BSI Cybersecurity and Information Resilience

Pathway to GDPR Series - Using penetration testing to keep your data safe

BSI Cybersecurity and Information Resilience

Cybersecurity and Information Resilience services enable organizations' to secure information from cyber-threats, strengthening their information governance and business resilience, whilst safeguarding them from any vulnerability in their critical infrastructure.

Consultancy

Training

Research

Technology Solutions

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End-to-end information security consultancy

Consultancy | **Training** | **Research** | **Technology Solutions**

- **IT Audits/Assessments**
- **Penetration** Testing
- Vulnerability Scanning
- **PCI-DSS** Support
- **Digital forensics**
- Cyber posture **reviews**
- **SDLC**, Architecture
- **Code** Review
- IS **Monitoring**

Tactical

- **IR Strategy Development** (Board Representation)
- **CISO/DPO as a Service** (onsite/virtual)
- **IR Management System** Support + Implementation
- **E-Discovery/Litigation** Support Strategy
- **Critical Infrastructure Security** SCADA/ICS security reviews

Strategic

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Information resilience training, education, awareness

Consultancy | **Training** | **Research** | **Technology Solutions**

Managerial Security

Technical Security

IT Compliance

eDiscovery and Digital Forensics

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Research and Development

Consultancy | Training | **Research** | Technology Solutions

Dedicated Research Division

Security and Privacy

Certification and Assurance Frameworks

IOT and Convergence

Big Data

Blockchain

Collaborative EU R&D

SAWSOC

Ecossian

IPACSO

CAMINO

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Trusted information resilience solution partnerships

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Vulnerability Management

QUALYS

Information Management

VERITAS

Relativity

Security Awareness

wombat security technologies

Policy Management

netconsent

Managed Security Solutions

ALERT LOGIC
Security. Compliance. Cloud.

EiQ

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DELL SecureWorks

Cloud Assurance

skyhigh

okta

zscaler

Menlo Security

Vaultive

druva

GDPR Expertise

A range of services to help you achieve compliance

Understanding

- Awareness workshops
- Data asset workflow and mapping
- Gap analysis
- Legal and regulatory assessments
- Data protection risk assessments
- Training and awareness for staff

Implementation

- Outsourced DPO services
- Privacy compliance framework development
- Data protection and privacy implementation support
- Privacy by design support –
- Privacy impact assessments (PIAs) and change management support

Improvement

- Data Protection partner programme service for ad hoc assistance
- Compliance expertise reviews
- Compliance and assurance assessments
  - Privacy compliance audits
  - Internal audits
  - Independent third party audits
  - Preparation for supervisory authority audits
  - Attendance during supervisory authority audits
  - External audits for data transfers outside EU
  - Certifications – e.g. PCI-DSS

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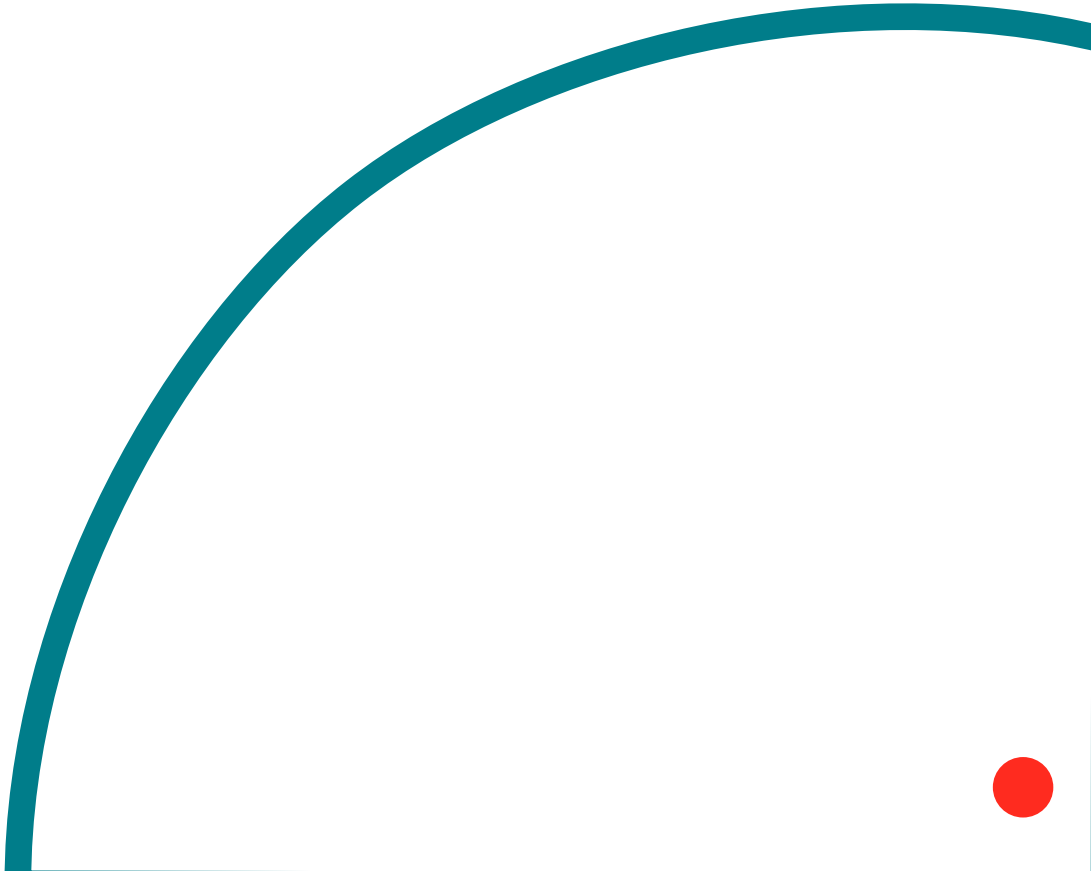
What is Penetration Testing?



What is Penetration Testing?

- Assessment of technical security by simulating an attack using manual and automated techniques.
- Uses tools and techniques of real attackers.
- Threat actors can be malicious externals or internal users.
- Testing follows robust established methodology.
- Tightly defined scope.
- More focussed than 'Vulnerability Assessments' with greater accuracy.

Business benefits

- Demonstrate compliance with regulators.
- Provide assurance of security to customers, end users and third parties.
- Identify actual vulnerabilities present in systems (rather than just theoretical).
- Identify vulnerabilities present in systems before go-live.
- Help business gain an understanding of the impact of these vulnerabilities.

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Limitations of Penetration Testing?

- Constrained scope – particularly time.
- Often assesses systems in isolation.
- Provides a snapshot of security at a point of time.
- Does not cover social engineering aspect, such as phishing attacks.
- Often difficult to test the Availability aspect.

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Webinar Poll 1

Who can/should perform Penetration Testing?

- Penetration testing requires an expert skillset.
- Testers should be part of an industry recognised scheme, such as CREST.
- Staff must be appropriately qualified.
- Ethical and cleared staff.
- Independence is key - if in-house resources, then testers should be 'organisationally' separate from IT or development team.
- Knowledge of systems. 'White/Grey/Black box'

"*Technical compliance review should only be carried out by a competent, authorized persons or under the supervision of such persons.*" *ISO 27002*

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How frequently should Penetration Testing take place?

- Ultimately, a risk-based decision.
- Also factor in compliance and contractual obligations.
- PCI DSS guidance is:
  - "..at least annually and after any significant infrastructure or application upgrade or modification".
- Seek to retest vulnerabilities following remediation.
- Penetration testing should take place as soon as possible during the project implementation or system development process. The cost of remediation increases significantly the later the project progresses.

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Webinar Poll 2

Getting the most from Penetration Tests

- Ensure you understand what you're commissioning: Vulnerability Scanning is often completely automated and will not weed out false positives.
- Ensure scope is meaningful:
  - Understand your attack surface – who is likely to be targeting your application/system.
  - Perform testing against Production environments wherever possible.
  - The agreed scope is realistic and allows the testers to gain a reasonable view of system security.
  - Sampling can be used where it can be demonstrated that representative samples are being tested.
- Define any specific assurance objectives during the scoping or initiation phase.
- Where possible, allow exploitation of vulnerabilities. Experienced testers will be able to help you make a risk-informed decision.

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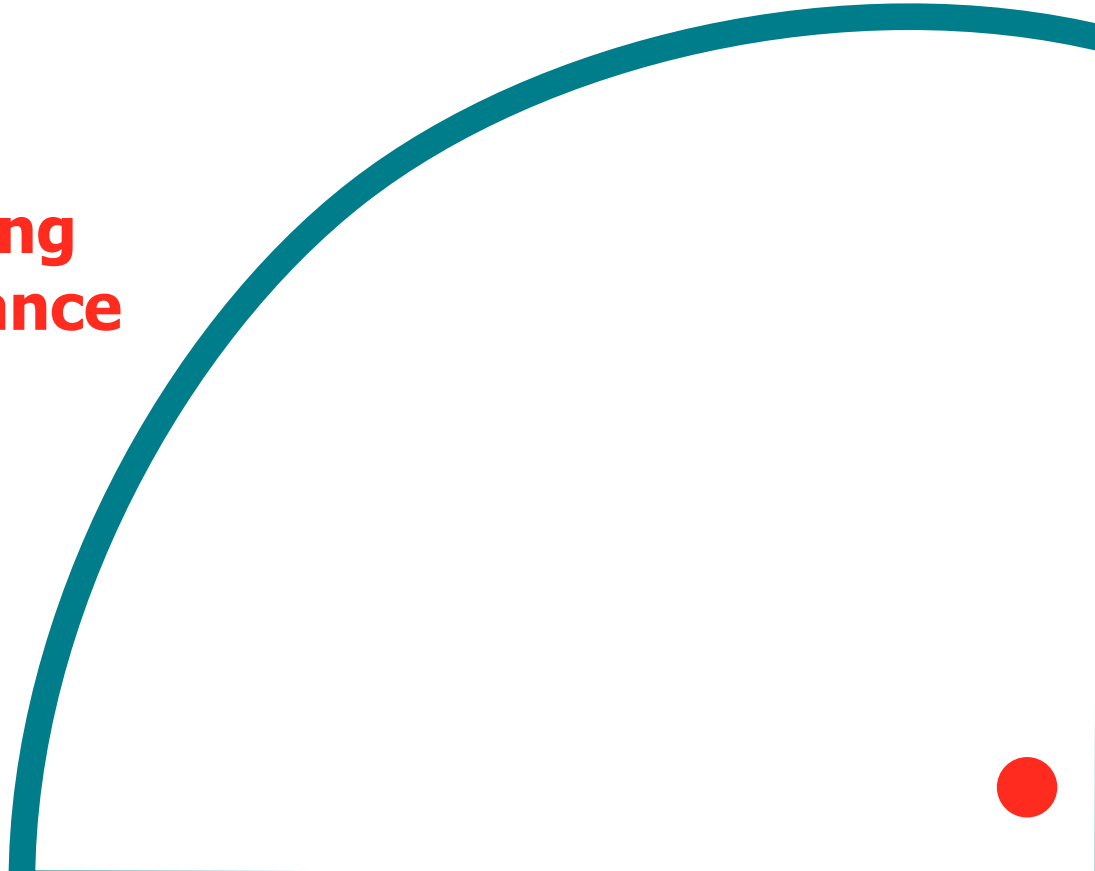
Using Penetration Testing to help achieve Compliance



Compliance

General Data Protection Regulation (GDPR)

- **Integrity and confidentiality** – Article 5(1) – appropriate security
- **Accountability** – Article 5(2) – requires you to demonstrate compliance
- **Data protection by design and by default** – Article 25 – implement suitable technical measures

ISO/IEC 27001/27002

A.12.6.1 - 1 Management of technical vulnerabilities

A.14.1.2 - Securing applications services on public networks.

A18.2.3 - Compliance with information security policies and standards.

Other standards

PCI DSS Req. 11.3

Perform internal/external penetration testing at least annually and after any significant infrastructure or application upgrade or modification.

Gambling Commission

Financial Conduct Authority (FCA)

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Types of Penetration Test

- Infrastructure penetration testing – servers, endpoints, network infrastructure, firewalls.
- Web Application – such as ecommerce, transactional, HR,

- Mobile Device and Mobile Application
- Device Build Security – servers, endpoints
- Network Device Configurations – assurance of firewall, router, switches.
- Wireless testing
- Telephony and VoIP testing.
- Social Engineering

Webinar Poll 3

Cyber Essentials

Key components:

- Self-Assessment questionnaire
- External Vulnerability scan
- Internal Vulnerability scan and on-site assessment.

5 mitigation strategies:

1. Boundary firewalls and Internet Gateways
2. Secure Configuration
3. Access Control and Privileged Management
4. Malware Protection
5. Patch Management

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Cyber Red Teaming

- Incorporates Threat Intelligence to provide a realistic test.
- More holistic view of enterprise-wide systems security.
- Less constrained scope: often includes aspects such as Physical Social Engineering and Phishing.
- Scenario-based testing agreed at scoping phase.
- Helps organisations assess their Response/Detection capabilities
- Engagements typically last several weeks
- CREST Simulated Attack and Response (STAR) standard.
- BSI is a CREST accredited STAR provider.

Webinar Poll 4

Ransomware

Questions?

...making excellence a habit.™