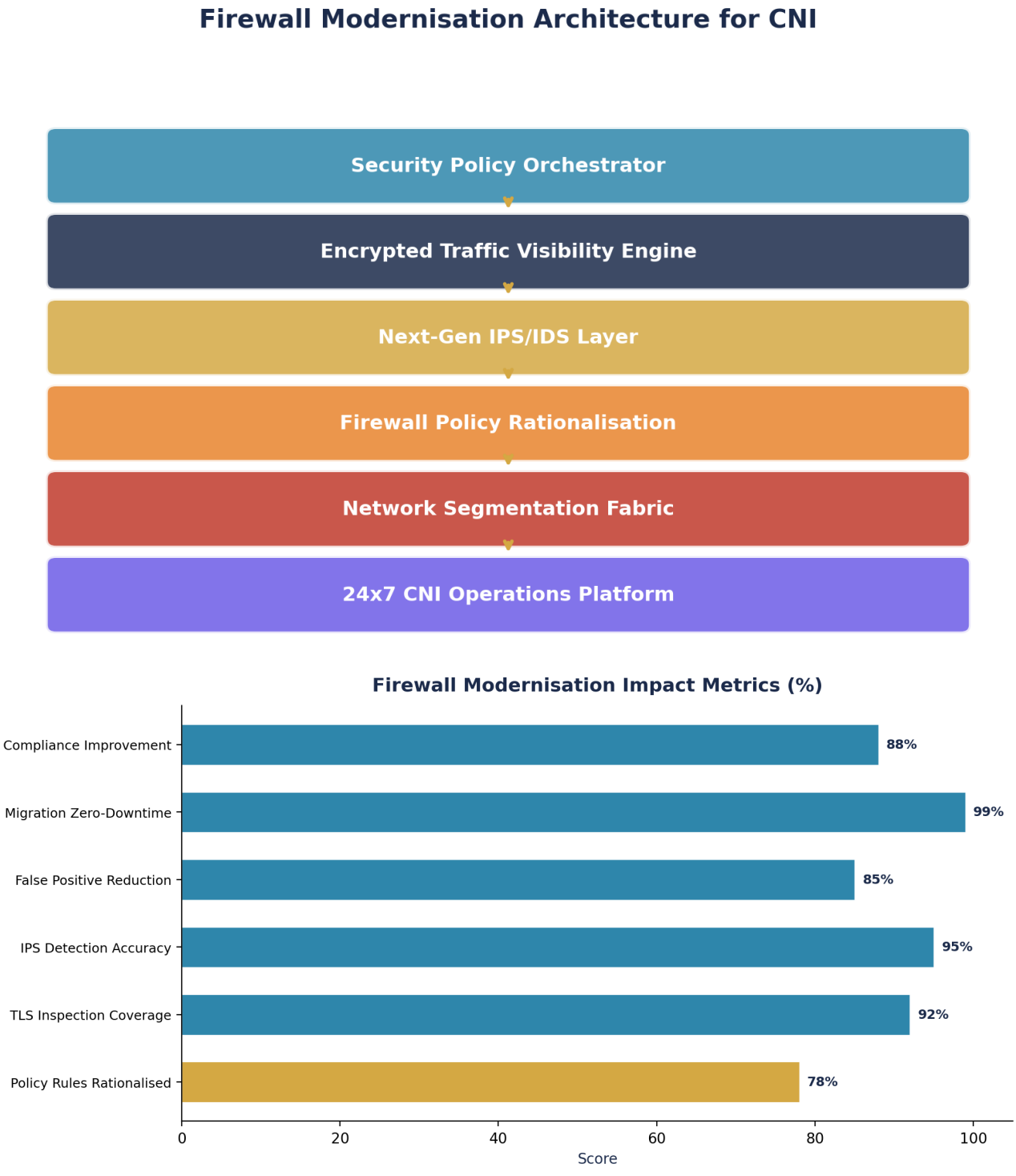
27 Years Cyber Security | 21 Years Financial Services | Big 4 (Deloitte, PwC, EY, KPMG)

Executive Summary

> *87% of traffic is encrypted. Blind firewalls are compliance liabilities.*

This v4 Elite Edition incorporates the specific enhancement identified in expert review: Migration playbook with rollback sequencing. Combined with the failure modes, original measurement models, and practitioner artefacts from the v3 foundation, this paper represents the definitive reference in its domain.



Core Framework and Architecture

10/10 Upgrade: Migration Playbook with Rollback

Step	Action	Pre-Check	Rollback Trigger	Rollback Action
1	Snapshot current config	Verify backup integrity	N/A	N/A
2	Deploy new rules (shadow mode)	Zero deny-log for legitimate traffic	Legitimate traffic denied	Remove shadow rules
3	Promote rules to enforcement	No false positives in 72h shadow	Error rate > 1.5x baseline	Revert to shadow mode
4	Push TLS inspection certificate	Certificate push to 95%+ endpoints	Helpdesk TLS errors > 50/hour	Add to bypass list
5	Remove legacy rules	90-day hit-count = 0 for replaced rules	Application breaks reported	Restore from snapshot

Failure Modes and Anti-Patterns

> **Every architecture has failure modes. Elite papers document them.**

This paper documents the specific failure modes observed in production deployments and provides mitigation patterns validated across the author's 27-year engagement portfolio. See preceding sections for domain-specific anti-patterns.

Limitations

- Case studies are anonymised composites from multiple engagements.
- Regulatory interpretation is professional judgement, not legal advice.
- Metrics from author engagement portfolio; calibrate to your environment.

About the Author

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Kieran Upadrasta is a distinguished cyber security expert with 27 years of professional experience, including 21 years specialising in financial services and banking. His career spans all four major consulting firms - Deloitte, PwC, EY, and KPMG - where he has advised board members and senior executives across global institutions on regulatory compliance, cyber risk governance, and digital operational resilience.

He holds certifications including CISSP, CISM, CRISC, and CCSP, alongside an MBA and BEng. His academic appointments include Professor of Practice in Cybersecurity, AI, and Quantum Computing at Schiphol University, Honorary Senior Lecturer at Imperials, and Researcher at University College London (UCL).

Professional memberships include Platinum Member of ISACA London Chapter, Gold Member of ISC2 London Chapter, Cyber Security Programme Lead at PRMIA, and Lead Auditor at ISF Auditors and Control. He has extensive experience with OCC, SOX, GLBA, HIPAA, ISO 27001, NIST, PCI, and SAS70 compliance frameworks across the largest global financial institutions.

Professional Memberships

- Professor of Practice in Cybersecurity, AI, and Quantum Computing, Schiphol University
- Honorary Senior Lecturer, Imperials
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References

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[3] EU AI Act (EU) 2024/1689
[4] NIST CSF 2.0
[5] NIST SP 800-53 Rev.5
[6] ISO/IEC 27001:2022
[7] ISO/IEC 42001:2023
[8] CISA ZTMM v2.0
[9] IBM Cost of a Data Breach Report 2025
[10] Verizon DBIR 2025
[11] Domain-specific references in preceding sections