Two Factor Pilot Project

Security Liaisons
4/10/13

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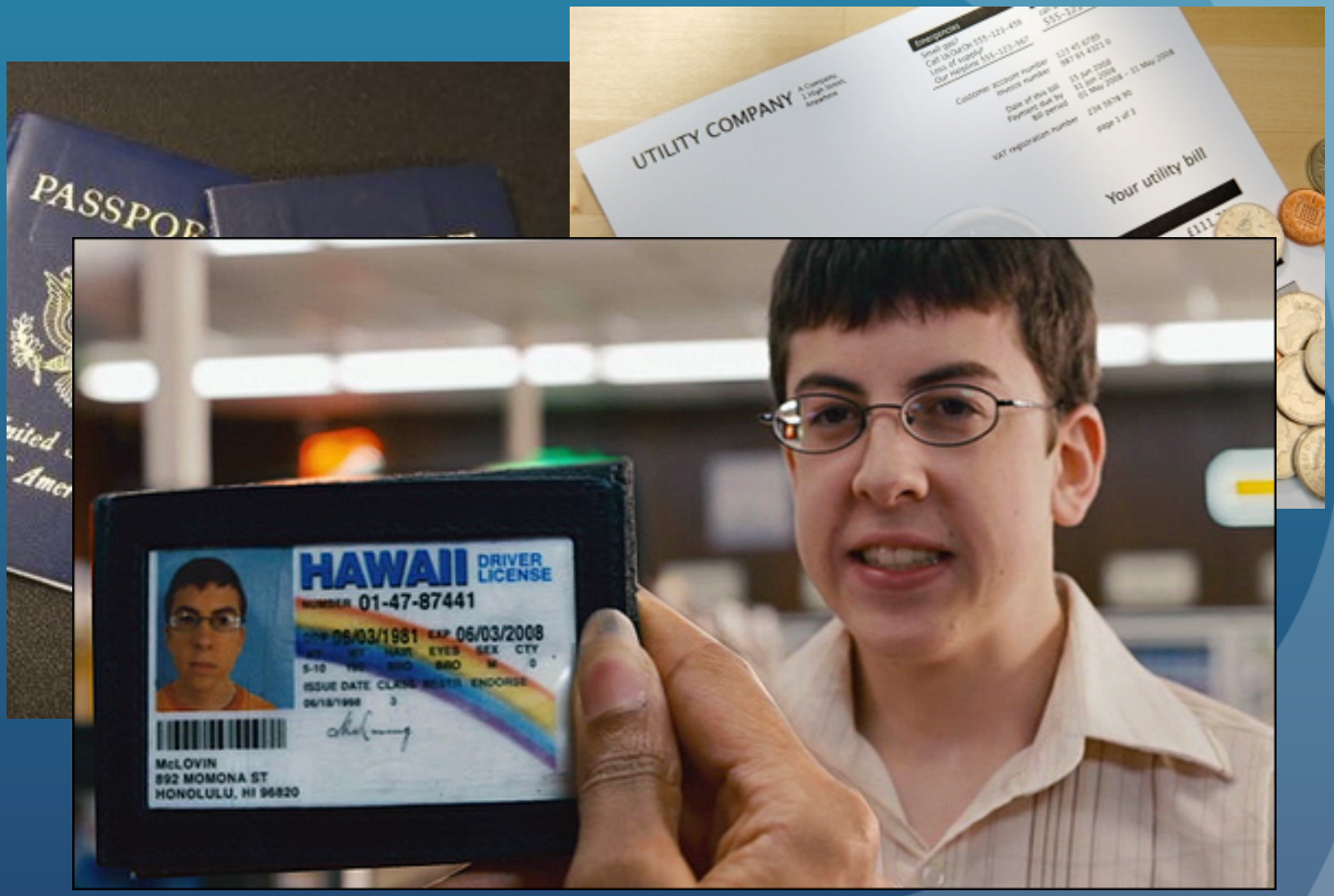
Talk Outline

- Overview of Multi Factor Authentication (MFA)
- MFA at Penn
  - History
  - Current Pilot

Two Factor/Multi-Factor



Common Knowledge Factors

Something You Know

Something You Are

Something You Have

What problem are we solving?

What problem are we solving?

Table 7. Top 10 Threat Action Types by number of breaches and records

Rank	Variety
1	Keylogger/Fo
2	Exploitation c

Figure 20. Malware functionality

Keylogger/Form-grab

Send data to extern

Disable or interfere with sec

System/net

Initiate brute force or dict

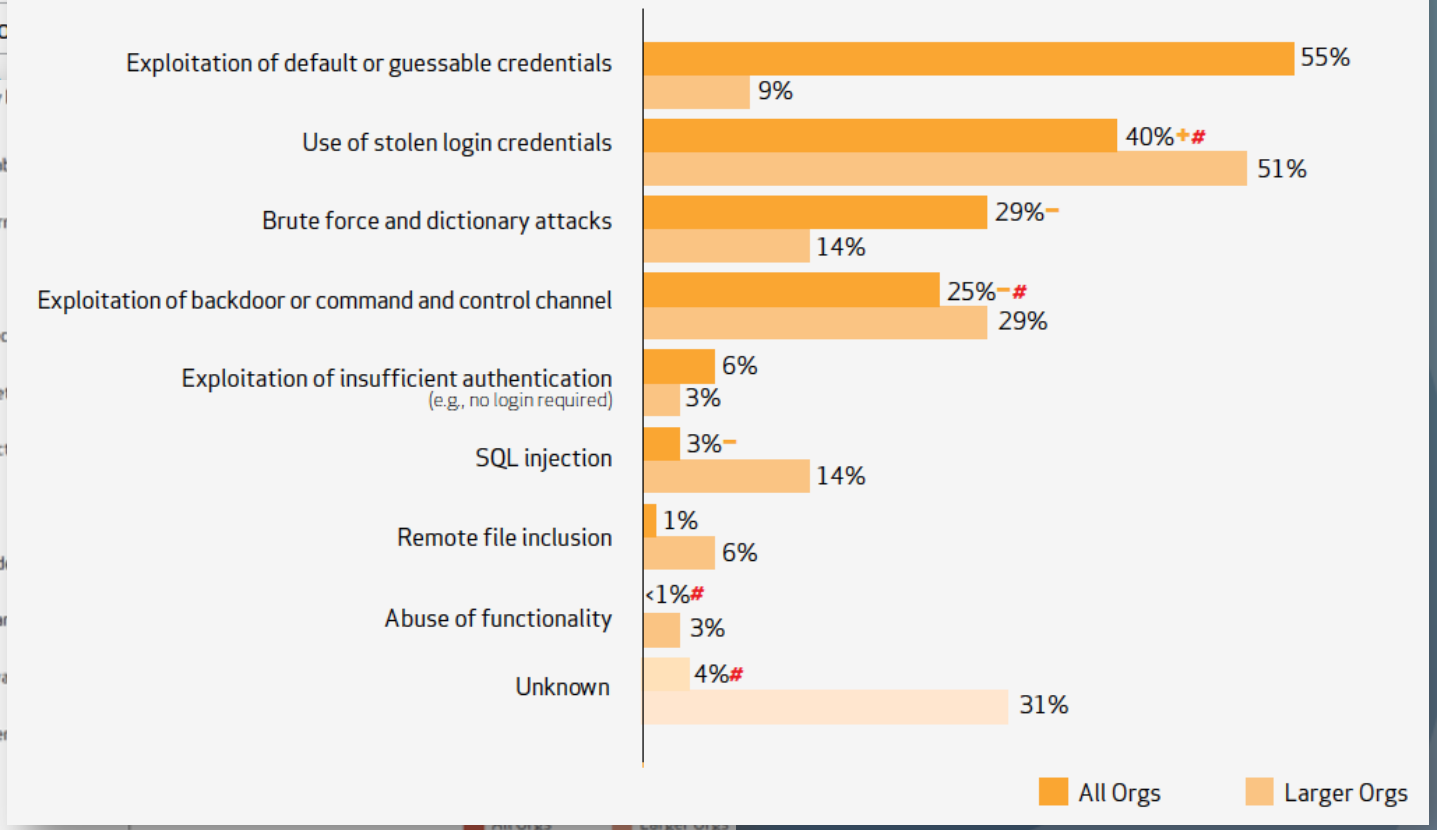
Capture data resid

Comma

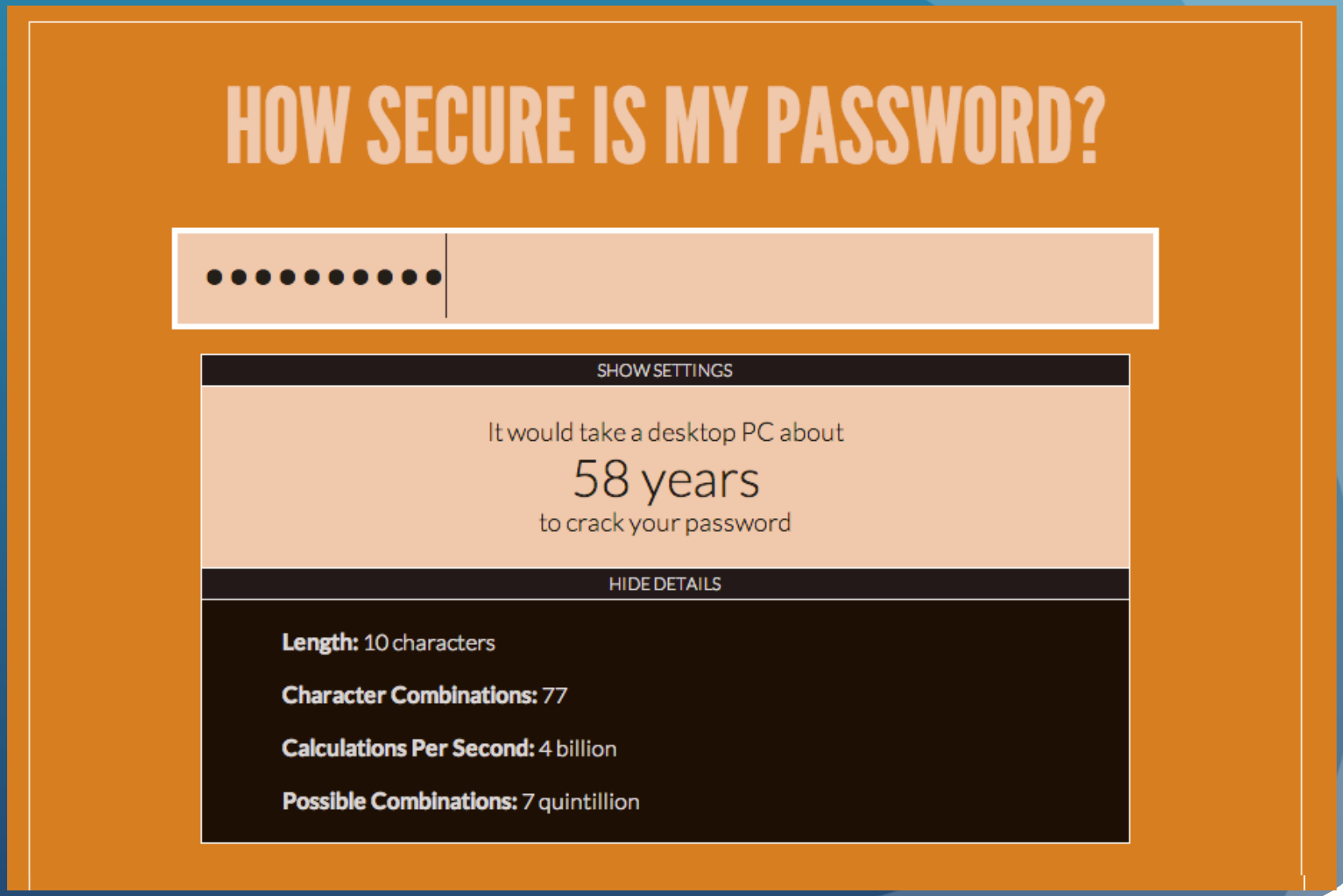
Download/install additional malwa

Redirect to another

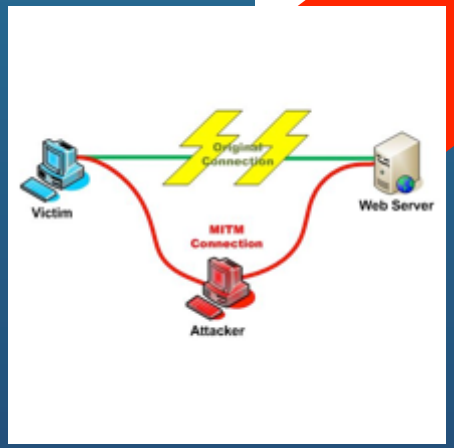
Figure 21. Hacking methods by percent of breaches within Hacking



What problem are we solving?



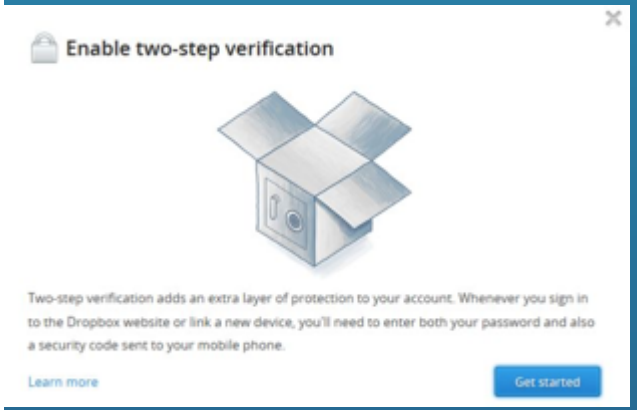
Not a magic bullet

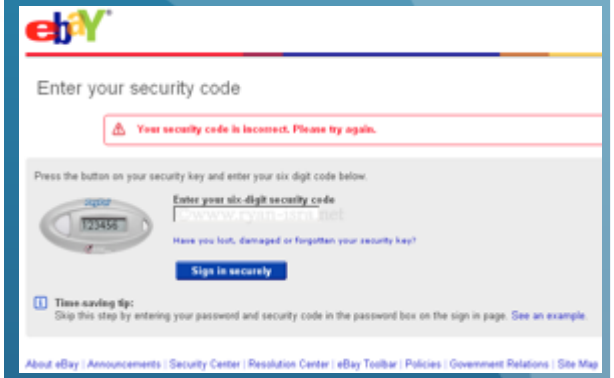


Man in the Middle

Trojan/
Piggybacking

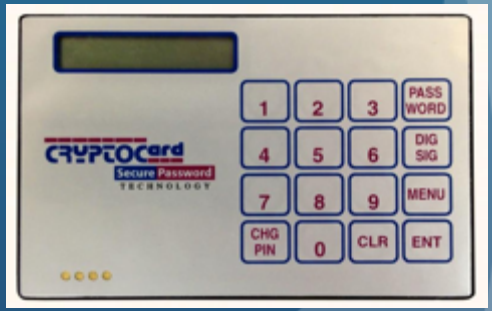
MFA in Popular Commercial Services





Common Past MFA Experience

- **One-time funding & long term cost**
- **Technology limitations**
  - RSA tokens (expensive, proprietary)
  - CryptoCard (too complex for some?)
- **Specific use case (OOB network)**
- **Hard to get prioritized**
  - Affecting individuals, not apps
  - Other more pressing concerns



History of MFA at Penn

PhoneFactor

RSA SECURITY®

RSA Agrees to Replace Security Tokens After Admitting Compromise

BY KIM ZETTER 06.07.11 12:41 PM

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Nearly three months after RSA Security was breached by hackers, the company has announced it will replace the security tokens for nearly all of its SecurID customers.

History of MFA at Penn

Lessons Learned

1. Proprietary vs. open source
2. Power of personal mobile devices was real
3. Cost - and who pays it – can make or break it
   - What application and/or how it MFA is deployed matters (self-provisioning, opt-in, “remember this device”)
4. Security (PhoneFactor spoofing)

MFA Small Ball

If you know there is value (there is a risk)…

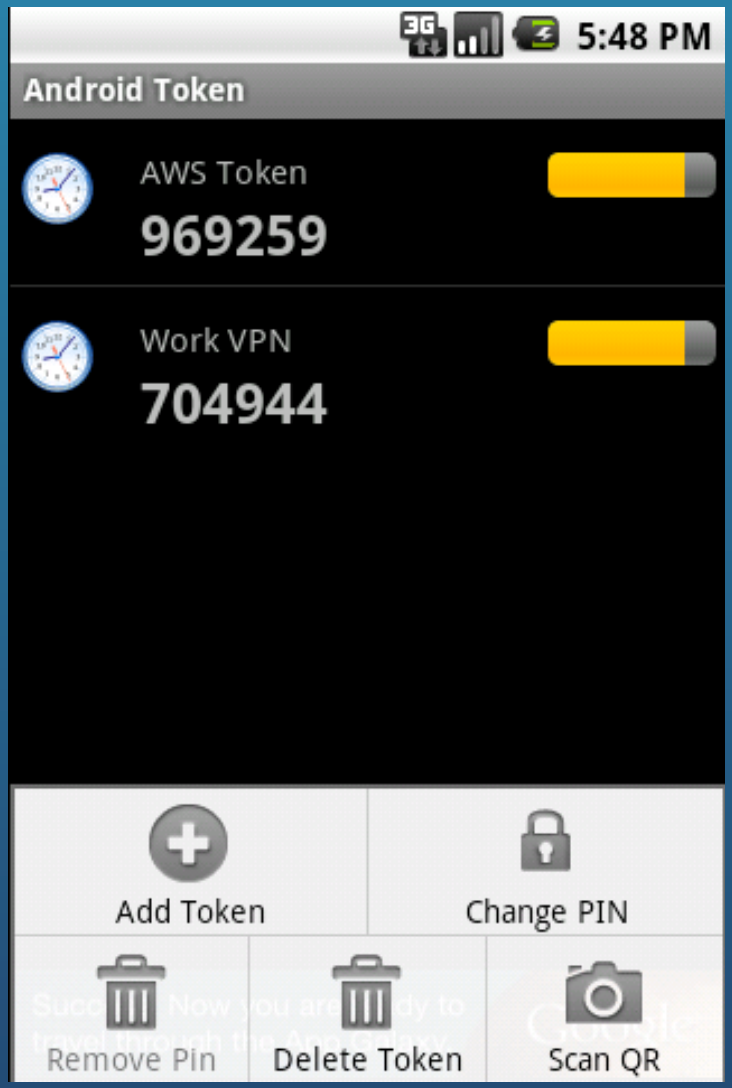
If you think you can find a solution…

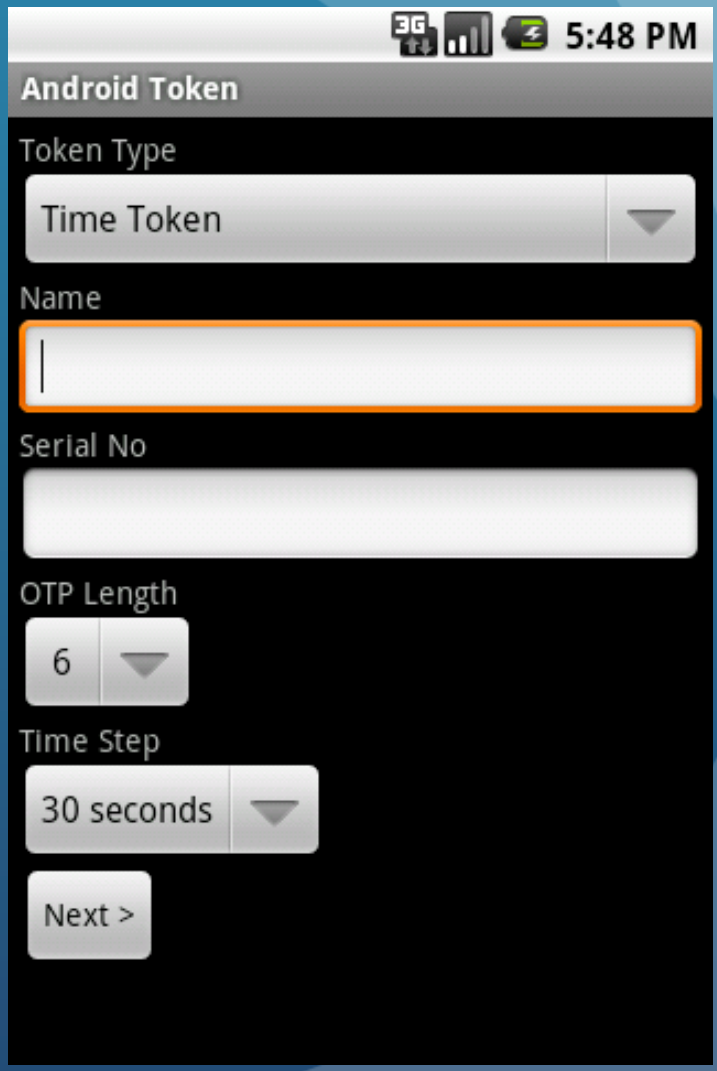
Set the table and wait for the chance to score.

FY12 Goal: Evaluate and draft white paper on open-source, standards-based, one-time passcode generators for mobile platforms.

FY 13 Goal: Implement a pilot two-factor service using Google Authenticator and CoSign for individual users who opt in, including the infrastructure for provisioning and management of tokens.

Client Options





Client Options

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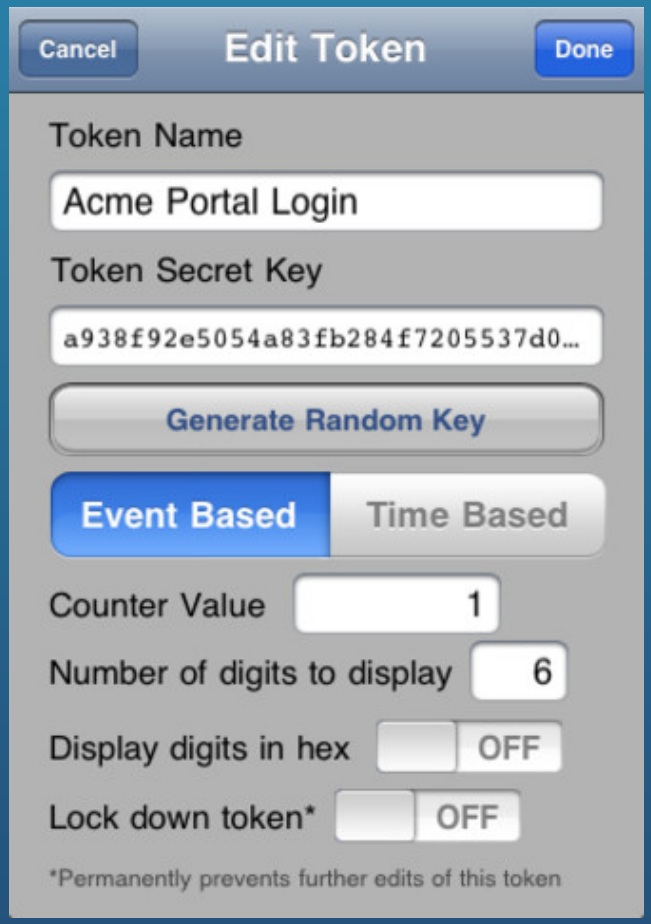
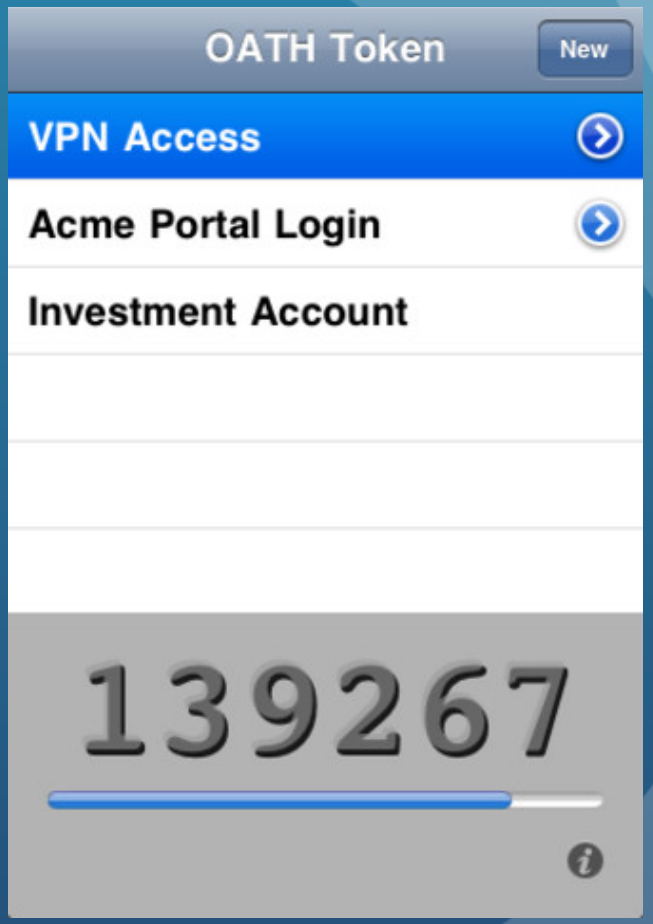
Client Options





Client Options

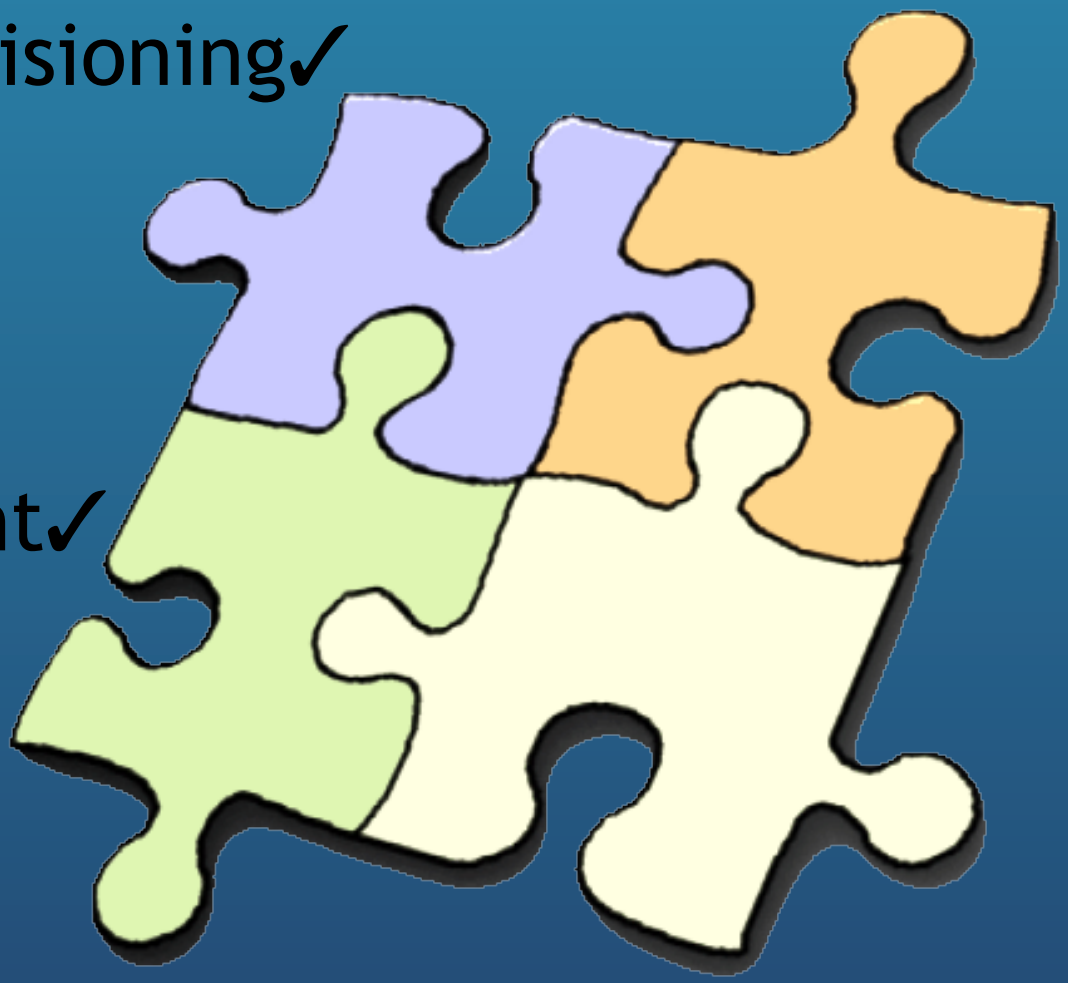
Google Authenticator

Winner: Google Authenticator

- Server-side authentication component
- QR code generation for easy provisioning
- Generation of printable backup codes
- Broad platform support (iOS, Android, Blackberry, Linux)

Found: [partial] Open Source Solution

Provisioning✓



Management

Client✓

+ Cosign integration

Authentication (server) ✓

Goal: Pilot Two-Factor Service

- Opt-in by user (not just service)
- Option for user to “trust” a browser
- Self-service interface
  - Opt in/out
  - Regenerate scratch codes
  - Change secret
  - Revoke browser trust
- Integrate with web authN (Cosign)

Pilot Project

- Team:
  - Development, Info Sec, Support, Networking, Data Administration
- Timeline (Sept 2012 – May 2013)
  - Definition & Planning: Sep 2012-Oct 2012
  - Development: Nov 2012-Feb 2013
  - Testing & Documentation: Mar 2013
  - Pilot Rollout: May 2013

Decision Points

- Which group should run the service?
  - Development group: web service for all 2f functionality
  - Networking group: integrate 2f with Cosign
- When/how to display second factor prompt
  - Only if user authenticates successfully with 1st factor, and has opted in
  - Requires modification to Cosign; alternative (showing 2f only if cookie present) would leave users in dark about when to provide 2f.

Decision Points

- What to call it
  - PennKey Token? PennToken?
  - Two-step verification
- How to support it
  - Push the one-time codes!
  - Alternate phone number
  - Designee to opt the user out
- Whom to invite
  - Must be in online directory
  - IT & Security contacts

2F status

- Self-serve UI nearly complete
- Cosign integration underway
- [screen shots]


Penn
University of Pennsylvania
Penn WebLogin
Enter your credentials to initiate
a 10-hour Penn WebLogin session.
The session provides single sign-on access
to many protected University web resources.
PennKey
muthm
Password
About Penn WebLogin
Log in


Penn
University of Pennsylvania
Penn WebLogin
Additional authentication is required.
Please enter a valid PennToken code to continue.
PennKey authentication complete
PennToken
About Penn WebLogin
Log in

Penn WebLogin Two Factor

Two Factor authentication is optional. If you do opt in, you can greatly reduce the risk of unauthorized access to your and to Penn's data by providing not only a password, but also a second factor - one-time passwords displayed by your phone. For more details, see About Penn WebLogin Two Factor, below.

Manage my two factor **I am having trouble logging in**

About Penn WebLogin Two Factor

Penn

Penn WebLogin Two Factor

Two Factor authentication is optional. If you do opt in, you can greatly reduce the risk of unauthorized access to your and to Penn's data by providing not only a password, but also a second factor - one-time passwords displayed by your phone. For more details, see About Penn WebLogin Two Factor, below.

You are not currently enrolled in this service.

Profile | Opt in | View recent activity | Help a colleague | Admin console

About Penn WebLogin Two Factor

Penn

Penn WebLogin Two Factor - Opt in

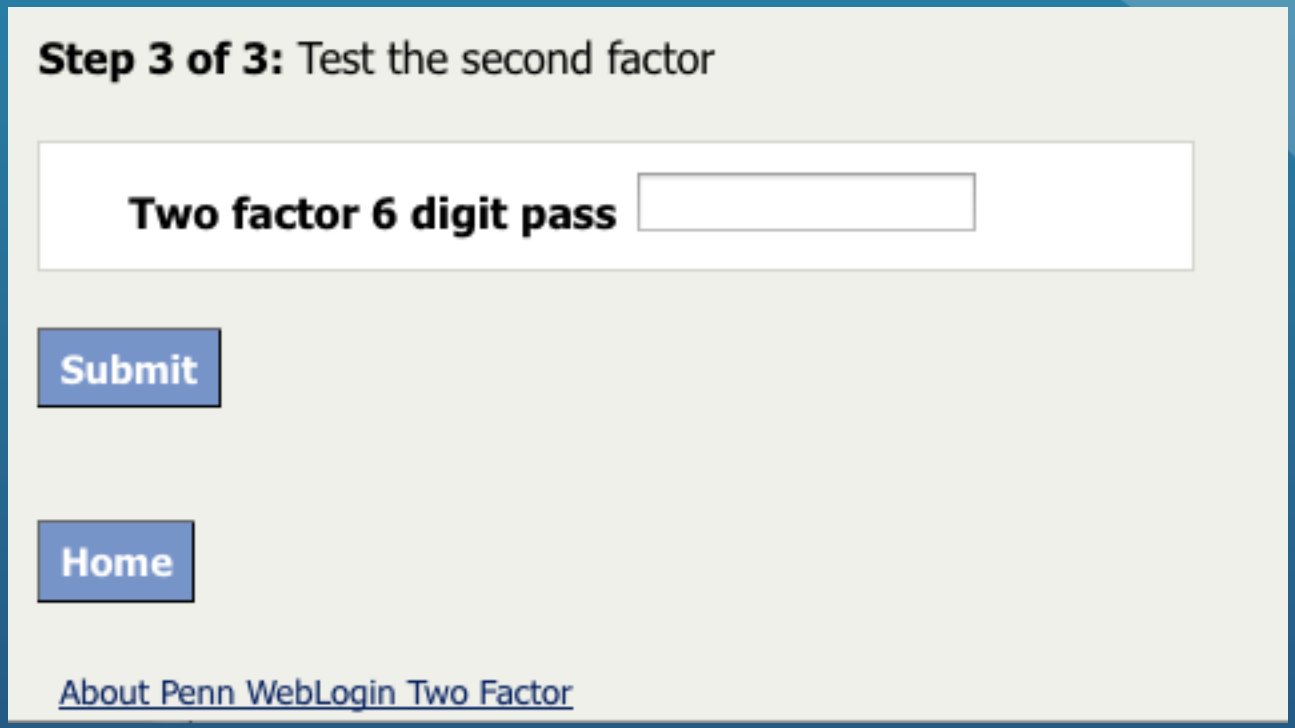
Note: your two factor enrollment is not complete until you test your device below

Step 1 of 3: Install Google Authenticator in your mobile device

Step 2 of 3: Scan this QR code or or enter this secret value into your device(s)

Base 32 (e.g. Google Authenticator): **WLGV ECHT VQVE JMC3** (Other options)

Note: This QR code and secret value should not be stored anywhere but inside the two-factor device (phone or token).


Step 3 of 3: Test the second factor
Two factor 6 digit pass
Submit
Home
About Penn WebLogin Two Factor

Penn WebLogin Two Factor - Opt in success

You have been successfully enrolled in Two Factor.

Important: If you lose your phone, run out of charge, or do not have it, *you will not be able to log in to WebLogin*. We **strongly recommend** that you click the 'Show one-time codes' button below and then print out and store them securely, for the event you do not have your phone.

Home | Show one-time codes

About Penn WebLogin Two Factor

Penn

Penn WebLogin Two Factor - Show one-time codes

Note: Keep these codes safe since they are your passwords.
Use your browser Print function to print these codes and instructions.

Instructions: you can use each 6-digit password once in order. If you forget which password you are on, you can use two that have not been used (separated by a space). Generally these are used if you lose your phone or do not have it available. If you lose your printed codes you must invalidate them so no ones else uses them.

Note: all codes before the ones on this screen are now invalid

1. 392146	11. 007181
2. 073332	12. 559526
3. 800432	13. 523248
4. 768860	14. 411788
5. 236396	15. 811581
6. 377212	16. 356830
7. 839041	17. 338517
8. 787762	18. 179087
9. 440100	19. 971353
10. 931292	20. 719261

Home

About Penn WebLogin Two Factor

Almost there…