



Nexicon, Inc

# Nexicon FAQs

# Monitoring and Classifying Data

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## **What is the MARC technology platform?**

Nexicon's MARC (monitor, analyze, report, and collect) technology platform is the world's most advanced technology solution for content owners today in their battle against digital piracy. As the technical backbone of Nexicon's comprehensive offering of anti-piracy products, MARC monitors every conversation on the Internet Relay Chat (IRC) system, simultaneously tracking more than 80,000 files at one time. MARC inspects more than 21 billion file transmission using three agent servers. And since the platform is easily scalable, the number of files that can be scanned can easily be increased by adding servers. The platform monitors potential infringement data through a global network of data mining agents that scan Internet protocols, such as BitTorrent, Ares, and newsgroups. As pirates leverage new distribution methods, Nexicon engineers quickly adapt the MARC platform to monitor any new protocol.

Although Nexicon is a new company, our technology is not new. It comes from companies in Europe where we won the World Telecom billing award in 2003 for the most innovative billing system for the Telecom industry. Our system was used to trunk phone calls for MCI Europe, and our systems (CPU capabilities) were deployed by the ALCATEL telecoms division. Nexicon's expertise may come from the telecom ISP industry, but we are unique in that we are also an ISP. This makes us very powerful in the world of Internet monitoring. Nexicon also offers advanced network security analysis, and we been employed to perform security jobs at national security levels. Nexicon intends to use our expertise and experience to innovate and improve our complete line of products. Currently we are engaged in heavy R&D work within digital distribution for the movies/games/music and software industries, and we also have a very large department within government markets.

## **What is the significance of the "nickname" file in the MARC platform?**

The nickname file in MARC identifies users who have a nickname attributed to their IP addresses. Examples of these users include peers or facilitators, such as companies or usernames on a protocol, or specific domain names that are tied to their IP addresses, such as thepiratebay.org.

## **How does Nexicon collect data?**

Nexicon maintains some of the largest servers and networks in the world on all protocols (including one of the main EFnet nodes on IRC). Nexicon has built software similar to all the P2P applications, but has added functionality that enables us to participate with the protocol and also to monitor the activity. All Nexicon software is based on ANSI C and runs in UNIX® environments. This applies to the P2P capabilities. We use both web crawling and PSP participation.

## **Before manual checking, what kind of technology does Nexicon use to preclassify data?**

We use a range of different techniques, including meta information where it is applicable and can be reliable for predetection. We also use an audio/video fingerprinting system, but the most effective tool Nexicon uses is the manual human audio/visual verification system. All of these capabilities bundled together make up a very robust classification of data.

## **What is the Front Porch technology, and how do the pop-up messages work with Nexicon's technology?**

Front Porch technology provides ISPs with the ability to send pop-up, pop-under, or sidebar advertising messages or service notices to their subscribers while they browse the Internet. The messages can be sent based on defined parameters and triggers. An ISP uses specially designed APIs and, with the assistance of Front Porch technology and MARC, can communicate to a subscriber that an "event" has occurred. In the case of digital rights management, MARC communicates via an API to the Front Porch application that a given user on the network is downloading or uploading an asset for which MARC is monitoring. The ISP can then define the actions to be taken at this point; for example, display a pop-up window with options that a user can take action on.

# Monitoring End-User File Downloading and File Sharing

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## What supported services does Nexicon use to monitor file downloading and file sharing?

Nexicon uses the following supported services:

- Direct Connect
- HTTP/HTTPS
- BitTorrent™
- Auctions (such as eBay®)
- Usenet (newsgroups)
- IRC (Internet Relay Chat)
- Gnutella (Gnutella2)
- Kademia (part of our eD2k systems and is named ed2k in our system)
- Ares
- eDonkey (eD2k)
- FTP (file transfer protocol)
- FastTrack
- FreeNet (can be implemented on client request)

Nexicon's infrastructure and backbone represent a full-scale, Tier 1 and Tier 2 ISP. We peer with all the major ISPs in the Euronet and US networks. We run our own fiber and do all our network engineering in house so that we can simulate millions of users on the Internet and participate with other networks to enable better coverage and to maintain complete security and control of future R&D innovations.

## Monitoring file downloading and sharing is possible on P2P networks, but how does Nexicon monitor HTTP or newsgroups services?

In HTTP, we use meta crawlers (just like Google). We also use content and payload spiders and crawlers to provide a snapshot of all the data on a web site on a regular basis. To crawl newsgroups, we use a very robust Usenet client that runs in a UNIX environment and has access to some of the main root Usenet servers. We monitor content when it is posted to a newsgroup and by whom it is posted. We also track and record when someone downloads the content from the server.

## How many files does Nexicon track and check per hour?

As of July 2009, we are writing 800 million files per hour. In addition, we are connected to over 2.5 million BitTorrent peers; 532,000 eDonkey peers; 1.1 million IRC users; and 945 IRC networks.

## How many servers are monitored per hour?

By protocol:

BitTorrent: 1.1 million (torrent sites and torrent trackers)

eDonkey2000 (eD2k): 242

Gnutella (Ultra): 122,991

Ares: 12,140

## **How many end-users are checked per hour (in P2P protocols)?**

By protocol:

BitTorrent: 1.1 million (torrent sites and torrent trackers)

eDonkey2000 (eD2k): 242

Gnutella (Ultra): 122,991

Ares: 12,140

Note: These numbers apply only to our current clients (major Hollywood studios and major recording artists) plus government product lines.

## **How many users can access the MARC system before the system slows down?**

Our systems utilize a cloud architecture and master and slave database clustering. These systems are custom-built to handle massive transaction rates and can scale to any load, such as the 30 billion Internet transactions per day that are currently being monitored for illegal downloads.

In the past, we had over 1000 users from different locations in the world using MARC. Today we can manage around 2000 users for one cloud (one implementation). To manage more users, we just need to add one web server and one database server for every +2000 users. We then use round robin load balancing and load latency rules to route traffic and requests to the systems.

## **How does Nexicon handle proxies and VPN connections?**

VPNs and proxies are regularly encountered and handled by MARC. However, MARC does not handle cases of a VPN for which the algorithms are not open source. Note that instances of closed VPNs represent an extremely small percentage of the amount of file sharing occurring on the Internet.

## **How do encryption data or encryption protocols affect Nexicon?**

Encryption on the protocols or the data does not affect our technology because we are a participant on the protocol, and our software supports all the cryptographics used. Our clock skew system was originally built to detect computer fingerprints to reveal users behind Tor (the onion router, an encrypted anonymity service).

## **To focus on a specific P2P user, IP is not enough. How high is the precision of Nexicon's clock skew fingerprint technology? Are you using other unique IDs?**

Precision of the clock skew is extremely accurate and uses a PPM (parts per million) calculation that has a false positive rate of 0.0015%. We apply a country rule on the clock skew so a skew collision within the same country never occurs. We will reveal our algorithms to clients when we have a contract and a signed NDA through a third-party law firm.

## **What is Nexicon doing to stay one step ahead of P2P users so they cannot find ways around the solution?**

It's well-known that most P2P users do not take steps to shield themselves from potential tracking. Despite this knowledge, Nexicon is very serious about preventing P2P users from circumventing the MARC anti-piracy platform. Nexicon employs specialists whose primary or secondary role is to research and design countermeasures before they become mainstream solutions. Having this in place ensures Nexicon is able to penetrate the vast majority of illicit file sharing worldwide.

# Deploying Nexicon Systems

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## **How does Nexicon customize application deployments?**

Nexicon's MARC technology is the backbone of its comprehensive offerings of anti-piracy products. Because MARC is a platform and not a finished interface product, Nexicon can build customized deployment scenarios for each client. During the contractual period, clients will have a dedicated Nexicon person to communicate with about changes and alterations to the system during and after deployment.

## **What equipment and what level of connectivity are needed to operate the system, and who controls encryption of the data?**

Deployment options and scenarios will be customized for clients based on their business requirements and technical specifications.

## **What technical platform is needed to implement Nexicon's systems?**

Deployment options and scenarios will be scaled according to client and customer base growth and customer need. But for every deployment, Nexicon will supply the necessary hardware with all BSD-licensed software and source code installed for maximum security purposes and control for the clients. Nexicon's MARC platform only operates under UNIX (FreeBSD). Clients will have dedicated support from a FreeBSD expert in Nexicon located in the same time zone as the client, with the ability to add 2- to 10-hour on-location support.

## **How much CPU, bandwidth, and storage capacities are needed to fulfill Nexicon's services?**

Nexicon has 16,000 CPUs online, separated into 125 clusters, and we maintain a 10GigE connection that is running an average traffic congestion of 1.2% of its capacity. Because we build our systems to be fully scalable instantly, we can easily add both CPU and storage space. We scale our storage capacities on SAN and use NFS technology with shared and dedicated space for clients. Nexicon's CPU space does not run over 11% on peak days, such as major holidays, and we also have full disaster recovery and backup plans.

## **Describe Nexicon's server and network architecture, such as network granularity, localization, and layout.**

For security reasons, Nexicon does not reveal its specific network locations. But if we are under contract and have a strict NDA with a client, we will share a network map and enable clients to co-locate servers within our network. We also offer clients the ability to host their own databases, if applicable, and if the client has the capability of running 5TB database servers and larger (with certifications).

What we can disclose is that we have the 16th strongest and largest backbone in the world. In some countries, we are Tier 1, and in some countries, we are Tier 2 and Tier 3. We have spent 12 years designing our network (note that Nexicon used to be a DSL and International Telcom backbone carrier). We have a strong presence in Scandinavia, UK, Spain, France, Germany, US, as well as other continents. Today our agent network server farms (where the software for the monitoring resides) run over 2100 physical servers that start at 4-quad CPU machines and larger.

## **Describe Nexicon's geolocation capabilities.**

We employ the following techniques to provide geolocation capabilities:

- Standard geolocation IP database
- Latency to ensure the geolocation database yields the correct result
- Worldwide, Nexicon-based IP geolocation database that is used to update and build a geolocation database
- If geolocation fails, we rely on the following additional methods:
  - Border Gateway Protocol (BGP) route where we use CIDR Looking Glass servers to find and name the route of the end target
  - Regular route where we see who has attempted and compared to geolocation
  - Telecom databases
  - Public information shared among ISPs in the world and used by network engineers for advanced routing practices

We have dedicated engineers at Nexicon whose only job is to ensure geolocation accuracy on targets. Combined, all of these methods yield very accurate geolocation information.

## **What is Nexicon's actual processing capacities?**

Our clients will have access to 16,000 CPUs, which are in the top 100 worldwide and are extremely scalable clusters. Our systems ONLY run UNIX (our own modified version of FreeBSD).

Our products range from 1TB to 5TB (high availability data), and our database clusters are running approximately 21 billion transactions. Our systems have an Erlang of 3.2 million (simultaneous connections from one network center point). Since 2004, we have been monitoring every asset for the entire movie industry in the US/EU. This equates to approximately 121,000 movie titles. On behalf of many government operations, we are calculating over 16 Gb/s of data for data mining and relational comparison.

## **Will Nexicon help clients test and validate its systems' effectiveness?**

Yes. Nexicon actively encourages validation of the MARC anti-piracy platform.



# Monitoring Illegal Content and Identifying Infringers

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## **What protocols are used to track and log public chatter to identify criminals and select targets?**

- Direct Connect
- HTTP/HTTPS
- BitTorrent™
- Auctions (eBay®, etc.)
- Usenet (newsgroups)
- IRC (Internet relay chat)
- Gnutella (Gnutella2)
- Kademia
- Ares
- eDonkey
- FTP (file transfer protocol)

## **Can Nexicon identify other software or system elements to further validate which device is committing an infringement?**

Yes. In addition to clock skew, Nexicon collects usernames/nicknames, aliases, and software version and applications the target has used. We also collect many other parameters that can be used as part of the evidence to prove a relationship between the end-user and his or her computer.

## **Can Nexicon identify an infringer in an environment where the IP addresses are being allocated dynamically?**

Yes. Based on historical data as well as proper network management, an Internet service provider can determine the actual identity of an infringer based on the time stamp and IP address at a minimum. Nexicon monitors and collects all this information to ensure proper identification of infringers.

## **How does Nexicon manage confidential, critical data on a database that clients have access to?**

Each deployment of Nexicon's systems will be tailored to the client's needs and will be configured so that only authorized users have physical and technical access to critical data within the system. In addition, clients can choose to host their own database server, in which case, Nexicon will provide the hardware and specifications to set up the database server as a slave cloud to MARC. To ensure the security of a client's information, Nexicon will delete the data from our systems as soon as it is committed to the client's database.

### **Can Nexicon track illegal use of credit cards?**

Yes Nexicon can track illegal use of credit cards using IPCheck, which will enable the public to self-police their own business. IPCheck can also be used to help identity theft, hacking activity, and many other malicious activities with Telecom disruption (faking their Internet identity).

### **Does Nexicon track streaming over the Internet?**

Since 2004, Nexicon has been tracking illegal movie streams over many protocols and for many purposes. The stream doesn't have to be an actual web site; it can just be an IP address and port that streams the media. Streams are visible in our web module and classified as streaming sites.

### **Can Nexicon track Usenet?**

Nexicon can track Usenet, but we only discuss this process when we have a signed contract and NDA with a client.

# Monitoring Child Pornography

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## **How does Nexicon track web chat rooms and private communities for child pornographers?**

Nexicon systems monitor and identify private chat rooms automatically on a constant basis, store all the chats, catalog users, and cross-reference IPs and usernames across all the protocols on the Internet. With the constant Internet monitoring being performed by Nexicon, we are also able to identify new chat rooms that are created.

## **Does Nexicon collect images of child pornography?**

Nexicon will not collect any image or videos, which ensures that child pornography images will not be released on the Internet. Nexicon just collects cryptographic hashes of the images from their system, not the real images/videos. Currently Nexicon uses this method with clients in the movie industry and music industry. We don't get a copy of the content, but hashes that we choose and create with the content (the hashing software is supplied by Nexicon and runs on Windows/Linux/Unix and is very easy to operate in batch mode).

# Using Nexicon Applications

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## **What Internet browsers are compatible with Nexicon's systems?**

Nexicon's systems are fully compatible with Microsoft® Office applications. If needed, our systems can be configured to be compatible with Firefox®, Opera, and Safari® browsers.

## **Can Nexicon initiate multiple searches at the same time using the Search engine?**

Yes. From the search engine, several windows open to enable users to perform simultaneous searches.

## **Can Nexicon provide the user hash generated by protocols, such as eDonkey and eMule?**

Yes. Nexicon can provide the user hash information in the interface. Note that the user hash generated by eDonkey and eMule is not the same thing as the FingerPrint on the peer details.

## **Can Nexicon provide a validation process when opening a compressed ZIP, RAR, or ACE file that contains several pictures? In other words, can Nexicon make a mosaic like the initial one?**

Yes, but it requires a plug-in to the browser.

## **Can users export reports into different file formats?**

After data is captured in a Nexicon system, users who have been assigned at least viewer access to the system will have the ability to generate real-time and historical reports. Included in the cost estimates of deployments, Nexicon will provide a number of pre-defined reports. In addition to the types of reports that can be generated, users who have the appropriate access level will be able to export the data into several usable formats, including:

- .pdf
- .xls
- .doc

## **What type of information is contained in Nexicon's cease and desist notices?**

Cease and desist notices can be customized for each customer. As an example, the notice could contain the following information:

- Infringement source (the protocol used)
- Time stamp
- IP address of the infringer
- MAC address
- DNS name
- Port of the infringer

- Username of the infringer
- Title of the content infringed upon, including the file name, hash, file size, and number of files
- Historical information of the infringer
- Relevant information about the internet service provider upon whose network the infringement occurred