Computer Security

tutorialspoint

SIMPLY EASY LEARNING

www.tutorialspoint.com

https://www.facebook.com/tutorialspointindia https://twitter.com/tutorialspoint

About the Tutorial

Computer Security is the process of detecting and preventing any unauthorized use of your laptop/computer. It involves the process of safeguarding against trespassers from using your personal or office based computer resources with malicious intent or for their own gains, or even for gaining any access to them accidentally.

In this tutorial, we will treat the concept of computer security which can be a laptop, a workstation, a server or even a network device. This is an introductory tutorial that covers the basics of Computer Security and how to deal with its various components and sub-components.

Audience

This tutorial has been prepared mainly for those professionals who are within the IT industry, working as IT specialists, System administrators, and Security administrators.

This tutorial is intended to make you comfortable in getting started with Computer Security and its various functions.

Prerequisites

It is an elementary tutorial and you can easily understand the concepts explained here with a basic knowledge of how a company or an organization deals with its Computer Security. However, it will help if you have some prior exposure on how to carry out computer updates regularly, setting up firewalls, antiviruses, etc.

Copyright and Disclaimer

© Copyright 2016 by Tutorials Point (I) Pvt. Ltd.

All the content and graphics published in this e-book are the property of Tutorials Point (I) Pvt. Ltd. The user of this e-book is prohibited to reuse, retain, copy, distribute or republish any contents or a part of contents of this e-book in any manner without written consent of the publisher.

We strive to update the contents of our website and tutorials as timely and as precisely as possible, however, the contents may contain inaccuracies or errors. Tutorials Point (I) Pvt. Ltd. provides no guarantee regarding the accuracy, timeliness or completeness of our website or its contents including this tutorial. If you discover any errors on our website or in this tutorial, please notify us at contact@tutorialspoint.com

tutorialspoint
SIMPLYEASYLEARNING

Table of Contents

About the Tutorial i

Audience i

Prerequisites i

Copyright and Disclaimer i

Table of Contents ii

1. COMPUTER SECURITY – OVERVIEW 1

Why Security? 1

What to Secure? 2

Benefits of Computer Security Awareness 4

Potential Losses due to Security Attacks 5

Basic Computer Security Checklist 6

2. COMPUTER SECURITY – ELEMENTS 9

Different Elements in Computer Security 9

Confidentiality 10

Integrity 10

Availability 11

3. COMPUTER SECURITY – TERMINOLOGIES 12

4. COMPUTER SECURITY – LAYERS 13

5. COMPUTER SECURITY – SECURING OS 15

Guidelines for Windows OS Security 15

Guidelines for Mac OS X Security 22

6. COMPUTER SECURITY – ANTIVIRUSES 31

Basic Functions of Antivirus Engines 31

tutorialspoint
SIMPLYEASYLEARNING

Online Virus Testing **32**

Free Antivirus Software **33**

Avast Antivirus **34**

AVG Antivirus **35**

Panda Antivirus 2016 ..... **35**

Bitdefender Antivirus **36**

Microsoft Security Essentials **37**

Commercial Antivirus **37**

Kaspersky Antivirus **37**

McAfee AntiVirus Plus **38**

Webroot SecureAnywhere Antivirus **40**

7. COMPUTER SECURITY – MALWARES 41

Characteristics of a Virus **41**

Working Process of Malwares and how to Clean it **43**

Detecting a Computer Error from a Virus Infection **45**

Virus Information **46**

8. COMPUTER SECURITY – ENCRYPTION 47

What is Encryption? **47**

Tools Used to Encrypt Documents **47**

Encryption Ways of Communication **48**

9. COMPUTER SECURITY – DATA BACKUP 50

Why is Backup Needed? **50**

Backup Devices **50**

Types of Backups Based on Location **52**

10. COMPUTER SECURITY – DISASTER RECOVERY 57

Requirements to Have a Disaster Recovery Plan **57**

tutorialspoint
SIMPLYEASYLEARNING

11. COMPUTER SECURITY – NETWORK 59

Devices that Help us with Network Security **59**

Intrusion Detection Systems **60**

Intrusion Detection Tools **60**

Virtual Private Network **62**

12. COMPUTER SECURITY – POLICIES 63

Role of the Security Policy in Setting up Protocols **63**

Structure of a Security Policy **64**

Types of Policies **64**

13. COMPUTER SECURITY – CHECKLIST 66

14. COMPUTER SECURITY - LEGAL COMPLIANCE 70

What are the Main Compliances? **70**

tutorialspoint
SIMPLYEASYLEARNING

1. Computer Security – Overview

In this tutorial, we will treat the concept of Computer Security which can be a laptop, a workstation, a server or a network device. This tutorial is done mainly for people that are within the IT industry who are IT specialists, System administrators, Security administrators.

Why Security?

Cyberspace (internet, work environment, intranet) is becoming a dangerous place for all organizations and individuals to protect their sensitive data or reputation. This is because of the numerous people and machines accessing it. It is important to mention that the recent studies have shown a big danger is coming from internal threats or from disappointed employees like the Edward Snowden case, another internal threat is that information material can be easy accessible over the intranet.

One important indicator is the IT skills of a person that wants to hack or to breach your security has decreased but the success rate of it has increased, this is because of three main factors:

1. Hacking tools that can be found very easily by everyone just by googling and they are endless.

2. Technology with the end-users has increased rapidly within these years, like internet bandwidth and computer processing speeds.

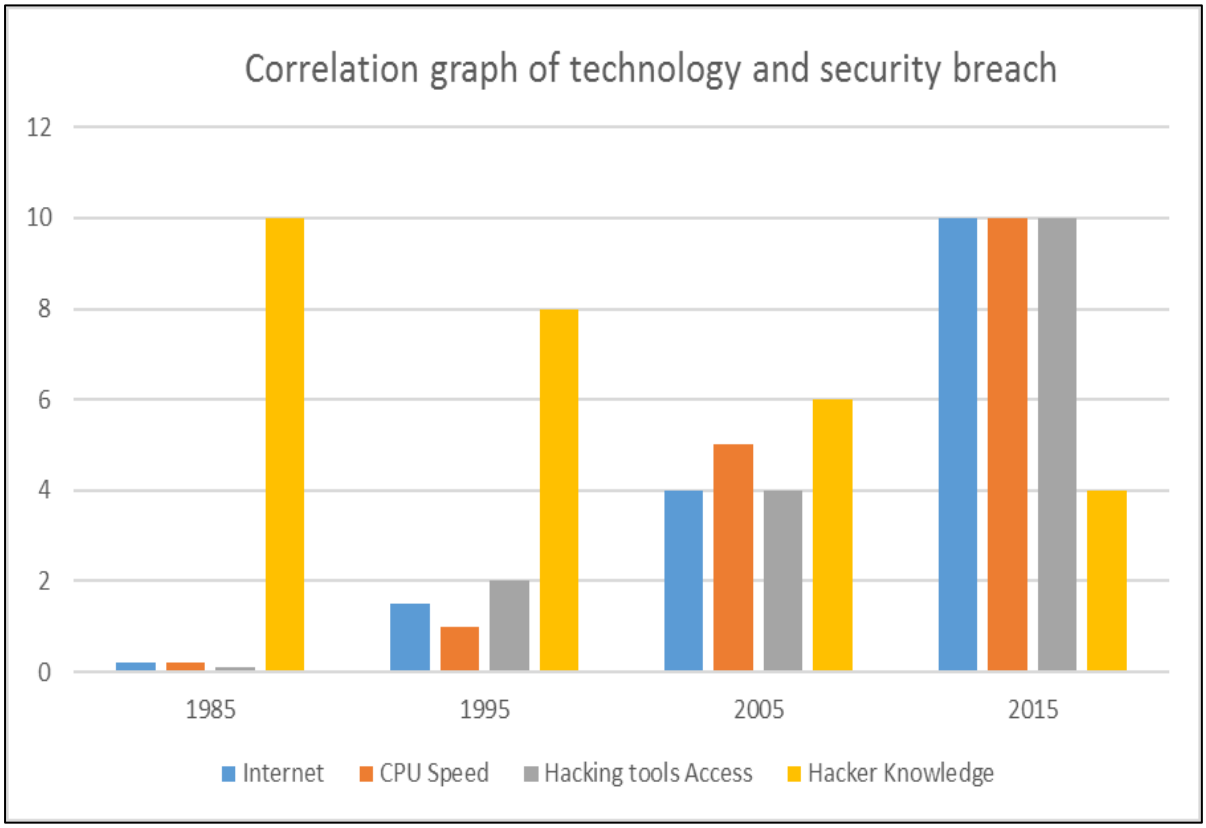
3. Access to hacking information manuals.

All this can make even a school boy with the curiosity, a potential hacker for your organization.

Since locking down all networks is not an available option, the only response the security managers can give is to harden their networks, applications and operating systems to a reasonable level of safety, and conducting a business disaster recovery plan.

tutorialspoint
SIMPLYEASYLEARNING

The following graph gives us a basic idea.

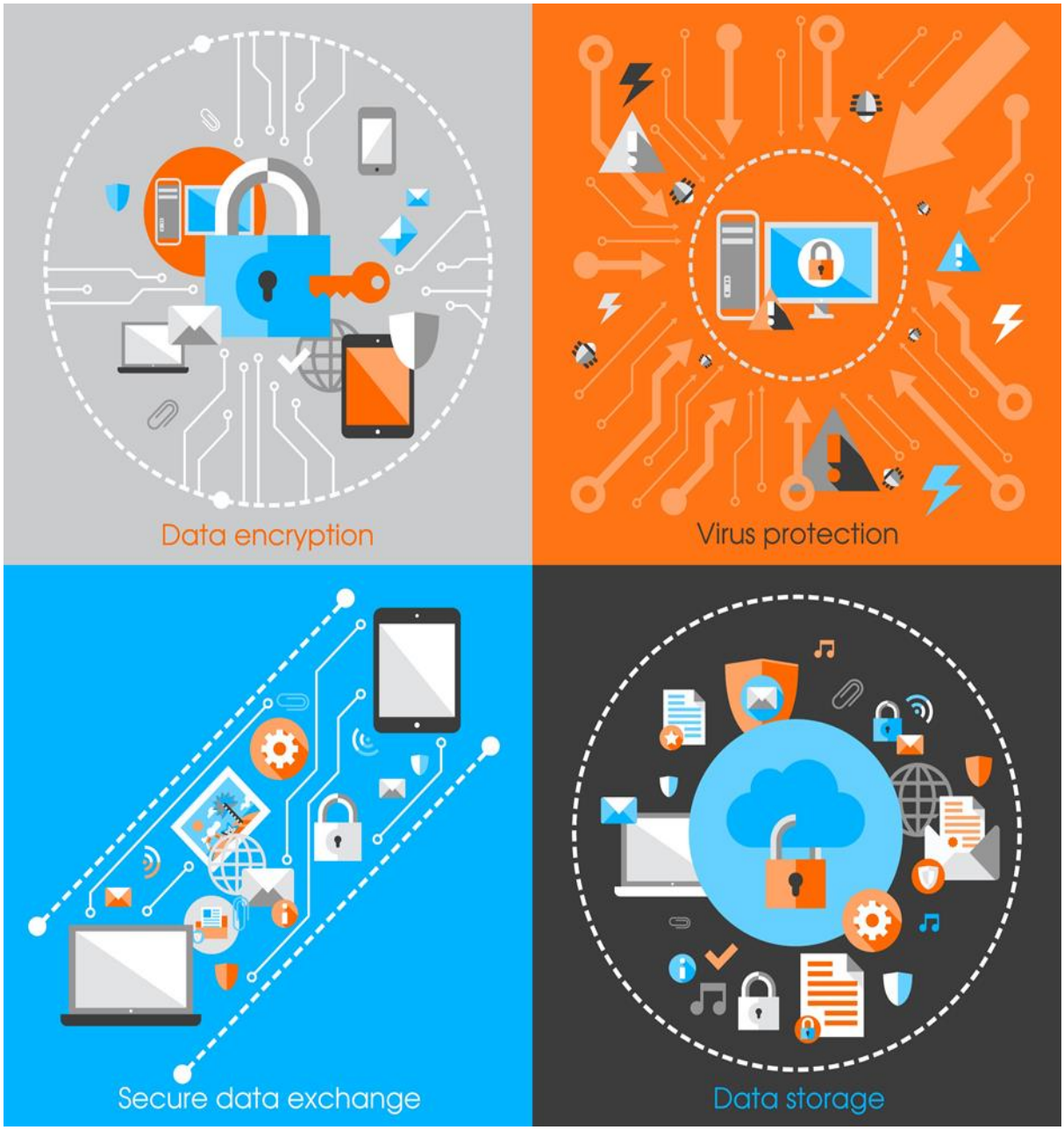


What to Secure?

Let's see this case, you are an IT administrator in a small company having two small servers staying in a corner and you are very good at your job. You are doing updates regularly, setting up firewalls, antiviruses, etc. One day, you see that the organization employees are not accessing the systems anymore. When you go and check, you see the cleaning lady doing her job and by mistake, she had removed the power cable and unplugged the server.

What I mean by this case is that even physical security is important in computer security, as most of us think it is the last thing to take care of.

tutorialspoint
SIMPLYEASYLEARNING



Now let's go directly to the point of what all to secure in a computer environment:

- First of all, is to check the physical security by setting control systems like motion alarms, door accessing systems, humidity sensors, temperature sensors. All these components decrease the possibility of a computer to be stolen or damaged by humans and environment itself.

- People having access to computer systems should have their own user id with password protection.

- Monitors should be screen saver protected to hide the information from being displayed when the user is away or inactive.

- Secure your network especially wireless, passwords should be used.

- Internet equipment as routers to be protected with password.

- Data that you use to store information which can be financial, or non-financial by encryption.

- Information should be protected in all types of its representation in transmission by encrypting it.

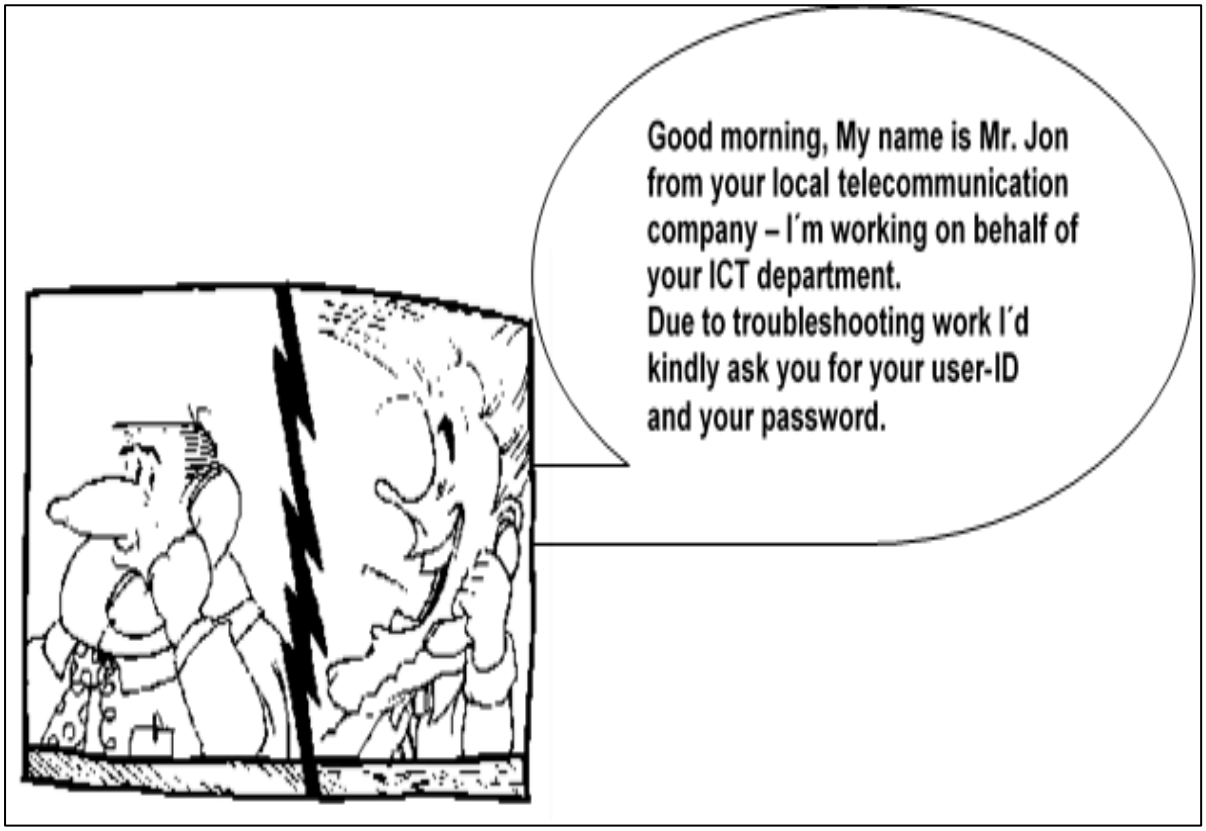
Benefits of Computer Security Awareness

Do you know in all this digital world, what is the biggest hole or the weakest point of the security?

Answer. It is us, humans.

Most of the security breaches come from uninformed and untrained persons which give information to a third party or publish data in Internet without knowing the consequences.

See the following scenario which tells us what employees might end up doing without computer security awareness:



So the benefits of computer security awareness are obvious as it directly minimizes the potential of you being hacked off your identity, your computer, your organization.

tutorialspoint
SIMPLYEASYLEARNING

Potential Losses due to Security Attacks

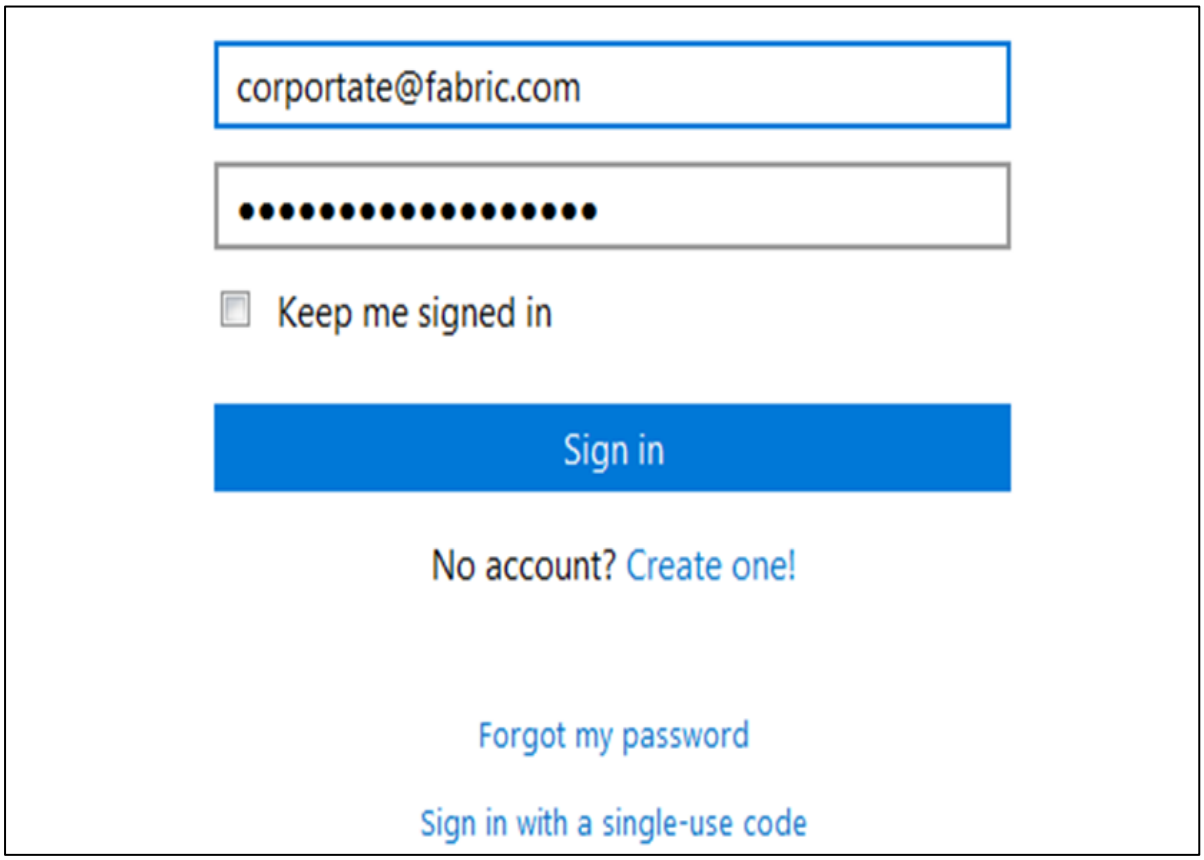
The potential loses in this cyberspace are many even if you are using a single computer in your room. Here, I will be listing some examples that have a direct impact on you and on others:

- **Losing you data –** If your computer has been hacked or infected, there is a big chance that all your stored data might be taken by the attacker.

- **Bad usage of your computer resources –** This means that your network or computer can go in overload so you cannot access your genuine services or in a worst case scenario, it can be used by the hacker to attack another machine or network.

- **Reputation loss –** Just think if your Facebook account or business email has been owned by a social engineering attack and it sends fake information to your friends, business partners. You will need time to gain back your reputation.

- **Identity theft –** This is a case where your identity is stolen (photo, name surname, address, and credit card) and can be used for a crime like making false identity documents.

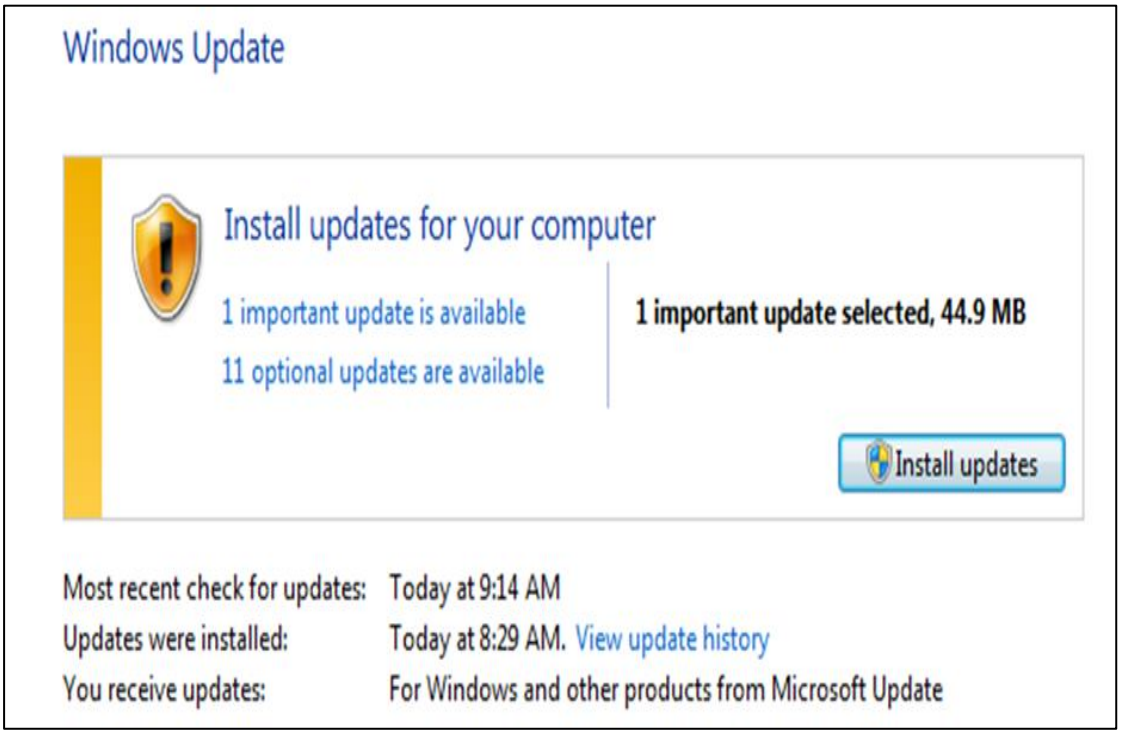


tutorialspoint
SIMPLYEASYLEARNING

Basic Computer Security Checklist

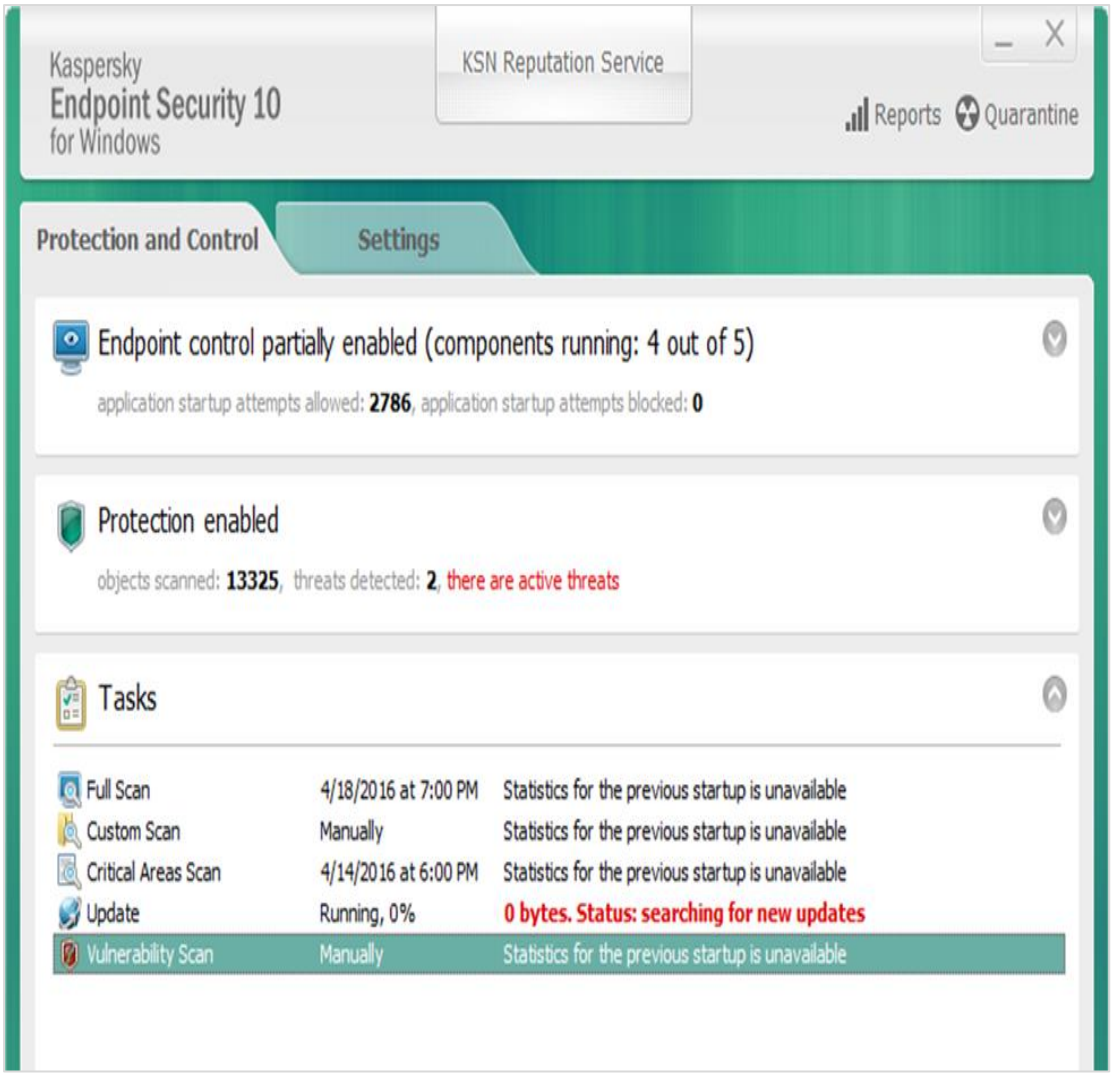
There are some basic things that everyone of us in every operating system need to do:

- Check if the user is password protected.
- Check if the operating system is being updated. In my case, I did a screenshot of my laptop which is a Windows 7.



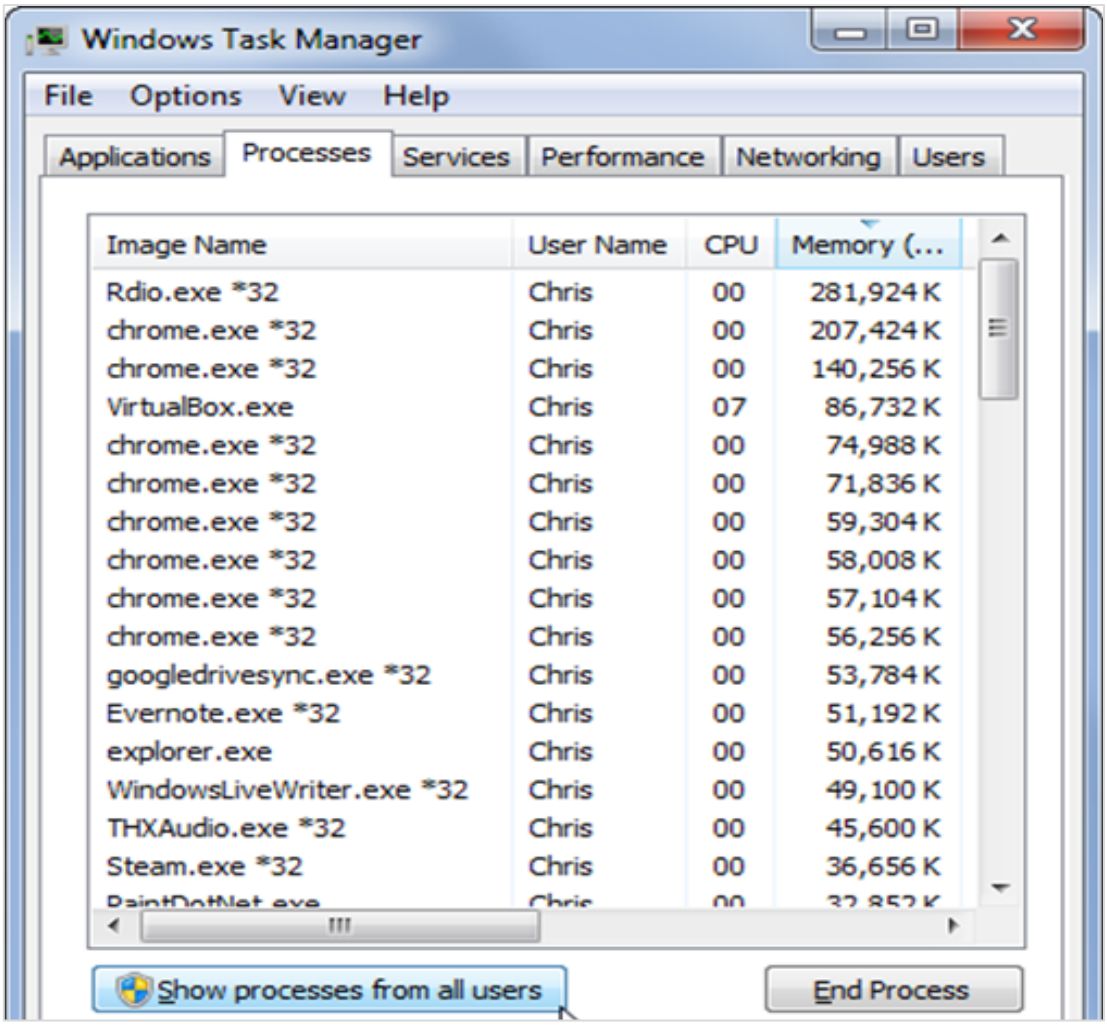
- Check if the antivirus or antimalware is installed and updated. In my case, I have a Kaspersky antivirus being updated.

tutorialspoint
SIMPLYEASYLEARNING



- Check for the unusual services running that consumes resources.

tutorialspoint
SIMPLYEASYLEARNING



- Check if your monitor is using a screen saver.
- Check if the computer firewall is on or not.
- Check if you are doing backups regularly.
- Check if there are shares that are not useful.
- Check if your account has full rights or is restricted.
- Update other third party software's.

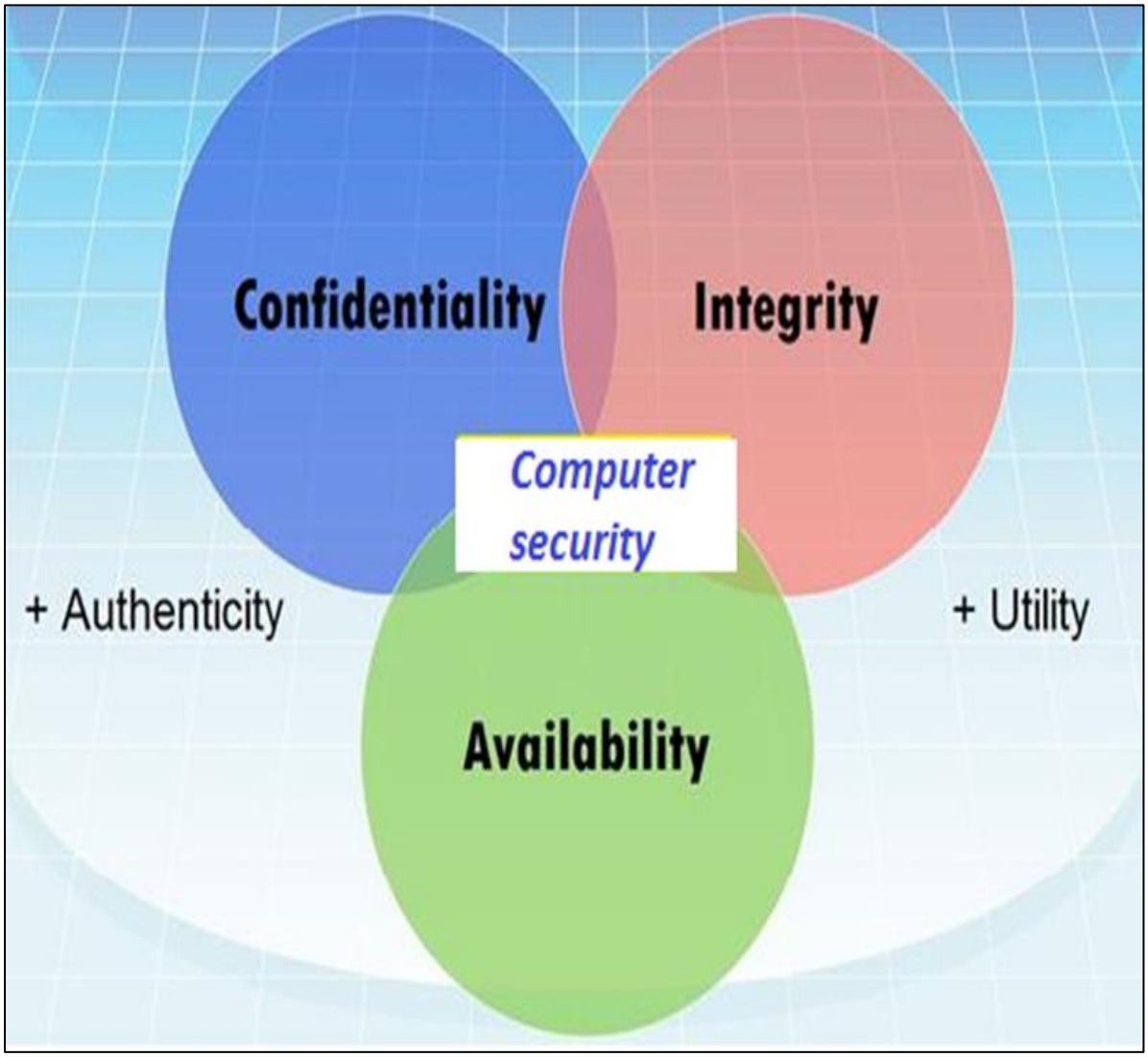
tutorialspoint
SIMPLYEASYLEARNING

2. Computer Security – Elements

The general state in Computer Security has the ability to detect and prevent attacks and to be able to recover. If these attacks are successful as such then it has to contain the disruption of information and services and check if they are kept low or tolerable.

Different Elements in Computer Security

In order to fulfil these requirements, we come to the three main elements which are **confidentiality, integrity,** and **availability** and the recently added **authenticity and utility**.



tutorialspoint
SIMPLYEASYLEARNING

End of ebook preview

If you liked what you saw…

Buy it from our store @ **https://store.tutorialspoint.com**

tutorialspoint
SIMPLYEASYLEARNING