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2025 EUROPE COMMUNITY MEETING

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Charging Ahead

Defending EV Chargers Against Cyber Threats

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Today’s Journey

EV Charging & Compliance

Introduction & Context

Threat Landscape

Security & PCI Compliance

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bp Chargers

Global presence
The global network includes 8,000+ EV
The network is growing

Start Charging via App or Web
Initiate charging sessions through bp app, web, smart card

Payment Terminals
Pulse has deployed a wide range of Payment Terminals

Secure Payment Tech Built In
At the minimum, all payment terminals use Derived Unique Key Per Transaction (DUKPT)

Safety, Security, Compliance
Key aspects of Pulse & Charging

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Pulse Chargers

Contactless Payments

Payment terminals at Pulse are contactless

A rollout of P2PE devices is taking place.

UK & German Law

UK law mandates contactless card acceptance for public chargers over 8 kW.

German law mandates card acceptance for all new publicly accessible charging stations since 1st Jul 2023.

Compliance Meets Security

Payment Terminals meet the high standards of regulatory compliance while safeguarding customer data.

Business process and business as usual designed in the Target Operating Model ***rather than an after thought.***

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bp pulse Charging Process

Insights of an EV Charger

- Human Machine Interface
- Charge Control Unit
- Communications Unit
- Payment Terminal

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Attacks

Targeting EV Chargers

Physical Attacks

Cyber Attacks

Ideological or Malicious Vandalism

Vandalism Examples

- Blocking chargers with petrol/diesel cars (“ICE-ing”)
- Physically damaging EVs whilst charging
- Rising cable theft for copper

Mitigation

- Increasing physical checks
- Crowd based capabilities
- Technical controls
- Awareness with customers

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Skimming and Other Physical Compromises

Impact on EV Drivers

Successful skimming can lead to theft of payment & personal information, resulting in unauthorized charges and financial loss for victims

QR Code Fraud - Quishing

Fraudsters can overlay fake QR codes to direct users to spoofed payment pages, compromising their payment information.

Defensive Measures

User vigilance and physical inspection of devices, along with contactless payments, can help prevent skimming and other attacks

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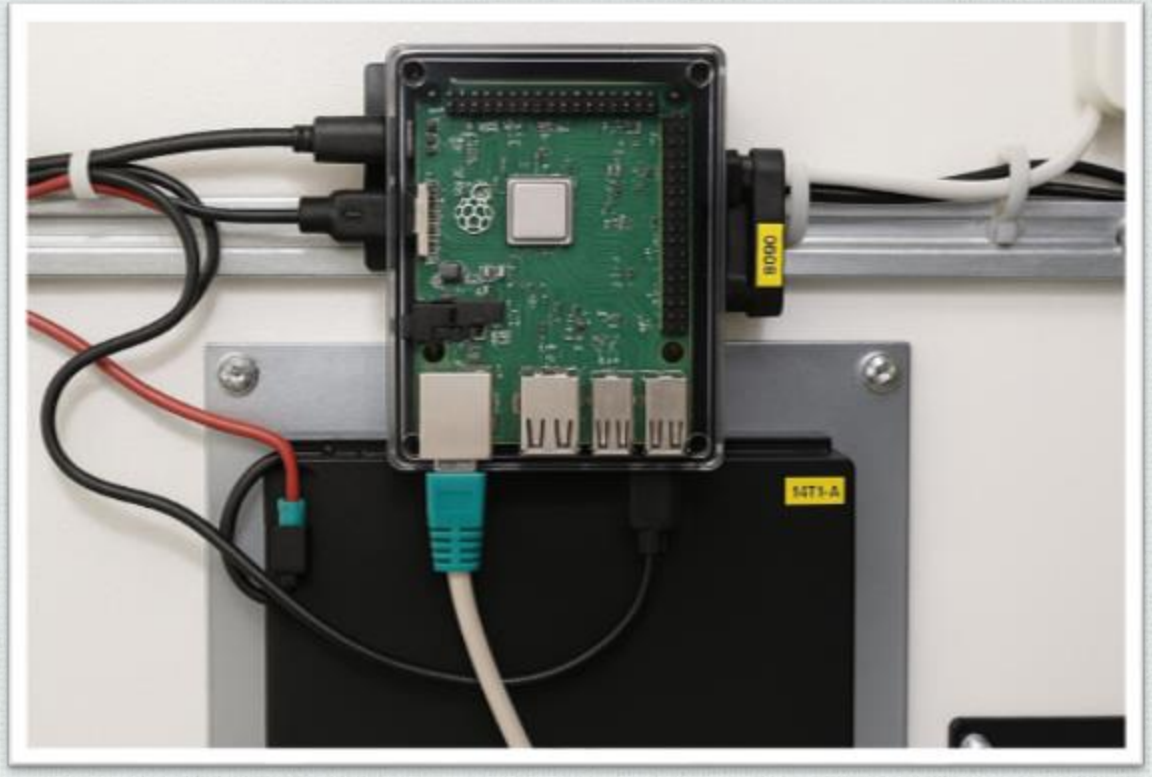
Case: Penetration Testing Insights

Experiences from Penetration Tests (Symbolic Pictures)



PCI DSS Req. 9 – Targeted Risk Assessment

Key Points on Charger Security

Recognize risks at unattended chargers

Include transaction counts in the TRA assessment

Identify high risk points and volumes of Tx

Perform physical inspections on all chargers

Support security through customer education

Pulse undertakes an annual TRA assessment

Whats the challenge in this image ?

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Cyber Attacks

This appears to be familiar, does it not?

Remote Hacking / unauthorized access

Data Breaches / Privacy Attacks

Denial-of-Service and Network attacks

Malware / Ransomware

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Security Measures

And Best-Practices

Physical Security

Robust Hardware & Anti-Vandalism Design
Surveillance and Lighting
Awareness for Consumers

Secure Communication

Use secure protocols, like TLS >= 1.2

Strong authentication

Unique credentials and strong authentication methods

Regular Software Updates

Keeping charger firmware and all network devices up-to-date

Intrusion Detection

Monitoring systems should be in place to detect unusual activity

Be Compliant

Implement PCI Standards and monitor continuous compliance, PCI P2PE

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3 TAKE AWAYS

EV Charging is Booming – So are the Risks

More payment options mean more attack surfaces. Security must keep up.

Unattended Payment Terminals Pose a Challenge

Meeting PCI DSS and regulatory standards is essential.

The Right Partner Makes the Difference

A trusted QSA boosts security, ensures compliance, and builds awareness with customers and colleagues.

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