

The KnujOn News

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I. Welcome to KnujOn!

You are now part of one of the most innovative free Internet security efforts available. Your spam submissions to this project are used to enhance the flawed policy structure of the Internet and give voice to the ordinary e-consumer. From our perspective, the roots of cybercrime and abuse lie within the lack of accountability among service providers. A snake will always be a snake, and criminals will always seek and find ways to exploit the system. However, our research shows that a majority of spam and illicit Internet activity is preventable by enforcing existing policies. Unfortunately, there is no incentive for Internet service providers to police or remove illicit customers because they actually provide a sizeable amount of business to the service providers.

Spam is not about who sent it, but about who benefits from it. Spammers are mercenaries who work for the organizations profiting from counterfeit and questionable products. In order to properly conduct their illicit traffic they need unfettered access to transaction platforms, namely Internet domain names. Domain names are sold by companies called Registrars who have in some cases cooperated with cybercriminals. The body that oversees Registrars is called ICANN and our long history of experience with them shows they are unable or unwilling to enforce existing policies with their contracted parties. KnujOn provides a path to enforcement by unraveling the mysteries behind the Internet infrastructure and ensuring policies are enforced as designed!

A. How to use KnujOn and these reports

The best way to use us is to submit email junk to the address we designated or upload them through this page. There will be a .CSV file (comma separated values) which some KnujOn members use to build personal email filters and a receipts page which shows the most recent submissions of your we have processed. The samples you send us are processed and the results are parsed out in a report showing four cardinal relationships for a domain name and our actions against them. Frequently we will post detailed analysis of various problems related to a particular provider right in this interface. These reports are constantly changing in data and makeup. We will do our best to alert you of changes. Below you will see a briefing of each of the four categories featured in these reports

The CSV file: CSV stands for “Comma Separated Values” and is a basic data format which can be opened by most spreadsheet programs on most platforms including MS Excel and Mac Numbers. This file is a list of domains you reported with statistics. Many KnujOn users apply this list to their personal email filters.

The Receipts Page: This webpage lists your most recently and processed samples. If it does not match your records, let us know. The receipts also indicate if we were able to extract data from the samples. If you see “No Data” next to a file sample it means we could not pull any domain information from the file for our process. There are many reasons for this including:

- The file was empty
- The file did not contain any domain-related email samples (i.e. image-only or 419 junk mail*)
- There is a Base64 issue in your file**
- The file was encrypted
- We could not open the file compression format

*Image and 419 spam are forwarded to research labs but not included in your statistics at the moment.

**Base64 is an extended character encoding set which takes up less space in email files than Base32 encoded messages.

Future versions of the receipt file will contain more information about the data extracted.

Note about the Application Process:

- You should receive an automatic notice from KnujOn after applying with your temporary KnujOn ID which will allow you to upload samples but no email
- A second email will be sent confirming your KnujOn ID and ability to email samples. Accounts are created once a week, so depending on the day you submitted it may take a few days.
- A third email will supply a link to your report interface. This is will be a static page until your samples are submitted and processed. This link should have instructions and abundant information about KnujOn.
- After this you will only receive emails during your selected frequency (set to WEEKLY as a default), and if you submit samples. KnujOn creates an account upon application but no data table is created until samples are submitted.
- Once samples are submitted and successfully processed, your reports will be deployed to your designated account page.

We acknowledge that this process has been slow on a per-account basis and we are making changes to speed it up!

FYI, Suffolk University releases case study on KnujOn:

http://swcrahome.org/Cases/V10_N1d_KnujOn_Case.pdf. The release timing is complete coincidence!

B. About Registrars...

What is a Registrar and what role do they play in your spam and other Internet abuse? A Generic Top Level Domain Registrar (.com, .net, .org, .biz, .info...) is a company licensed by the Internet Corporation of Assigned Names and Numbers (ICANN) to sell and sponsor domain names. Registrars must sponsor domain names in a central structure to avoid name conflicts and abuse of our common communication system. The point is to create accountable and contactable parties with an agreed upon rule set for creating a domain on the Internet. Registrars are supposed to be accountable to ICANN and ICANN is supposed to be accountable the Internet community (meaning YOU!).

Unfortunately, this plan has been corrupted and turned upside-down. The Registrars now wield the most influence at ICANN, often in secret, and ICANN has failed in its mandated oversight of the Registrars. This is why KnujOn spends so much time devoted to researching Registrars. Criminals and companies sued for spamming own Registrars. Many Registrars are unrepentantly assisting organized crime in exploiting Internet consumers. The economics are fairly straightforward. While individual domain owners and companies buy few domain names, spammers and other Internet criminals buy tens of thousands on a regular basis. For each domain name sold by a Registrar ICANN gets USD 0.18. When domains are sold in bulk the Registrars make more money and ICANN

earns more as well. Criminals and spammers need domain names as a critical resource, and they need lots of them frequently. What is the point of spam or malicious webcode? To direct a user to a domain name which serves as a transaction platform. Some spam have no web links, but the ones discussed here do.

Registrars will often claim they have no authority or ability to deal illicit use of a domain, but this is a flat out lie. In two critical sections of the Registrar contracts they are obligated to follow local law and regulations¹ and the domain owner is obligated not to use their domain for an illegal purpose². Domain owners are also required to have valid contact information, and the Registrars are required to validate that information.

What you will see in our frequent reports about Internet abuse is documented policy failure among Registrars and a general failure of ICANN to address these issues. By highlighting these problems and publicizing them, KnujOn has had significant success in getting various problems fixed while limiting illicit access to domains names. Because our activities cut into Registrar profits and put ICANN under scrutiny, we are constantly under attack from these parties. The overall goal is to make them more accountable and improve ICANNs poor oversight. Registrars are the first vertex of our Tetrahedron.

C. About IP Addresses...

Spam is about who benefits from it, not who sent it. Previously we focused on the Registrar role in your Internet abuse and spam, now we take a quick look at IP Addresses. IP stands for Internet Protocol and an IP Address is a unique machine number on the Internet identifying the location of Internet content or services to be retrieved by your computer. Registrar sponsorship of a domain name means the domain can be tied to an IP address. For example, the content of Knujon.com does not reside there, in truth there is no location such as Knujon.com rather a machine address: 97.74.144.105 that serves the content and is associated with Knujon.com. Domain names function like human names in a phonebook that direct to phone numbers to call. The full IP range of the Internet is 0.0.0.0 to 255.255.255.255 and every website exists within this range (these examples only refer to IPv4, IPv6 addresses are very different but not in full use). The address format has four counters if you will with a limit of 255, the next address after 0.0.0.255 is 0.0.1.0. After 0.0.255.255 the next address is 0.1.0.0, etc. Not every address in the full range is in use or accessible to the public, many are reserved for internal network use, testing, government agencies, or held for future use. The recent news about the Internet running out of addresses is not completely accurate; All the addresses have been assigned, but not all are used and the size of the Internet is virtually unlimited. Many addresses are not used for domain names but for other telecommunications.

IP ranges are assigned in blocks by the Internet Assigned Numbers Authority (IANA – iana.org), which is an arm of ICANN. There are 5 regional delegate organizations: North America (ARIN.net), Latin America/Caribbean (LACNIC.net), Europe/Central Asia/Middle East (RIPE.net), Africa (AfriNIC.net), and Asia/Pacific (APNIC.net). Each

¹ <http://www.icann.org/en/registrars/ra-agreement-21may09-en.htm>

² <http://www.icann.org/en/udrp/udrp-policy-24oct99.htm>

of these organizations in turn assigns IP blocks to Internet Service Providers who may sub-lease them to other providers. The IP Addresses we are concerned with host content for sites advertised in spam to you. For the purpose of tracking abuse we are building a cumulative report interface here: <http://www.knujon.com/ips/>. We have posted details on abuse statistics for all IP ranges here: <http://www.knujon.com/ips/#all> but we are primarily focused on the worst IP ranges: <http://www.knujon.com/ips/#worst>. Of the 256 top-level IP ranges only 11 have more than ten thousand abused domains reported to KnujOn.com since January 2011. Of those eleven, 2 are in Europe and 9 are in North America. Just as we have reported with Registrars, spam and abuse is concentrated in specific places. Over time we will break down these ranges and reveal which providers are responsible. As with Registrars there is a chain of responsibility. IP Addresses are the second vertex of our Tetrahedron.

D. About Name Servers...

Spam is about who benefits from it, not who sent it. Previously we discussed Registrars and IP Addresses. Registrars sponsor domains and IP Addresses host the website content. However, both are useless on their own. Name Servers provide the critical link between domain registration and IP hosted content. A website isn't a website until it has a Name Server. What is called the Domain Name System (DNS) is essentially a vast digital phonebook. When you enter or click on a domain name in a browser it accesses the DNS which finds the domain name in this massive phone book and directs the browser to a Name Server. The Name Server in turn associates the Name Server with an IP address that actually holds the website content and returns it to your browser. At the most basic, technical level a Registrar sponsors a domain name in the DNS. The Registrar inserts, updates, maintains and removes domains from the DNS. Not all Name Servers are run by Registrars; ISPs run Name Servers and it is possible for an individual domain owner to run their own Name Server, but the DNS entry cannot be done by a domain owner. Name Servers are themselves domain names with a special record entry. Name Servers frequently follow this naming convention: NS.DOMAIN.COM but not always. A single domain name may have many Name Server records and appear in sequence like this: NS1.DOMAIN.COM, NS2.DOMAIN.COM, NS3.DOMAIN.COM, etc. Name Server information is required in all WHOIS records. We often refer to the Name Servers we examine as -Crime Servers- because they are dedicated to serving illicit and spam domains. This is the third vertex of our Tetrahedron.

E. About Domain Owners...

Spam is about who benefits from it, not who sent it. Domain registration is where the problem starts, illicit activity at Registrars, IP Addresses, and Name Servers is a product of illicit domain registration. People, not technology, are the ultimate problem in Internet security and abuse. Domains don't register themselves, and it is the abusive owner who needs access to domains to conduct transactions. Owners, often called Registrants, are the fourth part of our new report format. This is the murkiest and most complex data item since some domain owners may be victims of hijacking or spoofing. Hijacking is when a

criminal compromises access to the domain and posts illicit content or uses the resources to promote illicit activity, this is often done with malware deployed on the website which creates hidden content. Spoofing is where a domain name is used within a spam message to misdirect blame for the spam message, frequently a victim domain name is used as phony opt-out link or simply accessed to provide additional content within a spam message which is unrelated to the transaction target of the spam. In these cases KnujOn attempts to contact as many owners as possible so they can address the problem. We generally purge these from our records quickly.

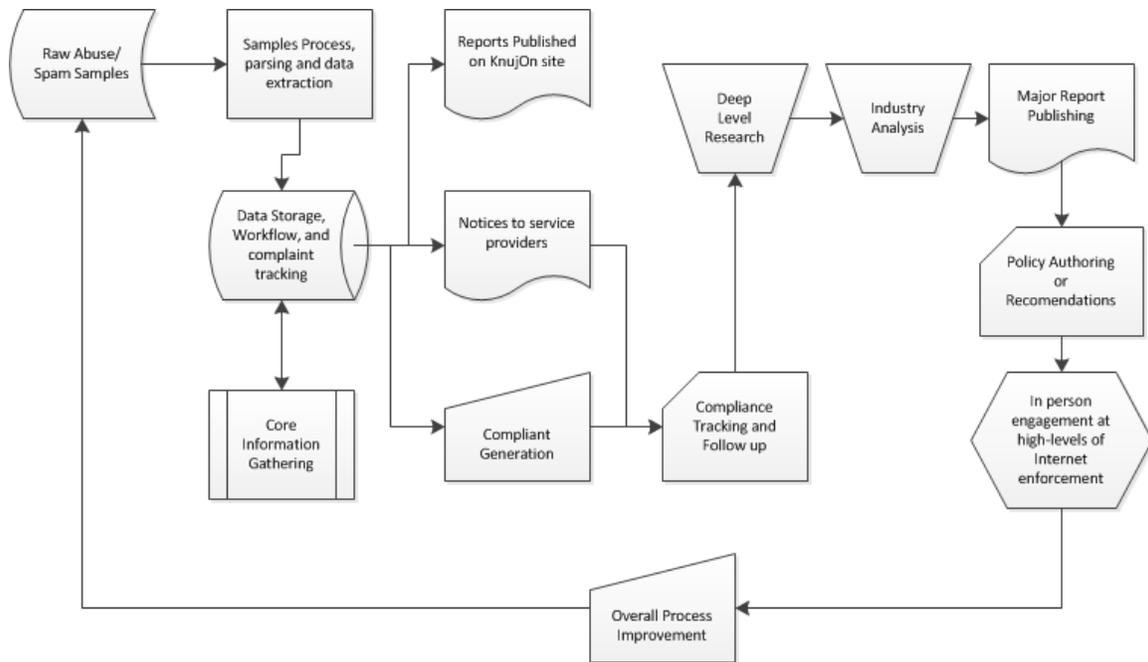
As for the rest, criminal ownership of domains is pervasive and unchecked by the domain name industry. While Registrars have a contractual obligation validate ownership there is no incentive to do so. It is fact that spammers and illicit product traffickers provide significant profits to major Registrars. There are some Registrars who provide exclusive registration services to criminal domain owners. There are some Registrars who create false identities to purchase trademark violating domain names, which violates their contract with ICANN. This is the fourth vertex of our Tetrahedron.

F. The Flow...

We discussed Domain Owners, Registrars, Name Servers and IP Addresses. Now we will briefly go over the flow of creation for a domain name. Domain names are the ultimate destination for Internet abuse as they serve as transaction platforms for illicit activity. Domain creation is initiated by Registrants or domain owners (in some cases it is a Registrar which violates the rules, but that is a different discussion). Domains can only be purchased through a Registrar who inserts the domain name in the Domain Name System(DNS) through zone files and Name Servers. The Name Server record(within a WHOIS record) associates the domain name with a raw IP address which actually has the website content. These relationships are important to our work as various providers use this multi-party architecture to reject responsibility. The Registrar will blame the ISP, and the ISP will blame the owner and all will claim they have no control. As we have explained this is big lie that allows Internet abuse to persist. In your refreshed reports you will see three arrows between the four vertices of our Tetrahedron which demonstrate the flow or creation and control. KnujOn breaks this flow with various tools.

G. KnujOn Process

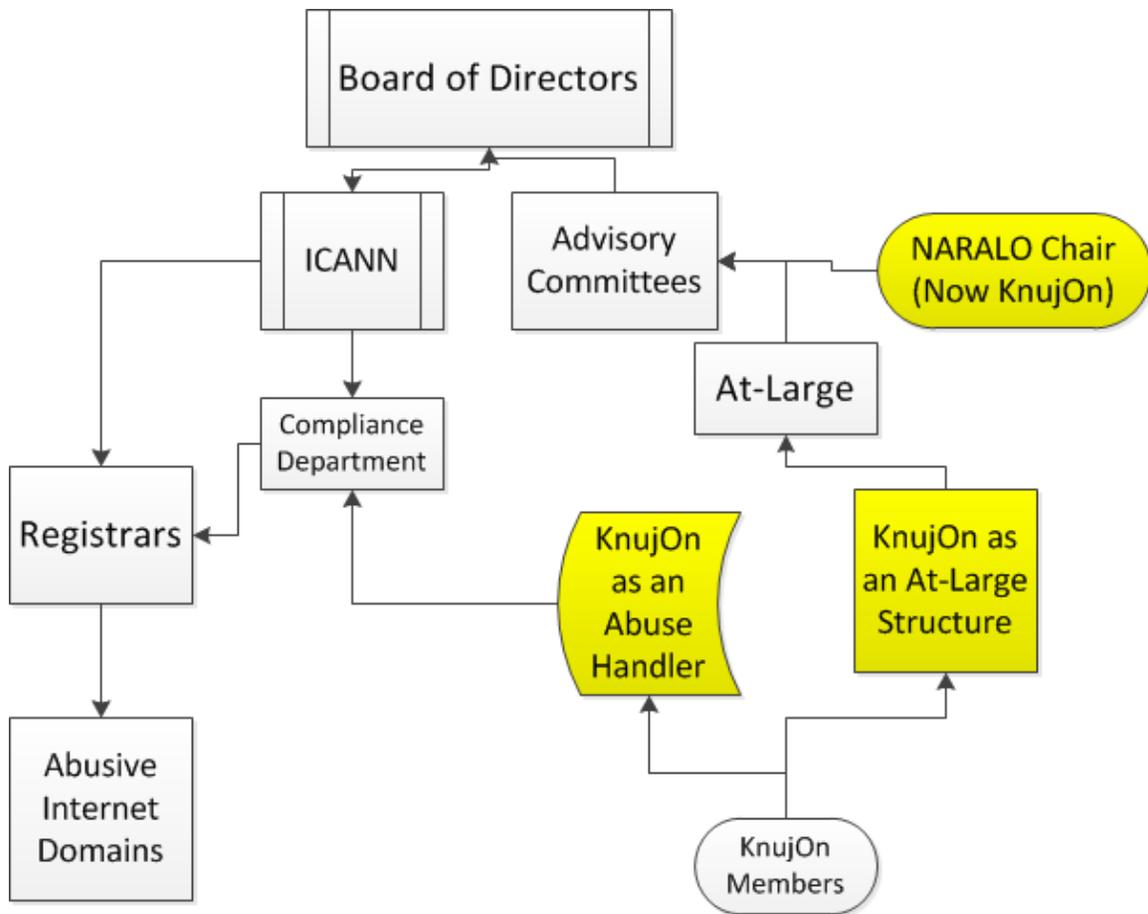
This chart shows a very high-level view of the KnujOn Process. As explained in detail above, this is a *political* process as much as it is a *technical* process. KnujOn drives issues into the existing Internet enforcement structures and measures their effectiveness. When they fail to produce results, we take to the next level to find out what went wrong.



One of the places we have been spend quite a bit of time is ICANN because of the crucial role in drafting and enforcing policy for the Internet. More details in the next section.

H. KnujOn and ICANN

Understanding how KnujOn and the KnujOn client fit into the ICANN universe is important. ICANN accredits the Registrars who sell domains which end up in your spam. KnujOn has been engaged in an aggressive campaign to make sure the ICANN contract with Registrars is properly enforced and to fix broken policy where it is found by our research. The chart below show three ways KnujOn is engaging ICANN to address your abuse issues. The first is that as a private abuse handler, KnujOn is continuously pushing the ICANN Compliance department to conduct proper investigations and follow through with enforcement. The second is that KnujOn is an At-Large structure within the ICANN community which feeds policy recommendations to the organization's board of directors. The third is that as of August 2012 KnujOn's principal researcher is the Chair of the North American Regional At-Large Organization. This allows us to set the agenda, run various meetings, and access areas of Internet policy not usually open to the public. To see the entire ICANN structure go here: <http://www.icann.org/en/groups/chart>. The chart below shows how KnujOn addresses abuse through the existing structure.



KnujOn has had some major success in fixing the broken system. Below is a table outlining some of these achievements.

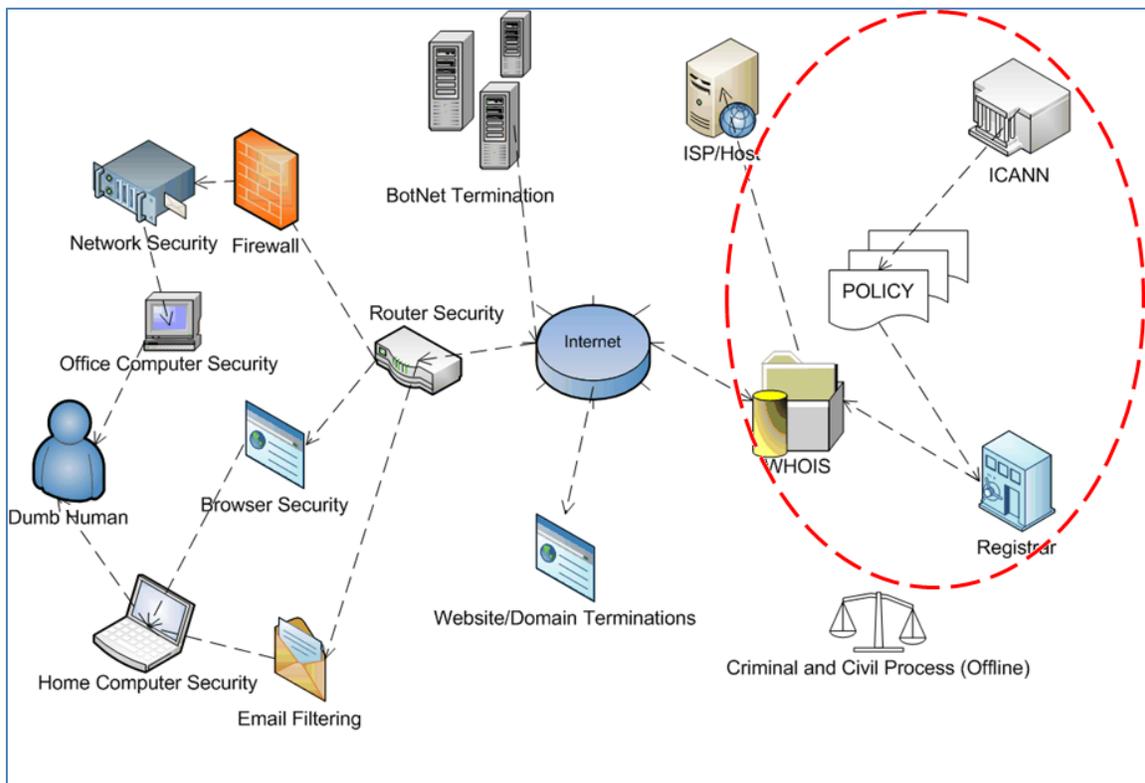
Published Research	Policy Changes
KnujOn Report Correlating SPAM statistics with specific Domain Name Registrars.	ICANN publicly warns those Registrars and cites KnujOn research. Several Registrars changed policies as a result.
High-volume complaint system for reporting fraudulently registered domain names through ICANN developed by KnujOn reveals the compliance system is inadequate for the expanding Internet.	ICANN upgrades the complaint system with KnujOn testing assistance.
KnujOn research finds Internet service providers are obscuring their location due to a contract loophole.	Amendment to the contract now requires disclosure and ICANN published a full list of Registrar business addresses.

Detailed KnujOn audit of ICANN Registrars finds extensive illicit activity and failure to enforce the contract.	Multiple effects
KnujOn Research finds that ICANN Registrar Contract may have serious loophole	Ongoing debate
Year-long study of ICANN Compliance based on KnujOn spam submissions shows general failure of the department.	ICANN internal structure reorganized to move Compliance under the CEO and not Legal Counsel.

This research document:

http://knujon.com/Knujon_ICANN_compliance_eval_09192012.pdf is one of the most comprehensive reviews of the problem.

This chart shows where KnujOn “sits” in terms of abuse handling:



II. About Spam and Internet Abuse

A. What is *not* SPAM

Truly defining SPAM is difficult, and part of this definition should be a clear delineation of what is *not* SPAM, or more specifically what KnujOn will not process. Newsletters you voluntarily signed up for but have not unsubscribed from are not SPAM. There are many legitimate uses for mass email, especially items you have accepted. If you have unsubscribed or used the opt-out functions but they keep sending you mail, then it becomes spam. If you have made a purchase, say from Amazon, iTunes, 1800Flowers, etc., they may send you notices because you have a *relationship* with them as a customer. Relationships are key in determining what *is* and *is not* unsolicited. Most online retailers have checkboxes on forms which allow you opt-out of notices when you make purchases, be sure to uncheck these! Also, be sure to check the retailer's conditions about selling your data to third-part marketers. Most online businesses thrive on reselling your data to other advertisers. If you have not carefully reviewed the terms of a purchase, you may be opening yourself up to more junk email. However, all legitimate companies should honor opt-opt requests. Some questionable online services make it very difficult to opt-out or unsubscribe. If make honest attempts to opt-out and keep receiving email, then it has become SPAM. The truly malicious spam we deal with is mostly of the variety for which you have no relationship and never had a relationship! The spammers stole your email from somewhere or auto-generated the address.

Appendix – KnujOn Articles and Major Reports

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