Quantifying Cross Sector Cyber Performance Goals (CPGs)

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CISA CPGs Promise to Deliver

The community is excited about CPG application in terms of:

- Establishing baseline practices to reduce risk exposure
- Benchmarking for improved maturity
- Prioritizing security practices
- May lead to a greater understanding of aggregate risk to the nation

Challenges for community acceptance may include:

- Currently voluntary
- **Estimates of cost, complexity, and impact provided**
- Approaches for quantification may vary based on context

Quantification Raises Confidence

Quantification of **cost, complexity, and impact** would make the CPG framework more robust

- Of the **36 sub-elements distributed over the 7 process areas**, a uniform standard of measurement would provide:
  - Consistent basis for analysis
  - Equivalent comparison that enables prioritization of resources

Possible approach:

1. **Define** each metric explicitly to include means of measurement
2. **Establish a scoring scheme** that aligns measures with current scale
3. **Benchmark** scoring with existing industry best practices
4. Periodically refine and **update** scores with evolution of TTPs and technology

Quantification Raises Confidence (continued)

Cost

- Survey of commercial off the shelf tools, cybersecurity professional average salaries, and other related factors would provide quantified ranges of control costs
  - Total cost that spans the life of the control should be considered to enable organizational asset planning and management
- Improved cost estimates may inform procurement planning and prioritization

Cost Approach Use Case Example

Define – "COST" score shall include initial investment in procurement, install, and training

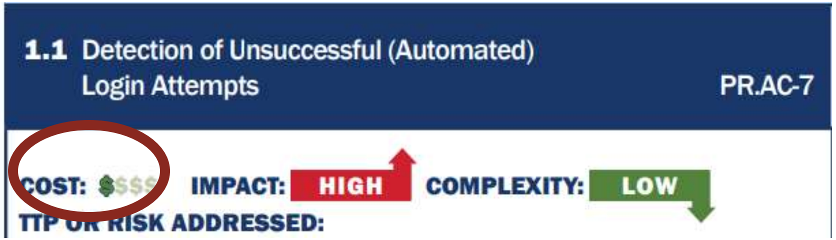
Establish Scoring Scheme – notional tolerance bands could include

- $ = less than $100K
- $$ = $100K - $1M
- $$$ = $1M - $10M
- $$$$ = greater than $10M

These values may scale to context of the organization.

Benchmark – survey top three off the shelf solutions across at least three sectors

Update – periodic updates plus specific circumstances that would require update



1.1 Detection of Unsuccessful (Automated) Login Attempts PR.AC-7

COST: $$$$ **IMPACT:** HIGH **COMPLEXITY:** LOW

TTP OR RISK ADDRESSED:

Quantification Raises Confidence (continued)

Impacts

- Several frameworks and methodologies exist for quantifying risk impacts, yet few help with control efficacy
- For the CPG framework, the goal would involve a survey of most risk incidents to determine potential efficacy of practice suggested
- Must consider primary impacts as well as secondary
  - Various response strategies suggested by the CPGs may overlap or amplify each other
  - For example, 7.2 Incident Response Plans may be enhanced with 4.3 and 4..4 Cybersecurity Training

Impact Approach Use Case Example

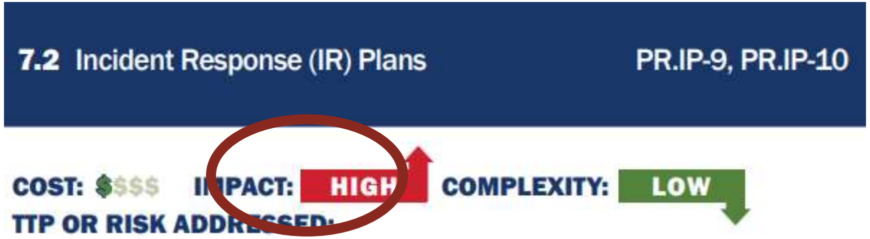
Define – “IMPACT” score includes consideration of control effect compared to potential loss

Establish Scoring Scheme – notional tolerance bands could include

- High – No more than 4 hours of operational downtime per year
- Medium – Between 4 – 24 hours of downtime per year
- Low – Greater than 24 hours of downtime despite practice in place

Benchmark – survey of sector SOCs for downtime despite practice in place

Update – periodic updates plus specific circumstances that would require update



7.2 Incident Response (IR) Plans PR.IP-9, PR.IP-10

COST: $$$$ IMPACT: HIGH COMPLEXITY: LOW

TTP OR RISK ADDRESSED:

Quantification Raises Confidence (continued)

Complexity

- Maya be based on several fundamental pillars
- **NOTE:** not all may be applicable in the CPG context
  - Network traffic
  - Organizational Capability
  - Technical Debt
  - Supply Chain and Third-Party Providers
  - Resources
- Complexity may inform upon implementation and usage challenges

Complexity Approach Use Case Example

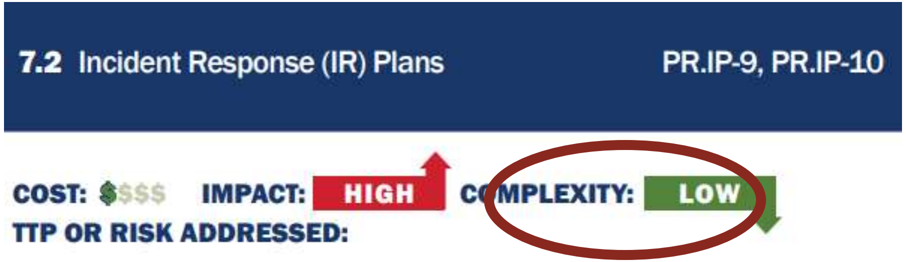
Define – “COMPLEXITY” score includes consideration of system burden despite practice implementation, ease of implementation, and potential for errors (e.g., Tech debt, configuration, etc.)

Establish Scoring Scheme – notional tolerance bands could include

- High – Implementation could take up to a year or more
- Medium – Implementation could take up to 6 months to a year
- Low – Less than 6 months to implement

Benchmark – compare with other analogous system implementation efforts

Update – periodic updates plus specific circumstances that would require update



7.2 Incident Response (IR) Plans PR.IP-9, PR.IP-10

COST: $$$$ IMPACT: HIGH COMPLEXITY: LOW

TTP OR RISK ADDRESSED:

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