

HonEeeBox – Rapid Deployment of Many Distributed Low Interaction Malware Collectors

AusCERT 2009

David Watson

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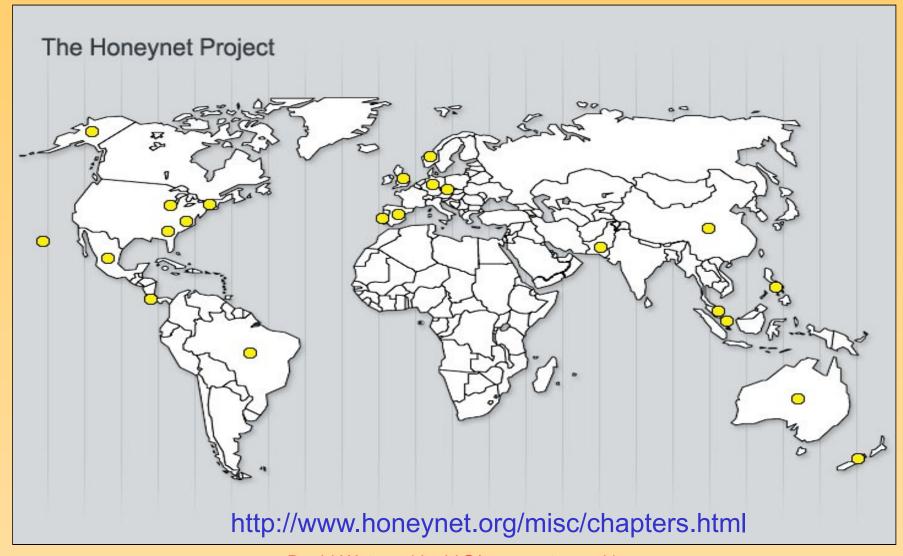
Speaker



David Watson (UK)

- 14 years managed services industry and consultancy
- Solaris, IP Networking, Firewalls, PenTest background
- Led the UK Honeynet Project since 2003
- Honeynet Project Chief Research Officer / Director
- Shadowserver Foundation member
- Developed bootable system prototypes, Honeystick, version 0.x of Honeysnap analysis too, co-authored "KYE: Phishing", KYE reviewer / editor
- GDH lead developer & project manager
- Director of UK open source consultancy Isotoma Ltd.

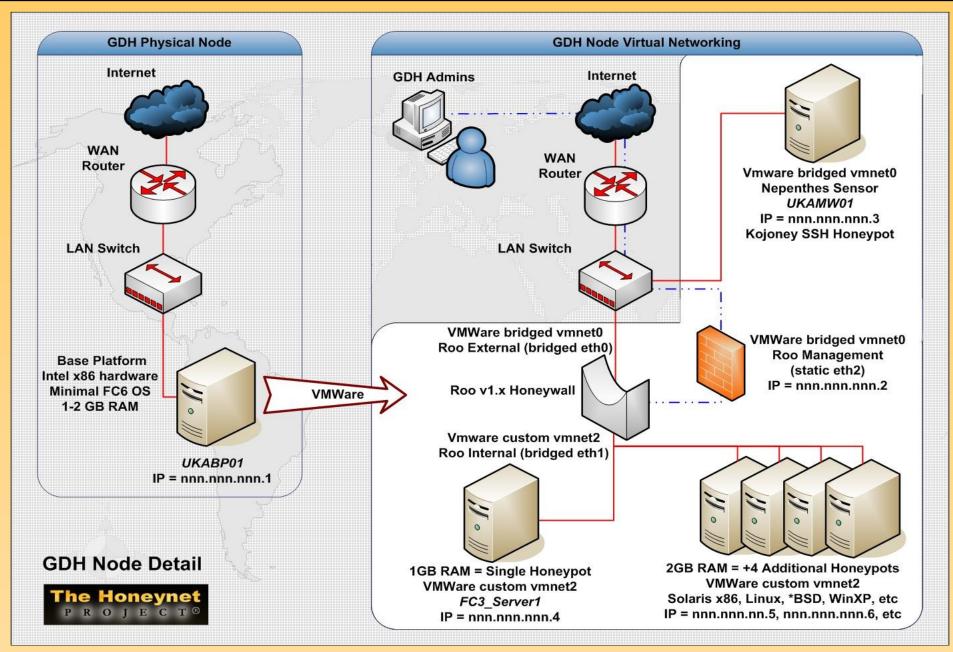
25 International Chapters

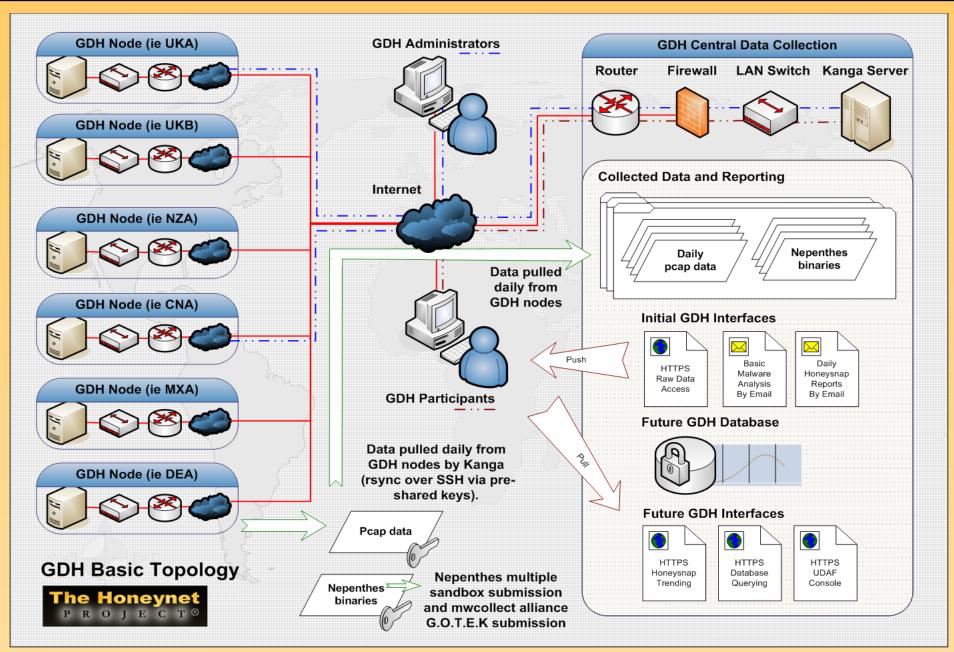


GDH Phases 1 and 2

- Global Distributed Honeynet (GDH)
- Previous efforts to deploy and operate long running standardised low and high interaction virtual honeynets
- Multiple identical international nodes
- Centralised data collection and analysis (DA)
- Human analysts responding to incidents
- GDH1 voted best talk at PacSec 2007
- Ongoing R&D effort, continuing in 2009/2010

http://www.ukhoneynet.org/PacSec07_David_Watson_Global_Distributed_Honeynet.pdf





New "HonEeeBox" Project

- Build small, cheap, highly portable low interaction honeypots for distributed malware collection to a central location
- Deploy widely and internationally (100's)
- Anonymous central sample submission
- 'Outsource' malware binary analysis to Shadowserver, VirusTotal, etc
- Focus development on reporting and analysis UI, then improving data analysis
- Also add netflow and p0f data recording

Embedded Nepenthes

Spent a fair bit of time building embedded
 Nepenthes sensors on many platforms















http://www.ukhoneynet.org/category/howto

Embedded Sensors Pros/Cons

- Consumer hardware
 Cross compiling
- Cheap
- Small
- Quiet
- Low power
- Reliable
- Easy to ship
- Minimal footprint

- Slow development
- Endian-ness
- Capacity
- Performance
- Poor console / UI
- Upgrade re-flash
- Making bricks!

Asus Eee PC Box (B202)

- Best of both worlds
- Intel Atom x86 CPU
- 1.6 GHz HT
- 1GB RAM
- 160GB hard disk
- Standard PC I/O
- Hardware warranty
- Comparable price



- Still small, quiet, low power, easy to ship
- Normal Linux distros
- Simple to reinstall
- Update from image
- Upgrade from repos

HonEeeBox

- Scripts to build a bootable ISO or USB image:
 - Live CD sensor
 - Live CD sensor with disk persistence
 - Live USB sensor
 - Live USB sensor with disk persistence
 - Virtual appliance
 - Hard disk installation (ideally to Eee Box PC)
 - SHDC card installation, no moving parts

HonEeeBox

- Minimal Debian-Live system (Lenny 5.0)
- Custom Nepenthes .deb created from the current Nepenthes release in svn
- DHCP plus automatic live CD login
- Patch and upgrade on the fly via apt
- Permanent installation prompts for locale, network configuration, etc as normal
- Basic anonymous HTTPS submission

en_US.UTF-8... done

leneration complete. lone. legin: Setting up automatic login ... done. The Honey

hadows

Press F1 for help, or ENTER to boot: _ ıdmın@debian: \$ ps -et ; grep nepen 2612 1 0 08:28 ? er=nepenthes --group=nepenthes 2703 2667 0 08:31 ttv1 00:00:00 grep nepen ıdmin@debian:~\$ ıdmin@debian:~\$

ıdmin@debian:~\$ tail /opt/nepenthes/var/log/nepenthes.log .26022009 08:28:07 info sc module] Loading signatures from file nes/signatures/shellcode-signatures.sc 26022009 08:28:08 debug info fixmel Logfile var/log/nepenthes. now 101:103 (nepenthes:nepenthes) 26022009 08:28:08 crit mgrl Compiled without support for capab

run capabilities 26022009 08:28:08 info mgrl Process groupid 103

26022009 08:28:08 info mgrl Process userid 101

ıdmin@debian:~\$

```
legin: Setting up console keyboard ... done.
legin: Configuring gnome-panel-data ... done.
legin: Configuring screensaver ... done.
legin: Preconfiguring /etc/modules ... done.
legin: Preconfiguring networking ... done.
legin: Running /scripts/init-bottom ... done.
 NIT: version 2.86 booting
 tarting the hotplug events dispatcher: udevd[
                                                  8.5125041 udevd version 125
 ynthesizing the initial hotplug events...done.
 aiting for /dev to be fully populated...[ 8.873512] Linux agpgart interface
 0.103
```

legin: Setting up locales ... Generating locales (this might take a while)...

8.8766311 agpgart: Detected an Intel 440BX Chipset. 8.8767061 agpgart: AGP aperture is 256M @ 0x0 8.8847151 pci_hotplug: PCI Hot Plug PCI Core version: 0.5 8.8849841 shpchp: Standard Hot Plug PCI Controller Driver version: 0.4 "" as /class/input/input1

00:00:00 /opt/nepenthes/bin/nepenthes --[PWRF]

```
[!!] Choose language
Please choose the language used for the installation process. This
language will be the default language for the final system.
Choose a language:
                                 - No localization
          Albanian
                                 - Shqip
          Arabic
                                   Euskara
          Basque
          Belarusian

    Беларуская

          Bosnian

    Bosanski

          Bulgarian
                                 - Български
                                 – Català
          Chinese (Simplified)
                                - 中文(简体)
          Chinese (Traditional) - 中文(繁體)
                                 - Hrvatski
          Croatian
                                    Čeština
          Czech
          Danish
                                   Dansk
          Dutch
                                    Nederlands
          Esperanto
                                 - Esperanto
    <Go Back>
```

HonEeeBox Participation

- 1+ public IP addresses (more is better)
- 1+ networked x86 PC/server(s) to boot ISO or USB key or space to host HonEeeBox sensor hardware
- Be willing to submit basic attack data
 (SRC IP, download URL, MD5, timestamp, binary, etc)
- Be willing to share collected malware samples with all participants and project sponsors
- Submissions from existing Nepenthes sensors
- Funding for additional sensor deployment
 - Regional, CERT, industry, academic, etc
- Sponsorship ;-)

HonEeeBox Summary Total Attacks: 56 Millian Total Source IPs: 6 Millian Total Target IPs: 1 Millian Total MD5sums: 7 Millian Google Map Sandbox Anti-Virus Googe Earth Graphs PicViz. Heatmap Cuttlefish Attacks Attacker IP Victim IP MD5sum ID Time Download 不 $\leftarrow \Rightarrow \rightarrow$ 20 Mar 2009 17:22:37 **70.232.61.243** 64. 236. 114. 1 1a2c0e6130850f8fd9b9b5309413cd00 ftp://70.232.61.243 $\overline{\mathbf{V}}$ 64, 236, 114, 1 64, 236, 114, 1 ftp://1:1@88.204.18 20 Mar 2009 17:22:37 e399196c959235c23f71ac2c5ab1192d 20 Mar 2009 17:22:37 87, 175, 58, 187 64.236.114.1 3875b6257d4d21d51ec13247ee4c1cdb creceive://87.175.5 + creceive://211.200 20 Mar 2009 17:22:37 127, 255, 255, 255 64. 236. 114. 1 8f4e8e31fcdbf9635791ab009defe1b5 20 Mar 2009 17:22:37 87.17.73.69 64. 236. 114. 1 f5f55437982c893ae8b9cb8187d47256 creceive://87.17.73 Greenland 11d31a4ebd7260193ffe8da9bb79156a creceive://87.17.73 20 Mar 2009 17:22:37 87.17.73.69 64, 236, 114, 1 20 Mar 2009 17:22:37 118. 165. 49. 147 64, 236, 114, 1 e8d4d8cde15ef310305955c943c0d1c2 ftp://a:a@118.165.4 ftp://70.232.61.243 1a2c0e6130850f8fd9b9b5309413cd00 20 Mar 2009 17:22:37 **70.232.61.243** 64.236.114.1 Sverige 20 Mar 2009 17:22:37 64, 236, 114, 1 64, 236, 114, 1 e399196c959235c23f7lac2c5ab1192d ftp://1:1@88.204.18 20 Mar 2009 17:22:37 **87.175.58.187** 64. 236. 114. 1 3875b6257d4d21d5lec13247ee4c1cdb creceive://87.175.5 10 United Kingdom 11 20 Mar 2009 17:22:37 127, 255, 255, 255 64. 236. 114. 1 8f4e8e31fcdbf9635791ab009defe1b5 creceive://211.200. Deutschland Україна 12 20 Mar 2009 17:22:37 87, 17, 73, 69 64, 236, 114, 1 f5f55437982c893ae8b9cb8187d47256 creceive://87.17.73 13 20 Mar 2009 17:22:37 87.17.73.69 64. 236. 114. 1 11d31a4ebd7260193ffe8da9bb79156a creceive://87.17.73 España United Türkiye States 20 Mar 2009 17:22:37 64. 236. 114. 1 e8d4d8cde15ef310305955c943c0d1c2 ftp://a:a@118.165.49 118, 165, 49, 147 North Atlantic 64, 236, 114, 1 15 20 Mar 2009 17:22:37 70, 232, 61, 243 1a2c0e6130850f8fd9b9b5309413cd00 ftp://70.232.61.243 Algeria Libya Egypt 20 Mar 2009 17:22:37 64. 236. 114. 1 64. 236. 114. 1 e399196c959235c23f71ac2c5ab1192d ftp://1:1@88.204.18 16 20 Mar 2009 17:22:37 87. 175. 58. 187 64. 236. 114. 1 3875b6257d4d21d5lec13247ee4c1cdb creceive://87.175.5 Chad 20 Mar 2009 17:22:37 127. 255. 255. 255 64.236.114.1 8f4e8e31fcdbf9635791ab009defe1b5 creceive://211.200. Venezuela 20 Mar 2009 17:22:37 87.17.73.69 64. 236. 114. 1 f5f55437982c893ae8b9cb8187d47256 creceive://87.17.73 Colombia DR Kenva Page 1 of 3 | | | | | | | | IP: MD5: Rows 1 - 20 of 56 Congo Tanzania Brasil Attack Detail Angola ID: Madagascar Botswana South South Pacific Ocean 1235924337 Time: 64.236.114.1 Sensor: Argentina Download ftp://1:1@88.204.183.126:7293/netlibrary.exe ftp://1:1@88.204.183.126:7293/netlibrary.exe Trigger: Google MD5sum: e399196c959235c23f71ac2c5ab1192d SHA512: d41821a576642131e32645afc3d531dca5f6d4a09a76ad0ce71a7d49021c6906 File Type: PE32 executable for MS Windows (GUI) Intel 80386 32-bit Attacker IP: 1089237505 Victim IP: 1089237505 Filename: netlibrary.exe FR Country ISP: Vodafone FR

ASN:

5142

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Country:

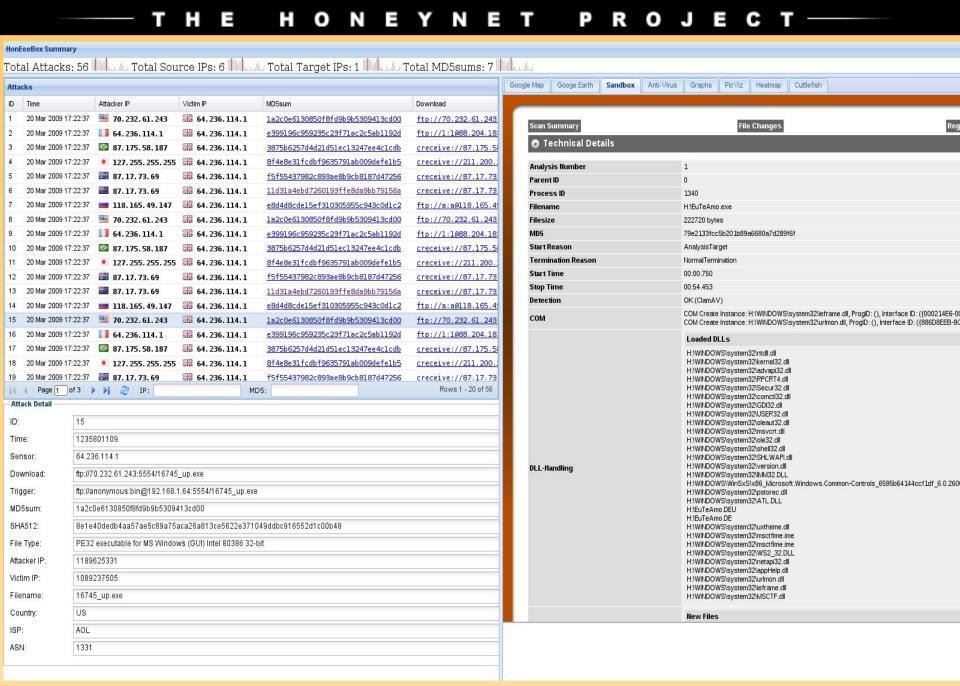
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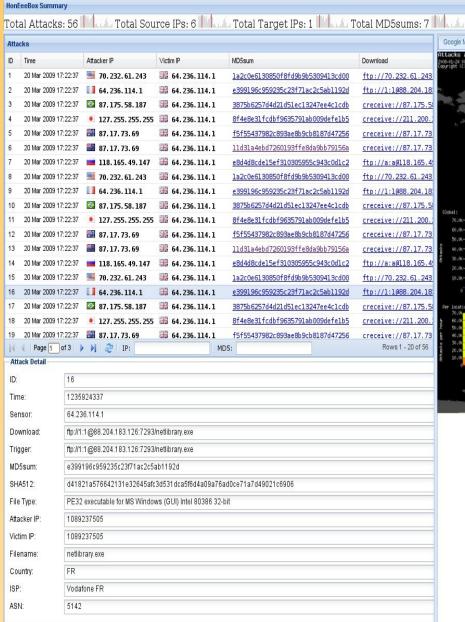
Centrica Internet

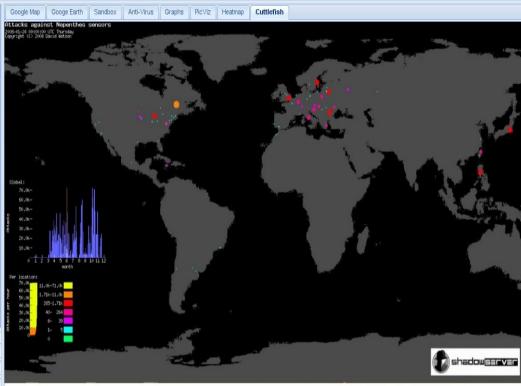
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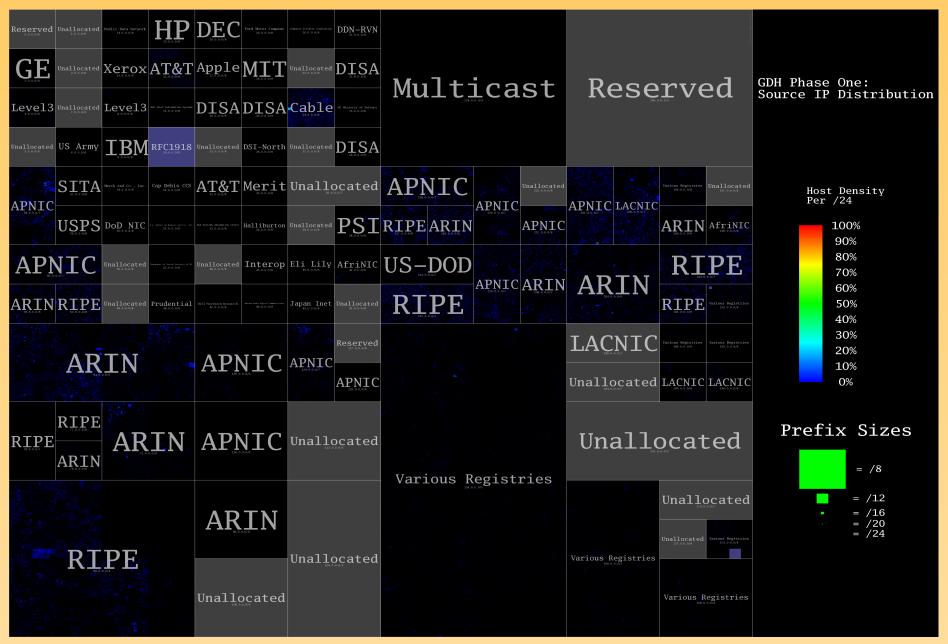
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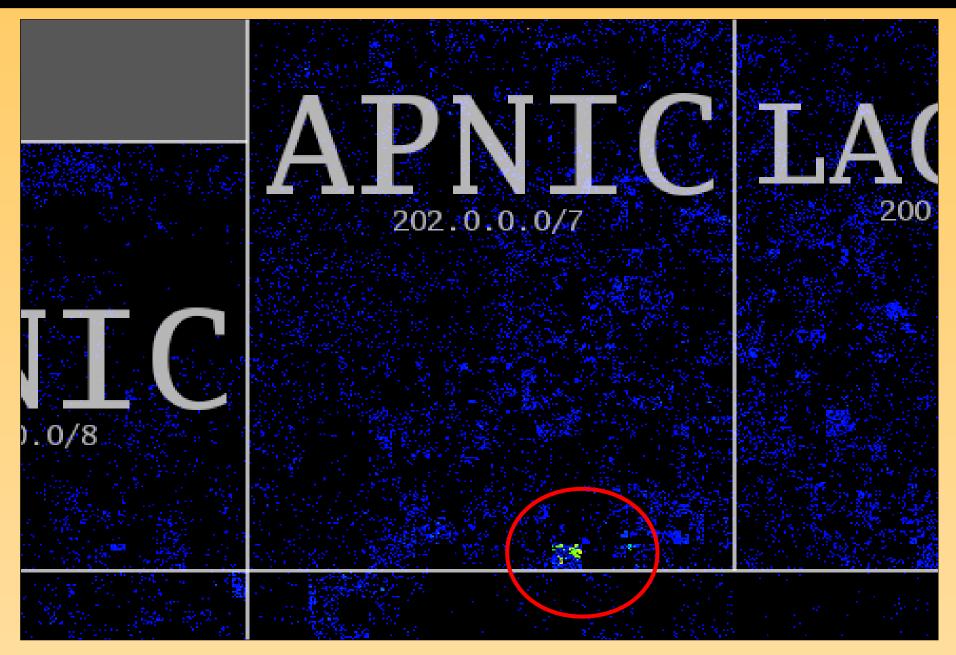
Win32.Worm.Sasser.B

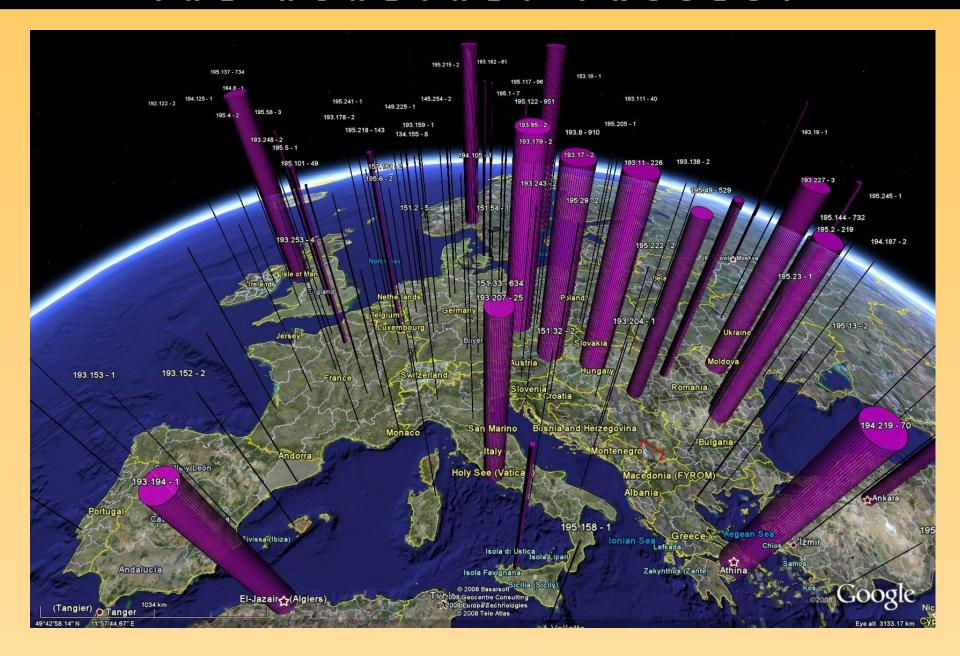


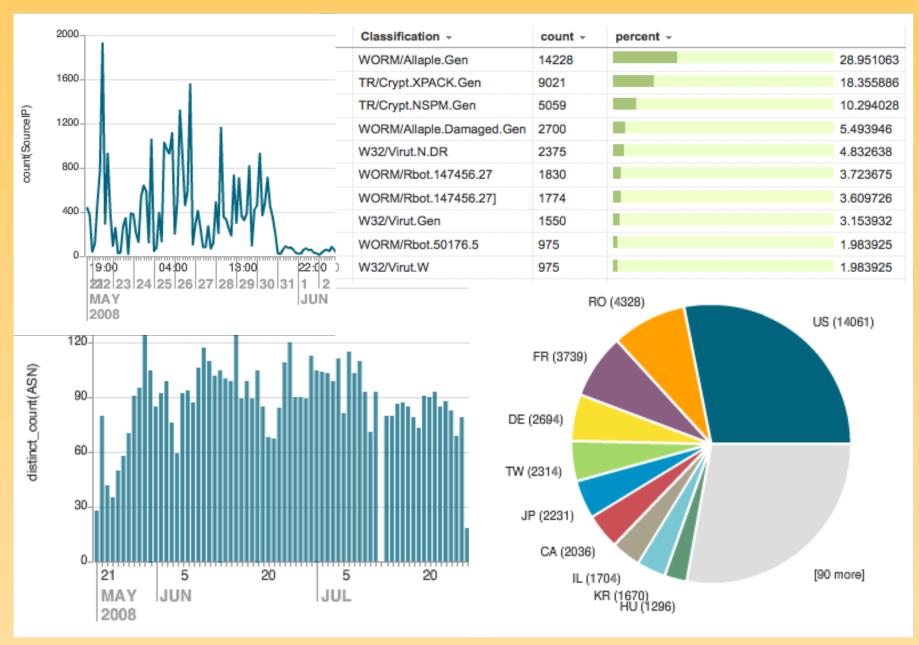




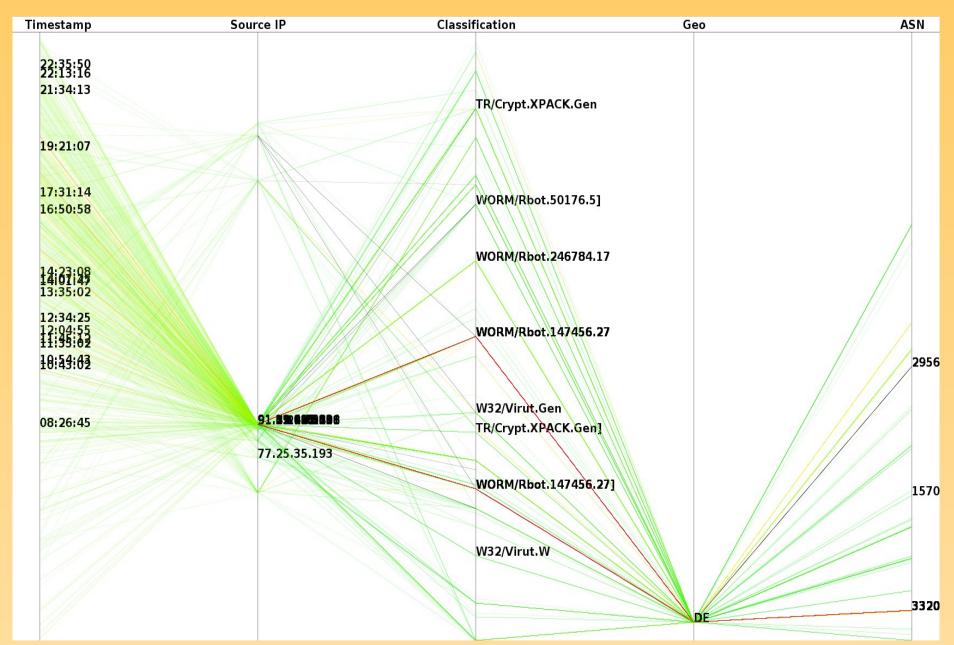




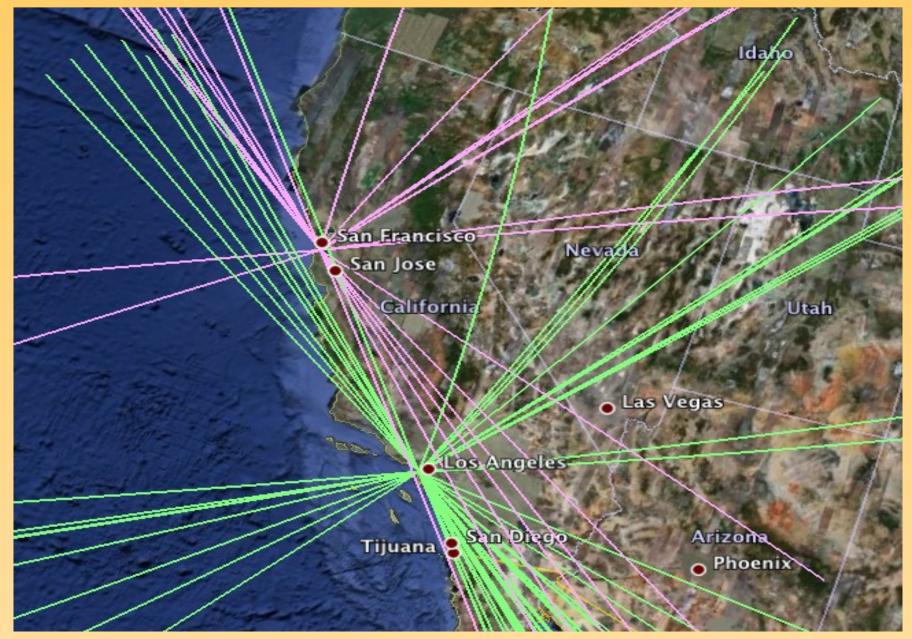




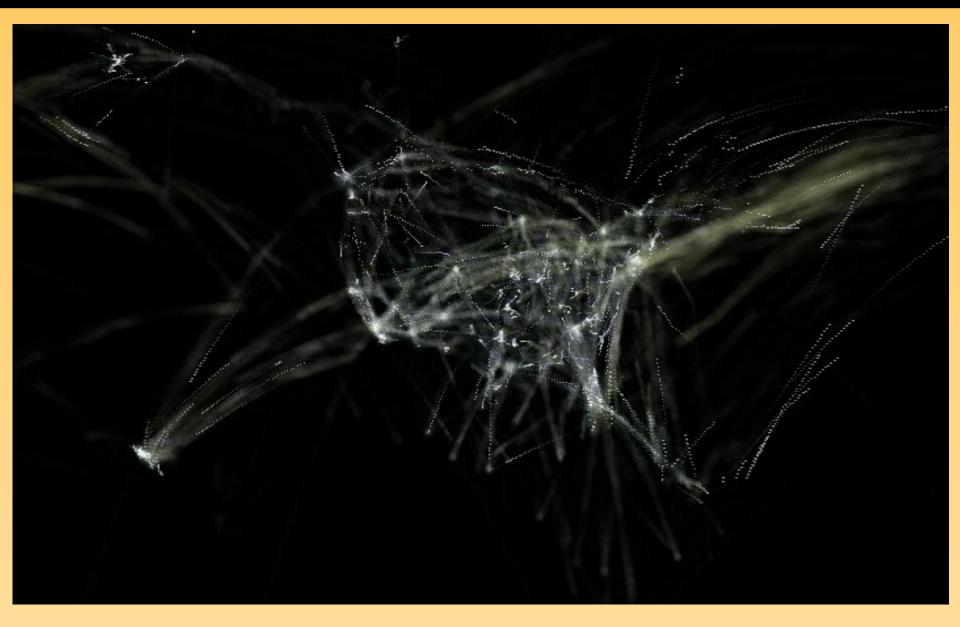
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Any Questions?

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