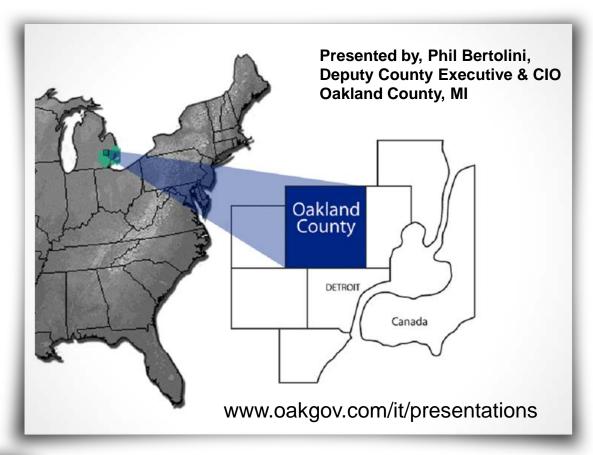
What Finance Officers Need to Know About Cyber Security





Agenda

- Introduction
- Business Challenge
- Technical Challenge
- CySAFE
- Recommendations



Massive breach at health care company Anthem Inc.



Elizabeth Weise, USATODAY 9:26 a.m. EST February 5, 2015



confirmed a breach three days later, saying hackers had installed malicious software on cash registers

in food and beverage outlets at 14 locations nationwide, and that the intruders had been stealing customer card data from these outlets for approximately nine months.

Agenda

- Introduction
- Business Challenge
- Technical Challenge
- CySAFE
- Recommendations



Business Challenges

- How to get started with a cybersecurity initiative?
- How to prioritize efforts?
- How to gauge impact / risk of needs?
- How to measure results and progress?



Cyber Security





Cyber Security





Cyber Security





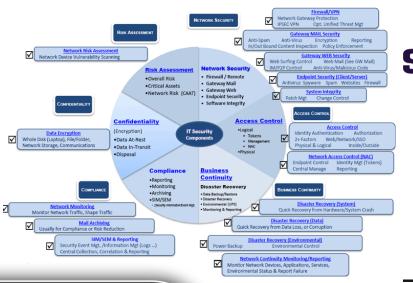
Agenda

- Introduction
- Business Challenge
- Technical Challenge
- CySAFE
- Recommendations















10 Worst Data Breaches of All Time

By Elizabeth Palermo SEPTEMBER 21, 2014 11:06 AM - Source: Tom's Guide US | 2014 0 COMMENT

TAGS: Security + Privacy +





Technical Challenge

Numerous cybersecurity standards exist









Minimizing Time, Cost, and Risk

While Maximizing Control and Meeting Compliance Standards













Framework for Improving Critical Infrastructure Cybersecurity



Developed by NIST under a Presidential initiative

Targeted for government

39 Pages of summary and references to other frameworks

98 Controls

Framework for Improving Critical Infrastructure Cybersecurity

Version 1.0

National Institute of Standards and Technology

February 12, 2014



Category	Subcategory	Informative References				
		CCS CSC 1 COBIT 5 BAI09.01, BAI09.02				
	ID.AM-1: Physical devices and systems within the organization are inventoried	ISA 62443-2-1:2009 4.2.3.4 ISA 62443-3-3:2013 87.8				
		- ISO/IEC 27001:2013 A.8.1.1, A.8.1.2 - NIST SP 800-53 Rev. 4 CM-8 - CCS CSC 2				
	ID.AM-2: Software platforms and applications within the organization are inventoried	COS CSC 2 COBIT 5 BAI09.01, BAI09.02, BAI09.05 ISA 62443-2-1:2009 4.2.3.4				
		ISA 62443-3-3:2013 SR 7.8 ISO/IEC 27001:2013 A. 8.1.1. A. 8.1.2				
set Management (ID AM). The data personnel		NIST SP 800-53 Rev. 4 CM-8				
devices, systems, and facilities that enable the organization to achieve business purposes are	ID.AM-3: Organizational communication and data flows are mapped	CCS CSC 1 COBIT 5 DSS05.02				
Asset Management (ID.AM): The data, personnel, devices, systems, and facilities that enable the organization to achieve business purposes are identified and managed consistent with their relative importance to business objectives and the organization's risk strategy.		• ISA 62443-2-1:2009 4.2.3.4 • ISO/IEC 27001:2013 A.13.2.1				
		NIST SP 800-53 Rev. 4 AC-4, CA-3, CA-9, PL-8				
	ID.AM-4: External information systems are catalogued	· ISO/IEC 27001:2013 A.11.2.6				
	ID.AM-5: Resources (e.g., hardware, devices, data, and software) are prioritized based on their classification, criticality, and business value	NIST SP 800-53 Rev. 4 AC-20, SA-9 COBIT 5 APO03.03, APO03.04, BAI09.02				
		ISA 62443-2-1:2009 4.2.3.6 ISO/IEC 27001:2013 A.8.2.1				
	ID.AM-6: Cybersecurity roles and responsibilities for the entire workforce and third-party stakeholders	NIST SP 800-53 Rev. 4 CP-2, RA-2, SA-14 COBIT 5 APO01.02, DSS06.03				
		ISA 62443-2-1:2009 4.3.2.3.3 ISO/IEC 27001:2013 A.6.1.1				
	(e.g., suppliers, customers, partners) are established	NIST SP 800-53 Rev. 4 CP-2, PS-7, PM-11				

NIST

National Institute of Standards and Technology

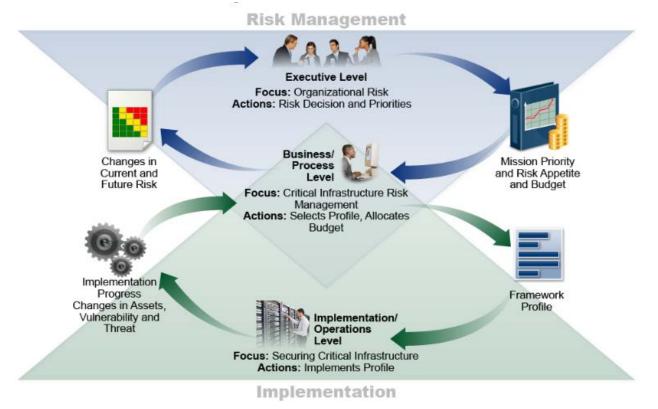


Figure 2: Notional Information and Decision Flows within an Organization



ISO 27000



The **ISO/IEC 27000-series** (also known as the 'ISMS Family of Standards' or 'ISO27k' for short) comprises <u>information security</u> standards published jointly by the <u>International Organization for Standardization</u> (ISO) and the <u>International Electrotechnical Commission</u> (IEC).

The series provides <u>best practice</u> recommendations on information security management, risks and controls within the context of an overall <u>information security management system</u> (ISMS), similar in design to management systems for quality assurance (the ISO 9000 series) and environmental protection (the ISO 14000 series).



ISO 27000



The series is deliberately broad in scope, covering more than just privacy, confidentiality and IT or technical security issues.

It is applicable to organizations of all shapes and sizes. All organizations are encouraged to assess their information security risks, then implement appropriate information security controls according to their needs, using the guidance and suggestions where relevant.

Given the dynamic nature of information security, the ISMS concept incorporates continuous feedback and improvement activities, summarized by Deming's "plan-do-check-act" approach, that seek to address changes in the threats, vulnerabilities or impacts of information security incidents.



ISO 27000



ISO	27k ref.	Description	Control Total
Management	4	Context of the organization	8
	5	Leadership	19
	6	Planning	39
	7	Support	28
	8	Operation	9
	9	Performance evaluation	29
	10	Improvement	16
		ISMS Control Point Total:	148
	A5	Management direction for information security,	2
[A6	Organisation of information security,	7
	A7	Human Resource security,	6
	AS	Asset Management,	10
	A9	Access control,	13
- [A10	Cryptography,	2
Operational	All	Physical and Environmental security,	15
	9 Performance evaluation 10 Improvement ISMS Control Point Total: A5 Management direction for information security, A6 Organisation of information security, A7 Human Resource security, A8 Asset Management, A9 Access control, A10 Cryptography, A11 Physical and Environmental security, A12 Operations Security, A13 Communications Security, A14 System acquisition, Development and Maintenance, A15 Supplier Relationships, A16 Information Security Incident Management, A17 Information Security Aspects of Business Continuity	14	
1	A13	Communications Security,	7
5	A14	System acquisition, Development and Maintenance,	13
	A15	Supplier Relationships,	5
	A16	Information Security Incident Management,	7
	A17	Information Security Aspects of Business Continuity	4
[A18	Compliance	8
		Annex 'DIS' Control Objective Total:	113
		Total Control Points :	261





20 Critical Controls

Critical Security Controls - Version 5

- 1: Inventory of Authorized and Unauthorized Devices
- 2: Inventory of Authorized and Unauthorized Software
- Secure Configurations for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers
- 4: Continuous Vulnerability Assessment and Remediation
- 5: Malware Defenses
- 6: Application Software Security
- 7: Wireless Access Control
- 8: Data Recovery Capability
- 9: Security Skills Assessment and Appropriate Training to Fill Gaps
- Secure Configurations for Network Devices such as Firewalls, Routers, and Switches
- Limitation and Control of Network Ports, Protocols, and Services
- 12: Controlled Use of Administrative Privileges
- 13: Boundary Defense
- 14: Maintenance, Monitoring, and Analysis of Audit Logs
- 15: Controlled Access Based on the Need to Know
- 16: Account Monitoring and Control
- 17: Data Protection
- 18: Incident Response and Management
- 19: Secure Network Engineering
- 20: Penetration Tests and Red Team Exercises





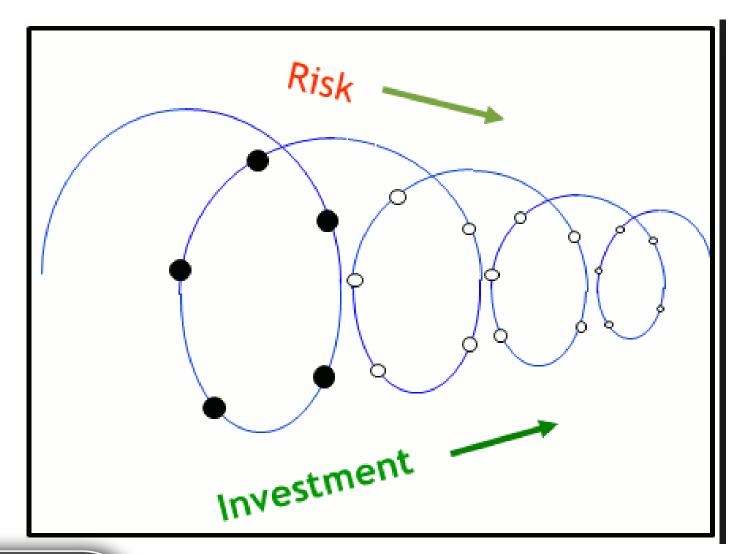
20 Critical Controls

Clear examples of control outputs based on current maturity and end goal

More Technical than Management

Recommend order of implementation debatable







Measuring Risk

What is the Risk Equation?

Risk = Impact X Probability/Cost







Agenda

- Introduction
- Business Challenge
- Technical Challenge
- CySAFE
- Recommendations



Gyber Security Assessment for Everyone

www.g2gmarket.com



CySAFE Team

- Phil Bertolini, Chris Burrows Oakland County
- Ed Winfield, Jeff Small Wayne County
- Andy Brush Washtenaw County
- Rich Malewicz Livingston County
- Colleen Hinzmann Monroe County
- Jessica Moy State of Michigan





- A practitioner's experience with these standards
- Need an organized approach that addresses IT Security Management issues and Technical controls
- 95/5 Rule (36 Controls out of 379)
- All controls factor (Cost / Time / Risk)
- Reports built-in with trending and graphs
- Private (only you have the data)
- Takes 60 minutes to complete the assessment

FREE





Overview

In the world of cyber security, local governments often struggle to keep pace with an ever-changing threat environment. CySAFE was created through a collaborative effort, driven by five Michigan counties and the State of Michigan to develop a free IT security assessment tool to help small and mid-sized government agencies assess, understand and prioritize their **basic** IT security needs.

CySAFE was created from three well-known IT security frameworks: 20 Critical Controls, ISO 27001 and NIST. The goal was to combine the 379 controls from all three frameworks into one condensed list, removing any redundant controls and assess the controls against the government agency's current IT security capabilities. Next, the master list of 36 controls were evaluated over three key factors – cost to implement, time to implement and risk – and were assigned a number based on each key factor. The evaluation was completed in a collaborative effort by the IT specialists from the six participating Michigan government agencies (See Appendix).

How to Use CySAFE

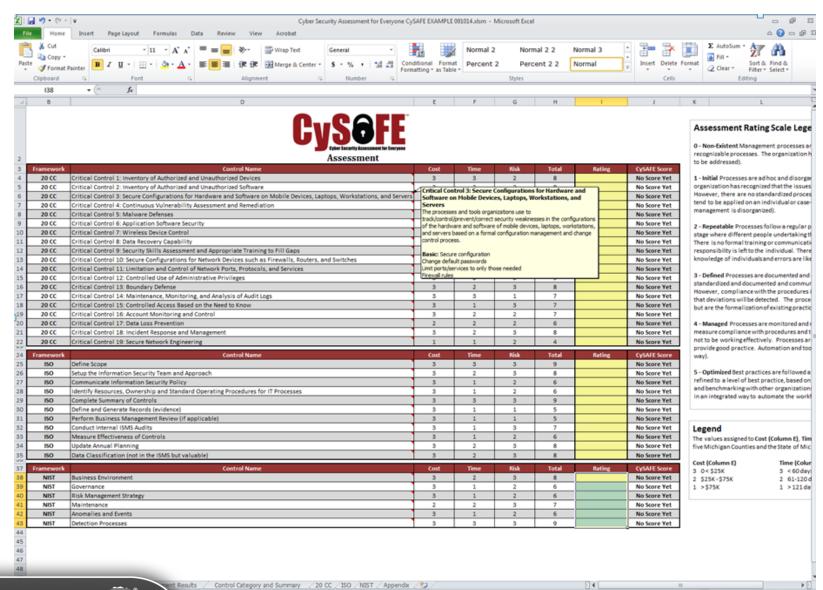
Step 1: Understand the Source Frameworks

CySAFE was built upon current industry IT security standards: 20 Critical Controls, ISO 27001 and NIST. For a description of the 36 controls from each framework used with CySAFE, review the worksheets labelled 20 CC, ISO and NIST. This will provide you with an understanding of the recommended IT security controls, descriptions and approaches. For more detailed background information on the security standards documents, refer to the links found in the Appendix worksheet.

Step 2: Become Familiar With the Tool

CySAFE was built in a Microsoft Excel workbook with eight worksheets. Each worksheet plays a different role in evaluating and understanding IT security readiness.







Assessment Results

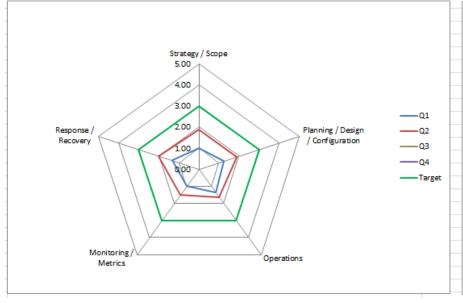
Framework	Control Name	Rating	CySAFE Score
20 CC	Critical Control 12: Controlled Use of Administrative Privileges	0	100
ISO	Complete Summary of Controls	1	85
NIST	Detection Processes	1	85
20 CC	Critical Control 13: Boundary Defense	1	76
ISO	Update Annual Planning	1	76
ISO	Data Classification (not in the ISMS but valuable)	1	76
20 CC	Critical Control 5: Malware Defenses	2	70
ISO	Define Scope	2	70
ISO	Measure Effectiveness of Controls	0	67
20 CC	Critical Control 15: Controlled Access Based on the Need to Know	1	66
NIST	Maintenance	1	66
20 CC	Critical Control 1: Inventory of Authorized and Unauthorized Devices	2	62
20 CC	Critical Control 3: Secure Configurations for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers	2	62
20 CC	Critical Control 9: Security Skills Assessment and Appropriate Training to Fill Gaps	2	62
20 CC	Critical Control 10: Secure Configurations for Network Devices such as Firewalls, Routers, and Switches	2	62
20 CC	Critical Control 18: Incident Response and Management	2	62
NIST	Business Environment	2	62
NIST	Governance	1	57
20 CC	Critical Control 4: Continuous Vulnerability Assessment and Remediation	2	54
20 CC	Critical Control 8: Data Recovery Capability	2	54
20 CC	Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs	2	54
20 CC	Critical Control 16: Account Monitoring and Control	2	54
ISO	Conduct Internal ISMS Audits	2	54
20 CC	Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services	2	47
ISO	Identify Resources, Ownership and Standard Operating Procedures for IT Processes	2	47
NIST	Risk Management Strategy	2	47
NIST	Anomalies and Events	2	47
20 CC	Critical Control 2: Inventory of Authorized and Unauthorized Software	3	44
20 CC	Critical Control 7: Wireless Device Control	3	44
ISO	Setup the Information Security Team and Approach	3	44
20 CC	Critical Control 6: Application Software Security	2	39
ISO	Define and Generate Records (evidence)	2	39
ISO	Perform Business Management Review (if applicable)	2	39
20 CC	Critical Control 19: Secure Network Engineering	1	38
20 CC	Critical Control 17: Data Loss Prevention	3	33
ISO	Communicate Information Security Policy	3	33

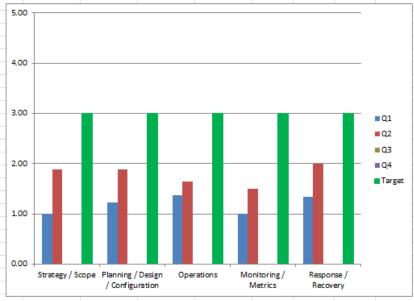


Control Category Summary Cotegory Summary of Control Category Strategy/Stope ISO Complete Summary of Controls ISO Update Annual Planning ISO Define Scope ISO Define Scope ISO Complete Summary of Controls ISO Update Annual Planning ISO Define Scope ISO Set Update Annual Planning ISO Complete Summary of Control Category Strategy ISO Set Update Annual Planning ISO Set Update Annual Planning ISO Communicate Information Security Team and Approach ISO Perform Business Management Strategy ISO Communicate Information Security Policy ISO Set Update Information Security Policy ISO Communicate Information Security Policy ISO Communicate Information Security Policy ISO Data Classification (not in the ISMS but valuable) ISO Data Classification (not in the ISMS but valuable) ISO Control Category Planning/Design/Configuration ISO Data Classification (not in the ISMS but valuable) ISO Control Category Planning/Design/Configuration ISO Data Classification (not in the ISMS but valuable) ISO Control Category Planning/Design/Configuration ISO Control Category Planning/Design/Configuration ISO Data Classification (not in the ISMS but valuable) ISO Control Category Planning/Design/Configuration ISO Control Category Operations ISO Control Category Maniforing And Control ISO Co				
Framework Control Category Stratery/Scope 150 Complete Summary of Controls 150 Update Annual Planning 1 1 76 150 Define Scope 2 70 NIST Business Environment 2 2 62 NIST Governance 1 1 57 NIST Business Environment 2 2 62 NIST Governance 1 1 57 NIST Governance 1 1 57 NIST Risk Management Strategy 2 2 47 150 Setup the Information Security Team and Approach 3 44 150 Perform Business Management Review (If applicable) 2 2 39 150 Communicate Information Security Team and Approach 3 3 44 44 450 Communicate Information Security Team and Approach 4 2 39 150 Communicate Information Security Folicy Average Rating 4 2 39 150 Communicate Information Security Folicy Average Rating 5 2 62 2 62 Communicate Information Security Folicy Average Rating 5 3 33 Average Rating 6 4 5 6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		Control Category and Summary		
Framework Control Category Stratery/Scope 150 Complete Summary of Controls 150 Update Annual Planning 1 1 76 150 Define Scope 2 70 NIST Business Environment 2 2 62 NIST Governance 1 1 57 NIST Business Environment 2 2 62 NIST Governance 1 1 57 NIST Governance 1 1 57 NIST Risk Management Strategy 2 2 47 150 Setup the Information Security Team and Approach 3 44 150 Perform Business Management Review (If applicable) 2 2 39 150 Communicate Information Security Team and Approach 3 3 44 44 450 Communicate Information Security Team and Approach 4 2 39 150 Communicate Information Security Folicy Average Rating 4 2 39 150 Communicate Information Security Folicy Average Rating 5 2 62 2 62 Communicate Information Security Folicy Average Rating 5 3 33 Average Rating 6 4 5 6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6				
150				
150 Define Scope 2 70				
150 Define Scope 2 70				
NIST Business Environment 2 5 52 NIST Governance 1 1 57 NIST Risk Management Strategy 2 47 180 Setup the Information Security Team and Approach 3 44 180 Setup the Information Security Team and Approach 3 44 180 Communicate Information Security Folicy 3 3 33 Retring 1.89 Framework Control Category, Planning/Design/Configuration 1 76 20 CC Critical Control 3: Secure Configuration 1 76 20 CC Critical Control 9: Secure Configuration 1 76 20 CC Critical Control 9: Secure Configuration 5 70 20 CC Critical Control 9: Secure Configuration 5 70 21 CC Critical Control 9: Secure Configuration 5 70 22 CC Critical Control 9: Secure Configuration 6 70 23 CC Critical Control 9: Secure Configuration 7 75 24 CC Critical Control 9: Secure Configuration 8 75 25 CC Critical Control 9: Secure Configuration 9 75 26 CC Critical Control 9: Secure Configuration 1 75 27 CC Critical Control 9: Secure Configuration 8 75 28 CC Critical Control 9: Secure Configuration 8 75 29 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 1 2 62 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 1 2 62 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 1 2 62 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 5 2 62 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Software 1 3 44 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Software 1 3 44 20 CC Critical Control 1: Secure Network Engineering 1 38 Promework Control Category: Operations 1 3 44 20 CC Critical Control 1: Secure Network Engineering 1 3 38 Promework Control Category: Operations 1 3 44 20 CC Critical Control 1: Secure Network Engineering 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5				
NIST Governance 1 57 NIST Risk Management Strategy 2 47 NIST Risk Management Strategy 2 47 NIST Risk Management Strategy 2 47 NIST Setup the Information Security Team and Approach 3 44 NIST Setup the Information Security Policy 3 33 NIST Setup the Information Security Policy 4 44 NIST Amount NIST				
NIST Risk Management Strategy 2 47 ISO Setup the Information Security Team and Approach 3 44 ISO Setup the Information Security Team and Approach 3 44 ISO Communicate Information Security Policy 3 3 33 ISO Communicate Information Security Policy 3 3 33 Security Skill (Application Security Policy 4 3 3 33 Average Rating 1.89 Framework Control Category: Planning/Design/Configuration 150 Data Classification (not in the ISMS but valuable) 1 76 20 CC Critical Control 10: Secure Configurations for Network Devices such as Firewalls, Routers, and 2 2 62 20 CC Critical Control 10: Secure Configurations for Network Devices such as Firewalls, Routers, and 2 2 62 20 CC Critical Control 11: Inventory of Authorized and Unauthorized Devices 2 2 62 20 CC Critical Control 11: Inventory of Authorized and Unauthorized Devices 2 2 62 20 CC Critical Control 12: Inventory of Authorized and Unauthorized Devices 2 2 62 20 CC Critical Control 12: Inventory of Authorized and Unauthorized Software 3 44 20 CC Critical Control 13: Application Software Security 2 2 39 20 CC Critical Control 14: Application Software Security 2 2 39 20 CC Critical Control 19: Secure Network Engineering 1 38 Average Rating 1.89 Framework Control Category: Operations 2 0 100 NIST Detection Processes 1 85 20 CC Critical Control 13: Boundary Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 15: Malware Defense 1 76 20 CC Critical Control 16: Malware Defense 1 76 20 CC Critical				
ISO Setup the Information Security Team and Approach 3 44				
ISO Perform Business Management Review (if applicable) 2 39 33 33 33 33 33 33				
Framework Control Category: Planning/Design/Configuration ISO Data Classification (not in the ISMS but valuable) ISO Control Category: Planning/Design/Configuration ISO Data Classification (not in the ISMS but valuable) ISO Control Office Control ID: Secure Configurations for Network Devices such as Firewalls, Routers, and 2 62 20 CC Critical Control ID: Secure Configurations for Network Devices such as Firewalls, Routers, and 2 62 20 CC Critical Control ID: Secure Configurations for Network Devices such as Firewalls, Routers, and 2 62 20 CC Critical Control ID: Secure Configurations for Network Devices such as Firewalls, Routers, and 2 62 20 CC Critical Control ID: Inventory of Authorized and Unauthorized Devices (Not ID: Inventory of Authorized and Unauthorized Devices (Not ID:				
Framework Control Category: Planning/Design/Configuration ISO Data Classification (not in the ISMS but valuable) 1 76 20 CC Critical Control 10: Secure Configurations for Network Devices such as Firewalls, Routers, and 2 62 20 CC Critical Control 9: Security Skills Assessment and Appropriate Training to Fill Gaps 2 62 20 CC Critical Control 9: Security Skills Assessment and Appropriate Training to Fill Gaps 2 62 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 2 62 21 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 2 62 22 CC Critical Control 1: Inventory of Authorized and Unauthorized Software on Mobile Devices, Laptop 2 62 23 CC Critical Control 1: Inventory of Authorized and Unauthorized Software 3 44 24 CC Critical Control 1: Application Software Security 2 2 39 20 CC Critical Control 1: Septication Software Security 2 2 39 20 CC Critical Control 1: Secure Network Engineering 1 38 Average Rating 1.89 Framework Control Category: Operations 2 7				
Rating CySAFE Score Ison Data Classification (not in the ISMS but valuable) 1 76 20 20 20 20 20 20 20 2	ISO		_	33
SO Data Classification (not in the ISMS but valuable) 1 76		Average Rating	1.89	
SO Data Classification (not in the ISMS but valuable) 1 76				
20 CC Critical Control 10: Secure Configurations for Network Devices such as Firewalls, Routers, and \$2 62 20 CC Critical Control 9: Secure Configurations for Nathyropriate Training to Fill Gaps 2 62 62 20 CC Critical Control 3: Secure Configurations for Hardware and Software on Mobile Devices, Laptop 2 62 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 2 62 62 83 62 84 84 84 84 84 84 84 84 84 84 84 84 84				
20 CC Critical Control 9: Security Skills Assessment and Appropriate Training to Fill Gaps 2 62 20 CC Critical Control 3: Secure Configurations for Hardware and Software on Mobile Devices, Laptop 2 62 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 2 62 21 ISO Identify Resources, Ownership and Standard Operating Procedures for IT Processes 2 47 20 CC Critical Control 2: Inventory of Authorized and Unauthorized Software 3 44 20 CC Critical Control 6: Application Software Security 2 39 20 CC Critical Control 19: Secure Network Engineering 1 38 20 CC Critical Control 19: Secure Network Engineering 1 38 20 CC Critical Control 19: Secure Network Engineering 1 38 20 CC Critical Control 12: Controlled Use of Administrative Privileges 0 100 20 CC Critical Control 12: Controlled Use of Administrative Privileges 0 100 21 Oct Critical Control 13: Boundary Defense 1 88 20 CC Critical Control 13: Boundary Defense 1 66 20 CC Critical Control 15: Malware Defenses 2 70 20 CC Critical Control 15: Malware Defenses 2 70 21 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 17: Data Loss Prevention 1 66 20 CC Critical Control 17: Data Loss Prevention 1 67 20 CC Critical Control 18: Incident Response and Management				
20 CC Critical Control 3: Secure Configurations for Hardware and Software on Mobile Devices, Laptop 2 62 20 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices 2 62 62 150 Identify Resources, Ownership and Standard Operating Procedures for IT Processes 2 4 47 20 CC Critical Control 2: Inventory of Authorized and Unauthorized Software 3 44 20 CC Critical Control 6: Application Software Security 2 39 20 CC Critical Control 6: Application Software Security 2 39 20 CC Critical Control 19: Secure Network Engineering 1 1 38 20 CC Critical Control 19: Secure Network Engineering 1 1 38 20 CC Critical Control 19: Secure Network Engineering 1 1 38 20 CC Critical Control 19: Secure Network Engineering 1 1 89 20 CC Critical Control 12: Controlled Use of Administrative Privileges 0 100 NIST Detection Processes 1 1 85 20 CC Critical Control 13: Boundary Defense 1 1 76 20 CC Critical Control 15: Boundary Defense 1 1 76 20 CC Critical Control 15: Malware Defenses 2 70 CC Critical Control 15: Malware Defenses 2 70 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 16: Account Monitoring and Control 2 2 54 20 CC Critical Control 16: Account Monitoring and Control 2 2 54 20 CC Critical Control 15: Control Invited Control 16: Account Monitoring and Control 2 2 54 20 CC Critical Control 17: Wireless Device Control 2 2 54 20 CC Critical Control 17: Data Loss Prevention 3 3 33 33 33 33 33 33 33 33 33 33 33 3				
20 CC Critical Control 1: Inventory of Authorized and Unauthorized Devices ISO Identify Resources, Ownership and Standard Operating Procedures for IT Processes 2 47 20 CC Critical Control 2: Inventory of Authorized and Unauthorized Software 3 44 20 CC Critical Control 5: Application Software Security 2 39 20 CC Critical Control 19: Secure Network Engineering 1 38 Average Rating 1.89 Framework Control Category: Operations Rating CySAFE Score 20 CC Critical Control 12: Controlled Use of Administrative Privileges 0 100 NIST Detection Processes 1 1 85 20 CC Critical Control 13: Boundary Defense 1 1 76 20 CC Critical Control 13: Boundary Defense 1 1 76 20 CC Critical Control 5: Malware Defense 1 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 16: Continuous Vulnerability Assessment and Remediation 2 54 20 CC Critical Control 17: Unitation and Control 67 20 CC Critical Control 17: Unitation and Control 75 20 CC Critical Control 17: Unitation and Control 75 20 CC Critical Control 77: Wireless Device Control 80 30 33 31 32 44 32 55 34 55 35 56 57 57 57 57 57 57 57 57 57 57 57 57 57				
ISO Identify Resources, Ownership and Standard Operating Procedures for IT Processes 2 47				
20 CC Critical Control 2: Inventory of Authorized and Unauthorized Software 3 44 20 CC Critical Control 6: Application Software Security 2 39 20 CC Critical Control 19: Secure Network Engineering 1 1 38 Average Rating 1.89 Framework Control Category: Operations 20 CC Critical Control 12: Controlled Use of Administrative Privileges 0 100 NIST Detection Processes 1 1 85 20 CC Critical Control 13: Boundary Defense 1 1 76 20 CC Critical Control 13: Boundary Defense 1 1 76 20 CC Critical Control 15: Maiware Defenses 1 1 66 20 CC Critical Control 15: Maiware Defenses 1 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Account Monitoring and Control 2 54 20 CC Critical Control 15: Account Monitoring and Control 2 54 20 CC Critical Control 15: Account Monitoring and Control 2 54 20 CC Critical Control 15: Wireless Device Control 3 3 44 20 CC Critical Control 17: Wireless Device Control 3 3 44 20 CC Critical Control 17: Data Loss Prevention 3 3 33 Framework Control Category: Monitoring/Metrics 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 15: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 16: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 18:				
20 CC Critical Control 6: Application Software Security 2 39 38 38 38 38 38 38 38				
Transport 1 38 38 38 38 38 38 38				
Framework Control Category: Operations 20 CC Critical Control 12: Controlled Use of Administrative Privileges 20 CC Critical Control 13: Boundary Defense 20 CC Critical Control 13: Boundary Defense 20 CC Critical Control 13: Boundary Defense 20 CC Critical Control 15: Malware Defenses 20 CC Critical Control 15: Controlled Access Based on the Need to Know 20 CC Critical Control 15: Controlled Access Based on the Need to Know 20 CC Critical Control 16: Account Monitoring and Control 20 CC Critical Control 16: Account Monitoring and Control 20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 2 47 20 CC Critical Control 17: Wireless Device Control 20 CC Critical Control 17: Data Loss Prevention 3 344 20 CC Critical Control 17: Data Loss Prevention 4 Average Rating 5 Average Rating 1.64 Framework Control Category: Monitoring/Metrics 1SO Measure Effectiveness of Controls 1SO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 15: Incident Response and Management 2 62 2 62 2 67 2 67 2 67 2 67 2 67 2 68 2 67 2 67 2 67 2 67 2 67 2 67 2 67 2 67				
Framework Control Category: Operations 20 CC Critical Control 12: Controlled Use of Administrative Privileges 1 1 85 20 CC Critical Control 13: Boundary Defense 2 70 20 CC Critical Control 5: Malware Defenses 2 70 20 CC Critical Control 5: Malware Defenses 2 70 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 16: Account Monitoring and Control 2 54 20 CC Critical Control 17: Controlled Access Based on the Need to Know 2 54 20 CC Critical Control 11: Limitation and Control 2 54 20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 2 47 20 CC Critical Control 7: Wireless Device Control 3 3 44 20 CC Critical Control 7: Data Loss Prevention 3 3 33 Framework Control Category: Monitoring/Metrics ISO Measure Effectiveness of Controls 0 67 ISO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 150 Define and Generate Records (evidence) Average Rating 1.50 Framework Control Category: Response/Recovery 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Incident Response and Management 2 54 20 CC Critical Control 18: Incident Response and Management 2 54 20 CC Critical Control 18: Incident Response and Management 2 54 20 CC Critical Control 18: Data Recovery Capability Anomalies and Events	20 CC			38
20 CC Critical Control 12: Controlled Use of Administrative Privileges 1 85 20 CC Critical Control 13: Boundary Defense 1 76 20 CC Critical Control 15: Malware Defenses 2 70 NIST Maintenance 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Wireless Device Control Critical Control 17: Wireless Device Control Critical Control 17: Wireless Device Control Critical Control 17: Data Loss Prevention 3 344 20 CC Critical Control 17: Data Loss Prevention 3 333 Average Rating 1.64 Framework Control Category: Monitoring/Metrics Rating CySAFE Score ISO Measure Effectiveness of Controls 0 67 ISO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 18: Maintenance, Wonitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 18: Incident Response and Management 2 55 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8:		Average Rating	1.89	1
20 CC Critical Control 12: Controlled Use of Administrative Privileges 1 85 20 CC Critical Control 13: Boundary Defense 1 76 20 CC Critical Control 15: Malware Defenses 2 70 NIST Maintenance 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Wireless Device Control Critical Control 17: Wireless Device Control Critical Control 17: Wireless Device Control Critical Control 17: Data Loss Prevention 3 344 20 CC Critical Control 17: Data Loss Prevention 3 333 Average Rating 1.64 Framework Control Category: Monitoring/Metrics Rating CySAFE Score ISO Measure Effectiveness of Controls 0 67 ISO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 18: Maintenance, Wonitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 18: Incident Response and Management 2 55 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 18: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8: Data Recovery Capability 2 54 20 CC Critical Control 8:				
NIST Detection Processes 1 85				
20 CC Critical Control 13: Boundary Defense 1 76 20 CC Critical Control 5: Malware Defenses 2 70 NIST Maintenance 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 15: Account Monitoring and Control 2 54 20 CC Critical Control 16: Account Monitoring and Control 2 54 20 CC Critical Control 4: Continuous Vulnerability Assessment and Remediation 2 54 20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 2 47 20 CC Critical Control 7: Wireless Device Control 3 44 20 CC Critical Control 7: Wireless Device Control 3 3 33 Average Rating 1.64 Framework Control Category: Monitoring/Metrics 8 8 8 164 1SO Measure Effectiveness of Controls 0 67 1SO Conduct Internal ISMS Audits 2 54 1SO Define and Generate Records (evidence) 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 20 CC Critical Control 14: Sincident Response and Management 2 56 20 CC Critical Control 18: Incident Response and Management 2 54 20 CC Critical Control 18: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47				
20 CC Critical Control 5: Malware Defenses 2 70 NIST Maintenance 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 16: Account Monitoring and Control 2 54 20 CC Critical Control 4: Continuous Vulnerability Assessment and Remediation 2 54 20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 2 47 20 CC Critical Control 7: Wireless Device Control 3 44 20 CC Critical Control 7: Data Loss Prevention 3 33 Average Rating 1.64 Framework Control Category: Monitoring/Metrics Rating CySAFE Score 150 Measure Effectiveness of Controls 0 67 150 Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 150 Define and Generate Records (evidence) 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery 20 CC Critical Control 18: Incident Response and Management 2 55 CySAFE Score 20 CC Critical Control 18: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC	Critical Control 12: Controlled Use of Administrative Privileges	0	100
NIST Maintenance 1 66 20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 16: Account Monitoring and Control 2 54 20 CC Critical Control 4: Continuous Vulnerability Assessment and Remediation 2 54 20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 2 47 20 CC Critical Control 7: Wireless Device Control 3 44 20 CC Critical Control 7: Data Loss Prevention 3 33 Average Rating 1.64 Framework Control Category: Monitoring/Metrics Rating CySAFE Score 1SO Measure Effectiveness of Controls 0 67 1SO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 1SO Define and Generate Records (evidence) 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery 20 CC Critical Control 18: Incident Response and Management 2 2 62 20 CC Critical Control 18: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes	0 1	100 85
20 CC Critical Control 15: Controlled Access Based on the Need to Know 1 66 20 CC Critical Control 16: Account Monitoring and Control 2 54 20 CC Critical Control 4: Continuous Vulnerability Assessment and Remediation 2 54 20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 2 47 20 CC Critical Control 7: Wireless Device Control 3 44 20 CC Critical Control 7: Wireless Device Control 3 3 33 33 20 20 20 20 CC Critical Control 17: Data Loss Prevention 3 3 33 33 20 20 20 CC Critical Control 17: Data Loss Prevention 3 3 33 30 20 20 20 CC Critical Control 17: Data Loss Prevention 2 2 25 20 20 20 20 20 20 20 20 20 20 20 20 20	20 CC NIST 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense	0 1 1	100 85 76
20 CC Critical Control 16: Account Monitoring and Control 20 CC Critical Control 4: Continuous Vulnerability Assessment and Remediation 20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 21 47 20 CC Critical Control 7: Wireless Device Control 33 44 20 CC Critical Control 17: Data Loss Prevention 33 33 Average Rating 1.64 Framework Control Category: Monitoring/Metrics 1SO Measure Effectiveness of Controls 1SO Conduct Internal ISMS Audits 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 21 S4 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 22 54 25 Average Rating 26 CySAFE Score 27 Control Category: Response/Recovery 28 Control Category: Response/Recovery 29 CC Critical Control 18: Incident Response and Management 20 CC Critical Control 18: Data Recovery Capability 20 CC Critical Control 8: Data Recovery Capability 21 Anomalies and Events	20 CC NIST 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses	0 1 1 2	100 85 76 70
20 CC Critical Control 4: Continuous Vulnerability Assessment and Remediation 2 54 20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 2 47 20 CC Critical Control 7: Wireless Device Control 3 44 20 CC Critical Control 17: Data Loss Prevention 3 33 Average Rating 1.64 Framework Control Category: Monitoring/Metrics Rating CySAFE Score 1SO Measure Effectiveness of Controls 0 67 1SO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 1SO Define and Generate Records (evidence) 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery 2 62 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 18: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 20 CC NIST	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance	0 1 1 2 1	100 85 76 70 66
20 CC Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services 2 47 20 CC Critical Control 7: Wireless Device Control 3 44 20 CC Critical Control 17: Data Loss Prevention 3 33 Average Rating 1.64 Framework Control Category: Monitoring/Metrics Rating CySAFE Score 1SO Measure Effectiveness of Controls 0 67 1SO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 1SO Define and Generate Records (evidence) 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery Rating CySAFE Score 20 CC Critical Control 18: Incident Response and Management 2 56 20 CC Critical Control 18: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 20 CC NIST 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know	0 1 1 2 1 1	100 85 76 70 66 66
20 CC Critical Control 7: Wireless Device Control 3 44 20 CC Critical Control 17: Data Loss Prevention 3 33 Average Rating 1.64 Framework Control Category: Monitoring/Metrics Rating CySAFE Score ISO Measure Effectiveness of Controls 0 67 ISO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 ISO Define and Generate Records (evidence) 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery Rating CySAFE Score 20 CC Critical Control 18: Incident Response and Management 2 26 CC 20 CC Critical Control 18: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 20 CC NIST 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control	1 1 2 1 1 2	100 85 76 70 66 66 54
20 CC Critical Control 17: Data Loss Prevention Average Rating 1.64 Framework Control Category: Monitoring/Metrics ISO Measure Effectiveness of Controls O office Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs ISO Define and Generate Records (evidence) Average Rating 1.50 Framework Control Category: Response/Recovery 20 CC Critical Control 18: Incident Response and Management 20 CC Critical Control 18: Incident Response and Management 20 CC Critical Control 18: Data Recovery Capability NIST Anomalies and Events	20 CC NIST 20 CC 20 CC NIST 20 CC 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 4: Continuous Vulnerability Assessment and Remediation	1 1 2 1 1 2 2	100 85 76 70 66 66 54
Framework Control Category: Monitoring/Metrics ISO Measure Effectiveness of Controls O 67 ISO Conduct Internal ISMS Audits 2 54 ISO Define and Generate Records (evidence) Framework Control Category: Response/Recovery 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 Average Rating CySAFE Score 2 54 ISO Define and Generate Records (evidence) Rating CySAFE Score 20 CC Critical Control 18: Incident Response and Management 2 62 COC Critical Control 18: Data Recovery Capability NIST Anomalies and Events	20 CC NIST 20 CC 20 CC NIST 20 CC 20 CC 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 4: Continuous Vulnerability Assessment and Remediation Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services	0 1 1 2 1 1 2 2 2 2 2	100 85 76 70 66 66 54 54
Framework Control Category: Monitoring/Metrics ISO Measure Effectiveness of Controls Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 ISO Define and Generate Records (evidence) 2 39 Average Rating CySAFE Score 2 54 1SO Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 8: Data Recovery Capability 2 54 NIST Anomalies and Events	20 CC NIST 20 CC 20 CC NIST 20 CC 20 CC 20 CC 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 4: Continuous Vulnerability Assessment and Remediation Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control	0 1 1 2 1 1 2 2 2 2 2 3	100 85 76 70 66 66 54 54 47
ISO Measure Effectiveness of Controls 0 67	20 CC NIST 20 CC 20 CC NIST 20 CC 20 CC 20 CC 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 15: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Continuous Vulnerability Assessment and Remediation Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control Critical Control 17: Data Loss Prevention	0 1 1 2 1 1 2 2 2 2 2 3 3	100 85 76 70 66 66 54 54 47
ISO Measure Effectiveness of Controls 0 67	20 CC NIST 20 CC 20 CC NIST 20 CC 20 CC 20 CC 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 13: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Continuous Vulnerability Assessment and Remediation Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control Critical Control 17: Data Loss Prevention	0 1 1 2 1 1 2 2 2 2 2 3 3	100 85 76 70 66 66 54 54 47
ISO Conduct Internal ISMS Audits 2 54 20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 ISO Define and Generate Records (evidence) 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery Rating CySAFE Score 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 8: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 20 CC NIST 20 CC 20 CC 20 CC 20 CC 20 CC 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 4: Continuous Vulnerability Assessment and Remediation Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating	0 1 1 2 1 1 2 2 2 2 2 2 3 3 3	100 85 76 70 66 66 54 54 47 44 33
20 CC Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs 2 54 ISO Define and Generate Records (evidence) 2 39 Average Rating 1.50 Framework Control Category: Response/Recovery Rating CySAFE Score 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 8: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 20 CC NIST 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 4: Continuous Vulnerability Assessment and Remediation Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating	0 1 1 2 1 1 2 2 2 2 3 3 3 1.64	100 85 76 70 66 66 54 47 44 33
ISO Define and Generate Records (evidence) Average Rating 1.50 Framework Control Category: Response/Recovery 20 CC Critical Control 18: Incident Response and Management 20 CC Critical Control 8: Data Recovery Capability NIST Anomalies and Events 2 39 CySAFE Score 2 62 2 54 47	20 CC NIST 20 CC 20 CC NIST 20 CC 20 CC 20 CC 20 CC 20 CC 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls	0 1 1 2 1 1 2 2 2 2 3 3 3 1.64	100 85 76 70 66 66 54 47 44 33
Framework Control Category: Response/Recovery Rating 20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 8: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 20 CC NIST 20 CC 30 CC 20 CC 20 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 13: Boundary Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 17: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits	0 1 1 2 1 1 2 2 2 2 2 2 3 3 3 1.64	100 85 76 70 66 66 54 54 47 44 33
Framework Control Category: Response/Recovery 20 CC Critical Control 18: Incident Response and Management 20 CC Critical Control 8: Data Recovery Capability NIST Anomalies and Events Rating CySAFE Score 2 62 2 54 2 47	20 CC NIST 20 CC 50 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 15: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs	0 1 1 2 1 1 2 2 2 3 3 3 1.64	100 85 76 70 66 66 54 54 47 44 33
20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 8: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 50 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 15: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Account Monitoring and Control Critical Control 17: Limitation and Control of Network Ports, Protocols, and Services Critical Control 77: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs Define and Generate Records (evidence)	0 1 1 2 1 1 2 2 2 2 3 3 3 1.64	100 85 76 70 66 66 54 54 47 44 33
20 CC Critical Control 18: Incident Response and Management 2 62 20 CC Critical Control 8: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 50 CC 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 15: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Account Monitoring and Control Critical Control 17: Limitation and Control of Network Ports, Protocols, and Services Critical Control 77: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs Define and Generate Records (evidence)	0 1 1 2 1 1 2 2 2 2 3 3 3 1.64	100 85 76 70 66 66 54 54 47 44 33
20 CC Critical Control 8: Data Recovery Capability 2 54 NIST Anomalies and Events 2 47	20 CC NIST 20 CC 20 CC NIST 20 CC 1SO 1SO	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control Critical Control 7: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs Define and Generate Records (evidence) Average Rating	0 1 1 2 1 1 2 2 3 3 3 1.64 Rating 0 2 2 1.50	100 85 76 70 66 66 54 47 44 33 CYSAFE Score 67 54 54
NIST Anomalies and Events 2 47	20 CC NIST 20 CC 20 CC NIST 20 CC Framework ISO 1SO 1SO Framework Framework	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 13: Boundary Defense Critical Control 15: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Limitation and Control of Network Ports, Protocols, and Services Critical Control 17: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs Define and Generate Records (evidence) Average Rating	0 1 1 1 2 1 1 2 2 3 3 3 1.64 Rating 0 2 2 1.50	100 85 76 70 66 66 54 54 47 44 33 Cysafe Score 67 54 54 54
	20 CC NIST 20 CC 20 CC NIST 20 CC Framework ISO ISO 20 CC Framework 20 CC SC S	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Limitation and Control of Network Ports, Protocols, and Services Critical Control 17: Data Loss Prevention Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs Define and Generate Records (evidence) Average Rating	0 1 1 1 2 1 1 2 2 3 3 3 1.64 Rating 0 2 2 2 1.50	100 85 76 70 66 66 54 54 47 44 33 Cysafe Score 67 54 54 39
Average Rating 2.00	20 CC NIST 20 CC 20 CC NIST 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 15: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Continuous Vulnerability Assessment and Remediation Critical Control 11: Limitation and Control of Network Ports, Protocols, and Services Critical Control 7: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs Define and Generate Records (evidence) Average Rating Control Category: Response/Recovery Critical Control 18: Incident Response and Management Critical Control 18: Data Recovery Capability	0 1 1 2 1 2 1 1 2 2 2 3 3 1.64 Rating 0 2 2 2 1.50	100 85 76 70 66 66 54 47 44 33 Cysafe score 67 54 39
	20 CC NIST 20 CC 20 CC NIST 20 CC	Critical Control 12: Controlled Use of Administrative Privileges Detection Processes Critical Control 13: Boundary Defense Critical Control 5: Malware Defenses Maintenance Critical Control 15: Controlled Access Based on the Need to Know Critical Control 16: Account Monitoring and Control Critical Control 16: Account Monitoring and Control Critical Control 17: Limitation and Control of Network Ports, Protocols, and Services Critical Control 17: Wireless Device Control Critical Control 7: Wireless Device Control Critical Control 17: Data Loss Prevention Average Rating Control Category: Monitoring/Metrics Measure Effectiveness of Controls Conduct Internal ISMS Audits Critical Control 14: Maintenance, Monitoring, and Analysis of Audit Logs Define and Generate Records (evidence) Average Rating Control Category: Response/Recovery Critical Control 18: Incident Response and Management Critical Control 8: Data Recovery Capability Anomalies and Events	0 1 1 2 1 1 2 2 3 3 3 1.64 Rating 0 2 2 1.50 Rating 2 2 2 1.50	100 85 76 70 66 66 54 47 44 33 Cysafe score 67 54 39

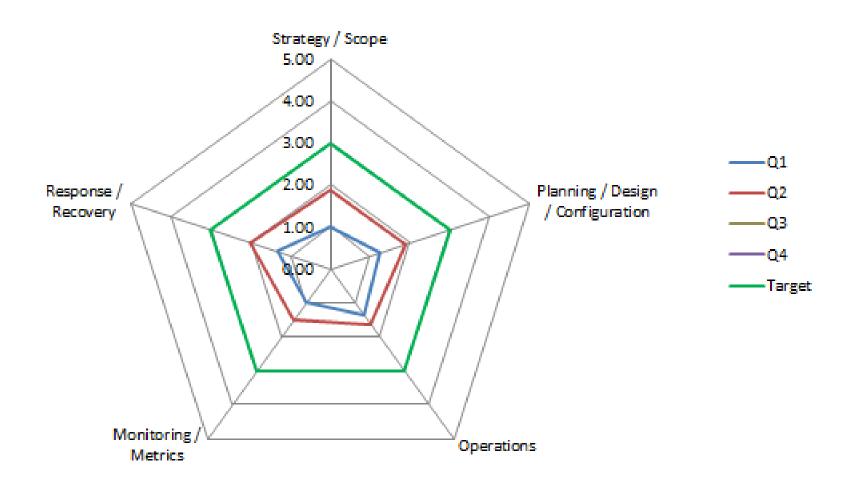


Control Category	Q1	Q2	Q3	Q4	Target		
Strategy / Scope	1.00	1.89			3.0		
Planning / Design / Configuration	1.22	1.89			3.0		
Operations	1.36	1.64			3.0		
Monitoring / Metrics	1.00	1.50			3.0		
Response / Recovery	1.33	2.00			3.0		











Appendix

Standards Documents:

20 Critical Controls http://www.sans.org/critical-security-controls

NIST <u>www.nist.gov/cyberframework/upload/cybersecurity-framework-</u>

021214.pdf

ISO 27001 www.iso.org/iso/home/standards/management-

standards/iso27001.htm

Reference Documents:

NIST SP 800-53 Rev 4 http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-

53r4.pdf

Verizon Security Report http://www.verizonenterprise.com/DBIR/

COIN http://www.countyinnovation.us/

Capability Maturity Model

Integration (CMMI)

http://en.wikipedia.org/wiki/Capability Maturity Model Integration

DHS Cyber Security Homepage http://www.dhs.gov/topic/cybersecurity

DHS Critical Infrastructure Cyber Community C³

Voluntary Program

http://www.dhs.gov/about-critical-infrastructure-cyber-community-

c³-voluntary-program



Summary

- CySAFE tool is an effective way to assess and plan your cybersecurity efforts
- Designed for any size government entity
- In 60 minutes, you have a Priority List and Graphs
- Data is private; Only stored in Excel format
- Built for governments by governments / FREE
- Available for all via G2G Cloud Solutions http://www.g2gmarket.com
- CySAFE for BUSINESS at www.advantageoakland.com



Agenda

- Introduction
- Business Challenge
- Technical Challenge
- CySAFE
- Recommendations



Oakland County Initiatives

- Secure endpoints by removing ADMIN access
- 2. ITSEC Training
- 3. Multi-Factor Authentication
- 4. Create Cyber Incident Response Plan
- 5. Improving patching life cycle timing



Recommendations free or low cost

- Removing Admin rights
- Turning on Windows Firewall
- Bitlocker
- Use a VPN (there are very cheap cloud based VPNs with low cost monthly fees) No hardware or administration costs required
- Turn Brower add-ons on like WOT (Web of Trust), HTTPS only
- Use Least Privilege Model
- Communicate with staff about Risks and current threats.
- Ask the users to report suspicious activity/emails
- Patch often
- Use a shredder
- Create a IT Security Policy and communicate it to users
- Add multifactor authentication
- Change Passwords and make them complex
- Use a Password Manager
- Check your backups
- Stay current with Web Browers (IE and Firefox) and any other systems that touch the internet
- Segment your network



Recommendations

- Hire a CISO
- # 1 priority for entire IT department
- What standard are you measuring against?
 - ISO 27000
 - NIST
 - SANS 20 Critical Controls
- Prepare to react, respond and recover
- Training is key to success
- The world of cyber security has changed
- Use CySAFE!!!



Wrap Up & Take-Aways

