Overview of the Cybersecurity Framework

Implementation of Executive Order 13636

15 January 2015

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Executive Order: Improving Critical Infrastructure Cybersecurity

"It is the policy of the United States to enhance the security and resilience of the Nation's critical infrastructure and to maintain a cyber environment that encourages efficiency, innovation, and economic prosperity while promoting safety, security, business confidentiality, privacy, and civil liberties"

President Barack Obama
Executive Order 13636, *Feb. 12, 2013*

- The National Institute of Standards and Technology (NIST) was directed to work with stakeholders to develop a voluntary framework for reducing cyber risks to critical infrastructure
- Version 1.0 of the framework was released on Feb. 12, 2014, along with a roadmap for future work

Based on the Executive Order, the Cybersecurity Framework Must...

- Include a set of standards, methodologies, procedures, and processes that align policy, business, and technological approaches to address cyber risks
- Provide a prioritized, flexible, repeatable, performance-based, and cost-effective approach, including information security measures and controls, to help owners and operators of critical infrastructure identify, assess, and manage cyber risk
- Identify areas for improvement to be addressed through future collaboration with particular sectors and standards-developing organizations
- Be consistent with voluntary international standards

Development of the Framework

EO 13636 Issued – February 12, 2013
NIST Issues RFI – February 26, 2013
1st Framework Workshop – April 03, 2013

Completed – April 08, 2013
Identify Common Practices/Themes – May 15, 2013

2nd Framework Workshop at CMU – May 2013
Draft Outline of Preliminary Framework – June 2013

3rd Workshop at UCSD – July 2013
4th Workshop at UT Dallas – September 2013

5th Workshop at NC State – November 2013
Published Framework – February 2014

Ongoing Engagement:

Open public comment and review encouraged and promoted throughout the process

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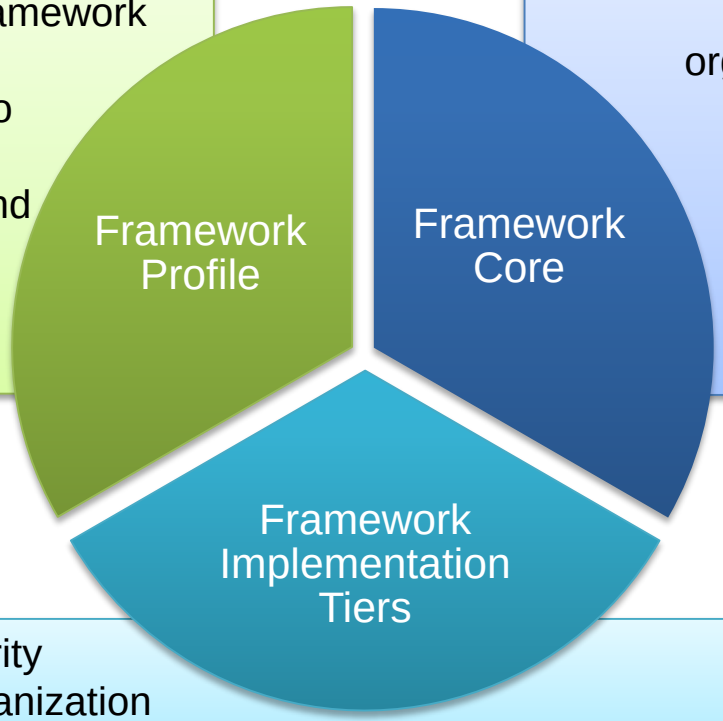
Framework Components

Aligns industry standards and best practices to the Framework Core in a particular implementation scenario

Supports prioritization and measurement while factoring in business needs

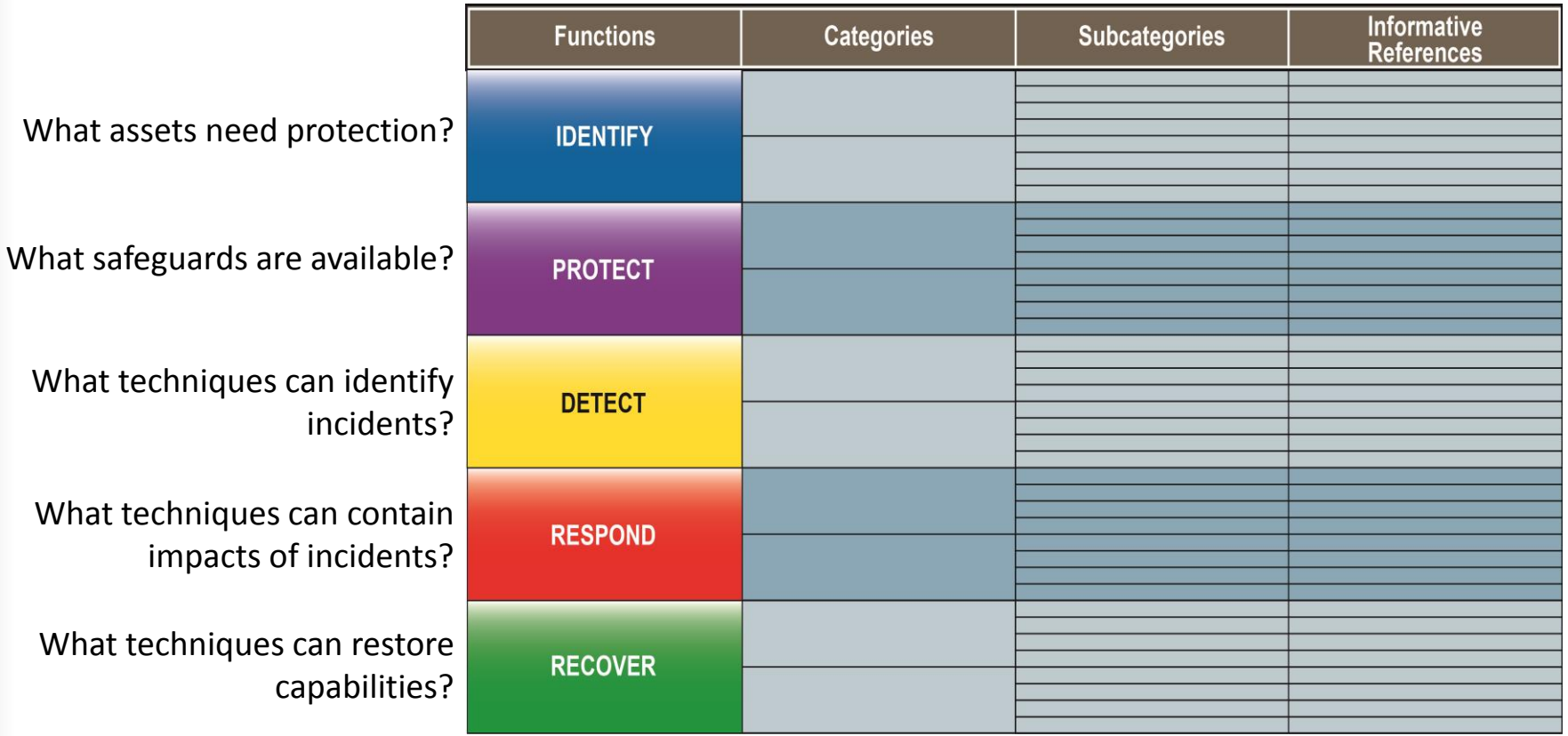


Cybersecurity activities and informative references, organized around particular outcomes

Enables communication of cyber risk across an organization

Describes how cybersecurity risk is managed by an organization and degree the risk management practices exhibit key characteristics

Framework Core



Framework Core - Sample

PROTECT (PR)	**Access Control (PR.AC):** Access to assets and associated facilities is limited to authorized users, processes, or devices, and to authorized activities and transactions.	**PR.AC-1:** Identities and credentials are managed for authorized devices and users	• **CCS CSC** 16 • **COBIT 5** DSS05.04, DSS06.03 • **ISA 62443-2-1:2009** 4.3.3.5.1 • **ISA 62443-3-3:2013** SR 1.1, SR 1.2, SR 1.3, SR 1.4, SR 1.5, SR 1.7, SR 1.8, SR 1.9 • **ISO/IEC 27001:2013** A.9.2.1, A.9.2.2, A.9.2.4, A.9.3.1, A.9.4.2, A.9.4.3 • **NIST SP 800-53 Rev. 4** AC-2, IA Family
		PR.AC-2: Physical access to assets is managed and protected	• **COBIT 5** DSS01.04, DSS05.05 • **ISA 62443-2-1:2009** 4.3.3.3.2, 4.3.3.3.8 • **ISO/IEC 27001:2013** A.11.1.1, A.11.1.2, A.11.1.4, A.11.1.6, A.11.2.3 • **NIST SP 800-53 Rev. 4** PE-2, PE-3, PE-4, PE-5, PE-6, PE-9
		PR.AC-3: Remote access is managed	• **COBIT 5** APO13.01, DSS01.04, DSS05.03 • **ISA 62443-2-1:2009** 4.3.3.6.6 • **ISA 62443-3-3:2013** SR 1.13, SR 2.6 • **ISO/IEC 27001:2013** A.6.2.2, A.13.1.1, A.13.2.1

Framework Profile

- Alignment of Functions, Categories, and Subcategories with business requirements, risk tolerance, and resources of the organization

- Enables organizations to establish a roadmap for reducing cybersecurity risk that is well aligned with organizational and sector goals, considers legal/regulatory requirements and industry best practices, and reflects risk management priorities

- Can be used to describe current state or desired target state of cybersecurity activities

Framework Implementation Tiers

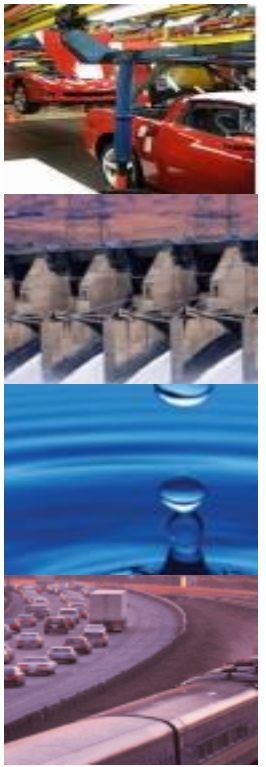
- Feedback indicated the need for the Framework to allow for flexibility in implementation and bring in concepts of maturity models.
- Responding to feedback, Framework Implementation Tiers were proposed to reflect how an organization implements the Framework Core functions and manages its risk.
- The Tiers are progressive, ranging from Partial (Tier 1) to Adaptive (Tier 4), with each Tier building on the previous Tier.
- The Tier characteristics are defined at the organizational level and are applied to the Framework Core to determine how a category is implemented.

Why You Should Consider Adopting the Framework

Benefits	Features
•Reduces time and expense of starting an information security program •Reduces risk within current information security programs by identifying areas for improvement •Increases efficiencies and reduce the possibility of miscommunication within your information security program and with other organizations such as partners, suppliers, regulators, and auditors	•Organizes reconciliation and de-confliction of legislation, regulation, policy, and industry best practice (Core) •Guides organization and management of and information security program (Core) •Measures current state and expresses desired state (Profile) •Enables investment decisions to address gaps in current state (Profile) •Communicates cybersecurity requirements with stakeholders, including partners and suppliers (Profile) •Enables informed trade-off analysis of expenditure versus risk (Tiers)

Near Term Framework Activities

- Continue education efforts, including creation of self-help and re-use materials for those who are new to the Framework
- Continue awareness and outreach with an eye toward industry communities who are still working toward basal Framework knowledge and implementation
- Educate on the relationship between Framework and the larger risk management process, including how organizations can use Tiers
- To allow for adoption, Framework version 2.0 is not planned for the near term



Key Points about the Framework

- **It's a framework, not a prescription**
  - It provides a common language and systematic methodology for managing cyber risk
  - It does not tell a company *how* much cyber risk is tolerable, nor does it claim to provide "the one and only" formula for cybersecurity
  - Having a common lexicon to enable action across a very diverse set of stakeholders will enable the best practices of elite companies to become standard practices for everyone
- **The framework is a living document**
  - It is intended to be updated over time as stakeholders learn from implementation, and as technology and risks change
  - That's one reason why the framework focuses on questions an organization needs to ask itself to manage its risk. While practices, technology, and standards will change over time—principals will not

Where to Learn More and Stay Current

The *Framework for Improving Critical Infrastructure Cybersecurity*, the *Roadmap*, and related news and information are available at:
http://www.nist.gov/cyberframework

Email: cyberframework@nist.gov