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# Effective IT Auditing: Planning and Execution

#### Tom Schauer

- ✓Since 1986
- ✓TrustCC Founded TrustCC in 2001
- ✓ State and Federal Examiner
- ✓CISSP, CISA, CISM, CEH, CTGA, CRISC, Former GCIH
- ✓ Presentation Style
- ➤ Ask Questions, Participate
- > Your Handouts

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#### Hackers, Activists and Anarchists The State of Information Security in 2013

By Tom Schauer CISA, CISM, CISSP, CEH, CRISC, CTGA

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TELESTICO

### Every week we steel millions of dollars worth of information... then we gave it back!

TrustCC has performed over 1600 IT Audits and Penetration Tests for nearly 400 Organizations.

Thus far in 2013, we've hacked into 53% of our clients from the Internet. Once on the inside we access sensitive information 75% of the time and Admin access 62% of the time.

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#### What is more valuable?



TrustCC's Social Engineering Success Proves that Credit Union Employees don't get it.



#### 600 Million Sensitive Records Breached Since 2005

\*Privacy Rights Clearinghouse's Chronology of Data Breaches.

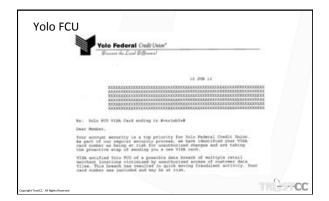
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#### Chronology of Data Breaches

- ✓See website
- √608,214,364 RECORDS BREACHED in 3796 Breaches
- ✓ Facebook June 21: 6,000,000 Personal Contact Records
- ✓ Yolo FCU June 17: Visa reports breach at several Merchants
- ✓ OneWest Bank April 23: Unauthorized Network Intrusion

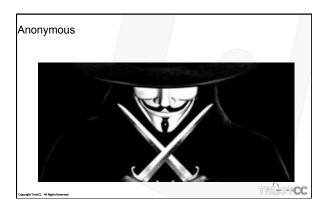
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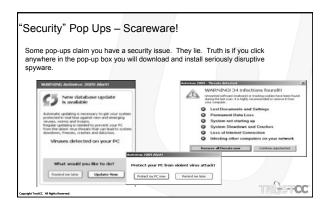


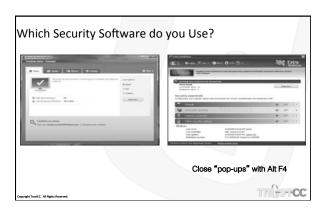






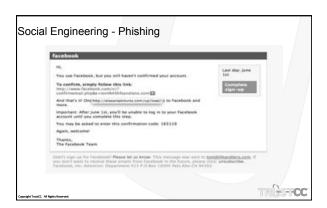


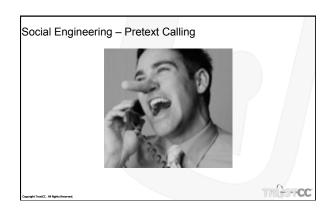




Vishing and Smishing	
> Hello this is "Your" Bank calling	
> We've detected potentially fraudulent activity on your Visa card	
> Please call 800.123.4567	
> You call and are asked to confirm your account	
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How Attackers Do It?	
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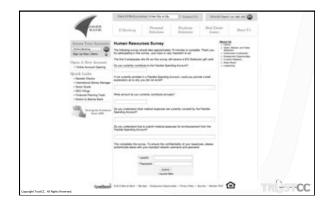












Thank you. You can generate your Visa gift card by clicking HERE	
Gift Card Instructions:  Clock the link above	-
When prompted, click "Run"  If a Microsoft Unverified Publisher warning pops up, click "Divregard and Run" and then "Run" again.	
Your coupon will pop up after being generated.	
-0	
Copyright Trustic. All Rights Insured.	
After SE, We are on the Internal Network	
✓ Every Month by Microsoft, Adobe Reader, Java, Flash, Office, Internet Explorer, etc.	
✓ Weak Configs: Default Passwords, Promiscuous Access	
✓Exploit Vulnerabilities	
✓ Metasploit: Point and Click Hacking	
✓ Disable controls, create accounts, crack passwords,	
establish resilient access, delete log records.	
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Smaller Organizations do better	
✓Any financial institution with more than 5 branches is highly	
likely to be susceptible to Social Engineering	
✓When combined with users having "local admin rights" ✓GAME OVER	
- GAINE OVER	
✓Must depend on technical controls, logging and alerts	
	-

Result: Online Account Takeover	
· Financial Institution deploys multi-factor	
authentication and strong controls.	
· Hacker successfully deploys Malware on	
customer/member computer	
· Malware records and replays keystrokes	
Once Authenticated the Hacker executes a	
fraudulent funds transfer	
indudulont fundo transici	
Coordet ToutC. All Ratio Respect.	
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We Don't DDOS but "They" Do.	
✓ Groups like Anonymous and "Cyber Fighters of Izz ad-Din	
al-Qassam" are wreaking havoc on larger (generally >\$5B)	
financial institutions. Recent guidance expects a written risk	
assessment, action, monitoring. For most FIs focus should	
be on outsourced website and online banking services.	
✓ How it works:	
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Auditors and Examiners are the Key to a Good Night of Sleep	
Additions and Examiners are the key to a Good Night of Sleep	
Assess Risks Signature Appropriate Controls Test Key Controls	
Controls	
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The Audit/Examination Challenge	
✓ How do I audit/examine something that is so dynamic, so	
actively hostile, and something I am unfamiliar with	
✓ Have a great plan	
✓ Either develop and retain skills OR partner with a provider ✓ Execute the plan	
Execute the plan	
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TI 0 1. 5 .	
The Regulatory Environment	
2 7/121	
By Tom Schauer CISA, CISM, CISSP, CEH, CRISC, CTGA	
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In 1986	
✓The Office of the Comptroller of Currency	
<ul> <li>BC 229 – Information Security</li> <li>BC 226 – End User Computing</li> </ul>	
> Do you think much has changed? See extract on next	
slide from 2001 OCC guidance.	
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APPENDIX: LIST OF OCC ISSUANCES REGARDING INFORMATION SECURITY	
<ul> <li>Interagency Guidelines Establishing Standards for Sufreyanding Customer Information, 66 Fall Roy 8616, 8632 (February 1, 2001), to be codified at 12 CFR Part 30, App. B</li> </ul>	
Fed. Reg. 8616, 8632 (February 1, 2001), to be coddled at 12 CFR Part 30, App. B  OCC Alert 2000-09 Protecting Internet Addresses of National Bands (fully 19, 2000)	
OCC Bulletin 2000-14: Infrastructure Threats-Intrusion Rusks (May 15, 2000)	
<ul> <li>OCC Alert 2000-01: Internet Security: Distributed Desial of Service Attacks (February 11, 2000)</li> </ul>	
"Interset Banking" booklet in Comptroller's Handbook (October 1999)	
<ul> <li>OCC Bulletin 99-9: Influstructure Threats from Cyber-Terrorists (March 15, 2000)</li> </ul>	
Check Fraud-A Guide to Avoiding Louises (February 2000)	
<ul> <li>OCC Bulletin 98-38: Technology Risk Management: PC Banking (August 24, 1998)</li> <li>OCC Advisory Letter 98-11: Pretest Phone Calling (August 20, 1998)</li> </ul>	
<ul> <li>OCC Advisory Letter 91-4: Use of Social Security Numbers for Automated Call Systems</li> </ul>	
(July 24, 1891)  OCC Banking Circular 229: Information Security (May 31, 1988)	
Banking Circular 226 End-User Computing (January 25, 1988)	
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Fast Forward to 2013 – Security Regulations for All	
rast rollward to 2013 – Security Regulations for All	
✓Industry Agnostic: CSB 1386, PCI	
√Healthcare: HIPAA, HITech	
✓Energy: NERC	
✓Federal Government: FISMA	
✓Banking: Gramm Leach Bliley Act and MORE	-
0	

Every Industry - CSB 1386 Compliance	
ι, ι, ι	
Requires a state agency, or a person or business that conducts business in California, that owns or licenses computerized data that includes personal information, to disclose any	
breach of the security of the data to any resident of California whose unencrypted personal information was, or is	
reasonably believed to have been, acquired by an unauthorized person.	
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IT Guidance for FIs	
✓ Graham-Leach-Bliley Act (GLBA)	
<ul> <li>Part A – Privacy</li> <li>Party B – Security</li> </ul>	
✓ Federal Financial Institution Examination Council	
<ul><li>(FFIEC) IT Booklets</li><li>✓ Sarbanes-Oxley (SOX) for Public Banks</li></ul>	
тинэнсс	
	'
CLDA Compliance	
GLBA Compliance	
"Each financial institution shall implement a comprehensive written information security program that includes	
administrative, technical, and physical safeguards.	-
A financial institutions information security program shall be designed to ensure the security and confidentiality of customer	
information, protect against any anticipated threats or hazards to the security of such information, and protect against	
unauthorized access to or use of such information that could result in substantial harm or inconvenience to any customer."	
- 6	
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GLBA Relevant to IT Audit	
✓ Assess Risks  (Test You Controls identified in the Risk Assessment)	
√Test Key Controls identified in the Risk Assessment √Report to the Board	
report to the Board	
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EEIEC IT Pooklet & Cuidence Pooklete	
FFIEC IT Booklet & Guidance – Booklets http://ithandbook.fflec.gov/it-booklets.aspx	
✓ Audit – provides guidance to examiners and financial institutions on the characteristics of an effective information technology ((T) audit function. It is a foundation from which examiners can	
effective information technology (IT) audit function. It is a foundation from which examiners can assess the quality and effectiveness of an institution's IT audit program. It describes the roles and responsibilities of the board of directors, management, and internal or external auditors; identifies	
effective practices for IT audit programs; and details examination objectives and procedures.	-
<ul> <li>Business Continuity Planning – provides guidance and examination procedures to assist examiners in evaluating financial institution and service provider risk management processes to ensure the</li> </ul>	
availability of critical financial services.	
✓ Development and Acquisition – provides examiners and financial institutions guidance for identifying and controlling development and acquisition risks. Development and acquisition is defined as "an organization's ability to identify, acquire, install, and maintain appropriate	
defined as "an organization's ability to identify, acquire, install, and maintain appropriate information technology systems." The process includes the internal development of software applications or systems and the purchase of hardware, software, or services from third parties.	
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FFIEC IT Booklet & Guidance - Booklets	
✓ E-Banking – provides guidance to examiners and financial institutions on identifying and	
<ul> <li>E-Banking – provides guidance to examiners and financial institutions on identifying and controlling the risks associated with electronic banking (e-banking) activities. The booklet primarily discusses e-banking risks from the perspective of the services or products provided to customers.</li> </ul>	
✓ Information Security – protection of information assets. It is the process by which an organization	
protects and secures its systems, media, and facilities that process and maintain information vital to its operations.	
Management – assist examiners in evaluating financial institution risk management processes to ensure effective information technology (IT) management.	
✓ Operations - risk management processes that promote sound and controlled operation of technology environments.	
Outsourcing Technology Services - assist examiners and bankers in evaluating a financial institution's risk management processes to establish, manage, and monitor IT outsourcing	
relationships.	
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#### FFIEC IT Booklet & Guidance - Booklets

- Retail Payment Systems provides guidance to examiners, financial institutions, and technology service providers (TSP) on identifying and controlling information technology (IT)-related risks associated with retail payment systems and related banking activities.
- Supervision of Technology Service Providers governs the supervision of technology service providers (TSPs) and briefly summarizes the Federal Financial Institutions Examination Council (FFIEC) customer agencies (agencies) expectations of financial institutions in the oversight and management of their TSP relationships. This booklet outlines the agencies 'risk-based supervision agrounds, the supervisory process, and the examination ratings used for information technology (IT) service providers.
- Wholesale Payment Systems provides guidance to examiners and financial institution
  management regarding the risks and risk-management practices when originating and transmitting
  large-value payments.

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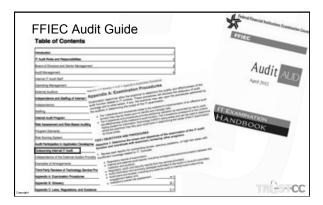
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#### FFIEC IT Booklet & Guidance - Booklets

- ✓ Supervision of Technology Service Providers governs the supervision of technology service providers (TSPs) and briefly summarizes the Federal Financial Institutions Examination Council (FFIEC) customer agencies' (agencies) expectations of financial institutions in the oversight and management of their TSP relationships. This booklet outlines the agencies' risk-based supervision approach, the supervisory process, and the examination ratings used for information technology (IT) service providers.
- Wholesale Payment Systems provides guidance to examiners and financial institution management regarding the risks and risk-management practices when originating and transmitting large-value payments.

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Security:	Espanded Series - D Question	Tim/No	Common
	Therein Frenchise  To the vitre activate and police application instead of a series of		
	other application to the small series named ?		
	<ol> <li>The male are detected scales report for across at least workly, or some office for any current identified as critical by the credit (across) claim processors.</li> </ol>		
	File legging enables in recent dissolves and reported of markets		

The IT Questionnairs will be used to document the work completed for the ISAT Team. Additional comments should be documented in the supplemental facts and overview documents contained with AJRES. Accordingly, the assignments are aligned to these questionnaires, which are embedded within this document. ui Nicholiu.

Review IT-148 Expanded Questionnaire (Steps 1 – 22, 45 – 48, 55 - 67).

Review IT-Remeter Access Questionnaire (Steps 1 – 27).

Review Statistic Transing documents and summarize.

Assist IS&s Team members as sected. Bil Bulley:

Review IT Business Cuttinity Questionnier (Steps 1 – 16).

Review IT JUS-STS Questionnier (Steps 1 – 50).

Review IT JUS-STS Questionnier (Steps 1 – 50).

Review IT JUS-STS Questionnier (Steps 1 – 56).

Review Synten Development Life Cycle and Acquisition Policies. Tom Schuner - Technical Controls, IT Tests of Key Controls, IT Auditing: Review IT-Networks Questionnaire applicable steps (Corporate Networks). Decision Ti-Roseure, Questionnaire (Supp. 1—20).
Review IT-Audit Vierus Malware Questionnaire (Supp. 1—19).
Parlore T-Audit Vierus Malware Questionnaire (Supp. 1—19).

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California Department of Financial Institutions

Information Technology Officer's Questionnaire

#### Instructions for Completing the Information Technology Officer's Questionnaire

The Information Technology Officer's Questionnaire Questionnaired commiss questions or owing significant sense of a financial mentalist's information technology (III) function. The questions are discourable for the production may find a speace of IT operation, unlimitation service programs, and IT for the production of the production of the comment of the comment of the financial multilation of the formation of the decourage of the financial multilation of this document is necessary. Examines may require adolficional reporting documentation to use ones the vehicle of the assessment are provided and to limite assess the quality of the statement that are provided and to limite assess the quality and quantitation of the financial institution's information servicy and IT generations programs.

as answer the questions as of the examination date pre-determined by the DFL. The majority of the times require only a "Yes" or "No" response, between, you are encouraged to expend or clerity say once as seeded destry before sade, postules, or sear for each of this document under the handless pulping or Additional Comments." For any question deemed one applicable to your institution or if the re-te in "Nime," places regord accordingly ("AN" or "Nimes"). Placed do not have believe thank response.

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#### Examiners want better tools

- ✓SANs 20 Critical Security Controls
- > Just security therefore incomplete
- ✓ISO27001&2, NIST 800 Series, COBIT5, etc...
- ✓CIS Center for Internet Security

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#### TrustCC Approach

- ✓Blend of Regulatory and Industry Guidelines
- > Approx 100 Security Controls (Primarily Technical)
- > Approx 130 IT Audit Controls (Physical & Administrative)
- ✓ Most Competitors have a less granular approach
- ✓ Advantages and Disadvantages

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	Questions and Answers	?
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#### Staffing – Internal Staff or/and External Partner

- ✓What size Financial Institution needs IT Audit?
- > If IT Audit is broadly defined... all sizes.
- ✓ A Security Assessment is an IT Audit
- ✓Other Minimal Audit Topics
- ☐GLBA Compliance all must comply
- ☐BCP all need adequate preparation
- ☐Vendor Management all have vendors w/ custody

Hiring and Retaining IT Audit Staff	
✓\$8B to \$10B seems to be "the" size ✓Most Internal FI IT Auditors lack deep technical skills	
✓Salary and Benefits: \$60k to \$120k	
✓Training and More Training or staff will fall behind	
Complet hat C. Al Right Research	
Partnering	
✓FFIEC Guide Recognizes the Necessity of Outsourcing	
✓Experience: 1600 Assessments for nearly 400 Fls ✓Efficiency: 3 to 20 days and your IT audit and Security	
Assessment is done!  ✓Benchmarking	
✓Some are better than others. Network/Referrals is the best method to identify a great partner!	
Complet heatt, at high formed	
6 Categories of IT Audits	
✓ General Computer Controls: Overview and Risk Based	
✓Security Assessments: Technical Focus ✓Integrated Audit: Performed with Operational Audits	
✓ Specialty Deep Dives: Where/when risk warrants	
✓ Consultative Audits: Participation in IT Operations ✓ Bank Compliance: SOX, FDICIA, etc.	
	-
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deneral compater contri	J13	
	✓Pitfalls	
✓ Scope > Info Sec Policies/Training	> If controls tested are not	
> Risk Assessments	granular many important controls can be missed	
<ul><li>Backup, Recovery, BCP</li><li>Vendor Management</li></ul>	> Difference between text book	
> Board Involvement	and "real" experience > Difficult to align with forever	
> General Physical Security	changing examination scope	
<ul> <li>Network Access Admin</li> <li>IT Governance</li> </ul>	> IT could baffle with acronyms	
> SDLC, Change Management		
> Core and Applications		
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C		
Security Assessments		-
√Scope:	✓Common Pitfalls	
> Vulnerability Scanning	> Too narrowly scoped	
> Social Engineering	> Infrequent	
> Pen Testing: Exploitation	> Not "integrated" with	
➤ Configuration Reviews	review of Admin and	
> Console Reviews	Physical controls	
> Incident Response		
> Other Testing		
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Integrated Audits		
integrated Addits		
✓Scope	✓ Pitfalls	
> User Access to Key Applications	Adds scope to already "tight" resource allocations	
<ul><li>Clean Desk / End of Day</li><li>Physical Security</li></ul>	> Auditors may be uncomfortable	
✓ Including IT Assets		
> Segregation of Duties		
<ul><li>BCP Plan Review</li><li>Training Verifications</li></ul>		
, maining verifications		
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#### Specialty "Deep Dives"

- ✓Scope Risk/Regulatory
- Mobile Banking
- Mobile DarkingMobile Devices
- ➤ Board iPads
- > DDOS Protection
- > Remote Deposit Capture
- Windows Active Directory & Group Policy
- √Pifalls
- > May be difficult to find talent
- > What makes the "cut"?
- Where do you get an audit program?
- > Perfect for Retainer or CoSource

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#### **Consultative Audits**

- √Scope
- Develop Scorecards/ Methodology
- > Participate in IT Committees
- ✓IT Steering
- ✓IT Change Control
- ✓BCP
- ✓Incident Response
- > Project Advisory

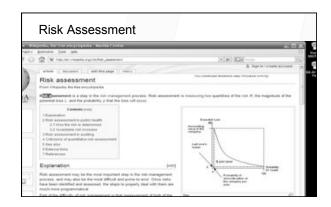
✓Pit Falls

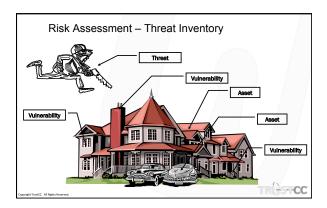
- > Must Maintain Independence
- > Challenging to "earn respect"
- > Meetings and more Meetings

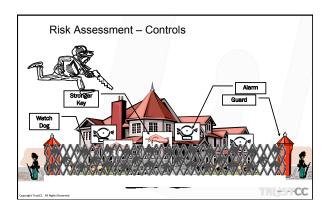




The Audit Process	
✓Risk Assess – Every 1 to 3 years	
✓ Plan – Every year	-
✓Execute - continuously	
✓Adjust – quarterly	
- August - quantity	
√Repeat	
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соруеди гласс. А в идил менчес.	
Risk Assessment	
A Critical IT Audit Component	
By Tom Schauer	
CISA, CISM, CISSP, CEH, CRISC, CTGA	
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Examiners Expect	
A D' L M	
A Risk Management Culture	
✓GLBA Member/Customer Info Security RA is Primary	
Other Types of Risk Assessments	
> Business Impact Assessment	
> Authentication for Online-Banking	
> Audit Risk Assessment	
> DDOS Risk Assessment	
> New Tech Risk Assessment (ie. Board iPads)	







What it is not				
✓A Risk Assessment does	s not include TESTING the			
effectiveness of controls.				
✓So when we talk about C a separate step that follo should be "tied" to the ri	Control testing, realize that it is two risk assessment and		_	
should be tied to the ri	sk assessment.			
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GLBA Information S	ecurity Risk Assessment			
√Threat Based:	county Prior Processinent			
✓ Consider foreseeable thr	reats, evaluate the impact			
should threat occur, docu				
controls, conclude.	elinood of the threat given the			
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GLBA - Reasonably F	orosocablo Throats			
✓ Passwords Guessed	✓ Social Engineering			
✓ Malware	✓ Backup Tapes Stolen			
<ul><li>✓ Network Device Attack</li><li>✓ Workstation Attack</li></ul>	✓ Remote Access Attack ✓ Vendor Data Attack			
✓ Wireless Attack	✓ Online Banking Attack			
<ul><li>✓ Server Attack</li><li>✓ Physical Security</li></ul>	✓ etc			
1 Hyorodi Ocounty		-		
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GLBA - Key Controls		
■Anti-Malware	Controls Testing	
<ul><li>System Configuration</li><li>Firewalls</li></ul>	<ul><li>Patching and Updates</li><li>Encryption</li></ul>	
■IDS/IPS ■Policies and Standards	■Visitor Controls ■etc	
Security Training  Board Reporting	-610	
-Board Neporting		
	тий-стесс	
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		_
Audit Risk Assessm	nent – Possible Risk Factors	
✓ Sensitivity to Executive Management	✓ SANs Twenty Critical Controls	
✓ Maturity of Practices and Procedures	✓ Financial Risk	
✓ Extent of Change ✓ Longevity of Personnel Responsible	<ul><li>✓ Operational Risk</li><li>✓ Reputation Risk</li></ul>	
✓ Experience of Personnel Responsible	✓ Period Since Last Review	
✓ Outsourced ✓ Sufficiency of Continuity Options	(internal or External)  ✓ Last Review had Significant Findings	
✓ Maturity of Logging and Monitoring	✓ Most Recent Audit Opinion	
✓ Regulatory Issuance, Known Examiner Focus, or other Compliance Practice		
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		_
Management Support		
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	ndy to embrace a risk	
management cultur	e?	
If not at the top, it w	von't happen.	
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#### Risk Assessment Outcomes

We prefer that risk assessment influence audit planning rather than dictate audit planning.

Walk Through Sample – We use tools, you can do the same analysis and reporting without "efficiency" tools.

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#### Why I like our Risk Assessment

- ✓It is easy to use
- ✓It can be done by IA, by Consultant or by Stakeholders
- ✓It produces "relative" result... comparison to Avg.
- ✓Influences the Audit Plan

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Proposed 2011 IT Audit Schedule				
Description	Performed By	Hours by IA	Hours by TrustCE	Quarter Planned
IT Risk Assessment and IT Audit Planning	IA and TrustCC	30	30	- OS
Data Loss Prevention - Deep Dive	IA.	80	0	Q0
Mobile Banking - Deep Dive	tA and TrustCC	60	30	Q0
General Computer Controls Audit	TrustCC	30	80	02
Security Assessment	TrustCC.	30	80	02
Data Center Modernization - Deep Dive	IA .	40	0	G2
Core Banking System - Deep Olive of Key Application	M. and TrustCC.	80	60	0.9
	(A.	80	0	Q3
Change Management - Deep Dive	IA.	120	0	Q4
Software Licensing - Deep Dive	IA.	120	0	.04
Totals		650	220	
Software Licensing - Deep Dive	IA IA	120	0	Q

#### The Audit Plan

Integrated Audits: Access, BCP, Segregation of Duties, Physical Security, Training

- Branch Audits Q1-Q4
   Real Estate Lending Q2
   Collections Q3
   Facilities Q3

#### Consultative Audit Activity

- Quarterly Security Committee
   Q4 BCP Test
   Weekly Change Meeting
   Core Replacement Project

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Transitioning to Tests of Key Controls	
✓Identify key controls in GLBA and Audit RA  ✓Determine skills needed  ✓Execute RFPs as necessary	
✓Coordinate Auditors	
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Tests of Key Controls – Testing Techniques	
✓Inquiry	
✓Inquiry and Observation	
✓Inquiry and Testing	
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Tests of Key Controls – Deficiency Ratings	
√High	
√Medium – High	
✓ Medium	
✓Discussion Item	
✓ Low- Medium ✓ Low	
· LOW	

Tests of Key Controls – Work-Papers	
√Who did the work	
✓Control Objectives	
✓Notes about the environment and deficiencies noted	
✓Is SAS65 needed? (Enough detail to re-perform and reach same conclusion)	
✓ This level of documentation is Time Consuming	
✓Keeping documents and samples?	
0	
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Tests of Key Controls – Sample Sizes	
✓Who will be relying on the audit work?	
	_
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Documentation Outcomes	
2004. Horitation Catebrillo	
We prefer documentation that provides	
evidence of testing but focuses effort on testing	
and consultation rather than documentation.	
Walk Through Sample – We use tools, you can	
do the same analysis and reporting without	
"efficiency" tools.	
TROSTCC	

#### Why I like our Documentation Process

- ✓It is easy to use
- √Very Efficient
- ✓ Good Level of Documentation
- √Granular
- > The BCP plan is sufficient to guide... vs.
- > The BIA..., Strategy aligns..., BCP updated..., Testing...
- ✓ Benchmarking
- ✓ Reports for Every Audience
- ✓ Graphical when effective

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#### The sub \$200M Credit Union

- ✓ Standard Security Assessment
- > Annual Internal and External Vulnerability Scanning
- > Social Engineering (at least one form)
- ➤ Limited Pen Testing and Exploitation
- > Limited Configuration Reviews and Console Reviews
- > Incident Response Review
- ✓ Value GCC Audit
- > Vendor Management
- ➤ GLBA Compliance
- ➤ Business Continuity Planning

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The \$200M to \$600M Credit Union  Standard or Premium Security Assessment  Standard GCC Audit  Integrated Audits using IA resources  Maybe an outsourced "Deep Dive"	
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The >\$600M Credit Union	
✓Premium Security Assessment ✓Premium GCC Audit	
✓Integrated Audits	
√2 to 3 Deep Dives √Consultative Auditing	
Solidare Maring	
Compain TracE. Al Refer Normal.	
What does your Audit Plan look like?	
What does your Audit Plan look like?	
	-

