

# Project Meshnet + CJDNS

Slides available from

<https://nimblesec.com/uas>

<http://projectmeshnet.org>

## Why a meshnet?

- Core router overhead
- Internet Kill Switch – It's a real threat
- SSL problems that nobody wants to solve

# Routing troubles

- Deaggregation
- Cisco's [LISP](#) and other solutions inadequate
- Current scheme requires an ICANN
- Difficulty getting an IP address if you don't have lots already

# Internet Kill Switch

- The UN wants one
- So does the US Senate
- Arab Spring: Tunisia, Egypt, Libya
- Syria, too
- Germany's been trying to have it both ways

# SSL issues

- Cert sales are still a racket
- CA trust can't be easily configured
- CA's from mutually antagonistic countries trusted by default; what could possibly go wrong?
- One bad CA can hurt everybody;
- [Comodo](#), [DigiNotar](#), [Bit9](#)

# Enter CJDNS

- IPv6 tunnel over encrypted UDP packets
- Can operate over raw ethernet frames; no dependence on IP
- Assign yourself an address via keypair generation; no DHCP, be your own ISP
- Expose a whole range of ports behind NAT
- Re-aggregate address space by peering with geographically close neighbors

# Whither Tor?

- Complementary goals and tradeoffs
- Peering with friends allows democratic abuse handling
- Handshake packet ends up with complete route, so no anonymity—but it's low latency
- Stationary wifi nodes aren't very anonymous to begin with
- Authentication, not just security

# Authentication?

- IPv6 endpoint addresses are derived from the public keys used to encrypt each connection
- Peers are known to each other, if not necessarily beyond that
- Once Tor fully supports IPv6, nothing technically stopping it being used on top of CJDNS



# How does it work?

Read the [whitepaper!](#)

Three modules: Switch, Router, CryptoAuth

Routing tables are minimal and switches are clever

# How clever?

- Verifiable source routing!

Each packet contains a label that tells the switch module which wire to send the packet along. At each hop, the label gets bit-shifted and the shifted bits reversed and added to the left side, such that return packets can be sent all the way home just by reversing the entire label.

# And thus...

- Forwarding errors get handled in a couple of clock cycles rather than via expensive memory lookups
- Routes can be added, subtracted, and spliced into each other
- Router can decide which router to forward to solely by relative address space distance
- Subsequent packets take more optimal paths

# Enough talk, let's compile it

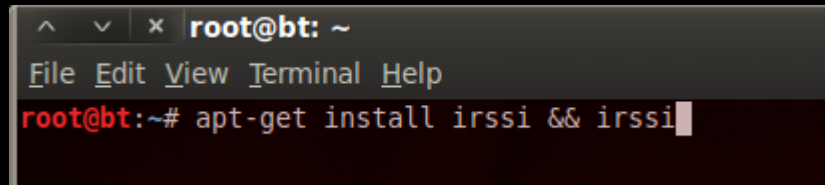
```
^ v x root@bt: /opt/cjdns
File Edit View Terminal Help
root@bt:~# uname -a
Linux bt 3.2.6 #1 SMP Fri Feb 17 10:40:05 EST 2012 i686 GNU/Linux
root@bt:~# cd /opt
root@bt:/opt# git clone https://github.com/cjdelisle/cjdns cjdns
Initialized empty Git repository in /opt/cjdns/.git/
remote: Counting objects: 11540, done.
remote: Compressing objects: 100% (5357/5357), done.
remote: Total 11540 (delta 6249), reused 11281 (delta 6020)
Receiving objects: 100% (11540/11540), 6.90 MiB | 2.72 MiB/s, done.
Resolving deltas: 100% (6249/6249), done.
root@bt:/opt# cd cjdns
root@bt:/opt/cjdns# ls
admin          CMakeLists.txt    exception        net             switch
benc          CMakeWindows.txt  gpl-3.0.txt     privatetopublic.c  test
benc2json.c   contrib           HACKING.md      publictoip6.c     tunnel
clean         crypto            interface       README.md        util
cleanconfig.c dht              io              rfcs             wire
cmake         do               memory          scripts
root@bt:/opt/cjdns# ./do
```

# Now, generate a conf file

```
root@bt: /opt/cjdns
File Edit View Terminal Help
sec
  Start 38: cjdroute_injection_test
38/42 Test #38: cjdroute_injection_test ..... Passed 0.02
sec
  Start 39: cjdroute_routerPing_test
39/42 Test #39: cjdroute_routerPing_test ..... Passed 0.01
sec
  Start 40: CryptoAddress_test
40/42 Test #40: CryptoAddress_test ..... Passed 0.00
sec
  Start 41: twoNodes_test
41/42 Test #41: twoNodes_test ..... Passed 0.02
sec
  Start 42: threeNodes_test
42/42 Test #42: threeNodes_test ..... Passed 0.03
sec
100% tests passed, 0 tests failed out of 42

Total Test time (real) = 0.52 sec
Build completed successfully, type ./cjdroute to begin setup.
root@bt:/opt/cjdns# ./cjdroute --genconf > /etc/cjdroute.conf
root@bt:/opt/cjdns# chmod 600 /etc/cjdroute.conf
root@bt:/opt/cjdns#
```

# Next, rustle up some peers

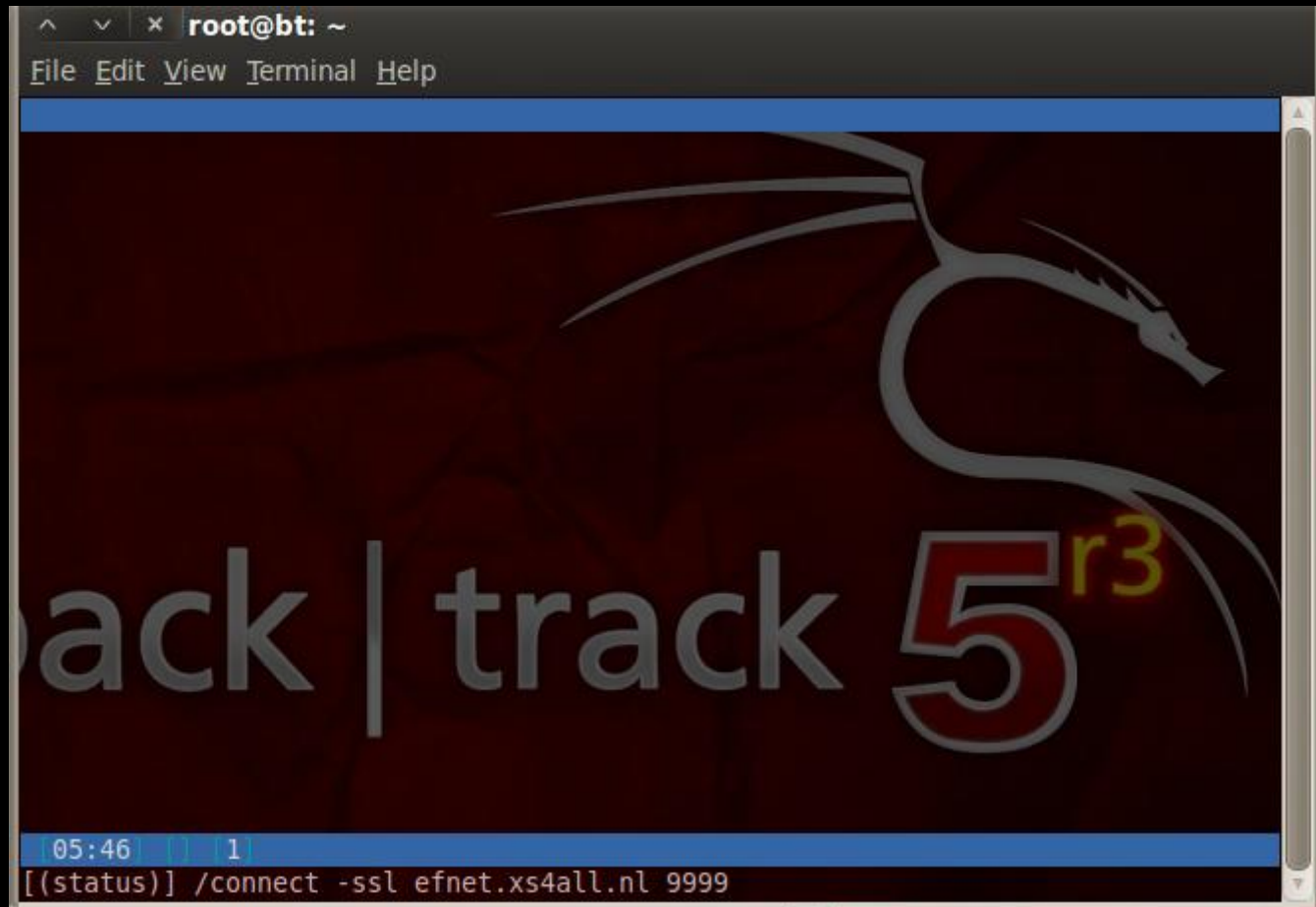
A terminal window with a dark background and light text. The title bar shows 'root@bt: ~'. Below the title bar is a menu bar with 'File', 'Edit', 'View', 'Terminal', and 'Help'. The main area of the terminal shows the prompt 'root@bt:~#' followed by the command 'apt-get install irssi && irssi' and a cursor at the end of the line.

```
^ v x root@bt: ~  
File Edit View Terminal Help  
root@bt:~# apt-get install irssi && irssi
```

IRC is the preferred way.

Irssi is the client of smart and beautiful people.

# Hail Eris!



A terminal window titled "root@bt: ~" with a menu bar containing "File", "Edit", "View", "Terminal", and "Help". The terminal content features a large, stylized dragon logo in the background. In the foreground, the text "back | track 5r3" is displayed, where "5" is large and red, and "r3" is smaller and yellow. At the bottom, a status bar shows "05:46" and "1". The command prompt "[ (status) ] /connect -ssl efnet.xs4all.nl 9999" is visible at the very bottom.

```
root@bt: ~  
File Edit View Terminal Help  
back | track 5r3  
05:46 1  
[(status)] /connect -ssl efnet.xs4all.nl 9999
```





# /join #CJDNS

```
root@bt: ~
File Edit View Terminal Help

05:46 -!- - | standard ports: 6661-6669
05:46 -!- - | SSL ports: 6697, 7000, 7001 and 9999
05:46 -!- - |
05:46 -!- - | Enjoy your stay!
05:46 -!- - |
05:46 -!- - | .. the kitten is finally ours!!!
05:46 -!- - |
05:46 -!- - |
05:46 -!- - |
05:46 -!- - |
05:46 -!- End of /MOTD command.
05:46 -!- Mode change [+i] for user root_
05:46 xs4cores [trancer@kill.city] requested CTCP VERSION from root_:
05:46 -!- Irssi: Your nick is owned by FATAL [wtf@rtfm.omfg.pl]
05:48 -!- You're now known as unicrizzl
05:49 unicrizzl(i) 1:efnet (change with ^X)
[(status)] /j cjdns
```

# Is he really nearby?

```
root@bt: ~
File Edit View Terminal Help
https://github.com/cjdelisle/cjdns/ | +menu | Last update Tues Mar 5 fixed seri
05:49 [+elb ] [ derp ] [ howdydo ] [ phantomci] [ unicon ]
05:49 [+inhies ] [ ds500ss ] [ Jellyfrog] [ picocyphe] [ unicon_1]
05:49 [+Lolcust ] [ Dunning-1] [ jercos ] [ Piratonym] [ VaporOne_]
05:49 [+miniBill] [ DuoNoxSol] [ Jerky_ ] [ plato_ ] [ way2stron]
05:49 [+NovaKing] [ epitron ] [ jMyles ] [ romanovic] [ werecat ]
05:49 [+prurigro] [ epoch ] [ jph_ ] [ rossdylal] [ XFaCE ]
05:49 -!- Irssi: <#cjdns: Total of 75 nicks, 8 ops, 0 halfops, 9 voices, 58
normal
05:49 -!- Channel #cjdns created Mon Dec 31 16:06:31 2012
05:49 -!- Irssi: Join to #cjdns was synced in 1 secs
05:50 < uniczrizzl> it's 5:50AM. do you know where your stack pointer is?
05:50 < uniczrizzl> +peers
05:50 < mg2bot> say your approx location (city), ask channel who wants to peer,
WAIT for someone local willing to peer with you. Note that
PEOPLE AREN'T ALWAYS AROUND, so it could take a few minutes or
hours so IDLE and WAIT for a while. DO NOT ask then QUIT.
05:50 < uniczrizzl> fairfax, virginia
05:51 < unicon> uniczrizzl: why hello there, you seem like a fine chap. would
you like to peer with me?
05:52 < uniczrizzl> unicon: you dazzle me with your nimbleness, sir. I'd be
grateful.
05:53 uniczrizzl(i) 2:efnet/#cjdns( lnt)
[#cjdns] /whois unicon
```

# Diff server. Using SSL?

```
^ v x root@bt: ~
File Edit View Terminal Help
https://github.com/cjdelisle/cjdns/ | +menu | Last update Tues Mar 5 fixed seri
05:49 [+elb ] [ derp ] [ howdydo ] [ phantomci] [ unicon ]
05:49 [+inhies ] [ ds500ss ] [ Jellyfrog] [ picocyphe] [ unicon_1]
05:49 [+Lolcust ] [ Dunning-1] [ jercos ] [ Piratonym] [ Vapor0ne_]
05:49 [+miniBill] [ DuoNoxSol] [ Jerky_ ] [ plato_ ] [ way2stron]
05:49 [+NovaKing] [ epitron ] [ jMyles ] [ romanovic] [ werecat ]
05:49 [+prurigro] [ epoch ] [ jph_ ] [ rossdyla] [ XFaCE ]
05:49 -!- Irssi: #cjdns: Total of 75 nicks 8 ops, 0 halfops, 9 voices, 58
normal
05:49 -!- Channel #cjdns created Mon Dec 31 16:06:31 2012
05:49 -!- Irssi: Join to #cjdns was synced in 1 secs
05:50 < uniczrizzl> it's 5:50AM. do you know where your stack pointer is?
05:50 < uniczrizzl> +peers
05:50 < mg2bot> say your approx location (city), ask channel who wants to peer,
WAIT for someone local willing to peer with you. Note that
PEOPLE AREN'T ALWAYS AROUND, so it could take a few minutes or
hours so IDLE and WAIT for a while. DO NOT ask then QUIT.
05:50 < uniczrizzl> fairfax, virginia
05:51 < unicon> uniczrizzl: why hello there, you seem like a fine chap. would
you like to peer with me?
05:52 < uniczrizzl> unicon: you dazzle me with your nimbleness, sir. I'd be
grateful.
05:54 uniczrizzl(i) 2:efnet/#cjdns( lnt)
[#cjdns] /wii unicon
```



# As they say in Russia, “Trust, but verify”

```
^ v x root@bt: ~
File Edit View Terminal Help
Irssi v0.8.14 - http://www.irssi.org
05:46 -!- End of /MOTD command.
05:46 -!- Mode change [+i] for user root_
05:46 xs4cores [trancer@kill.city] requested CTCP VERSION from root_:
05:46 -!- Irssi: Your nick is owned by FATAL [wtf@rtfm.omfg.pl]
05:48 -!- You're now known as uniczrizzl
05:53 -!- unicon [~unicon@pool-108-18-233-208.washdc.fios.verizon.net]
05:53 -!- ircname : unicon
05:53 -!- channels : #cjdns
05:53 -!- server : irc.choopa.net [60 percent of the time it works every
time]
05:53 -!- End of WHOIS
05:54 -!- unicon [~unicon@pool-108-18-233-208.washdc.fios.verizon.net]
05:54 -!- ircname : unicon
05:54 -!- channels : #cjdns
05:54 -!- server : irc.choopa.net [60 percent of the time it works every
time]
05:54 -!- : is using a secure connection
05:54 -!- hostname : 108.18.233.208
05:54 -!- idle : 0 days 0 hours 3 mins 35 secs [signon: Sat May 4
05:50:24 2013]
05:54 -!- End of WHOIS
05:57 uniczrizzl( i) 1:efnet (change with ^X) Act: 3
[(status)]
```

# A wild peer appears!

```
root@bt: ~
File Edit View Terminal Help
~unicron@pool-108-18-233-208.washdc.fios.verizon.net (efnet)
05:57 -!- Irssi: Starting query in efnet with unicon
05:57 <unicron> please add the following to your cjdroute.conf in the
        "connectTo" section
06:00 <unicron> // unicon's Fairfax, VA node
06:00 <unicron> "108.18.233.208:4389": {
06:00 <unicron>   "name":"megatron.decepticons.net - operated by unicon",
06:01 <unicron>   "publicKey":"4uysq08hyfspxf2n0yc7p4wf2sg7tqfxr7bz17y43v3f068lk000.k",
06:02 <unicron>   "password":"lpmvjubkb9j4y47mhszjxjw71ykwt",
06:02 <unicron>   "ipv6":"fcac:c546:51b9:6e43:b2e8:8374:b7b7:916f"
06:02 <unicron> }
06:03 <unicron> don't forget to add a comma after the last curly brace, if you
        add any other peers after that!
06:04 <unicron> if i'm behind NAT and can't forward a port, you might need to
        do so yourself so that I can connect out to you instead. but
        once the connection is established, it's as if both of our
        nodes were fully exposed, so be sure to check netstat -an|grep
        LISTEN and make sure the only services there are things you
        want accessible!
06:05 <unicrizzl> understood. thanks for being so kind to noobs like me!
06:05 uniconrizzl( i) 3:efnet/unicon
[unicron]
```

# Emacs > vi

```
root@bt: ~
File Edit View Terminal Help
File Edit Options Buffers Tools Conf Help
// Nodes to connect to.
"connectTo":
{
  // unicon's Fairfax, VA node
  "108.18.233.208:4389":
  {
    "name": "megatron.decepticons.net - operated by unicon",
    "publicKey": "4uysq08hyfspxf2n0yc7p4wf2sg7tqfxr7bz17y43v3f068lk000.k",
    "password": "lpmvjubkb9j4y47mhszjxjwt71ykwty",
    "ipv6": "fcac:f546:51b9:6e43:b2e8:8374:b7b7:916f"
  }
}

// Add connection credentials here to join the network
// Ask somebody who is already connected.
}
]
/*
back | track 5
-UU-:----F1 cjdroute.conf 35% L79 (Conf[JavaProp])
Wrote /etc/cjdroute.conf
```



# Starting it up

```
root@bt: ~
File Edit View Terminal Help
root@bt:~# /opt/cjdns/cjdroute < /etc/cjdroute.conf
1367662203 INFO cjdroute2.c:470 Forking angel to background.
1367662203 INFO RandomSeed.c:57 Attempting to seed random number generator
1367662203 INFO RandomSeed.c:72 Trying random seed [RtlGenRandom() (Windows)] Failed
1367662203 INFO RandomSeed.c:72 Trying random seed [sysctl(KERN_ARND) (BSD)] Failed
1367662203 INFO RandomSeed.c:68 Trying random seed [/dev/urandom] Success
1367662203 INFO RandomSeed.c:68 Trying random seed [sysctl(RANDOM_UUID) (Linux)] Success
1367662203 INFO RandomSeed.c:68 Trying random seed [/proc/sys/kernel/random/uuid (Linux)] Success
1367662203 INFO RandomSeed.c:79 Seeding random number generator succeeded with [3] sources
1367662203 DEBUG AngelInit.c:188 Initializing angel with input [10] and output [13]
1367662203 DEBUG AngelInit.c:189 Getting pre-configuration from client
1367662203 DEBUG AngelInit.c:195 Finished getting pre-configuration from client
1367662203 INFO AngelInit.c:224 Initializing core [/opt/cjdns/cjdns]
1367662203 DEBUG AngelInit.c:228 Sending pre-configuration to core.
1367662203 INFO PipeInterface.c:372 Creating new PipeInterface [0xb7a80034]
```

# All systems nominal

```
root@bt:~# ps ax|grep cjd
1973 pts/2    S+   0:00 emacs /etc/cjdroute.conf
2001 ?        Ss   0:00 /opt/cjdns/cjdns angel 10 13
2002 ?        Ss   0:00 /opt/cjdns/cjdns core 17 14
2038 pts/3    S+   0:00 grep --color=auto cjd
root@bt:~# ifconfig tun0
tun0      Link encap:UNSPEC  HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
          inet6 addr: fc85:6448:5113:5b3b:c8f9:dcd5:7fbc:c2eb/8 Scope:Global
          UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1312 Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:500
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

root@bt:~#
```



# Did I mention it's very fast?

```
root@bt:~# ping6 megatron.decepticons.net
PING megatron.decepticons.net(fc546:51b9:6e43:b2e8:8374:b7b7:916f) 56 data bytes
64 bytes from fc546:51b9:6e43:b2e8:8374:b7b7:916f: icmp_seq=1 ttl=64 time=38.8 ms
64 bytes from fc546:51b9:6e43:b2e8:8374:b7b7:916f: icmp_seq=2 ttl=64 time=16.6 ms
64 bytes from fc546:51b9:6e43:b2e8:8374:b7b7:916f: icmp_seq=3 ttl=64 time=24.9 ms
^C
--- megatron.decepticons.net ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 16.637/26.823/38.854/9.164 ms
root@bt:~#
```

# Let's load it by default via init

```
root@bt: /etc/init.d
File Edit View Terminal Help
root@bt:~# cd /etc/init.d
root@bt:/etc/init.d# wget https://nimblesec.com/uas/hyperboria
--2013-05-04 05:35:57-- https://nimblesec.com/uas/hyperboria
Resolving nimblesec.com... 66.33.198.60, 2607:f298:1:102::93:d8fb
Connecting to nimblesec.com[66.33.198.60]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 6263 (6.1K) [application/octet-stream]
Saving to: `hyperboria'

100%[====>] 6,263 ---K/s in 0s

2013-05-04 05:35:58 (287 MB/s) - `hyperboria' saved [6263/6263]

root@bt:/etc/init.d# chmod +x hyperboria
root@bt:/etc/init.d# update-rc.d hyperboria defaults
Adding system startup for /etc/init.d/hyperboria ...
/etc/rc0.d/K20hyperboria -> ../init.d/hyperboria
/etc/rc1.d/K20hyperboria -> ../init.d/hyperboria
/etc/rc6.d/K20hyperboria -> ../init.d/hyperboria
/etc/rc2.d/S20hyperboria -> ../init.d/hyperboria
/etc/rc3.d/S20hyperboria -> ../init.d/hyperboria
/etc/rc4.d/S20hyperboria -> ../init.d/hyperboria
/etc/rc5.d/S20hyperboria -> ../init.d/hyperboria
root@bt:/etc/init.d#
```

# Finding some leet chats

```
root@bt:~# host irc.hypeirc.net
irc.hypeirc.net has IPv6 address fcef:c7a9:792a:45b3:741f:59aa:9adf:4081
irc.hypeirc.net has IPv6 address fcbf:7bbc:32e4:716:bd00:e936:c927:fc14
irc.hypeirc.net has IPv6 address fca8:2dd7:4987:a9be:c8fc:34d7:5a1:4606
irc.hypeirc.net has IPv6 address fc3a:2804:615a:b34f:abfe:c7d5:65d6:f50c
root@bt:~# irssi -c irc.hypeirc.net
```

# /j hyperboria

```
root@bt: ~
File Edit View Terminal Help
::Hyperboria:: ~ est 2012 ~ pop 665
06:17 -!- unicrizzl [~root@fc85:6448:5113:5b3b:c8f9:dcd5:7fbc:c2eb] has joined #hyperboria
06:17 -!- Topic for #hyperboria: ::Hyperboria:: ~ est 2012 ~ pop 665
06:17 -!- Topic set by derp [~derp@fcfb:7bbc:32e4:716:bd00:e936:c927:fc14] [Fri May 3 19:26:57
2013]
06:17 [Users #hyperboria]
06:17 [ @cjd ] [ +finnbot ] [ +theRyno ] [ dorknet ] [ Kyle ] [ TrueShift ]
06:17 [ @derp ] [ +hintss ] [ +user ] [ ds500ss ] [ Liam ] [ unicrizzl ]
06:17 [ @fcf4e309 ] [ +inhies ] [ +XFaCE ] [ DuoNoxSol ] [ lukevers ] [ unicon ]
06:17 [ @ircerr ] [ +jack ] [ +xulfer ] [ dylwhich ] [ lydgate ] [ werecat ]
06:17 [ @jercos ] [ +jph ] [ ampernand ] [ elb ] [ mg2bot ]
06:17 [ @prurigro ] [ +lifeless ] [ bentley ] [ emery ] [ Mikey ]
06:17 [ +brokomo ] [ +miniBill ] [ cantor ] [ fcefc7a9 ] [ peter ]
06:17 [ +Dan ] [ +skee ] [ cel ] [ foo ] [ ryansb ]
06:17 [ +evilroots ] [ +Tanuki ] [ djpohly ] [ jtuo ] [ toyowheel ]
06:17 -!- Irssi: #hyperboria: Total of 49 nicks [6 ops, 0 halfops, 16 voices, 27 normal]
06:17 -!- Channel #hyperboria created Sun Aug 12 05:20:07 2012
06:17 -!- Irssi: Join to #hyperboria was synced in 1 secs
06:18 < unicrizzl>
06:18 < unicrizzl>
06:18 < unicrizzl>
06:18 < unicrizzl>
06:18 < unicrizzl>
06:18 < unicrizzl>
06:18 < unicrizzl>
06:19 < unicrizzl> this presentation for unallocatedspace.org is gonna have the best screenshots
ever
06:19 unicrizzl( i) | 2:hypeirc/#hyperboria( lnt) | Act: |
[#hyperboria]
```

# Let's try the web

[ni] - NodeInfo Main - Mozilla Firefox

File Edit View History Bookmarks Tools Help

[ni] - NodeInfo Main

[fc5d:baa5:61fc:6ffd:9554:67f0:e290:7535]

Google

Home Nodes Maps unrec: c2eb

Darknet IPv6 Address Go

## NodeInfo

Your flashlight in the darknet

Known: 1202 | Up: 129

### Recently Updated / New Nodes

Name	IPv6 Addr	Last Modified
<a href="#">rochack.hype</a>	<a href="#">fc5b:00a6:0d7e:7fdb:c501:0ec5:fba6:1e24</a>	04/29/2013 at 19:44:16 EDT
<a href="#">bf2b</a>	<a href="#">fc39:4712:f9c1:1284:8486:9712:327f:bf2b</a>	04/26/2013 at 02:33:55 EDT
<a href="#">a1d9</a>	<a href="#">fc2d:d2d2:ad0f:ab6a:7773:b635:dc84:a1d9</a>	04/13/2013 at 05:24:23 EDT
<a href="#">Q.hype</a>	<a href="#">fc9e:2ccf:e6e7:b129:8186:053e:5085:1f24</a>	04/12/2013 at 23:38:02 EDT
<a href="#">alpha.werecat</a>	<a href="#">fced:e53c:1b6d:018f:a9fc:fc3d:9050:7ac6</a>	04/12/2013 at 08:40:58 EDT

**NodeInfo v0.06**  
NodeInfo is a database of known nodes on cjdns-based Darknets

**Questions / Help**  
Email [Mikey G](#), or [Mikey\\_/Mikey](#) on EFnet

**Darknet DNS (HypeDNS)**  
Visit [HypeDNS](#)

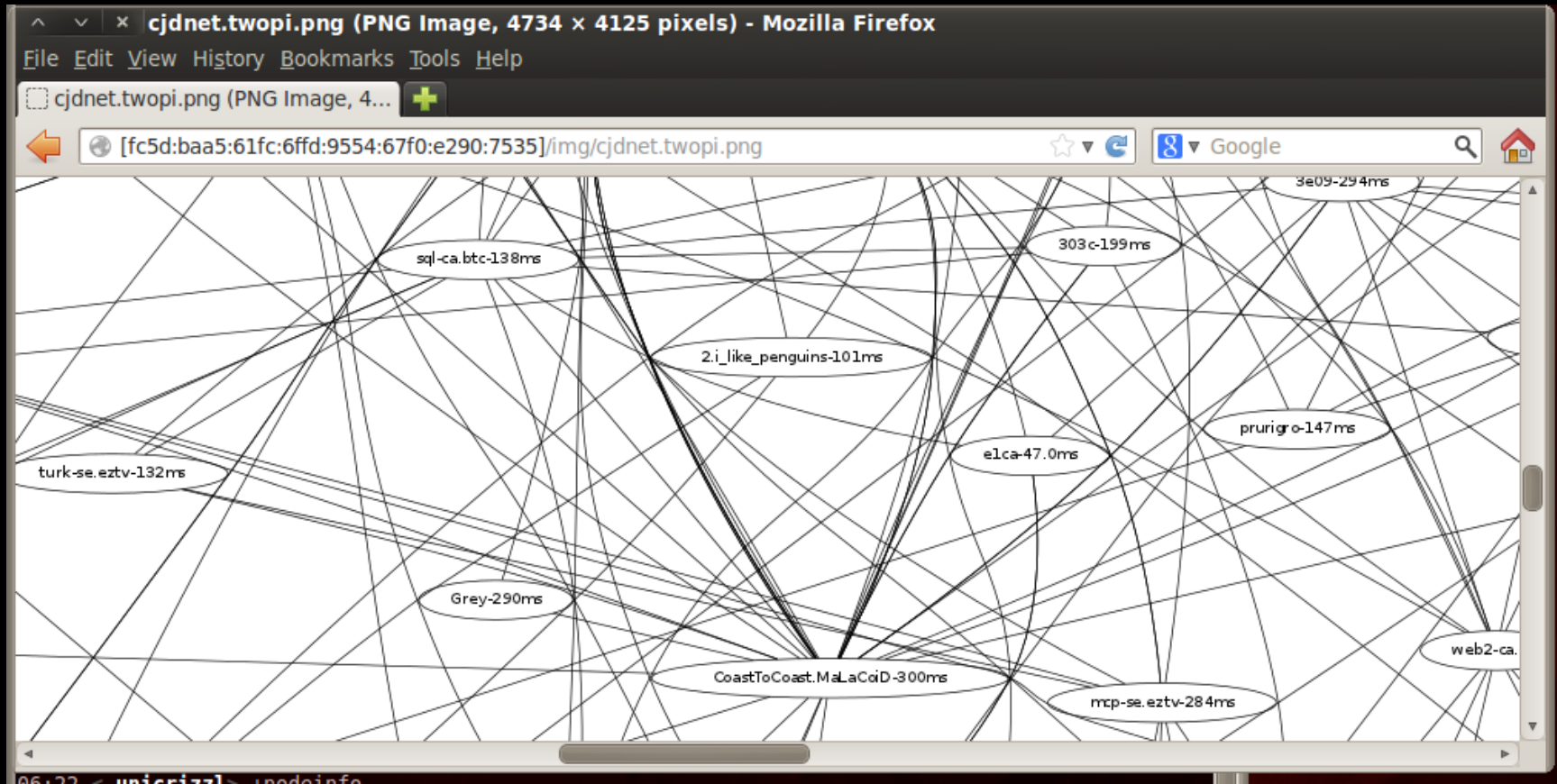
**Other Darknet Resources**

- [ircerr's cjdns homepage](#)
- [darknet git server](#)

```
06:22 < uncrizzl> +nodeinfo
06:22 < mg2bot> http://[fc5d:baa5:61fc:6ffd:9554:67f0:e290:7535]/
06:24 uncrizzl( i) 2:hypeirc/#hyperboria( lnt)
[#hyperboria]
```



# Lots of nodes already!



# A twitter clone

Public timeline - socialnode - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Known Hyperboria sites - m... Public timeline - socialnode

socialno.de


socialnode

Login

Public


- Public
- Groups
- Recent tags
- Popular

## Public timeline

 **JPH**  
For those interested... there's a few hours left for 50% off ebooks at oreilly <http://shop.oreilly.com/category/deals/day-against-drm.do?code=DRM2013>


about 7 hours ago from web

---

 **Cy**  
Sniping monsters from hanging on my giant jungle tree, seeing how far away I can hit. Makes me want to take up archery again irl.


about 11 hours ago from web


---


 **Derp**  
Fixing my S3, glad to get rid of this iPhone 4S... I will be able to browse the [#hypawebs](#) anywhere.

about 11 hours ago from web

## Popular notices

 Just wanted to share: I am posting this from a computer that is connected **ONLY** via a batman-adv wireless mesh network, which is handling **ONLY** cjdns ETHInterface traffic. A little experimet I set up at home. :)  
about 3 days ago

 Mozilla update on WebRTC in FF: <https://hacks.mozilla.org/2013/04/webrtc-update-our-first-implementation-will-be-in-release-soon-welcome-to-the-party-but-please-watch-your-head/>  
about 5 days ago

 This is insane  
[https://www.youtube.com/watch?feature=player\\_embedded&v=L2w-XqW7bF4#1](https://www.youtube.com/watch?feature=player_embedded&v=L2w-XqW7bF4#1)  
about 4 days ago

# What's next?

- Very encouraging reaction from [CapitolHillCTF](#) participants
- Prior to that, no new nodes for months; since then, multiple new nodes per day
- Track the snowball at <https://twitter.com/MeshnetUpdates>
- Lots of things one can do to add to the project



# Contributing more than bandwidth

- Help out with the Windows port
- Update the OpenWRT port
- Help me with the NetBSD and DragonFlyBSD ports
- Got disk? Run some Cassandra nodes
- Game servers, news sites, really anything
- Convince your landlord to put a satellite dish on the roof

# Long range point to point

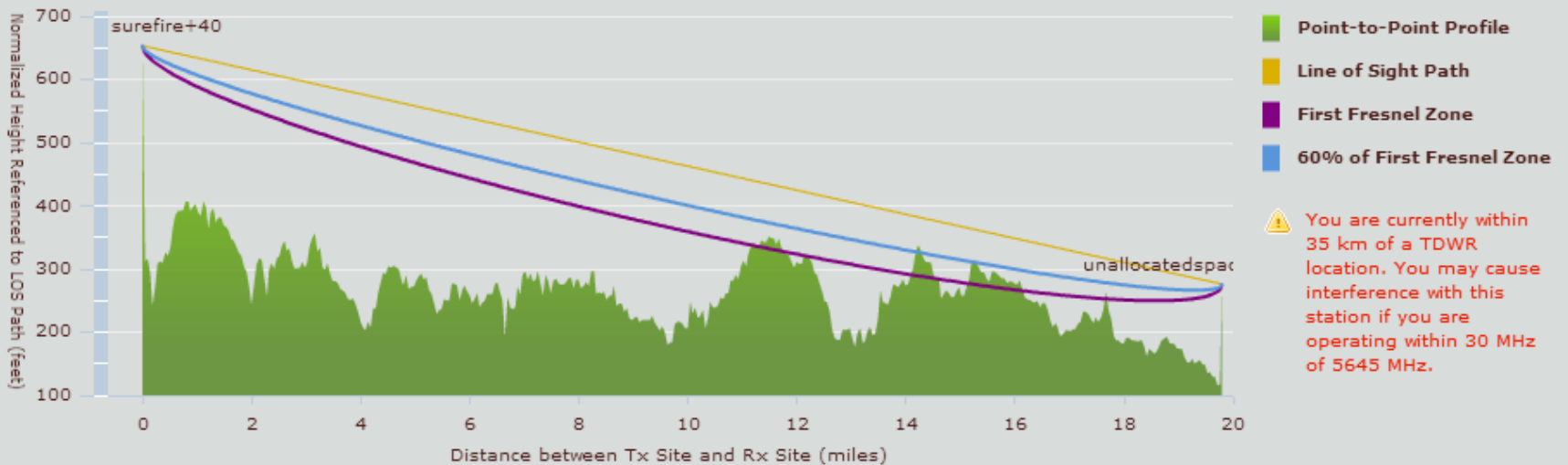
- A packet was sent 125 miles across the desert at Defcon in 2005.
- Maryland already has a bunch of meshnet fanatics; they lurk in #marylandmesh on EFnet
- A long range link would be newsworthy, attracting more people. You'd be famous...
- And the mesh would become stronger, faster, and more likely to forestall a Kill Switch.

# It's doable.

## LINK ANALYSIS

Total path loss	131.59 dBm	Thermal fade margin	-51.59 dBm	Download Report (PDF)	<a href="#">Download</a>
Signal level at the RX site	-92.59 dBm	Distance between Sites	19.80 miles	Save to your account	<a href="#">Save</a>
EIRP	20.00 dBm	Link availability due to rain	0.000 %	Share this Link (?)	<a href="#">Make URL</a>

## PATH PROFILE BETWEEN TX AND RX SITE



# Even without 802.22 yet!

- K-band dishes of 8-10 feet can be sourced locally for \$300 or so; check craigslist
- Smaller dishes work too, but require better aim
- Make a biquad antenna for the focal point
- Put those 2.4GHz Alfa dongles to good use!

# Building a biquad

Here is a picture of the final antenna assembly ready to be attached to the dish.



Instructions can be found [here](#)

# Inspiration from Defcon



The full story can be read [here](#)

# But that whitespace WRAN...

## Can't wait to get in on some of this new kit.

<http://ow.ly/kHEIL>

### World's First TV White Space Prototype Based on IEEE 802.22 for Wireless Regional Area Network



TOKYO, Jan. 23, 2013 /PRNewswire/ -- The National Institute of Information and Communications Technology (NICT), Hitachi Kokusai Electric Inc. and ISB Corporation have developed the world's first prototypes of base station (BS) and consumer premise equipment (CPE) based on the IEEE 802.22 standard operating in TV White Spaces (TVWS) (470 MHz - 710 MHz). The developed prototypes will provide broadband wireless access to underserved and unserved regional areas around the world as well as bringing reliable backup broadband communications in emergency, which will follow the worldwide trend of promoting the TVWS for wireless communication systems.

#### Featured Video



CPU routing is fast enough for now

But CJDNS is tiny enough to run in an [FPGA NIC](#),



Orders of magnitude cheaper than any of Cisco's or Juniper's offerings...



This could leapfrog ipv6. Let's start putting up nodes!

Some interesting links and useful references:

[Github](#) [Build instructions](#) [A talk by CJD](#)

[Another talk by CJD](#) [Notes toward DNS](#)

[A todo list](#) [The OpenWRT port](#) [Non-CJDNS](#)

[Some benchmarks](#) [Nodes to browse](#)

[A fix for broken confs](#) [HypeIRC](#) [Reddit](#)

[MarylandMesh updates](#) [NimbleSec's notes](#)