The Carrier-Grade NAT Information Gap and Source Port Logging

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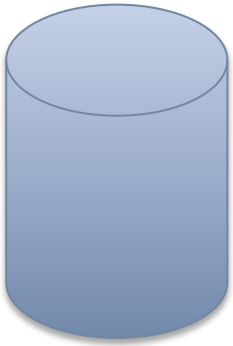
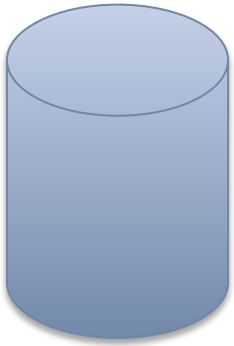
IETF-102 OPSEC WG

20th July 2018

The Problem



Victim/Service Provider Records



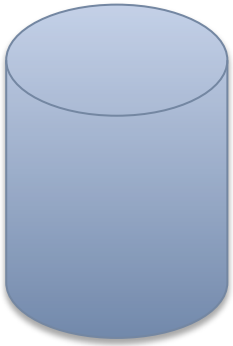
ISP/CGN Subscriber Database

	Time	IP
Suspect →	1	W
	3	H
	3	I
	4	K
	5	M

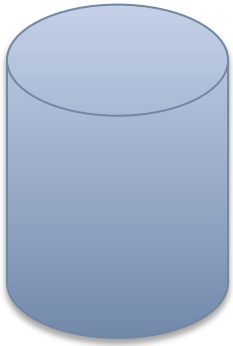
Time	IP	Port	Subscriber
1	W	A	Bob
1	W	B	John
1	W	C	Liz
2	Y	D	Eric
2	Z	E	Joe

?

Solution 1 of 4 – Connection Logging



Victim/Service Provider Records



ISP/CGN Subscriber Database

Suspect →

Time	IP
1	W
3	H
3	I
4	K
5	M

Time	IP	Port	Dest	Subscriber
1	W	A	V	Bob
1	W	B	G	John
1	W	C	H	Liz
2	Y	D	G	Eric
2	Z	E	V	Joe

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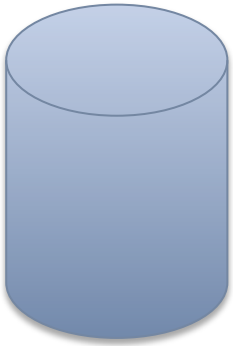
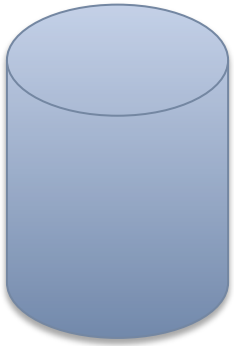
Solution 2 of 4 – IPv6



Victim/Service Provider Records



ISP/CGN Subscriber Database

Suspect →

Time	IP
1	W::Z
3	H::L
3	I::M
4	K::R
5	M::S

Time	IP	Subscriber
1	W::X	Bob
1	W::Z	John
1	W::H	Liz
2	Y::G	Eric
2	Z::T	Joe

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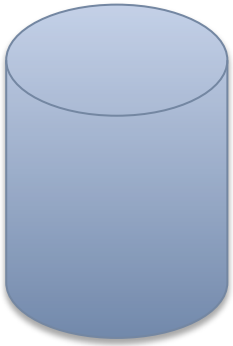
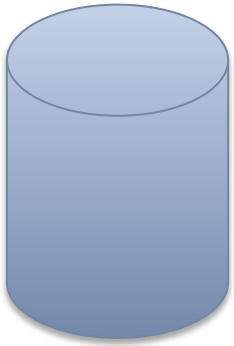
Solution 3 of 4 – Don't use Carrier-Grade NAT



Victim/Service Provider Records



ISP/CGN Subscriber Database

Suspect →

Time	IP
1	W
3	H
3	I
4	K
5	M

Time	IP	Subscriber
1	W	Bob
1	W	John
1	W	Liz
2	Y	Eric
2	Z	Joe

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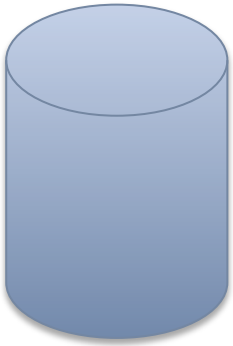
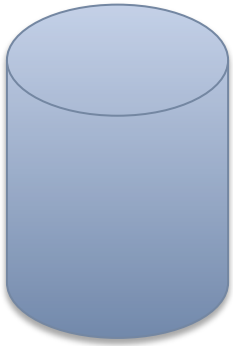
Solution 4 of 4 – Source Port Logging



Victim/Service Provider Records

	Time	IP	Port
Suspect →	1	W	B
	3	H	9
	3	I	8
	4	K	7
	5	M	6



ISP/CGN Subscriber Database

Time	IP	Port	Subscriber
1	W	A	Bob
1	W	B	John
1	W	C	Liz
2	Y	D	Eric
2	Z	E	Joe

Log Source Port: Challenges

Awareness

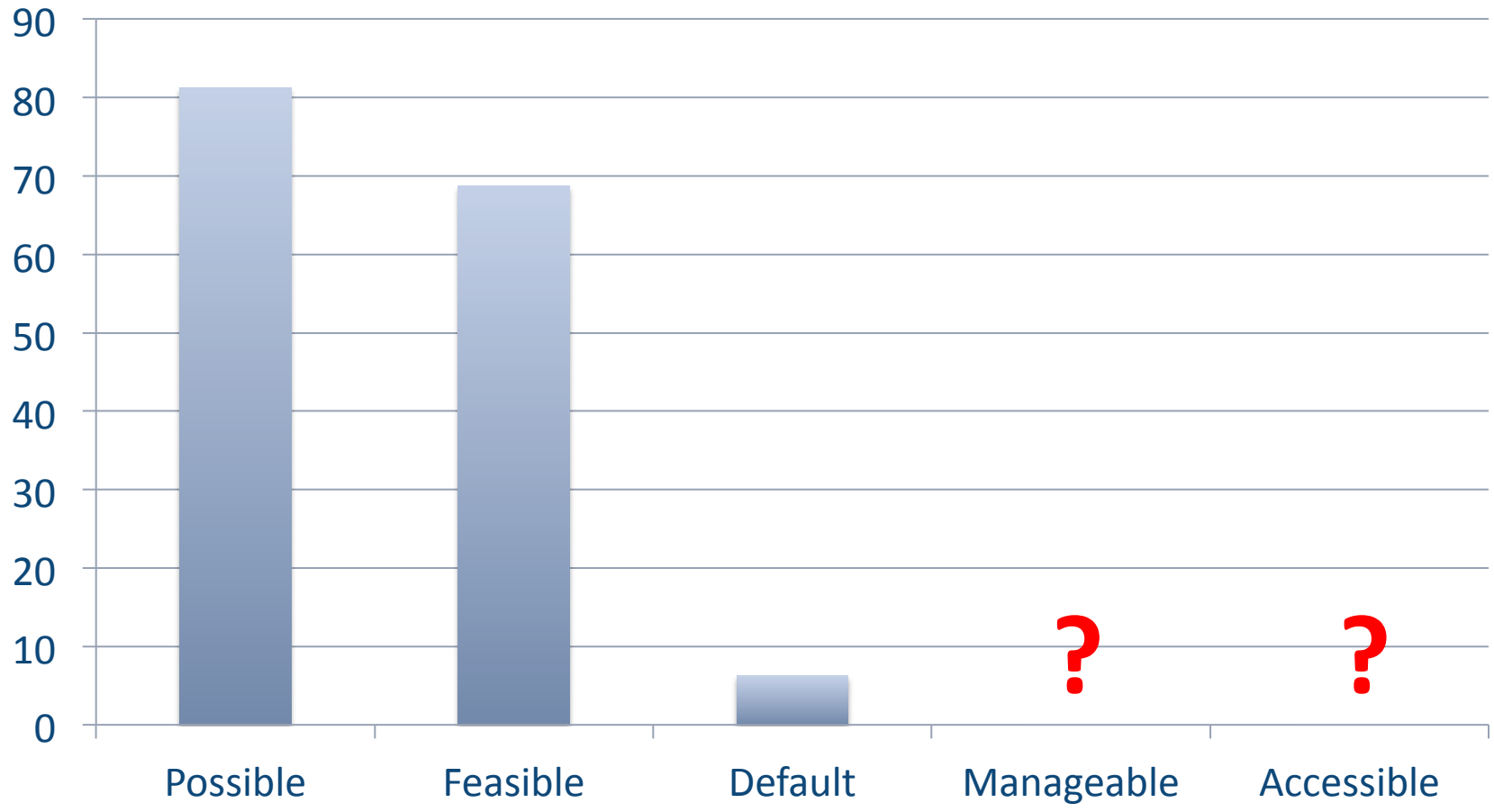
Software Support

Storage

Breaking Other Tooling

Time Accuracy

Software Support



Further Reading

"Approaches to Address the Availability of Information in Criminal Investigations Involving Large-Scape IP Address Sharing Technologies."

https://tools.ietf.org/html/draft-daveor-cgn-logging-04

Also:

- https://www.ftrsolutions.com/index.php/resources/carrier-grade-nat
- https://www.ftrsolutions.com/index.php/resources

Thank You! Any Questions?

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