October 2011



Hacker Intelligence Initiative, Monthly Trend Report #5

Hacker Intelligence Summary Report – Monitoring Hacker Forums

As a part of Imperva's hacker intelligence initiative, we monitor hacker forums to understand many of the technical aspects of hacking. Forums are the cornerstone of hacking – they are used by hackers for training, communications, collaboration, recruitment, commerce and even social interaction. Forums contain tutorials to help curious neophytes mature their skills. Chat rooms are filled with technical subjects ranging from advice on attack planning and solicitations for help with specific campaigns. Commercially, forums are a marketplace for selling of stolen data and attack software. Most surprisingly, forums build a sense of community where members can engage in discussions on religion, philosophy and relationships.

Hacking has become a group activity. Technical complexities have made hacking too difficult for any single individual to conduct attacks successfully – as recently evidenced by the hacking team called Lulzsec. For hackers participating in illegal activity the challenge is to preserve anonymity while finding and communicating with partners. To remove this obstacle, hackers have developed numerous hacker forums worldwide. The precise number is unknown, but there are likely several thousand. Some are quite large with nearly 250,000 members (though many are dormant) while others are smaller and quite exclusive with just dozens of hand-selected participants. And not all participants may be engaging in illegal activity, they may simply be technically curious or in search of community. Many forums are in English but attract an international group. Due to obvious anonymity requirements, hackers don't identify themselves or their nationality. But it is safe to assume that forums host a very internationally diverse group.

To date, we are not aware of any studies that have been performed on hacker forums – yet the value of studying these forums can help security professionals build better defensive strategies. Moreover, forums give interesting insight into the personalities and drivers that compel hackers. For parents and even law enforcement, there may be lessons to help spread the word that hacking for profit is wrong.

Methodology

Imperva's analyzed one of the largest-known hacker forums with roughly 250,000 members. Known as "content analysis," Imperva used the forum's sophisticated search capability to analyze chats by topic using specific keywords. Specifically, we summarized the volume of threads addressing a multitude of topics.

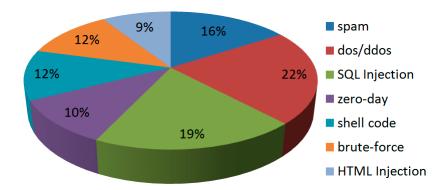
Though there are many forums that are small and solely focused on committing cybercrime, we don't have access to these. The site we examined is not a hardcore crime site, but it's not entirely softcore either. New hackers come to this site to learn and on the other hand more experienced hackers teach to gain "street cred" and recognition. In the past, this forum has helped security researchers identify illicit cyber activity. Typically, once hackers have gained enough of a reputation they go to a more hardcore, by-invite-only forum.



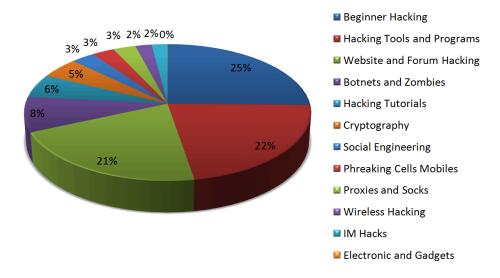
Key Findings:

Finding #1: The most discussed topics in forums are SQL injection, 19% of all discussions, and DDoS with 22% of discussions.

Top 7 attacks discussed in a large hacker forum in the last year (# threads with keyword)



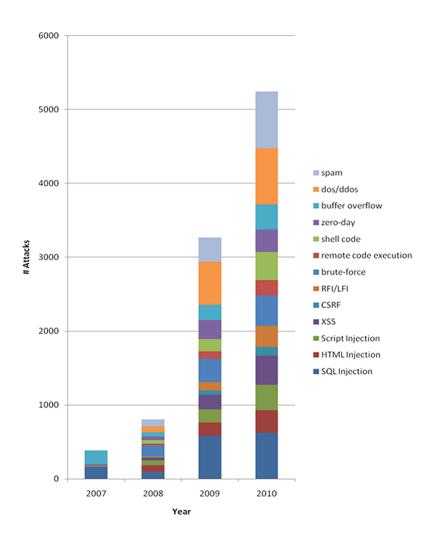
Finding #2: Hackers devote most of their time, 25%, towards discussing beginning hacking. The strongest category with nearly 25% of discussions was on hacking tutorials. This means there's a strong, steady interest in content to learn hacking, ensuring a steady supply of new talent. Other hacks, such as botnets and zombies, were prominent but website hacking more than tripled the next highest topic.





Finding #3: Attack discussions have grown exponentially over a four-year period, growing an average 157% since 2007. The fastest growing topics were DDoS, SQL injection and spam.

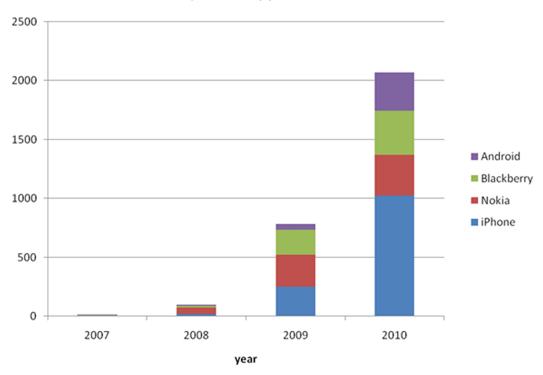
Growth of discussion topics by year





Finding #4: Mobile hacking has seen very strong growth in discussion forums, with iPhone hacking leading the way.



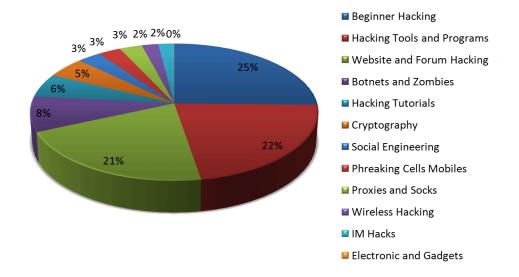


A Trip To the Dark Side

As we have mentioned, hacker forums serve several functions: training, communications, collaboration, recruitment, commerce and even social interaction.

1. Training – Forums help aspiring hackers learn the trade technically and nontechnically. Our analysis shows that training comprises the most frequented topic with 25% of total discussion threads.

Most frequent popular topics: June 2010-June 2011. Note: sample was 241,881 total threads.





Technically, forums provide tutorials and videos for common hacking techniques such as SQL injection – the most common method to steal data.



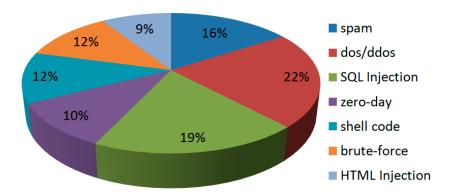
SQL injection tutorial:





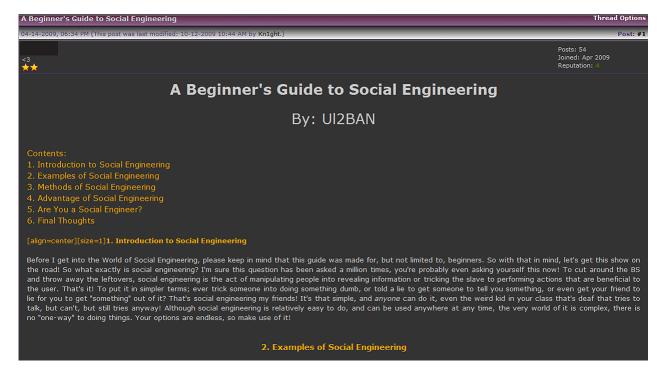
DDOS was the most frequently discussed topic with 22% of threads with SQL injection a close second with 19%.

Top 7 Attacks discussed in HackForums.net in the last year (# threads with keyword)



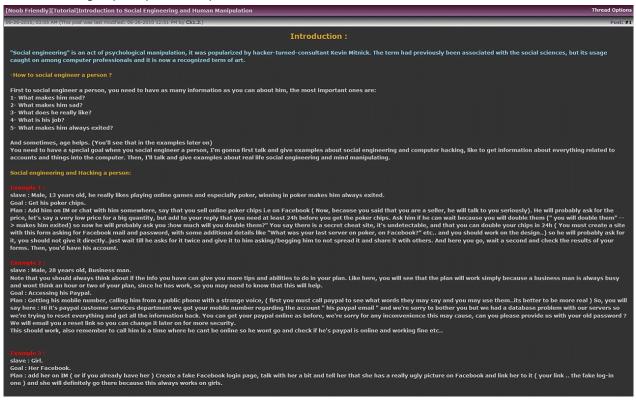
Most frequent popular topics: June 2010-June 2011. Note: sample was 241,881 total threads.

However, a fair bit of nontechnical training takes place on forums. For example, hackers have developed extensive tutorials on "Social Engineering" which is described as "manipulating a person to accomplish goals that may or may not be in the "target's" best interest. This may include obtaining information, gaining access, or getting the target to take certain action."

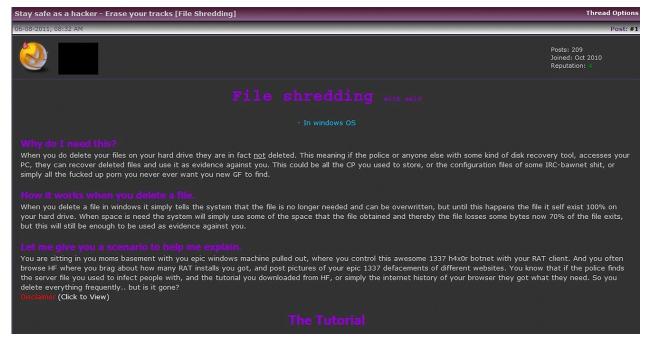




Some tutorials get quite specific and provide case studies:

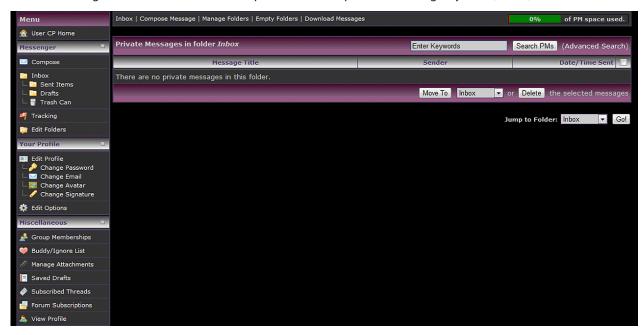


There are even tutorials on avoiding the grip of law enforcement. In the picture below, we see a guide to ensuring files on a hard drive are properly erased to prevent legal repercussions in the event of being incarcerated:

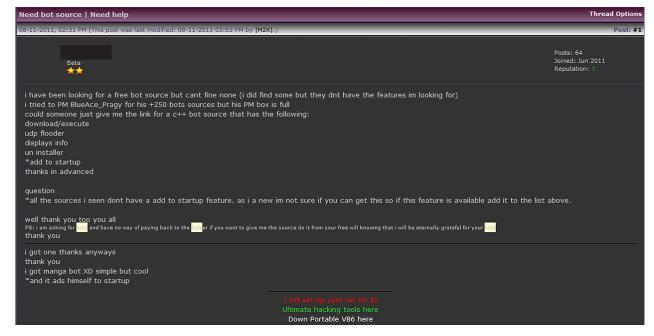




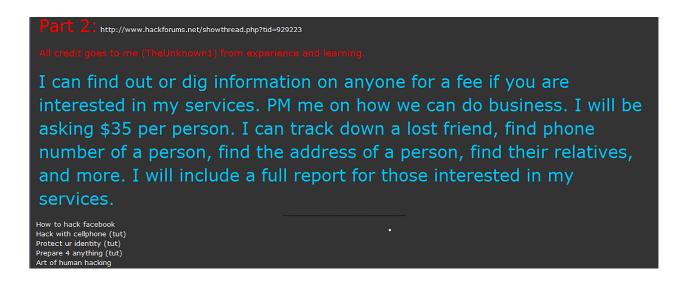
2. Communications – The ability to communicate with anonymity is a cornerstone of hacking. Forums provide a platform for to discuss miscellaneous topics as well as host internet relay chats (IRCs) for real-time communications, often used when executing an attack. Below is an example of a forum's "personal message" system (or PM):



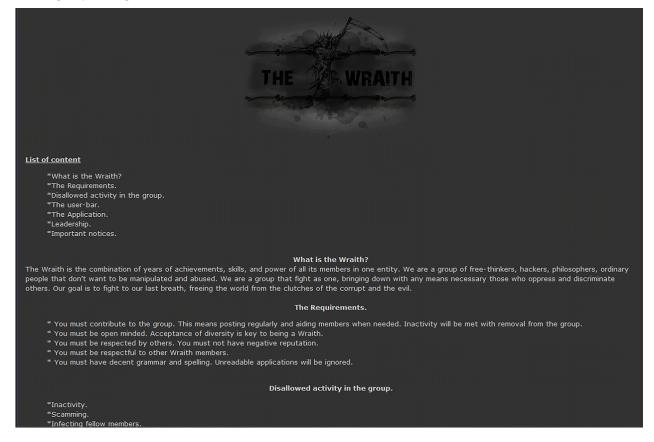
3. Collaboration – Hacking has become more and more complicated with several components required to execute attacks. Forums provide a conduit for hackers to volunteer help and information regarding attack campaigns.







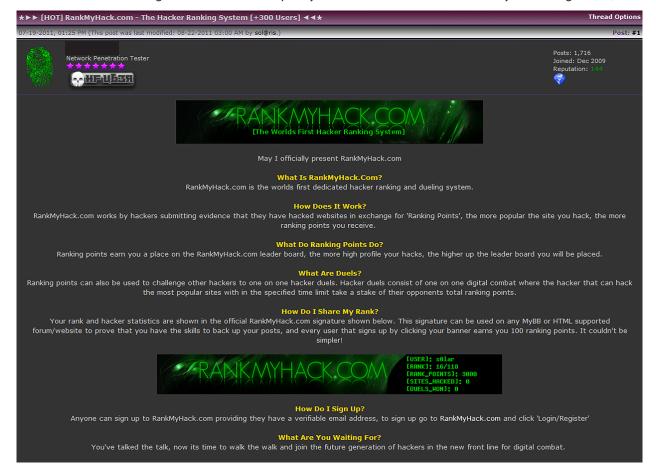
4. Recruitment – Keith Richards described the Rolling Stones' success saying "It's really teamwork, one guy supporting the others, and it's all for one purpose, and there's no flies in the ointment." To illustrate his point, Keith explained that Mick Jagger's solo album "Goddess In The Doorway" should have been titled "dog shit in the doorway." Likewise, hacking has become a group sport and its success depends on a quality team. To be successful, you need to have expertise in various areas such as web attacks, DDOS, malware, etc... If a single hacker finds or conceives of a potential target but only has some portion of the expertise required to successfully execute an attack, where do they go? Here a hacker group, calling themselves the Wraith, recruits members:





Recently, one forum participant, claiming to be a security researcher, hosted a hacking contest, RankMyHack.com, which was advertised on hacker forums. This effort took recruiting to a new level with a ranking system, similar to how eBay ranks sellers based on reliability:

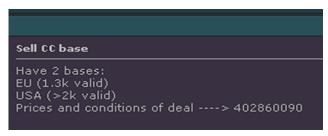
Up until now, when you met another hacker on an IRC or forum, there was no way to indicate if that hacker had any skills what so ever, RankMyHack.com was built to give a clear indication of a hackers general abilities. It also serves the purpose of tracking a hackers hacking acheivements under their current alias allowing for other hackers to quickly establish the calibre of hacker they are talking to. (Sic)





5. Commerce – A key function of hacker forums is commerce. Members can buy, sell or trade but in this case the goods are stolen data and attack software. In this case, the exchanges resemble the type of commerce seen on Craig's List where buyers contact sellers directly with no transaction engines processing the engagements.

When data such as credit cards, social security numbers or login credentials are stolen, the hacker will post the information, often with some evidence, to the forum for prospective buyers. Here, a hacker tries to sell credit card numbers:

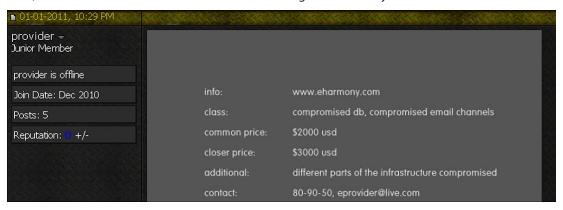


Here, a hacker shows the full set of personal details as a proof that they have more:



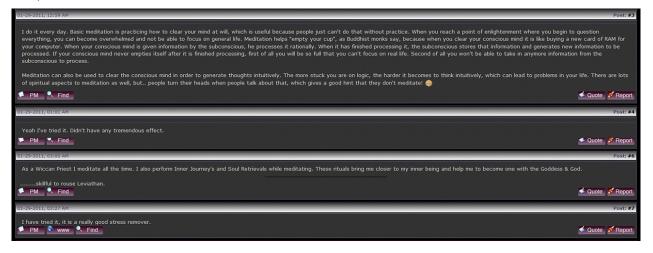


Here, a hacker sells the database contents from dating site eharmony.com.



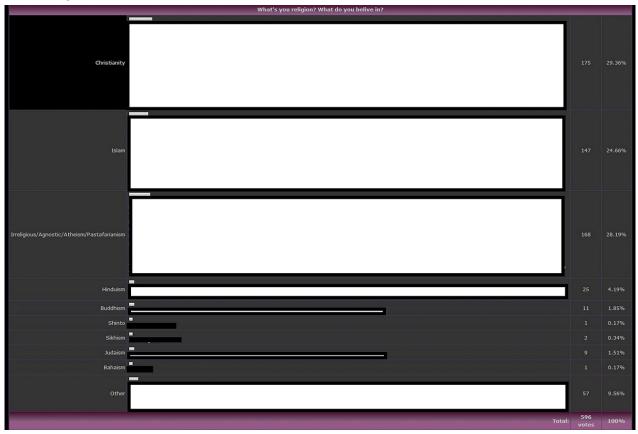
6. Social interaction – Since forums provide a sense of community, they are a natural location for social interaction. The anonymity in the forums allows blunt exchanges and questions. Topics can range from religion, philosophy, books, movies, TV, relationships, sex and even acts of revenge.

Here, a hacker discusses meditation:





Here, hackers take an informal poll regarding religious views (we have obfuscated some derogatory comments about various religions):





Conclusion

In June 2011, the UK's Guardian <u>explained</u> how hackers are acting as FBI informants. The article cited the importance of forums when it came to apprehend cyber criminals:

...popular illegal forums used by cyber criminals as marketplaces for stolen identities and credit card numbers have been run by hacker turncoats acting as FBI moles. In others, undercover FBI agents posing as "carders" – hackers specializing in ID theft – have themselves taken over the management of crime forums, using the intelligence gathered to put dozens of people behind bars.

The article went on to suggest that nearly 25% of hackers act as FBI informants. Although this figure seems too high in our opinion, it highlights the value of studying hackers for security professionals to focus on actual threats and devise new defenses based actual attacks. Specifically, studying hackers gives:

- > Clues on what hackers are attacking. This helps security teams prioritize the overwhelming number of vulnerabilities they need to remediate.
- > **Technical insight into hacker activity**. Hackers, by definition, are early adopters and innovators which is often detailed in forums.
- > **Business trends of hacker activity**. By monitoring the sale of data and how hackers make money, security teams can monitor what type of data is most attractive on the black market.
- > **Future directions of hacker activity**. Forums today have much more discussions regarding mobile computing. Not coincidentally, mobile malware has risen just as dramatically. This episode, to paraphrase hockey great Wayne Gretsky, assists security teams to not keep their eye on the puck, but rather, know where it's going.

Hacker Intelligence Initiative Overview

The Imperva Hacker Intelligence Initiative goes inside the cyber-underground and provides analysis of the trending hacking techniques and interesting attack campaigns from the past month. A part of Imperva's Application Defense Center research arm, the Hacker Intelligence Initiative (HII), is focused on tracking the latest trends in attacks, Web application security and cyber-crime business models with the goal of improving security controls and risk management processes.