

Cybercrime Warfare: Dark Web the Hidden Internet

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Abstract. We currently live in a world where technology is present in all aspects of our life, from the complex tasks performed in our work environment to the simple entertainment we have at our homes and most likely than not these have access to a simple web browser. Although most of these web browsers are considered “normal” it’s through the computer that we can access these “anormal” browsers which in essence are a normal browser in all their aspects except the limitations that they provide, these are called dark web browsers. They allow their users to browse the web without the limitations of being “locked out/hidden away” from websites considered insecure/unsafe. On this paper we will be discussing the “power” of the dark web, comparing it with the “normal” web and all the threats present in the dark web. We will also discuss how to access it and make small comparison of the dark web with the deep web.

Keywords: Dark web, Deep web, Cybersecurity, Technology, Cybersecurity risk

1 Introduction

The internet from its origins was but a simple means of communications between people but as time has progressed it has evolved into a platform that easily allows one to expose their ideas, their art works or even just a simple image of them during a vacation.

This evolution ended up splitting the internet into 3 parts, the surface web, the dark web, and the deep web.

The surface web is your everyday web page that can be accessed directly from your web browser.

The deep web sometimes is inaccurately called the lawlessness or unregulated part of the internet. It is used by a lot of criminals but on the flip side it is an online refuge for people who are persecuted for their own beliefs, opinions and who they are. While the deep web is so anonymous by nature it is still possible to be tracked and monitored there by authorities or criminal groups.[1]

The dark web is the actual lawless place of the internet since that place requires a lot more effort to simply access it not to even mention tracking someone in it because of the simple fact that it doesn’t operate in the same way as the surface and deep web.

This paper will focus on what is the various sub sections of the Clearnet and what they represent/what you are able to do there.

On section 2 we will be investigation in some detail what represents each part of the of the Clearnet and making some comparisons between the three of them.

On section 3 we will be explaining on how to access the dark web, the market that was considered to be the most famous for the trade of illegal products, one of the main reasons as to why the dark web had a massive boom in use due to the increase in difficulty to trace who performed trades in there and lastly, we will be evaluating its dangers.

2 Clearnet

The Clearnet is something that, to be accessed needs to have some sort of application like Microsoft edge, google chrome, opera, and many others out there available to the consumer and all it need it's some form of internet connection to be used.



Figure 1 – A size comparison of what is available in each of the available webs [2]

2.1 Surface web

So, what is the surface web, well its actually quite simple the Surface web is the portion of the World Wide Web that is readily available to the public and searchable with standard web search engines. It is the opposite of the deep web. The section of the internet that is being indexed by search engines is known as the “Surface Web” or “Visible Web”.[3]

The surface web is in constant growth and ever changing but never removed and due to that a popular quote appeared “what happens on the internet stays on the internet”. According to one estimate, there were 334.6 million Internet top-level domain names registered globally during the second quarter of 2016. This is a 12.9% increase from the number of domain names registered during the same period in 2015. As of February 2017, there were estimated to be more than 1.154 billion websites. As researchers have noted, however, these numbers “only hint at the size of the Web,” as numbers of users and websites are constantly fluctuating.[4]

2.2 Deep web

Most people are familiar with the surface web or at least with the basic concept of what the internet is and what it allows one to do, but in most cases, they don't know what the deep web is or have never even heard of its existence. So, what is the deep web well, the Deep web is part of the World Wide Web whose contents are not indexed by standard web search engines for any reason. The content of the deep web is hidden behind HTTP forms, and includes many common uses such as web mail, online banking, and services that users must pay for, and which is protected by a paywall, such as video on demand, some online magazines, and newspapers, and many more. Content of the deep web can be located and accessed by a direct URL or IP address and may require password or other security access past the public website page.[5]

The Deep Web, as noted, cannot be accessed by traditional search engines because the content in this layer of the web is not indexed. Information here is not “static and linked to other pages” as is information on the Surface Web. As researchers have noted, it's almost impossible to measure the size of the Deep Web. While some early estimates put the size of the Deep Web at 4,000 5,000 times larger than the surface web, the changing dynamic of how information is accessed and presented means that the Deep Web is growing exponentially and at a rate that defies quantification.[6]

2.3 Dark web

Although those who know of the existence of the deep web or have at least basic knowledge of it also know of the existence of the dark web very few of those venture into it do to existence of some form of fear or lack of means/knowledge of how to access it.

So, what is the dark web, the Dark Web is defined as a layer of information and pages that you can only get access to through so-called "overlay networks", which run on top of the normal internet and obscure access. You need special software to access the Dark Web because a lot of it is encrypted, and most of the dark web pages are hosted anonymously.[7]

The Dark Web is also growing as new tools make it easier to navigate. Because individuals may access the Dark Web assuming little risk of detection, they may use this arena for a variety of legal and illegal activities. It is unclear, however, how much of the Deep Web is taken up by Dark Web content and how much of the Dark Web is used for legal or illegal activities.[8]

2.4 Surface web vs Deep web vs Dark web

So, what’s the major difference between each of these webs, well in all honesty there isn’t much besides its legality but there are still a few key points that one can take.

- Surface web
 - Only what’s legal is visible there
 - Can be accessed by the normal search engines
 - Represents only 4% of all the web
- Deep web
 - Has everything from the most legal to the most illegal
 - Can be accessed by normal search engines but they will not be able to find it on their own
 - Represents 96% of all the web
- Dark web
 - Is mostly illegal
 - Can only be accessed by specific search engines like Tor
 - Represents around 48% of the web (in which this 48% encounter themselves inside the deep web)

	Surface Web	Deep Web	Dark Web
Description	Content that search engine can find	Content that search engine cannot find	Content that are hidden intentionally
Known as	Visible web, Indexed web	Invisible web, Hidden web, Deep web	-
Constitutes	Web	Web	Web
Contents	Legal	Legal + Illegal	Illegal
Information found	4%	96%	-
Browsers	Google chrome, Mozilla firefox, opera	-	TOR browser

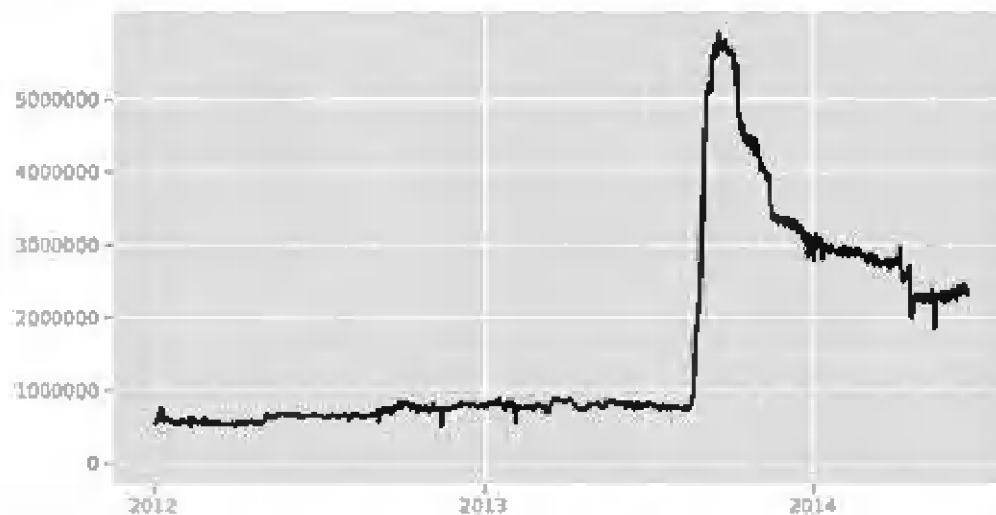
Figure 2 – Picture comparing the various web and what they offer to the user [9]

3 Dark web

The Dark Web can be reached through decentralized, anonymized nodes on several networks including Tor (short for The Onion Router) or I2P (Invisible Internet Project). Tor, which was initially released as The Onion Routing project in 2002, was originally created by the U.S. Naval Research Laboratory as a tool for anonymously communicating online. Tor “refers both to the software that you install on your computer to run

Tor and the network of computers that manages Tor connections.” Tor’s users connect to websites “through a series of virtual tunnels rather than making a direct connection, thus allowing both organizations and individuals to share information over public networks without compromising their privacy.” Users route their web traffic through other users’ computers such that the traffic cannot be traced to the original user. Tor essentially establishes layers (like layers of an onion) and routes traffic through those layers to conceal users’ identities. To get from layer to layer, Tor has established “relays” on computers around the world through which information passes. Information is encrypted between relays, and “all Tor traffic passes through at least three relays before it reaches its destination.” The final relay is called the “exit relay,” and the IP address of this relay is viewed as the source of the Tor traffic. When using Tor software, users’ IP addresses remain hidden. As such, it appears that the connection to any given website “is coming from the IP address of a Tor exit relay, which can be anywhere in the world.” While data on the magnitude of the Deep Web and Dark Web and how they relate to the Surface Web are not clear, data on Tor users do exist. According to metrics from the Tor Project, the mean number of daily Tor users in the United States across the first two months of 2017 was 353,753— or 19.2% of total mean daily Tor users. The United States has the largest number of mean daily Tor users, followed by Russia (11.9%), Germany (9.9%), and United Arab Emirates (9.2%).[10]

Directly connecting users



The Tor Project - <https://metrics.torproject.org/>

Figure 3 – User connection to Tor’s [11]

3.1 Silk Road

So, what is the Silk Road, well as the name entails it has to do with trade and in its most basic of forms a drug trading website located on the dark web.

How does one go about purchasing and selling drugs in such a website, well its quite simple in all honesty, the Payment for goods and services on Silk Road were made in Bitcoin, an encrypted digital currency. In contrast to the vulnerabilities exposed by PayPal, Western Union and cash in post, this offered anonymity in financial transactions. The use of anonymous Tor mail for private and anonymized communications between site users was another important security feature.[12]

So how does one estimate how many trades were done in such a place well there is mostly two ways.

- Most purchases entail a review at the end, and reviews are displayed on the front page, so one can monitor the front page and extrapolate to estimate average number of transactions per day or week, and from there estimate turnover and what SR's commissions total.[13]
- Another way is to look in the blockchain for SR-related addresses or transactions; one possible address had a 2012-06-23 balance of ₪450,825 or \$2,885,280.[14]



Figure 4 – Silk Road website [15]

3.2 BitCoin

By now and having in consideration the recent times most of us must know or at least have heard of bit coins and how they can influence the trade market, the simple truth is that the bit coin is currency like any other and it only has any real value because we deem it so.

So, what is a Bitcon, well a Bitcoin is a cryptocurrency that has received substantial attention given its innovative features, simplicity, transparency, and its increasing popularity. Since it was first outlined in a paper by Nakamoto (2008) and went online in 2009, the price of Bitcoin has increased by over 5000% up July 2016. Investors have employed Bitcoin as currency as well as for investment purposes with Selgin (2015) and Baeck and Elbeck (2015) arguing that Bitcoin should be seen as a speculative commodity rather than a currency. Yet, the efficiency of Bitcoin within the meaning of Fama (1970) has not been investigated.[16]

3.3 The dangers of the dark web

What became a real power behind the dark web was the bitcoin due to the simple fact that it is considered untraceable allowing for all kinds of transaction to be performed with out any of the dangers of being found and arrested.

For example, as shown before one can acquire drugs trough the use of the bitcoin and buy it in mass quantities without the fear of being traced, and the only problem that will remain is how one will manage to acquire it.

So, one can imagine that with enough monetary power in the dark web one will be able to acquire anything they desire, from the simple purchase of drugs to the potential of buying any kind of weapons be the simple side arms to ones considered to be of mass destruction.

Also, one can purchase the actions of someone or a group of people and direct them to perform attacks be they virtual or physical on a certain target.

For what I can take from the research I performed on this matter as long as one has the monetary power in the dark web one will be able to perform what ever they desire for the simple fact that in the dark web exists the lack of rules.

So, in basic principle as long as there will be any sort of demand there will be an offer to perform the given task.

4 Conclusion

So is the deep web and the dark web as dangerous as some of us fear it to be, well not really it depends on what you access and how you access it. One can find a hidden community that's all about doing good to the world just as fast as one can find one that its sole purpose is to do harm to it.

But in majority what one will find the most in such place is a simple market that trades in all things with out regulations of the law and sometimes even without regulations of what is considered morally wrong, as said before as long as there is a demand there will be someone offering.

While one can take measures to prevent the maximum amount of danger as possible in most cases, they will serve almost no purpose other than self-assurance because while yes, it is a lawless place in most cases the only thing one seeks to do there is the act of buying/selling something that is considered illegal and will not try to track anyone that bought or sold a specific product.

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