



# Measuring eduroam traffic

eduroam international statistics





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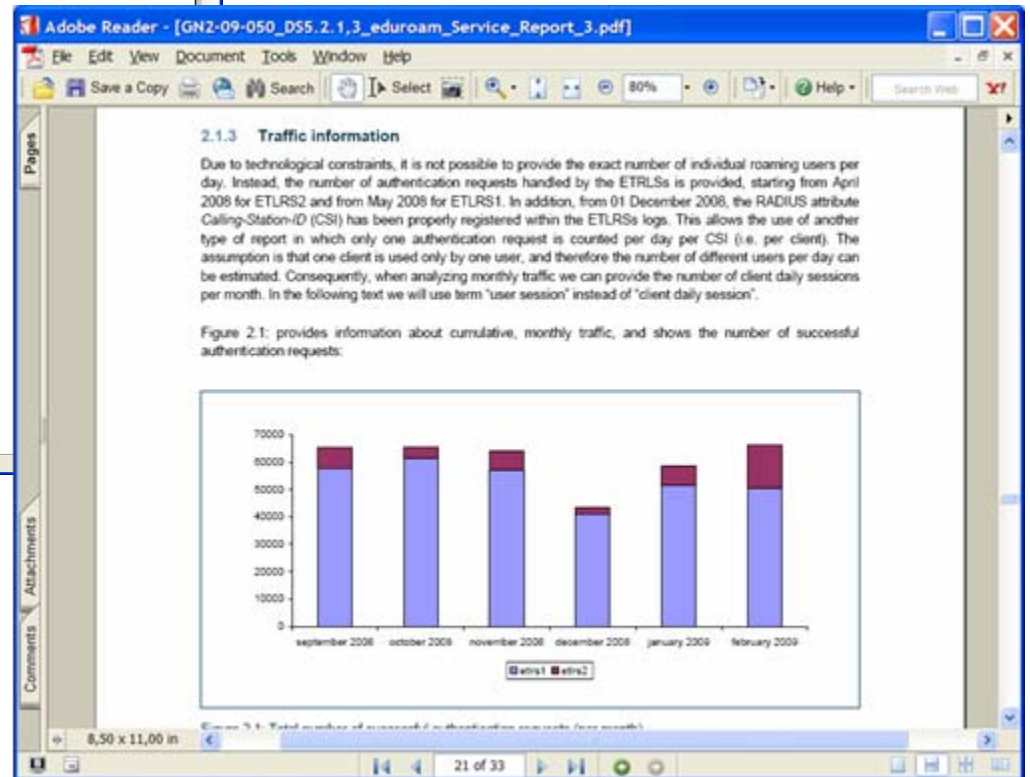
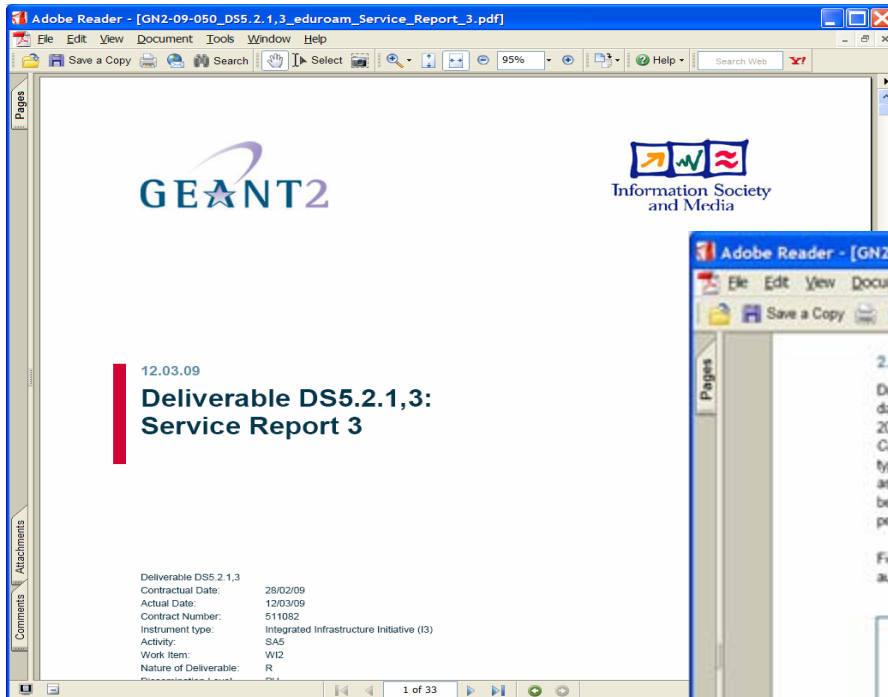
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eduroam international statistics

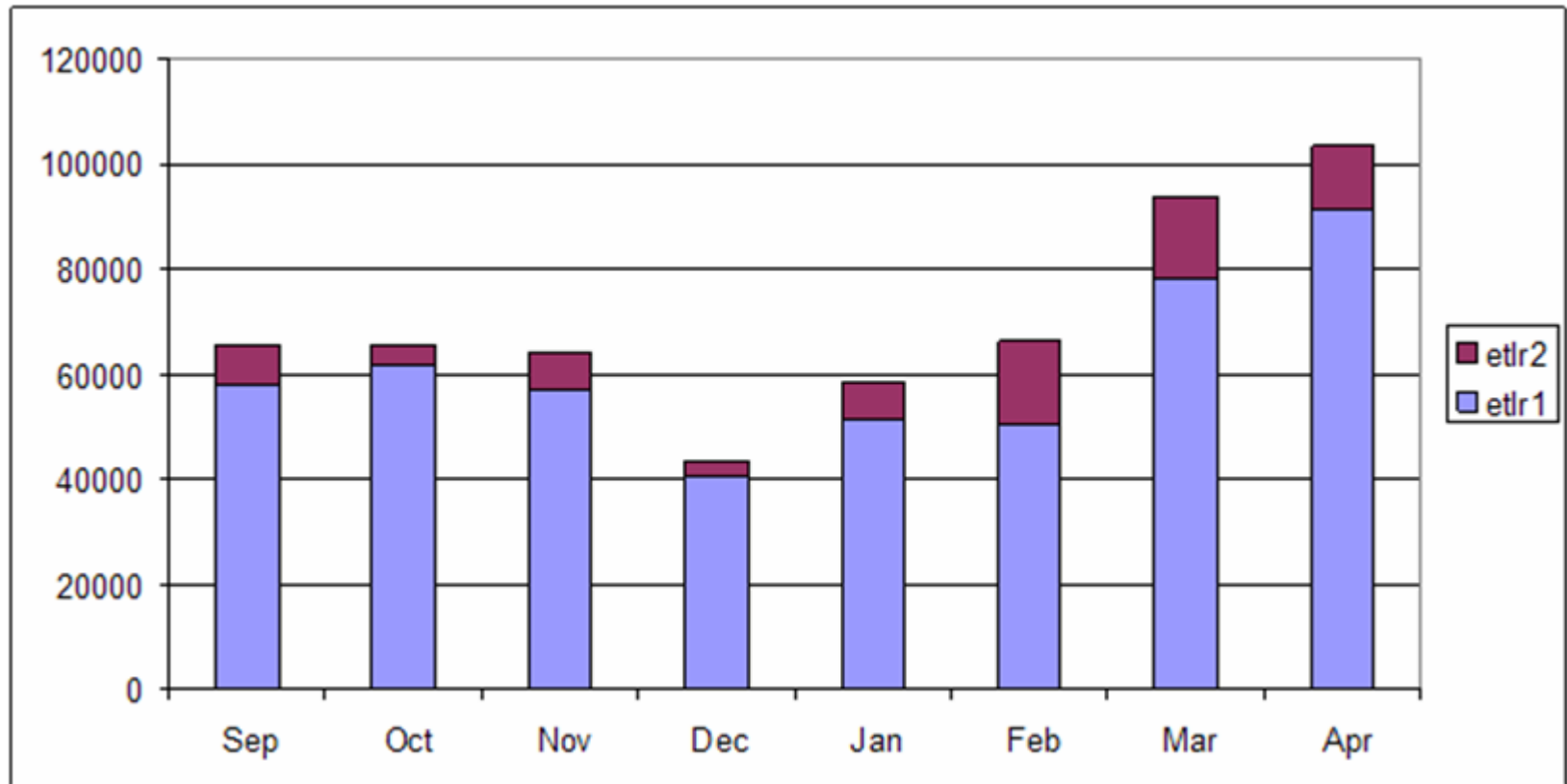
- ▶ Recent figures
- ▶ Motivation for statistics
- ▶ Problems in counting
- ▶ Making two expressions
- ▶ Improvements to come



# eduroam service report



# International authentications





# Motivation for statistics

- ▶ Documentation of the usage
- ▶ Illustrating trends in usage



# User by country stats

Microsoft Excel - dec-apr.xls

Skriver et spørgsmål

Pivottabel

D3

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI			
1																																						
2																																						
3	Auth_result	OK																																				
4																																						
5	Sum of Increpeats	Incountry																																				
6	Userfram	AD	AT	AU	BE	CH	CY	CZ	DE	DK	EDU	EE	ES	FI	FR	GR	HR	HU	IE	IS	IT	LT	LV	MT	NO	PL	PT	RadSe	RO	SE	SI	SK	TR	UK	Hovedtotal			
7	ad																																		19			
8	at			86	2	31			298	2172	23			1432	25	89	50	2		17	1	101				280	61	301	413		184	72	81		491	6272		
9	au	112												338		11										120	13	58		12					206	1061		
10	be		4			147	1		887					216		1569	27	1	163	88						1077	83	702		48					609	5622		
11	ca															4										21									27			
12	ch		11	55	36			1	32	385	14			296		347	13	2			7					207	88	125		9		2			102	1732		
13	cy																1			3															1	50		
14	CZ		1676	198	666	37			3451	1509		31	3177	83	9058			1	115	19						546	70	14781	1933		294	1071	1273	1	2485	42551		
15	de		4762	6915	231	856	150	1768		1186		7	7143	50	2331	102	67	5			16	15		23		702	149	144	1049		2703	198	29	214	4504	36319		
16	DK		142	2211	137	15			549	664				388	171	186				46	5	1				997	29	331	5355		1197	20			1026	13470		
17	ee		247						21	9	137			14	1	1											538					23				116	1132	
18	ES	1	1548	383	960	1293			3416	7733	488			14	1541			2	71	171		144	37	16		244	487	4133	21611		516	32	36		9431	54308		
19	fi		23			9			85	146				91													65					3	31			1017		
20	FR		78		551	56			100	888	184		1	982							184						52	1	579	712		33		18		1704	6133	
21	GR		2		16		5		21	112	1			1464		39					45											22				233	1993	
22	hk		45			1							2	5	3																					699	1170	
23	hr		165	5		9			7	253																	139	18	1290				1666		9	3661		
24	hu		313			109			70	38	35			41		3										2			107		107					8	849	
25	ie																																				122	
26	IT		2						171	16				116		6											8										12	365
27	jp					2																															4	68
28	lt		1		2281				7				42	1														236	27	3						56	2867	
29	LU		38	2	5303	264			266	659	81				4776										1												502	16233
30	NL		389	1947	1829	65			578	2099	576	22	2	1742		475	52	286	119	136						645	18	1763	1288		4257	5	2	1	2548	20860		
31	no		254	630	19	82			172	572	1441			308		493	2		3	13	5	1	47	5			3	1497	182		1028					2294	9061	
32	pl		382		129	224			331	2812	270			1235	3	344		14		10							56	63	26		58	1	140	21		530	6779	
33	pt		1907	986	8995	2395	3	4593	7463	5375		5	25280	274	3001	959	744	3521	5		33	2475	4	4	3796	284		1613		1	2050	1174	21	4	3744	80259		
34	ro		8						376																												384	
35	se		974		161	33			274	6697	73		251	210	121	55								1		376	578	33	225						9	842	10913	
36	si		1261	107	292	8			825	330	2238		635	433	36	175											101	95	430	348		11	51			275	8470	
37	sk		35						5668					28	73																						1	5815
38	tr								77	386						14	2																				2	486
39	UK		1341	3468	703	301			574	5251	2915			1854	184	628	3	81			13				17	1967	59	2121	2854		17	545	53	134	6		25157	
40	Hovedtotal	1	15716	16397	22330	5977	160	20593	43519	16844	22	974	47052	967	25709	811	1347	3999	890	27	401	2611	134	21	11800	2210	27464	40272	29	17579	4337	1742	256	32434	365225			
41																																						
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Klar

# User by country - selection

		International authentications					
Auth_result	OK	Dec 08 to Apr 09					
Sum af Increpeats	Incountry						
Userfrom	DE	ES	FR	PL	SE	UK	
de		7143	2331	149	2703	4504	
ES	7733		1541	487	516	9431	
FR	888	982		1	33	1704	
LU	659	201	4776		3910	502	
pl	2812	1235	344		158	530	
se	6697	210	55	578		842	
UK	5251	1854	628	59	545		
Total	24040	11625	9675	1274	7865	17513	

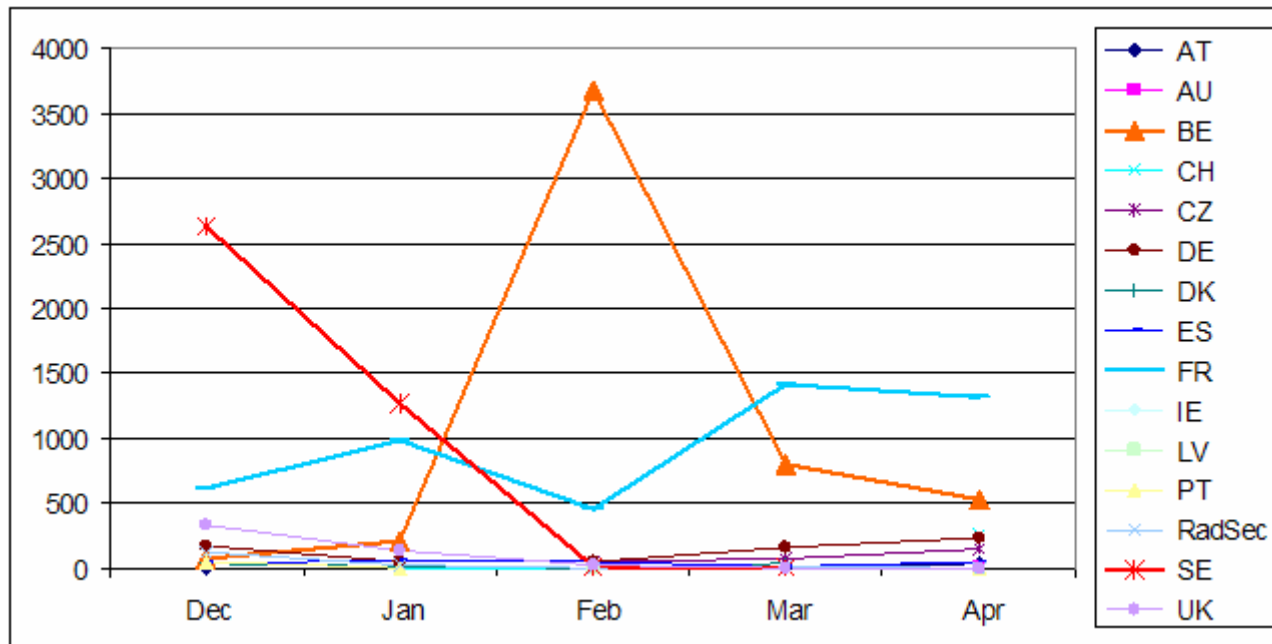


# User by country - selection

		International authentications					
Auth_result	OK	Dec 08 to Apr 09					
Sum af Exclrepeats	Incountry						
Userfrom	DE	ES	FR	PL	SE	UK	
de		932	277	51	288	585	
ES	657		210	33	53	979	
FR	187	225		1	4	111	
LU	69	34	157		13	24	
pl	211	218	93		16	52	
se	253	83	8	5		44	
UK	784	416	89	9	54		
Total	2161	1908	834	99	428	1795	

# Luxemburgers abroad

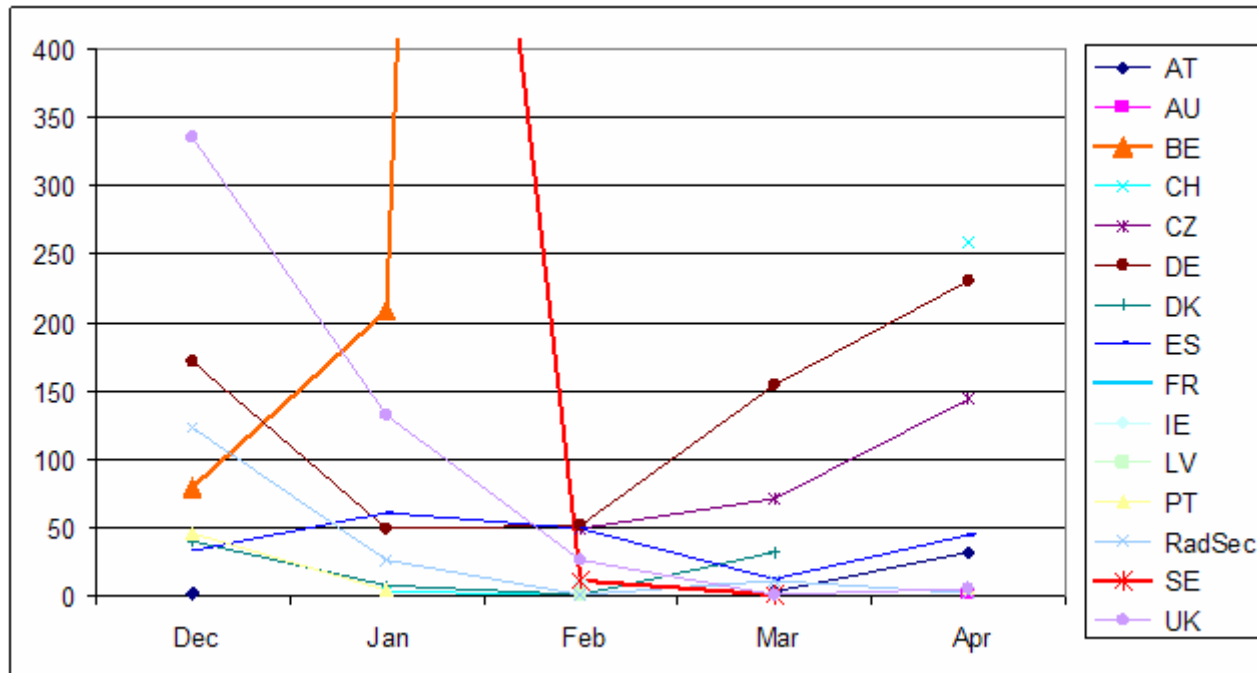
## ► Authentications



# Luxemburgers abroad

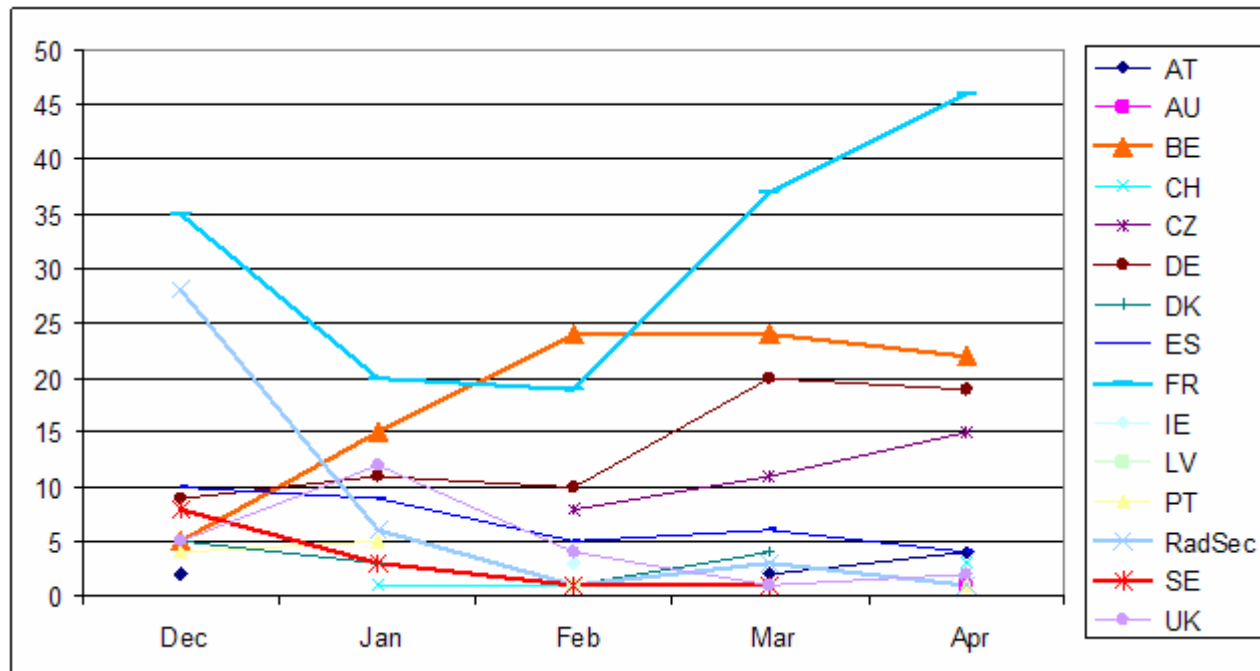
## ► Authentications

Zoom in



# Luxemburgers abroad

## ► Roaming days





# Luxemburgers in Sweden

▶ December 08 to April 09

▶ Auths 3910

▶ Roaming days 13

▶ Ratio 300





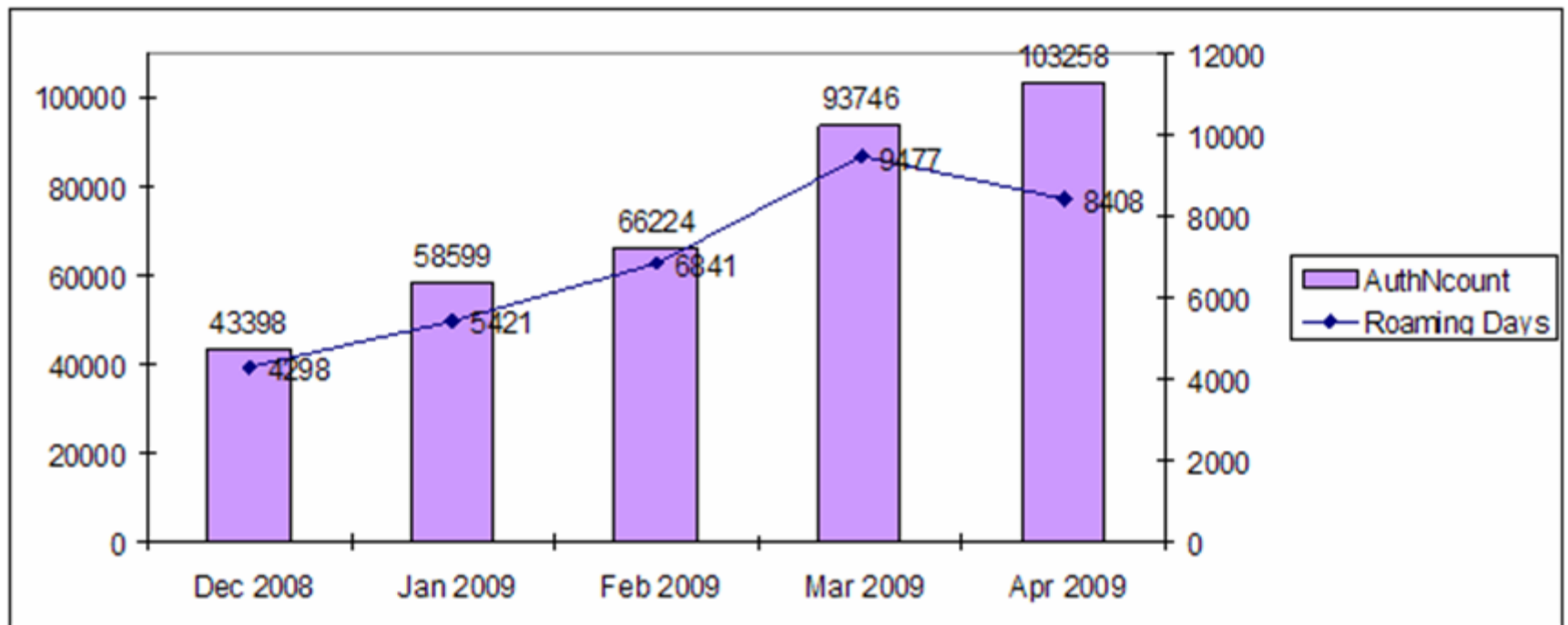
# Roaming Day

- ▶ Roaming Day  
One or more sessions on a client computer within a country in one day
- ▶ Roaming Days are counted by CSI
- ▶ CSI – Calling Station Identifier  
(MAC address)



# Making two expressions

- ▶ Actual authentications
- ▶ Roaming Days





## RadSec

- ▶ When authentication is acknowledged by a national server using RadSec for communication with ETLR's the location of the user is \*not\* registred.
- ▶ Geo-location of the ip address of the national server from where the request is coming - a possible solution



# Data quality

- ▶ A high number of the authentication requests does not specify Calling Station Id
- ▶ Policy requires recording CSI
- ▶ Might be necessary to chase units that is not providing CSI





# Preventing high repeat rates

- ▶ Need for a guideline of configuring equipment preventing high rates of repeats
- ▶ Could help reduce local load on AP's
- ▶ Who have the knowledge of circumstances leading to multiple repeats?



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▶ Auths	3910
▶ Roaming days	13
▶ Ratio	300

