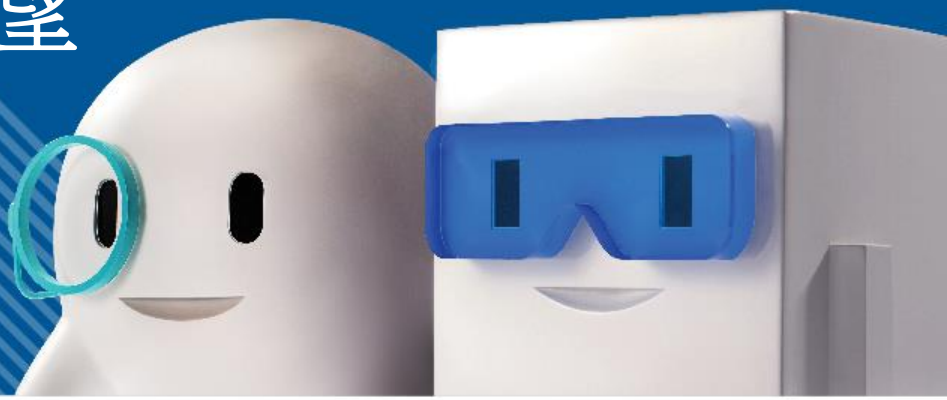
Hong Kong Information Security Outlook 2015

香港資訊保安展望



All-round Productivity Partner
全方位企業伙伴

Agenda

- Information Security Trends
  - Year 2014 in Review
  - Outlook for 2015
- Advice to the Public

Hong Kong Computer Emergency Response Team Coordination Centre

- 香港電腦保安事故協調中心 (HKCERT)

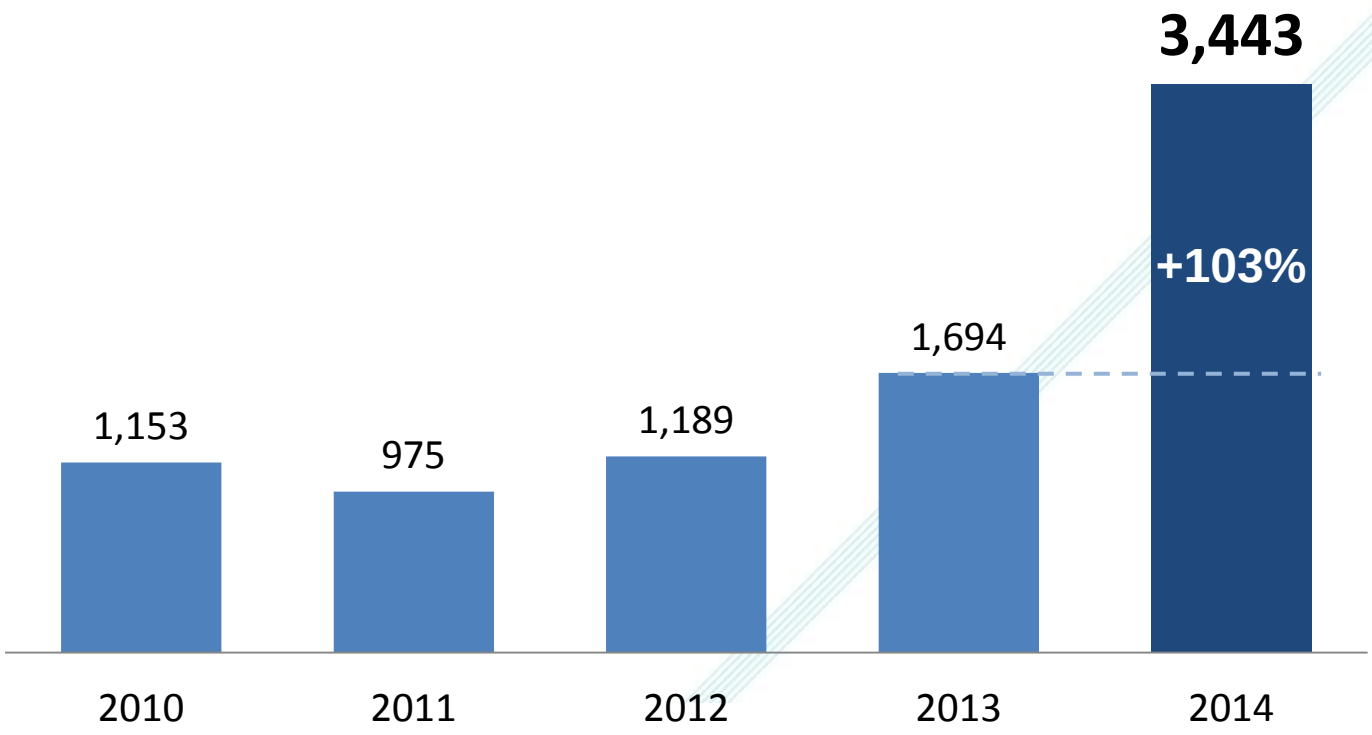
- 成立於 2001 年
- 100% 由香港特區政府資助
- 由香港生產力促進局 (HKPC) 管理

Summary of HKCERT Incident Reports for 2014

香港電腦保安事故協調中心
2014年保安事故報告摘要

Security Incident Reports
保安事故報告

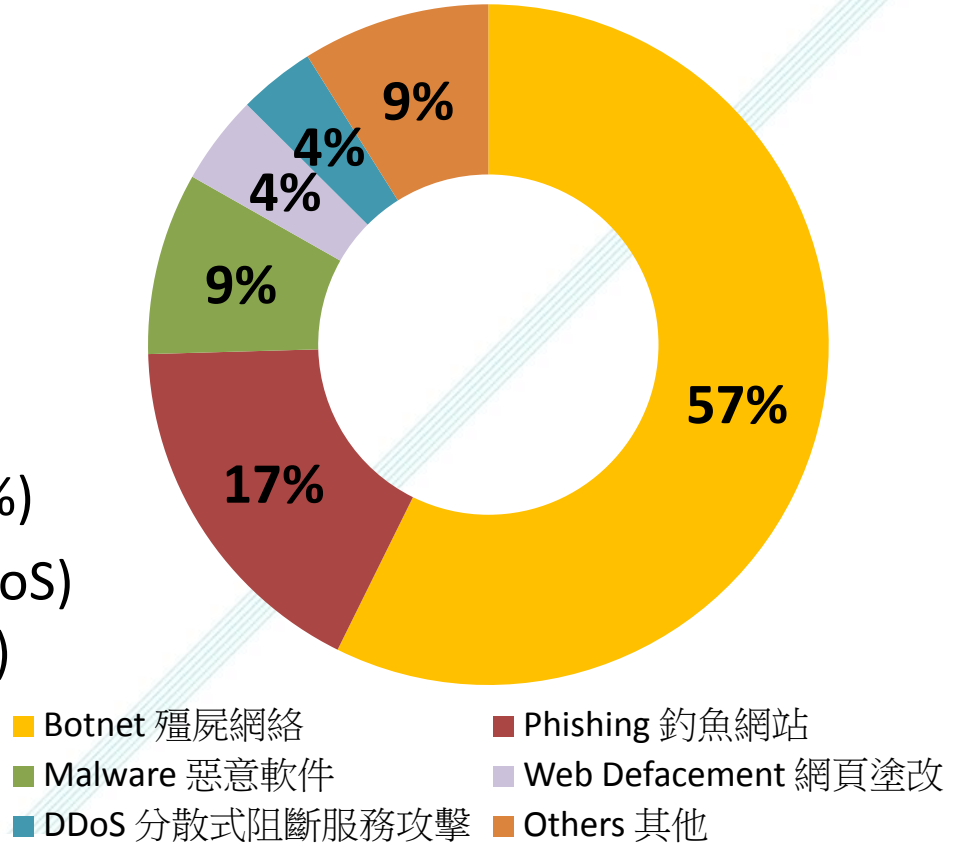
總數 3,443　比2013年增加 103%



Incident Reports Breakdown in 2014
2014年保安事故報告的分佈

Total 總數: 3,443

- Botnet (殭屍網絡): 1,973 (57%)
- Phishing (釣魚網站): 594 (17%)
- Malware (惡意軟件): 298 (9%)
- Defacement (網頁塗改) : 146 (4%)
- Distributed Denial-of-Service (DDoS) (分散式阻斷服務攻擊): 125 (4%)



Growth of Major Incident Reports

- Botnet (殭屍網絡)
  - **1,973** cases in 2014 vs **432** cases in 2013 (↑357%)

- Phishing (釣魚網站)
  - **594** cases in 2014 vs **384** cases in 2013 (↑55%)

Increasing number of Incidents on Mobile and Internet Devices

- **Mobile Devices related** 流動設備
  - **154** cases in 2014 vs **35** cases in 2013 (个340%)

- **Internet Devices related** 互聯網設備 **(new trend)**
  - **15** cases (**332** devices involved)



Security Outlook 2015

Potential Trends in 2015

1. **Scale of Attack 規模**
   - DDoS attack more powerful
   - Multiple servers attacked in single campaign

2. **Targets 目標**
   - Mobile and Cloud Platforms
   - Higher Value Targets
   - Internet Devices and “Internet of Things” (物聯網)

Potential Trends in 2015

3. **Mode of Attack 攻擊模式**
   - Botnets (殭屍網絡)
   - Ransomware (加密勒索軟件)
   - One-click Attack (一按攻擊)

1. Scale of Attack

- DDoS attacks more powerful (100s of Gbps)
  - More devices, higher bandwidth, online attacking tools
- Multiple victims / servers attacked in a single campaign
- **Collateral damages** – no one is a bystander
- Local compromised computers involved in attacks

2. Targets

(1) Mobile and Cloud Platforms

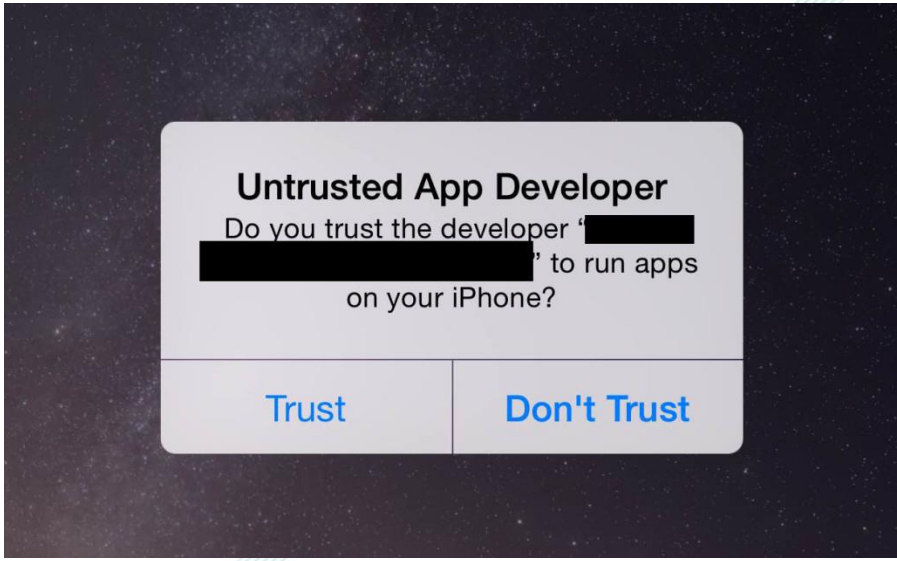
- **Mobile botnet** (流動殭屍網絡)
  - Botnet command centres and hosting found

More iOS malware

- **Wirelurker infected JB & non-JB devices**
- Infections via synchronization with desktop
  - Host Mac malware on piracy app store 麥芽地
  - Mac malware monitor USB connection, and sync with iOS device to infect it with WireLurker
- Use Enterprise provision profile to install malware not published on Apple app store

“Masque” iOS attack - in Malware We Trust

- Enterprise provisioning vulnerability – no check on digital certificate
- Malicious app can replace genuine app with the same bundle identifier
- can even access the original app's local data



Target: (2) Personal Cloud

- **Personal cloud services account breach**
  - Attackers break into personal cloud accounts to obtain personal data or make fraudulent transactions.
- **Mitigation**
  - Use strong password and two factor authentication

Image credit
http://technews.tw/2014/12/29/apple-denies-breach-in-celebrity-icloud-hack

Target: (3) POS

POS 系統被廣泛應用於零售、餐飲、酒店行業。

- **Credential data in Point of Sales Systems**

  入侵銷售點系統，盜竊信用卡和個人資料圖利

  – Malware scans memory of POS for unencrypted credit card and personal credentials

  – US large retail stores had tens or millions of customer data leaked

Protect POS

- Do not connect POS to the Internet or guest wifi
- Install security software on POS
- Change default administrator password
- Patch it regularly

Targets
(5) Internet Devices and “Internet of Things”

- Hackers control Internet devices to steal data, or use them to launch attacks
  - IP Camera – leaking personal privacy
  - Broadband routers – compromised by hacker to launch DDoS
  - TV Box – compromised by preloaded malware
- Potential threats for “Internet of Things” (物聯網)
    - Smart Home, Smart Watch or Industrial Control System (ICS) connected to the Internet

BB Router firmware vulnerability

- Some ASUS router models has unauthenticated command execution vulnerability
- Listen on port 9999 on LAN and WAN interface
- https://github.com/jduck/asus-cmd

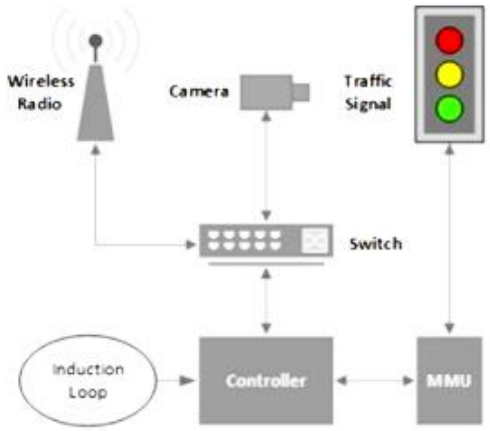
Attack Scenarios of Internet of Things

Smart Transport

ars technica

Researchers find it's terrifyingly easy to hack traffic lights

Open wireless and default passwords make controlling a city's intersections trivial.



- Camera & Controller of traffic light
  - communication via WiFi
- Controller
  - running VxWorks, debug port open
- Control system communication
  - no encryption, no authentication

Researchers @ University of Michigan with road agency
August 2014

Smart Meters

Researchers: Spain electricity smart meters hack-able

Possibilities

- Shut down home electricity
- Over/Under bill
- Forward data out
- Install network worm

Reference
http://www.itpro.co.uk/security/23251/smart-meter-hack-could-leave-homes-in-the-dark

- Nest Thermostat
- Smart device integration
  - Mercedes-Benz tells Nest you're on the way home → adjust temperature
  - Jawbone UP24 tells Nest your wake up
  - Nest Protect detects smoke or CO at home → inform you to call emergency
  - LG, Whirlpool refrigerator energy saving
  - LIFX mimic occupied house via lighting

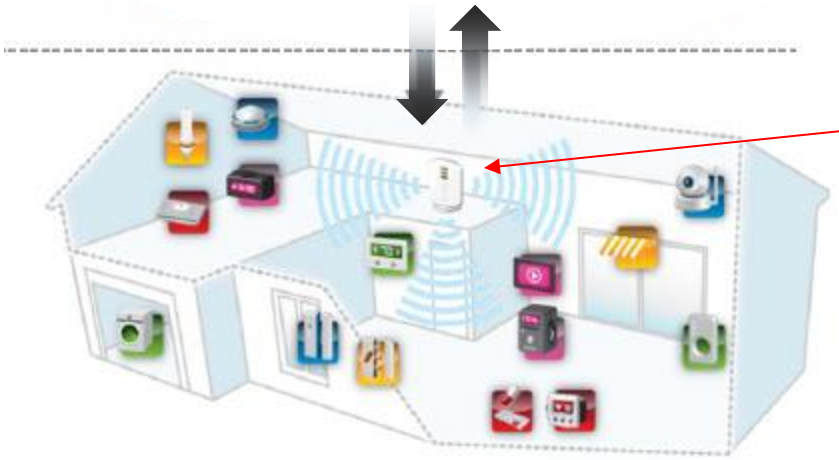
http://www.techhive.com/article/2864067/works-with-nest-program-explodes-with-15-new-smart-device-integrations.html

- Nest users not aware of log content and cannot turn off
- Nest thermostat bootup has backdoor - bypass verification (Researchers @ University of Central Florida)
  - Can boot via USB and install any code
  - Can read log file that contains local Wifi credentials in plaintext
  - Can block sending log back to server

https://www.blackhat.com/docs/us-14/materials/us-14-Jin-Smart-Nest-Thermostat-A-Smart-Spy-In-Your-Home.pdf

Smart Home & Personal Cloud

- Remote Control
  - Mobile Devices
- Personal Cloud
  - Managed Service



- Home Gateway
- Home Devices

Reference:
http://www.gsma.com/connectedliving/wp-content/uploads/2012/05/Marcos-Zart-Amdocs_Connected_Home-SmartCity-2012-June.pdf

Security vulnerabilities

Devices

- Physical access
- Communication vulnerability
- DDoS
- Malware

Back End System

- System Auth. & Access Control
- Communication vulnerability
- DDoS
- Software API

Users

- Cloud account
- Malware
- User hacks device and breaks security

Security Impacts in Physical World

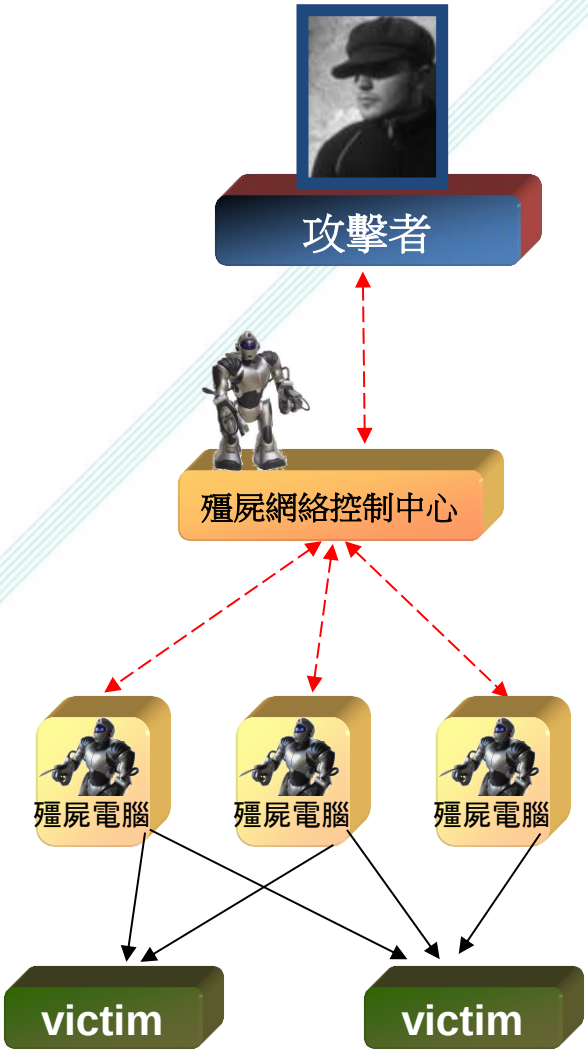
- Smart Systems connect with the physical world by automated Responses (with intelligent decision making algorithms based on sensor data)
  - Early Warning
  - Health Advice
  - Safety Control
  - Traffic Control
  - Other Controls
- What is the Consequence of attacks?

3. Mode of Attack

(1) Botnet (殭屍網絡)

- Large number of computers or devices (bots) infected by malware (from thousands to millions)

- Controlled by attacker via botnet control centre



3. Mode of Attack

(2) Ransomware (加密勒索軟件)

- Encrypt victims' data → demand ransom
- Targets
  - → **PC** (Cryptolocker, CryptoDefense, CryptoWall …)
  - → **Network attached storage** (SynoLocker)
  - → **Mobile devices** (SimpLocker)

- New ransomware may **spread like virus**

3. Mode of Attack

(3) One-click Attack (一按攻擊)

- Cyber criminals provide online attack tools

  網絡犯罪分子提供網上攻擊工具

- Lure people to click a link to help participate in attacks

  引誘市民參與「一按攻擊」,作為幫兇

Advice of HKCERT

Advice to Businesses

- **Patch servers**

  安裝保安修補程序

- **Strengthen POS system protection**

  加強銷售點系統保護

- **Proper management of BYOD**

  妥善管理 “自攜流動設備”

- **Backup data and keep offline copy**

  備份數據，並保持離線副本

- **Be cautious of social network, email / IM communication. Verify information via alternate channels (e.g. phone)**

  小心電郵/即時通訊，用其他渠道驗證信息 (例如電話)

Advice to Individual Users

- **Do not participate in "One-click Attack"**
  切勿參與「一按 DDoS攻擊」活動
- **Patch computers**
- **Protect personal cloud services accounts**
- **Avoid becoming a bot** 避免成為殭屍電腦
  殭屍電腦檢測和清洗步驟指南: https://www.hkcert.org/botnet
- **Secure mobile devices** 保護流動設備
  流動手機安全指南: https://www.hkcert.org/my_url/zh/guideline/13022802
- **Secure Internet devices**
- **Be cautious of hyperlinks in SNS, SMS, IM communication**

Q&A

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