Analyzing Mobile/Cellular DNI in XKEYSCORE

May 2009

Derived From: NSA/CSSM 1-52
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DERIVED FROM: NSA/CSSM 1-52
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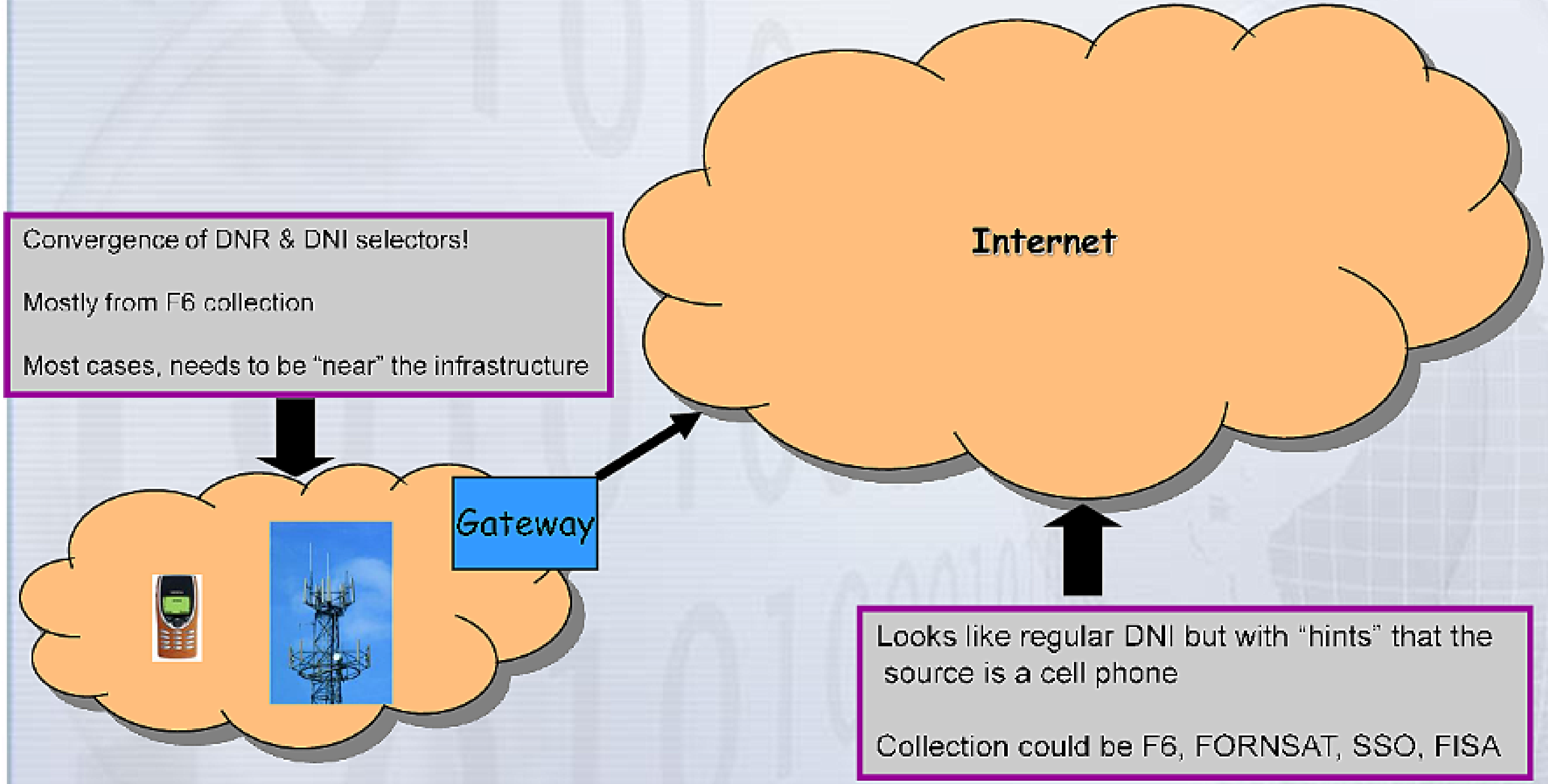
Mobile DNI

- Mobile DNI can be described as people using their Cell Phone or cellular technology to access the Internet and E-mail
- There are essentially two “types” of collection:
  - Collection within the GPRS/3G network (i.e Abis link)
  - Collection within the public Internet (FORNSAT/F6/SSO/FISA/etc)

Mobile DNI

- Mobile DNI Collect comes in two main types:



Convergence of DNR & DNI selectors!

Mostly from F6 collection

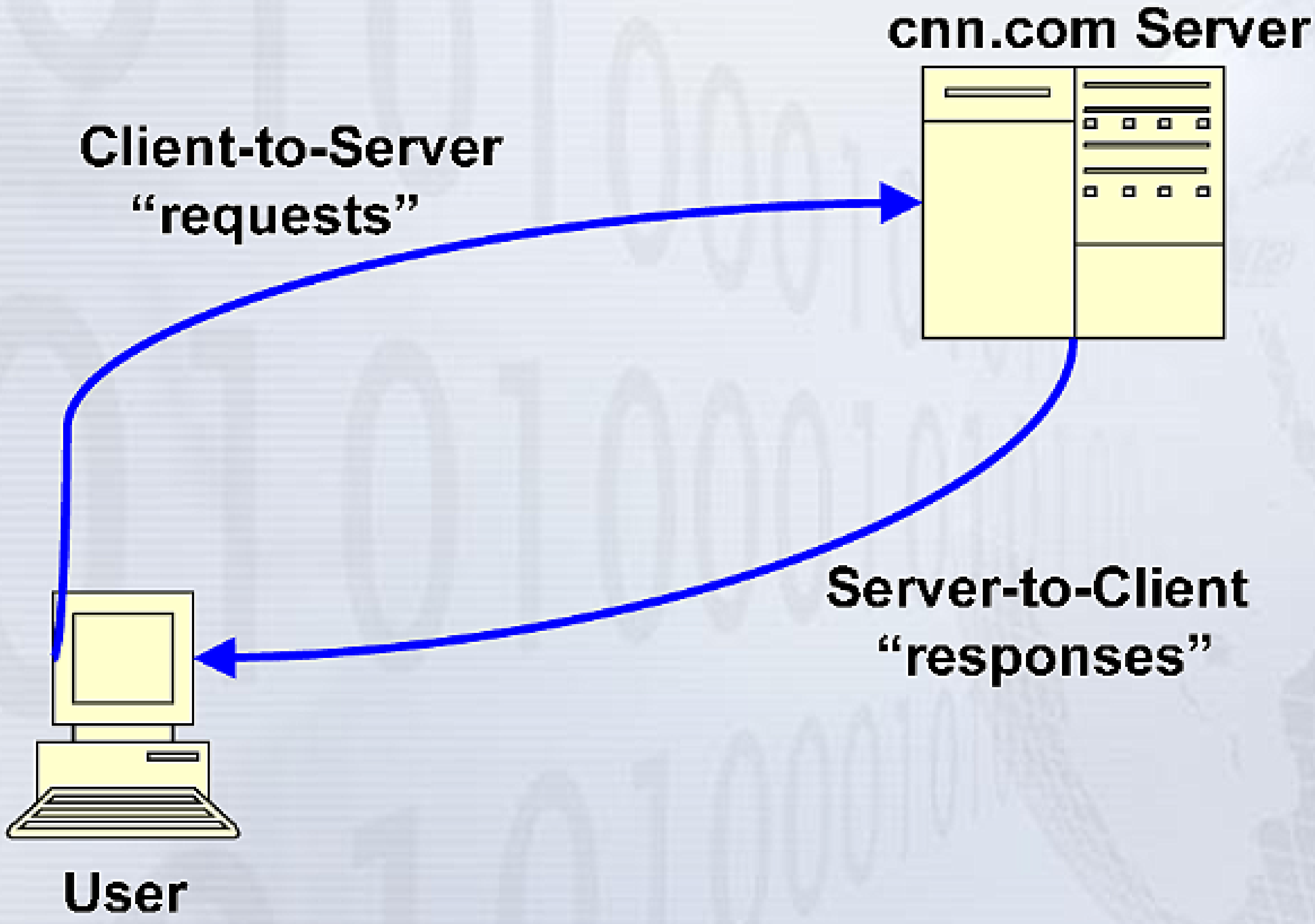
Most cases, needs to be "near" the infrastructure

Looks like regular DNI but with "hints" that the source is a cell phone

Collection could be F6, FORNSAT, SSO, FISA

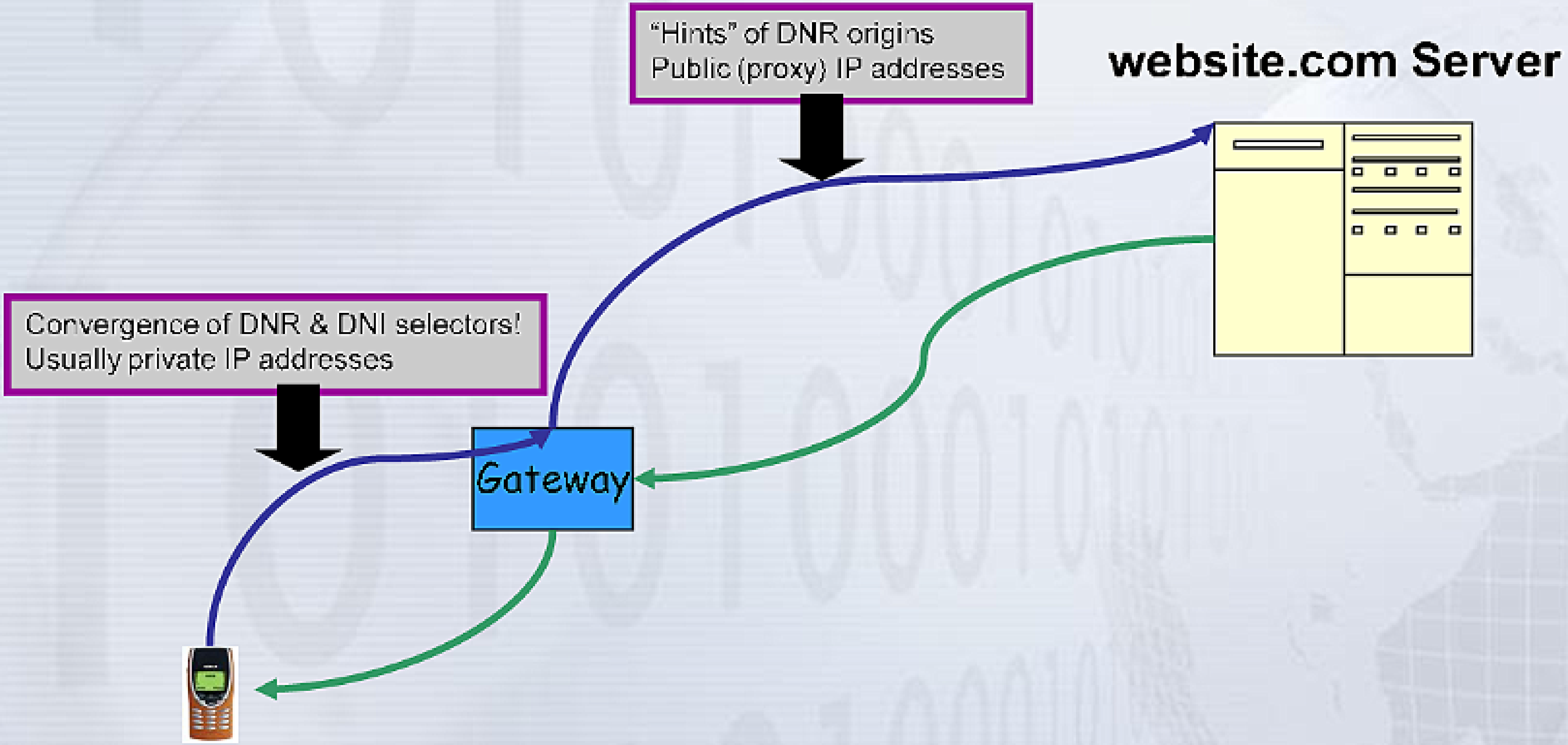
HTTP Activity

- HTTP activity comes in two types:



Mobile DNI: HTTP Activity

- HTTP activity comes in two types:



"Hints" of DNR origins
Public (proxy) IP addresses

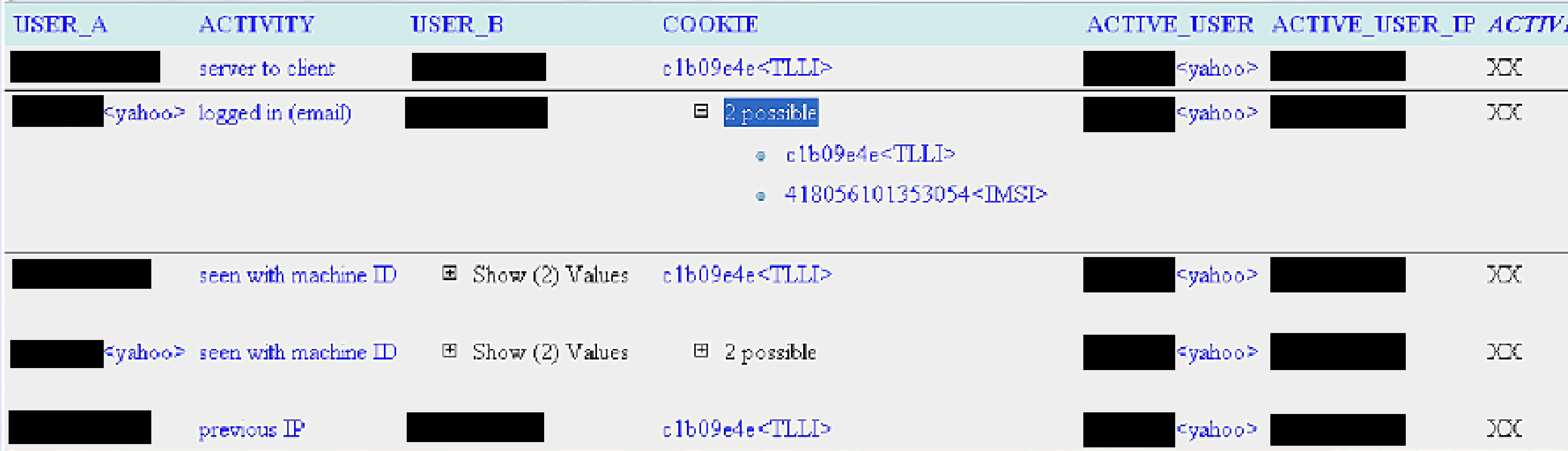
Convergence of DNR & DNI selectors!
Usually private IP addresses

Mobile DNI: Converged collection

- Examples of "converged" collection:
  - GPRS by F6 JUGGERNAUT's
  - WLL/CDMA by SCREAMIN (OTRS)
- All "converged" collection is put into the "Cellular DNI" plug-in of XKS which gives you the ability to query for DNI traffic based on DNR selectors (IMSI, IMEI, MSISDN, etc) where applicable

Mobile DNI: Converged collection

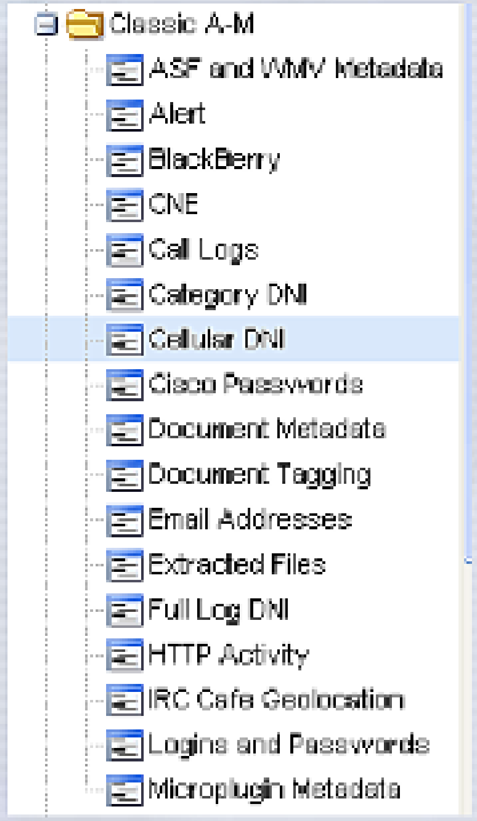
- DNR & DNI meta-data will be together:

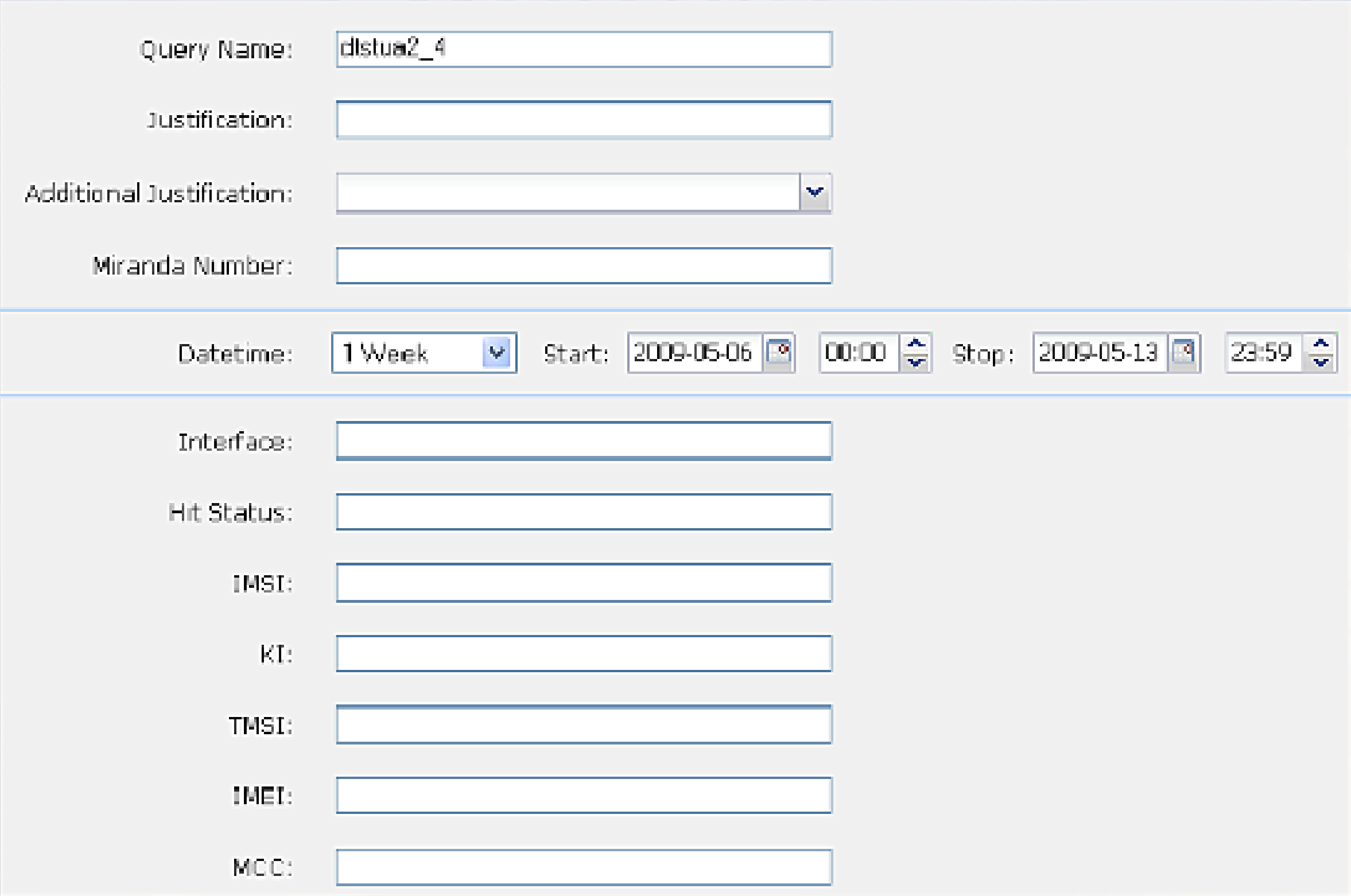


USER_A	ACTIVITY	USER_B	COOKIE	ACTIVE_USER	ACTIVE_USER_IP	ACTIV
[redacted]	server to client	[redacted]	c1b09e4e<TLLI>	[redacted]<yahoo>	[redacted]	XX
[redacted]<yahoo>	logged in (email)	[redacted]	⊟ 2 possible • c1b09e4e<TLLI> • 418056101353054<IMSI>	[redacted]<yahoo>	[redacted]	XX
[redacted]	seen with machine ID	⊞ Show (2) Values	c1b09e4e<TLLI>	[redacted]<yahoo>	[redacted]	XX
[redacted]<yahoo>	seen with machine ID	⊞ Show (2) Values	⊞ 2 possible	[redacted]<yahoo>	[redacted]	XX
[redacted]	previous IP	[redacted]	c1b09e4e<TLLI>	[redacted]<yahoo>	[redacted]	XX

Mobile DNI: Converged collection

- X-KEYSCORE's Cellular DNI plug-in allows you to query on the DNR selectors for Persona Analysis




Query Name: dlstua2_4

Justification:

Additional Justification:

Miranda Number:

Datetime: 1 Week Start: 2009-05-06 00:00 Stop: 2009-05-13 23:59

Interface:

Hit Status:

IMSI:

KI:

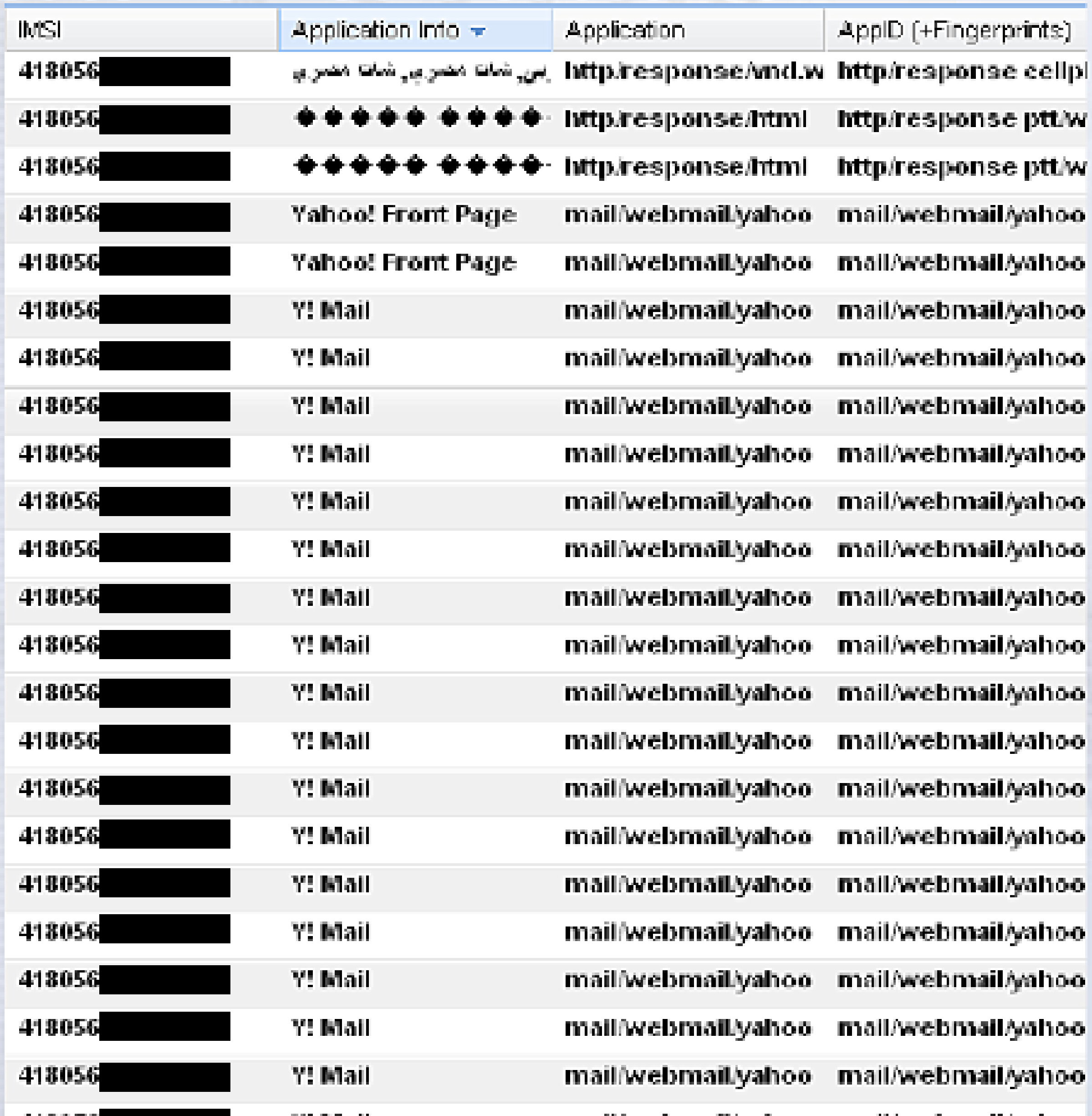
TMSI:

IMEI:

MCC:

Mobile DNI: Converged collection

- By taking the IMSI we found in MARINA we can identify all of the DNI traffic (webmail, web-surfing etc.) that originated from that same mobile subscriber



IMSI	Application Info ▾	Application	AppID (+Fingerprints)
418056[redacted]	[illegible]	http.response/vnd.w	http/response cellpl
418056[redacted]	◆◆◆◆◆ ◆◆◆◆-	http.response/html	http/response ptt/w
418056[redacted]	◆◆◆◆◆ ◆◆◆◆-	http.response/html	http/response ptt/w
418056[redacted]	Yahoo! Front Page	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Yahoo! Front Page	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
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418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
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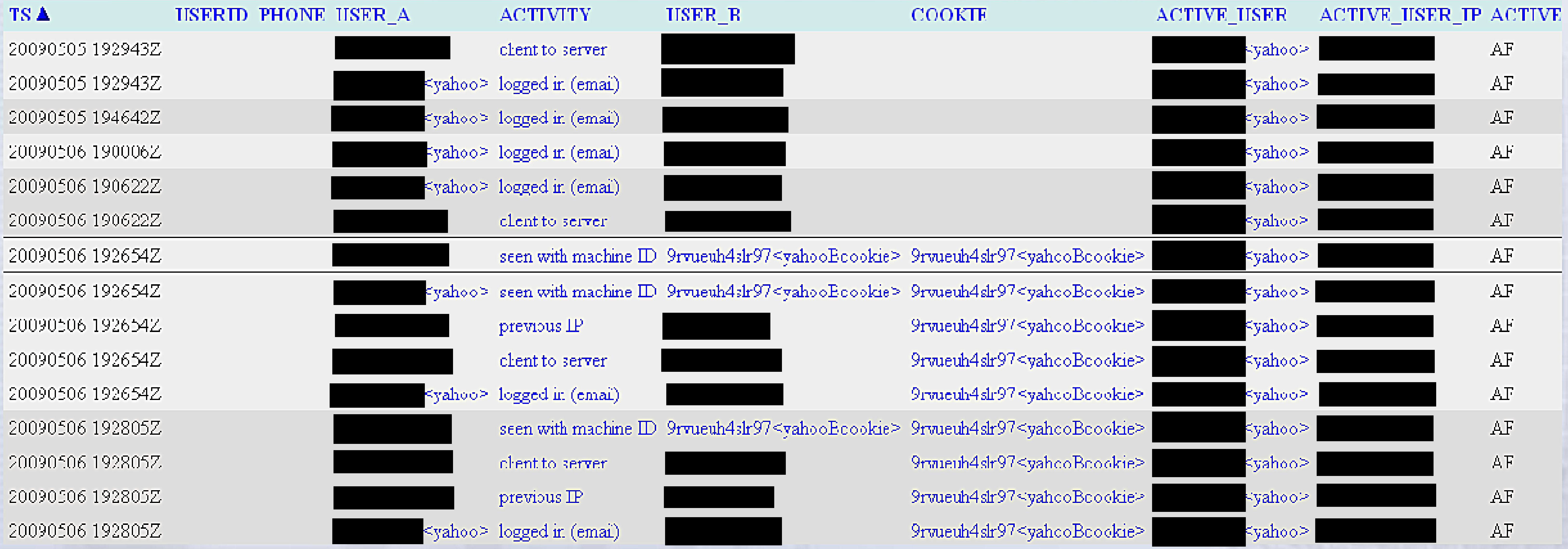
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo
418056[redacted]	Y! Mail	mail/webmail.yahoo	mail/webmail/yahoo

Mobile DNI: Traditional Collection

- After the DNI traffic exits the GPRS/WLL/CDMA Gateway, it will travel over the public Internet and can be collected through "traditional" DNI accesses like FORNSAT, F6, SSO, FISA etc.

Mobile DNI: Traditional Collection

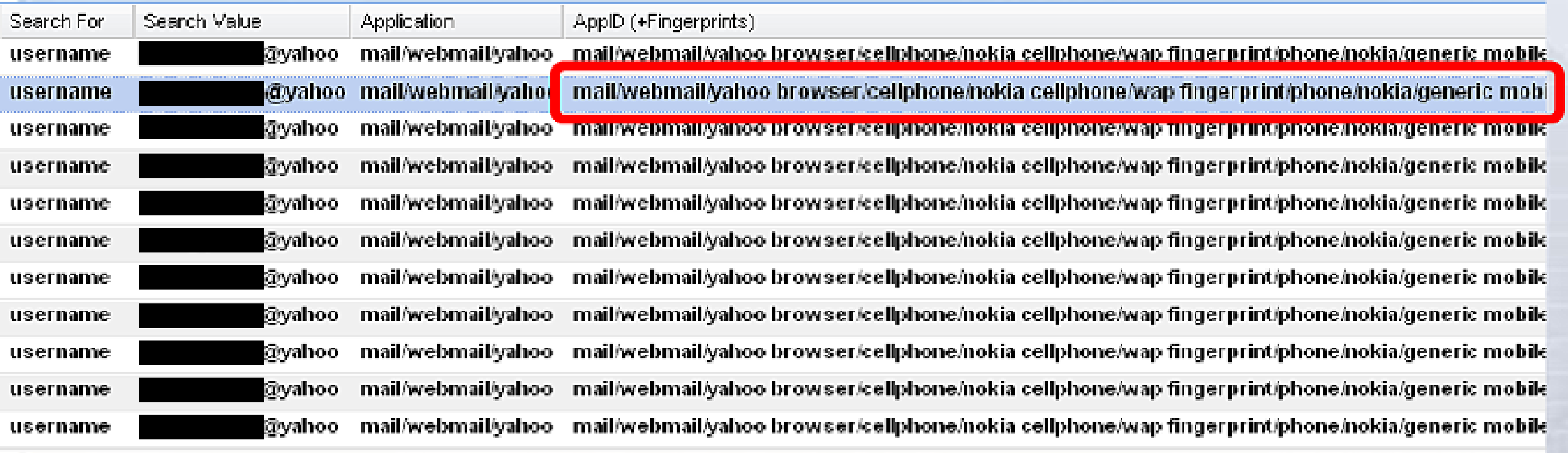
- Sometimes its difficult to tell if your target is using a cell phone to access his E-mail
- MARINA currently provides little or no “hints”



TS ▲	USERID	PHONE	USER_A	ACTIVITY	USER_B	COOKIE	ACTIVE_USER	ACTIVE_USER_IP	ACTIVE
20090505 192943Z			[redacted]	client to server	[redacted]		[redacted]<yahoo>	[redacted]	AF
20090505 192943Z			[redacted]<yahoo>	logged in (email)	[redacted]		[redacted]<yahoo>	[redacted]	AF
20090505 194642Z			[redacted]<yahoo>	logged in (email)	[redacted]		[redacted]<yahoo>	[redacted]	AF
20090506 190006Z			[redacted]<yahoo>	logged in (email)	[redacted]		[redacted]<yahoo>	[redacted]	AF
20090506 190622Z			[redacted]<yahoo>	logged in (email)	[redacted]		[redacted]<yahoo>	[redacted]	AF
20090506 190622Z			[redacted]	client to server	[redacted]		[redacted]<yahoo>	[redacted]	AF
20090506 192654Z			[redacted]	seen with machine ID	9rvueuh4slr97<yahooBcookie>	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF
20090506 192654Z			[redacted]<yahoo>	seen with machine ID	9rvueuh4slr97<yahooBcookie>	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF
20090506 192654Z			[redacted]	previous IP	[redacted]	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF
20090506 192654Z			[redacted]	client to server	[redacted]	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF
20090506 192654Z			[redacted]<yahoo>	logged in (email)	[redacted]	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF
20090506 192805Z			[redacted]	seen with machine ID	9rvueuh4slr97<yahooBcookie>	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF
20090506 192805Z			[redacted]	client to server	[redacted]	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF
20090506 192805Z			[redacted]	previous IP	[redacted]	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF
20090506 192805Z			[redacted]<yahoo>	logged in (email)	[redacted]	9rvueuh4slr97<yahooBcookie>	[redacted]<yahoo>	[redacted]	AF

Mobile DNI: Traditional Collection

- X-KEYSCORE "User Activity" provides *some* hints
- Note the fingerprint of browser/cellphone/nokia

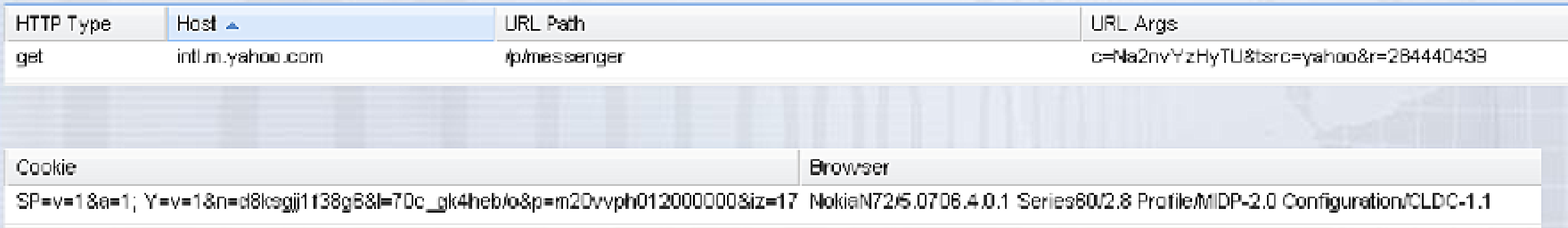


Search For	Search Value	Application	AppID (+Fingerprints)
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yaho	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobi
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile
username	[redacted]@yahoo	mail/webmail/yahoo	mail/webmail/yahoo browser/cellphone/nokia cellphone/wap fingerprint/phone/nokia/generic mobile

Mobile DNI: Traditional Collection

- X-KEYSCORE "HTTP Activity" also provides some hints!
- Note the hostname of intl.m.yahoo.com and user agent of:

NokiaN72/5.0706.4.0.1 Series60/2.8 Profile/MIDP-2.0 Configuration/CLDC-1.1

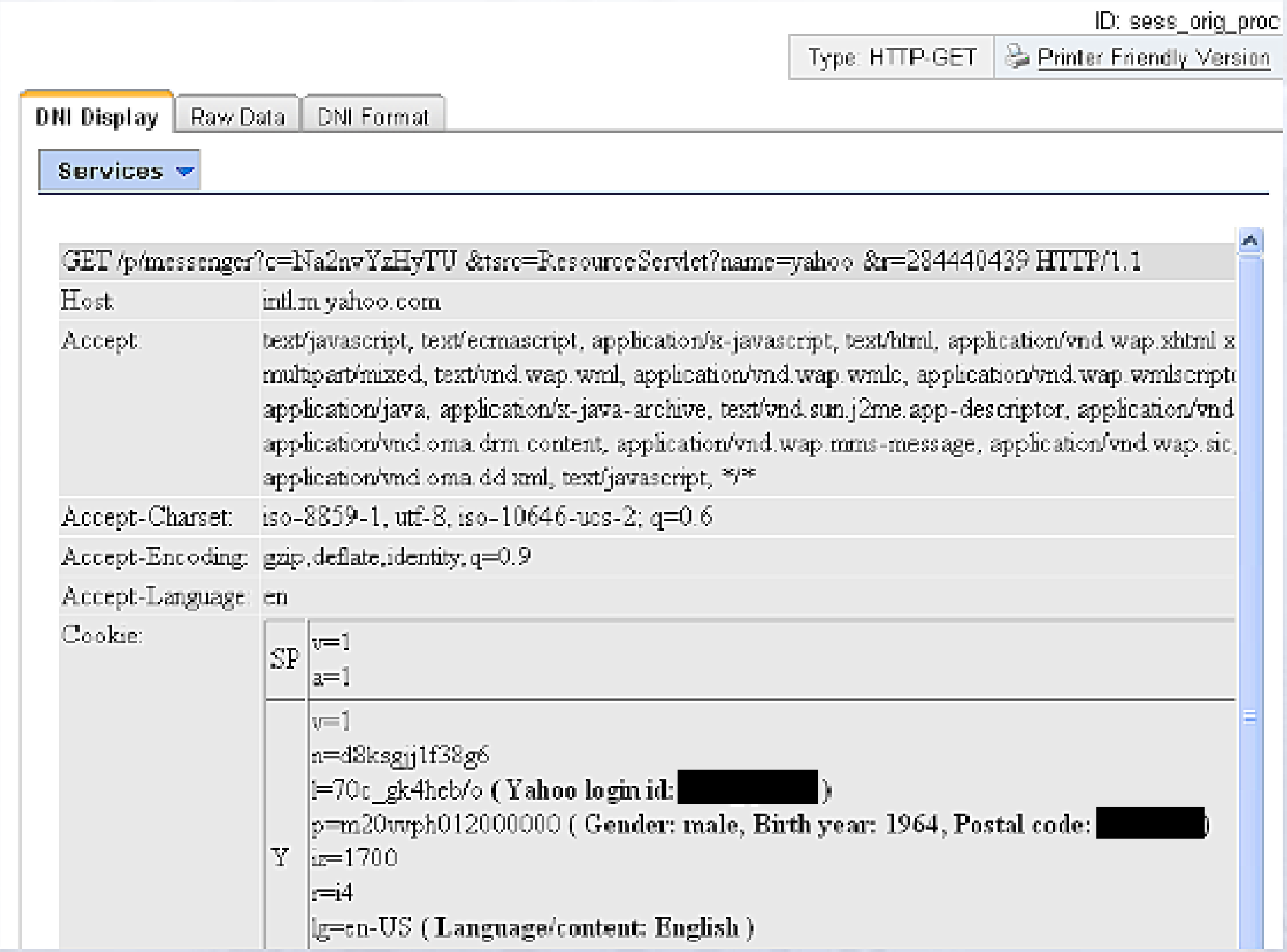


HTTP Type	Host	URL Path	URL Args
get	intl.m.yahoo.com	/p/messenger	c=Na2nvYzHyTU&tsrc=yahoo&r=284440439

Cookie	Browser
SP=v=1&a=1; Y=v=1&n=d8ksgjj1f38g6&l=70c_gk4heb/o&p=m20vvph012000000&iz=17	NokiaN72/5.0706.4.0.1 Series60/2.8 Profile/MIDP-2.0 Configuration/CLDC-1.1

Mobile DNI: Traditional Collection

The content also provides some “hints”



ID: sess_orig_proc

Type: HTTP-GET

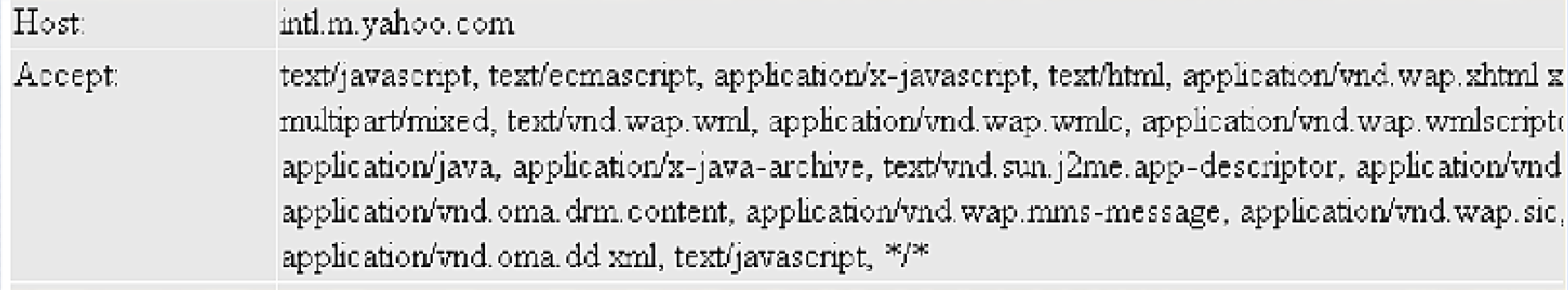
GET /p/messenger?c=Na2nvYzHyTU &tsrc=ResourceServlet?name=yahoo &r=284440439 HTTP/1.1		
Host:	intl.m.yahoo.com	
Accept:	text/javascript, text/ecmascript, application/x-javascript, text/html, application/vnd.wap.xhtml x multipart/mixed, text/vnd.wap.wml, application/vnd.wap.wmlc, application/vnd.wap.wmlscript application/java, application/x-java-archive, text/vnd.sun.j2me.app-descriptor, application/vnd application/vnd.oma.drm.content, application/vnd.wap.mms-message, application/vnd.wap.sic, application/vnd.oma.dd.xml, text/javascript, */*	
Accept-Charset:	iso-8859-1, utf-8, iso-10646-ucs-2; q=0.6	
Accept-Encoding:	gzip,deflate,identity;q=0.9	
Accept-Language:	en	

Cookie:	SP	v=1
		a=1

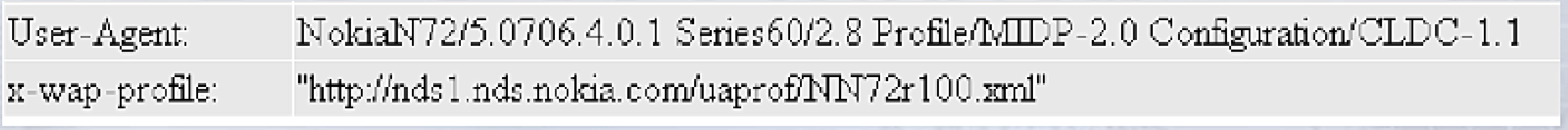
	Y	v=1
		n=d8ksgjj1f38g6
		l=70c_gk4hcb/o (**Yahoo login id:** [redacted])
		p=m20wph012000000 (**Gender: male, Birth year: 1964, Postal code:** [redacted])
		iz=1700
		r=i4
		lg=en-US (**Language/content: English**)

HTTP Activity Examples

The content also provides some “hints”



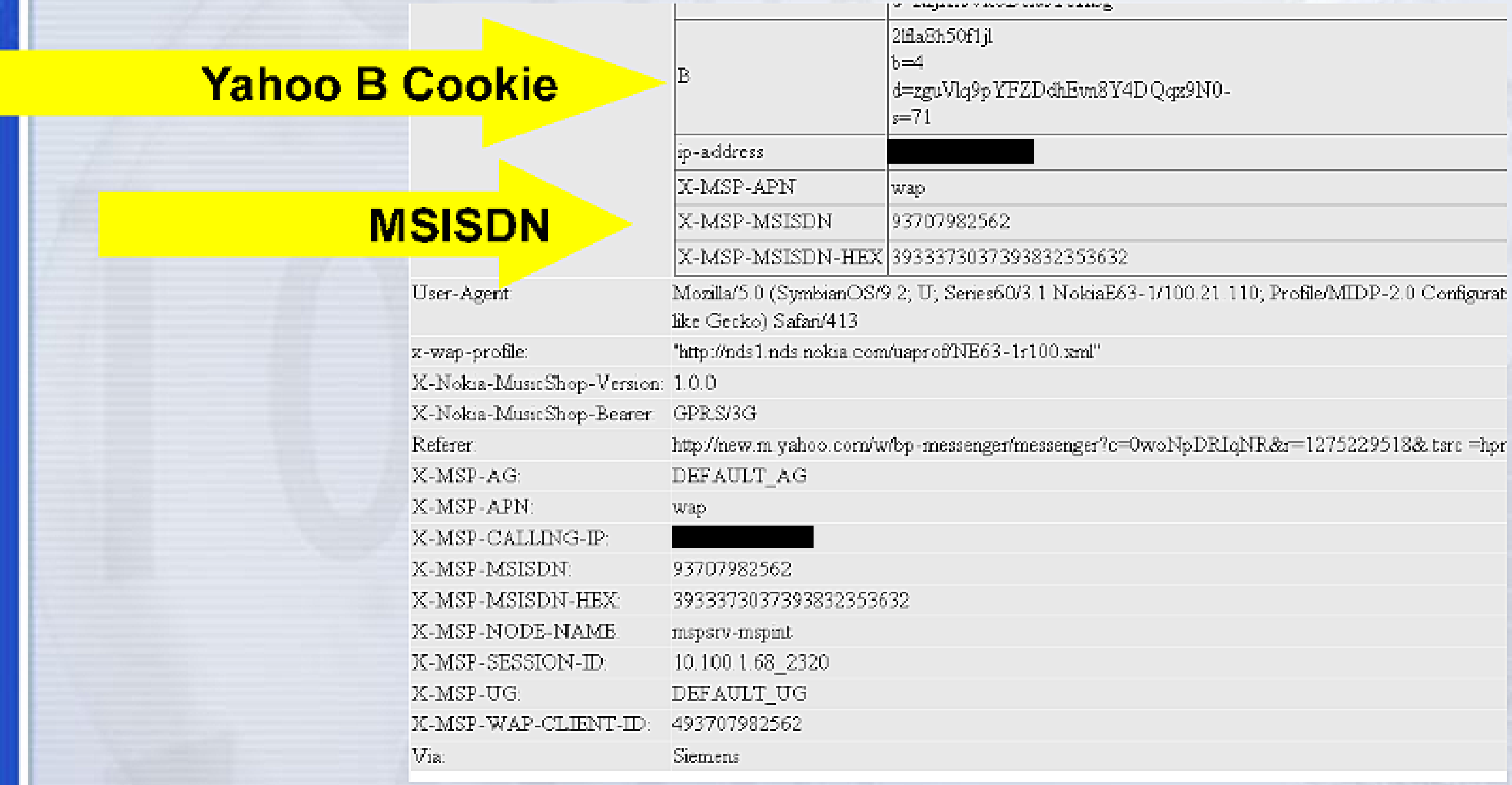
Host:	intl.m.yahoo.com
Accept:	text/javascript, text/ecmascript, application/x-javascript, text/html, application/vnd.wap.xhtml x multipart/mixed, text/vnd.wap.wml, application/vnd.wap.wmlc, application/vnd.wap.wmlscript application/java, application/x-java-archive, text/vnd.sun.j2me.app-descriptor, application/vnd application/vnd.oma.drm.content, application/vnd.wap.mms-message, application/vnd.wap.sic, application/vnd.oma.dd xml, text/javascript, */*



User-Agent:	NokiaN72/5.0706.4.0.1 Series60/2.8 Profile/MIDP-2.0 Configuration/CLDC-1.1
x-wap-profile:	"http://nds1.nds.nokia.com/uaprof/NN72r100.xml"

Mobile DNI: Traditional Collection

Sometimes there are even more “hints”



Yahoo B Cookie

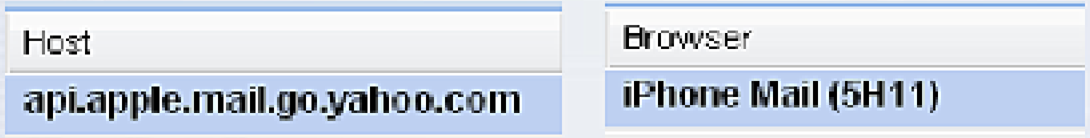
MSISDN

	B	2lfla8h50f1jl
		b=4
		d=zguVlq9pYFZDdhEvn8Y4DQqz9N0-
		s=71

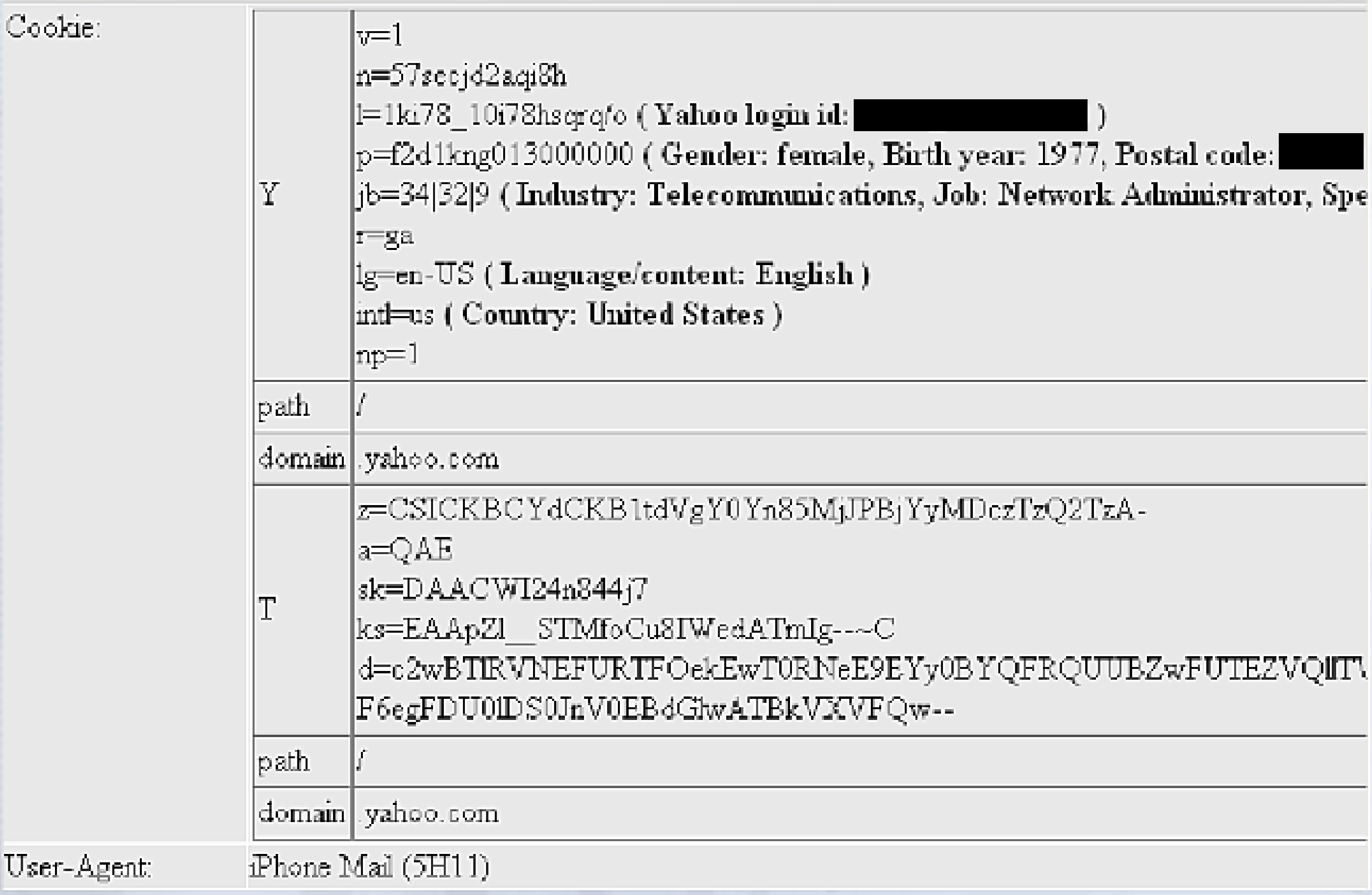
	ip-address	[redacted]
	X-MSP-APN	wap
	X-MSP-MSISDN	93707982562
	X-MSP-MSISDN-HEX	3933373037393832353632
User-Agent:	Mozilla/5.0 (SymbianOS/9.2; U; Series60/3.1 NokiaE63-1/100.21.110; Profile/MIDP-2.0 Configurat like Gecko) Safari/413	
x-wap-profile:	"http://nds1.nds.nokia.com/uaprof/NE63-1r100.xml"	
X-Nokia-MusicShop-Version:	1.0.0	
X-Nokia-MusicShop-Bearer:	GPRS/3G	
Referer:	http://new.m.yahoo.com/w/bp-messenger/messenger?c=0woNpDRIqNR&r=1275229518&.tsrc =hpr	
X-MSP-AG:	DEFAULT_AG	
X-MSP-APN:	wap	
X-MSP-CALLING-IP:	[redacted]	
X-MSP-MSISDN:	93707982562	
X-MSP-MSISDN-HEX:	3933373037393832353632	
X-MSP-NODE-NAME:	mspsrv-mspint	
X-MSP-SESSION-ID:	10.100.1.68_2320	
X-MSP-UG:	DEFAULT_UG	
X-MSP-WAP-CLIENT-ID:	493707982562	
Via:	Siemens	

HTTP Activity Examples

IPhone Users!



Host	Browser
api.apple.mail.go.yahoo.com	iPhone Mail (5H11)



Cookie:	Y	v=1
		n=57secjd2aqi8h
		l=1ki78_10i78hsqrq/o (**Yahoo login id:** [redacted])
		p=f2d1kng013000000 (**Gender: female, Birth year: 1977, Postal code:** [redacted]
		jb=34|32|9 (**Industry: Telecommunications, Job: Network Administrator, Spe**
		r=ga
		lg=en-US (**Language/content: English**)
		intl=us (**Country: United States**)
		np=1

	path	/
	domain	.yahoo.com

	T	z=CSICKBCYdCKB1tdVgY0Yn85MjJPBjYyMDczTzQ2TzA-
		a=QAE
		sk=DAACWI24n844j7
		ks=EAApZl__STMfoCu8IWedATmIg---C
		d=c2wBTlRVNEFURTFOekEwT0RNeE9EYy0BYQFRQUUBZwFUTEZVQllTV
		F6egFDU0lDS0JnV0EBdGlwATBkVXVFQw--

	path	/
	domain	.yahoo.com
User-Agent:	iPhone Mail (5H11)	