(S//SI//REL) What Your Mother Never Told You About SIGDEV Analysis [redacted]

SSG21 Net Pursuit
Network Analysis Center

Derived From: NSA/CSSM 1-52
Dated: 20070108
Declassify On: 20370401

(U//FOUO) What have I learned in my first two years in SIGDEV…….

- (U//FOUO) Important to understand the data that you are searching against
- (S//SI//REL) Important to understand the hidden treasures and nuances in various SIGDEV tools
- (U//FOUO) Nothing is 100%: there are always exceptions to the tools and the rules
- (S//SI//REL) Took a network view of VPNs

(TS//SI//REL)What Makes SIGDEV Analysis Challenging?

- (U//FOUO) Requires knowledge of.....
  - (S//SI//REL) Access and collection
  - (S//SI//REL) Network protocols
  - (S//SI//REL) Routing
  - (TS//SI//REL) Encryption

(U//FOUO) Challenges etc....

(TS//SI//REL) Technical jargon and abbreviations

- IPSEC
- IKE
- MPLS
- PSK
- PPTP
- L2TP
- GRE
- Cisco commands

(TS//SI//REL)Challenges etc....

(S//SI//REL) Tools

- How to use them
- Knowing that they exist
- Multiple query languages
  - SQL for TOYGRIPPE
  - Oracle Text Query in DISCOROUTE
  - Quantity

(U//FOUO) Tools

- DISCOROUTE
- BLACKPEARL
- TOYGRIPPE
- GNETWORK GNOME
- NKB & RONIN
- XKEYSCORE
- TREASUREMAP
- RENOIR
- ....and more....

(S//SI//REL) Building Network Knowledge

BLACKPEARL

BLACKPEARL

TOYGRIPPE

TOYGRIPPE

XKEYSCORE

XKEYSCORE

Maximize the overlap of the tools for success

(S//SI//REL)
DISCOROUTE

NAC's router configuration database

(U//FOUO) DISCOROUTE

- (C) NAC project to acquire, parse, database and display configuration files from network devices
- (C) Allows analysts to mine device configs for SIGDEV discovery

Router configs are a rich source of network and VPN information

(S//SI//REL) DISCOROUTE Methodology

- (S//SI//REL) All IPs are important because they all belong to a device and they all have a purpose in the network
- (S//SI//REL) Search for
  - Endpoint IPs
  - Loopback IPs
  - Opposite end of a point-to-point connection
  - IPs found in pings and telnets
- (S//SI//REL) Make note of the source and destination IPs of the config

(U//FOUO) DISCOROUTE Searches

- (U//FOUO) Country
- (U//FOUO) IP Search
- (U//FOUO) Text Query
- (TS//SI//REL) Manifest Tag Selection
  - K – Crypto Keys
  - H – TAO Pop
  - M – Multihop
- (S//SI//REL) VPN report

(S//SI//REL) DISCOROUTE: Country Search

- (S//SI//REL) IPGeo lookup on every IP address that is parsed
- (S//SI//REL) Configs with only private IPs will not show up in the results of a country search

(S//SI//REL) DISCOROUTE: Searching for IP Addresses

- (S//SI//REL) Text query IP search
  - searches through the payload
  - If you only search using this field, then you will miss
  - configs that have your IPs of interest as the source and destination address
  - configs where your IP falls within the range of the interface mask
- (S//SI//REL) IP address field search
  - searches through the parsed file
  - If you only search using this field, then you will miss configs with your IPs of interest in pings, telnets, arp commands

(S//SI//REL) DISCOROUTE Search 1Feb to 13 Apr:

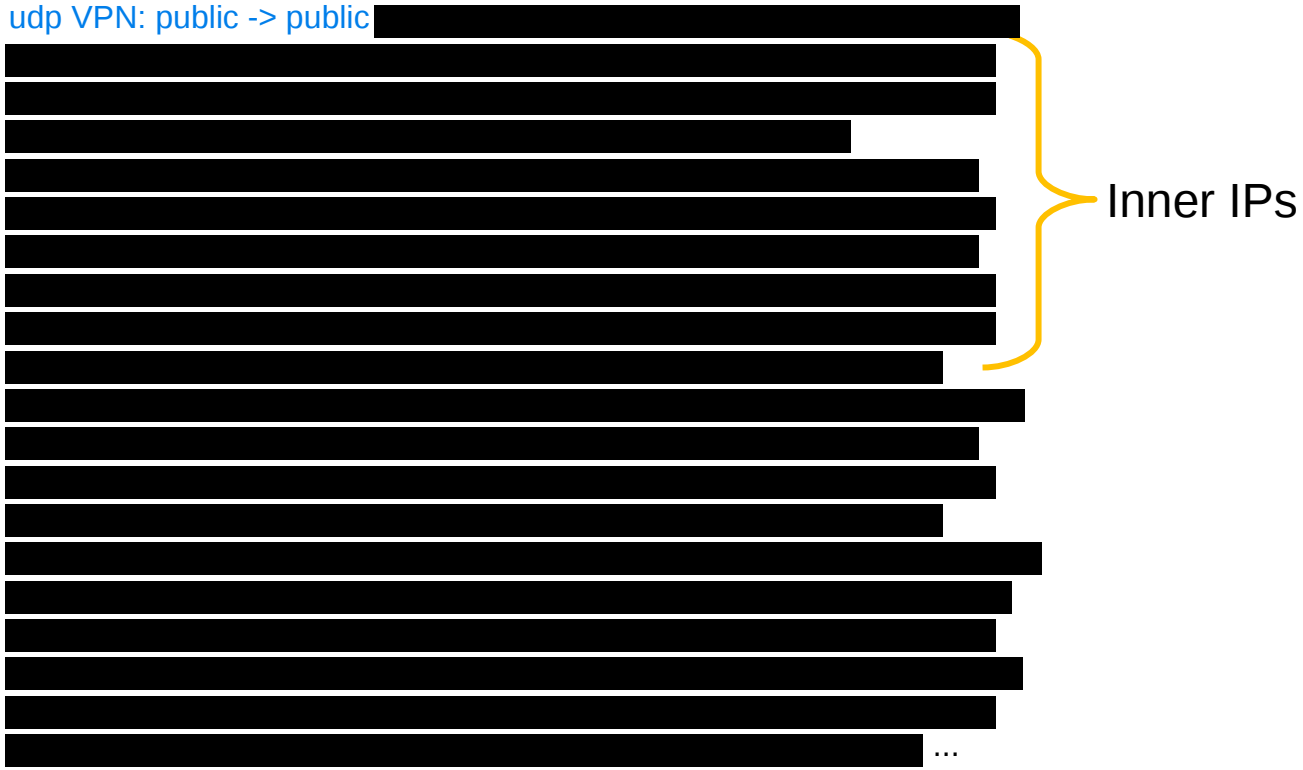
- (S//SI//REL) T[redacted] in the payload
  - 3 results
- (S//SI//REL) IP Address Search: searching for the IP in the parsed file
  - Exact IP search
  - De-duped by most recent
  - 28 results (27 had [redacted] as the source IP)
- (S//SI//REL) Somalia Country search: 66 results (12 of those had a source IP of [redacted])
- (S//SI//REL) Difference: IP was the source IP for configs more times than it occurred in the payload data

(S//SI//REL) Why fewer configs for [redacted] in the country search?

- (S//SI//REL) 12 as opposed to 27
- (S//SI//REL) Geo location for [redacted] was Hong Kong for a period of time
- (S//SI//REL) Geo is assigned to router configs at the time of ingest and not changed if the IP location is corrected

(S//SI//REL) Data Found in a Text Query: Inner Network IPs in a Huawei Config

<LNS>dis firew se t
04:19:05 2011/06/18
Current total sessions : 19
udp VPN: public -> public [redacted]



...
Press CTRL+K to abort
Connected to [redacted] …

(S//SI//REL) DISCOROUTE Manifest Tag

- (TS//SI//REL) H – TAO has a presence on the router
- (S//SI//REL) M - multihop router. The admin telnetted into a router and then telnetted again to another device. Potential goldmine of information about your network, but be careful when looking through them to make sure you are associating an IP with the correct device.
- (TS//SI//REL) K – crypto keys

(S//SI//REL) VPNs in Router Configs

- (TS//SI//REL) DISCOROUTE sets manifest tags to ‘K’ for configs with crypto information
- (S//SI//REL) Separate parsers developed for each vendor to pull out the endpoints and the pre-shared keys
  - Cisco
  - Huawei
  - Juniper

(S//SI//REL) VPN Information in a Cisco Config

(S//SI//REL) Endpoint IPs, PSKs and Description Fields

```
crypto isakmp key VpnsAreCool address [redacted]

crypto map VPNS-ROCK 10 ipsec-isakmp
      set peer [redacted]

interface Tunnel1
      description Tunnel TO theStars
      bandwidth 512
      ip address [redacted]
      ip tcp adjust-mss 1350
      load-interval 30 keepalive 5 2
      tunnel source [redacted]
      tunnel destination [redacted]
      crypto map VPNS-ROCK
```

(S//SI//REL) VPN Information in a Cisco Config

(S//SI//REL) Netstrings: Usernames, SNMP Community & Domain Names

Username deb privilege 5 password 7 082C495A0C1617

snmp-server community dancer RW 70

snmp-server community tangosnmp RW 60

ip domain name lifesabeach

(S//SI//REL) VPN Information in a Huawei Config

```
# ike proposal 60 authentication-algorithm md5
# ike peer e ---- More ----.[42D .[42D
exchange-mode aggressive pre-shared-key GoHokies
ike-proposal 60
undo version 2
local-id-type name
remote-name svn
remote-address [redacted]
remote-address authentication-address [redacted]
nat traversal
# ipsec proposal GoHokies
# ipsec policy helloworld 60 isakmp
security acl 3060
ike-peer proposal GoHokies
# interface Virtual-Template1 ---- More ----.[42D .[42D
ip address [redacted]
remote address pool 1
# interface GigabitEthernet0/0/0
ip address [redacted]
# interface GigabitEthernet0/0/1
description GigabitEthernet0/0/1 Interface
ip address [redacted]
ipsec policy helloworld
```

(S//SI//REL) VPN Information in a Juniper Config

set ike gateway "BadguyVPN" address [redacted] Main outgoing-interface "untrust" preshare "xGe7YOYfNx3DNGsp4GCq+fgCdondsCBQtVwo/3YfCvbR7zJyDUewVD4=" proposal "pre-g2-3des-sha" "pre-g2-3des-md5"

set ike gateway "BadguyVPN" cert peer-ca all

set ike gateway "BadguyVPN Backup" address [redacted] Main outgoing-interface "untrust" preshare "YWZpKbUvNGQvCbsiXdCwv3pxRDnLEAxo9877SfJFLBgg9utCdSyYPPI=" proposal "pre-g2-3des-sha" "pre-g2-3des-md5"

set ike gateway "To Mouse" address [redacted] Main outgoing-interface "untrust" preshare "fn3VG5E1NI+amHsDeyChciqYVHnuTsbj4w==" proposal "pre-g2-3des-sha"

set ike respond-bad-spi 1

set vpn "BadguyVPN" gateway "BadguyVPN" no-replay tunnel idletime 0 proposal "nopfs-esp-3des-sha"

set vpn "BadguyVPN" monitor optimized rekey

set vpn "BadguyVPN" id 5 bind interface tunnel.3

set vpn "backup BadguyVPN" gateway "BadguyVPN Backup" no-replay tunnel idletime 0 proposal "nopfs-esp-3des-sha" "nopfs-esp-3des-sha" "nopfs-esp-3des-sha" "nopfs-esp-3des-md5"

set vpn "backup BadguyVPN" monitor optimized rekey

set vpn "backup BadguyVPN" id 4 bind interface tunnel.1

set vpn "From Rat" gateway "To Mouse" no-replay tunnel idletime 0 proposal "nopfs-esp-des-md5"

set vpn "From Rat" monitor optimized rekey

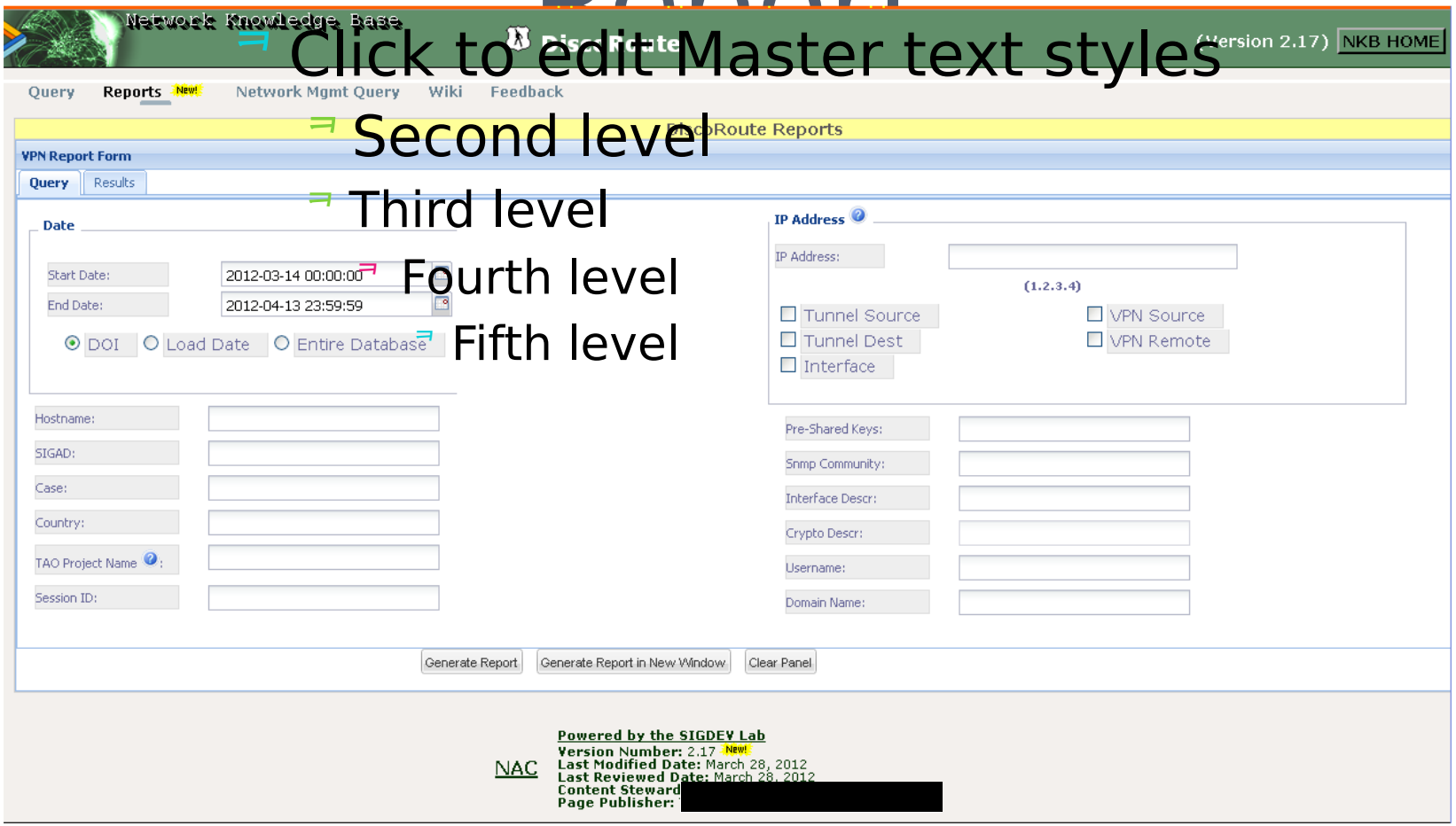
set vpn "From Rat" id 6 bind interface tunnel.2

(S//SI//REL) VPN Report Search Fields

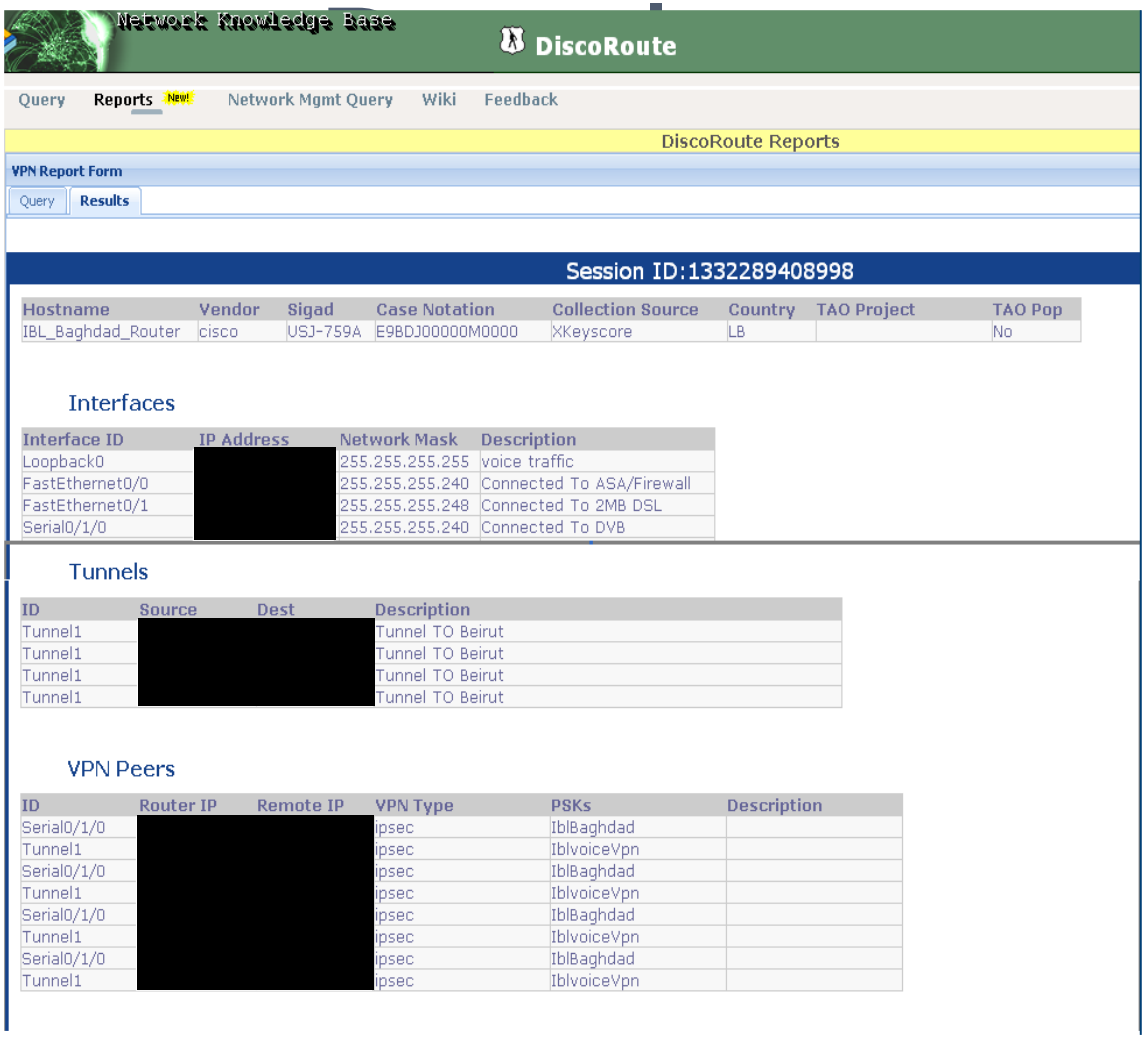
- (S//SI//REL) Some of the fields that you can search in…
  - Country
  - IP Address
  - SIGAD/Case Notation
  - Descriptions: crypto map and interface
  - Netstrings: Username, Domain Name
  - Pre-shared keys
  - Device Hostname
  - TAO Project Name

(S//SI//REL) DISCOROUTE VPN Report

Click to edit Master text styles
- Second level
- Third level
  - Fourth level
  - Fifth level



(S//SI//REL) VPN Report



Network Knowledge Base

DiscoRoute

Query | Reports New! | Network Mgmt Query | Wiki | Feedback

DiscoRoute Reports

VPN Report Form

Query | Results

Session ID:1332289408998

Hostname	Vendor	Sigad	Case Notation	Collection Source	Country	TAO Project	TAO Pop
IBL_Baghdad_Router	cisco	USJ-759A	E9BDJ00000M0000	XKeyscore	LB		No

Interfaces

Interface ID	IP Address	Network Mask	Description
Loopback0	[redacted]	255.255.255.255	voice traffic
FastEthernet0/0		255.255.255.240	Connected To ASA/Firewall
FastEthernet0/1		255.255.255.248	Connected To 2MB DSL
Serial0/1/0		255.255.255.240	Connected To DVB

Tunnels

ID	Source	Dest	Description
Tunnel1	[redacted]		Tunnel TO Beirut
Tunnel1			Tunnel TO Beirut
Tunnel1			Tunnel TO Beirut
Tunnel1			Tunnel TO Beirut

VPN Peers

ID	Router IP	Remote IP	VPN Type	PSKs	Description
Serial0/1/0	[redacted]		ipsec	IblBaghdad	
Tunnel1			ipsec	IblvoiceVpn	
Serial0/1/0			ipsec	IblBaghdad	
Tunnel1			ipsec	IblvoiceVpn	
Serial0/1/0			ipsec	IblBaghdad	
Tunnel1			ipsec	IblvoiceVpn	
Serial0/1/0			ipsec	IblBaghdad	
Tunnel1			ipsec	IblvoiceVpn	

(S//SI//REL) VPN Report Hints

- (TS//SI//REL) Use the VPN report as a start but not as the final answer for VPNs from a country or a SIGAD
- (C) Query in different ways to make sure you get as much of the data as possible
- (TS//SI//REL) Depending on your scenario you may want to start with a country search, an IP range or a descriptive term

VPN Peers Section contains the endpoint IPs for your VPN which can be entered into TOYGRIPPE

(S//SI//REL) Description &Net Strings Searches

- (S//SI//REL) Suppose you do a general VPN report query
  - Search by country
  - Search by SIGAD
- (S//SI//REL) Find a VPN of interest
- (S//SI//REL) Analyze the NetStrings and the description fields

(S//SI//REL) NetStrings Examples

- (S//SI//REL) Do a follow-on VPN report using a netstring specific to your network
  - Snmp community string: pegasus
  - Domain name: badguy.com
  - Username
- (S//SI//REL) Search ROYALNET
  - Analytics to find other netstrings related to your target
  - Analytics to find links likely to carry your target's communications

(U//FOUO)
BLACKPEARL

(S//SI//REL) NAC tool enabling automated DNI link and network characterization against survey collection across the SIGINT system

(S//SI//REL) BLACKPEARL Searches

- (U//FOUO) General Query
- (S//SI//REL) Customized reports
  - VPN report
  - DNI Access Essentials
  - MPLS report
  - Five Tuple Report

(S//SI//REL) BLACKPEARL IP Searches

- Endpoint IPs
- Interface IPs
- Loopback IPs
- Source or destination IPs of the router config file
- Inner network IPs
- Analyze other IPs on the link

(U//FOUO) BLACKPEARL

- (S//SI//REL) Search ‘All traffic’ and include subchannels and tunnels if no results found under limited search
- (S//SI//REL) If link is identified as MPLS then look at the other IPs in inner labels, if present
- (S//SI//REL) Use BLACKPEARL for finding access and gathering information on your network

(S//SI//REL) Search for Inner Tunneled IPs

- (S//SI//REL) Query BLACKPEARL with an endpoint IP
  - Find other tunneled IPs – inner network IPs that you can do follow on searches
- (S//SI//REL) Query DISCOROUTE with any new IPs found

- (TS//SI//REL) Success: Discovered information on Somalia's Hormuud network

(TS//SI//REL) Example: Hormuud Network

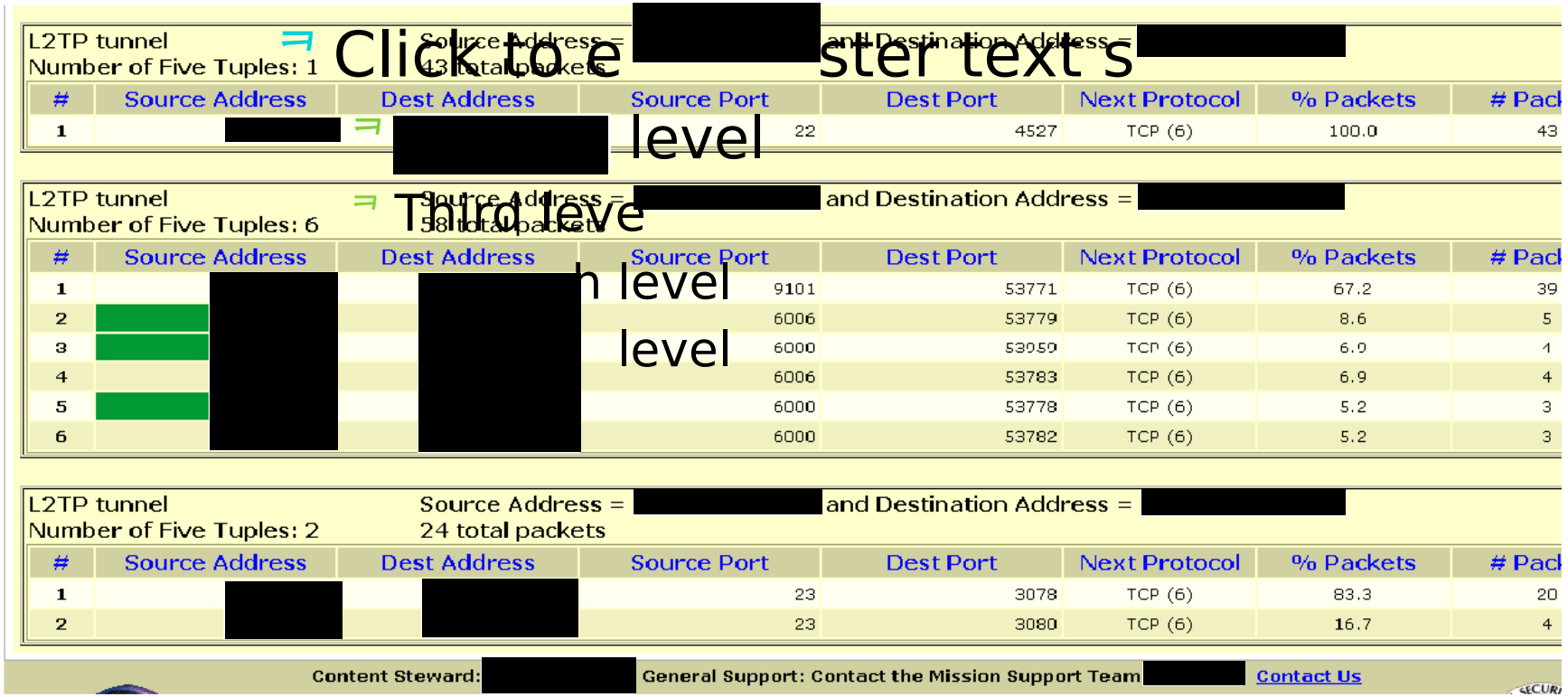
- (S//SI//REL) Began with loopback IPs from a spreadsheet
  - [redacted]
- (S//SI//REL) Found configs for 2 of the 12 loopbacks in a text query in DISCOROUTE
  - [redacted] and [redacted] were in the payload but not parsed
- (S//SI//REL) Took the IPs from those configs and found other configs, one with hostname ‘LNS’

(U) Example continued

- (S//SI//REL) BLACKPEARL hit on LNS IP [redacted]
  - Inner IPs in L2TP tunnels
  - DR search for inner IPs from the L2TP tunnels and found more configs
- (U//FOUO) Many of the configs were multi-hop
- (S//SI//REL) Information compiled for TAO
  - ~400 IPs for over 50 devices

(S//SI//REL) BLACKPEARL Search:

[redacted]



L2TP tunnel — Source Address = [redacted] and Destination Address = [redacted]
Number of Five Tuples: 1 — 43 total packets

#	Source Address	Dest Address	Source Port	Dest Port	Next Protocol	% Packets	# Pack
1	[redacted]	[redacted]	22	4527	TCP (6)	100.0	43

L2TP tunnel — Source Address = [redacted] and Destination Address = [redacted]
Number of Five Tuples: 6 — 58 total packets

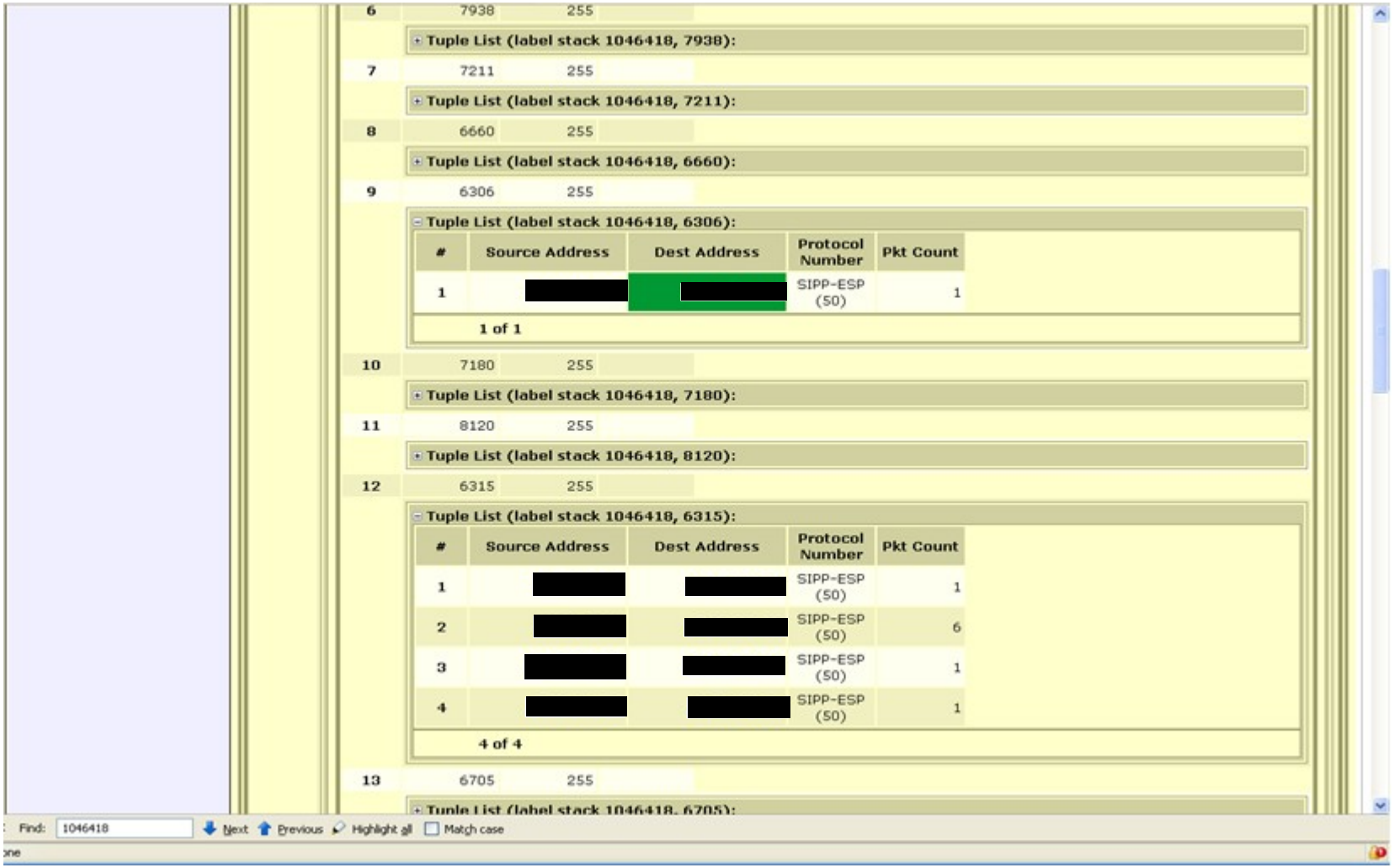
#	Source Address	Dest Address	Source Port	Dest Port	Next Protocol	% Packets	# Pack
1	[redacted]	[redacted]	9101	53771	TCP (6)	67.2	39
2	[redacted]	[redacted]	6006	53779	TCP (6)	8.6	5
3	[redacted]	[redacted]	6000	53959	TCP (6)	6.9	4
4	[redacted]	[redacted]	6006	53783	TCP (6)	6.9	4
5	[redacted]	[redacted]	6000	53778	TCP (6)	5.2	3
6	[redacted]	[redacted]	6000	53782	TCP (6)	5.2	3

L2TP tunnel — Source Address = [redacted] and Destination Address = [redacted]
Number of Five Tuples: 2 — 24 total packets

#	Source Address	Dest Address	Source Port	Dest Port	Next Protocol	% Packets	# Pack
1	[redacted]	[redacted]	23	3078	TCP (6)	83.3	20
2	[redacted]	[redacted]	23	3080	TCP (6)	16.7	4

Content Steward: [redacted] General Support: Contact the Mission Support Team [redacted] Contact Us

(S//SI//REL) BLACKPEARL MPLS



6 7938 255

Tuple List (label stack 1046418, 7938):

7 7211 255

Tuple List (label stack 1046418, 7211):

8 6660 255

Tuple List (label stack 1046418, 6660):

9 6306 255

Tuple List (label stack 1046418, 6306):

#	Source Address	Dest Address	Protocol Number	Pkt Count
1	[redacted]	[redacted]	SIPP-ESP (50)	1

1 of 1

10 7180 255

Tuple List (label stack 1046418, 7180):

11 8120 255

Tuple List (label stack 1046418, 8120):

12 6315 255

Tuple List (label stack 1046418, 6315):

#	Source Address	Dest Address	Protocol Number	Pkt Count
1	[redacted]	[redacted]	SIPP-ESP (50)	1
2	[redacted]	[redacted]	SIPP-ESP (50)	6
3	[redacted]	[redacted]	SIPP-ESP (50)	1
4	[redacted]	[redacted]	SIPP-ESP (50)	1

4 of 4

13 6705 255

Tuple List (label stack 1046418, 6705):

Find: 1046418 Next Previous Highlight all Match case

(U//FOUO) TOYGRIPPE

(S//SI//REL) VPN Metadata Repository

(S//SI//REL)Building VPN Network Knowledge

- (S//SI//REL)VPNs are part of a larger network
- (S//SI//REL)Inner or tunneled IPs are a peek inside the target's network
- (S//SI//REL)Beneficial to look beyond the endpoints of your VPN
- (S//SI//REL)Combine information from as many SIGDEV databases as you can

(U/FOUO) TOYGRIPPE Searches

- (U//FOUO) Search 3 months at a time
- (U//FOUO) Keep going back in time if no results found
- (S//SI//REL) Take endpoint IPs found here and search in
  - DISCOROUTE -- device information
  - BLACKPEARL -- inner tunneled IPs
- (S//SI//REL) Country report

(U//FOUO) TOYGRIPPE Searches

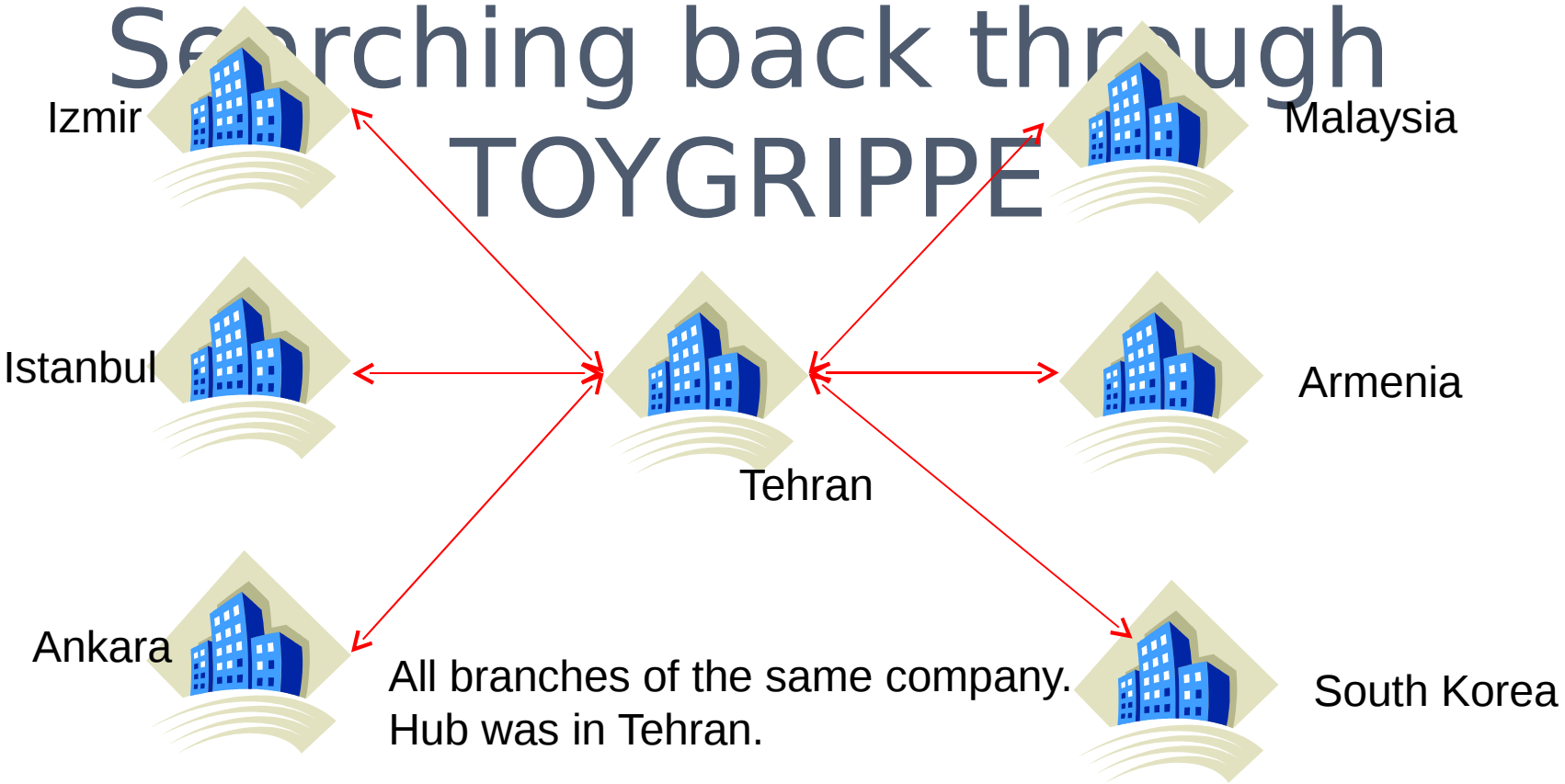
- (S//SI//REL) Make note of other connections to the IP of interest and search for them separately
- (S//SI//REL) You might not find what you are looking for, but it still may be important
- (S//SI//REL) Convert the target domain name to hex and search for it in the idData field
  - badguy.com = 626164775792e636f6d
  - (idData LIKE '%626164775792e636f6d')

(U//FOUO) Endpoint IP Search

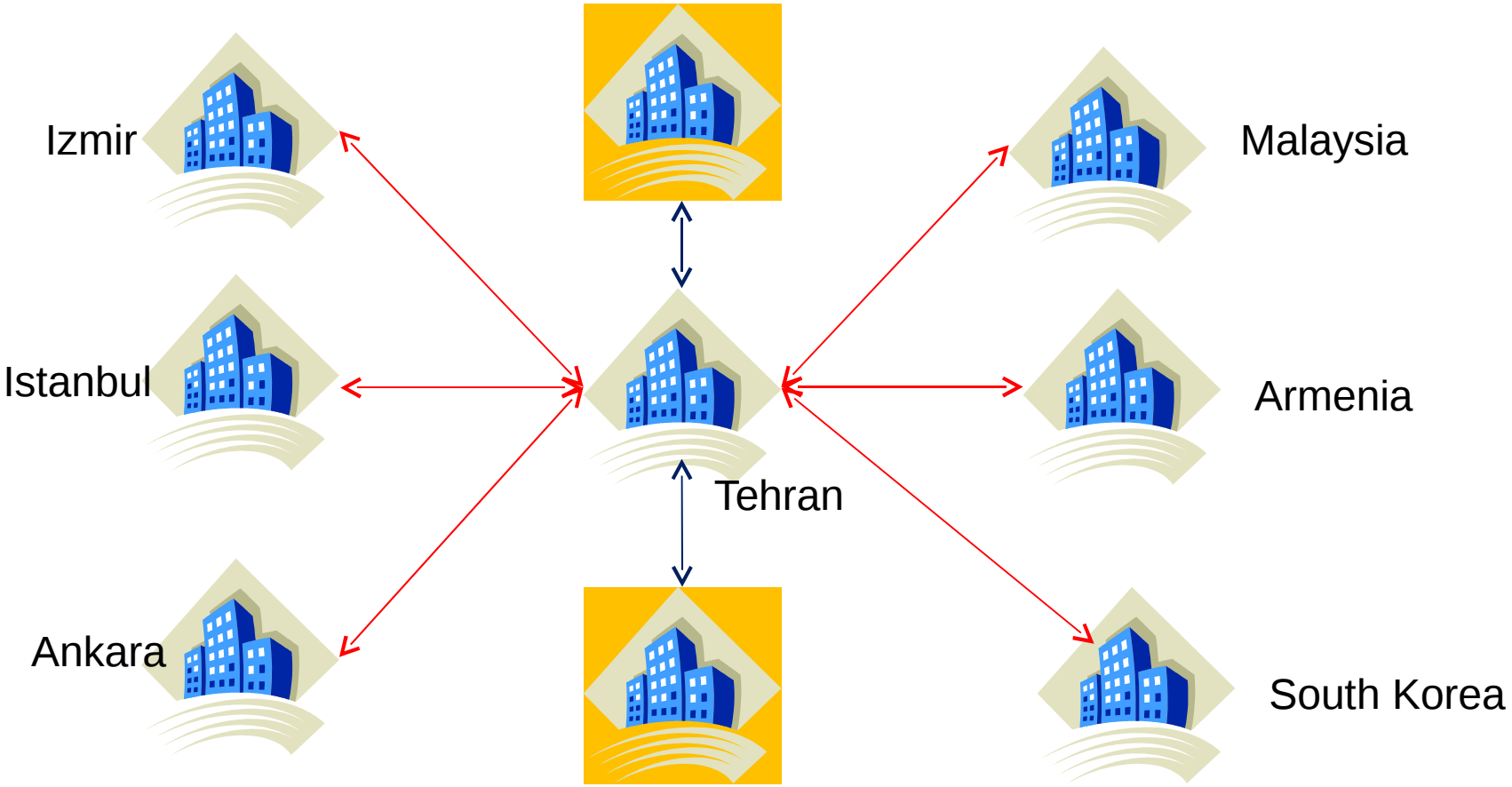
- (TS//SI//REL)Query each IP in TOYGRIPPE separately
  - Try to determine the importance of the connections
  - Note other VPN connections: all IPs are important until proven otherwise

- (TS//SI//REL)Success: Discovered Iranian corporate intranet

(S//SI//REL) Building a VPN Intranet: Searching back through TOYGRIPPE

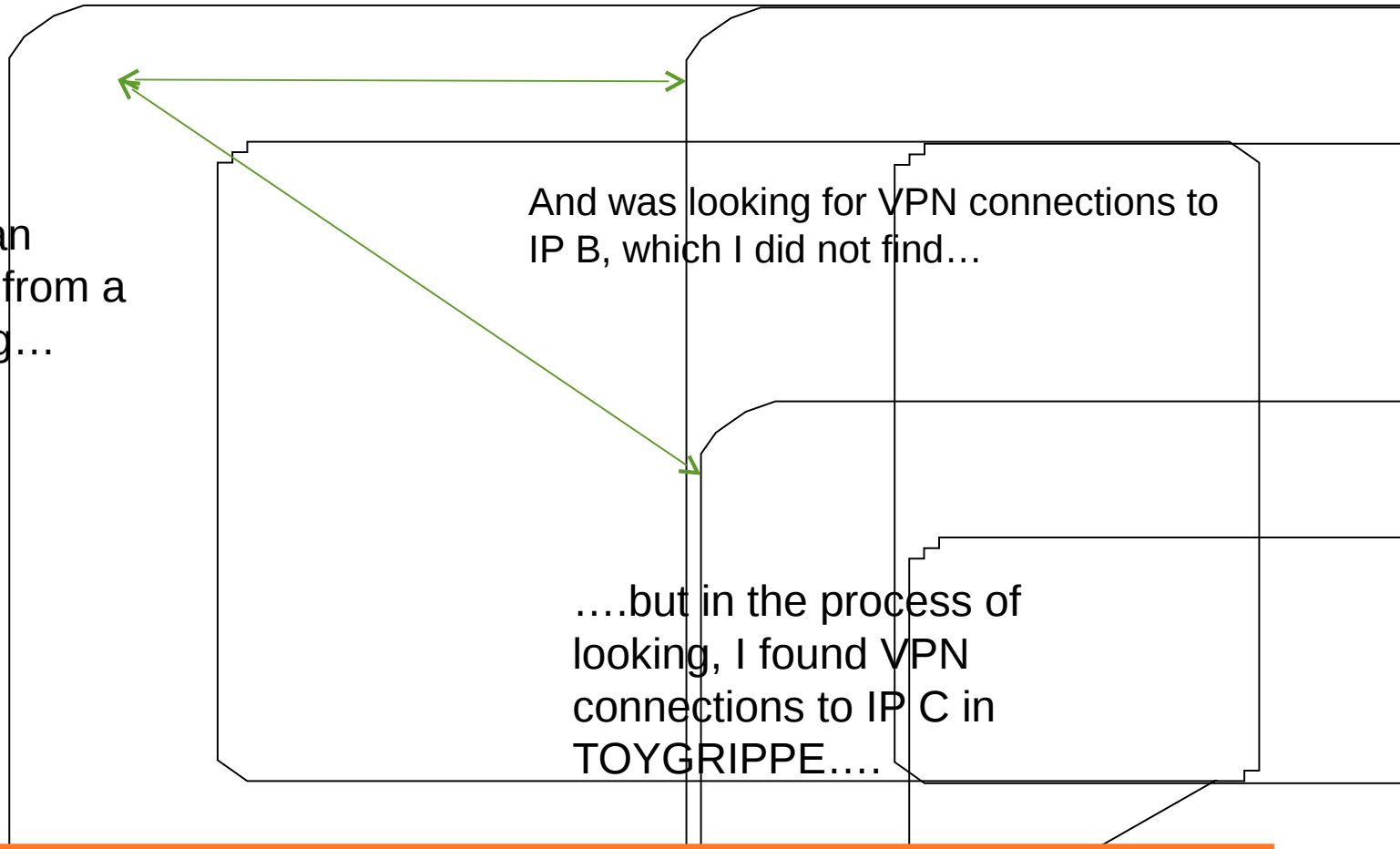


(S//SI//REL) Finding Suspicious VPN Connections

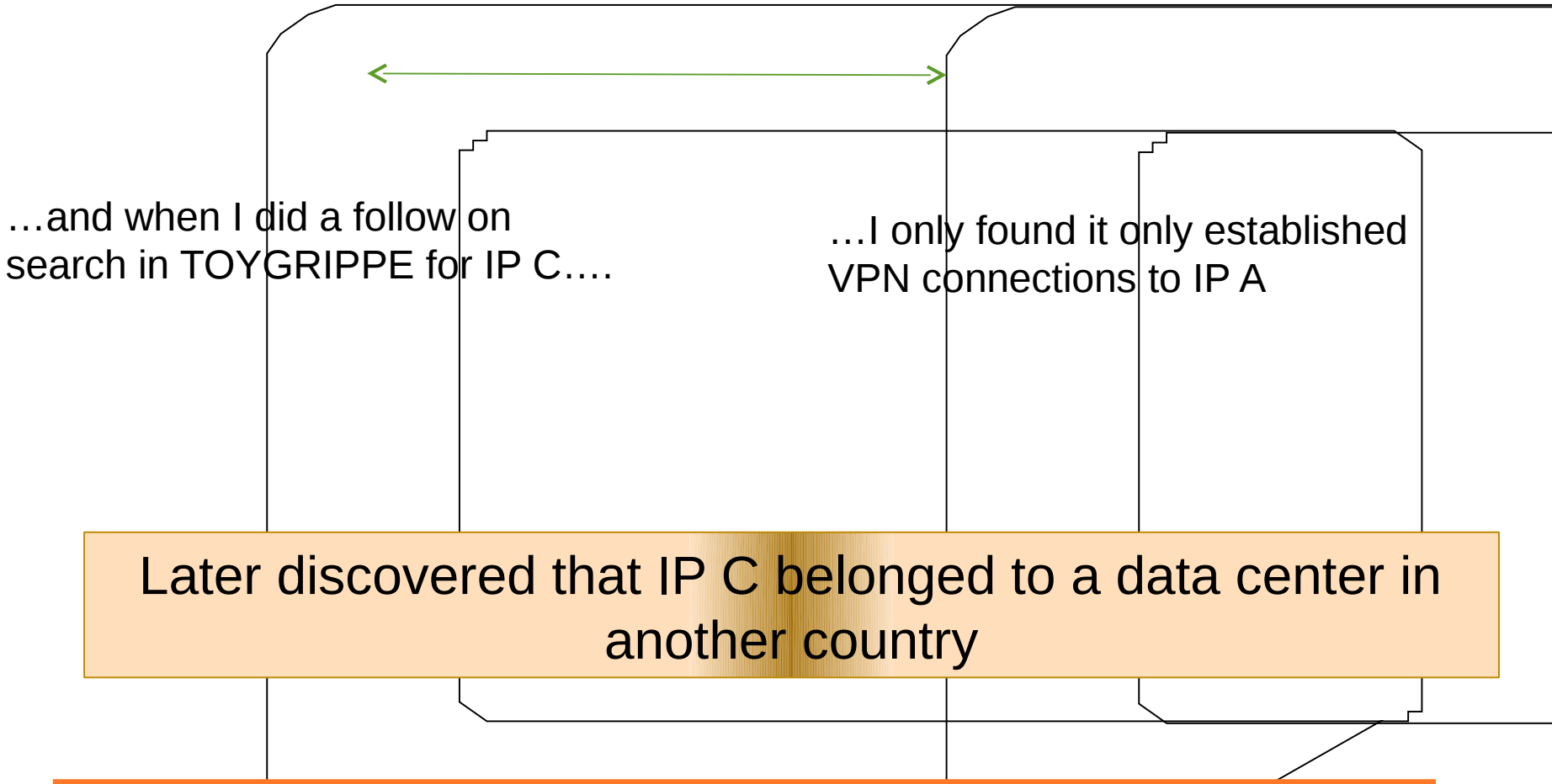


(TS//SI//REL)Two connections outside the target company

(S//SI//REL) Discovery of a Data Center



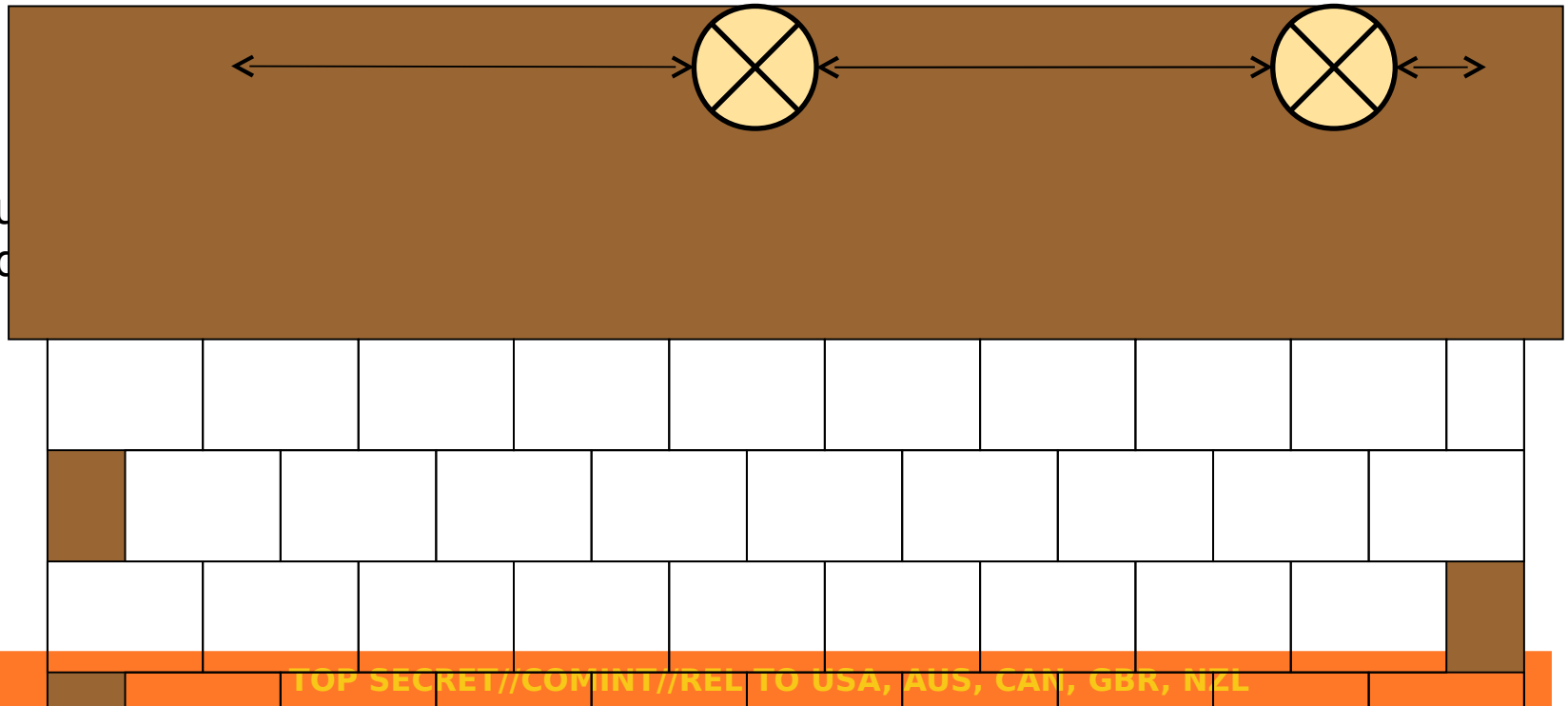
(S//SI//REL) Discovery of a Data Center



(S//SI//REL) Search for other end of the point-to-point connection

- (S//SI//REL) What if you already have VPN endpoints from a GNOME report or a TOYGRIPPE search
- (S//SI//REL) Search for that IP in the DISCOROUTE VPN report GUI – you don't find it
- (S//SI//REL) Try to search for the other end of what would be a point-to-point connection in DISCOROUTE to find the customer edge router
- (S//SI//REL) END GOAL: find more information about the network

(S//SI//REL) Customer Edge Routers



(U//FOUO) NKB and RONIN

(S//SI//REL) NKB is NSA's Network Knowledge Base delivering target communications' DNI and enrichment data

(S//SI//REL) RONIN is a device characterization database and one of the enrichments to NKB

(U//FOUO) NKB

- (S//SI//REL) RONIN data
  - Server Analytics: VPN identified through application layer information in ASDF
  - Wiki: VPN Metadata in ASDF
  - VPN Analytics: endpoint in TOYGRIPPE
  - Router Config: new descriptive information coming soon to include tunnel & VPN information for IPs
  - Example: Kenya VPN IP [redacted]

(TS//SI//REL) NKB Search for [redacted]: Device Details

(U//FOUO) GNETWORK

GNOME

(S//SI//REL) Tool used to extract and correlate information from a variety of NAC, SSG, SSO, NTOC and other metadata databases

(S//SI//REL) Keep an Eye on the Entire Netblock

- (S//SI//REL) Multiple VPNs for one target
  - different purposes
  - different clients

(S//SI//REL) GNOME Task: Private IP VPNs

- (S//SI//REL) Find a public IP associated with your private IP
  - Loopback IP
  - Another interface IP
- (S//SI//REL) Use those for your GNOME report and look for your private IP on the same link
- (S//SI//REL) Data presented in the VPN tab in GNOME report is limited

(U//FOUO) Network Patterns...

(S//SI//REL) IP Patterns

- (S//SI//REL) Admins are people -- lean towards predictability in assignment of IPs to make their job easier
- (S//SI//REL) IP or a combination of the octets could be an indication of:
  - network provider
  - location
  - specific purpose in the network

(S//SI//REL) Example #1:Private IP VPN Network Patterns

- (S//SI//REL) Client side of the VPN: [redacted]
  - Second octet indicated the network provider
    - 20 = network provider #1
    - 21 = network provider #2
  - Second and third octet = country
    - 20.30 and 21.30 were the same country but different providers
  - 40 = individual target entity in that country

- (S//SI//REL) Server side of the VPN: [redacted]
  - Second octet indicated network provider
    - 51= network provider #1
    - 52 = network provider #2

(S//SI//REL) Example #2:Network Patterns

(S//SI//REL) Public IP VPN: [redacted].#

- Third octet = country location of this IP (three possible)
- Fourth octet= country location of the other side of the VPN connection

Analyzed the opposite side of this /24 and identified the country for 167 4th octet values (out of 209) ▭ when this public IP connects to a private IP we know the country location of the private IP.

(U//FOUO) Final Thoughts…

- (S//SI//REL) Just because you don't get results doesn't mean the answer isn't there
  - If you're looking for a connection from A to B and don't find it, then maybe you need to look for one from A to C to B
- (S//SI//REL) Try the query a different way
  - Widen the search either by wildcarding (if permitted) or by selecting a different drop-down option
  - Enter information in a different field

(U//FOUO)Final Thoughts…

- (S//SI//REL) All IPs are important until proven otherwise
  - They all serve a purpose and belong to a device
  - Make note of what you find even if you don't know at the time what it means
- (S//SI//REL) Search for data even if results are unlikely
- (S//SI//REL) Don't necessarily discard dated information

(U//FOUO) Final Thoughts…

- (U//FOUO) Understand the data that you are searching and what the fields in the GUI are searching for
- (U//FOUO) Take an iterative approach: start searches wide, then narrow them down, then widen back out again
- (S//SI//REL) Bounce between the different databases and use the tools for every aspect of your network analysis

(S//SI//REL) VPN SIGDEV: Build the network knowledge…

- (TS//SI//REL) Dig beyond paired collection, PSKs and persistence
- (S//SI//REL) Discovery of the inner IPs of the VPN is possible in ways other than decryption
- (S//SI//REL) Investigate device IPs
- (U//FOUO) Look for patterns
- (S//SI//REL) Discover the ‘N’ of your VPN

(U//FOUO) Questions?

[redacted]

SSG21 Net Pursuit
Network Analysis Center

(S//SI//REL) Simplifying and Automating VPN SIGDEV

[redacted]

SSG22
Network Analysis Center

(U//FOUO) The Ultimate Goals

- (S//SI//REL) Integrate VPN information into mainstream analytic tools and knowledge bases.
- (S//SI//REL) Give analysts the ability to discover, develop, and track known targets using VPNs.
- (S//SI//REL) Give analysts the ability to discover new targets using VPNs.

(U//FOUO) The Start . . .

- (S//SI//REL) Develop new corporate VPN tool (DARKSUNRISE).
  - Joint collaboration between CES and the NAC.
  - Take advantage of cloud architecture.
  - Strive to meet the needs of the entire VPN community.

(U//FOUO) To The Cloud!

- (S//SI//REL) Data stored in MDR-2, the corporate metadata repository.
  - Stores one year of DNI metadata.
  - Enables filtering, aggregating, and transforming large datasets quickly.
  - Manage high data volumes.
  - Answer VPN questions efficiently and easily.

(S//SI//REL) What are Some of the Needs of the VPN SIGDEV Community?

- (S//SI//REL) Answer VPN SIGDEV questions quickly.

- (S//SI//REL) Allow SIGDEVers to spend time analyzing data instead of gathering and processing the data first.

- (S//SI//REL) Make VPN SIGDEV more widely understood by simplifying and automating the SIGDEV process.

- (S//SI//REL) Robust Structure
  - Allow for multiple VPN and network encryption protocols
  - Allow for incorporation of new analytics.

(S//SI//REL) What are Some of the Questions?

- (S//SI//REL) Basic Questions
  - Is my target using a VPN?
  - What are all of the VPNs from country BadGuyLand?
  - Tell me all of the VPNs where domain = sita*.
  - Tell me all of the VPNs where the vendor ID = Cisco.

(S//SI//REL) What are Some of the Questions?

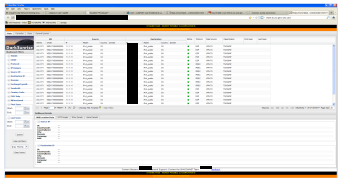
- (S//SI//REL) Specialized Questions
  - What are all of the VPNs that are bi-directional?
  - What are all of the VPNs that are paired?
  - Tell me all of the VPNs (and how many) that a particular VPN talks to (persistent hubs/centrality).
  - What are all of the VPNs that are of interest (via Target Network Service)?
  - What VPNs are associated to a router config?
  - What are all of the VPNs that are persistent?
  - For which VPNs do we have a PSK?

(S//SI//REL) What are Some of the Questions?

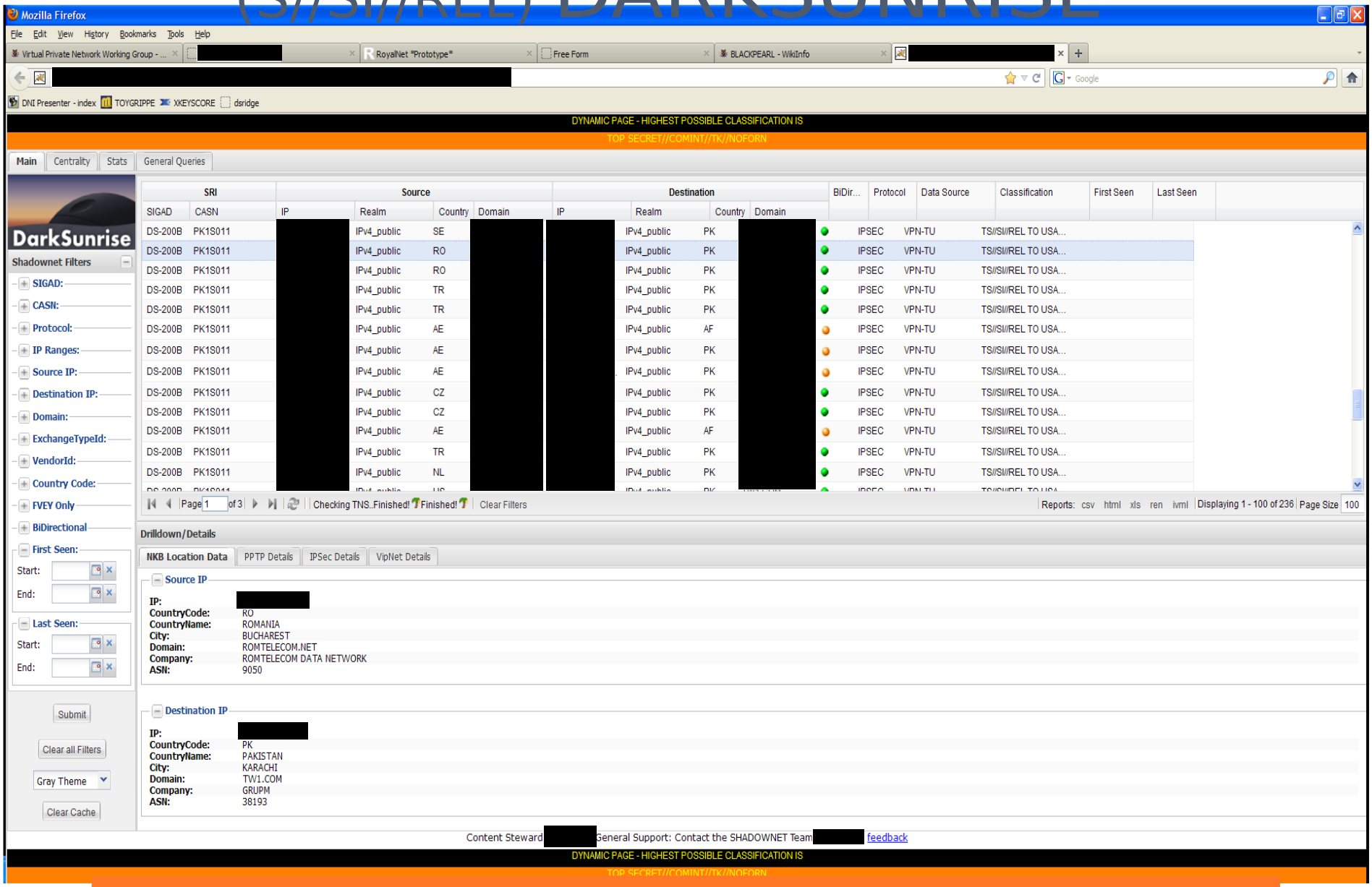
- (S//SI//REL) Synthesizing Information
  - What are all of the VPNs that are bi-directional, persistent, and of interest?
  - What are all of the VPNs that are paired, persistent, and for which we have a PSK?
  - What are all of the VPNs from country BadGuyLand that are paired, associated to a router config, and of interest?

(U//FOUO) DARKSUNRISE

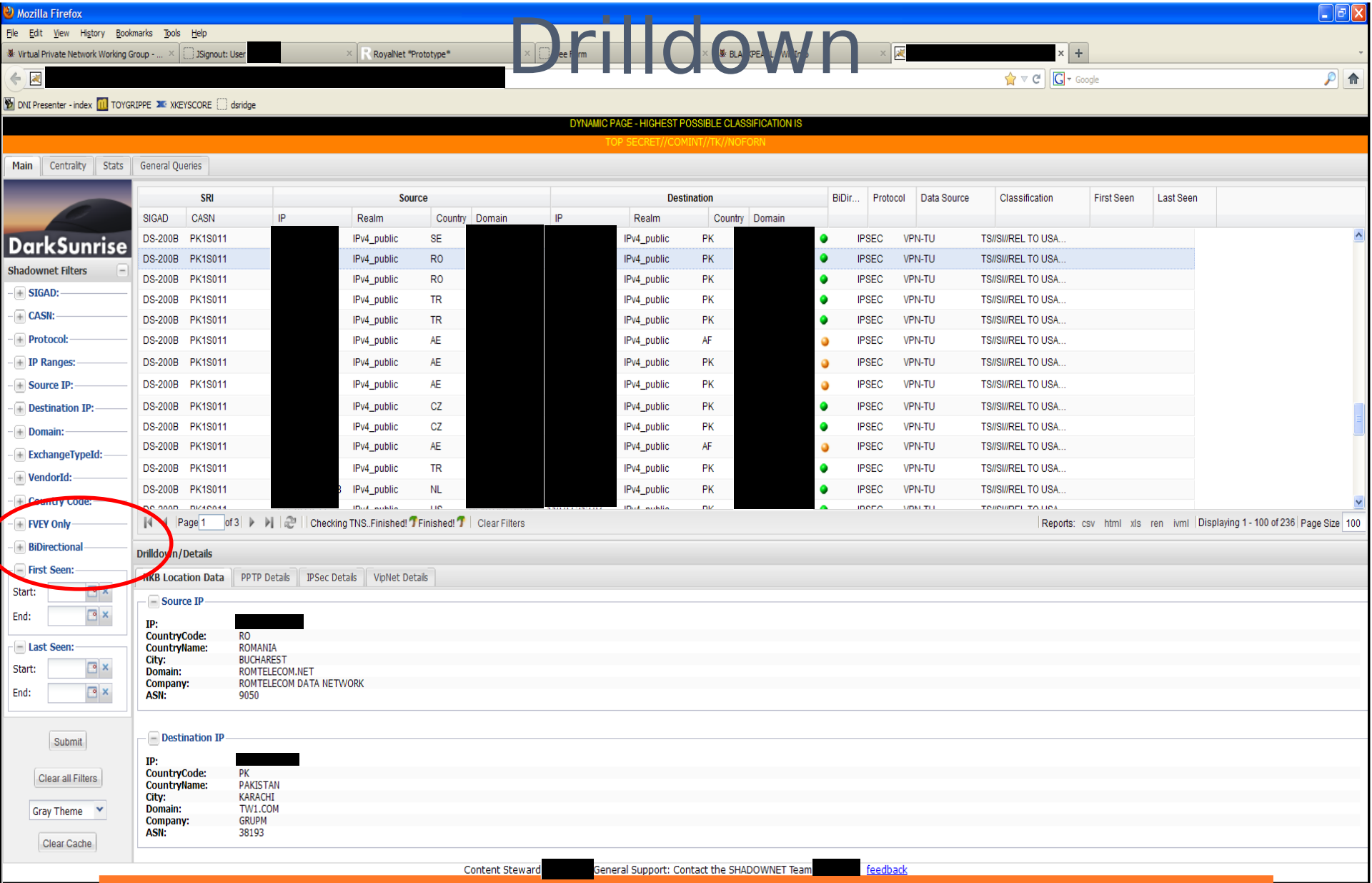
- (U//FOUO) This is a prototype GUI.
- (U//FOUO) Comingg Fall 2012



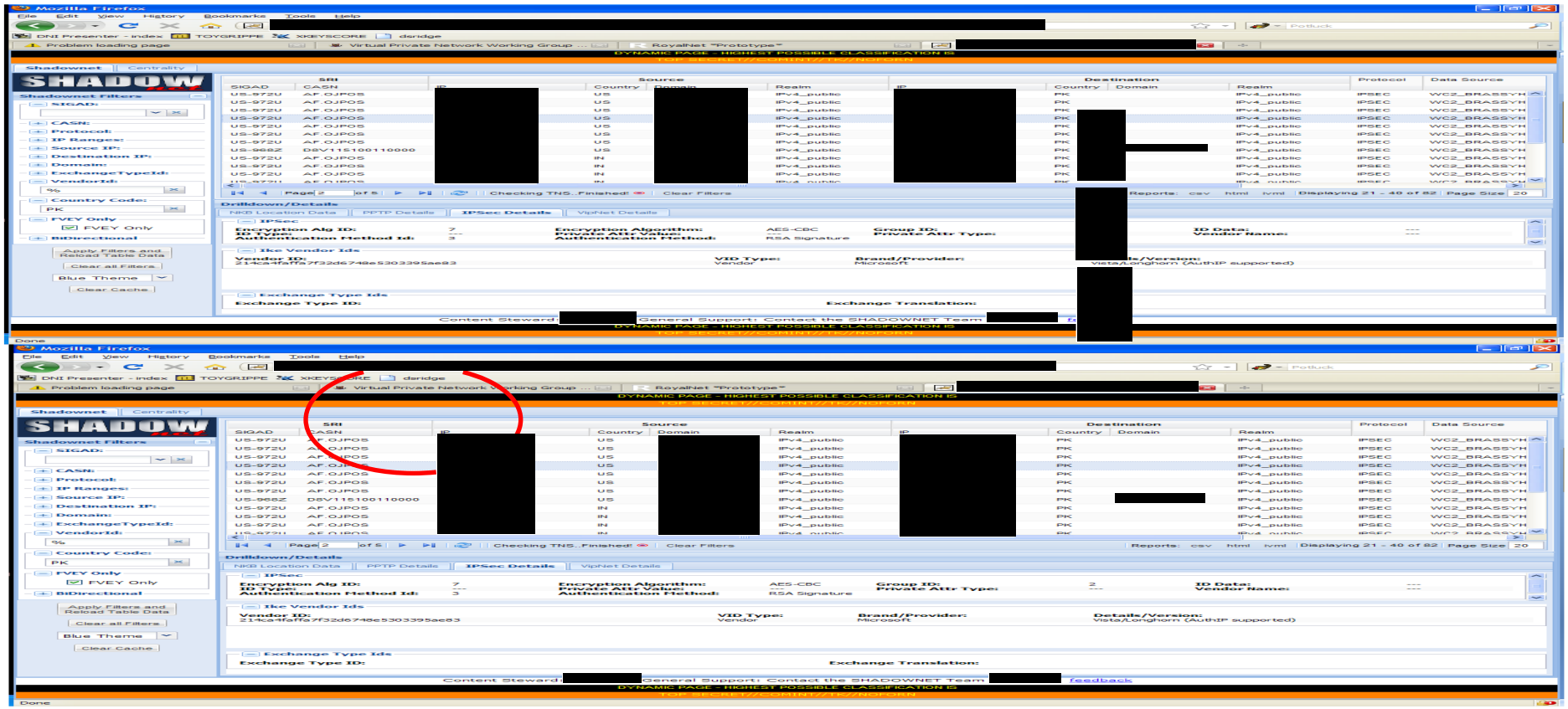
(S//SI//REL) DARKSUNRISE



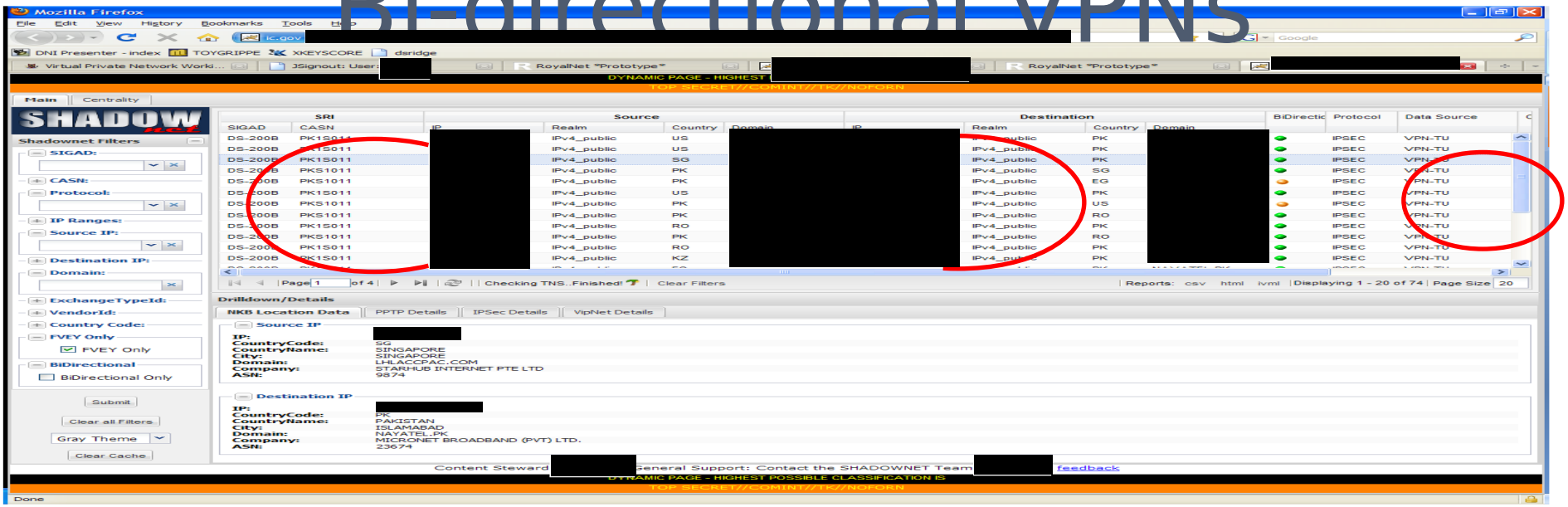
(TS//SI//REL) The NKB Location Data Drilldown



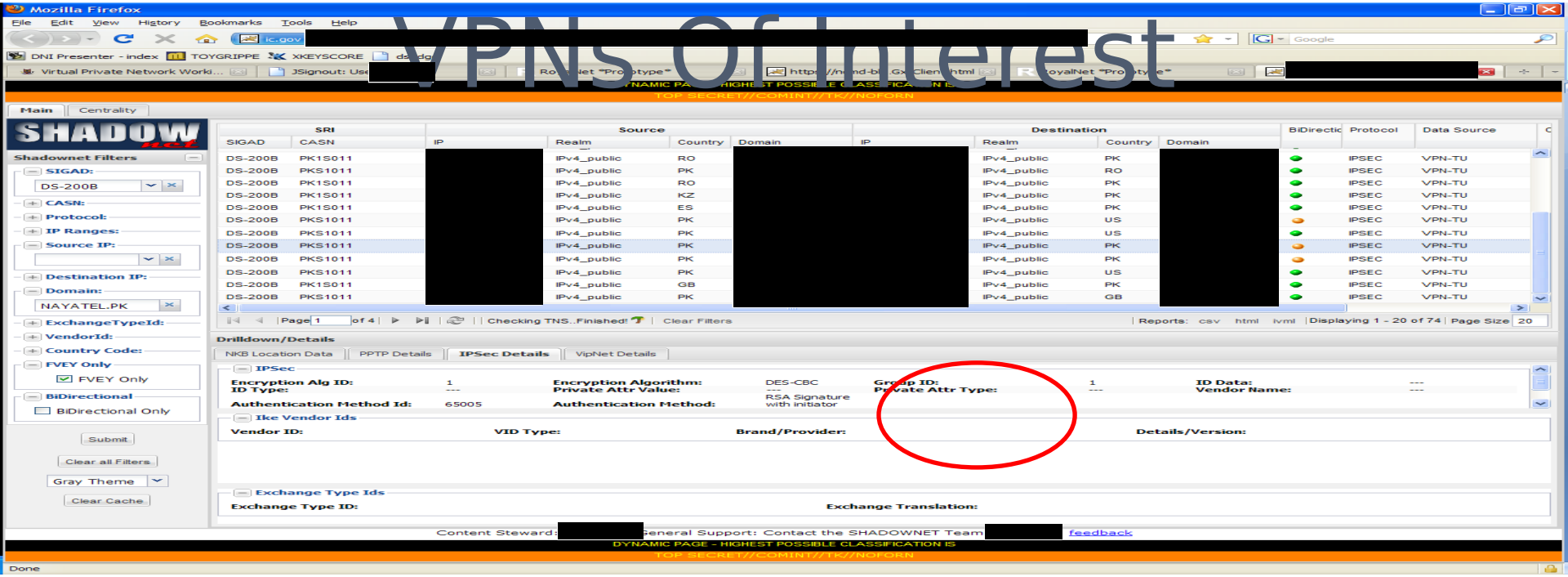
(TS//SI//REL) The IPSec Details Drilldown



(TS//SI//REL) Automatic Identification of Bi-directional VPNs

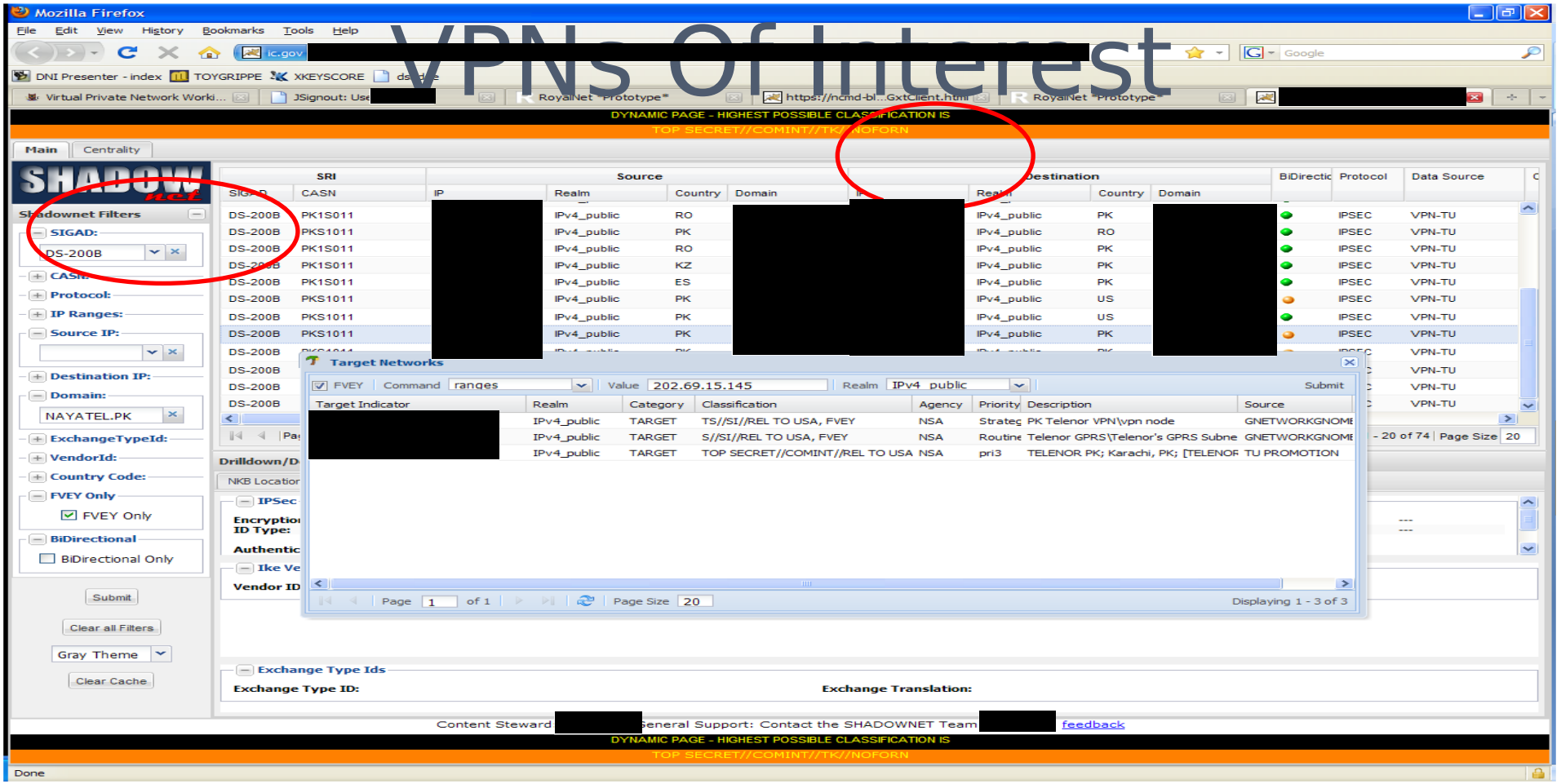


(TS//SI//REL) Automatic Identification of VPNs Of Interest

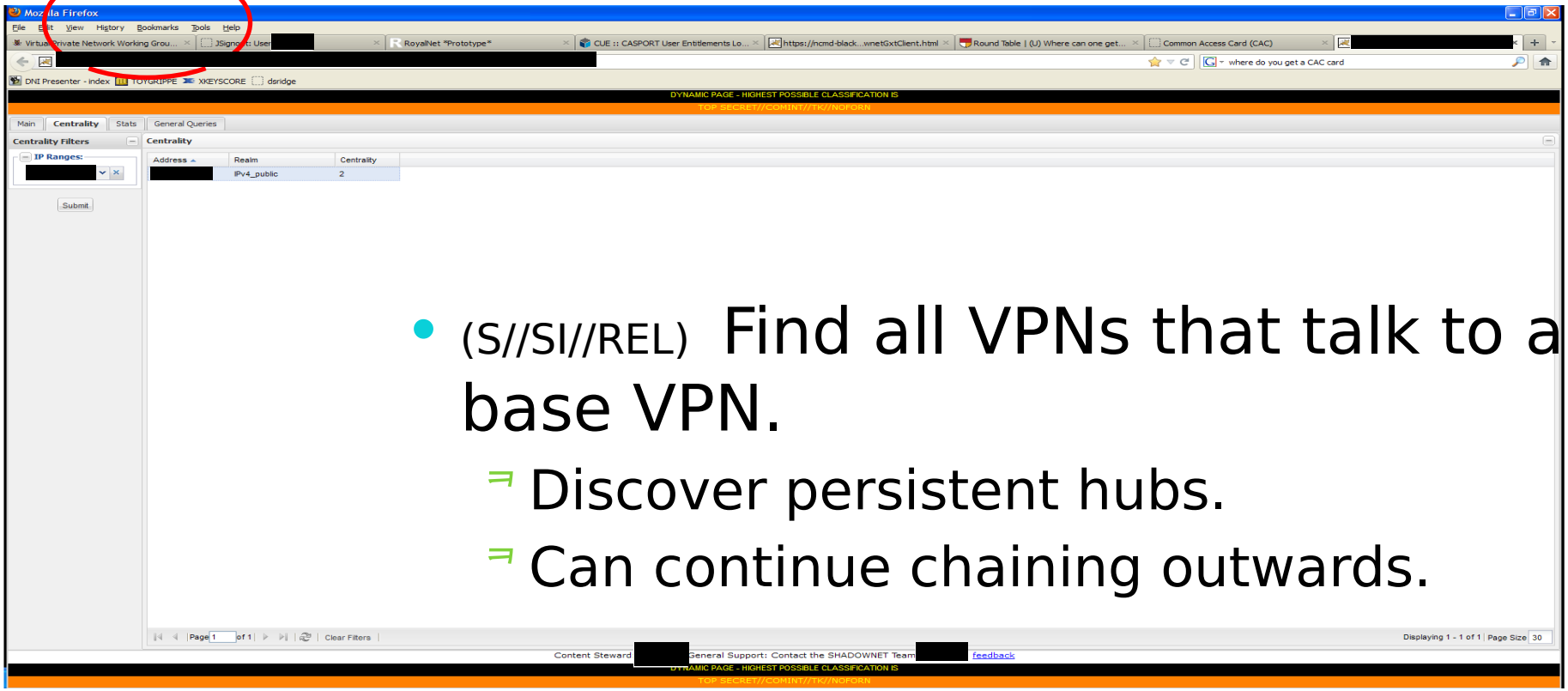


- (S//SI//REL) The icon means this record hits against the Target Network Service (TNS).

(TS//SI//REL) Automatic Identification of VPNs Of Interest

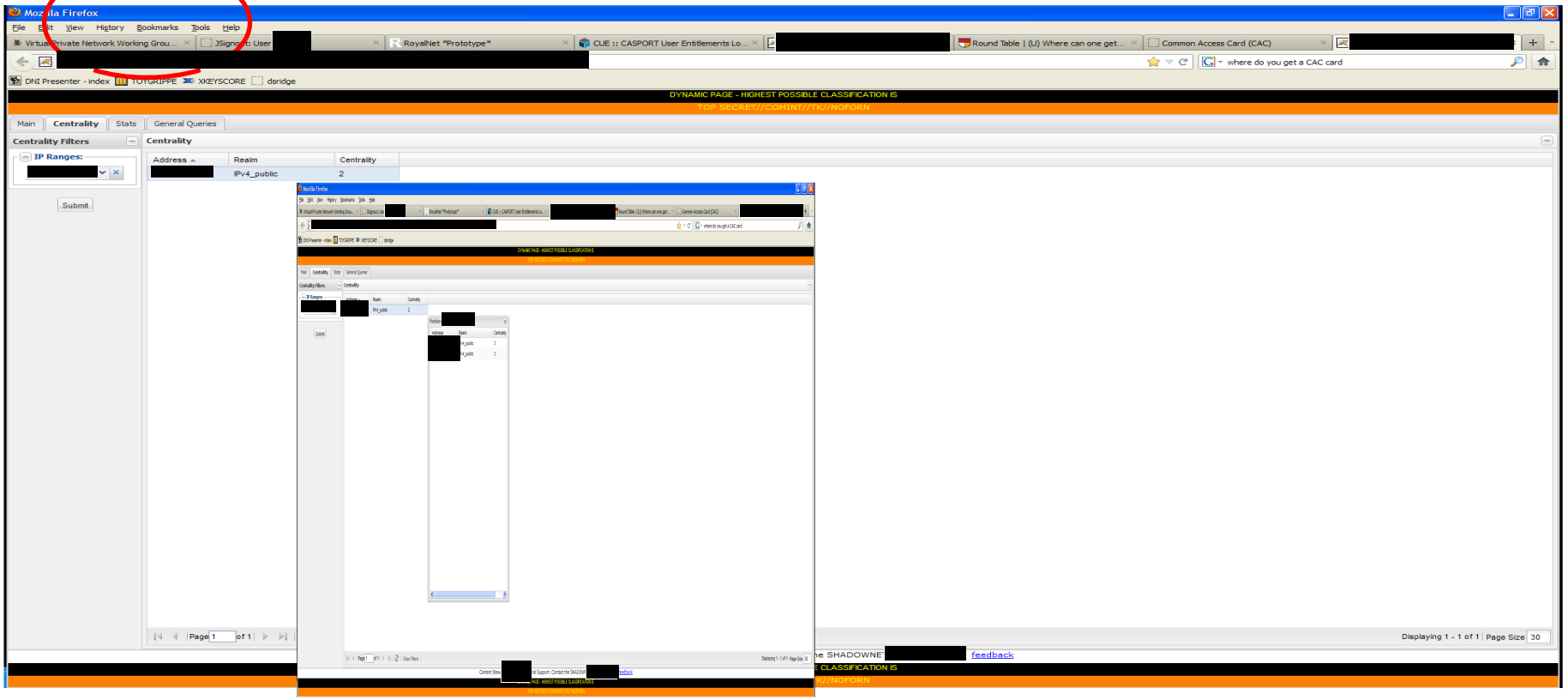


(S//SI//REL) The Centrality Tab

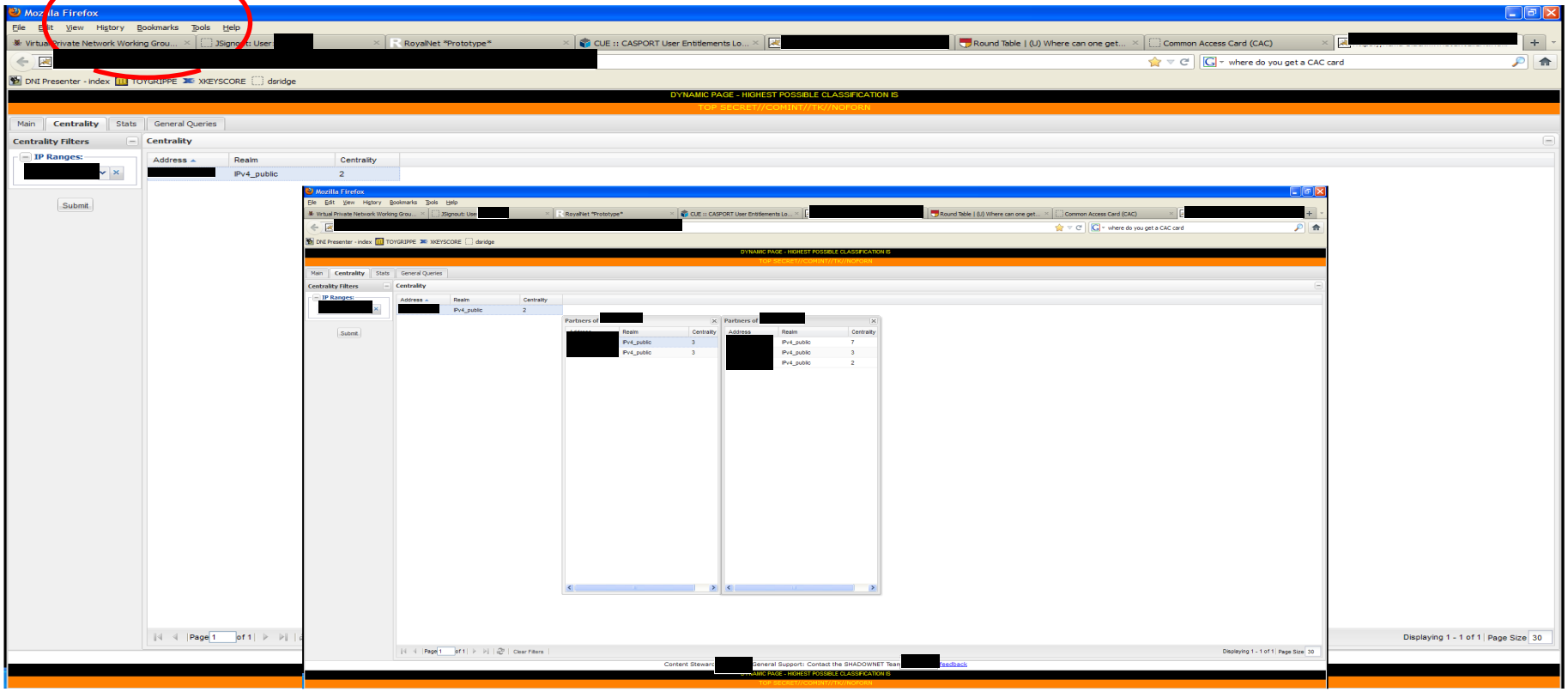


- (S//SI//REL) Find all VPNs that talk to a base VPN.
  - Discover persistent hubs.
  - Can continue chaining outwards.

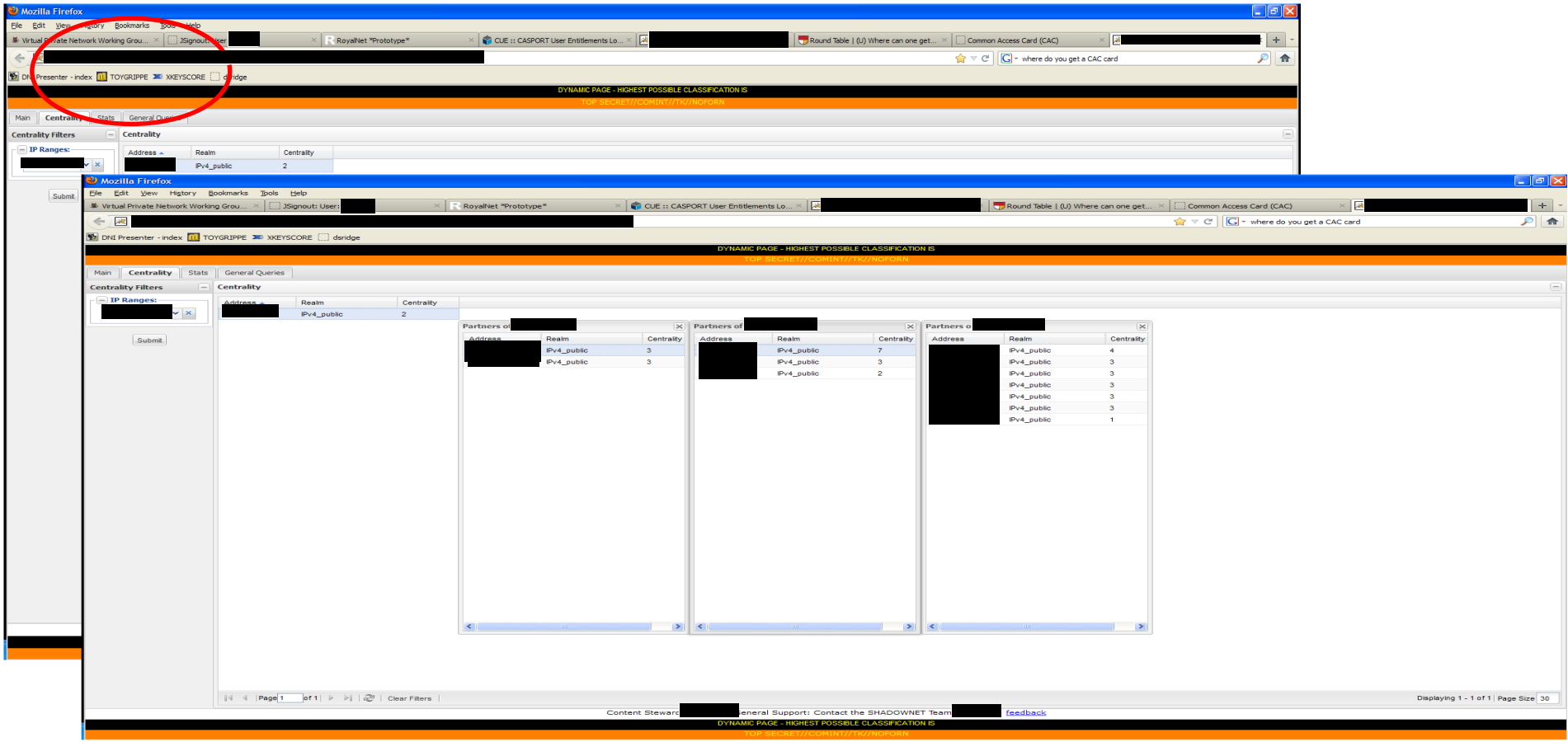
(S//SI//REL) The Centrality Tab



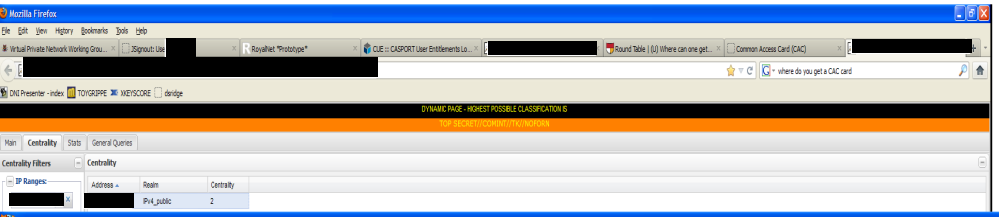
(S//SI//REL) The Centrality Tab

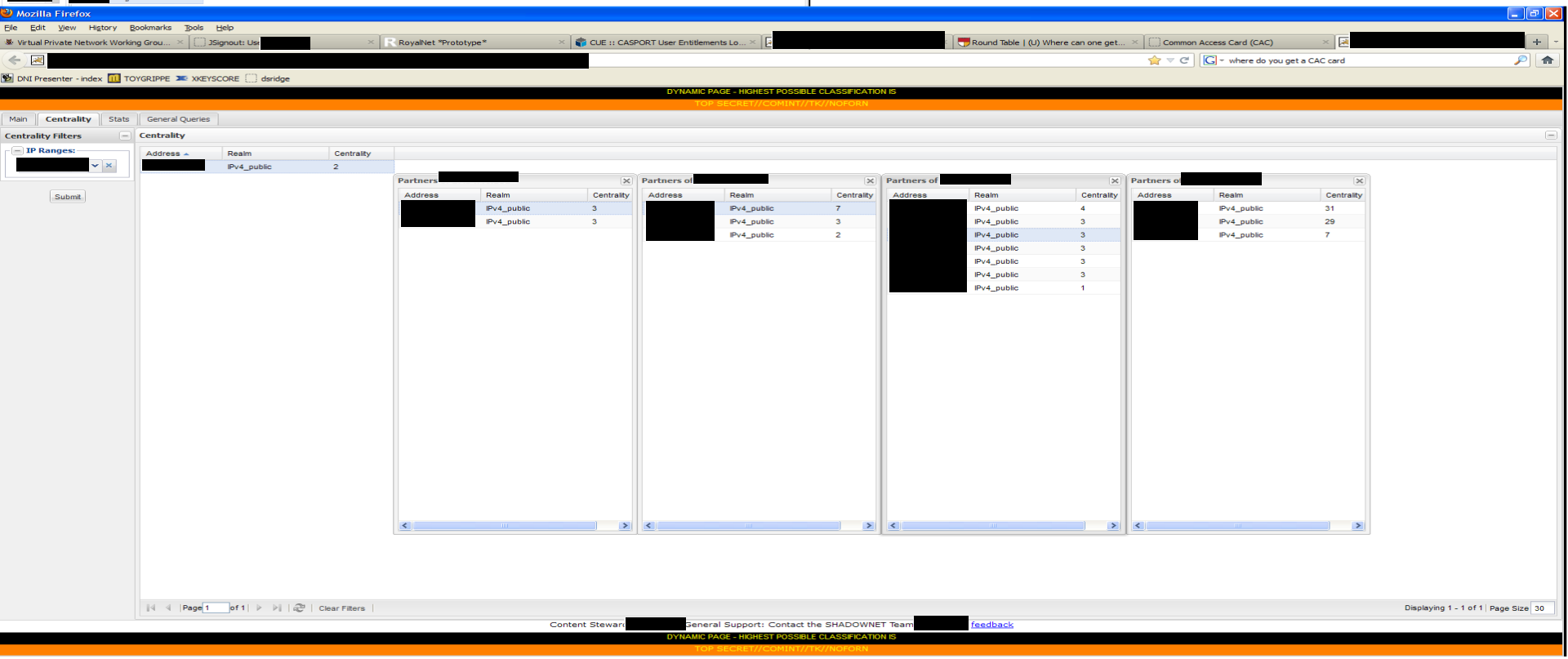


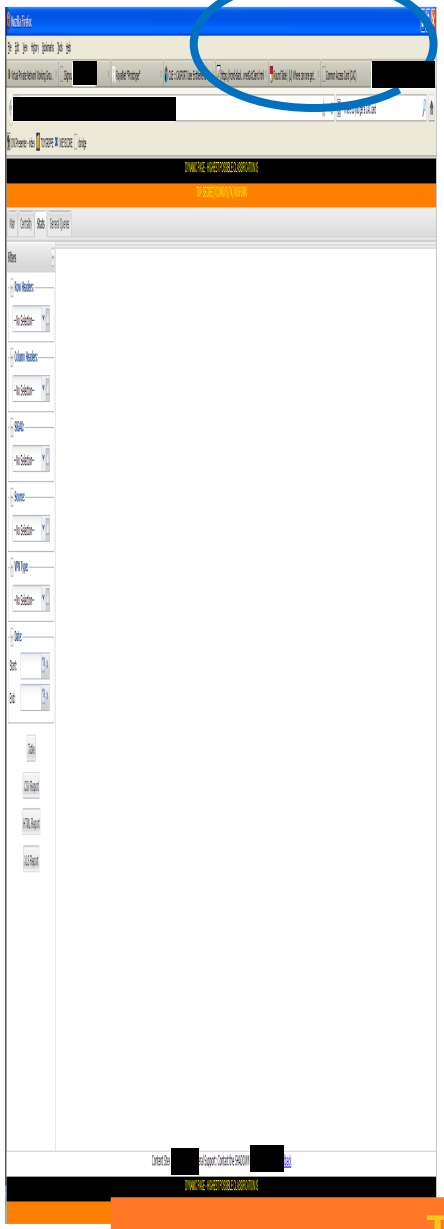
(S//SI//REL) The Centrality Tab



(S//SI//REL) The Centrality Tab



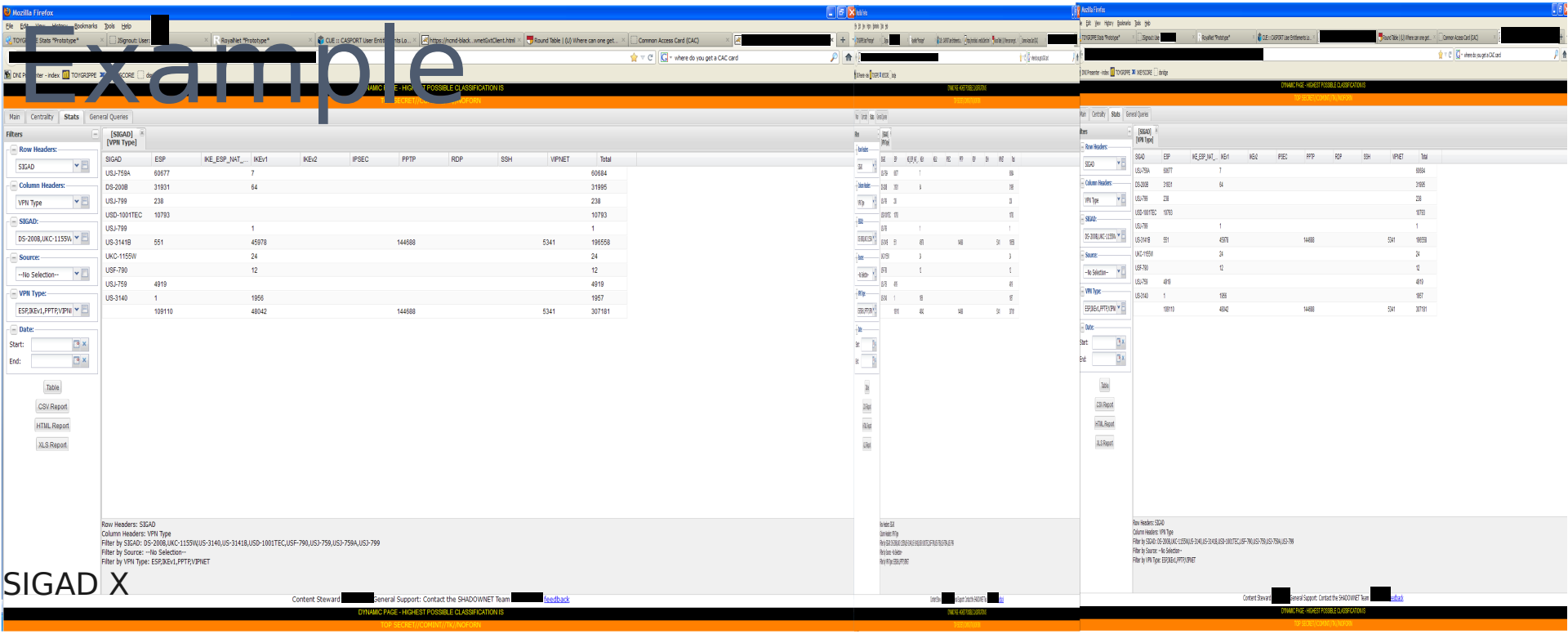




(U//FOUO) The Metrics Tab

- (S//SI//REL) Count distinct VPN records, grouping them by one or more of the following attributes:
  - SIGAD
  - Source
  - VPN Type
  - Case Notation
  - Date

(U//FOUO) The Metrics Tab: One Example



SIGAD X

- (TS//SI//REL) Total number of VPN type per SIGAD.

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(U//FOUO) Questions?

[redacted]

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