

Risk Assessment and other Defensive Security Measures

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Fun SE Stories

- Beth really wanted her Starbucks. Clicked 6 times.
- Begged to know, "Are you tricking me?"
- Came back to the office to restart payload.
- Actually tried to repair the copier.

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"In the world of networked computers every sociopath is your neighbor" ... Dan Geer

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7

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The Threatscape We Now Face...

"The threat has reached the point that, given enough time, motivation, and funding, a determined adversary will likely be able to penetrate any system accessible from the Internet."

Joseph M Demarest, Assistant Director, Cyber Division FBI, before the Senate Judiciary Committee, May 8,2013



Time
Motivation
Funding
Are we hopeless?

Time
Motivation
Funding

Profit

Are we hopeless?

Time
Motivation
Funding

Profit

Profit

3

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Key Action

- Risk Assessment
 - Only as good as the effort put into it.
 - Must be championed from the top and not just a check box for exampreparation
 - Risk changes and threats change cannot be static



Risk Assessment

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- 2001 GLBA Information Security Risk Assessment
- 2006 FFIEC Information Security Risk Assessment
- 2010 Online Banking Authentication Risk Assessment
- mid-2010s Social Media and DDoS Risk Assessments
- 2015 FFIEC CyberSecurity Risk Assessment

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GLBA Risk Assessment

- 2001 GLBA Information Security Risk Assessment
 - Not displaced by the new FFIEC CyberSecurity Risk Assessment
 - Different Perspective
 - · Threats and Corresponding Controls vs
 - Inherent Risk and Maturity Model based upon List of Controls
 - Identifies KEY CONTROLS for testing
 - Frankly, GLBA RA can be very enlightening



FFIEC Handbook Risk Assessment

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- 2006 FFIEC Information Security Handbook Risk Assessment
 - This handbook is woefully out of date.
 - Only reference to performing asset based risk assessment
 - · Guidance is vague therefore models vary



Online Banking Authentication Risk Assessment

- Online Banking and Mobile Banking Focus
 - Identifies Transactions of Greatest Risk
 - Identifies mechanisms to mitigate these risks through stronger authentication, anomaly detection, other controls



Social Media and DDoS Risk Assessment

- Social Media Risk Assessment
 - Identifies risk related to social media, not necessarily social media initiated by the financial institution.
- DDoS Risk Assessment
 - Identifies DDoS specific risk. Knee-jerk reaction to attacks in early 2013.
- Technology Specific Risk Assessment
 - Identifies risks related to technologies being deployed such as Board iPads, cloud services, Microsoft 365, etc.



FFIEC Cybersecurity Self Assessment

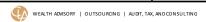
- Two years in development!
- Initially labeled as Voluntary...
- Voluntary verbiage is removed... not mandatory.
- Will be an examination tool

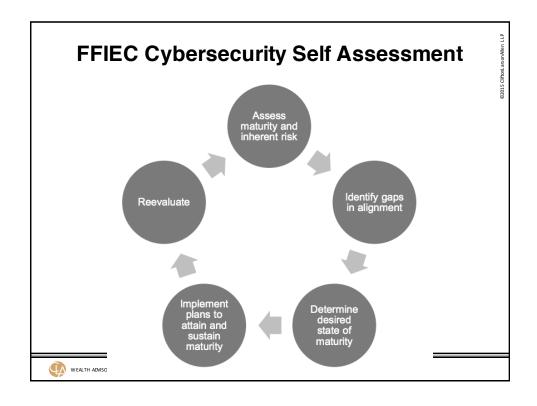


FFIEC Cybersecurity Self Assessment

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- Benefits to Institution and Board
 - · Consistent evaluation
 - Know your risks
 - Develop a Plan
 - Measure over Time
- Challenges
 - Only as good as the effort/critical thought put into it.
- Two Components: Inherent Risk, Maturity



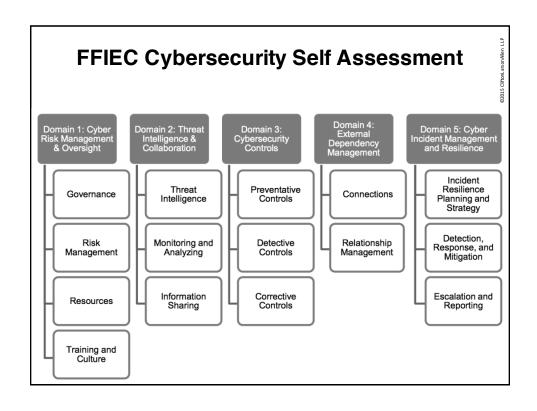


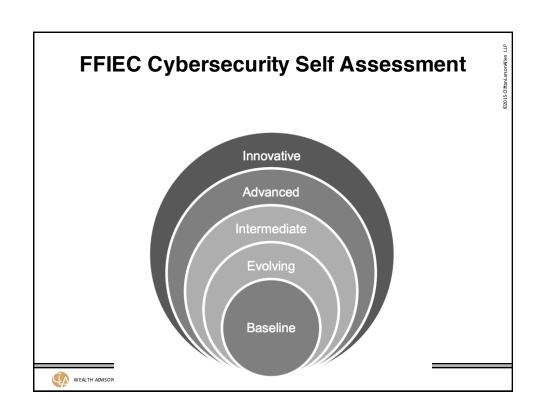
FFIEC Cybersecurity Self Assessment

Inherent Risk Profile

Category: Technologies and	Risk Levels					
Connection Types	Least	Minimal	Moderate	Significant	Most	
Total number of Internet service provider (ISP) connections (including branch connections)	No connections	Minimal complexity (1–20 connections)	Moderate complexity (21–100 connections)	Significant complexity (101–200 connections)	Substantial complexity (>200 connections)	
Unsecured external connections, number of connections not users (e.g., file transfer protocol (FTP), Telnet, rlogin)	None	Few instances of unsecured connections (1–5)	Several instances of unsecured connections (6–10)	Significant instances of unsecured connections (11–25)	Substantial instances of unsecured connections (>25)	
Wireless network access	No wireless access	Separate access points for guest wireless and corporate wireless	Guest and corporate wireless network access are logically separated; limited number of users and access points (1–250 users; 1–25 access points)	Wireless corporate network access; significant number of users and access points (251–1,000 users; 26–100 access points)	Wireless corporate network access; all employees have access substantial number of access points (>1,000 users; >100 access points)	

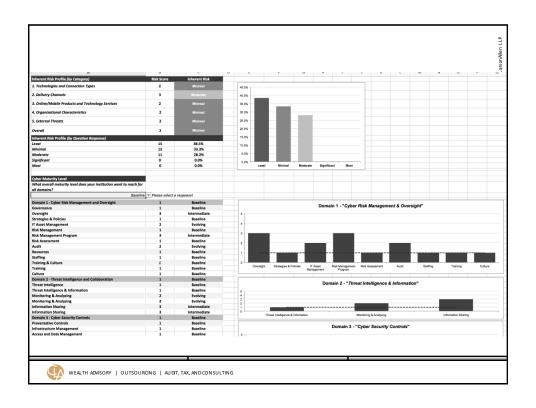
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egory Risk Are 1.1 - Tet branch of 1.2 - Uns file trans	for each of the risk areas listed below within Columns D to H. You can provide real tild multiple of Internet service provider (ISP) connections (including connections) connections, multiple of connections, number of connections and users (a g. sector protect (IFP). Internet connections, multiple of connections and users (a g. sector).		r Risk Assessment if needed within Column I. Least No connections	Tool - "Inherent Ris	sk Profile"		
assment Date: uudions: Please only select or s "Yes" for spory Risk Are 1.1 - Tot branch of life trans	rea ttal number of internet service provider (ISP) connections (including connections) secured external connections, number of connections not users (e.g.,	Inherent Risk	Least				
egory Risk Are 1.1 - Tet branch of 1.2 - Uns file trans	rea ttal number of internet service provider (ISP) connections (including connections) secured external connections, number of connections not users (e.g.,	Inherent Risk	Least				
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1.1 - Tot branch 1.2 - Une file trans	tal number of internet service provider (ISP) connections (including connections) secured external connections, number of connections not users (e.g.,				Risk Levels		
branch of 1.2 - Une file trans	secured external connections, number of connections not users (e.g.,			Minimal Minimal complexity (1–20 connections)	Moderate Moderate complexity (21–100	Significant Significant complexity (101–200	Most Substantial complexity (>20
file trans	secured external connections, number of connections not users (e.g., sefer protocol (FTP), Telnet, riogin)				connections)	connections)	connections)
file trans	secured external connections, number of connections not users (e.g., sefer protocol (FTP), Telnet, riogin)		No None	Yes Few instances of unsecured	No Several instances of unsecured	No Significant instances of unsecured	No Substantial instances of unseco
=	initial protocol (r 1r), Tallian, Insigni)	Least		connections (1-5)	connections (6-10)	connections (11-25)	connections (>25)
1.3 - Wir			Yes No wireless soness	No	No Guest and corporate wireless network	No No	No Wireless corporate network acce
	1.3 - Wireless network access		No wretes access	Separate access points for guest wireless and corporate wireless		Wireless corporate network access; significant number of users and access points (251–1,000 users; 26–100 access points)	
			No	Yes	No	No	No
1.4 - Per	1.4 - Personal devices allowed to connect to the corporate network	Least	None	available to <5% of employees (staff,		Multiple device types used; available to <25% of authorized employees (staff, executives, managers) and board; e- mail and some applications accessed	
			Yes	No	No	No.	No
	1.5. Third parties, including number of organizations and number of individuals from vendors and subcontractors, with access to internal systems (s.g., Virtual private network, modern, intranst, direct connection)	Moderate	No third parties and no individuals from third parties with access to systems	Limited number of third parties (1–5) and limited number of individuals from	Moderate number of third parties (6-10) and moderate number of	Significant number of third parties (11–25) and significant number of	Substantial number of third po (>25) and substantial number
individu			010 paras 110 2002 10 3 paras	third parties (<50) with access; low complexity in how they access systems	individuals from third parties (50-500)	individuals from third parties (501–1,500) with access; high level of complexity in terms of how they access systems.	individuals from third parties (> with access; high complexity in they access systems
			No	No	Yes	No	No
	1.6 - Wholesale customers with dedicated connections	Least	None	Few dedicated connections (between 1-5)	Several dedicated connections (between 6-10)	Significent number of dedicated connections (between 11-25)	Substantial number of dedice connections (>25)
Technologies			Yes No applications	No Few applications (between 1–5)	No Several applications (between 6-10)	No Significant number of applications	No Substantial number of applicatio
	ternally hosted and developed or modified vendor applications ting critical activities		No	Yes	No	(between 11-25) No	complexity (>25) No
1.8 - Inte activities	ternally hosted, vendor-developed applications supporting critical es		Limited applications (0–5)	Few applications (6-30)	Several applications (31–75)	Significent number of applications (76–200)	Substantial number of applicatio complexity (>200) No
1.9 - Use	1.9 - User-developed technologies and user computing that support critical	Least	No user-developed technologies	1-100 technologies	101-500 technologies	501-2,500 technologies	>2,500 technologies
activities	es (includes Microsoft Excel spreadsheets and Access databases or		Yes No systems (hardware or software)	No Few systems that are at risk of EOL	No.	No A large number of systems that support	No Majority of critical operation
1.10 - Er	1.10 - End-ef-life (EOL) systems		No systems (narowere or somewre) that are past EOL or at risk of nearing EOL within 2 years	and none that support critical operations	Several systems that will reach ECL within 2 years and some that support critical operations	A large number or systems that support critical operations at ECL or are at risk of reaching EOL in 2 years	Majority of critical operation dependent on systems that I reached EOL or will reach EOL the rext 2 years or an unknot number of systems that have re EOL
			No	No	Yes	No	No
1.11 - 0	Open Source Software (OSS)	Minimal	No OSS	Limited OSS and none that support ortical operations	Several OSS that support critical operations	Large number of OSS that support critical operations	Majority of operations depende
			No	Yes	No	No	No
	letwork devices (e.g., servers, routers, and firewalls; include physical	Minimal	Limited or no network devices (<250)	Few devices (250–1,500)	Several devices (1,501-25,000)	Significant number of devices (25,001–50,000)	Substantial number of device (>50,000)
and virtu	tual)		No	Yes	No	No	No
support	Third-party service providers storing and/or processing information that t critical activities (Do not have access to internal systems, but the ion relies on their services)		No third perties that support critical activities	1–25 third parties that support critical activities	26–100 third parties that support critical activities	101–200 third parties that support critical activities; 1 or more are foreign- based	activities; 1 or more are foreign-
	Cloud computing services hosted externally to support critical activities	Moderate	No No cloud providers	Yes Few cloud providens; private cloud only (1-3)	No Several disud praviders (4–7)	No Significant number of doud providers (8–10); cloud-provider locations used include international; use of public doud	





Risk Assessment Wrap Up

• Combined, the CyberSecurity and GLBA Risk Assessment will help you be well informed.

- Having your controls independently tested will validate your risk assessments.
- Well Informed + Validated = Good Decisions

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Key Action

- Test Key Controls (from the risk assessments)
 - General Controls Review (BCP, Vendor, Change, Board)
 - Vulnerability Assessment (collaborative, comprehensive)
 - Penetration Testing (Breach Simulation, COVERT)

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Secure Computer?

 "The only secure computer is one surrounded by concrete and in the bottom of the ocean. We are not seeking absolute security, we are seeking enough security... and 'enough' is a moving target!"

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27

Enough is a Moving Target...

- Password length 4, then 8, now 14+
- Passwords any value, now Aa1/ complexity
- Passwords reused, now unique per use
- ... just one example

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Testing Controls

- Pen Testing: best performed covertly
 - Definition: Breach Simulation (SE, sessions, escalation, detection)
 - Can this question be answered if those responsible for breach detection and response are aware of the timing of testing?
- Vulnerability Assessment: best performed collaboratively
 - Definition: Inclusive, thorough, what are my vulnerabilities?
 - Includes scanning, config reviews, shoulder surfing, interaction.
- General Controls Review: best performed collaboratively
 - Definition: Supporting controls, admin/physical practices, compliance
 - Board Reporting, Physical, Vendor Mgmt, BCP, Change, Policies and training, etc

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OVERVIEW OF PENETRATION TEST LEVELS

The following matrix highlights the differences between the four levels of penetration testing. It is important to gain a full understanding of the different service levels when comparing offerings with others in the industry. Our comprehensive offering demonstrates in-depth understanding of penetration testing, as well as providing the flexibility to choose a penetration test solution that is best suited to clients' regulatory requirements and budgetary standpoint.

Descriptions, Features, Options	Penetration Test Levels				
	Level 1	Level 2	Level 3	Level 4	
Type of test available:					
External	•	•	•	•	
Internal	•	•	•	•	
Description of service:					
Review of vulnerability assessment report, highlighting key weaknesses	•	•	•	•	
Vulnerabilities exploited until analyst compromises the domain		•	•	•	
Vulnerabilities exploited on a representative sampling of devices			•	•	
Vulnerabilities exploited on all devices selected by the client				•	
Other features:					
Near-real-time notification of critical vulnerabilities	•	•	•	•	
Soft copy report prepared summarizing findings; view via Frontline or download	•	•	•	•	

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"True Breach Simulation"

- Almost 90% of "real attacks" start with social engineering to obtain network access, then establish persistence, carefully escalate access and privileges, commit fraud or data theft...
- Effective Pen-testing mirrors this approach and is done without IT knowledge!
- This is separate from collaborative testing.
- Results: 65% / 100% Compromise

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31

14

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Bears....

- "When you and a friend are being chased by a bear, it is not necessary to out run the bear, it is only necessary to out run your friend."
- Effective security **May Be** nothing more than being more secure than the FI down the road?

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Are you Ready for Breach?

- Would your IT detect a breach? Are you sure?
 - Our IT is REALLY GOOD!
 - Our IS&T Exam was clean!
 - Our security partner scans our systems!
 - We subject our personnel and IT to "True Breach Simulation" and they've gotten good and breach avoidance, detection and response!

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Breach Preparedness

- CyberSecurity Insurance Review
- Security Testing and Remediation
- Legal Preparedness
- Public Relations Preparedness
- A BREACH COACH with your interests in mind!

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Now...

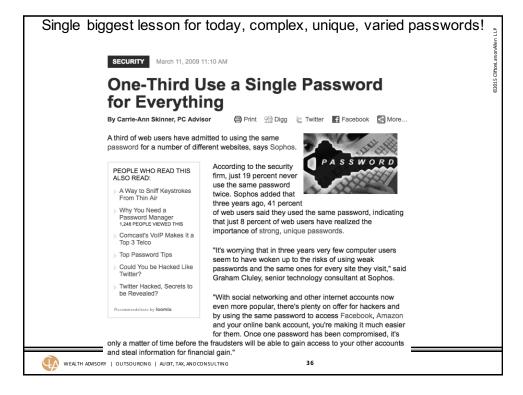
• Practical Guidance

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16

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Threat: Weak Passwords

- Fact: Passwords are inherently weak.
- If 90 day interval, 3% use "SeasonYear"
- Steps to thwart this attack vector:
 - Establish strong password standards
 - Equip employees with password wallet technology
 - Supplement with two-factor
 - Train employees
 - Test passwords with password cracking
 - Credential capture, MINIMIZE the use of Admin Accounts
 - 80% of attacks hijack admin passwords
 - Admin account logging, alerts and monitoring –1 minute

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Strong Passwords are:

- ✓ Lengthy (at least 8, more is better, consider 14+)
- ✓ Complex (mix upper/lower/numbers, characters)
- ✓ Known only by authorized user
- ✓ Unique per Use
- ✓ Unique from any personal attributes
- ✓ Unique from any personal passwords

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Use Routine Character Substitution for Websites

Choose a Consistent and Secret Technique you will use to change easily remembered passwords.

Example: Prefix is '8720' (address) + A through M becomes 3

Great for Websites:

Amazon = 8720333zon Costco = 87203ost3o Facebook = 8720333333oo3

Keep your Routine Character Substitution pattern a Secret and change once a year!

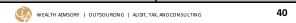
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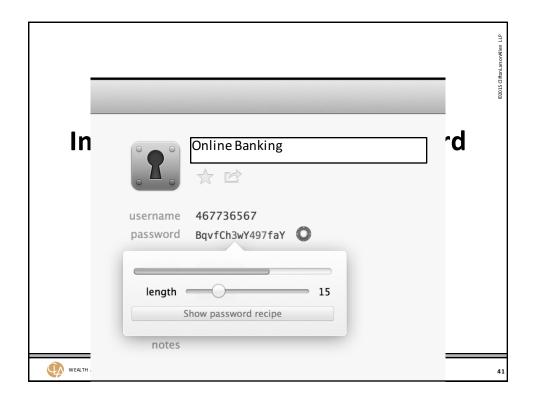
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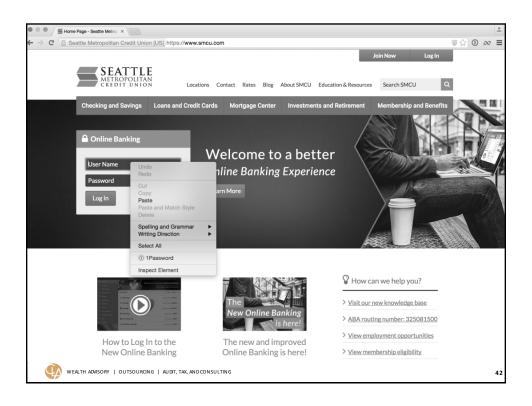
Use a Password Wallet for Important Passwords

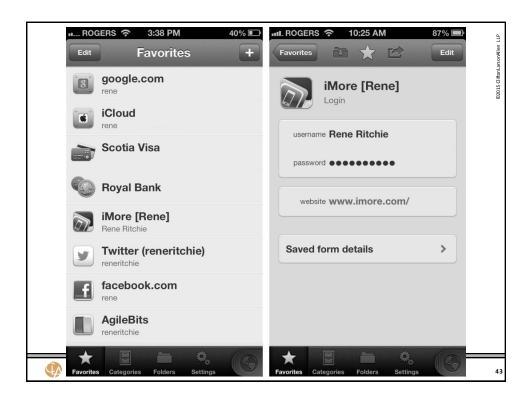
We do not recommend Routine Character Substitution for your most important passwords.

- Work
- Online Banking
- Investments and Insurance Sites
- Long Complex pws are the very best: J29NL7bnuzUv6Tc or Pacino15myFAVORITE!
- *Password wallets allow smart people to securely store all of your passwords, credit cards, software licenses and more.









Threat: Weak Configuration

- Windows, despite considerable effort, remains vulnerable to many exploits.
- Attackers WILL locate the weakest link. We routinely find 90% of systems well configured.
- Steps to thwart this attack vector:
 - Regular credentialed vulnerability scanning
 - Remediate vulnerabilities
 - ♦ Patching, configuration, end-of-life
 - Minimal risk acceptance, actively avoid risk acceptance
 - Establish and enforce expectations (standards) for ALL SYSTEMS, including vendors.
 - Document and revisit exceptions.



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Win	ndows	Laptop Control Checklist	Tipo Culpurina conflice TT
Y	es No	Configuration Standard	arsc
		 Verify that all hard drive partitions are formatted with NTFS 	cont
		 Install encryption and manage encryption keys for information recovery 	di di
		Install laptop recovery software	115
		 Assign laptop asset tag and input device info into asset tracking database 	020
		 Configure strong password for Administrator accounts 	-
		 Restrict number of users with Administrative privileges 	
		Disable unnecessary services	
	Т	Disable or delete unnecessary accounts	
		 Configure access restrictions to files, directories and shares 	
		Make sure the Guest account is disabled	
		 Disable anonymous access to system registry 	
		 Restrict anonymous access to Local Security Authority (LSA) information 	
		 Configure password policies (length, complexity, expiration, history, etc.) 	
		Enable account lockout	
		Rename the Administrator account	
		Revoke the Debug programs user right	
		Remove all unnecessary file shares	
		 Configure appropriate access controls on all necessary file shares 	
		Enable security event auditing	
		Set log on warning message	
		Install anti-virus software and updates	
		 Install host-based IPS/IDS or firewall 	
		 Install service packs and critical patches 	
		 Configure security patches deployment solution 	
		 Establish backup and file restore procedures 	
		Scan system with the Baseline Security Analyzer	
		 Install the appropriate post-Service Pack security hotfixes 	
		Run Microsoft's Malicious Code Removal Tool	
		Implement backup and recovery solution	
Jt	ustification	for Exceptions:	
L			
Techni	ical Lead A	proval:Date:	
Manag	ger Approva	Date:	
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Threat: Unknown systems and software

- If an attacker can engage unknown hardware or unknown software into the environment...
 advantage attacker!
 - Rogue wireless
 - Key loggers
 - Modified executables
- Steps to thwart this attack vector:
 - Hardware Pre-authorization
 - Control Local/Domain Admin
 - Detection of unknown hardware and software

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Security Awareness Training

- Security Training is an important part of any security program but is largely ineffective if not supported by consequences.
- · Password Training
- SE Avoidance
- Safe email and web surfing practices.

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What is the gap between secure and not secure?

Sometimes vast, sometimes narrow.

We need to protect from thousands of threats... attackers need to find just ONE vulnerable path.

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Are you doing what it takes to win?

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