It's All About the Bottom Line: Winning the ICM through Showmanship, Low Expectations, and the CIA

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Cost Equation

$$AttackCost =$$
$$years \cdot \left(\frac{BaselineCostC}{\prod_{i=1}^{i=n} dC_i} + \frac{BaselineCostI}{\prod_{i=1}^{i=n} dI_i} \right.$$
$$\left. + \frac{BaselineCostA}{\prod_{i=1}^{i=n} dA_i} \right)$$

$$SunkCost =$$
$$\sum_{i=1}^{n} \left(procureCost + maintCost + trainCost \right)$$
$$+ years \cdot \left(\frac{BaselineValueP}{\prod_{i=1}^{n} dP} \right.$$
$$\left. - BaselineValueP \right)$$

Algorithms

- **Cherry Picking**

  – Iteratively pick the most profitable security measures

  – Stop when there are no more profitable security measures or the security budge is exceeded

- **Reduced Brute Force**

  – Remove any security measures that are non-profitable on their own

  – Find the optimal configuration of the remaining security measures with brute force search

Results

Sunk Cost Vs. Attack Cost
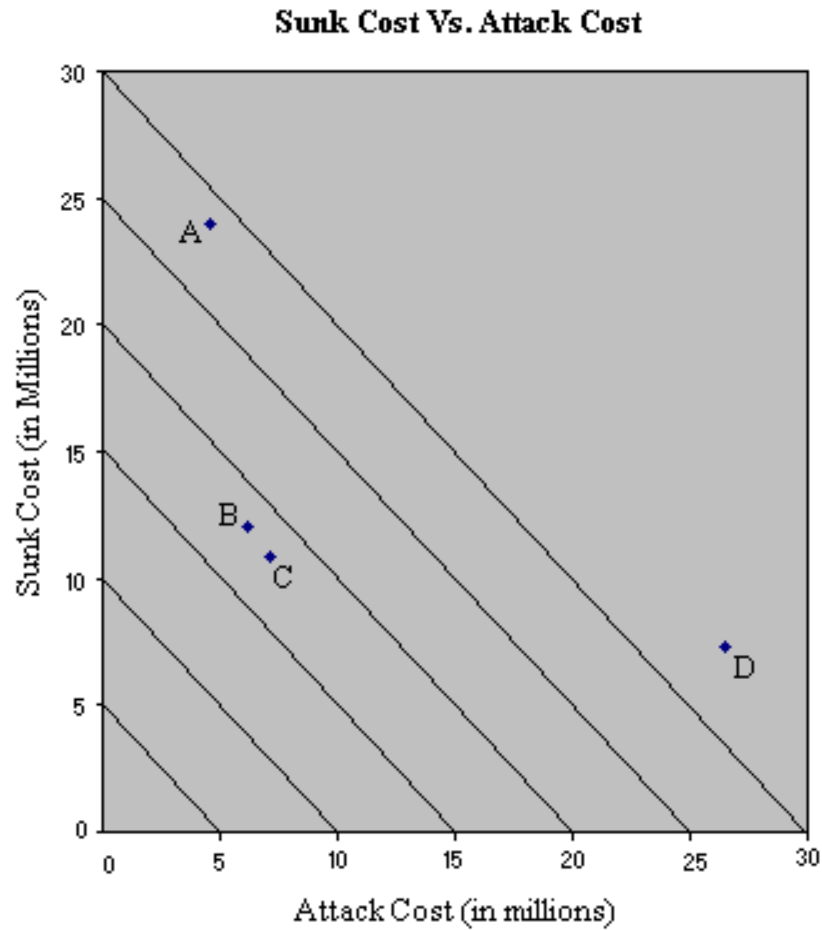
- Diagonal lines are of points with equal cost.

- Point A = min attack cost

- Point B = Cherry Picking

- Point C = Reduced Brute Force

- Point D = min sunk cost

Analysis

Attack Cost vs Sunk Cost - Varied Attack Rates
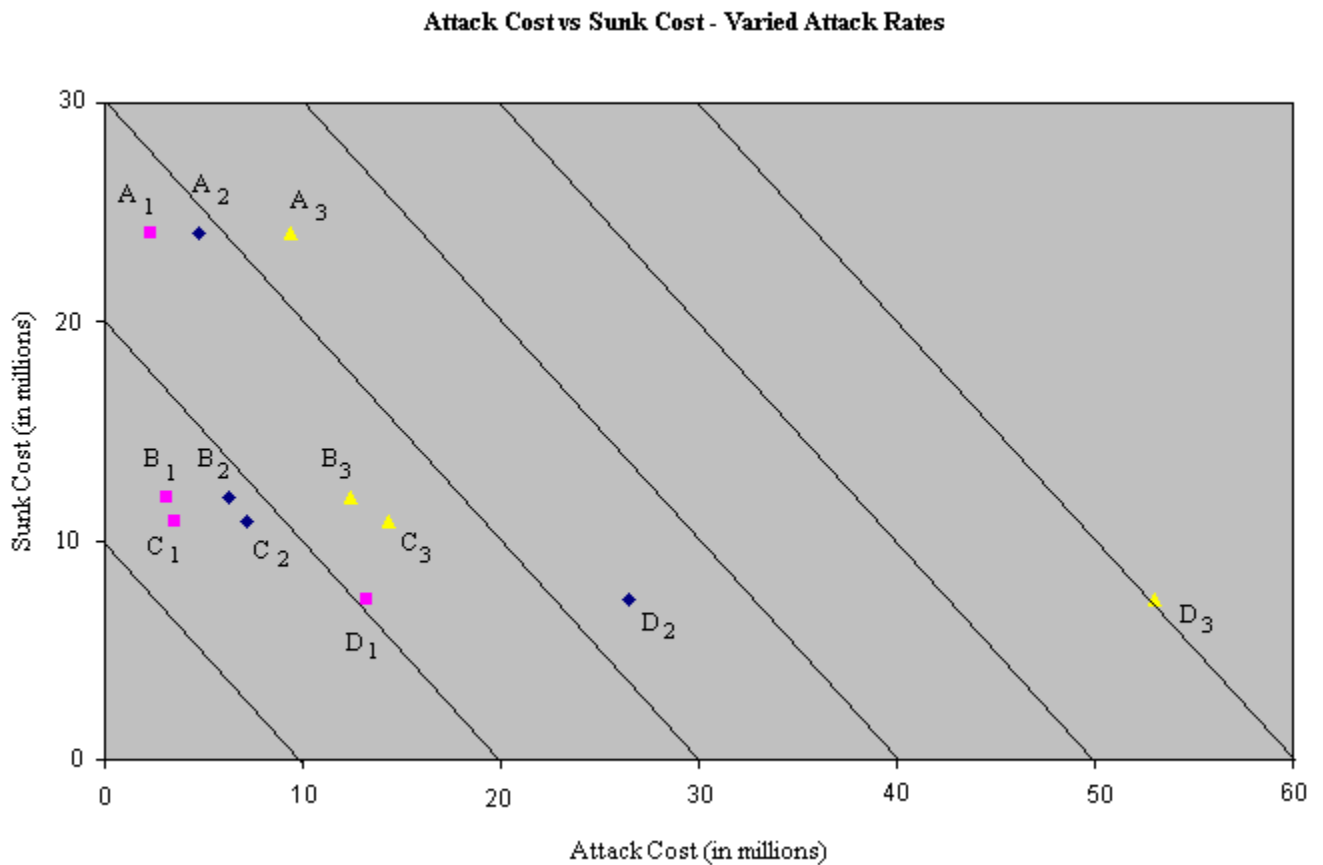
- Points A, B, C and D are as before.

- Subscript 1 = half attack cost

- Subscript 2 = normal attack cost

- Subscript 3 = twice attack cost

Critique

- The problem statement should be concise

MCM A

It is a commonplace belief that the thumbprint of every human who has ever lived is different. Develop and analyze a model that will allow you to assess the probability that this is true. Compare the odds (that you found in this problem) of misidentification by fingerprint evidence against the odds of misidentification by DNA evidence.

MCM B

"QuickPass" systems are increasingly appearing to reduce people's time waiting in line, whether it is at tollbooths, amusement parks, or elsewhere. Consider the design of a QuickPass system for an amusement park. The amusement park has experimented by offering QuickPasses for several popular rides as a test. The idea is that for certain popular rides you can go to a kiosk near that ride and insert your daily park entrance ticket, and out will come a slip that states that you can return to that ride at a specific time later. For example, you insert your daily park entrance ticket at 1:15 pm, and the QuickPass states that you can come back between 3:30 and 4:30 pm when you can use your slip to enter a second, and presumably much shorter, line that will get you to the ride faster. To prevent people from obtaining QuickPasses for several rides at once, the QuickPass machines allow you to have only one active QuickPass at a time.

You have been hired as one of several competing consultants to improve the operation of QuickPass. Customers have been complaining about some anomalies in the test system. For example, customers observed that in one instance QuickPasses were being offered for a return time as long as 4 hours later. A short time later on the same ride, the QuickPasses were given for times only an hour or so later. In some instances, the lines for people with Quickpasses are nearly as long and slow as the regular lines.

The problem then is to propose and test schemes for issuing QuickPasses in order to increase people's enjoyment of the amusement park. Part of the problem is to determine what criteria to use in evaluating alternative schemes. Include in your report a non-technical summary for amusement park executives who must choose between alternatives from competing consultants.

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You probably know about computer hackers and computer viruses. Unless your computer has been targeted by one, you may not know how they could affect an individual or an organization. If a computer is attacked by a hacker or virus, it could lose important personal information and software.

The creation of a new university campus is being considered. Your requirement is to model the risk assessment of information technology (IT) security for this proposed university. The narrative below provides some background to help develop a framework to examine IT security. Specific tasks are provided at the end of this narrative.

Computer systems are protected from malicious activity through multiple layers of defenses. These defenses, including both policies and technologies (Figure 1), have varying effects on the organization's risk categories (Figure 2).
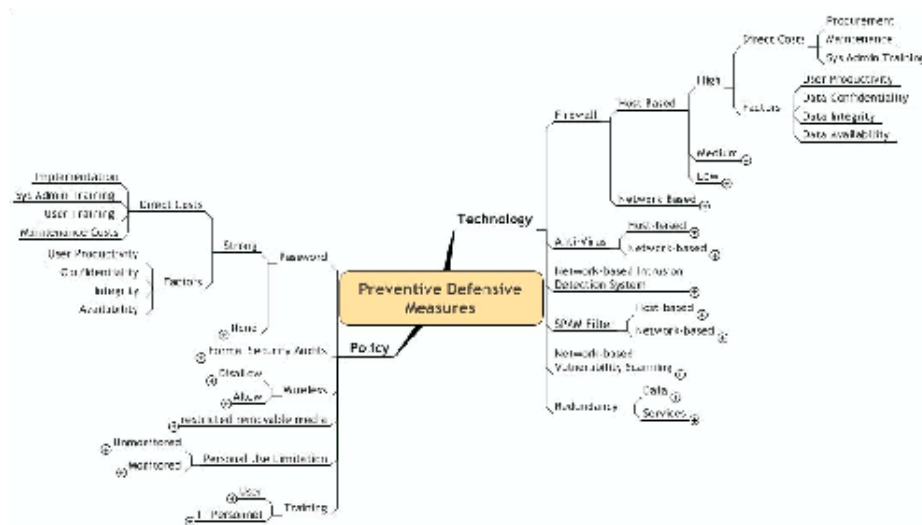
Figure 1 – Preventative Defensive Measures

Management and usage policies address how users interact with the organization's computers and networks and how people (system administrators) maintain the network. Policies may include password requirements, formal security audits, usage tracking, wireless device usage, removable media concerns, personal use limitations, and user training. An example password policy would include requirements for the length and characters used in the password, how frequently they must be changed, and the number of failed login attempts allowed. Each policy solution has direct costs associated with its implementation and factors that impact productivity and security. In Figure 1, only the topmost branch is fully detailed. The structure is replicated for each branch.

The second aspect of a security posture is the set of technological solutions employed to detect, mitigate, and defeat unauthorized activity from both internal and external users. Technology solutions cover both software

and hardware and include intrusion detection systems (IDS), firewalls, anti-virus systems, vulnerability scanners, and redundancy. As an example, IDS monitors and records significant events on a specific computer or from the network examining data and providing an "after the fact" forensic ability to identify suspect activity. SNORT (www.snort.org) is a popular IDS solution. Figure 1 provides a sample of key defensive measures (management/usage policies and technology solutions). As with a policy, a technology solution also has direct costs, as well as factors that impact productivity and security.

Sources of risk to information security include, but are not limited to, people or hardware within or outside the organization (Figure 2). Different preventive defensive measures (Figure 1) may be more effective against an insider threat than a threat from a computer hacker. Additionally, an external threat may vary in motivation, which could also indicate different security measures. For example, an intruder who is trying to retrieve proprietary data or customer databases probably should be combated much differently from an intruder who is trying to shut down a network.

Potential costs due to information security that an organization may face (Figure 2) include opportunity cost, people, and the cost of preventative defensive measures. Significant opportunity costs include: litigation damages, loss of proprietary data, consumer confidence, loss of direct revenue, reconstruction of data, and reconstruction of services. Each cost varies based on the profile of the organization. For example, a health care component of the university might have a greater potential for loss due to litigation or availability of patient medical records than with reconstruction of services.
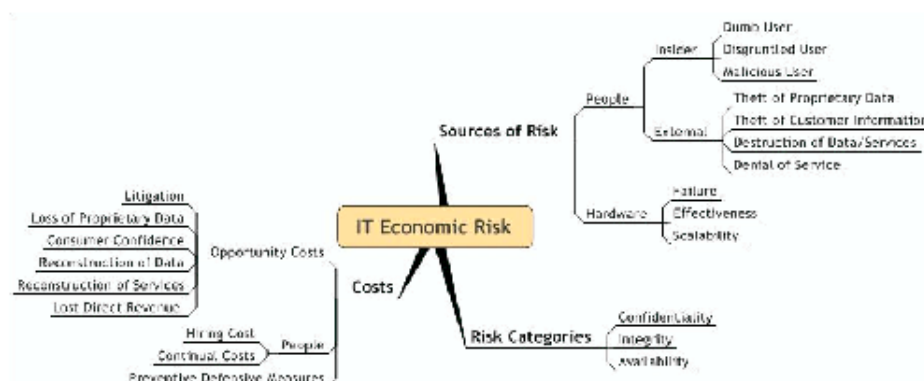
Figure 2 - Economic Risk schematic for IT systems

An organization can evaluate potential opportunity costs through a risk analysis. Risks can be broken down into three risk categories; *confidentiality*, *integrity*, and *availability*. Combined, these categories define the organization's security posture. Each of the categories has different impacts on cost depending on the mission and requirements of the organization. *Confidentiality* refers to the protection of data from release to sources that are not authorized with access. A health care organization could face significant litigation if health care records were inadvertently released or stolen. The *integrity* of the data refers to the unaltered state of the data. If an intruder modifies pricing information for certain products or deletes entire data sets, an organization would face costs associated with correcting transactions affected by the erroneous data, the costs associated with reconstructing the correct values, and possible loss of consumer confidence and revenue. Finally, *availability*

refers to resources being available to an authorized user, including both data and services. This risk can manifest itself financially in a similar manner as confidentiality and integrity

Each measure implemented to increase the security posture of an organization will impact each of the three risk categories (either positively or negatively). As each new defensive security measure is implemented, it will change the current security posture and subsequently the potential opportunity costs. A complicated problem faced by organizations is how to balance their potential opportunity costs against the expense of securing their IT infrastructure (preventative defensive measures).

Task 1: You have been tasked by the Rite-On Consulting Firm to develop a model that can be used to determine an appropriate policy and the technology enhancements for the proper level of IT security within a new university campus. The immediate need is to determine an optimal mix of preventive defensive measures that minimizes the potential opportunity costs along with the procurement, maintenance, and system administrator training costs as they apply to the opening of a new private university. Rite-On contracted technicians to collect technical specifications on current technologies used to support IT security programs. Detailed technical data sheets that catalog *some* possible defensive measures are contained in Enclosures A and B. The technician who prepared the data sheets noted that as you combine defensive measures, the cumulative effects within and between the categories confidentiality, integrity, and availability cannot just be added.

The proposed university system has 10 academic departments, a department of intercollegiate athletics, an admissions office, a bookstore, a registrar's office (grade and academic status management), and a dormitory complex capable of housing 15,000 students. The university expects to have 600 staff and faculty (non IT support) supporting the daily mission. The academic departments will maintain 21 computer labs with 30 computers per lab, and 600 staff and faculty computers (one per employee). Each dorm room is equipped with two (2) high speed connections to the university network. It is anticipated that each student will have a computer. The total computer requirements for the remaining department/agencies cannot be anticipated at this time. It is known that the bookstore will have a Web site and the ability to sell books online. The Registrar's office will maintain a Web site where students can check the status of payments and grades. The admissions office, student health center, and the athletic department will maintain Web sites.

The average administrative employee earns $38,000 per year and the average faculty employee earns $77,000 per year. Current industry practice employs three to four system administrators (sys admin) per sub-network and there is typically one (1) sys admin (help desk support) employee per 300 computers. Additionally, each separate system of computers (for web hosting or data management) is typically managed by one (1) sys admin person.

The current opportunity cost projection (due to IT) with no defensive measures is shown in Table 1. The contribution of various risk categories (Confidentiality Integrity, and Availability) to a given cost is also shown in Table 1.

Table 1: Current Opportunity costs and Risk Category contributions

Opportunity Cost (due to IT)	Amount	Risk Category Contribution
Litigation	$3,800,000	C (55%), I (45%)
Proprietary Data loss	$1,500,000	C (70%), I (30%)
Consumer confidence	$2,900,000	C (40%), I (30%), A (30%)
Data Reconstruction	$400,000	I (100%)
Service Reconstruction	$80,000	I (100%)
Direct Revenue Loss	$250,000	I (30%), A (70%)

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Task 2: We know that technical specifications will change rapidly over time. However, the relations and interplay among costs, risk categories, and sources of risk will tend to change more slowly. Create a model for the problem in Task 1 that is flexible enough to adapt to changing technological capabilities and can be applied to different organizations.

Carefully describe the assumptions that you make in designing the model. In addition, provide an example of how the university will be able to use your model to initially determine and then periodically update their IT security system.

Task 3: Prepare a three page position paper to the university President that describes the strengths, weakness, and flexibility of your model in Task 2. In addition, explain what can be inferred and what should not be inferred from your model.

Task 4: Explain the differences that may exist in the initial Risk Category Contributions (Table 1) if you model IT security for a commercial company that provides a search engine for the World Wide Web (such as Google, Yahoo, AltaVista, …). Will your model work for this type of organization?

Task 5: Honeynets are designed to gather extensive information on IT security threats. Write a two-page memo to your supervisor advising whether a university or a search engine company should consider using a honeynet.

Task 6: To become a leader in IT security consulting, Rite-On Consulting must also take an active role in anticipating the future direction of information technology and advising companies on how to respond to future security risks. After performing your analysis, write a two-page memo to the President of Rite-On to inform him of the future of IT security. In addition, describe how your model can be used to anticipate and respond to the uncertain future.

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Technology -
Preventive
Defensive
Measure

Enclosure A

How to read this table: The Qualitative Values are a judgment based on the assessment from industry experts on the tools' effectiveness. Each defensive measure has several instances that vary in costs and effectiveness. The Low, Mean, and High values represent a characterization of reviews found in different consumer review periodicals as they relate to user productivity, confidentiality, integrity, and availability. The variability indicates the concentration of the data about the mean. The Low and High are the minimum and maximum possible values, respectively. Costs are in U.S. dollars. A factor value of 5.00% indicates an improvement of 5%. A value of -5.00% indicates that the factor is degraded by 5%. These values are modifiers to the existing levels. For example from a base Confidentiality level of .8 a factor value of -25% would result in a new Confidentiality factor of 0.8 - (0.8*0.25) = 0.6. A positive value results in a positive change in the factor.

| | | | Quantitative Values | | | |
			Low	Mean	High	Variability
Host-based Firewall						
	Intelli-Scan	Direct Costs				
		Procurement/computer	n/a	$ 45.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	-2.00%	-1.00%	0.00%	Low
		Confidentiality	9.00%	28.00%	38.00%	High
		Integrity	9.00%	28.00%	38.00%	High
		Availability	9.00%	18.00%	28.00%	Med
	Shield	Direct Costs				
		Procurement/computer	n/a	$ 50.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	-5.00%	-2.00%	0.00%	Low
		Confidentiality	10.00%	20.00%	25.00%	Low
		Integrity	8.00%	15.00%	18.00%	Low
		Availability	7.00%	10.00%	20.00%	Low
	Lava	Direct Costs				
		Procurement/computer	n/a	$ 35.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	-3.00%	-2.00%	0.00%	Low
		Confidentiality	3.00%	28.00%	35.00%	High
		Integrity	4.00%	28.00%	40.00%	High
		Availability	2.00%	18.00%	30.00%	High
	Protect IT	Direct Costs				
		Procurement/computer	n/a	$ 40.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	-6.00%	-3.00%	0.00%	Low
		Confidentiality	9.00%	20.00%	25.00%	Med
		Integrity	9.00%	20.00%	25.00%	Med
		Availability	9.00%	20.00%	25.00%	Med
	Blockade	Direct Costs				
		Procurement/computer	n/a	$ 30.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	-5.00%	-3.00%	0.00%	Low
		Confidentiality	9.00%	20.00%	25.00%	Med
		Integrity	9.00%	20.00%	25.00%	Med
		Availability	9.00%	20.00%	25.00%	Med

Blocker	Direct Costs				
		Procurement/computer	n/a	$ 15.00	n/a
		Maintenance/year/computer	n/a	$ -	n/a
		Training/year/sys admin	n/a	$ 1,000.00	n/a
	Factors				
		User Productivity	-10.00%	-5.00%	0.00%	Low
		Confidentiality	2.00%	10.00%	30.00%	High
		Integrity	1.00%	10.00%	25.00%	Med
		Availability	1.00%	5.00%	17.00%	Med
Watertight	Direct Costs				
		Procurement/computer	n/a	$ 10.00	n/a
		Maintenance/year/computer	n/a	$ -	n/a
		Training/year/sys admin	n/a	$ 1,000.00	n/a
	Factors				
		User Productivity	-5.00%	-3.00%	0.00%	Low
		Confidentiality	9.00%	20.00%	25.00%	Med
		Integrity	9.00%	20.00%	25.00%	Med
		Availability	9.00%	20.00%	25.00%	Med
Barrier	Direct Costs				
		Procurement/computer	n/a	$ 10.00	n/a
		Maintenance/year/computer	n/a	$ -	n/a
		Training/year/sys admin	n/a	$ 1,000.00	n/a
	Factors				
		User Productivity	-4.00%	-3.00%	-2.00%	Low
		Confidentiality	9.00%	21.00%	20.00%	Low
		Integrity	10.00%	19.00%	23.00%	Low
		Availability	7.00%	20.00%	27.00%	Med

Network-based Firewall

Enterprise Solution	Direct Costs				
		Procurement	n/a	$ 15,000.00	n/a
		Maintenance/year/computer	n/a	$ 2,000.00	n/a
		Training/year/sys admin	n/a	$ 4,000.00	n/a
	Factors				
		User Productivity	-15.00%	-5.00%	0.00%	Med
		Confidentiality	10.00%	30.00%	40.00%	High
		Integrity	10.00%	30.00%	40.00%	High
		Availability	10.00%	20.00%	30.00%	Med
Network defense	Direct Costs				
		Procurement	n/a	$ 17,500.00	n/a
		Maintenance/year/computer	n/a	$ 1,500.00	n/a
		Training/year/sys admin	n/a	$ 4,000.00	n/a
	Factors				
		User Productivity	-10.00%	-4.00%	0.00%	Low
		Confidentiality	15.00%	30.00%	40.00%	Med
		Integrity	19.00%	30.00%	50.00%	High
		Availability	9.00%	20.00%	30.00%	Med
System Inoc	Direct Costs				
		Procurement	n/a	$ 10,000.00	n/a
		Maintenance/year/computer	n/a	$ 1,000.00	n/a
		Training/year/sys admin	n/a	$ 4,000.00	n/a
	Factors				
		User Productivity	-15.00%	-5.00%	0.00%	Med
		Confidentiality	5.00%	20.00%	40.00%	High
		Integrity	2.00%	15.00%	40.00%	High
		Availability	18.00%	20.00%	30.00%	High
Protection	Direct Costs				
		Procurement	n/a	$ 10,000.00	n/a
		Maintenance/year/computer	n/a	$ 1,500.00	n/a
		Training/year/sys admin	n/a	$ 2,000.00	n/a
	Factors				
		User Productivity	-0.11	-0.05	0	Low
		Confidentiality	0.1	0.25	0.3	Low
		Integrity	0.1	0.25	0.3	Low
		Availability	0.1	0.13	0.2	Low

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Acera	Direct Costs					
		Procurement	n/a	$ 15,000.00	n/a	
		Maintenance/year/computer	n/a	$ 3,000.00	n/a	
		Training/year/sys admin	n/a	$ 2,500.00	n/a	
	Factors					
		User Productivity	-70.00%	-5.00%	0.00%	High
		Confidentiality	10.00%	25.00%	30.00%	Med
		Integrity	10.00%	25.00%	30.00%	Med
		Availability	10.00%	13.00%	20.00%	Low
Plunger	Direct Costs					
		Procurement	n/a	$ 12,500.00	n/a	
		Maintenance/year/computer	n/a	$ 1,500.00	n/a	
		Training/year/sys admin	n/a	$ 2,000.00	n/a	
	Factors					
		User Productivity	-0.11	-0.05	0	Low
		Confidentiality	0.1	0.25	0.3	Low
		Integrity	0.1	0.25	0.3	Low
		Availability	0.1	0.13	0.2	Low
Firebase	Direct Costs					
		Procurement	n/a	$ 5,000.00	n/a	
		Maintenance/year/computer	n/a	$ 1,000.00	n/a	
		Training/year/sys admin	n/a	$ 2,500.00	n/a	
	Factors					
		User Productivity	-9.00%	-5.00%	0.00%	Med
		Confidentiality	5.00%	10.00%	20.00%	Med
		Integrity	5.00%	10.00%	20.00%	Med
		Availability	1.00%	5.00%	13.00%	Med
Enterprise Lava	Direct Costs					
		Procurement	n/a	$ 2,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 3,500.00	n/a	
	Factors					
		User Productivity	-11.00%	-7.00%	0.00%	Med
		Confidentiality	2.00%	10.00%	20.00%	Med
		Integrity	3.00%	10.00%	20.00%	Med
		Availability	1.00%	5.00%	13.00%	Med
Draco	Direct Costs					
		Procurement	n/a	$ 3,000.00	n/a	
		Maintenance/year/computer	n/a	$ 500.00	n/a	
		Training/year/sys admin	n/a	$ 2,500.00	n/a	
	Factors					
		User Productivity	-11.00%	-7.00%	0.00%	Med
		Confidentiality	2.00%	18.00%	20.00%	Med
		Integrity	3.00%	17.00%	20.00%	Med
		Availability	1.00%	10.00%	13.00%	Low
Host-based Anti-Virus						
Bug Killer	Direct Costs					
		Procurement/computer	n/a	$ 20.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-5.00%	-2.00%	0.00%	Low
		Confidentiality	9.00%	28.00%	38.00%	High
		Integrity	9.00%	28.00%	38.00%	High
		Availability	9.00%	18.00%	28.00%	Med
Anti-V	Direct Costs					
		Procurement/computer	n/a	$ 12.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-3.00%	-1.00%	0.00%	Low
		Confidentiality	10.00%	29.00%	32.00%	Med
		Integrity	12.00%	25.00%	40.00%	High
		Availability	9.00%	18.00%	24.00%	Med

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Insecticide	Direct Costs					
		Procurement/computer	n/a	$ 8.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-6.00%	-3.00%	0.00%	Low
		Confidentiality	9.00%	20.00%	25.00%	Med
		Integrity	9.00%	20.00%	25.00%	Med
		Availability	9.00%	20.00%	25.00%	Med
Smasher	Direct Costs					
		Procurement/computer	n/a	$ 10.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-8.00%	-3.00%	0.00%	Low
		Confidentiality	5.00%	20.00%	23.00%	Med
		Integrity	2.00%	10.00%	20.00%	Med
		Availability	9.00%	18.00%	25.00%	Med
Stomper	Direct Costs					
		Procurement/computer	n/a	$ 5.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-9.00%	-5.00%	0.00%	Med
		Confidentiality	5.00%	10.00%	20.00%	Med
		Integrity	5.00%	10.00%	20.00%	Med
		Availability	1.00%	5.00%	13.00%	Low
The Swatter	Direct Costs					
		Procurement/computer	n/a	$ 8.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-9.00%	-5.00%	0.00%	Med
		Confidentiality	15.00%	19.00%	20.00%	Med
		Integrity	15.00%	18.00%	19.00%	Low
		Availability	1.00%	5.00%	13.00%	Med
McKiller	Direct Costs					
		Procurement/computer	n/a	$ 8.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-11.00%	-5.00%	0.00%	Med
		Confidentiality	15.00%	19.00%	23.00%	Med
		Integrity	15.00%	16.00%	18.00%	Med
		Availability	1.00%	6.00%	10.00%	Med
Fogger	Direct Costs					
		Procurement/computer	n/a	$ 3.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-11.00%	-5.00%	0.00%	Med
		Confidentiality	15.00%	19.00%	23.00%	Low
		Integrity	15.00%	16.00%	18.00%	Low
		Availability	1.00%	6.00%	10.00%	Med
Innoculator	Direct Costs					
		Procurement/computer	n/a	$ 5.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-11.00%	-5.00%	0.00%	Med
		Confidentiality	10.00%	16.00%	22.00%	Med
		Integrity	5.00%	10.00%	11.00%	Low
		Availability	1.00%	6.00%	10.00%	Med

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Network-based Anti-Virus						
Enterprise Stopper	Direct Costs					
		Procurement	n/a	$ 4,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 3,000.00	n/a	
	Factors					
		User Productivity	-15.00%	-5.00%	0.00%	Med
		Confidentiality	10.00%	30.00%	40.00%	High
		Integrity	10.00%	30.00%	40.00%	High
		Availability	10.00%	20.00%	30.00%	Med
System Splatter	Direct Costs					
		Procurement	n/a	$ 1,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 2,500.00	n/a	
	Factors					
		User Productivity	-8.00%	-5.00%	0.00%	Low
		Confidentiality	10.00%	30.00%	35.00%	Med
		Integrity	12.00%	30.00%	41.00%	Med
		Availability	9.00%	20.00%	28.00%	Med
Enterprise Inoculation	Direct Costs					
		Procurement	n/a	$ 600.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 3,000.00	n/a	
	Factors					
		User Productivity	-15.00%	-5.00%	0.00%	Med
		Confidentiality	10.00%	30.00%	36.00%	Med
		Integrity	12.00%	30.00%	35.00%	Med
		Availability	9.00%	20.00%	21.00%	Med
Global Protect	Direct Costs					
		Procurement	n/a	$ 400.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 4,000.00	n/a	
	Factors					
		User Productivity	-11.00%	-5.00%	0.00%	Med
		Confidentiality	10.00%	25.00%	30.00%	Med
		Integrity	10.00%	25.00%	30.00%	Med
		Availability	10.00%	13.00%	20.00%	Low
Bug Zapper	Direct Costs					
		Procurement	n/a	$ 600.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-11.00%	-8.00%	0.00%	Med
		Confidentiality	5.00%	25.00%	30.00%	Med
		Integrity	7.00%	25.00%	31.00%	Med
		Availability	11.00%	13.00%	20.00%	Med
Enterprise Stomper	Direct Costs					
		Procurement	n/a	$ 300.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-9.00%	-4.00%	0.00%	Med
		Confidentiality	20.00%	25.00%	30.00%	Med
		Integrity	9.00%	20.00%	28.00%	Med
		Availability	11.00%	13.00%	19.00%	Low
Enterprise Fogger	Direct Costs					
		Procurement	n/a	$ 400.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 3,000.00	n/a	
	Factors					
		User Productivity	-11.00%	-8.00%	0.00%	Med
		Confidentiality	5.00%	25.00%	30.00%	Med
		Integrity	7.00%	25.00%	31.00%	Med
		Availability	11.00%	13.00%	20.00%	Med

	System fixer	Direct Costs					
			Procurement	n/a	$ 250.00	n/a	
			Maintenance/year/computer	n/a	$ -	n/a	
			Training/year/sys admin	n/a	$ 750.00	n/a	
		Factors					
			User Productivity	-11.00%	-5.00%	0.00%	Med
			Confidentiality	2.00%	10.00%	20.00%	Med
			Integrity	5.00%	9.00%	21.00%	Med
			Availability	2.00%	3.00%	11.00%	Low
	System Doctor	Direct Costs					
			Procurement	n/a	$ 300.00	n/a	
			Maintenance/year/computer	n/a	$ -	n/a	
			Training/year/sys admin	n/a	$ 1,500.00	n/a	
		Factors					
			User Productivity	-6.00%	-2.00%	0.00%	Low
			Confidentiality	4.00%	10.00%	15.00%	Low
			Integrity	5.00%	7.00%	15.00%	Low
			Availability	1.00%	5.00%	13.00%	Low
	Blue Sky	Direct Costs					
			Procurement	n/a	$ 400.00	n/a	
			Maintenance/year/computer	n/a	$ -	n/a	
			Training/year/sys admin	n/a	$ 2000.00	n/a	
		Factors					
			User Productivity	-5.00%	-2.00%	-1.00%	Low
			Confidentiality	3.00%	10.00%	14.00%	Low
			Integrity	1.00%	2.00%	9.00%	Low
			Availability	1.00%	12.00%	13.00%	Low
	Acer Security	Direct Costs					
			Procurement	n/a	$ 300.00	n/a	
			Maintenance/year/computer	n/a	$ -	n/a	
			Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors					
			User Productivity	-9.00%	-5.00%	0.00%	Med
			Confidentiality	5.00%	10.00%	20.00%	Med
			Integrity	5.00%	10.00%	20.00%	Med
			Availability	1.00%	5.00%	13.00%	Low
	Protection	Direct Costs					
			Procurement	n/a	$ 250.00	n/a	
			Maintenance/year/computer	n/a	$ -	n/a	
			Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors					
			User Productivity	-11.00%	-9.00%	0.00%	Med
			Confidentiality	4.00%	10.00%	20.00%	Med
			Integrity	2.00%	10.00%	19.00%	Med
			Availability	0.00%	5.00%	15.00%	Med
Network-based Intrusion Detection System							
	Data Watcher	Direct Costs					
			Procurement	n/a	$ 19000.00	n/a	
			Maintenance/year/computer/as	n/a	$ 50.00	n/a	
			Training/year/sys admin	n/a	$ 5000.00	n/a	
		Factors					
			User Productivity	-10.00%	-5.00%	0.00%	Low
			Confidentiality	10.00%	20.00%	30.00%	Med
			Integrity	18.00%	20.00%	30.00%	Low
			Availability	10.00%	20.00%	30.00%	Med
	Data Inc	Direct Costs					
			Procurement	n/a	$ 20,000.00	n/a	
			Maintenance/year/computer/as	n/a	$ 100.00	n/a	
			Training/year/sys admin	n/a	$ 7,000.00	n/a	
		Factors					
			User Productivity	-11.00%	-9.00%	-2.00%	Med
			Confidentiality	10.00%	20.00%	40.00%	High
			Integrity	10.00%	20.00%	35.00%	High
			Availability	19.00%	20.00%	38.00%	Med

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Correlation Inc	Direct Costs					
		Procurement	n/a	$ 15,000.00	n/a	
		Maintenance/year/computer/as	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 6,000.00	n/a	
	Factors					
		User Productivity	-10.00%	-5.00%	0.00%	Med
		Confidentiality	3.00%	9.00%	42.00%	High
		Integrity	4.00%	11.00%	41.00%	High
		Availability	0.00%	13.00%	39.00%	High
Detect IT	Direct Costs					
		Procurement	n/a	$ 8,000.00	n/a	
		Maintenance/year/computer/as	n/a	$ 50.00	n/a	
		Training/year/sys admin	n/a	$ 5,000.00	n/a	
	Factors					
		User Productivity	-15.00%	-10.00%	0.00%	Med
		Confidentiality	5.00%	15.00%	25.00%	Med
		Integrity	5.00%	15.00%	25.00%	Med
		Availability	5.00%	15.00%	25.00%	Med
Security Associates	Direct Costs					
		Procurement	n/a	$ 9,000.00	n/a	
		Maintenance/year/computer/as	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 4,000.00	n/a	
	Factors					
		User Productivity	-12.00%	-8.00%	0.00%	Med
		Confidentiality	5.00%	15.00%	20.00%	Med
		Integrity	5.00%	15.00%	18.00%	Low
		Availability	5.00%	15.00%	17.00%	Low
Network Traffic ID	Direct Costs					
		Procurement	n/a	$ 9,000.00	n/a	
		Maintenance/year/computer/as	n/a	$ 75.00	n/a	
		Training/year/sys admin	n/a	$ 5,000.00	n/a	
	Factors					
		User Productivity	-15.00%	-10.00%	0.00%	Med
		Confidentiality	5.00%	16.00%	30.00%	Med
		Integrity	5.00%	18.00%	28.00%	Med
		Availability	5.00%	20.00%	26.00%	Med
Unitec	Direct Costs					
		Procurement	n/a	$ 5,000.00	n/a	
		Maintenance/year/computer/as	n/a	$ 20.00	n/a	
		Training/year/sys admin	n/a	$ 7,000.00	n/a	
	Factors					
		User Productivity	-30.00%	-20.00%	-2.00%	Med
		Confidentiality	5.00%	18.00%	20.00%	Med
		Integrity	7.00%	17.00%	20.00%	Med
		Availability	10.00%	17.00%	20.00%	Low
Network Eye	Direct Costs					
		Procurement	n/a	$ 4,000.00	n/a	
		Maintenance/year/computer/as	n/a	$ 35.00	n/a	
		Training/year/sys admin	n/a	$ 2,000.00	n/a	
	Factors					
		User Productivity	-30.00%	-10.00%	0.00%	Med
		Confidentiality	5.00%	20.00%	25.00%	Med
		Integrity	7.00%	21.00%	25.00%	Med
		Availability	10.00%	22.00%	25.00%	Med
Watcher	Direct Costs					
		Procurement	n/a	$ 3,000.00	n/a	
		Maintenance/year/computer/as	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-30.00%	-10.00%	0.00%	Med
		Confidentiality	5.00%	20.00%	22.00%	Med
		Integrity	7.00%	19.00%	22.00%	Med
		Availability	10.00%	21.00%	23.00%	Low

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Network-based SPAM Filter						
Spam Stoper	Direct Costs					
		Procurement	n/a	$ 45,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-0.10%	-0.10%	-0.10%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	0.00%	0.00%	Low
		Availability	15.00%	15.00%	15.00%	Low
Mail Control	Direct Costs					
		Procurement	n/a	$ 30,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,500.00	n/a	
	Factors					
		User Productivity	-0.10%	-0.10%	-0.10%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	0.00%	0.00%	Low
		Availability	-5.00%	2.00%	15.00%	Med
Postman	Direct Costs					
		Procurement	n/a	$ 3,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 2,000.00	n/a	
	Factors					
		User Productivity	-5.00%	-1.00%	-0.10%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	0.00%	0.00%	Low
		Availability	-8.00%	1.00%	7.00%	Med
Mail Scrubber	Direct Costs					
		Procurement	n/a	$ 5,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-0.30%	-0.20%	-0.10%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	0.00%	0.00%	Low
		Availability	0.00%	1.00%	5.00%	Low
Spam Meteter	Direct Costs					
		Procurement	n/a	$ 1,500.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 800.00	n/a	
	Factors					
		User Productivity	-5.00%	-1.00%	-0.10%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	0.00%	0.00%	Low
		Availability	-10.00%	-3.00%	10.00%	Med
Email Valve	Direct Costs					
		Procurement	n/a	$ 10,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 500.00	n/a	
	Factors					
		User Productivity	-0.20%	-0.25%	-0.10%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	0.00%	0.00%	Low
		Availability	0.00%	3.00%	5.00%	Med
Email Filter	Direct Costs					
		Procurement	n/a	$ 5,000.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
	Factors					
		User Productivity	-0.30%	-0.25%	-0.10%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	0.00%	0.00%	Low
		Availability	-1.00%	3.00%	5.00%	Med

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	Acer INC	Direct Costs				
		Procurement	n/a	$ 100.00	n/a	
		Maintenance/year/computer	n/a	$ -	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	-0.20%	-0.25%	-0.10%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	0.00%	0.00%	Low
		Availability	-15.00%	-5.00%	5.00%	Med
Network-based Vulnerability Scanning						
	Hole Plugger	Direct Costs				
		Procurement	n/a	$ 75,000.00	n/a	
		Maintenance/year	n/a	$ 25,000.00	n/a	
		Training/year/sys admin	n/a	$ 10,000.00	n/a	
		Factors				
		User Productivity	-1.00%	-0.50%	0.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	-1.00%	0.00%	10.00%	Med
		Availability	-1.00%	0.00%	10.00%	Med
	Scanner	Direct Costs				
		Procurement	n/a	$ 60,000.00	n/a	
		Maintenance/year	n/a	$ 20,000.00	n/a	
		Training/year/sys admin	n/a	$ 5,000.00	n/a	
		Factors				
		User Productivity	-1.00%	-0.50%	0.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	-10.00%	-70.00%	15.00%	Med
		Availability	-10.00%	-70.00%	15.00%	Med
	Health Check	Direct Costs				
		Procurement	n/a	$ 90,000.00	n/a	
		Maintenance/year	n/a	$ 25,000.00	n/a	
		Training/year/sys admin	n/a	$ 9,000.00	n/a	
		Factors				
		User Productivity	-1.00%	-0.50%	0.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	-0.50%	0.00%	5.00%	Low
		Availability	-0.50%	0.00%	5.00%	Low
	Net Assessment	Direct Costs				
		Procurement	n/a	$ 50,000.00	n/a	
		Maintenance/year	n/a	$ 20,000.00	n/a	
		Training/year/sys admin	n/a	$ 7,000.00	n/a	
		Factors				
		User Productivity	-0.90%	-0.50%	0.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	-15.00%	-9.00%	10.00%	Med
		Availability	-19.00%	-10.00%	10.00%	Med
	SCT scanner	Direct Costs				
		Procurement	n/a	$ 30,000.00	n/a	
		Maintenance/year	n/a	$ 10,000.00	n/a	
		Training/year/sys admin	n/a	$ 5,000.00	n/a	
		Factors				
		User Productivity	-5.00%	-3.00%	0.00%	Med
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	-20.00%	-9.00%	15.00%	Med
		Availability	-20.00%	-10.00%	15.00%	High
	NetStat	Direct Costs				
		Procurement	n/a	$ 20,000.00	n/a	
		Maintenance/year	n/a	$ 6,000.00	n/a	
		Training/year/sys admin	n/a	$ 3,000.00	n/a	
		Factors				
		User Productivity	-1.20%	-0.50%	0.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	-20.00%	-10.00%	1.00%	Med
		Availability	-20.00%	-10.00%	1.00%	Med

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	VulnerScan	Direct Costs				
		Procurement	n/a	$ 15,000.00	n/a	
		Maintenance/year	n/a	$ 5,000.00	n/a	
		Training/year/sys admin	n/a	$ 3,000.00	n/a	
		Factors				
		User Productivity	-1.20%	-0.50%	0.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	-30.00%	-20.00%	9.00%	High
		Availability	-30.00%	-20.00%	9.00%	High
Data Redundancy						
	Sonic Data	Direct Costs				
		Procurement	n/a	$ 800,000.00	n/a	
		Maintenance/year/computer	n/a	$ 8,000.00	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	0.00%	1.00%	10.00%	Med
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	10.00%	20.00%	40.00%	Med
		Availability	10.00%	20.00%	40.00%	Med
	Data Soutions	Direct Costs				
		Procurement	n/a	$ 500,000.00	n/a	
		Maintenance/year/computer	n/a	$ 5,000.00	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	0.00%	1.00%	20.00%	Med
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	10.00%	60.00%	High
		Availability	0.00%	10.00%	60.00%	High
	Data R Us	Direct Costs				
		Procurement	n/a	$ 300,000.00	n/a	
		Maintenance/year/computer	n/a	$ 4,000.00	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	0.00%	1.00%	5.00%	Med
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	10.00%	30.00%	Med
		Availability	0.00%	10.00%	30.00%	Med
	Bytes	Direct Costs				
		Procurement	n/a	$ 250,000.00	n/a	
		Maintenance/year/computer	n/a	$ 3,000.00	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	0.00%	1.00%	5.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	20.00%	22.00%	Med
		Availability	0.00%	20.00%	22.00%	Med
	Digital Solutions	Direct Costs				
		Procurement	n/a	$ 150,000.00	n/a	
		Maintenance/year/computer	n/a	$ 3,000.00	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	0.00%	1.00%	3.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	10.00%	15.00%	Med
		Availability	0.00%	10.00%	15.00%	Med
	Data	Direct Costs				
		Procurement	n/a	$ 100,000.00	n/a	
		Maintenance/year/computer	n/a	$ 10,000.00	n/a	
		Training/year/sys admin	n/a	$ 1,000.00	n/a	
		Factors				
		User Productivity	0.00%	1.00%	3.00%	Low
		Confidentiality	0.00%	0.00%	0.00%	Low
		Integrity	0.00%	15.00%	17.00%	Med
		Availability	0.00%	15.00%	17.00%	Med

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Service Redundancy							
WebKing	Direct Costs						
		Procurement	n/a	$	50,000.00	n/a	
		Maintenance/year/computer	n/a	$	10,000.00	n/a	
		Training/year/sys admin	n/a	$	1,000.00	n/a	
	Factors						
		User Productivity	0.00%		1.00%	10.00%	Med
		Confidentiality	0.00%		0.00%	0.00%	Low
		Integrity	10.00%		20.00%	40.00%	High
		Availability	10.00%		20.00%	40.00%	High
Redundant Servies	Direct Costs						
		Procurement	n/a	$	30,000.00	n/a	
		Maintenance/year/computer	n/a	$	10,000.00	n/a	
		Training/year/sys admin	n/a	$	1,000.00	n/a	
	Factors						
		User Productivity	0.00%		1.00%	20.00%	Med
		Confidentiality	0.00%		0.00%	0.00%	Low
		Integrity	0.00%		10.00%	60.00%	High
		Availability	0.00%		10.00%	60.00%	High
ServU	Direct Costs						
		Procurement	n/a	$	15,000.00	n/a	
		Maintenance/year/computer	n/a	$	10,000.00	n/a	
		Training/year/sys admin	n/a	$	1,000.00	n/a	
	Factors						
		User Productivity	0.00%		1.00%	5.00%	Med
		Confidentiality	0.00%		0.00%	0.00%	Low
		Integrity	0.00%		10.00%	30.00%	High
		Availability	0.00%		10.00%	30.00%	High
Robust Solutions	Direct Costs						Med
		Procurement	n/a	$	10,000.00	n/a	
		Maintenance/year/computer	n/a	$	10,000.00	n/a	
		Training/year/sys admin	n/a	$	1,000.00	n/a	
	Factors						
		User Productivity	0.00%		1.00%	5.00%	Low
		Confidentiality	0.00%		0.00%	0.00%	Low
		Integrity	0.00%		20.00%	22.00%	Med
		Availability	0.00%		20.00%	22.00%	Med
Duplicity	Direct Costs						
		Procurement	n/a	$	10,000.00	n/a	
		Maintenance/year/computer	n/a	$	10,000.00	n/a	
		Training/year/sys admin	n/a	$	1,000.00	n/a	
	Factors						
		User Productivity	0.00%		1.00%	3.00%	Low
		Confidentiality	0.00%		0.00%	0.00%	Low
		Integrity	0.00%		10.00%	15.00%	Med
		Availability	0.00%		10.00%	15.00%	Med
Dito	Direct Costs						
		Procurement	n/a	$	6,000.00	n/a	
		Maintenance/year/computer	n/a	$	10,000.00	n/a	
		Training/year/sys admin	n/a	$	1,000.00	n/a	
	Factors						
		User Productivity	0.00%		1.00%	3.00%	Low
		Confidentiality	0.00%		0.00%	0.00%	Low
		Integrity	0.00%		15.00%	17.00%	Med
		Availability	0.00%		15.00%	17.00%	Med

Policy - Preventive Defensive Measure

Enclosure B

How to read this table: The Qualitative Values are a judgment based on the assessment from industry experts on the tools' effectiveness. Each defensive measure has several instances that vary in costs and effectiveness. The Low, Mean, and High values represent a characterization of reviews found in different consumer review periodicals as they relate to user productivity, confidentiality, integrity, and availability. The variability indicates the concentration of the data about the mean. The Low and High are the minimum and maximum possible values, respectively. Costs are in U.S. dollars. A factor value of 5.00% indicates an improvement of 5%. A value of -5.00% indicates that the factor is degraded by 5%. These values are modifiers to the existing levels. For example from a base Confidentiality level of .8 a factor value of -25% would result in a new Confidentiality factor of 0.6 - (0.8*0.25) = 0.6. A positive value results in a positive change in the factor.

| | | Quantitative Values | | |
		Low	Mean	High	Variability
Strong Passwords					
	Costs				
	Policy Implementation	n/a	$45,000	n/a	Low
	Training year per Sys Admin	$8,000	$12,000	$15,000	Med
	Training year per user	$3	$5	$12	Med
	Maintenance Costs	$10,000	$12,000	$20,000	Med
	Factors				
	User Productivity	9.00%	28.00%	38.00%	Med
	Confidentiality	9.00%	28.00%	38.00%	Low
	Integrity	9.00%	28.00%	38.00%	Low
	Availability	9.00%	18.00%	28.00%	Low
No Password Policy					
	Costs				
	Policy Implementation	n/a	n/a	n/a	n/a
	Training year per Sys Admin	n/a	n/a	n/a	n/a
	Training year per user	n/a	n/a	n/a	n/a
	Maintenance Costs	n/a	n/a	n/a	n/a
	Factors				
	User Productivity	0.00%	0.00%	0.00%	Low
	Confidentiality	-75.00%	-50.00%	0.00%	High
	Integrity	-75.00%	-50.00%	0.00%	High
	Availability	-75.00%	-50.00%	0.00%	High
Formal Security Audits					
	Costs				
	Policy Implementation	n/a	$45,000	n/a	Low
	Training year per Sys Admin	$10,000	$12,000	$20,000	Med
	Maintenance Costs	$10,000	$12,000	$20,000	Med
	Factors				
	User Productivity	-10.00%	0.00%	0.00%	Low
	Confidentiality	-5.00%	20.00%	40.00%	High
	Integrity	-5.00%	20.00%	40.00%	High
	Availability	-5.00%	20.00%	40.00%	High
Disallow Wireless					
	Costs				
	Policy Implementation	n/a	$20,000	n/a	Low
	Training year per User	$5	$10	$30	Med
	Maintenance Costs	$10,000	$12,000	$20,000	Med
	Factors				
	User Productivity	-10.00%	-5.00%	0.00%	Low
	Confidentiality	0.00%	5.00%	10.00%	Low
	Integrity	0.00%	5.00%	10.00%	Low
	Availability	0.00%	5.00%	10.00%	Low
Allow Wireless					
	Costs				
	Policy Implementation	n/a	$45,000	n/a	Low
	Training year per Sys Admin	$20,000	$30,000	$40,000	Med
	Training year per User	$5	$10	$30	Med
	Maintenance Costs	$10,000	$12,000	$20,000	Med
	Factors				
	User Productivity	40.00%	60.00%	70.00%	Med
	Confidentiality	-60.00%	-30.00%	0.00%	High
	Integrity	-60.00%	-30.00%	0.00%	High
	Availability	-60.00%	-30.00%	0.00%	High

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Restrict Removable Media

		Low	Base	High	Conf
Costs	Policy Implementation	n/a	$20,000	n/a	Low
	Training year per Sys Admin	$10,000	$12,000	$20,000	Med
	Training year per User	$5	$10	$30	Med
	Maintenance Costs	$10,000	$12,000	$20,000	Med
Factors	User Productivity	-50.00%	-40.00%	-30.00%	Low
	Confidentiality	0.00%	5.00%	10.00%	Low
	Integrity	0.00%	5.00%	10.00%	Low
	Availability	0.00%	5.00%	10.00%	Low

Unmonitored Personal Use

		Low	Base	High	Conf
Costs	Policy Implementation	n/a	$20,000	n/a	Low
	Training year per Sys Admin	$0	$0	$0	Med
	Training year per User	$0	$0	$0	Med
	Maintenance Costs	$0	$0	$0	Med
Factors	User Productivity	-20.00%	-10.00%	10.00%	High
	Confidentiality	-20.00%	-10.00%	10.00%	High
	Integrity	-19.00%	-10.00%	10.00%	High
	Availability	-19.00%	-10.00%	10.00%	High

Restricted Personal Use/ Detailed User Tracking

		Low	Base	High	Conf
Costs	Policy Implementation	n/a	$45,000	n/a	Low
	Training year per Sys Admin	$20,000	$30,000	$40,000	Med
	Training year per User	$3	$5	$10	Med
	Maintenance Costs	$10,000	$12,000	$20,000	Med
Factors	User Productivity	-40.00%	0.00%	25.00%	High
	Confidentiality	-10.00%	25.00%	35.00%	High
	Integrity	9.00%	25.00%	35.00%	Med
	Availability	9.00%	15.00%	25.00%	Low

User Training Required

		Low	Base	High	Conf
Costs	Policy Implementation	n/a	$45,000	n/a	Low
	Training year per User	$5	$10	$13	Med
	Maintenance Costs	$10,000	$12,000	$20,000	Med
Factors	User Productivity	2.00%	15.00%	30.00%	Med
	Confidentiality	10.00%	30.00%	50.00%	High
	Integrity	10.00%	30.00%	50.00%	High
	Availability	10.00%	30.00%	50.00%	High

Sys Admin Training Required

		Low	Base	High	Conf
Costs	Policy Implementation	n/a	$45,000	n/a	Low
	Training year per Sys Admin	$20,000	$30,000	$40,000	Med
	Maintenance Costs	$10,000	$18,000	$20,000	Med
Factors	User Productivity	20.00%	40.00%	60.00%	Med
	Confidentiality	10.00%	30.00%	50.00%	Med
	Integrity	10.00%	30.00%	50.00%	Med
	Availability	10.00%	30.00%	50.00%	Med

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- The topic of the contest should change from year to year

Benefits of the ICM

- Team building

- Writing and communication skills

- Good concept

Advice

- Take risks (low expectations)

- Food and Sleep!

- Divide work early and often

- Focus on the writing aspect (Showman-ship!)

- Interdisciplinary team

- Generalizable code (good programmer on team)

Stories and Questions