





Contact Information

cisecurity.org/ms-isac info@msisac.org soc@msisac.org ncsr@cisecurity.org 518.266.3460 In an effort to assist State, Local, Tribal & Territorial (SLTT) governments in advancing their cybersecurity practices, the Multi-State Information Sharing & Analysis Center (MS-ISAC) has mapped the following services and resources to the NIST Cybersecurity Framework (NIST CSF): MS-ISAC Services, CIS Services, FedVTE Training, Policy Templates, and additional open source documents. Some services and resources are free to MS-ISAC members (MS-ISAC membership is always free to all SLTTs) and others are affordable for-fee services for SLTTs available through CIS Services and CIS CyberMarket.

MS-ISAC is offering this guide to the SLTT community, as a resource to assist with the application and advancement of establishing best practices, implementing cybersecurity policies, and increasing overall cybersecurity maturity. This resource guide can also be used after completing the Nationwide Cybersecurity Review (NCSR) to identify and prioritize improvements.

These policy templates are not to be used for profit or monetary gain by any organization.

Functions Key

Identify

The activities under this functional area are key for an organization's understanding of their current internal culture, infrastructure, and risk tolerance. This functional area tends to be one of the lowest-rated functions for many organizations. Immature capabilities in the Identify Function may hinder an organization's ability to effectively apply risk management principles for cybersecurity. By incorporating sound risk management principles into cybersecurity programs, organizations will be able to continuously align their efforts towards protecting their most valuable assets against the most relevant risks.

Protect

The activities under the Protect Function pertain to different methods and activities that reduce the likelihood of cybersecurity events from happening and ensure that the appropriate controls are in place to deliver critical services. These controls are focused on preventing cybersecurity events from occurring through common attack vectors, including attacks targeting users and attacks leveraging inherent weakness in applications and network communication.

Detect

The quicker an organization is able to detect a cybersecurity incident, the better positioned it is to be able to remediate the problem and reduce the consequences of the event. Activities found within the Detect Function pertain to an organization's ability to identify incidents. These controls are becoming more important as the quantity of logs and events occurring within an environment can be overwhelming to handle and can make it difficult to identify the key concerns. This function continues to represent the largest maturity gap between state and local governments.

Respond

An organization's ability to quickly and appropriately respond to an incident plays a large role in reducing the incident's consequences. As such, the activities within the **Respond Function examine** how an organization plans, analyzes, communicates, mitigates, and improves its response capabilities. For many organizations, integration and cooperation with other entities is key. Many organizations do not have the internal resources to handle all components of incident response. One example is the ability to conduct forensics after an incident, which helps organizations identify and remediate the original attack vector. This gap can be addressed through resource sharing within the SLTT community and leveraging organizations such as MS-ISAC and DHS's Cybersecurity and Infrastructure Security Agency (CISA), which have dedicated resources to provide incident response at no cost to the victim.

Recover

Activities within the Recover Function pertain to an organization's ability to return to its baseline after an incident has occurred. Such controls are focused not only on activities to recover from the incident, but also on many of the components dedicated to managing response plans throughout their lifecycle.

Category	Subcategory	MS-ISAC Service or Resource Guide (No Cost)	CIS Service or Resource Guide (No Cost)	CIS or MS-ISAC Service (Fee-Based)	Open Source	FedVTE https://fedvte.usalearning.gov/	Policy Template
unct	ion: Identify						
ID.AM-1	Physical devices and systems within the organization are inventoried	First Steps Within a Cybersecurity Program			 ↗ Nmap ↗ OpenVAS ↗ SnipeIT 	 Cyber Risk Management for Managers; CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2(TM) Systems Security Certified Practitioner; 	 Acceptable Use of Information Technology Resource Policy Access Control Policy Account Management/Access Control Standard Identification and Authentication Policy Information Security Policy Security Assessment and Authorization Policy Security Awareness and Training Policy
ID.AM-2	Software platforms and applications within the organization are inventoried	➢ First Steps Within a Cybersecurity Program			↗ SnipeIT	 Cyber Risk Management for Managers; CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; D B Evaluations using AppDetectivePro & dbProtect; Dynamic Testing using HPE WebInspect; Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CDM Module 3: Software Asset Management; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2(TM) Systems Security Certified Practitioner; 	 Acceptable Use of Information Technology Resource Policy Access Control Policy Account Management/Access Control Standard Identification and Authentication Policy Information Security Policy Security Assessment and Authorization Policy Security Awareness and Training Policy
ID.AM-3	Organizational communication and data flows are mapped	First Steps Within a Cybersecurity Program			↗ Draw.io	 Cyber Risk Management for Managers; CompTIA Advanced Security Practitioner; Cisco CCENT Self-Study Prep; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
ID.AM-4	External information systems are catalogued	 First Steps Within a Cybersecurity Program 				 Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2(TM) Systems Security Certified Practitioner; 	System and Communications Protection Policy
ID.AM-5	Resources (e.g., hardware, devices, data, and software) are prioritized based on their classification, criticality, and business value	 First Steps Within a Cybersecurity Program 				 Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CDM Module 2: Hardware Asset; CDM Module 3: Software Asset Management; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	 Information Classification Standard Information Security Policy
ID.AM-6	Cybersecurity roles and responsibilities for the entire workforce and third-party stakeholders (e.g., suppliers, customers, partners) are established	First Steps Within a Cybersecurity Program				 The Election Official as IT Manager; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Acceptable Use of Information Technology Resource Policy Information Security Policy Security Awareness and Training Policy
ID.BE-1	The organization's role in the supply chain is identified and communicated					 ISACA Certified Information Security Manager (CISM) Prep; 	

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ID.BE-2	The organization's place in critical infrastructure and its industry sector is identified and communicated					101-Critical Infrastructure Protection;	
ID.BE-3	Priorities for organizational mission, objectives, and activities are established and communicated					 Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; 101-Critical Infrastructure Protection; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
ID.BE-4	Dependencies and critical functions for delivery of critical services are established					 Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; 101-Critical Infrastructure Protection; CompTIA Security +; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
ID.BE-5	Resilience requirements to support delivery of critical services are established					 101-Critical Infrastructure Protection; CompTIA Security +; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
ID.GV-1	Organizational information security policy is established					 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; Emerging Cybersecurity Threats; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
ID.GV-2	Information security roles and responsibilities are coordinated and aligned with internal roles and external partners					 Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; 101-Critical Infrastructure Protection; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
ID.GV-3	Legal and regulatory requirements regarding cybersecurity, including privacy and civil liberties obligations, are understood and managed				↗ Eramba GRC	 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; Emerging Cybersecurity Threats; 101 Reverse Engineering; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	

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ID.GV-4	Governace and risk management processes address cybersecurity risks	 Malicious Domain Blocking and Reporting (MDBR) MS-ISAC Risk Assessment Guide 			↗ Eramba GRC	 Cyber Risk Management for Technicians; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; 	
ID.RA-1	Asset vulnerabilities are identified and documented	 First Steps Within a Cybersecurity Program MS-ISAC Risk Assessment Guide 	CIS-CAT Pro	 Network Penetration Test Vulnerability Assessment Web Application Penetration Test 	↗ Nmap ↗ OpenVAS	 Cyber Risk Management for Technicians; Cyber Risk Management for Managers; EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; DB Evaluations using AppDetectivePro & dbProtect; Dynamic Testing using HPE WebInspect; Introduction to Threat Hunting Teams; Static Code Analysis using Synopsis Coverity; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CDM Module 5: Vulnerability Management; CompTIA Advanced Security Practitioner; CompTIA Cybersecurity Analyst (CySA+) Prep; Radio Frequency Identification (RFID) Security; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
ID.RA-2	Threat and vulnerability information is received from information sharing forums and sources	 MS-ISAC Membership Malicious Domain Blocking and Reporting (MDBR) First Steps Within a Cybersecurity Program MS-ISAC Risk Assessment Guide 			↗ Nmap ↗ OpenVAS	 Foundations of Incident Management; Introduction to Threat Hunting Teams; 101-Critical Infrastructure Protection; CompTIA Cybersecurity Analyst (CySA+) Prep; CDM Module 5: Vulnerability Management; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	

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ID.RA-3	Threats, both internal and external, are identified and documented	 MS-ISAC Membership Malicious Domain Blocking and Reporting (MDBR) First Steps Within a Cybersecurity Program MS-ISAC Risk Assessment Guide 		 Network Penetration Test Vulnerability Assessment 		 Cyber Risk Management for Technicians; Cyber Risk Management for Managers; EC-Council Certified Ethical Hacker; (CEHv9) Self-Study Prep; CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; Foundations of Incident Management; Introduction to Threat Hunting Teams; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Cybersecurity Analyst (CySA+) Prep; Cisco CCENT Self-Study Prep; Cisco CCNA Security Self-Study Prep; Cyber Awareness Challenge 2019; Cybersecurity Overview for Managers; Emerging Cybersecurity Threats; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
ID.RA-4	Potential business impacts and likelihoods are identified	 MS-ISAC Membership First Steps Within a Cybersecurity Program MS-ISAC Risk Assessment Guide 		 Network Penetration Test Vulnerability Assessment Web Application Penetration Test 		 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; 101-Critical Infrastructure Protection; CompTIA Advanced Security Practitioner; Cloud Computing Security; CompTIA Security +; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
ID.RA-5	Threats, vulnerabilities, likelihoods, and impacts are used to determine risk	 MS-ISAC Membership First Steps Within a Cybersecurity Program MS-ISAC Risk Assessment Guide 	 CIS-CAT Pro CIS Benchmarks 	 Network Penetration Test Vulnerability Assessment Web Application Penetration Test 		 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cloud Computing Security; CompTIA Security +; Cybersecurity Overview for Managers; Emerging Cybersecurity Threats; 101-Critical Infrastructure Protection; CompTIA Advanced Security Practitioner; CompTIA Cybersecurity Analyst (CySA+) Prep; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	
ID.RA-6	Risk responses are identified and prioritized	 Malicious Domain Blocking and Reporting (MDBR) First Steps Within a Cybersecurity Program MS-ISAC Risk Assessment Guide 				 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Advanced Security Practitioner; CompTIA Cybersecurity Analyst (CySA+) Prep; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	

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ID.RM-1	Risk management processes are established, managed, and agreed to by organizational stakeholders	MS-ISAC Risk Assessment Guide				 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Information Security Policy Information Security Risk Management Standard Risk Assessment Policy
ID.RM-2	Organizational risk tolerance is determined and clearly expressed					 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
ID.RM-3	The organization's determination of risk tolderance is informed by its role in critical infrastructure and sector specific risk analysis					 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; 101-Critical Infrastructure Protection; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
ID.SC-1	Cyber supply chain risk management processes are identified, established, assessed, managed, and agreed to by organizational stakeholders	Supply Chain Cybersecurity Resources Guide	 Guide for Ensuring Security in Election Technology Procurements Managing Cybersecurity Supply Chain Risks in Election Technology: A Guide for Election Technology Providers 			 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Advanced Security Practitioner; Cyber Supply Chain Risk Management; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
ID.SC-2	Suppliers and third party partners of information systems, components, and services are identified, prioritized, and assessed using a cyber supply chain risk assessment process	Supply Chain Cybersecurity Resources Guide	 Guide for Ensuring Security in Election Technology Procurements Managing Cybersecurity Supply Chain Risks in Election Technology: A Guide for Election Technology Providers 			 CompTIA Advanced Security Practitioner; Cyber Supply Chain Risk Management; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	 Identification and Authentication Policy Security Assessment and Authorization Policy Systems and Services Acquisition Policy Monitoring Vendor Performance and Compliance Policy Template Vendor Acquisition and Selection Policy Template

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ID.SC-3	Contracts with suppliers and third-party partners are used to implement appropriate measures designed to meet the objectives of an organization's cybersecurity program and Cyber Supply Chain Risk Management Plan.	Supply Chain Cybersecurity Resources Guide	 Guide for Ensuring Security in Election Technology Procurements Managing Cybersecurity Supply Chain Risks in Election Technology: A Guide for Election Technology Providers 			 Cyber Supply Chain Risk Management; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
ID.SC-4	Suppliers and third-party partners are routinely assessed using audits, test results, or other forms of evaluations to confirm they are meeting their contractual obligations.	Supply Chain Cybersecurity Resources Guide	 Guide for Ensuring Security in Election Technology Procurements Managing Cybersecurity Supply Chain Risks in Election Technology: A Guide for Election Technology Providers 			 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; Cyber Supply Chain Risk Management; CompTIA Advanced Security Practitioner; Supply Chain Assurance using Sonatype Nexus; 	 Identification and Authentication Policy Security Assessment and Authorization Policy Systems and Services Acquisition Policy Monitoring Vendor Performance and Compliance Policy Template Vendor Acquisition and Selection Policy Template
ID.SC-5	Response and recovery planning and testing are conducted with suppliers and third-party providers	Supply Chain Cybersecurity Resources Guide	 Guide for Ensuring Security in Election Technology Procurements Managing Cybersecurity Supply Chain Risks in Election Technology: A Guide for Election Technology Providers 			 Foundations of Incident Management; CompTIA Advanced Security Practitioner; Cyber Supply Chain Risk Management; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy Systems and Services Acquisition Policy Monitoring Vendor Performance and Compliance Policy Template Vendor Acquisition and Selection Policy Template

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Funct	ion: Protect						
PR.AC-1	Identities and credentials are managed for authorized devices and users	First Steps Within a Cybersecurity Program				 Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Advanced Security Practitioner; Securing Infrastructure Devices; Cisco CCNA Security Self-Study Prep; CompTIA Security +; Windows Operating System Security; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; Linux Operating System Security; 	 Access Control Policy Account Management/Access Control Policy Authentication Tokens Standard Configuration Management Policy Identification and Authentication Policy Sanitization Secure Disposal Standard Secure Configuration Standard Secure System Development Life Cycle Standard
PR.AC-2	Physical access to assets is managed and protected	First Steps Within a Cybersecurity Program				 Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Advanced Security Practitioner; CompTIA A+ 220-902 Certification Prep; CDM Module 2: Hardware Asset; Securing Infrastructure Devices; CompTIA Security +; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; Mobile and Device Security; 	
PR.AC-3	Remote access is managed	First Steps Within a Cybersecurity Program			⊅ OpenVPN	 CMaaS Technical Overview Course; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Advanced Security Practitioner; CompTIA Network+ N10-007; Cisco CCNA Security Self-Study Prep; CompTIA Security +; Cybersecurity Overview for Managers; Emerging Cybersecurity Threats; Windows Operating System Security; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; Mobile and Device Security; 	 Access Control Policy Account Management/Access Control Policy Authentication Tokens Standard Configuration Management Policy Identification and Authentication Policy Sanitization Secure Disposal Standard Secure Configuration Standard Secure System Development Life Cycle Standard

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PR.AC-4	Access permissions are managed, incorporating the principles of least privilege and separation of duties	➢ First Steps Within a Cybersecurity Program			 OpenNAC PacketFence 	 Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Advanced Security Practitioner; CompTIA Network+ N10-007; Securing Infrastructure Devices; Cisco CCNA Security Self-Study Prep; CompTIA Security +; Cybersecurity Overview for Managers; Windows Operating System Security; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) System Security; Linux Operating System Security; Mobile and Device Security; 	 Access Control Policy Account Management/Access Control Standard Configuration Management Policy Identification and Authentication Policy Sanitization Secure Disposal Standard Secure Configuration Standard Secure System Development Life Cycle Standard
PR.AC-5	Network integrity is protected, incorporating network segregation where appropriate	➢ First Steps Within a Cybersecurity Program			 pfSense Snort Suricata OpenNAC PacketFence 	 CMaaS Technical Overview Course, CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; Demilitarized Zone (DMZ) with IDS/IPS; DNSSEC Training Workshop; IPv6 Security Essentials Course; ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Security +; Cybersecurity Overview for Managers; Emerging Cybersecurity Threats; Advanced PCAP Analysis and Signature Development (APA); CompTIA Advanced Security Practitioner; Securing the Network Perimeter; (ISC)2 (TM) CISSP (R) Certification Prep 2018; LAN Security Using Switch Features; 	 802.11 Wireless Network Security Standard Mobile Device Security System and Information Integrity Policy
PR.AC-6	Identities are proofed and bound to credentials and asserted in interactions	➢ First Steps Within a Cybersecurity Program				 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Windows Operating System Security; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; Linux Operating System Security; 	
PR.AC-7	Users, devices, and other assets are authenticated (e.g., single-factor, multi- factor) commensurate with the risk of the transaction (e.g., individuals' security and privacy risks and other organizational risks)	First Steps Within a Cybersecurity Program				 ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Security +; Cybersecurity Overview for Managers; Emerging Cybersecurity Threats; CDM Module 2: Hardware Asset; CompTIA A+ 220-902 Certification Prep; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; 	

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PR.AT-1	All users are informed and trained	↗ MS-ISAC Membership				 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cyber Awareness Challenge 2019; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Acceptable Use of Information Technology Resources Policy Information Security Policy Personnel Security Policy Physical and Environmental Protection Policy Security Awareness and Training Policy
PR.AT-2	Privileged users understand roles & responsibilities				↗ Eramba GRC	 ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
PR.AT-3	Third-party stakeholders (e.g., suppliers, customers, partners) understand roles & responsibilities					 ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
PR.AT-4	Senior executives understand roles & responsibilities				↗ Eramba GRC	 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
PR.AT-5	Physical and information security personnel understand roles & responsibilities				↗ Eramba GRC	 The Election Official as IT Manager; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
PR.DS-1	Data-at-rest is protected	First Steps Within a Cybersecurity Program				 DB Evaluations using AppDetectivePro & dbProtect; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Advanced Security Practitioner; CompTIA Security +; Windows Operating System Security; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; 	
PR.DS-2	Data-in-transit is protected	➢ First Steps Within a Cybersecurity Program				 IPv6 Security Essentials Course; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Advanced PCAP Analysis and Signature Development (APA); Analysis Pipeline; CompTIA Advanced Security Practitioner; CompTIA Network+ N10-007; Cloud Computing Security; CompTIA Security +; Emerging Cybersecurity Threats; Windows Operating System Security; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; LAN Security Using Switch Features; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Encryption Standard Incident Response Policy Information Security Policy Maintenance Policy Media Protection Policy Mobile Device Security Patch Management Standard

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PR.DS-3	Assets are formally managed throughout removal, transfers, and disposition	First Steps Within a Cybersecurity Program				 CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CDM Module 2: Hardware Asset; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; 	 Access Control Policy Account Management/Access Control Standard Authentication Tokens Standard Configuration Management Policy Identification and Authentication Policy Sanitization Secure Disposal Standard Secure Configuration Standard Secure System Development Life Cycle Standard
PR.DS-4	Adequate capacity to ensure availability is maintained	 First Steps Within a Cybersecurity Program 				 (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
PR.DS-5	Protections against data leaks are implemented	➢ First Steps Within a Cybersecurity Program			↗ OpenDLP	 CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; ISACA Certified Information Security Manager (CISM) Prep; Advanced PCAP Analysis and Signature Development (APA); Analysis Pipeline; CompTIA Advanced Security Practitioner; CompTIA Network+ NI0- 007; 	
PR.DS-6	Integrity checking mechanisms are used to verify software, firmware, and information integrity	First Steps Within a Cybersecurity Program			 ↗ Tripwire ↗ AIDE 	 DNSSEC Training Workshop; Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; ISACA Certified Information Security Manager (CISM) Prep; Advanced Windows Scripting; (ISC)2(TM) Systems Security Certified Practitioner; 	
PR.DS-7	The development and testing environment(s) are separate from the production environment	First Steps Within a Cybersecurity Program			 ↗ Agnito ↗ W3AF ↗ Wapiti 	 DB Evaluations using AppDetectivePro & dbProtect; Dynamic Testing using HPE WebInspect; Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; Supply Chain Assurance using Sonatype Nexus; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; Software Assurance Executive Course (SAE); 	
PR.DS-8	Integrity checking mechanisms are used to verify hardware integrity	 First Steps Within a Cybersecurity Program 				(ISC)2(TM) Systems Security Certified Practitioner;	Restant A System and Information Integrity Policy
PR.IP-1	A baseline configuration of information technology/ industrial control systems is created and maintained	First Steps Within a Cybersecurity Program			↗ DMARC	 CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; Advanced Windows Scripting; CompTIA A+ 220-901 Certification Prep; CompTIA A+ 220-902 Certification Prep; CompTIA Advanced Security Practitioner; CDM Module 4: Configuration Settings Mgt; 	 Access Control Policy Account Management/Access Control Standard Authentication Tokens Standard Configuration Management Policy Identification and Authentication Policy Sanitization Secure Disposal Standard Secure Configuration Standard Secure System Development Life Cycle Standard

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PR.IP-2	A System Development Life Cycle to manage systems is implemented	First Steps Within a Cybersecurity Program				 DB Evaluations using AppDetectivePro & dbProtect; ISACA Certified Information Security Manager (CISM) Prep; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; Software Assurance Executive Course (SAE); 	
PR.IP-3	Configuration change control processes are in place	➢ First Steps Within a Cybersecurity Program	CIS-CAT Pro			 CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; Securing Infrastructure Devices; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; Software Assurance Executive Course (SAE); 	
PR.IP-4	Backups of information are conducted, maintained, and tested periodically	➢ First Steps Within a Cybersecurity Program				 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; CompTIA Security +; CompTIA Network+ N10-007; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Encryption Standard Incident Response Policy Information Security Policy Maintenance Policy Media Protection Policy Mobile Device Security Patch Management Standard
PR.IP-5	Policy and regulations regarding the physical operating environment for organizational assets are met	First Steps Within a Cybersecurity Program				 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Security +; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2(TM) Systems Security Certified Practitioner; 	
PR.IP-6	Data is destroyed according to policy	First Steps Within a Cybersecurity Program				 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Security +; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2(TM) Systems Security Certified Practitioner; 	 Maintenance Policy Media Protection Policy Sanitization Secure Disposal Standard
PR.IP-7	Protection processes are continuously improved	First Steps Within a Cybersecurity Program				 Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; 	

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PR.IP-8	Effectiveness of protection technologies is shared with appropriate parties	First Steps Within a Cybersecurity Program				 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; 101–Critical Infrastructure Protection; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	
PR.IP-9	Response plans (Incident Response and Business Continuity) and recovery plans (Incident Recovery and Disaster Recovery) are in place and managed	First Steps Within a Cybersecurity Program				 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; 101-Critical Infrastructure Protection; CompTIA Network+ N10-007; 101-Critical Infrastructure Protection; Cisco CCNA Security Self-Study Prep; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy Planning Policy
PR.IP-10	Response and recovery plans are tested	First Steps Within a Cybersecurity Program				 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Network+ N10-007; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy Planning Policy
PR.IP-11	Cybersecurity is included in human resources practices (e.g., deprovisioning, personnel screening)	First Steps Within a Cybersecurity Program				 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
PR.IP-12	A vulnerability management plan is developed and implemented	First Steps Within a Cybersecurity Program			↗ OpenVAS	 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; Dynamic Testing using HPE WebInspect; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; Radio Frequency Identification (RFID) Security; CDM Module 5: Vulnerability Management; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
PR.MA-1	Maintenance and repair of organizational assets is performed and logged in a timely manner, with approved and controlled tools					ISACA Certified Information Security Manager (CISM) Prep; CompTIA Advanced Security Practitioner	
PR.MA-2	Remote maintenance of organizational assets is approved, logged, and performed in a manner that prevents unauthorized access				 ↗ Snort ↗ Suricata 	 CompTIA Advanced Security Practitioner; CompTIA Network+ N10- 007; 	 Maintenance Policy Remote Access Standard Security Logging Standard

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PR.PT-1	Audit/log records are determined, documented, implemented, and reviewed in accordance with policy	First Steps Within a Cybersecurity Program			⊅ OSSIM	 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; CompTIA Advanced Security Practitioner; Cisco CCNA Security Self-Study Prep; CompTIA Security +; Windows Operating System Security; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	 Access Control Policy Account Management/Access Control Standard Authentication Tokens Standard Configuration Management Policy Identification and Authentication Policy Sanitization Secure Disposal Standard Secure Configuration Standard Secure System Development Life Cycle Standard Security Logging Standard
PR.PT-2	Removable media is protected and its use restricted according to policy	 First Steps Within a Cybersecurity Program 				 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA Security +; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; 	 Acceptable Use of Technology Resources Policy Media Protection Policy Mobile Device Security
PR.PT-3	Access to systems and assets is controlled, incorporating the principle of least functionality	➢ First Steps Within a Cybersecurity Program				 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Emerging Cybersecurity Threats; CompTIA Security +; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; CompTIA Network+ NI0-007; Securing Infrastructure Devices; Securing the Network Perimeter; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; 	
PR.PT-4	Communications and control networks are protected	➢ First Steps Within a Cybersecurity Program			↗ Nmap ↗ OpenVAS	 CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; Demilitarized Zone (DMZ) with IDS/IPS; DNSSEC Training Workshop; ISACA Certified Information Security Manager (CISM) Prep; Securing Infrastructure Devices; Securing the Network Perimeter; Wireless Network Security; CompTIA Advanced Security Practitioner; CompTIA Network+ N10-007; Analysis Pipeline; (ISC)2 (TM) CISSP (R) Certification Prep 2018; Mobile and Device Security; 	 Encryption Standard Information Security Policy Maintenance Policy Media Protection Policy Mobile Device Security System and Communications Protection Policy
PR.PT-5	Mechanisms (e.g., failsafe, load balancing, hot swap) are implemented to achieve resilience requirements in normal and adverse situations	First Steps Within a Cybersecurity Program				 DNSSEC Training Workshop; Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Emerging Cybersecurity Threats; Securing the Network Perimeter; CompTIA Advanced Security Practitioner; CompTIA Network+ N10-007; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2(TM) Systems Security Certified Practitioner; 	

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Funct	ion: Detect						
DE.AE-1	A baseline of network operations and expected data flows for users and systems is established and managed	First Steps Within a Cybersecurity Program			 ↗ Snort ↗ Suricata 	 Cyber Risk Management for Managers; DB Evaluations using AppDetectivePro & dbProtect; Dynamic Testing using HPE WebInspect; ISACA Certified Information Security Manager (CISM) Prep; Emerging Cybersecurity Threats; Analysis Pipeline; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
DE.AE-2	Detected events are analyzed to understand attack targets and methods	 First Steps Within a Cybersecurity Program Malicious Domain Blocking and Reporting (MDBR) 		 Albert Network Monitoring Endpoint Security Services (ESS) 		 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; Demilitarized Zone (DMZ) with IDS/IPS; DB Evaluations using AppDetectivePro & dbProtect; Foundations of Incident Management; Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; ISACA Certified Information Security Manager (CISM) Prep; Emerging Cybersecurity Threats; Advanced PCAP Analysis and Signature Development (APA); Analysis Pipeline; Root Cause Analysis; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; SiLK Traffic Analysis; 	
DE.AE-3	Event data are aggregated and correlated from multiple sources and sensors	First Steps Within a Cybersecurity Program			↗ OSSIM	 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; Demilitarized Zone (DMZ) with IDS/IPS; Dynamic Testing using HPE WebInspect; Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; Analysis Pipeline; (ISC)2 (TM) CISSP (R) Certification Prep 2018; SiLK Traffic Analysis; 	 Auditing and Accountability Standard Security Logging Standard System and Information Integrity Policy Vulnerability Scanning Standard
DE.AE-4	Impact of events is determined	 First Steps Within a Cybersecurity Program 			⊅ OSSIM	 DB Evaluations using AppDetectivePro & dbProtect; Dynamic Testing using HPE WebInspect; Foundations of Incident Management; CompTIA Advanced Security Practitioner; Root Cause Analysis; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	
DE.AE-5	Incident alert thresholds are established	 First Steps Within a Cybersecurity Program 			 ↗ Logstash ↗ Graylog 	 Foundations of Incident Management; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	
DE.CM-1	The network is monitored to detect potential cybersecurity events	First Steps Within a Cybersecurity Program		 Albert Network Monitoring Endpoint Security Services (ESS) 	 ↗ Zeek ↗ Snort ↗ Suricata ↗ Quad9 	 Cyber Risk Management for Technicians; Cyber Risk Management for Managers; Demilitarized Zone (DMZ) with IDS/IPS; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Advanced PCAP Analysis and Signature Development (APA); Analysis Pipeline; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	 Encryption Standard Information Security Policy Maintenance Policy Media Protection Policy Mobile Device Security Patch Management Standard Security Assessment and Authorization Policy Vulnerability Scanning Standard
DE.CM-2	The physical environment is monitored to detect potential cybersecurity events	First Steps Within a Cybersecurity Program				 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; CompTIA A+ 220-902 Certification Prep; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	

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DE.CM-3	Personnel activity is monitored to detect potential cybersecurity events	 First Steps Within a Cybersecurity Program Malicious Domain Blocking and Reporting (MDBR) 			↗ Zabbix	 ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	
DE.CM-4	Malicious code is detected	➢ First Steps Within a Cybersecurity Program		Albert Network Monitoring	↗ ClamAV	 Demilitarized Zone (DMZ) with IDS/IPS; DB Evaluations using AppDetectivePro & dbProtect; Dynamic Testing using HPE WebInspect; Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; Advanced PCAP Analysis and Signature Development (APA); Analysis Pipeline; CompTIA A+ 220-902 Certification Prep; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; SiLK Traffic Analysis; 	 Auditing and Accountability Standard Secure Coding Standard Security Logging Standard System and Information Integrity Policy Vulnerability Scanning Standard
DE.CM-5	Unauthorized mobile code is detected	First Steps Within a Cybersecurity Program				 DB Evaluations using AppDetectivePro & dbProtect; Static Code Analysis using HPE Fortify; Static Code Analysis using Synopsis Coverity; Advanced PCAP Analysis and Signature Development (APA); Analysis Pipeline; CompTIA A+ 220-902 Certification Prep; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; Mobile and Device Security; 	
DE.CM-6	External service provider activity is monitored to detect potential cybersecurity events	 First Steps Within a Cybersecurity Program 		Albert Network Monitoring		Demilitarized Zone (DMZ) with IDS/IPS	
DE.CM-7	Monitoring for unauthorized personnel, connections, devices, and software is performed	 First Steps Within a Cybersecurity Program Malicious Domain Blocking and Reporting (MDBR) 			≉ Quad9	 Demilitarized Zone (DMZ) with IDS/IPS; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Analysis Pipeline; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2(TM) Systems Security Certified Practitioner; 	 Auditing and Accountability Standard Security Logging Standard System and Information Integrity Policy Vulnerability Scanning Standard
DE.CM-8	Vulnerability scans are performed	First Steps Within a Cybersecurity Program	CIS-CAT Pro	✓ Vulnerability Management Program (VMP)	↗ Nmap, OpenVAS	 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; DB Evaluations using AppDetectivePro & dbProtect; Dynamic Testing using HPE WebInspect; Introduction to Threat Hunting Teams; Static Code Analysis using Synopsis Coverity; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Supply Chain Assurance using Sonatype Nexus; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	

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DE.DP-1	Roles and responsibilities for detection are well defined to ensure accountability					 Cyber Risk Management for Managers; The Election Official as IT Manager; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy Information Security Risk Management Standard
DE.DP-2	Detection activities comply with all applicable requirements					 ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; Analysis Pipeline; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
DE.DP-3	Detection processes are tested					 Demilitarized Zone (DMZ) with IDS/IPS; DB Evaluations using AppDetectivePro & dbProtect; ISACA Certified Information Security Manager (CISM) Prep; 	
DE.DP-4	Event detection information is communicated to appropriate parties	Malicious Domain Blocking and Reporting (MDBR)		Albert Network Monitoring		 ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; 101-Critical Infrastructure Protection; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy Information Security Risk Management Standard
DE.DP-5	Detection processes are continuously improved			Albert Network Monitoring		 Demilitarized Zone (DMZ) with IDS/IPS; DB Evaluations using AppDetectivePro & dbProtect; ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; (ISC)2 (TM) CAP Certification Prep Self Study 2014; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	

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unct	ion: Respond						
RS.RP-1	Response plan is executed during or after an event				↗ TheHive	 Foundations of Incident Management; The Election Official as IT Manager; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; Cybersecurity Overview for Managers; CompTIA A+ 220-902 Certification Prep; Root Cause Analysis; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy Planning Policy
RS.CO-1	Personnel know their roles and order of operations when a response is needed					 Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; Cybersecurity Overview for Managers; Offensive and Defensive Network Operations; CompTIA A+ 220-902 Certification Prep; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy
RS.CO-2	Events are reported consistent with established criteria	➢ Malicious Domain Blocking and Reporting (MDBR)				 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; Offensive and Defensive Network Operations; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2(TM) Systems Security Certified Practitioner; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy
RS.CO-3	Information is shared consistent with response plans					 Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; Offensive and Defensive Network Operations; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy
RS.CO-4	Coordination with stakeholders occurs consistent with response plans	Malicious Domain Blocking and Reporting (MDBR)				 Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; Offensive and Defensive Network Operations; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy
RS.CO-5	Voluntary information sharing occurs with external stakeholders to achieve broader cybersecurity situational awareness	Malicious Domain Blocking and Reporting (MDBR)				 Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; Offensive and Defensive Network Operations; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy

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RS.AN-1	Notifications from detection systems are investigated	➢ First Steps Within a Cybersecurity Program				 Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; Advanced PCAP Analysis and Signature Development (APA); Root Cause Analysis; (ISC)2 (TM) CISSP (R) Certification Prep 2018; SiLK Traffic Analysis; 	
RS.AN-2	The impact of the incident is understood	 24/7 Security Operations Center (SOC) First Steps Within a Cybersecurity Program 				 Dynamic Testing using HPE WebInspect; Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
RS.AN-3	Forensics are performed	 Computer Emergency Response Team (CERT) Forensic Analysis First Steps Within a Cybersecurity Program 				 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; 101 Reverse Engineering; Advanced PCAP Analysis and Signature Development (APA); Cyber Fundamentals for LE Investigators; Cybersecurity Overview for Managers; Offensive and Defensive Network Operations; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; Mobile Forensics; 	
RS.AN-4	Incidents are categorized consistent with response plans	First Steps Within a Cybersecurity Program				 Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; CompTIA A+ 220-902 Certification Prep; (ISC)2 (TM) CISSP: ISSMP Prep 2018; (ISC)2(TM) Systems Security Certified Practitioner; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy
RS.AN-5	Processes are established to receive, analyze and respond to vulnerabilities disclosed to the organization from internal and external sources (e.g. internal testing, security bulletins, or security researchers)	First Steps Within a Cybersecurity Program			↗ Nmap ↗ OpenVAS	 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cyber Risk Management for Managers; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; 101-Critical Infrastructure Protection; Supply Chain Assurance using Sonatype Nexus; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	

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RS.MI-1	Incidents are contained	 Computer Emergency Response Team (CERT) Incident Response First Steps Within a Cybersecurity Program 				 Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; Offensive and Defensive Network Operations; CompTIA A+ 220-902 Certification Prep; Root Cause Analysis; (ISC)2(TM) Systems Security Certified Practitioner; Mobile Forensics; 	
RS.MI-2	Incidents are mitigated	 Computer Emergency Response Team (CERT) Incident Response First Steps Within a Cybersecurity Program 				 Dynamic Testing using HPE WebInspect; Foundations of Incident Management; Introduction to Investigation of Digital Assets; Cybersecurity Overview for Managers; Offensive and Defensive Network Operations; CompTIA A+ 220-902 Certification Prep; Root Cause Analysis; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) Systems Security Certified Practitioner; (ISC)2(TM) Systems Security Certified Practitioner; Mobile Forensics; SiLK Traffic Analysis; 	
RS.MI-3	Newly identified vulnerabilities are mitigated or documented as accepted risks	➢ First Steps Within a Cybersecurity Program	CIS Controls			 EC-Council Certified Ethical Hacker (CEHv9) Self-Study Prep; CMaaS Overview; CMaaS Technical Overview Course; CMaaS Transition Classroom Sessions; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; 101-Critical Infrastructure Protection; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP: ISSMP Prep 2018; 	
RS.IM-1	Response plans incorporate lessons learned					 Foundations of Incident Management; Introduction to Investigation of Digital Assets; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; CompTIA A+ 220-902 Certification Prep; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy
RS.IM-2	Response strategies are updated					 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy

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Funct	ion: Recover						
RC.RP-1	Recovery plan is executed during or after an event					 Foundations of Incident Management; Cyber Risk Management for Managers; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	 Computer Security Threat Response Policy Contingency Planning Policy Cyber Incident Response Standard Incident Response Policy
RC.IM-1	Recovery plans incorporate lessons learned					 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	 Computer Security Threat Response Policy Contingency Planning Policy Cyber Incident Response Standard Incident Response Policy
RC.IM-2	Recovery strategies are updated					 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; (ISC)2 (TM) CAP Certification Prep Self Study 2014; Cybersecurity Overview for Managers; CompTIA Advanced Security Practitioner; (ISC)2 (TM) CISSP (R) Certification Prep 2018; 	 Computer Security Threat Response Policy Contingency Planning Policy Cyber Incident Response Standard Incident Response Policy
RC.CO-1	Public relations are managed					 Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy
RC.CO-2	Reputation after an event is repaired					 Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy
RC.CO-3	Recovery activities are communicated to internal stakeholders and executive and management teams					 Foundations of Incident Management; ISACA Certified Information Security Manager (CISM) Prep; Cybersecurity Overview for Managers; (ISC)2 (TM) CISSP (R) Certification Prep 2018; (ISC)2 (TM) CISSP Concentration: ISSEP Prep; (ISC)2(TM) Systems Security Certified Practitioner; 	 Computer Security Threat Response Policy Cyber Incident Response Standard Incident Response Policy