The Default Password Conundrum

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Biography

Conundrum?

- Why is the default password problem a conundrum
- One Definition - Free Dictionary
  - “A paradoxical, insoluble, or difficult problem; a dilemma”
- Presentation will
  - Outline the default password problem
  - Explain why the conundrum definition applies

What are Default Passwords

- Built in logonid/password pairs
- Built into operating system, firmware, database or software
- Some “benign”
- Others very powerful
- On all platforms

Uses

- Initial installations or upgrades.
- Support
  - Vendor
  - Helpdesk
- Sales demonstration
- Internet communications
  - The ANONYMOUS account
- Simplify programming by “hardcoding”

Nature of Threat

- Can Cause Major Damage
  - Privileged Accounts
  - Magnified by the Internet
- Long term Problem
- Exist in Many Environments
- Ubiquitous

Where Found

- On all platforms
- Operating Systems -Unix/Linux root
- Routers, access points, switches, firewalls, and other network equipment
- Databases
- Web applications
- Industrial Control Systems (ICS) systems
- Other embedded systems and devices
- Remote terminal interfaces like Telnet and SSH
- Administrative web interfaces
- Cloud services – IBM Cloudmaster
- Home Appliances/Devices
- Internet of Things (IOT)

Uses

- Installation
- Customer Support
- Vendor Troubleshooting
- Internet communications
- Database communications
- Simplify development by”hardcoding”

- If default user ids and passwords are so useful, why are they a security problem?

Default Password Security Problems

- Passwords widely known
- Exist on many commercial systems
- May carry high level privileges
- Often tightly integrated into operations
- Present on mission critical systems
- Frequently left unsecured at installation
- Mask audit trail, obscuring monitoring
- Hardcoded “ defaults difficult to remove
- Can be easily exploited; even by a novice

Default Password Security Problems, (Continued)

- Most important risks
- Information available to anyone
- Ease of exploitation

Default Passwords Attack Types

- Brute Force
- Dictionary Use
- Automated Attacks
- Complex Internet Attacks

Default Password Information Sources

- Vendor Manuals and Data
- Computer Books
- Internet
- Information Systems Training

Seriousness

- SANS Institute
  - Recognized default passwords on its “Ten Most Critical Internet Security Threats
- OWASP
  - Part of OWASP Top 10 2013

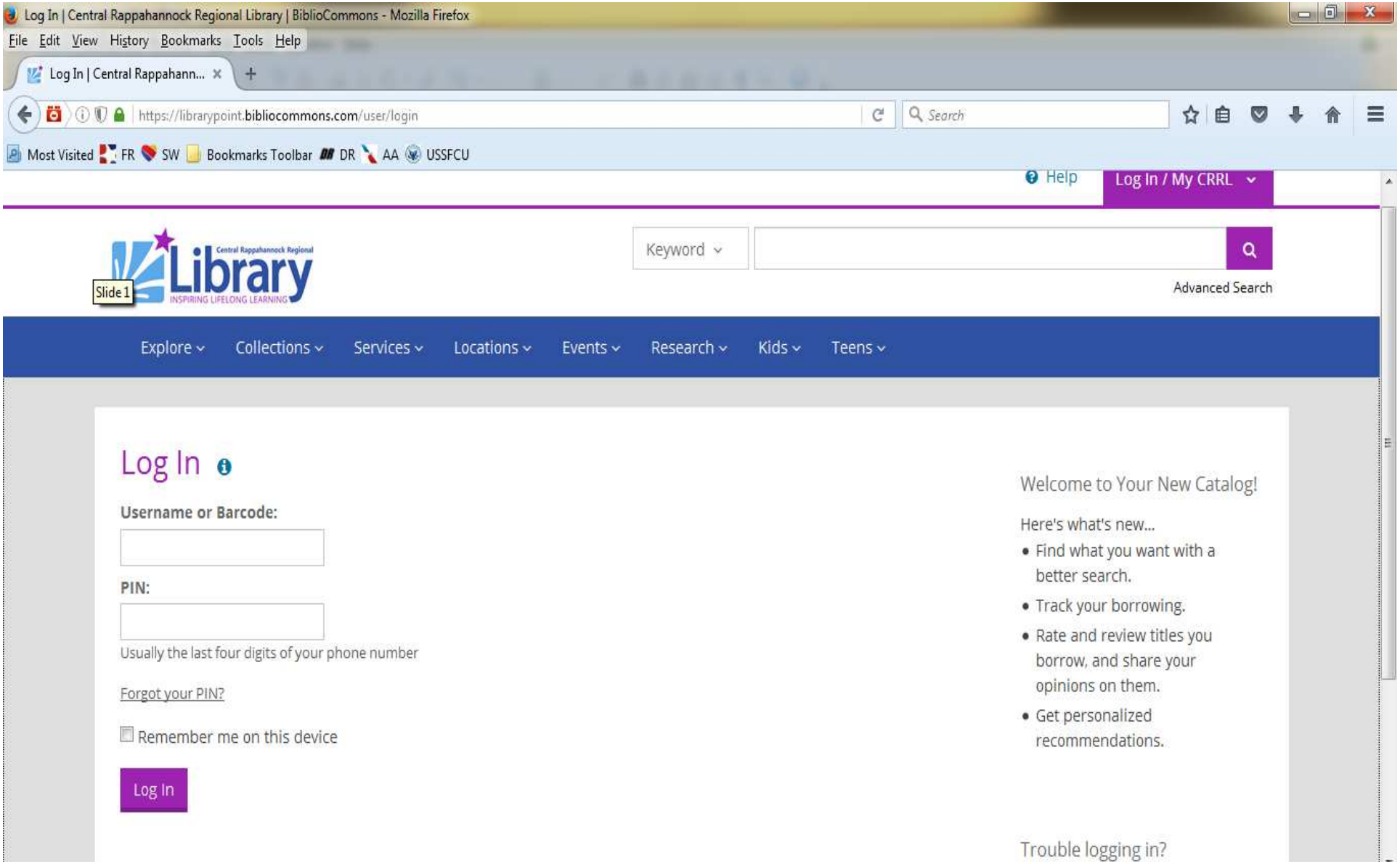
Authorities

- CERT Warning
  - Alert (TA13-175A)
  - Risks of Default Passwords on the Internet
- CAPEC
- NIST 800-53 IA-5
- OWASP Top 10 2013 – A5
- PCI DSS, Requirement 2
- DHS Alert (ICS-ALERT-13-164-01)

Current default passwords examples

- Central Rappahannock Regional Library
- CRRL User Login Website
- Use Unique Default Passwords

CRRL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Forgot your PIN?
Remember me on this device
Log In
Welcome to Your New Catalog!
Here's what's new...
Find what you want with a better search.
Track your borrowing.
Rate and review titles you borrow, and share your opinions on them.
Get personalized recommendations.
Trouble logging in?

SCADA Systems

- Supervisory control and data acquisition
- Programs installed in utilities and manufacturing facilities to manage operations
- Major European SCADA manufacturer hardcoded known default passwords
- Targeted by malware
- Over 50 percent of SCADA suppliers" hard-code passwords

SCADA Systems (Continued)

- 10,500 small dish satellite systems vulnerable to cyber attacks
- very small aperture terminals, (VSATs)
  - Remote broadband Internet
  - Transmit PoS credit card transactions
- Many have default password settings

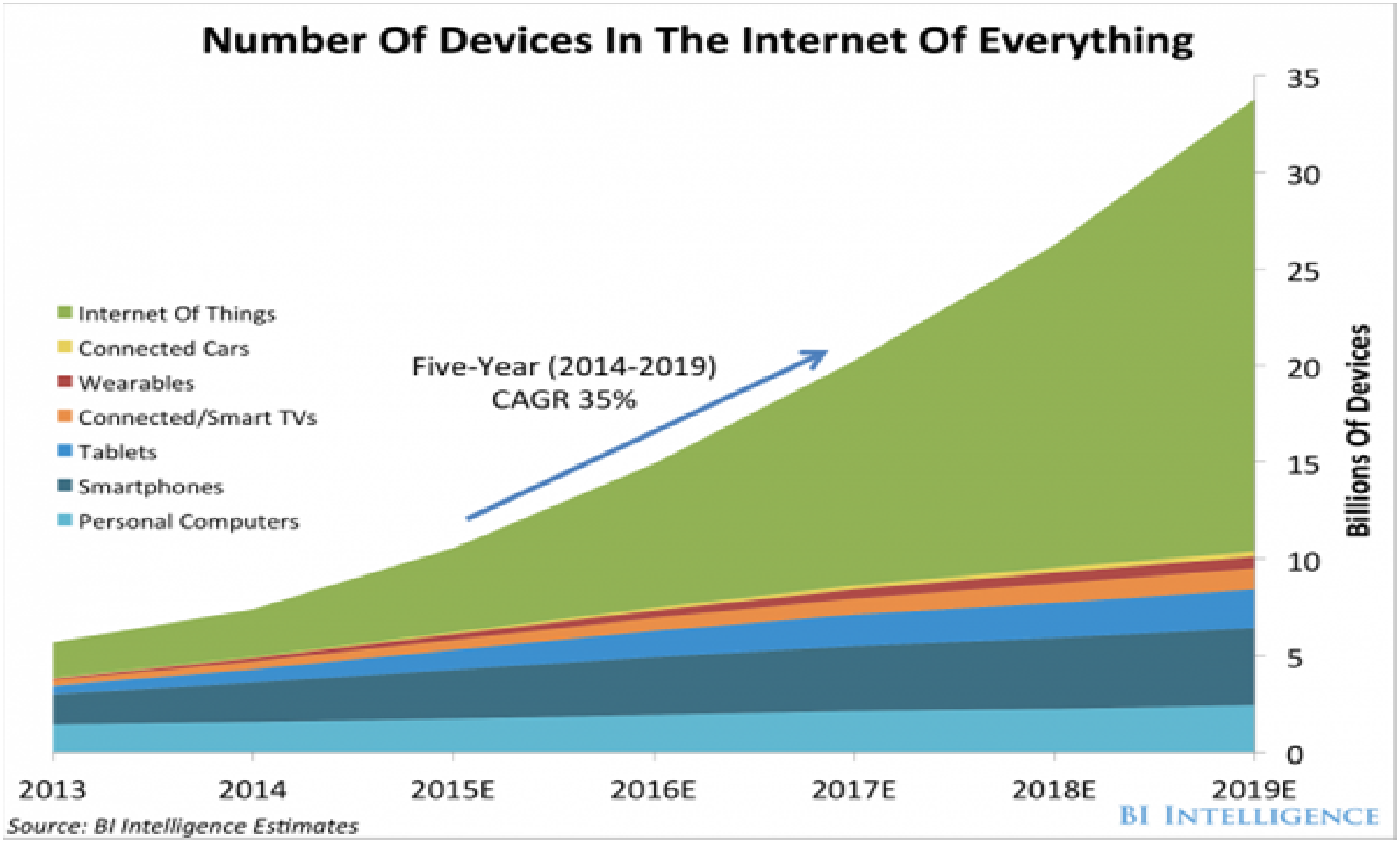
Databases

- Databases have been plagued with default password security problems.
  - Oracle – dozens of default ids and passwords
- NoSQL databases have these problems
  - MomgoDB had no passwords until 2015
  - After 2015 issue fixed
- MongoDB (older) databases subject to organized bitcoin ransom attempts

Internet of Things (IoT)

- New dimension to default password
- Estimated 1.7 trillion industry by 2020
- Majority of IoT devices shipped to users
  - With default passwords
  - Already set by factory manufacturers
  - Source Mcafee.com

2017 - 20 Billion IoT Devices



IoT Devices with Default Passwords

- Cameras
- Printers
- DVR Recorders
- Cellular modems
- Solar panels
- Medical devices

IoT DDoS and Defaults

- Two massive 2016 DDoS attacks enabled by IoT devices with default passwords
- Sept. 20 Akamai DDoS attack ,
  - Largest attack against company
- Oct. 20 attack Dyn US DNS Provider
  - Affected USA (East Coast)
  - Twitter, Amazon, Reddit, others affected
- Called the Mirai attacks

Mirai Attack Characteristics

- DNS attacks using Mirai malware
- Originated from thousands of bots
  - Bots IoT cameras & DVRs
  - Used in homes & small office
  - Most from one Chinese manufacturer
- Devices use factory hardcoded default id/passwords
- Spread by scanning Internet for IoT devices with the default passwords.

Attack Fixes

- Malware eliminated by power off
- Re-infection can easily reoccur
- Manufacturer
  - Issued a recall
  - Also threatened lawsuits
- Owner can
  - Go to an administrator web page
  - Enter the default credentials
  - Change to a new password

Default Password Solutions

- Change Default Passwords
- Use Unique Default Passwords
- Use Alternative Authentication Mechanisms
- Force Default Password Changes
- Restrict Network Access
- Identify Affected Products
- Don’t Buy Affected Products

Solutions IoT

- Secure wireless network
  - Obscure name
  - Disable network guest access
  - Firewall
- Good password management
  - If possible
- Install a unified threat management appliance (UTM)
- Examine each IoT device you own

Solutions IoT (Continued)

- Install security software wherever possible
- Check manufacturers' websites for firmware updates
- Pay attention to brands

Those who don't know history are doomed to repeat it

- Attributed to:
  - Edmund Burke
  - George Santayana
  - Winston Churchill
  - Jessie Ventura
- Applies to the default password conundrum
  - Problem existed 40 years ago in mainframes
  - Bigger than ever with IoT devices
- When will they ever learn