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Thank you for using the FCC’s Small Biz Cyber Planner, a tool for small businesses to create customized cyber security planning guides. Businesses large and small need to do more to protect against growing cyber threats. As larger companies take steps to secure their systems, less secure small businesses are easier targets for cyber criminals.

This planning guide is designed to meet the specific needs of your company, using the FCC’s customizable Small Biz Cyber Planner tool. The tool is designed for businesses that lack the resources to hire dedicated staff to protect their business, information and customers from cyber threats. Even a business with one computer or one credit card terminal can benefit from this important tool. We generally recommend that businesses using more sophisticated networks with dozens of computers consult a cyber security expert in addition to using the cyber planner. The FCC provides no warranties with respect to the guidance provided by this tool and is not responsible for any harm that might occur as a result of or in spite of its use.

The guidance was developed by the FCC with input from public and private sector partners, including the Department of Homeland Security, the National Cyber Security Alliance and The Chamber of Commerce.

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Website Security

Website security is more important than ever. Web servers, which host the data and other content available to your customers on the Internet, are often the most targeted and attacked components of a company's network. Cyber criminals are constantly looking for improperly secured websites to attack, while many customers say website security is a top consideration when they choose to shop online. As a result, it is essential to secure servers and the network infrastructure that supports them. The consequences of a security breach are great: loss of revenues, damage to credibility, legal liability and loss of customer trust.

The following are examples of specific security threats to web servers:

- Cyber criminals may exploit software bugs in the web server, underlying operating system, or active content to gain unauthorized access to the web server. Examples of unauthorized access include gaining access to files or folders that were not meant to be publicly accessible and being able to execute commands and/or install malicious software on the web server.
- Denial-of-service attacks may be directed at the web server or its supporting network infrastructure to prevent or hinder your website users from making use of its services. This can include preventing the user from accessing email, websites, online accounts or other services. The most common attack occurs when the attacker floods a network with information, so that it can't process the user's request.
- Sensitive information on the web server may be read or modified without authorization.
- Sensitive information on backend databases that are used to support interactive elements of a web application may be compromised through the injection of unauthorized software commands. Examples include Structured Query Language (SQL) injection, Lightweight Directory Access Protocol (LDAP) injection and cross-site scripting (XSS).
- Sensitive unencrypted information transmitted between the web server and the browser may be intercepted.
- Information on the web server may be changed for malicious purposes. Website defacement is a commonly reported example of this threat.
- Cyber criminals may gain unauthorized access to resources elsewhere in the organization's network via a successful attack on the web server.
- Cyber criminals may also attack external entities after compromising a web server. These attacks can be launched directly (e.g., from the compromised server against an external server) or indirectly (e.g., placing malicious content on the compromised web server that attempts to exploit vulnerabilities in the web browsers of users visiting the site).
- The server may be used as a distribution point for attack tools, pornography or illegally copied software.

Cyber Plan Action Items:

1. Carefully plan and address the security aspects of the deployment of a public web server.

Because it is much more difficult to address security once deployment and implementation have occurred, security should be considered from the initial planning stage. Businesses are more likely to make decisions about configuring computers appropriately and consistently when they develop and use a detailed, well-designed deployment plan. Developing such a plan will support web server administrators in making the inevitable tradeoff decisions between usability, performance and risk.

Businesses also need to consider the human resource requirements for the deployment and continued operation of the web server and supporting infrastructure. The following points in a deployment plan:

- Types of personnel required -- for example, system and web server administrators, webmasters, network administrators and information systems security personnel.

- Skills and training required by assigned personnel.
- Individual (i.e., the level of effort required of specific personnel types) and collective staffing (i.e., overall level of effort) requirements.

2. Implement appropriate security management practices and controls when maintaining and operating a secure web server.

Appropriate management practices are essential to operating and maintaining a secure web server. Security practices include the identification of your company's information system assets and the development, documentation and implementation of policies, and guidelines to help ensure the confidentiality, integrity and availability of information system resources. The following practices and controls are recommended:

- A business-wide information system security policy.
- Server configuration and change control and management.
- Risk assessment and management.
- Standardized software configurations that satisfy the information system security policy.
- Security awareness and training.
- Contingency planning, continuity of operations and disaster recovery planning.
- Certification and accreditation.

3. Ensure that web server operating systems meet your organization's security requirements.

The first step in securing a web server is securing the underlying operating system. Most commonly available web servers operate on a general-purpose operating system. Many security issues can be avoided if the operating systems underlying web servers are configured appropriately. Default hardware and software configurations are typically set by manufacturers to emphasize features, functions and ease of use at the expense of security. Because manufacturers are not aware of each organization's security needs, each web server administrator must configure new servers to reflect their business' security requirements and reconfigure them as those requirements change. Using security configuration guides or checklists can assist administrators in securing systems consistently and efficiently. Initially securing an operating system initially generally includes the following steps:

- Patch and upgrade the operating system.
- Change all default passwords
- Remove or disable unnecessary services and applications.
- Configure operating system user authentication.
- Configure resource controls.
- Install and configure additional security controls.
- Perform security testing of the operating system.

4. Ensure the web server application meets your organization's security requirements.

In many respects, the secure installation and configuration of the web server application will mirror the operating system process discussed above. The overarching principle is to install the minimal amount of web server services required and eliminate any known vulnerabilities through patches or upgrades. If the installation program installs any unnecessary applications, services or scripts, they should be removed immediately after the installation process concludes. Securing the web server application generally includes the following steps:

- Patch and upgrade the web server application.
- Remove or disable unnecessary services, applications and sample content.

- Configure web server user authentication and access controls.
- Configure web server resource controls.
- Test the security of the web server application and web content.

5. Ensure that only appropriate content is published on your website.

Company websites are often one of the first places cyber criminals search for valuable information. Still, many businesses lack a web publishing process or policy that determines what type of information to publish openly, what information to publish with restricted access and what information should not be published to any publicly accessible repository. Some generally accepted examples of what should not be published or at least should be carefully examined and reviewed before being published on a public website include:

- Classified or proprietary business information.
- Sensitive information relating to your business' security.
- Medical records.
- A business' detailed physical and information security safeguards.
- Details about a business' network and information system infrastructure -- for example, address ranges, naming conventions and access numbers.
- Information that specifies or implies physical security vulnerabilities.
- Detailed plans, maps, diagrams, aerial photographs and architectural drawings of business buildings, properties or installations.
- Any sensitive information about individuals that might be subject to federal, state or, in some instances, international privacy laws.

6. Ensure appropriate steps are taken to protect web content from unauthorized access or modification.

Although information available on public websites is intended to be public (assuming a credible review process and policy is in place), it is still important to ensure that information cannot be modified without authorization. Users of such information rely on its integrity even if the information is not confidential. Content on publicly accessible web servers is inherently more vulnerable than information that is inaccessible from the Internet, and this vulnerability means businesses need to protect public web content through the appropriate configuration of web server resource controls. Examples of resource control practices include:

- Install or enable only necessary services.
- Install web content on a dedicated hard drive or logical partition.
- Limit uploads to directories that are not readable by the web server.
- Define a single directory for all external scripts or programs executed as part of web content.
- Disable the use of hard or symbolic links.
- Define a complete web content access matrix identifying which folders and files in the web server document directory are restricted, which are accessible, and by whom.
- Disable directory listings.
- Deploy user authentication to identify approved users, digital signatures and other cryptographic mechanisms as appropriate.
- Use intrusion detection systems, intrusion prevention systems and file integrity checkers to spot intrusions and verify web content.
- Protect each backend server (i.e., database server or directory server) from command injection attacks.

7. Use active content judiciously after balancing the benefits and risks.

Static information resided on the servers of most early websites, typically in the form of text-based documents. Soon thereafter, interactive elements were introduced to offer new opportunities for user interaction.

Unfortunately, these same interactive elements introduced new web-related vulnerabilities. They typically involve dynamically executing code using a large number of inputs, from web page URL parameters to hypertext transfer protocol (HTTP) content and, more recently, extensible markup language (XML) content. Different active content technologies pose different related vulnerabilities, and their risks should be weighed against their benefits. Although most websites use some form of active content generators, many also deliver some or all of their content in a static form.

8. Use authentication and cryptographic technologies as appropriate to protect certain types of sensitive data.

Public web servers often support technologies for identifying and authenticating users with differing privileges for accessing information. Some of these technologies are based on cryptographic functions that can provide a secure channel between a web browser client and a web server that supports encryption. Web servers may be configured to use different cryptographic algorithms, providing varying levels of security and performance.

Without proper user authentication in place, businesses cannot selectively restrict access to specific information. All information that resides on a public web server is then accessible by anyone with access to the server. In addition, without some process to authenticate the server, users of the public web server will not be able to determine whether the server is the “authentic” web server or a counterfeit version operated by a cyber criminal.

Even with an encrypted channel and an authentication mechanism, it is possible that attackers may attempt to access the site by brute force. Improper authentication techniques can allow attackers to gather valid usernames or potentially gain access to the website. Strong authentication mechanisms can also protect against phishing attacks, in which hackers may trick users into providing their personal credentials, and pharming, in which traffic to a legitimate website may be redirected to an illegitimate one. An appropriate level of authentication should be implemented based on the sensitivity of the web server’s users and content.

9. Employ network infrastructure to help protect public web servers.

The network infrastructure (e.g., firewalls, routers, intrusion detection systems) that supports the web server plays a critical security role. In most configurations, the network infrastructure will be the first line of defense between a public web server and the Internet. Network design alone, though, cannot protect a web server. The frequency, sophistication and variety of web server attacks perpetrated today support the idea that web server security must be implemented through layered and diverse protection mechanisms, an approach sometimes referred to as “defense-in-depth.”

10. Commit to an ongoing process of maintaining web server security.

Maintaining a secure web server requires constant effort, resources and vigilance. Securely administering a web server on a daily basis is essential. Maintaining the security of a web server will usually involve the following steps:

- Configuring, protecting and analyzing log files.
- Backing up critical information frequently.
- Maintaining a protected authoritative copy of your organization’s web content.
- Establishing and following procedures for recovering from compromise.
- Testing and applying patches in a timely manner.

- Testing security periodically.

Cyber Security Glossary

Adware

Any software application that displays advertising banners while the program is running. Adware often includes code that tracks a user's personal information and passes it on to third parties without the user's authorization or knowledge. And if you gather enough of it, adware slows down your computer significantly. Over time, performance can be so degraded that you may have trouble working productively. See also **Spyware** and **Malware**.

Anti-Virus Software

Software designed to detect and potentially eliminate viruses before they have had a chance to wreak havoc within the system. Anti-virus software can also repair or quarantine files that have already been infected by virus activity. See also **Virus** and **Electronic Infections**.

Application

Software that performs automated functions for a user, such as word processing, spreadsheets, graphics, presentations and databases—as opposed to operating system (OS) software.

Attachment

A file that has been added to an email—often an image or document. It could be something useful to you or something harmful to your computer. See also **Virus**.

Authentication

Confirming the correctness of the claimed identity of an individual user, machine, software component or any other entity.

Authorization

The approval, permission or empowerment for someone or something to do something.

Backdoor

Hidden software or hardware mechanism used to circumvent security controls.

Backup

File copies that are saved as protection against loss, damage or unavailability of the primary data. Saving methods include high-capacity tape, separate disk sub-systems or on the Internet. Off-site backup storage is ideal, sufficiently far away to reduce the risk of environmental damage such as flood, which might destroy both the primary and the backup if kept nearby.

Badware

See **Malware**, **Adware** and **Spyware**.

Bandwidth

The capacity of a communication channel to pass data such as text, images, video or sound through the channel in a given amount of time. Usually expressed in bits per second.

Blacklisting Software

A form of filtering that blocks only websites specified as harmful. Parents and employers sometimes use such software to prevent children and employees from visiting certain websites. You can add and remove sites from the “not permitted” list. This method of filtering allows for more full use of the Internet, but is less efficient at preventing access to any harmful material that is not on the list. See also **Whitelisting Software**.

Blended Threat

A computer network attack that seeks to maximize the severity of damage and speed of contagion by combining methods—for example, using characteristics of both viruses and worms. See also **Electronic Infection**.

Blog

Short for “Web log,” a blog is usually defined as an online diary or journal. It is usually updated frequently and offered in a dated log format with the most recent entry at the top of the page. It often contains links to other websites along with commentary about those sites or specific subjects, such as politics, news, pop culture or computers.

Broadband

General term used to refer to high-speed network connections such as cable modem and Digital Subscriber Line (DSL). These types of “always on” Internet connections are actually more susceptible to some security threats than computers that access the Web via dial-up service.

Browser

A client software program that can retrieve and display information from servers on the World Wide Web. Often known as a “Web browser” or “Internet browser,” Examples include Microsoft’s Internet Explorer, Google’s Chrome, Apple’s Safari, and Mozilla’s Firefox.

Brute Force Attack

An exhaustive password-cracking procedure that tries all possibilities, one by one. See also **Dictionary Attack** and **Hybrid Attack**.

Clear Desk Policy

A policy that directs all personnel to clear their desks at the end of each working day, and file everything appropriately. Desks should be cleared of all documents and papers, including the contents of the “in” and “out” trays—not simply for cleanliness, but also to ensure that sensitive papers and documents are not exposed to unauthorized persons outside of working hours.

Clear Screen Policy

A policy that directs all computer users to ensure that the contents of the screen are protected from prying eyes and opportunistic breaches of confidentiality. Typically, the easiest means of compliance is to use a screen saver that engages either on request or after a specified short period of time. See also **Shoulder Surfing**.

Cookie

A small file that is downloaded by some websites to store a packet of information on your browser. Companies and organizations use cookies to remember your login or registration identification, site preferences, pages viewed and online “shopping-cart” so that the next time you visit a site, your stored information can automatically be pulled up for you. A cookie is obviously convenient but also presents potential security issues. You can configure your browser to alert you whenever a cookie is being sent. You can refuse to accept all cookies or erase all cookies saved on your browser.

Credit Card

A card indicating the holder has been granted a line of credit. Often sought after by criminals looking for an easy way to purchase things without having to pay for them. For this reason and others, a credit card preferable to a debit card for online shopping since it provides a buffer between buyer and seller, affording more protections to the buyer in case there is a problem with the order or the card number is compromised. See also **Debit Card**.

Cyberbullying

Sending or posting harmful, cruel, rude or threatening messages, or slanderous information, text or images using the Internet or other digital communication devices.

Debit Card

A card linked directly to the holder’s bank account, withdrawing money from the account. Not as safe as credit cards for online shopping since if problems arise, the buyer’s money has already been spent and is harder to get back. See also **Credit Card**.

Denial of Service Attack

The prevention of authorized access to a system resource or the delaying of system operations and functions. Often this involves a cyber criminal generating a large volume of data requests. See also **Flooding**.

Dictionary Attack

A password-cracking attack that tries all of the phrases or words in a dictionary. See also **Brute Force Attack** and **Hybrid Attack**.

Digital Certificate

The electronic equivalent of an ID card that establishes your credentials when doing business or other transactions on the Web. It contains your name, a serial number, expiration dates, a copy of the certificate holder's public key (used for encrypting messages and digital signatures) and the digital signature of the certificate-issuing authority so that a recipient can verify that the certificate is real.

Domain Hijacking

An attack in which an attacker takes over a domain by first blocking access to the domain's DNS server and then putting his own server up in its place.

Domain Name System (DNS)

The DNS is the way that Internet domain names are located. A website's domain name is easier to remember than its IP (Internet Protocol) address.

Dumpster Diving

Recovering files, letters, memos, photographs, IDs, passwords, checks, account statements, credit card offers and more from garbage cans and recycling bins. This information can then be used to commit identity theft.

Electronic Infections

Often called "viruses," these malicious programs and codes harm your computer and compromise your privacy. In addition to the traditional viruses, other common types include worms and Trojan horses. They sometimes work in tandem to do maximum damage. See also Blended Threat.

Encryption

A data security technique used to protect information from unauthorized inspection or alteration. Information is encoded so that it appears as a meaningless string of letters and symbols during delivery or transmission. Upon receipt, the information is decoded using an encryption key.

End User License Agreement (EULA)

A contract between you and your software's vendor or developer. Many times, the EULA is presented as a dialog box that appears the first time you open the software and forces you to check "I accept" before you can proceed. Before accepting, though, read through it and make sure you understand and are comfortable with the terms of the agreement. If the software's EULA is hard to understand or you can't find it, beware!

Evil Twins

A fake wireless Internet hot spot that looks like a legitimate service. When victims connect to the wireless network, a hacker can launch a spying attack on their transactions on the Internet, or just ask for credit card information in the standard pay-for-access deal. See also **Man-in-the-Middle Attacks**.

File-Sharing Programs

Sometimes called peer-to-peer (P2P) programs, these allow many different users to access the same file at the same time. These programs are often used to illegally upload and download music and other software. Examples include Napster, Grokster, Kazaa, iMesh, Ares and Limewire.

Firewall

A hardware or software link in a network that inspects all data packets coming and going from a computer, permitting only those that are authorized to reach the other side.

Flooding

An attack that attempts to cause a failure in the security of a computer by providing more input, such as a large volume of data requests, than it can properly process. See also **Denial of Service Attack**.

Grooming

Using the Internet to manipulate and gain trust of a minor as a first step towards the future sexual abuse, production or exposure of that minor. Sometimes involves developing the child's sexual awareness and may take days, weeks, months or in some cases years to manipulate the minor.

Hacker

An individual who attempts to break into a computer without authorization.

HTTPS

When used in the first part of a URL (e.g., http://), this term specifies the use of hypertext transfer protocol (HTTP) enhanced by a security mechanism such as Secure Socket Layer (SSL). Always look for the HTTPS on the checkout or order form page when shopping online or when logging into a site and providing your username and password.

Hybrid Attack

Builds on other password-cracking attacks by adding numerals and symbols to dictionary words. See also **Dictionary Attack** and **Brute Force Attack**.

Instant Messaging (IM)

A service that allows people to send and get messages almost instantly. To send messages using instant messaging you need to download an instant messaging program and know the instant messaging address of another person who uses the same IM program. See also **Spim**.

IP (Internet Protocol) Address

A computer's inter-network address, written as a series of four 8-bit numbers separated by periods, such as 123.45.678.990. Every website has an IP Address, although finding a website is considerably easier to do when using its domain name instead. See also **Domain Name System (DNS)**.

Internet Service Provider (ISP)

A company that provides internet access to customers.

Keystroke Logger

A specific type of electronic infection that records victims' keystrokes and sends them to an attacker. This can be done with either hardware or software. See also **Trojan Horse**.

Malware

A generic term for a number of different types of malicious code. See also **Adware** and **Spyware**.

Man-In-the-Middle Attack

Posing as an online bank or merchant, a cyber criminal allows a victim to sign in over a Secure Sockets Layer (SSL) connection. The attacker then logs onto the real server using the client's information and steals credit card numbers.

Monitoring Software

Software products that allow parents to monitor or track the websites or email messages that a child visits or reads. See also **Blacklisting Software** and **Whitelisting Software**.

Network

Two or more computer systems that are grouped together to share information, software and hardware.

Operating System (OS)

Programs that manage all the basic functions and programs on a computer, such as allocating system resources, providing access and security controls, maintaining file systems and managing communications between end users and hardware devices. Examples include Microsoft's Windows, Apple's Macintosh and Red Hat's Linux.

Password

A secret sequence of characters that is used as a means of authentication to confirm your identity in a computer program or online.

Password Cracking

Password cracking is the process of attempting to guess passwords, given the password file information. See also **Brute Force Attacks**, **Dictionary Attacks** and **Hybrid Attacks**.

Password Sniffing

Passive wiretapping, usually on a local area network, to gain knowledge of passwords.

Patch

A patch is a small security update released by a software manufacturer to fix bugs in existing programs. Your computer's software programs and/or operating system may be configured to check automatically for patches, or you may need to periodically visit the manufacturers' websites to see if there have been any updates.

Peer-to-Peer (P2P) Programs

See **File-Sharing Programs**.

Phishing

Soliciting private information from customers or members of a business, bank or other organization in an attempt to fool them into divulging confidential personal and financial information. People are lured into sharing user names, passwords, account information or credit card numbers, usually by an official-looking message in an email or a pop-up advertisement that urges them to act immediately, usually by clicking on a link provided. See also **Vishing**.

Pharming

Redirecting visitors from a real website to a bogus one. A user enters what is believed to be a valid Web address and is unknowingly redirected to an illegitimate site that steals the user's personal information. On the spoofed site, criminals may mimic real transactions and harvest private information unknowingly shared by users. With this, the attacker can then access the real website and conduct transactions using the credentials of a valid user.

Router

A hardware device that connects two or more networks and routes incoming data packets to the appropriate network. Many Internet Service Providers (ISPs) provide these devices to their customers, and they often contain firewall protections.

Script

A file containing active content -- for example, commands or instructions to be executed by the computer.

Shoulder Surfing

Looking over a person's shoulder to get confidential information. It is an effective way to get information in crowded places because it's relatively easy to stand next to someone and watch as they fill out a form, enter a PIN number at an ATM machine or type a password. Can also be done long-distance with the aid of binoculars or other vision-enhancing devices. To combat it, experts recommend that you shield paperwork or your keypad from view by using your body or cupping your hand. Also, be sure you password-protect your computer screen when you must leave it unattended, and clear your desk at the end of the day. See also **Clear Desk Policy** and **Clear Screen Policy**.

Skimming

A high-tech method by which thieves capture your personal or account information from your credit card, driver's license or even passport using an electronic device called a "skimmer." Such devices can be purchased online for under \$50. Your card is swiped through the skimmer and the information contained in the magnetic strip on the card is then read into and stored on the device or an attached computer. Skimming is predominantly a tactic used to perpetuate credit card fraud, but is also gaining in popularity amongst identity thieves.

Social Engineering

A euphemism for non-technical or low-technology means—such as lies, impersonation, tricks, bribes, blackmail and threats—used to attack information systems. Sometimes telemarketers or unethical employees employ such tactics.

Social Networking Websites

Sites specifically focused on the building and verifying of social networks for whatever purpose. Many social networking services are also blog hosting services. There are more than 300 known social networking websites, including Facebook, MySpace, Friendster, Xanga and Blogspot. Such sites enable users to create online profiles and post pictures and share personal data such as their contact information, hobbies, activities and interests. The sites facilitate connecting with other users with similar interests, activities and locations. Sites vary in who may view a user's profile—some have settings which may be changed so that profiles can be viewed only by "friends." See also **Blogs**.

Spam

Unwanted, unsolicited email from someone you don't know. Often sent in an attempt to sell you something or get you to reveal personal information.

Spim

Unwanted, unsolicited instant messages from someone you don't know. Often sent in an attempt to sell you something or get you to reveal personal information.

Spoofing

Masquerading so that a trusted IP address is used instead of the true IP address. A technique used by hackers as a means of gaining access to a computer system.

Spyware

Software that uses your Internet connection to send personally identifiable information about you to a collecting device on the Internet. It is often packaged with software that you download voluntarily, so that even if you remove the downloaded program later, the spyware may remain. See also **Adware** and **Malware**.

SSL (Secure Socket Layer)

An encryption system that protects the privacy of data exchanged by a website and the individual user. Used by websites whose URLs begin with https instead of http.

Trojan Horse

A computer program that appears to be beneficial or innocuous, but also has a hidden and potentially malicious function that evades security mechanisms. A “keystroke logger,” which records victims’ keystrokes and sends them to an attacker, or remote-controlled “zombie computers” are examples of the damage that can be done by Trojan horses. See also **Electronic Infection**.

URL

Abbreviation for “Uniform (or Universal) Resource Locator.” A way of specifying the location of publicly available information on the Internet. Also known as a Web address.

URL Obfuscation

Taking advantage of human error, some scammers use phishing emails to guide recipients to fraudulent sites with names very similar to established sites. They use a slight misspelling or other subtle difference in the URL, such as “monneybank.com” instead of “moneybank.com” to redirect users to share their personal information unknowingly.

Virus

A hidden, self-replicating section of computer software, usually malicious logic, that propagates by infecting—i.e., inserting a copy of itself into and becoming part of -- another program. A virus cannot run by itself; it requires that its host program be run to make the virus active. Often sent through email attachments. Also see **Electronic Infection** and **Blended Threat**.

Vishing

Soliciting private information from customers or members of a business, bank or other organization in an attempt to fool them into divulging confidential personal and financial information. People are lured into sharing user names, passwords, account information or credit card numbers, usually by an official-looking message in an email or a pop-up advertisement that urges them to act immediately—but in a vishing scam, they are urged to call the phone number provided rather than clicking on a link. See also **Phishing**.

Vulnerability

A flaw that allows someone to operate a computer system with authorization levels in excess of that which the system owner specifically granted.

Whitelisting Software

A form of filtering that only allows connections to a pre-approved list of sites that are considered useful and appropriate for children. Parents sometimes use such software to prevent children from visiting all but certain websites. You can add and remove sites from the “permitted” list. This method is extremely safe, but allows for only extremely limited use of the Internet.

Worm

Originally an acronym for “Write once, read many times,” a type of electronic infection that can run independently, can propagate a complete working version of itself onto other hosts on a network, and may consume computer resources destructively. Once this malicious software is on a computer, it scans the network for another machine with a specific security vulnerability. When it finds one, it exploits the weakness to copy itself to the new machine, and then the worm starts replicating from there, as well. See also **Electronic Infection** and **Blended Threat**.

Zombie Computer

A remote-access Trojan horse installs hidden code that allows your computer to be controlled remotely. Digital thieves then use robot networks of thousands of zombie computers to carry out attacks on other people and cover up their tracks. Authorities have a harder time tracing criminals when they go through zombie computers.

Sources:

National Institute of Standards and Technology:

<http://nvlpubs.nist.gov/nistpubs/ir/2013/NIST.IR.7298r2.pdf>

Cyber Security Links

Cyber Security and Privacy Protection

- Center for Internet Security (CIS):
www.cisecurity.org
- Free online security check ups:
<http://www.staysafeonline.org/stay-safe-online/free-security-check-ups>
- National Cyber Security Alliance for Small Business Home Users:
<http://www.staysafeonline.org>
- OnGuard Online:
www.OnGuardOnline.gov
- SANS (SysAdmin, Audit, Network, Security) Institute's Most Critical Internet Security Vulnerabilities:
www.sans.org/top20
- Security Tips from Securing our eCity:
<http://securingoureconomy.org/>
- Small Business Solutions from StopBadware:
<http://stopbadware.org/>
- The Open Web Application Security Project:
www.owasp.org

Cyber Security Threat Centers

- Cyber Safety Links for High School Students
<http://blackboard.aacps.org/portal/lor/obj/mods/4students/HSCybrSfty/addlinks.pdf>
- McAfee Security Solutions for Small Business:
<http://shop.mcafee.com/Default.aspx?site=us&pid=HOME&CID=MFE-MHP001>
- Symantec Security Solutions for Small Business:
http://store.symantec.com/?om_sem_cid=hho_sem_nam_us_Google_SMB_Store_Home&inid=hho_sem_syus:ggl:en:e%7Ckw0000006084%7CSMB

Training and Exercises

- Free training materials, security configuration guides from Internet Security Alliance:
<http://www.isalliance.org/>
- Free DOD user training:
<http://iase.disa.mil/eta/Pages/online-catalog.aspx>
- NIH Free Online User Training (non DOD version):
<http://irtsectraining.nih.gov/publicUser.aspx>

Government Resources

- Department of Homeland Security (DHS)'s National Strategy to Secure Cyberspace:
<http://www.dhs.gov/national-strategy-secure-cyberspace>
- DHS testimony before the House on Committee on Homeland Security Subcommittee on Cybersecurity, Infrastructure Protection, and Security Technologies:
http://www.dhs.gov/ynews/testimony/testimony_1300283858976.shtm
- FCC Cyber Security Encyclopedia Page
<http://www.fcc.gov/cyberforsmallbiz>
- FCC Public Safety and Homeland Security Bureau Clearinghouse:
<http://publicsafety.fcc.gov/pshs/clearinghouse/index.htm>
- FCC Public Safety and Homeland Security Bureau Guidelines for Emergency Planning:
<http://transition.fcc.gov/pshs/emergency-information/guidelines/>
- FCC Ten Cybersecurity Tips for Small Businesses
http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-306595A1.pdf
- Federal Trade Commission Guide for Business
<http://www.ftc.gov/bcp/edu/microsites/infosecurity/>
- Federal Trade Commission – Identity Theft Information:
<http://www.onguardonline.gov/topics/computer-security.aspx>
- Federal Trade Commission's Interactive Tutorial:
www.ftc.gov/infosecurity
- National Institute of Standards and Technology (NIST)'s Computer Security Resource Center:
www.csrc.nist.gov
- NIST briefing on Cybersecurity for Small Businesses:
<http://csrc.nist.gov/groups/SMA/sbc/documents/smb-presentation.pdf>

Government Resources (cont'd)

- NIST Guide to Selecting Information Technology Security Products:
<http://csrc.nist.gov/publications/nistpubs/800-36/NIST-SP800-36.pdf>
- NIST's Risk Management Guide for Information Technology Systems:
www.csrc.nist.gov/publications/nistpubs/800-30/sp800-30.pdf
- NIST Small Business Corner - A link to the NIST-SBA-FBI Small Business Information Security outreach pages :
<http://csrc.nist.gov/groups/SMA/sbc/index.html>
- NIST Small Business Information Security:
<http://csrc.nist.gov/publications/nistir/ir7621/nistir-7621.pdf>
- SBA, NIST and FBI partnership on Cybersecurity for small businesses:
<http://csrc.nist.gov/groups/SMA/sbc/overview.html>
- United States Computer Emergency Readiness Team (US-CERT):
www.us-cert.gov
- U.S. Department of Homeland Security Cyber Security Resources:
<http://www.dhs.gov/cyber>

Publications

- Cloud Security Alliance
<https://cloudsecurityalliance.org/csaguide.pdf>
- Computer Security Resource Center, National Institute of Standards and Technology:
<http://csrc.nist.gov/groups/SMA/sbc/library.html>
- Microsoft Small Business Guide:
http://download.microsoft.com/download/3/a/2/3a208c3c-f355-43ce-bab4-890db267899b/Security_Guide_for_Small_Business.pdf
- Protecting Your Small Business, Entrepreneur Magazine:
<http://www.entrepreneur.com/magazine/entrepreneur/2010/june/206656.html>
- Small business Information Security: The Fundamentals, National Institute of Standards and Technology:
<http://csrc.nist.gov/publications/nistir/ir7621/nistir-7621.pdf>