

To Be Secure or Not to Be?

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).

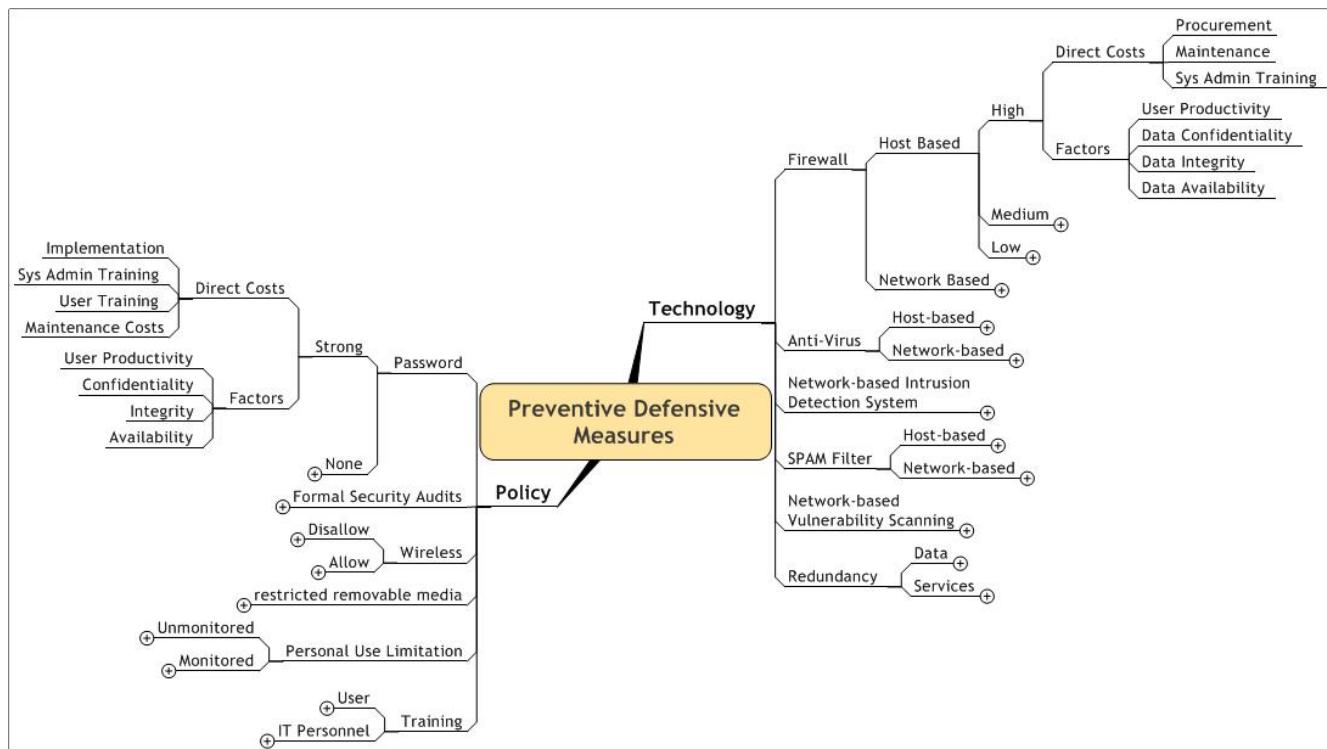


Figure 1 – Preventative Defensive Measures

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.

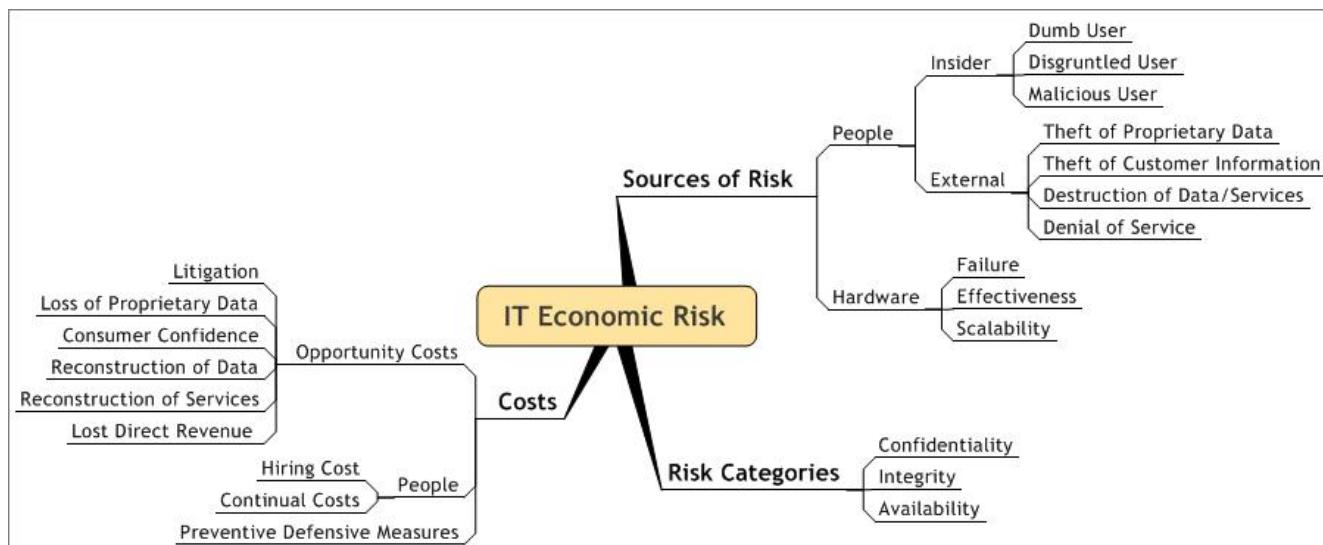


Figure 2 - Economic Risk schematic for IT systems

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%)

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.

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				
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				
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
		ProtectIT				
		Direct Costs				
ProtectIT	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				
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
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
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
Network-based Firewall	Direct Costs				
	Enterprise Solution	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
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
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
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

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			
	Factors	User Productivity	-70.00%	-5.00%	0.00%
		Confidentiality	10.00%	25.00%	30.00%
		Integrity	10.00%	25.00%	30.00%
		Availability	10.00%	13.00%	20.00%
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			
	Factors	User Productivity	-0.11	-0.05	0
		Confidentiality	0.1	0.25	0.3
		Integrity	0.1	0.25	0.3
		Availability	0.1	0.13	0.2
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			
	Factors	User Productivity	-9.00%	-5.00%	0.00%
		Confidentiality	5.00%	10.00%	20.00%
		Integrity	5.00%	10.00%	20.00%
		Availability	1.00%	5.00%	13.00%
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			
	Factors	User Productivity	-11.00%	-7.00%	0.00%
		Confidentiality	2.00%	10.00%	20.00%
		Integrity	3.00%	10.00%	20.00%
		Availability	1.00%	5.00%	13.00%
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			
	Factors	User Productivity	-11.00%	-7.00%	0.00%
		Confidentiality	2.00%	18.00%	20.00%
		Integrity	3.00%	17.00%	20.00%
		Availability	1.00%	10.00%	13.00%
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			
	Factors	User Productivity	-5.00%	-2.00%	0.00%
		Confidentiality	9.00%	28.00%	38.00%
		Integrity	9.00%	28.00%	38.00%
		Availability	9.00%	18.00%	28.00%
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			
	Factors	User Productivity	-3.00%	-1.00%	0.00%
		Confidentiality	10.00%	29.00%	32.00%
		Integrity	12.00%	25.00%	40.00%
		Availability	9.00%	18.00%	24.00%

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

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																																																																																																				
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		Availability	9.00%	20.00%	21.00%	Med																																																																																																			
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		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																																																																																																			
Bug Zapper	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	-11.00%	-8.00%	0.00%	Med																																																																																																			
	Factors	Confidentiality	5.00%	25.00%	30.00%	Med																																																																																																			
		Integrity	7.00%	25.00%	31.00%	Med																																																																																																			
		Availability	11.00%	13.00%	20.00%	Med																																																																																																			
		Procurement	n/a	\$ 300.00	n/a																																																																																																				
		Maintenance/year/computer	n/a	\$ -	n/a																																																																																																				
Enterprise Stomper	Direct Costs	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	Factors	Availability	11.00%	13.00%	19.00%	Low	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					Enterprise Fogger	Direct Costs	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	Procurement	n/a	\$ 400.00	n/a		Factors	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
		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																																																																																																			
	Factors	Availability	11.00%	13.00%	19.00%	Low																																																																																																			
		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																																																																																																							
Enterprise Fogger	Direct Costs	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	Procurement	n/a	\$ 400.00	n/a		Factors	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																																																					
		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																																																																																																			
		Procurement	n/a	\$ 400.00	n/a																																																																																																				
	Factors	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																																																																																																			

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			
	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			
	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	\$ 2,000.00	n/a
		Factors			
	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			
	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			
	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	\$ 19,000.00	n/a
		Maintenance/year/computer/as	n/a	\$ 50.00	n/a
		Training/year/sys admin	n/a	\$ 5,000.00	n/a
		Factors			
	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			
	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

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				
	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				
	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				
	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				
	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				
	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				
	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				
	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

Network-based SPAM Filter						
Spam Stopper	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	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	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	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	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 Meiseter	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	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	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	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

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 Assesment	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

Data Redundancy	VulnScan	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 Redundancy	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 Redundancy	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
Data Redundancy	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
Data Redundancy	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 Redundancy	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

Service Redundancy						
Web King		Direct Costs Procurement \$ 50,000.00 n/a Maintenance/year/computer \$ 10,000.00 n/a Training/year/sys admin \$ 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 Services		Direct Costs Procurement \$ 30,000.00 n/a Maintenance/year/computer \$ 10,000.00 n/a Training/year/sys admin \$ 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 \$ 15,000.00 n/a Maintenance/year/computer \$ 10,000.00 n/a Training/year/sys admin \$ 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 Procurement \$ 10,000.00 n/a Maintenance/year/computer \$ 10,000.00 n/a Training/year/sys admin \$ 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				
Duplication		Direct Costs Procurement \$ 10,000.00 n/a Maintenance/year/computer \$ 10,000.00 n/a Training/year/sys admin \$ 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 \$ 6,000.00 n/a Maintenance/year/computer \$ 10,000.00 n/a Training/year/sys admin \$ 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 $0.8 \cdot (0.8 \cdot 0.25) = 0.6$. 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	

Restrict Removable Media					
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					
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					
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%	28.00%	38.00%	High	
Integrity	9.00%	28.00%	38.00%	Med	
Availability	9.00%	18.00%	28.00%	Low	
User Training Required					
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					
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	