

## First Results from Vuze Network Monitoring Tool

Released April 18th, 2008: Revision to Appendix A

### 1.0 Background

Following allegations that certain ISPs were engaged in network management practices that, in some cases, involved sending false reset packets to artificially interrupt network connections, Vuze created a software plug-in (“Vuze Plug-In”) that could be installed in the Vuze Platform application. The Vuze Plug-In monitors all potential network interruptions that a user experiences due to reset messages, not interruptions specifically related to use of the Vuze platform.

The objective of the Vuze Plug-In was to add relevant data to the traffic throttling debate, and encourage that decisions be made based on facts.

This report summarizes all data collected and aggregated from the Vuze Plug-In from January 1st up to and including 13th April 2008.

### 2.0 Methodology

#### 2.1 Sample

- In January 2008 a limited group of beta testers were invited to install the Vuze Plug-In
- On March 18<sup>th</sup> 2008, all Vuze users were invited to install the Vuze Plug-In
- Once the plug-in is installed, each user has the option of sharing the data with Vuze for purposes of aggregation. These results reflect data only from users who chose to share their results with Vuze
- To date, 8000 users around the world have installed the Vuze Plug-In.
- To date over 1,000,000 hours of data have been collected
- To date, data has been collected relating to over 1200 different ASNs (Autonomous System Number). An ASN is a unique identifier for individual IP networks and routers
- The data summary below includes all ASNs with at least 20 unique users collecting and sharing information (Complete data results for all users is contained in Appendix A)

#### 2.2 Data collection

The Vuze Plug-In constantly monitors the rate of network interruptions occurring from RST (“reset”) packets by measuring the total number of attempted network connections and the total number of network connections that were interrupted by a reset message. By comparing these two values, one can calculate the ratio of network connections interrupted by reset messages. We have chosen to reflect the median ratio in order to reduce variability in the data given the sample size.

The Plug-In collects data for all Internet connections, not just connections occurring due to use of the Vuze application, and logs it every ten minutes. Then, at the top of the hour, the Plug-In aggregates the data into one-hour blocks and transmits it to Vuze, Inc.. By definition, each source of data had the Vuze application installed and launched in order for the Plug-In to operate, but the Plug-In monitors all internet connections.

Data has been collected at an ASN level to enable us to compare the ratio of network connections interrupted within a particular ASN.

We continue to collect data, and therefore these results will continue to evolve. As the total number of installed Vuze Plug-Ins increases and the total number of hours of data increases, the data set grows and the results should become more complete and robust.

### 3.0 Results

The table immediately below shows the results for all ASNs where there were at least 20 unique users operating the Vuze Plug-In within a particular ASN.

The chart contains the following information by ASN:

- Identity of network operator or ISP (“Network Operator”)\*
- Total number of unique users (“Unique Users”).
- Total hours of data collected (“Hours”).
- Median reset rate. (Total number of resets for a given ASN are divided by the total number of attempted network connections to arrive at a ratio of interrupted transmissions)

<b>Rank</b>	<b>ASN</b>	<b>Network Operator</b>	<b>Unique users</b>	<b>Hours</b>	<b>Median Reset Rate</b>
1	33668	Comcast Cable Communications, Inc.	40	3094	23.72%
2	33287	Comcast Cable Communications, Inc.	95	9227	21.28%
3	33650	Comcast Cable Communications, Inc.	62	9043	20.16%
4	7992	Cogeco	22	1273	19.13%
5	33491	Comcast Cable Communications, Inc.	101	10664	18.70%
6	33651	Comcast Cable Communications, Inc.	110	9362	18.12%
7	5384	Emirates Internet	29	4130	17.86%
8	6128	Cablevision	71	10280	17.58%
9	8167	Telecomunicacoes de Santa Catarina SA	61	3892	17.43%
10	7725	Comcast Cable Communications, Inc.	67	7291	16.87%
11	4788	TM Net, Internet Service Provider	34	3295	16.80%
12	33490	Comcast Cable Communications, Inc.	56	6895	16.76%
13	7015	Comcast Cable Communications, Inc.	75	8757	16.54%
14	20214	Comcast Cable Communications, Inc.	47	5771	15.91%
15	6389	BellSouth	21	2122	15.88%
16	33660	Comcast Cable Communications, Inc.	24	2705	15.38%
17	21508	Comcast Cable Communications, Inc.	20	1862	15.34%
18	8452	Tedata	35	2634	15.33%
19	9105	Tiscali UK	54	6307	14.89%
20	1668	AOL	42	4054	14.88%

<b>Rank</b>	<b>ASN</b>	<b>Network Operator</b>	<b>Unique users</b>	<b>Hours</b>	<b>Median Reset Rate</b>
21	33657	Comcast Cable Communications, Inc.	50	6226	14.55%
22	13367	Comcast Cable Communications, Inc.	34	4463	14.44%
23	22047	Banda Ancha SA	48	2739	14.44%
24	9143	AtHome Benelux BV	22	2141	14.12%
25	6478	AT&T WorldNet Services	27	2373	13.97%
26	33652	Comcast Cable Communications, Inc.	33	3830	13.45%
27	20115	Charter Communications	55	5884	13.20%
28	35228	Avatar Broadband Limited	35	4444	13.19%
29	5413	PIPEX Communications	20	2442	13.16%
30	812	Rogers Cable Communications Inc.	114	10109	13.07%
31	8151	Uninet S.A. de C.V.	45	3712	12.60%
32	5645	TekSavvy Solutions, Inc.	51	7198	12.48%
33	209	Qwest	77	9212	12.37%
34	1257	Tele2	61	4178	12.16%
35	8404	Cablecom GmbH	40	3867	12.07%
36	2856	BTnet UK Regional network	125	12103	12.06%
37	5462	Telewest Broadband	64	8046	12.05%
38	22773	Cox Communications Inc.	143	18480	11.95%
39	19262	Verizon Internet Services Inc.	216	26227	11.90%
40	6198	BellSouth Network Solutions, Inc	22	1589	11.74%
41	13127	VERSATEL AS	20	2225	11.63%
42	11427	Road Runner HoldCo LLC	52	8201	11.57%
43	11351	Road Runner HoldCo LLC	32	4399	11.42%
44	19108	Suddenlink Communications	32	5384	11.35%
45	22291	Charter Communications	26	3251	11.34%
46	1221	Telstra Pty Ltd	37	2853	11.31%
47	852	Telus Advanced Communications	58	5464	11.26%
48	2119	Telenor Nextel	53	4695	11.20%
49	7132	AT&T Internet Services	282	34718	11.17%
50	6830	UPC Broadband	86	8654	11.15%
51	9829	National Internet Backbone	58	2841	11.14%
52	577	Bell Canada	157	18118	11.13%
53	27699	Telecomuncacoes de Sao Paulo SA	25	773	11.11%
54	8400	TELEKOM SRBIJA_ a.d.	20	1715	11.00%
55	4589	Easynet Group Plc	63	5163	10.98%
56	8708	RCS & RDS S.A.	21	1061	10.92%
57	719	Elisa Oyj	31	2943	10.89%
58	7738	Telecomunicacoes da Bahia S.A.	38	3166	10.84%
59	11426	Road Runner HoldCo LLC	40	4220	10.81%
60	9498	Bharti BT Internet Ltd	36	2190	10.80%
61	12271	Road Runner HoldCo LLC	39	4354	10.76%

<b>Rank</b>	<b>ASN</b>	<b>Network Operator</b>	<b>Unique users</b>	<b>Hours</b>	<b>Median Reset Rate</b>
62	8612	Tiscali Italia SpA.	24	1453	10.71%
63	20001	Road Runner HoldCo LLC	44	4850	10.68%
64	6327	Shaw Communications Inc.	119	16596	10.64%
65	5089	NTL Group Limited	130	12722	10.61%
66	28573	NET Servicos de Comunicacao S.A.	77	5518	10.38%
67	3269	Telecom Italia	137	13530	10.33%
68	5769	Videotron Telecom Ltee	35	3705	10.29%
69	4802	iiNet Limited	36	4598	10.21%
70	12715	Jazz Telecom S.A.	26	4584	10.11%
71	31334	Kabel Deutschland Breitband Service GmbH	52	3491	10.01%
72	6739	ONO-AS Cableuropa - ONO	44	2329	10.00%
73	7545	TPG Internet Pty Ltd	25	3016	9.98%
74	3352	TELEFONICA-DATA-ESPANA Internet Access Network of TDE	122	12860	9.78%
75	13285	Opal Telecom	69	4269	9.65%
76	3301	TeliaNet Sweden	34	3413	9.63%
77	20838	YIF Autonomous System	23	3569	9.60%
78	25019	SaudiNet	22	2456	9.49%
79	8737	PT KPN Internet Solutions	29	2330	9.41%
80	18881	Global Village Telecom	20	635	9.32%
81	4804	Microplex PTY LTD	43	3658	9.25%
82	3243	TELEPAC PT.Com - Comunicacoes Interactivas, S.A.	24	1532	9.07%
83	3320	Deutsche Telekom AG	389	30007	8.93%
84	5615	TISNL-BACKBONE Green ISP B.V.	23	2201	8.59%
85	12479	Uni2 Autonomous System	27	2828	8.46%
86	3292	TDC TDC Data Networks	31	3186	8.22%
87	3209	Arcor IP-Network	135	11717	8.22%
88	3215	France Telecom - Orange	148	11646	7.83%
89	10796	Road Runner HoldCo LLC	49	5677	7.78%
90	6746	Astral Telecom SA, Romania	20	1003	7.67%
91	8881	Versatel Deutschland	39	4741	7.66%
92	16338	AUNA_TELECOM-AS AUNA Autonomous System	36	3474	7.15%
93	12322	Proxad/Free ISP	105	8547	7.00%
94	1267	Infostrada S.p.A.	32	2326	6.97%
95	13184	HanseNet Telekommunikation GmbH	148	10965	6.13%
96	6799	OTEnet S.A. Multiprotocol Backbone & ISP	33	4016	6.01%
97	15557	Neuf Cegetel (formerly LDCOM NETWORKS)	75	5777	5.97%
98	5617	Polish Telecom	69	5288	5.86%
99	8447	Telekom Austria AutonomousSystem	21	1429	5.70%
100	2860	Novis Telecom, S.A.	34	911	5.50%

<b>Rank</b>	<b>ASN</b>	<b>Network Operator</b>	<b>Unique users</b>	<b>Hours</b>	<b>Median Reset Rate</b>
101	7018	AT&T WorldNet Services	24	1528	5.35%
102	8422	Netcologne AS	26	3194	4.98%
103	1241	FORTHnet	30	4725	4.34%
104	5430	Freenet Cityline GmbH	73	5086	4.21%
105	6805	Telefonica Deutschland Autonomous System	93	5455	3.60%
106	33544	WiLine Networks Inc.	45	7173	2.78%
107	5390	EURONET Orange Nederland B.V. Global AS	22	1650	2.57%
108	12876	Telecom Italia France	37	1474	2.53%

\* The identity of each ASN was determined by looking up the ASN number in the Whois Database. While we have taken every care to correctly identify the Network Operator that relates to each ASN, in a limited number of cases, it is possible that bandwidth may have been sold to or by one ISP to another. In such cases, it would not be possible to determine whether any artificial interference with network communications that may be occurring is attributable to the ASN identified in the Whois records or its customer/reseller.

Appendix A. to this report contains the complete data results, regardless of the number of unique users. For purposes of complete transparency, we are also making available all of the raw data that was collected and analyzed, as well an explanation of how the analysis of the data was conducted. From Monday 21<sup>st</sup> April you will be able can find this information as a torrent file at

[www.vuze.com/channel/internet\\_future](http://www.vuze.com/channel/internet_future)

#### 4.0 Initial Conclusions

The results shed light on the differences in the median reset ratio among different ASNs. While we cannot conclude definitively that any particular network operator is engaging in artificial or false RST packet behavior, it is possible to compare the median experience of different users operating in different ASNs.

As a result of this comparison, it appears that the rate of interrupted network communications is disproportionately high in certain ASNs versus others. While the results would be more robust if there were more unique users and/or hours of data collected for each ASN, we believe that in most cases there is sufficient data to at least raise questions about whether particular network operators are taking steps to artificially interrupt network connections.

As can be seen, various Comcast ASNs appear higher up on the overall results chart. Given that Comcast has acknowledged that it has used reset messages as a network management technique, these results are not surprising, and at some level corroborate the relevance of the data results. Comcast has stated publicly that at some point before the end of the year it will cease using this technique as a network management practice. To our knowledge, other network operators appearing on the list have not publicly stated whether they use false reset messages as a network management technique.

## 5.0 Vuze Statement

We believe that there is sufficient data to suggest that network management practices that “throttle” internet traffic are widespread. At a minimum, more investigation is required to determine whether these resets are happening in the ordinary course of business or whether they represent the kind of throttling practices which target specific applications and/or protocols, harming the consumer experience and stifling innovation.

## Additional Information

Q: Why did you create the Vuze Plug-In?

A: It appeared to us that there existed only limited and mostly anecdotal information about use of false reset packets as a network management technique by network operators. Given the footprint of our existing Vuze Platform and the activist nature of our user base, we believed we were in a unique position to gather a large amount of data over a large geography that might be helpful in evaluating network operator practices. While we knew the results would not answer all outstanding questions in this area, we hoped they would at least shed some light on the scope and problem and lead to further, more specific inquiries of network management practices.

Q: What is an ASN?

A: This is an Autonomous System Number (ASN) and is a unique identifier for IP networks and routers. One company may operate in more than one ASN, but more than one company will not exist in the same ASN. Names of network operators corresponding to ASNs can be obtained by querying the Whois database.

Q: How did you identify the operators responsible for each of the ASNs?

A: We carried out a WHOIS lookup on each ASN. WHOIS (pronounced "who is"; not an acronym) is a TCP-based query/response protocol that is widely used for querying an official database in order to determine the owner of a domain name, an IP address, or an autonomous system number on the Internet.

Q: Can you definitively say that the ASN listed is attributed to the correct Network Operator?

A: While we have taken every care to correctly identify the Network Operator that relates to each ASN, in a limited number of cases, it is possible that bandwidth may have been sold to or by one ISP to another. In such cases, it would not be possible to determine whether any artificial interference with network communications that may be occurring is attributable to the ASN identified in the Whois records or its customer/reseller.

Q: Why do some network operators appear more than once on the list of results?

A: Some network operators operate in multiple ASNs. Therefore, they appear more than once on the list.

Q: Does the Vuze Plug-In measure any network management techniques other than the use of reset messages?

A: No. Thus, while a particular network operator could be using any number of techniques for network management, the Vuze Plug-In only attempts to measure interrupted communications using system resets.

Q: Are you able to definitively say that a reset message is a "false" message and that the "man in the middle" technique is being used?

A: No. We are able to show the differences in the median number of interrupted network connections resulting from reset messages. The Plug-In and our results do not distinguish

between resets that would happen in the ordinary course of using the Internet versus those that were artificially caused by, for example, a network operator. From this data, one might infer that a particular network operator may be interposing false RST messages, but the data cannot definitively establish that. Only the particular network operator can confirm the exact measures they may be taking to manage network traffic.

Q: What is an expected level of resets or “RST”s where no network management technique is being used?

A: We are unable to create a “control” group of users or ASNs that we categorically know are not being impacted by false resets. Nor are we able to state what level of resets would be “normal.” It is possible to compare data from ASNs at the top of the list with those at the bottom of the list and identify marked differences in median reset rates.

Q: What is a reset or “RST” Packet?

A: A reset or “RST” Packet is a computer message used to cause a computer network communication to abort or fail.

Q: Under what circumstances might an RST message naturally occur?

A: The normal way to close a TCP (Transmission Control Protocol) connection is to transmit a FIN Packet with an acknowledgement from the other side. If the system determines that something is wrong with the connection, for example no SYN (synchronization) message is received from the other end of the connection, it can “abort” with an RST Packet.

Q: What is a false RST Packet or false reset message?

A: A false reset or RST message is a message that has been artificially introduced into a network communication with the intention of closing the connection or causing it to abort.

Q: Why are false reset messages a problem for applications operating on the BitTorrent protocol?

A: Both uploads of content and the peering activity of the application rely on the ability of the computers on the system to receive and/or transmit data to one another. This is done through network communications. When false reset messages are introduced, “seeds” and “peers” that are affected are unable to effectively and consistently transmit or receive data.

Q: What are the limitations of your results?

A: The results do not purport to satisfy standard statistical methodology due mainly to the relatively small size of the samples in each ASN. We expect those sample sizes to grow over time. They also do not enable us to specifically identify false reset activity as compared to that occurring in the normal course. However, we believe that to the extent that there are naturally occurring explanations for reset activity or aberrations in the behavior of a particular user, they become less of a concern as the data set grows. We are not aware of any normal conditions that would cause the disproportionately large variances in reset activity shown in the data of data sets of this size.

Q: Does Vuze take any steps to countermand the use of false reset messages?

A: Yes. Our application automatically encrypts data transmissions when it detects reset messages.



Q: Are you planning to release further results in the future as you collect more data?

A: Most likely, yes, particularly if they are generally considered to be of value to the industry and to consumers.

**APPENDIX A**

Data from all ASNS (Organized alphabetically)

<b>ASN</b>	<b>Network Operator</b>	<b>Unique users</b>	<b>Hours</b>	<b>Median Reset Rate</b>
4713	-Allocated by APNIC-	13	3154	7.15%
32709	1-JOINK - JOINK	1	8	7.08%
26198	3MENATWORK - 3Men@Work Integrated Networks, Inc.	2	87	1.90%
15267	702COM - 702 communications	1	68	8.77%
2764	AAPT AAPT Limited	19	3240	20.23%
7642	ABCNET-AS-AP Australian Broadcasting Commission Dhiraagu Interne	1	64	19.56%
27759	ACCESS HAITI S.A.	1	403	39.01%
21804	ACCESS-SK - Access Communications Co-operative Limited	1	361	7.51%
21570	ACI-1 - Accelerated Connections Inc.	1	14	5.69%
13119	ACI-AS ACI Autonomous System	1	3	6.33%
19397	ACN-DIGITAL - American Communication Network (ACN.Inc)	1	31	29.16%
1853	ACONET AConet Backbone	2	396	49.94%
27364	ACS-INTERNET - Armstrong Cable Services	5	258	2.19%
4148	ACTCOM ACTCOM - Active Communication Ltd.	1	483	7.41%
9556	ADAM-AS-AP Adam Internet Pty Ltd	7	281	13.33%
7843	ADELPHIA-AS - Road Runner HoldCo LLC	2	14	0.10%
19548	ADELPHIA-AS2 - Road Runner HoldCo LLC	9	911	12.45%
6057	Administracion Nacional de Telecomunicaciones	5	397	17.04%
33942	AGACTEL-AS AGACTEL S.p.a.	1	152	2.96%
14496	AGILENT-AS - Agilent Technologies	1	51	21.53%
23871	AINS-AS-AP Australia Internet Solutions	2	619	21.24%
42143	AIR-BITES-AS SC AIR BITES SRL	1	1	3.30%
39826	AIRBITES Air Bites Polska AS Number	1	11	30.82%
34425	AIRBITESBG-AS Air Bites Bulgaria Network	1	33	1.44%
12430	AIRTEL AS	5	426	5.03%
7626	AJOUNET-AS COMPUTER OPERATION TEAM/AJOU UNIVERSITY	1	2	33.73%
7774	ALASKA - University of Alaska	1	26	14.09%
3238	ALCOM Alands Datakommunikation Ab	1	70	0.54%
27896	All America Cables & Radio/Centennial Dominicana	1	184	14.37%
23860	ALLIANCE-GATEWAY-AS-AP Alliance Broadband Services Pvt. Ltd.,All	2	36	1.10%
15290	ALLST-15290 - Allstream Corp. Corporation Allstream	2	228	9.81%
2634	ALLTEL - ALLTEL Corporation	3	68	14.77%
7782	ALSK-7782 - Alaska Communications Systems Group, Inc.	4	211	21.47%
12846	AltaiTelecom Autonomous System	1	1	0.76%

<b>ASN</b>	<b>Network Operator</b>	<b>Unique users</b>	<b>Hours</b>	<b>Median Reset Rate</b>
8509	ALTECTELECOMS ALTEC TELECOMS Autonomous System	3	164	12.06%
31554	ALTFEL SC altFEL SRL	1	24	13.53%
24213	AMB-AS-ID Anugrah Melayu Bersatu PT.	1	22	12.82%
8591	AMIS Amis	2	81	14.06%
9822	AMNET-AU-AP Amnet IT Services Pty Ltd	2	314	28.43%
39792	ANDERS-AS Anders Business Group IP Network	1	2	11.62%
6752	ANDORRA STA ANDORRA Autonomous System	1	27	17.31%
12829	ANGELSOFT AngelSoft ET	2	583	5.83%
11259	ANGOLATELECOM	1	1	18.54%
42841	ANTIK Antik Computers and Communications s.r.o.	1	1	36.71%
1668	AOL-ATDN – AOL Transit Data Network	42	4054	14.88%
14855	AOL-MTC1 – America Online, Inc.	2	25	0.00%
12578	APOLLO-AS LATTELEKOM-APOLLO	2	165	8.43%
13143	ARAGON DE CABLE	4	528	9.95%
3209	Arcor IP-Network	135	11717	8.22%
12926	ARTELECOMPT Ar Telecom Autonomous System	1	148	29.00%
12334	AS R Cable y Telecomunicaciones Galicia S.A.	3	238	17.73%
5668	AS-5668 – CenturyTel Internet Holdings, Inc.	9	820	14.23%
26462	AS-GENESEO – SUNY Geneseo Computer Center	1	106	3.07%
9260	AS-MULTINET-PK NSP,ISP,HFC,DSL,DIALUP,Data Network Connectivity	2	61	6.30%
6678	AS-NOOS NOOS Autonomous System	14	1008	8.62%
6316	AS-PAETEC-NET – PaeTec Communications, Inc.	1	93	22.11%
40473	AS-PLATINUM-COMMUNICATIONS – Platinum Communications Corporation	1	62	1.29%
11404	AS-VOBIZ – vanoppen.biz LLC	1	23	12.31%
12493	AS12493 be.mobistar Autonomous System	2	74	37.55%
12626	AS12626 9TELECOM	3	267	12.52%
12635	AS12635 ONE GmbH	4	46	8.58%
12876	AS12876 Telecom Italia France	37	1474	2.53%
13156	AS13156 Cabovisao,SA	3	133	23.03%
15589	AS15589 Eutelia S.p.A. Backbone AS	3	157	5.82%
15709	AS15709 Vodafone D2 GmbH	8	382	0.72%
20712	AS20712 Andrews + Arnold Ltd	1	38	36.89%
3215	AS3215 France Telecom – Orange	148	11646	7.83%
5413	AS5413 PIPEX Communications	20	2442	13.16%
702	AS702 Verizon Business EMEA – Commercial IP service provider in	2	31	7.73%
8841	AS8841 Taide US	2	2	13.23%
9008	AS9008 Visual Online S.A.	3	30	0.17%
9141	AS9141 UPC Poland	10	447	9.30%
4685	ASAHI-NET Asahi Net	3	740	5.74%
12392	ASBRUTELE AS Object for Brutele SC	5	24	0.85%
29177	ASCOTLC-AS ASCOTLC SPA	1	23	0.42%
15763	ASDOKOM DOKOM GmbH	1	665	11.69%
137	ASGARR GARR Italian academic and research network	4	818	2.03%

<b>ASN</b>	<b>Network Operator</b>	<b>Unique users</b>	<b>Hours</b>	<b>Median Reset Rate</b>
14188	ASHLANDFIBERNETWORK – Ashland Fiber Network	1	23	47.19%
7470	ASIAINFO-AS-AP ASIA INFONET Co.,Ltd.	15	2483	5.12%
24749	ASIMANTOVA-AS TEANET Mantova – 46100 – MANTOVA – ITALY	1	193	3.57%
36925	ASMedi	3	202	14.52%
9824	ASN-ATHOMEJP	3	1395	0.39%
2116	ASN-CATCHCOM Catch Communications	3	139	9.40%
25310	ASN-CWACCESS Cable and Wireless Access Ltd	7	519	4.88%
34400	ASN-ETTIHADETISALAT Etihad Etisalat	3	509	12.33%
18987	ASN-GLOBALMDM – Global MDM Inc.	2	137	27.37%
3269	ASN-IBSNAZ TELECOM ITALIA	137	13530	10.33%
4802	ASN-IINET iiNet Limited	36	4598	10.21%
29319	ASN-IMSYS Informational-measuring systems	1	1	5.54%
1267	ASN-INFOSTRADA Infostrada S.p.A.	32	2326	6.97%
13046	ASN-ISKON ISKON	2	2	11.37%
25138	ASN-MATRIXPL MATRIX.PL S.A.	1	233	13.26%
24731	ASN-NESMA National Engineering Services and Marketing Company Lt	3	899	1.14%
21502	ASN-NUMERICABLE NUMERICABLE is a cabled network in France,	18	968	11.49%
16121	ASN-ONLINE SC RC TEAM SA	1	167	12.63%
9648	ASN-OZONLINE-AU	1	82	16.97%
4628	ASN-PACIFIC-INTERNET-IX Pacific Internet Ltd	1	139	29.98%
29232	ASN-PAI Powszechna Agencja Internet S.A. Autonomous System ul. K	1	25	12.41%
209	ASN-QWEST – Qwest	77	9212	12.37%
6648	ASN-SKYINTERNET Bayan Telecommunications Inc.	3	409	4.74%
8997	ASN-SPBNIT SPBNIT-RU Autonomous System	7	925	11.36%
5410	ASN-T-ONLINEFRANCE Club-Internet	18	1895	3.59%
20804	ASN-TELENERGO EXATEL S.A. Autonomous System	2	98	33.39%
1221	ASN-TELSTRA Telstra Pty Ltd	37	2853	11.31%
16232	ASN-TIM TIM (Telecom Italia Mobile) Autonomous System	1	1	5.83%
29328	ASN-TMOBILEUK TMOBILEUK	1	42	2.09%
852	ASN852 – Telus Advanced Communications	58	5464	11.26%
35191	ASTA-NET ASTA-NET MALDZINSKI, RYCEK S.J.	1	148	1.85%
12476	ASTER-CITY-CABLE-AS Aster City Cable Sp. Z o.o.	7	649	11.79%
33863	ASTER-ZG-POLAND-AS Aster Zielona G $\sqrt{E} \geq ra$	1	30	23.26%
22759	ASTOUND-CABLE – Wave Broadband, LLC	1	4	27.37%
6746	ASTRAL ASTRAL Telecom SA, Romania	20	1003	7.67%
43320	ASTRATELKOM-AS Astratelkom	1	455	34.42%
20057	AT&T Wireless Service	8	386	14.45%
9143	ATHOME-BENELUX-BV AtHome Benelux BV provides broadband ISP servi	22	2141	14.12%

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11776	ATLANTICBB-JOHNSTOWN – Atlantic Broadband Finance, LLC	1	2	15.05%
12035	ATLANTICBB-MIAMI – Atlantic Broadband Finance, LLC	2	112	21.90%
32939	ATLANTICBB-MIDDLETOWN – Atlantic Broadband Finance, LLC	2	21	4.03%
15694	ATMAN ATMAN Autonomous System	1	9	22.19%
7796	ATMLINK – ATMLINK, INC.	1	2	13.59%
6714	ATOMNET ATOM SA	4	102	6.01%
6478	ATT-INTERNET3 – AT&T WorldNet Services	27	2373	13.97%
7018	ATT-INTERNET4 – AT&T WorldNet Services	24	1528	5.35%
16338	AUNA TELECOM-AS AUNA Autonomous System	36	3474	7.15%
35533	AVANET AVANET multiservice network	1	54	1.61%
6503	Avantel, S.A.	1	200	6.80%
35573	AVCOM-AS AVCom d.o.o.	1	245	0.47%
25233	AWALNET-ASN Autonomus System number for Awalnet	5	98	8.37%
28762	AWAX-AS AWAX Telecom Ltd	1	20	2.84%
24631	AZADNET Azadnet Autonomous System	2	4	13.30%
8642	B2 B2 Bredband AB (publ)	3	932	8.07%
577	BACOM – Bell Canada	157	18118	11.13%
8473	BAHNHOF Bahnhof AB	2	665	2.39%
39007	BALTICUM-TV-AS Balticum TV Autonomous System	1	40	17.39%
20910	BALTKOM-AS BALTKOM Autonomous System	1	12	2.13%
26769	BANDCON – Bandcon	1	2	3.06%
3307	BANETELE-NORWAY BaneTele AS (formerly Enitel), Norway	1	38	20.51%
35819	BAO-AS Bayanat Al-Oula Autonomous System	1	462	12.30%
8584	BARAK Netvision 013 Barak – Barak Network	4	755	8.78%
21274	BAS-NET-AS BAS-NET, Belarusian Academy of Sciences Network	1	20	11.68%
9038	BAT-AS9038 Batelco Jordan	1	38	45.85%
5416	BATELCO-BH	3	325	7.96%
6197	BATI-ATL – BellSouth Network Solutions, Inc	17	1313	6.80%
6198	BATI-MIA – BellSouth Network Solutions, Inc	22	1589	11.74%
10984	BAYOU-INTERNET-INC – Bayou Internet, Inc.	1	1	6.84%
9498	BBIL-AP BHARTI BT INTERNET LTD.	36	2190	10.80%
15670	BBNED-AS	9	586	12.29%
3633	BC-SYSTEMS – BC Systems Corporation	1	2	21.90%
24324	BCL-TRANSIT-AS-AP Broadcast Communications Limited (BCL)	1	99	45.23%
271	BCNET-AS – University of British Columbia	3	81	17.22%
21949	BEANFIELD – Beanfield Technologies Inc.	1	60	4.32%
5432	BELGACOM-SKYNET-AS Belgacom regional ASN	12	295	4.47%
6385	BELLSOUTH-NET-BLK – BellSouth.net Inc.	2	55	20.40%
6386	BELLSOUTH-NET-BLK – BellSouth.net Inc.	4	588	19.56%
6380	BELLSOUTH-NET-BLK – BellSouth.net Inc.	5	856	19.15%

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6389	BELLSOUTH-NET-BLK – BellSouth.net Inc.	21	2122	15.88%
6388	BELLSOUTH-NET-BLK – BellSouth.net Inc.	4	459	11.57%
6382	BELLSOUTH-NET-BLK – BellSouth.net Inc.	2	434	8.20%
6384	BELLSOUTH-NET-BLK – BellSouth.net Inc.	1	40	6.82%
6383	BELLSOUTH-NET-BLK – BellSouth.net Inc.	3	394	3.57%
7894	BELLSOUTH-NET-BLK2 – Bellsouth.Net	2	363	16.84%
7893	BELLSOUTH-NET-BLK2 – Bellsouth.Net	3	290	14.92%
7891	BELLSOUTH-NET-BLK2 – Bellsouth.Net	3	760	14.50%
8061	BELLSOUTH-NET-BLK3 – Bellsouth.Net	2	135	20.49%
8060	BELLSOUTH-NET-BLK3 – Bellsouth.Net	1	126	16.06%
8062	BELLSOUTH-NET-BLK3 – Bellsouth.Net	2	118	15.95%
6697	BELPAK-AS BELPAK	1	185	10.00%
21766	BEN-LOMAND-TEL – Ben Lomand Telephone Cooperative	1	225	3.53%
6700	BEOTEL-AS Autonomous System BeotelNet ISP	4	1055	4.93%
18734	BESTEL S.A. de C.V.	1	17	28.02%
35228	BEUNLIMITED Avatar Broadband Limited	35	4444	13.19%
24071	BEYONDCABLE-AS-AP Beyond Cable, Cable Internet Provider here in	2	168	17.56%
8551	BEZEQ-INTERNATIONAL-AS Bezeqint Internet Backbone	12	3022	18.51%
12998	BGNET-AS ISP BGNet	1	181	5.17%
41865	BIALLNET-AS BIALL-NET Sp. Z o.o	1	3	12.95%
5760	BIDDEFORD1 – Biddeford Internet Corp	5	580	11.84%
24197	BIGNET-AS-ID Elka Prakarsa Utama, PT	1	1529	14.13%
9146	BIHNET BIHNET Autonomus System	1	27	7.81%
16223	BITTERNET BitterNet	1	18	0.55%
13292	BK DAT	1	1	3.24%
20880	BLUE-CABLE TV-cable networks Zwickau, Wolfsburg	4	244	14.74%
11979	BLUENET – Bluegrass Network LLC	1	1	13.36%
25248	BLUETONE-AS Radiokomunikace a.s.	5	1409	28.99%
44038	BLUEWIN-AS Swisscom Fixnet AG	16	469	14.32%
23700	BM-AS-ID PT. Broadband Multimedia, Tbk	3	885	60.65%
12406	BN-AS Business network j.v.	1	5	26.33%
8877	BOLBG-AS BOL.BG Autonomous System	1	1	33.77%
111	BOSTONU-AS – Boston University	1	11	2.11%
33588	BRESNAN-AS – Bresnan Communications, LLC.	6	803	15.70%
22485	BRIDGEBAND – BridgeBand Communications Inc.	1	14	22.06%
25041	BRIGHTVIEW-UK-AS Brightview Internet Services AS	1	16	18.57%
11479	BRM-SUN-AS – Sun Microsystems, Inc	1	18	18.95%
10094	BRUNET-AS AS Number for BruNet, Brunei Darussalam	2	903	16.98%
9829	BSNL-NIB National Internet Backbone	58	2841	11.14%
35504	BSSYS-AS Banks Soft Systems LTD	1	2	7.61%
3300	BT-INFONET-EUROPE BT-Infonet-Europe	1	11	44.99%

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2856	BT-UK-AS Btnet UK Regional network	125	12103	12.06%
8866	BTC-AS Bulgarian Telecommunication Company Plc.	1	1	3.79%
17494	BTTB-AS-AP Telecom Operator & Internet Service Provider as well	1	143	22.75%
13490	BUCKEYECABLEVISION - Buckeye Cablevision, Inc.	5	1003	14.81%
3685	BUFFALO-ASN - University of Buffalo	1	7	9.65%
38105	BUKBUCATV-AS-KR Korea Cable TV Bukbu System. Co.,Ltd	1	39	12.49%
6510	BYU - Brigham Young University	1	2	5.76%
11700	CA-WEDNET - WEDnet	1	31	14.92%
11556	Cable & Wireless Panama	1	158	16.92%
6128	CABLE-NET-1 - Cablevision Systems Corp.	71	10280	17.58%
43612	CABLE-TEL CableTEL DOEL	1	302	0.83%
8404	CABLECOM Cablecom GmbH	40	3867	12.07%
5462	CABLEINET Telewest Broadband	64	8046	12.05%
11492	CABLEONE - CABLE ONE	15	2659	6.91%
12388	Cablesurf Backbone AS	5	192	0.68%
16960	Cablevision Red S.A. de C.V.	1	21	14.29%
10318	CABLEVISION S.A.	8	631	14.21%
42580	CABOTVA Cabo TV Acoreana	1	81	9.76%
9790	CALLPLUS-NZ-AP CallPlus Services Limited	2	19	12.70%
33139	CANACA-210 - Canaca-com Inc.	6	1102	10.75%
19090	Canbras Net Ltda.	5	333	12.64%
855	CANET-ASN-4 - Bell Aliant	19	2032	12.78%
8048	CANTV Servicios, Venezuela	12	1907	19.74%
30776	CASEMAISP-AS N.V. Casema	15	1232	9.62%
9931	CAT-AP The Communication Authoity of Thailand, CAT	2	38	77.43%
23685	CAT-HUTCH-AS-AP Hutchison CAT Wireless Multimedia Ltd,	1	388	18.81%
16810	CAVTEL02 - Cavalier Telephone	2	179	0.31%
12570	CBCZ CZECHBONE AS	1	2	0.61%
22258	CCCH-AS1 - Comcast Cable Communications Holdings, Inc	7	611	20.14%
7016	CCCH-AS2 - Comcast Cable Communications Holdings, Inc	16	1375	14.95%
13367	CCCH-AS3 - Comcast Cable Communications Holdings, Inc	34	4463	14.44%
7757	CCCH-AS4 - Comcast Cable Communications Holdings, Inc	17	1189	10.65%
21508	CCCH-AS5 - Comcast Cable Communications Holdings, Inc	20	1862	15.34%
20214	CCCH-AS6 - Comcast Cable Communications Holdings, Inc	47	5771	15.91%
32035	CCDT-AS - Telekenex	9	91	13.14%

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7725	CCH-AS7 - Comcast Cable Communications Holdings, Inc	67	7291	16.87%
6300	CCI-TEXAS - Consolidated Communications, Inc.	1	302	8.24%
22773	CCINET-2 - Cox Communications Inc.	143	18480	11.95%
12968	CDP Crowley Data Poland, sp. z o.o.	2	4	5.76%
25512	CDT-AS CD-Telematika a.s.	2	21	16.48%
10594	CEC - Cutting Edge Communications, Inc.	1	171	9.69%
23298	CEDAR-VALLEY-COMMUNICATIONS - Cedar Valley Communications, Inc.	1	277	2.99%
8228	CEGETEL-AS CEGETEL ENTREPRISES	8	734	15.55%
6167	CELLCO-PART - Cellco Partnership	7	203	16.84%
21052	CENARA-AS Cenara AB	2	125	14.51%
11992	CENTENNIAL-PR - Centennial de Puerto Rico	3	18	18.46%
13951	CENTER-SEVEN - NFT	4	164	6.76%
2852	CESNET2 CESNET, z.s.p.o.	4	55	10.76%
13855	CFU-NET - Cedar Falls Utilities	1	310	1.26%
16787	CHARTER-16787 - Charter Communications	1	6	16.75%
22291	CHARTER-LA - Charter Communications	26	3251	11.34%
19115	CHARTER-LEBANON - Charter Communications	6	332	28.66%
20115	CHARTER-NET-HKY-NC - Charter Communications	55	5884	13.20%
19444	CHARTER-STL - CHARTER COMMUNICATIONS	9	930	17.10%
4837	CHINA169-BACKBONE CNCGROUP China169 Backbone	4	743	12.00%
4814	CHINA169-BBN CNCGROUP IP network√Ç¬°√Ç¬™China169 Beijing Broadband N	1	80	17.77%
4808	CHINA169-BJ CNCGROUP IP network China169 Beijing Province Networ	3	262	13.63%
4134	CHINANET-BACKBONE No.31,Jin-rong Street	6	882	41.43%
4812	CHINANET-SH-AP China Telecom (Group)	7	269	9.89%
17785	CHINATELECOM-HA-AS-AP asn for Henan Provincial Net of CT	1	10	39.87%
13609	CHOICEONECOM - Choice One Communications Inc	1	10	13.72%
25668	CIPHERKEY - Cipherkey Exchange Corp.	1	36	6.16%
109	CISCO-EU-109 Cisco Systems Global ASN - ARIN Assigned	1	4	0.61%
29571	CITelecom-AS	2	32	14.36%
43589	CITYNET-AS CityNET Ko Ltd.	1	6	12.43%
17483	CITYSERV-AS-AP CityOnline Services Ltd	1	20	8.65%
4739	CIX-ADELAIDE-AS Internode Systems Pty Ltd	18	1570	12.24%
36926	CKL1-ASN	1	31	21.85%
8426	CLARANET-AS ClaraNET	1	7	14.40%
3659	CLAREMONT - The Claremont Colleges	1	141	5.93%
16586	CLEARWIRE - Clearwire, LLC	7	537	23.81%
4768	CLIX-NZ TelstraClear Ltd	5	780	0.54%
24862	CLSE-AS DATAPHONE SCANDINAVIA AB	1	200	11.80%
34347	CNH-AS AS for citynet@hall (Stadtwerke Hall in Tirol GmbH)	1	6	8.64%



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7992	COGECOWAVE – Cogeco Cable	22	1273	19.13%
174	COGENT Cogent/PSI	16	240	10.02%
6706	COL-AS Telekom Austria Czech Republic, a.s.	1	8	0.75%
3816	COLOMBIA TELECOMUNICACIONES S.A. ESP	2	44	12.25%
27665	Columbus Communications Trinidad Limited.	2	998	15.20%
10297	COLUMBUSNAP – The Columbus Network Access Point, Inc.	1	5	17.40%
15582	COMCORTV-AS COMCOR-TV Autonomous System	5	253	8.91%
39651	COMHEM-SWEDEN Com Hem Sweden	19	1002	16.17%
9942	COMINDICO-AP SOUL Converged Communications Australia	4	1265	13.23%
8200	COMMERCIAL-AS Commercial Networks	1	1	10.74%
17253	COMMUNIGROUP – CommuniGroup Inc.	1	37	74.84%
7693	COMNET-TH KSC Commercial Internet Co. Ltd.	1	21	3.85%
6400	Compañía Dominicana de Teléfonos, C. por A. – CODETEL	5	157	25.98%
16735	Companhia de Telecomunicacoes do Brasil Central	4	217	3.20%
12670	Completel Autonomous System in France	2	65	19.32%
30753	COMPOWER-AS Compower – Cracow, Poland	1	81	3.38%
6731	COMSTAR-AS COMSTAR Telecommunications	1	256	9.88%
12357	COMUNITEL Comunitel Global Autonomous System	6	918	2.12%
31661	COMX ComX Networks A/S	1	532	1.08%
9787	CONCEPT-AU-AP Concept Networks	1	113	14.23%
17805	CONCEPT-SYD-AU-AP Conceptual Internet Australia, ISP, Sydney	1	209	3.04%
10996	CONCORDE – Concorde inc.	2	123	9.12%
11734	CONNECTRIA – Connectria	1	373	9.83%
39120	CONVERGENZE-AS Convergenze S.p.A.	1	5	7.89%
14232	Cooperativa Telefonica Pinamar Ltda.	2	79	12.82%
22639	COOPTEL-AS-01 – Coop Tel	2	338	7.14%
10396	COQUI-NET – DATACOM CARIBE, INC.	9	803	18.74%
18282	CORALNET TONAMI Internet Service(TONAMI TransportationCo.,Ltd.)	2	103	0.51%
8402	CORBINA-AS Corbina Telecom	6	1284	10.15%
35078	CORVETTE-AS Corvette Autonomous System	1	30	14.33%
18566	COVAD – Covad Communications Co.	10	2015	11.50%
13432	COX-LAS-VEGAS – Cox Communications Inc.	8	1096	29.91%
22318	COX-NCF – Cox Communications Inc.	2	9	10.20%
15218	COX-OKC – Cox Communications	1	42	2.95%
30569	CREIGHTON-AS – Creighton University	1	2	11.06%
4750	CSLOXINFO-ISP-AS-AP CSLOXINFO Public Company Limited.	2	257	48.40%
26792	CSSNW – CSS Integration, Inc.	1	264	11.48%
7497	CSTNET-AS-AP Computer Network Information Center	1	1	14.77%

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2152	CSUNET-NW – California State University Network	5	158	22.25%
25515	CTCNET-AS Joint-Stock Central Telecommunication Company Autonomo	1	9	3.87%
19037	CTI Compania de Telefonas del Interior S.A.	2	268	34.58%
10292	CWJ-1 – Cable & Wireless Jamaica	1	4	16.97%
11139	CWRIN CW BARBADOS	4	151	15.07%
6785	CYBERCITY Cybercity A/S	13	788	7.99%
34397	CYBERIA-RUH Cyberia Riyadh Autonomous System	4	387	3.18%
9541	CYBERNET-AP Cyber Internet Services (Pvt) Ltd.	1	2	45.26%
12429	CYBERNET-CH Swisscom Fixnet AG / Autonomous System	1	2	8.96%
11814	CYBERSURF – Cybersurf Inc.	5	980	11.80%
35266	CYBERTECH CYBERTECH Sp. Z o.o.	1	475	8.03%
6866	CYTA-NETWORK Cyprus Telecommunications Authority	3	20	53.88%
28725	CZ-EUROTEL-AS AS of Eurotel Praha	2	395	14.44%
5610	CZECHTELECOM CZECH TELECOM, a.s	8	530	9.86%
23966	DANCOM-AS-AP LINKdotNET Pakistan	2	21	7.89%
10755	DARTMOUTH-AS – Dartmouth College	1	5	40.49%
35567	DASTO-BOSNIA-AS DASTO semtel d.o.o.	1	1	4.16%
29863	DATA393 – Data393 Inc.	1	128	20.17%
10113	DATAFAST-AP DATAFAST TELECOMMUNICATIONS LTD	5	1035	12.59%
25124	DATAK DATAK Internet Engineering, GmbH	4	467	17.14%
3340	DataNet Telecommunication Ltd.	1	32	7.51%
15735	DATASTREAM-NET DataStream International high speed,	2	26	20.71%
41039	DBD-AS DBD Deutsche Breitband Dienste GmbH	4	158	11.97%
34823	DBNET-AS Danish Broadband a/s	2	169	0.73%
22799	DCC – Delta Cable Communications Ltd.	2	121	12.94%
12880	DCI-AS DCI Autonomous System	6	540	30.63%
31012	DCM-AS B.Net Hrvatska d.o.o.	1	24	16.03%
9010	DE-IESY iesy Hessen GmbH & Co. KG	1	76	15.76%
20535	DE-INSAT InSat GmbH, Saarbrucken, DE	1	23	13.49%
20124	DE-TELECOMM – D&E Communications	1	66	3.86%
11835	Default Informatica Ltda	1	10	16.80%
2529	DEMON-INTERNET Demon Internet	17	1575	10.67%
5417	DEMON-NL Demon Netherlands, TDINL BV	4	1610	8.88%
34234	DEPENDIT-AS Dependit AS	1	23	3.28%
30217	DESYNC – Desync Networks	2	49	3.02%
680	DFN-IP service G-WiN	3	55	10.65%
18001	DIALOG-AS DIALOG INTERNET	1	123	25.27%
33576	DIG001 – Digicel Jamaica	1	70	6.49%
10081	DIGI-MY DiGi Telecommunications Sdn Bhd	1	160	13.50%
36453	DIGIS-ASN-UT – Digis, LLC	1	14	37.88%

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9497	DIGITELONE Digital Telecommunications Philippines Inc.	2	61	19.00%
31122	DIGIWEB-AS Digiweb Ltd.	3	170	1.57%
29300	DIRECTCONNECT-AS Direct Connect, ISP, Norway	1	11	3.72%
21677	DISTRIBUTEL - DISTRIBUTEL COMMUNICATIONS LTD.	1	35	5.02%
33774	DJAWEB	7	951	24.42%
10692	DLS-LITH - DLS Internet Services	1	52	7.93%
22909	DNEO-OSP1 - Comcast Cable Communications, Inc.	7	493	11.05%
33287	DNEO-OSP4 - Comcast Cable Communications, Inc.	95	9227	21.28%
33490	DNEO-OSP5 - Comcast Cable Communications, Inc.	56	6895	16.76%
33653	DNEO-OSP7 - Comcast Cable Communications, Inc.	2	476	37.80%
33654	DNEO-OSP7 - Comcast Cable Communications, Inc.	2	494	30.23%
33668	DNEO-OSP7 - Comcast Cable Communications, Inc.	40	3094	23.72%
33650	DNEO-OSP7 - Comcast Cable Communications, Inc.	62	9043	20.16%
33666	DNEO-OSP7 - Comcast Cable Communications, Inc.	3	108	20.12%
33491	DNEO-OSP7 - Comcast Cable Communications, Inc.	101	10664	18.70%
33651	DNEO-OSP7 - Comcast Cable Communications, Inc.	110	9362	18.12%
33660	DNEO-OSP7 - Comcast Cable Communications, Inc.	24	2705	15.38%
33657	DNEO-OSP7 - Comcast Cable Communications, Inc.	50	6226	14.55%
33667	DNEO-OSP7 - Comcast Cable Communications, Inc.	3	613	14.24%
33655	DNEO-OSP7 - Comcast Cable Communications, Inc.	2	169	14.11%
33659	DNEO-OSP7 - Comcast Cable Communications, Inc.	9	1070	13.54%
33652	DNEO-OSP7 - Comcast Cable Communications, Inc.	33	3830	13.45%
33662	DNEO-OSP7 - Comcast Cable Communications, Inc.	19	1003	10.27%
33661	DNEO-OSP7 - Comcast Cable Communications, Inc.	1	27	8.79%
33656	DNEO-OSP7 - Comcast Cable Communications, Inc.	2	227	2.35%
38285	DODO-AS-AP Dodo Australia Pty Ltd	3	287	10.82%
28926	DONTELE-AS Telenet LLC	1	13	0.79%
27288	DPCHICO-1 - Digital Path	1	184	22.90%
19817	DSLEXTREME - DSL Extreme	2	348	13.19%
3320	DTAG Deutsche Telekom AG	389	30007	8.93%

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8879	DTS-SERVICE DTS-Service Autonomous System	1	12	9.70%
15802	DU-AS1 Emirates Integrated Telecommunications Company PJSC (EITC	4	1513	17.32%
34814	DYTYNETS-AS DYTYNETS Autonomous System	1	188	5.51%
22658	EARTHNET – Earthnet, Inc.	1	55	7.40%
11260	EASTLINK-HIS – EastLink	14	2878	4.25%
4589	EASYNET Easynet Group Plc	63	5163	10.98%
26146	EASYTEL – EasyTEL Communications, Inc.	1	18	67.36%
43118	EAW-AS East & West Sp. Z o.o.	1	1	11.74%
12513	ECLIPSE Eclipse Internet	9	2554	19.83%
33783	EEPAD	5	1038	9.46%
13657	EGATE-NETWORKS E-Gate Networks	1	88	8.45%
20858	EGYNET-AS	2	5	1.60%
5466	EIRCOM Eircom	8	710	7.64%
39721	ELEVEN-AS E-leven S.A.	1	55	14.29%
719	ELISA-AS Elisa Oyj	31	2943	10.89%
3336	ELISA-AS Elisa Oyj	1	14	0.69%
34337	ELPOS Cable TV Elpos Ltd.	1	23	13.18%
17402	EMBARQ-CHSK – Embarq Corporation	1	123	8.00%
14905	EMBARQ-CHVL – Embarq Corporation	1	279	20.12%
6222	EMBARQ-CLTN – Embarq Corporation	2	14	22.33%
14910	EMBARQ-FTMY – Embarq Corporation	1	1004	14.84%
22186	EMBARQ-GRNR – Embarq Corporation	1	4	20.49%
14921	EMBARQ-HDRV – Embarq Corporation	1	40	29.00%
16718	EMBARQ-HMBL – Embarq Corporation	2	277	1.47%
11398	EMBARQ-LVGS – Embarq Corporation	4	57	0.82%
11530	EMBARQ-MNFD – Embarq Corporation	7	667	12.06%
5778	EMBARQ-RCMT – Embarq Corporation	3	218	18.30%
2379	EMBARQ-WNPK – Embarq Corporation	4	93	8.20%
18494	EMBARQ-WRBG – Embarq Corporation	1	23	4.63%
4230	Embratel	7	654	13.49%
5384	EMIRATES-INTERNET Emirates Internet	29	4130	17.86%
23106	Empresa de Infovias S/A	2	49	20.74%
5388	ENERGIS-AS Energis UK	14	1017	12.25%
31117	ENERGOTEL-AS Energotel, a.s.	4	498	5.05%
8468	ENTANET ENTANET International Ltd	12	1065	9.44%
6471	ENTEL CHILE S.A.	3	479	12.84%
8065	EPM Telecomunicaciones S.A. E.S.P.	3	100	35.61%
6661	EPT-LU Entreprise des P. et T. Luxembourg	3	422	1.43%
4355	ERMS-EARTHINK – EARTHINK, INC.	7	359	5.19%
17401	ERTACH S.A.	1	8	8.16%
3758	ERX-SINGNET SingNet	1	3	9.33%
4515	ERX-STAR Star Internet Services Ltd.	1	16	0.00%
7395	ESCHELON – Eschelon Telecom, Inc.	1	55	2.37%
25008	ESOO-AS OJSC <i>VolgaTelecom</i> Orenburg	1	44	14.75%
11653	ESS-PR-WEBMASTERS – ESS/PR WebMasters	1	41	18.37%
3249	ESTPAK Estonian Telephone Company Ltd.	4	420	7.79%

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19429	ETB - Colombia	9	434	14.06%
9658	ETPI-IDS-AS-AP Eastern Telecoms Phils., Inc.	2	108	3.02%
790	EUNETFI EUNET Finland	2	11	0.64%
1897	EUNETPT KPNQwest Portugal Backbone AS	2	38	2.37%
34811	EURISP EurISP ASN	1	55	18.12%
5390	EURONET Orange Nederland B.V. Global AS	22	1650	2.57%
29387	EUROWEBMALTA Euroweb Ltd	1	78	5.65%
12338	EUSKALTEL Euskaltel Autonomous System	12	832	12.44%
18712	EVEREST - Everest Connections, LLC	1	1	9.19%
25472	EVERGY-AS Evergy S.A.,	13	684	8.68%
20876	EVRO-AS EVRO.NET	1	8	1.35%
9145	EWETEL EWE TEL GmbH	7	441	3.85%
18231	EXATT-AS-AP Exatt Technologies Private Ltd.	1	6	11.70%
17754	EXCELL-AS Excellmedia	1	114	15.99%
10143	EXETEL-AS-AP Exetel Pty Ltd	11	730	11.45%
40020	FARMERS-TELECOMMUNICATIONS-COOPERATIVE-INC - Farmers Telecommuni	1	1	22.51%
25543	FasoNet-AS	1	6	17.15%
21050	FAST-TELCO kw.fast-telco Autonomous System	1	20	48.58%
12874	FASTWEB Fastweb Autonomous System	16	315	6.66%
36947	FAWRI-AS	9	572	14.98%
30058	FDCSERVERS - FDCservers.net	2	34	21.67%
6981	FDNCOM - FDN.com	1	18	17.48%
33935	FI-24ONLINE-AS 24 Online Oy	1	75	10.67%
5048	FIBER - FIBERNET Corp.	1	46	3.02%
15600	FINECOM Finecom Telecommunications AG	2	188	12.43%
16086	FINNET-AS Finnet, Finland	5	527	13.21%
28917	FIORD-AS JSC TRC FIORD	1	175	6.44%
23138	FIRST-STEP - FIRST STEP INTERNET	2	59	13.44%
1249	FIVE-COLLEGES-AS - Five Colleges Network	1	13	9.89%
15412	FLAG-AS Flag Telecom Global Internet AS	3	137	12.22%
21453	FLEX-AS Autonomous System for Wireless Network in Moscow region R	1	32	13.36%
42739	FONE-ASN FONE Sp. Z o.o.	1	384	0.14%
1241	FORTHNET-GR FORTHnet	30	4725	4.34%
25653	FORTRESSITX - FortressITX	1	273	10.15%
18403	FPT-AS-AP The Corporation for Financing & Promoting Technology	5	311	18.72%
2200	FR-RENATER Reseau National de telecommunications pour la Technol	1	1	3.90%
31148	FREENET-AS FreeNet ISP	1	140	3.53%
5430	FREENETDE freenet Cityline GmbH	73	5086	4.21%
7011	FRONTIER-AND-CITIZENS - Frontier Communications of America, Inc.	5	836	12.22%
1835	FSKNET-DK Forskningsnettet - Danish network for Research and Edu	2	115	12.10%
2553	FSU-AS - Florida State University	1	440	12.66%

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25898	FULL-SAIL-INC – Full Sail, Inc.	1	5	1.01%
39554	FULLRATE Tele og Teknik Aps	4	1199	5.79%
2715	Fundacao de Amparo a Pesquisa do Estado de Sao Pau	1	3	0.60%
1741	FUNETAS FUNET autonomous system	1	7	11.69%
6181	FUSE-NET – Cincinnati Bell Telephone	4	168	31.84%
15833	FUTURO-AS Futuro Poland Autonomous System	3	326	0.30%
3549	GBLX Global Crossing Ltd.	5	1257	16.47%
42298	GCC-MPLS-PEERING Qatar Telecom	10	1048	24.07%
8047	GCI – GCI Communications, Inc.	3	63	12.20%
12615	GCN-AS GCN Bulgaria AS	1	54	17.56%
22299	GCRONLINE – GCR Company	1	19	5.08%
33823	GEMENII SC GEMENII NETWORK SRL	1	70	3.14%
2637	GEORGIA-TECH – Georgia Institute of Technology	2	368	7.46%
41164	GET-NO GET Norway	5	895	15.73%
8301	GIBTELECOMNET GIBTELECOM (ISP)	1	77	19.44%
17577	GIGAPASS-AS-KR YOUNGNAM CABLE NETWORK	1	1	1.63%
7492	GIL-AS-AP Global Info-Links	1	18	7.89%
9080	GIN IPEX/GIN Autonomous System	2	61	11.83%
18881	Global Village Telecom	20	635	9.32%
24323	GLOBAL-ONLINE-AS-AP aamra networks limited,	1	33	0.44%
20830	GLOBALAIRNETWORK-AS GlobalAirNet Network Muenchen, Germany	1	24	10.27%
4922	GLOBALCOM – Shentel Service Company	1	23	6.63%
4775	GLOBE-TELECOM-AS Telecom Carrier / ISP Plus +	5	245	19.91%
6453	GLOBEINTERNET Teleglobe America Inc.	1	62	1.81%
38173	GNODE-AS-AP G-node Networks Pty Ltd	3	444	0.80%
8376	GO-JOR Autonomous System	1	94	19.96%
7794	GOLDEN – Golden Triangle On Line	7	1072	14.34%
9116	GOLDENLINES-ASN Golden Lines Main Autonomous System	6	365	7.44%
21003	GPTC-AS	2	230	0.15%
5408	GR-NET Greek Research and Technology Network	1	58	18.04%
24389	GRAMEENPHONE-AS-AP GrameenPhone Ltd.	2	28	27.10%
19384	GRAMTEL001 – GramTel	2	257	3.64%
7459	GRANDECOM-AS1 – Grande Communications Networks, Inc.	4	660	0.94%
21494	GREEN green.ch AG, Brugg, Switzerland	3	377	4.29%
27789	GREENDOT	2	1081	3.35%
41877	GRT-AS Railway Telecom AS number	1	635	6.89%
22128	Grupo Editorial Sinos S/A	1	7	36.75%
6539	GT-BELL – Bell Canada	3	168	9.94%
14259	Gtd Internet S.A.	1	20	5.86%
8246	GTS-POLSKA-AS GTS Polska Sp. Z o.o.	2	212	0.10%
5578	GTS-SK-AS GTS Nextra a.s.	4	105	15.59%

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2819	GTSCZ GTS NOVERA (GTS CZ)	3	269	11.11%
3225	GULFNET-KUWAIT Gulfnet Kuwait	2	145	16.37%
16527	GVTCINTERNET - Guadalupe Valley Telephone Co-op, Inc.	1	349	13.68%
24608	H3G-AS H3G Italy Autonomous System	1	2	25.57%
25255	H3G-AUSTRIA-AS Hutchison 3G Austria GmbH	1	8	30.90%
18359	H3GA-AP Hutchison 3G Australia	1	9	16.79%
21327	H3GUK Hutchison 3G UK core network autonomous system	3	82	24.42%
15935	HA-VEL-LOCAL-AS ha-vel internet spol. S r.o.	1	2	16.41%
9318	HANARO-AS Hanaro Telecom Inc.	2	175	34.54%
13184	HANSENET HanseNet Telekommunikation GmbH	148	10965	6.13%
17488	HATHWAY-NET-AP Hathway IP Over Cable Internet	10	331	17.16%
3329	Hellas Online SA	3	525	16.88%
44034	HI3G Hi3G Access AB	1	1	25.22%
3462	HINET Data Communication Business Group	2	179	27.83%
4760	HKTIMS-AP PCCW Limited	7	1394	9.84%
16097	HLKOMM HL komm Telekommunikations GmbH	6	453	14.90%
28719	HMFES OJSC <i>Uralsviazinform</i>	1	1	21.19%
39618	HOMELINK Homelink Company	2	387	6.78%
71	HP-INTERNET-AS Hewlett-Packard Company	1	96	14.15%
20875	HPTNET-AS HT d.o.o. Mostar	1	126	5.15%
5483	HTC-AS Hungarian Telecom	3	252	18.44%
21565	HTCC - HTC Communications, LLC	1	195	10.38%
13045	HTP-AS Autonomous System for htp	3	872	12.12%
20542	HTV Helsinki Televisio Oy	5	293	16.14%
9304	HUTCHISON-AS-AP Hutchison Global Communications	1	14	30.57%
29802	HVC-AS - HIVELOCITY VENTURES CORP	1	1296	2.21%
39852	IBAHN-EUROPE iBAHN-Europe Public AS	1	39	11.94%
15732	IBERBANDA-SPAIN Iberbanda AS for Spanish operations	1	510	20.25%
13124	IBGC IBGC Autonomous system of Inter-Bg-Com Ltd.	1	50	11.37%
25441	IBIS-AS Irish Broadband Internet Services Ltd.	2	405	1.21%
3855	IBL-LYNX - Internet Bermuda Limited	1	277	9.09%
16191	ICANET-AS ICA-NET S.r.l.	1	637	15.40%
32453	ICANETWORK - ICA Canada On-Line Inc.	1	279	3.37%
7805	ICD - ICD Inc.	1	70	46.95%
6677	ICENET-AS1 *****	1	53	0.85%
8613	ICM-NETSERV-UK-AS ICM NetServ Internet Network AS	1	31	21.73%
4595	ICNET - ICNet/Innovative Concepts	1	213	15.30%
13110	ICP-AS Internet Cable Provider network	2	35	11.22%
1547	IDK-NETWORK Multihomed AS in Tiraspol, Moldova.	2	126	2.52%

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12496	IDNET IDNET Autonomous System	2	130	14.01%
2110	IEUNET Esat Net backbone AS Number	9	346	5.12%
32703	IFN-NET – Indiana Fiber Network, LLC	1	3	4.05%
18747	IFX-NW – IFX Communication Ventures, Inc.	2	582	20.05%
34143	IHOME-AS iHome, Kiev, Ukraine	1	1	16.14%
40022	IN-LAFA-4NOC – FOREPOINT NETWORKS LLC	1	38	12.69%
12524	INDEX Autonomous System	1	147	10.84%
4761	INDOSAT-INP-AP INDOSAT Internet Network Provider	2	34	6.06%
34979	INET-EXPERT-SOLUTIONS-AS iNet Expert Solutions SRL	2	106	24.62%
37995	INFOAGE-AS-MY Infoage Technology Sdn Bhd, Internet Service Provi	1	197	10.33%
34892	INFOLINK-AS Infolink Autonomous System	1	1	27.14%
15083	INFOLINK-MIA-US – Infolink Information Services Inc.	2	12	12.77%
9188	INFOSERVE-AS infoServe GmbH	1	3	2.17%
28760	INFOTECH-AT-AS Infotech EDV-Systeme GmbH, Austria	1	114	11.13%
29468	INFRACOM Infracom AB	1	23	15.63%
22302	INOC – INOC, LLC	2	260	8.80%
8514	INODE inode Telekommunikationsdienstleistungs GmbH	5	819	7.02%
2386	INS-AS – AT&T Data Communications Services	3	55	8.00%
5056	INS-NET-2 – Iowa Network Services	1	292	1.64%
36727	INSIGHT-COMMUNICATIONS-CORP-AS1 – INSIGHT COMMUNICATIONS COMPANY	14	1179	25.96%
11830	Instituto Costarricense de Electricidad y Telecom.	3	443	2.46%
34351	INTER-TELECOM-AS Autonomous System of Inter-Telecom Ltd.	1	2	8.81%
7456	INTERHOP – Interhop Network SERVICES Inc.	2	231	15.90%
13790	INTERNAP-BLK3 – Internap Network Services	1	4	33.33%
22689	Internet By Sercomtel Ltda	1	97	8.60%
21826	Internet Cable Plus C. A.	3	537	37.01%
12741	INTERNETIA-AS Netia SA	17	1122	5.43%
9443	INTERNETPRIMUS-AS-AP Primus Telecommunications	2	170	2.17%
18678	INTERNEXA S.A. E.S.P	1	1	23.22%
8928	INTERROUTE Interoute Communications Ltd	2	147	2.10%
38929	INTEXPRIM-AS SC Intex Prim SRL	1	34	12.85%
9031	INTICONET intico.net	1	64	9.03%
8696	INVITEL INVITEL Telecommunications	2	31	10.63%
9299	IPG-AS-AP Philippine Long Distance Telephone Company	17	1471	5.33%



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29545	IPLACE iPlace Internet & Network Services GmbH	1	113	0.37%
12284	IPNS-AS - Internet Professionals & Network Solutions	1	10	20.41%
12552	IPO-EU IP-Only	3	266	14.01%
18207	IQARA-INDIA-AP Iqara Telecom India Pvt Ltd.	3	129	9.40%
35632	IRIS64-AS IRIS64	1	1	23.14%
3741	IS	4	201	0.07%
8622	ISIONUK Formerly NetDirect Internet Ltd	2	950	16.73%
18530	ISOMEDIA-1 - Isomedia Inc.	1	22	28.42%
23702	ISPONE-AU-AS ispONE Pty Ltd, Wholesale Telecommunications	4	1878	19.67%
35366	ISPPRO-AS ISPpro Internet KG	3	31	10.89%
30976	IT4WEB IT4WEB S.R.L.	1	90	13.89%
31706	ITALYCOM I-NetCom s.a.s.	1	452	10.75%
35753	ITC ITC AS number	1	2	1.07%
6983	ITCDELTA - ITC_Deltacom	1	47	10.58%
9070	ITD ITD Network Bulgarian ISP	1	6	10.21%
786	JANET The JANET IP Service	1	43	8.49%
12715	JAZZNET Jazz Telecom S.A.	26	4584	10.11%
35388	JEEL-AS Arabic Computer System Co.	1	13	38.67%
8681	JERSEY-TELECOM-AS Jersey Telecom Island Network	2	68	12.78%
5723	JHU - Johns Hopkins University	2	294	3.59%
7616	JINET-BKK-AS-AP Jasmine Internet Co, Ltd.	1	10	0.46%
23671	JMN-ID-AP PT.JogjaMediaNet	1	1	18.57%
2497	JPNIC-ASBLOCK-AP JPNIC	1	391	14.93%
2510	JPNIC-ASBLOCK-AP JPNIC	5	1545	7.15%
17676	JPNIC-JP-ASN-BLOCK Japan Network Information Center	5	655	14.62%
17506	JPNIC-JP-ASN-BLOCK Japan Network Information Center	1	65	1.83%
8697	JTC-AS8697 Jordan Telecom	1	18	24.00%
29562	KABELBW-ASN Kabel Baden-Wuerttemberg GmbH & Co. KG	16	2046	12.19%
31334	KABELDEUTSCHLAND-AS Kabel Deutschland Breitband Service GmbH	52	3491	10.01%
15435	KABELFOON CAIW Autonomous System	4	167	17.75%
8339	KABSI-AS Kabelsignal AG	4	247	9.67%
1781	KAIST-DAEJEON-AS-KR Korea Advanced Institute of Science and Tech	1	2	16.80%
9198	KAZTELECOM-AS Kazakhtelecom Corporate Sales Administration	1	12	6.78%
2516	KDDI KDDI CORPORATION	1	163	2.73%
44566	KDS-KABELNET KDS KabelNet BROADBAND Network	1	19	8.74%
31103	KEYWEB-AS Keyweb AG	4	58	2.47%
25295	KIELNET-AS KielNET Gesellschaft fuer Kommunikation mbH	1	49	13.06%
4766	KIXS-AS-KR Korea Telecom	6	1073	10.11%

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35244	KMS-DE AS AS for KMS Munich	2	41	1.95%
12083	KNOLOGY-NET – Knology Holdings	4	302	14.49%
20825	KNRW Unitymedia NRW GmbH, (Formerly KNRW)	18	1091	4.24%
286	KPN KPN Internet Backbone AS	5	1054	5.73%
13170	KPO-AS Kajaanin Puhelinosuuskunta	2	13	2.02%
15895	KSNET-AS Kyivstar GSM	1	1	11.18%
2701	KSU-NET – Kansas State University	1	92	11.54%
29170	KUJTESA-AS Kujtesa, ISP, located in Prishtina	1	20	3.61%
10021	KVH KVH Co.,Ltd	1	2	0.32%
35369	LAGIS-AS lagis Internet Serviceprovider GmbH	1	16	2.15%
14638	LCPR-HSD – Liberty Cablevision of Puerto Rico LTD	2	78	18.17%
15557	LDCOMNET NEUF CEGETEL (formerly LDCOM NETWORKS)	75	5777	5.97%
41275	LEALTA-AS Lealta Ltd	1	1	6.34%
3356	LEVEL3 Level 3 Communications	8	413	11.11%
24863	LINKdotNET-AS	19	2786	12.68%
3327	LINXTELECOM Linxtelecom Autonomous System	1	389	16.88%
2847	LITNET LITNET, Lithuanian Academic and Research Network	1	9	23.51%
34001	LIVAS-NET-AS Used by LIVAS NET LLC, Riga ,Latvia. Peering with	2	402	14.79%
12605	LIWEST-AT LIWEST Kabelmedien GmbH	9	397	17.41%
32867	LLI-BLK1 – Long Lines Internet	1	81	14.68%
7271	LOOKAS – Look Communications Inc.	3	803	13.73%
1657	LOUISVILLE – University of Louisville	1	5	16.67%
15419	LRTC-AS SC LRTC Internet services	5	242	1.73%
25899	LSNET – LS Networks	1	20	33.09%
8632	Luxembourg Online S.A.	2	217	1.46%
24651	LVBALTICOM-AS <i>Balticom</i> JSC	2	112	11.18%
7911	LVLT-7911 – Level 3 Communications, Inc.	1	96	28.88%
43310	LVS-AS TOV LVS	1	197	13.30%
29695	LYSE-AS Lyse Tele AS	3	246	9.02%
13276	MAGENTA Nebula Internet international operations AS	1	29	8.22%
9506	MAGIX-SG-AP Magix Broadband Network	8	618	20.43%
15031	MAGMA-AS15031 – Magma Communications Ltd.	1	267	6.95%
34245	MAGNET-AS Magnet Networks AS	2	234	11.08%
8401	MAILBOX Mailbox Internet UK Network	4	204	8.54%
7057	MANAGEDNETWORK – Managed Network Systems Inc.	1	9	3.14%
8365	MANDA MANDA	1	13	1.90%
18822	Manquehuenet	1	82	15.62%
13122	MANX-AS MANX-TELECOM Autonomous System	2	8	8.33%
33929	MASICOM-AS Ljubljanski kabel telekomunikacijske storitve d.d.	1	115	8.28%

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4661	MASKCOM-PK-AS-AP Maskatiya Communications (Pvt) Ltd	1	102	16.91%
23889	MAURITIUS-TELECOM-AS-AP	1	56	0.22%
9534	MAXIS-AS1-AP Binariang Berhad	2	91	17.81%
17049	MBO-NET - MBO Video	3	329	17.03%
5396	MC-link Spa	1	128	25.18%
32744	MCCC - Montgomery County Community College	1	7	11.17%
15318	MCGILL-AS - McGill University	1	12	15.47%
2830	MCI-DUAL-HOMED-CUSTOMERS MCI Dual-Homed customers	1	2	6.15%
7228	MCLEOD - McLeod, Inc.	2	189	1.14%
8629	MCNTT-AS MCNTT Autonomous System	1	77	1.52%
12112	MCTCNET-NET - HickoryTech Corporation	1	28	9.49%
15206	MDSG-PACWEST - Pac-West Telecomm, INC.	1	2	72.26%
7776	MEBT7776 - Mebtel Communications	1	692	9.07%
34169	MEDIA-COM-TYCHY Media-Com Network	1	25	9.16%
39005	MEDIALYS MEDI@LYS	2	759	10.04%
21351	MEDIASERV-AS Mediaserv ISP autonomous System for peering agreeme	1	351	5.35%
13999	MegaCable SA de CV	8	506	13.32%
41557	MEGANET-AS Meganet	1	12	15.56%
4565	MEGAPATH2-US - MegaPath Networks Inc.	1	36	2.22%
22381	Megatelecom Telecomunicoes S/A	1	6	7.89%
12709	MELITACABLE Melita Cable plc	6	385	25.12%
39613	MELT MELT limited liability company	1	40	3.58%
237	MERIT-AS-14 - Merit Network Inc.	1	4	3.23%
2518	MESH C&C Internet Service mesh(NEC Corporation)	5	2152	10.64%
32448	METROCAST-1 - MetroCast Cablevision of New Hampshire, LLC.	1	98	3.40%
13591	MetroRED Telecom Services	1	13	6.93%
31133	MF-MGSM-AS OJSC MegaFon Network	1	1	23.66%
6461	MFNX MFN - Metromedia Fiber Network	2	112	6.87%
22968	MIAMI-UNIVERSITY - Miami University	1	21	8.29%
26205	MIC-MARCO - MARCO ISLAND CABLE INC	1	41	33.99%
11232	MIDCO-NET - Midcontinent Media, Inc.	4	467	19.69%
23292	MILLENIUM-DIGITAL - Millenium Digital Media	5	261	11.25%
35584	MILLENNIUM-IT-AS Asociata Millennium IT	1	28	14.63%
15765	MIMER Tafjord Mimer AS	1	82	72.67%
25394	MK-NETZDIENSTE-AS AS for MK Netzdienste GmbH & Co. KG	1	3	21.23%
8767	MNET-AS M-net AS	4	515	17.08%
24709	MNI MNI S.A. IP Backbone (former PT Szeptel S.A.)	1	3	13.64%
19366	MNS - Managed Network Solutions	1	208	17.86%
12302	MobiFon S.A.	1	32	0.17%
4773	MOBILEONELTD-AS-AP MobileOne Ltd. Mobile/Cellular Service Provid	1	2	2.38%
8926	MOLDTELECOM-AS Moldtelecom Autonomous System	2	3	4.56%

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41272	MOSELLE-TELECOM-AS MOSELLE TELECOM	2	115	15.30%
4804	MPX-AS Microplex PTY LTD	43	3658	9.25%
10546	MSSTATE – Mississippi State University	1	3	36.71%
20135	MTL-19 – Millennium Telcom LLC	1	130	20.53%
20294	MTN-UGA MTN Uganda	1	28	19.05%
14366	MTNCABLE – Moutain Cablevision	2	513	7.67%
17813	MTNL-AP Mahanagar Telephone Nigam Ltd.	8	821	9.75%
684	MTSAL-ASN – MTS Allstream Inc.	9	1310	12.06%
17627	MTT-AS-AP Dialog Broadband Networks (Pvt.) Ltd.	1	43	22.50%
21021	MULTIMEDIA-AS Multimedia Polska Sp.z o.o.	7	190	13.69%
41349	MVMTECH-AS Limited Liability Company MVM Technology	1	148	11.34%
14530	MYC-NET – Cybernet Communications Inc.	1	4	7.25%
638916430	n/a	1	9	59.13%
2096121021	n/a	1	2	35.68%
39785	n/a	1	58	35.11%
15962	n/a	2	53	32.48%
35549	n/a	1	2	27.32%
8326	n/a	1	78	27.17%
38444	n/a	2	68	26.98%
35328	n/a	1	5	25.58%
1717533770	n/a	1	12	24.91%
22833	n/a	1	4	22.94%
632716796	n/a	1	1	21.84%
36898	n/a	1	18	20.13%
8382	n/a	1	19	18.82%
25405	n/a	1	174	17.21%
12390	n/a	6	508	16.95%
7015	n/a	75	8757	16.54%
6003112	n/a	1	2	16.13%
5511	n/a	1	15	15.47%
30689	n/a	2	7	15.06%
15857	n/a	4	266	13.65%
33489	n/a	4	382	13.45%
2045936996	n/a	1	428	12.16%
35215	n/a	1	23	11.57%
2119	n/a	53	4695	11.20%
4364	n/a	1	362	11.11%
647833668	n/a	2	205	11.11%
1152532703	n/a	1	13	10.72%
34070	n/a	1	9	10.61%
1213	n/a	1	63	10.48%
500633692	n/a	1	353	10.47%
26333	n/a	1	2	9.63%
2021422909	n/a	2	8	9.38%
6713	n/a	11	801	8.64%

<b>ASN</b>	<b>Network Operator</b>	<b>Unique users</b>	<b>Hours</b>	<b>Median Reset Rate</b>
3605	n/a	1	109	8.31%
215211164	n/a	3	46	7.78%
33902	n/a	1	444	5.17%
8359	n/a	10	802	4.76%
35047	n/a	1	1	4.11%
34513	n/a	1	29	3.77%
2102130824	n/a	1	34	3.44%
178515270	n/a	1	16	3.20%
915529357	n/a	1	110	1.65%
6821	n/a	1	5	1.26%
25036	n/a	1	1	0.70%
35706	NAO Net at Once	2	50	1.16%
8308	NASK-COMMERCIAL NASK	1	42	0.44%
18371	NCABLE-AP Neighborhood Cable	1	363	0.89%
81	NCREN – MCNC	3	87	11.86%
15560	NCS-AS NCS	1	38	13.41%
11060	NEO-RR-COM – Road Runner HoldCo LLC	15	1747	10.17%
28964	NEOBEE-AS Autonomous System ISP Neobee.net	2	326	32.15%
9902	NEOCOMISP-KH-AP NEOCOMISP LIMITED, Transit AS Content Service Pr	1	28	80.70%
34772	NEOTEL-AS-MK NEOTEL-MKD Autonomous System	1	24	10.21%
28590	Neovia Telecomunicacoes S.A.	1	454	6.61%
28573	NET Servicos de Comunicacao S.A.	77	5518	10.38%
8001	NET-ACCESS-CORP – Net Access Corporation	3	233	0.05%
11809	NET-ERAU-PRC – Embry-Riddle University	1	23	20.00%
14112	NET-SECURENET-MTL – SecureNet Information Services Inc.	1	2	5.41%
31246	NETBOX-AS NETBOX Autonomous system	1	1	0.77%
8422	NETCOLOGNE NETCOLOGNE AS	26	3194	4.98%
4786	NETCONNECT-AS Chariot Ltd	2	439	15.83%
34133	NETIT-AS NetIT Internet Solutions in Sweden AB	1	56	10.48%
20579	NETLABPLUS Netlab plus, spol. S r. o.	1	24	16.47%
9142	Netline UK Ltd	1	20	23.66%
9151	NETONE-GR Net One SA Autonomous System	3	33	11.69%
15444	NETSERVICES Netservices Plc	1	66	10.18%
4854	NETSPACE-AS-AP Netspace Online Systems	6	862	10.07%
18111	NETSPEED-AS-AP Netspeed Internet Communications	1	229	2.84%
42153	NETTEL-AS NETTEL INWESTYCJE AS Number	1	21	2.94%
1680	NetVision Ltd.	7	446	14.06%
16399	NETWORKGCI – Globalcom	1	28	18.22%
34569	NETWORX-BG Networx-BG Ltd.	1	2	57.01%
15594	NETZQUADRAT AS operated by [netzquadrat] GmbH, Germany for ISP s	2	45	0.08%
27734	New Technologies Group N.V.	1	689	11.01%
11844	Newsite Informatica Ltda	1	11	22.67%

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13208	NEWTELSOLUTIONS-AS Newtel Ltd	3	370	3.34%
18812	NEWWAVECOMM - New Wave Communications	2	116	27.89%
11666	NEXICOM-CA - Nexicom Inc.	2	419	1.26%
15659	NEXTGENTEL NEXTGENTEL Autonomous System	8	943	10.17%
25163	NG-NIGERIA-AS	1	16	45.70%
35612	NGI-AS NGI Spa	7	999	4.38%
39501	NGSAS Neda Gostar Saba Data Transfer Company Private Joint	2	290	1.22%
26234	NIBBLE - Nibble Information Systems Inc.	1	3	14.37%
24277	NIRAI Okinawa Cable Network Co.,Ltd	1	87	4.63%
24587	NL-IO Autonomous System for Internet Online BV	1	79	12.40%
12414	NL-SOLCON SOLCON-NL	2	3	19.48%
33681	NNFIBER - NN-FIBERNET LLC	1	1	4.16%
16713	NOANET-WA - Northwest Open Access Network	1	132	18.11%
15475	NOL	5	263	15.33%
8362	NordNet Autonomous System	2	4	20.85%
7099	NORTELCH - NORTEL	1	218	20.24%
12305	NORTENET NORTENET- Sistemas de Comunicacao SA.	2	60	6.69%
40285	NORTHLAND-CABLE - NORTHLAND CABLE TELEVISION INC.	4	124	4.85%
3680	NOVELL-AUSTRALIA Novell is connected to ATT&T in Sydney	1	1	19.18%
24789	NOVGORODTELECOM-AS AS Velikij Novgorod and Novgorod Area	1	229	3.59%
2860	NOVIS Novis Telecom, S.A.	34	911	5.50%
40029	NOVUS-3 - Novus Entertainment Inc.	2	83	16.62%
25994	NPG-001 - NPG Cable, INC	1	151	16.15%
7795	NTELOSINC - Ntelos Inc.	3	400	0.99%
5089	NTL NTL Group Limited	130	12722	10.61%
13693	NTS-ONLINE - NTS Communications	1	9	22.22%
2914	NTT-COMMUNICATIONS-2914 - NTT America, Inc.	1	291	2.02%
25500	NTUU-KPI-AS National Technical University of Ukraine	1	24	2.30%
11456	NUVOX - NuVox Communications, Inc.	4	146	33.13%
31410	NWC-AS Network Communications Ltd.	1	45	0.51%
42893	NWLINK-AS Nord-West Link NP	1	76	16.30%
4771	NZTELECOM Netgate	9	497	14.09%
13280	O2 Ireland	1	2	8.53%
39706	O2-GERMANY-AS o2 Germany	1	5	6.48%
600	OARNET-AS - OARnet	1	58	18.99%
3112	OARNET-AS-1 - OARnet	1	315	6.47%
10838	OCEANIC-INTERNET-RR - Oceanic Internet	5	685	5.37%
39225	OMEGALINK-AS SC Omega Link SRL	1	151	7.41%
12708	ONETEL-AS One.Tel ISP operations	3	137	18.01%
6739	ONO-AS Cableuropa - ONO	44	2329	10.00%

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41920	ONTELECOMS-AS ON S.A.	4	1584	1.67%
9313	ONTHENET-AS Network Technology (AUST) P/L	1	4	6.80%
25636	ONTL-2002 - ONTel	2	296	11.20%
13285	OPALTELECOM-AS Opal Telecom	69	4269	9.65%
21182	OPOLMAN-AS-EDU AS dedicated to educational part of MAN network,	3	474	7.37%
12375	OPOY-AS Oulu Telephone Company,Finland	4	249	7.96%
18200	OPT-NC-AS-AP Office des Postes et Telecommunications New-Caledon	2	122	0.18%
24698	OPTIMUS-AS Optimus Portugal	2	16	1.44%
41900	ORACLE-AS Oracle Investments Group	2	108	5.75%
12576	ORANGE-PCS Orange PCS Limited	1	2	22.35%
28708	ORANGEFR-PORTAL-AS Orange France	1	8	12.71%
13489	ORBITEL S.A. E.S.P.	1	2	30.47%
17746	ORCONINTERNET-NZ-AP Orcon Internet	5	321	14.71%
15747	OSNATEL osnatel GmbH	4	286	26.60%
38987	OST-AS Okregowa Spoldzielnia Telefoniczna w Tyczynie	1	12	61.06%
6799	OTENET-GR OTEnet S.A. Multiprotocol Backbone & ISP	33	4016	6.01%
16276	OVH OVH	3	23	0.72%
33885	OWNIT Ownit Broadband AB	2	175	11.36%
34201	PADICOM SC PADICOM SOLUTIONS SRL	1	1	27.63%
12975	PALTEL-AS PALTEL Autonomous System	2	35	4.97%
12361	PANAFONET-AS PanafonNet AS	1	7	0.54%
16322	PARSONLINE PARSONLINE Autonomous System	2	111	14.81%
11342	PATHWAY - Pathway Communications	1	40	19.94%
36377	PATRIOT-MEDIA-NJ - PATRIOT MEDIA AND COMMUNICATIONS, LLC	3	568	17.68%
6615	PCIS - Kelly Consultants	1	1	27.87%
7832	PCISYS - WW/Precision Communication	1	375	9.09%
43200	PCSUPPORT PCSUPPORT Autonomous System	1	45	11.66%
13409	PDX - PORTLAND INTERNETWORKS	3	284	8.03%
6366	PDXNET - Portland State University	1	9	1.27%
3999	PENN-STATE - The Pennsylvania State University	2	7	11.81%
20343	PEPPERDINE - Pepperdine University	1	12	12.39%
23184	PERSONA - PERSONA COMMUNICATIONS INC.	2	85	14.75%
15782	PERSPEKTIV-AS Perspektiv Bredband AB	1	3	24.56%
9875	PESAT1-AS-AP PT. Pasifik Satelit Nusantara	1	15	8.93%
15501	PHNET PHNet Internet Services	1	430	2.58%
18229	PIONEER-AS-IN Pioneer Online Pvt. Ltd.	1	2	8.25%
38289	PIVIT-AS-AU-AP Last Mile Link Telecommunications Network	1	7	8.11%
17557	PKTELECOM-AS-AP Pakistan Telecom	4	115	16.84%
6871	PLUSNET PlusNet PLC	17	2389	14.64%
8972	PLUSSERVER-AS PlusServer AG, Germany	2	17	10.33%
11242	POP-SC - Po	1	6	8.12%

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32829	PORT-NETWORKS-BALTIMORE – Port Networks, LLC	1	3	7.69%
20412	PRAIR-2 – PrairieWave Telecommunications, Inc.	1	382	8.56%
10481	Prima S.A.	2	46	15.49%
16202	PRIMACOM-AS Primacom AG	5	153	3.89%
12332	PRIMORYE-AS Far East Telecommunications Company	1	80	4.20%
6407	PRIMUS-AS6407 – Primus Telecommunications Canada Inc.	3	197	10.87%
15742	PRIVATONLINE Private Online Autonomous System	1	1	0.01%
35274	PRONET-AS PRONET, Lublin, Poland	3	41	13.26%
12322	PROXAD AS for Proxad/Free ISP	105	8547	7.00%
29005	PROXIMUS-AS Belgacom Mobile SA	1	10	1.00%
8737	PT KPN Internet Solutions	29	2330	9.41%
3737	PTD-AS – PenTeleData Inc.	4	253	13.98%
12743	PTK-CENTERTEL PTK Centertel Autonomous System	4	80	2.74%
8781	QA-ISP Qatar Telecom (Q-Tel)	7	583	1.15%
8608	QINIP XB Networks B.V.	10	1591	3.41%
20676	QSC-1 QSC AG	12	777	11.03%
9155	QualityNet AS number	5	195	9.08%
8341	QUICKNET MultiKabel QuickNet Netherlands	2	113	1.30%
3909	QWEST-AS-3908 – Qwest Communications Corporation	4	654	18.72%
13036	RadioMobil Autonomous system	1	2	8.81%
8564	Raiffeisen Verband Suedtirol	1	2	13.64%
39744	RAKNET-AS SC Raknet Soft SRL	1	5	25.17%
6580	RAPIDNET-ASN – RapidNet LLC	1	5	14.59%
11290	RAPIDUS – COGECO Cable Canada Inc.	4	236	12.97%
31549	RASANA Aria Rasana Tadbir	2	55	45.45%
24835	RAYA-AS	4	191	13.25%
1930	RCCN RCCN-NET	1	437	0.59%
6079	RCN-AS – RCN Corporation	13	1735	13.64%
10715	RCT-SC – Rede Catarinense de Ciencia eTecnologia	1	14	24.29%
8708	RDSNET RCS & RDS S.A.	21	1061	10.92%
11340	Red Universitaria Nacional	1	36	18.00%
19182	Rede Ajato Ltda	2	324	14.35%
766	REDIRIS RedIRIS Autonomous System	1	9	9.76%
2602	RESTENA Reseau Teleinformatique de l_Education Nationale	1	427	0.88%
18101	RIL-IDC Reliance Infocom Ltd Internet Data Centre,	14	896	10.45%
376	RISQ-AS – Reseau Interordinateurs Scientifique Quebecois (RISQ)	3	82	29.56%



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4385	RIT-ASN - Rochester Institute of Technology	2	38	11.46%
20231	ROADRUNNER-CENTRAL - Road Runner HoldCo LLC	7	734	9.25%
20001	ROADRUNNER-WEST - Road Runner HoldCo LLC	44	4850	10.68%
812	ROGERS-CABLE - Rogers Cable Communications Inc.	114	10109	13.07%
2854	ROSPRINT-AS & Equant Russia AS	1	22	0.01%
91	RPI-AS - Rennselaer Polytechnic Institute	1	247	5.26%
12262	RR-CINCINNATI-ASN-01 - Road Runner HoldCo LLC	10	974	8.07%
11351	RR-NYSREGION-ASN-01 - Road Runner HoldCo LLC	32	4399	11.42%
8342	RTCOMM-AS RTComm.RU Autonomous System	1	103	9.58%
9050	RTD RTD-ROMTELECOM Autonomous System Number	14	407	14.74%
3239	RU-SURNET Uralsvyazinform, Chelyabinsk branch	1	7	3.91%
13319	S-I-S - Storm Internet Services	4	131	13.34%
41176	SAHARANET-AS Sahara Net Main NOC AS	1	40	12.11%
5713	SAIX-NET	5	135	0.32%
34726	SALTAR Saltar Telecom	1	2	1.47%
15500	Samara Telegraph	1	15	11.80%
36423	SAN-JUAN-CABLE - San Juan Cable, LLC	2	370	13.63%
2607	SANET Slovak Academic Network	3	140	9.36%
803	SASKTEL - SaskTel	16	1867	7.78%
14522	Satnet	1	11	40.10%
42563	SATTEL SatTel Telecommunications	1	1	6.19%
25019	SAUDINETSTC-AS Autonomus System Number for SaudiNet	22	2456	9.49%
3561	SAVVIS - Savvis	1	1	1.58%
7132	SBIS-AS - AT&T Internet Services	282	34718	11.17%
3304	SCARLET Scarlet Belgium	4	299	11.05%
29587	SCHEDOM-AS schedom-europe.net autonomous system	3	393	4.91%
41824	SCNETCZ AS number of Losan s.r.o.	1	2	25.42%
10311	SCRR-10311 - Road Runner HoldCo LLC	8	769	13.16%
10796	SCRR-10796 - Road Runner HoldCo LLC	49	5677	7.78%
11426	SCRR-11426 - Road Runner HoldCo LLC	40	4220	10.81%
11427	SCRR-11427 - Road Runner HoldCo LLC	52	8201	11.57%
11955	SCRR-11955 - Road Runner HoldCo LLC	16	1942	13.32%
12271	SCRR-12271 - Road Runner HoldCo LLC	39	4354	10.76%
13343	SCRR-13343 - Road Runner HoldCo LLC	18	1970	10.89%
7017	SCRR-7015 - Road Runner HoldCo LLC	6	740	11.22%
10091	SCV-AS-AP SCV Broadband Access Provider	18	3226	8.84%
4780	SEEDNET Digital United Inc.	2	107	5.85%
11647	SENTEX-NET - Sentex Communications Corporation	1	229	12.86%
31042	SERBIA-BROADBAND-AS Serbia Broadband Autonomous system	6	353	16.70%
11816	SetarNet	1	32	30.22%

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35013	SEVKAZNA-AS Severnaya Kazna Bank	1	358	9.44%
9125	SEZAMPRO-AS PCS – SezamPro On-Line d.o.o.	2	56	13.86%
29372	SFR-NETWORK SFR	1	10	1.03%
6327	SHAW – Shaw Communications Inc.	119	16596	10.64%
7654	SIAMGLOBE-AS-AP Internet Service Provider Co., Ltd.	1	215	18.06%
41440	SIBIRTELECOM-AS Sibirtelecom backbone AS	1	1	9.16%
9583	SIFY-AS-IN Sify Limited	1	11	18.89%
12026	SIGECOM – SIGECOM, LLC.	1	233	48.11%
3248	SIL-AT SILVER SERVER GmbH	1	94	21.14%
30851	SILEMAN-RUDASL-AS Slaska Grupa Multimedialna – Infrastruktura sp	2	251	17.11%
26622	SIM TELECOMUNICACOES LTDA	1	1	3.67%
34781	SIMA-LAUSANNE-AS Service Multimedia – SI – Ville de lausanne	1	150	1.19%
19381	SIMPLY-BITS-LLC – Simply Bits, LLC	1	37	9.78%
25272	SINSTELECOM-AS Autonomous System for IKAR INVEST (SINSTELECOM NE	1	543	12.19%
5603	SIOL-NET Telekom Slovenije d.d.	1	135	3.30%
10617	SION S.A	1	1	64.41%
10943	SIRIUS-SYSTEMS – SIRIUS SYSTEMS GROUP INC	1	121	1.87%
18230	SIRIUSBK-DKB-AS-AP Sirius Broadband (BD) Limited DKB AS number	1	70	4.81%
6855	SK SLOVAK TELECOM, AS6855	13	955	11.84%
31291	SKKNET-AS SKKNET LTD	1	14	20.60%
23118	SKYBEST – Skyline Telephone	2	26	21.81%
29518	SKYNET-AS Skycom Sweden	14	1178	13.22%
15805	SKYNET-CY-AS HTTP Planitis Communications Ltd	1	4	6.51%
8513	SKYVISION SkyVision Network Services	1	3	23.64%
29113	SLOANE-AS Sloane Park Property Trust, a.s. Autonomous System	5	361	1.31%
9329	SLTINT-AS-AP Sri Lanka Telecom Internet	12	452	22.34%
10139	SMARTBRO-PH-AP Smart Broadband, Inc.	9	1083	7.46%
37972	SMARTDIGITAL-AS-AP Smart Digital Communications BHD.	1	48	5.29%
31458	SMARTTELECOM-AS Smart Telecom Autonomous System	2	290	15.16%
5486	SMILE-ASN Euronet Digital Communications, (1992) LTD, Israel	3	597	8.13%
27781	SMITCOMS N.V.	1	57	0.36%
35138	SMN-AS S.C. Dynamic Net Solutions S.R.L.	1	97	24.67%
23655	SNAP-NZ-AS Snap Internet Limited	1	6	14.33%
9205	SNS-AS Satellite Service AS	1	555	9.24%
2527	SO-NET So-net Entertainment Corporation	1	188	3.22%
4581	SOCKET – Socket Internet Services Corporation	1	45	18.49%
9044	SOLNET SolNet Internet Solution Provider	3	344	9.58%

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8346	SONATEL-AS Autonomous System	1	22	13.47%
7065	SONOMA – Sonoma Interconnect	5	614	14.04%
17771	SOUTHONLINE-AS-AP Southern Online Services Limited	1	13	16.80%
10507	SPCS – Sprint Personal Communications Systems	8	778	10.17%
23504	SPEAKEASY – Speakeasy, Inc.	1	2	14.06%
15152	SPEEDFACTORY – Speed Factory	1	10	11.93%
42081	SPEEDY-NET-AS SPEEDY-NET Autonomous System Number	1	24	12.47%
18390	SPIN-INTERNET-AP Spin Internet Service	1	91	0.56%
6187	SPRINT-ZA	1	3	5.81%
1239	SPRINTLINK – Sprint	3	18	19.95%
1790	SPRINTLINK2 – Sprint Government Systems Division	1	90	15.03%
42428	SPSNET SPSNET Autonomous System Saudi Arabia	3	313	7.11%
7602	SPT-AS-VN Saigon Postel Corporation	1	26	20.87%
41491	STAKA-AS Stadtwerke Kapfenberg	1	2	17.59%
32	STANFORD – Stanford University	1	14	11.69%
33776	STARCOMMS-ASN	1	37	15.83%
4657	STARHUBINTERNET-AS Starhub Internet, Singapore	1	15	18.25%
13272	STARMAN Starman Internet AS	3	104	1.45%
42110	STK-AS JSC Sochitelecom_s AS	1	323	25.99%
6724	STRATO Strato AG	2	2	21.22%
42539	STYRION styrion Internet und eBusiness Services GmbH – AS	1	51	14.43%
15706	Sudatel	1	72	9.40%
19108	SUDDENLINK-COMMUNICATIONS – Suddenlink Communications	32	5384	11.35%
90	SUN-AS – Sun Microsystems, Inc.	1	331	20.63%
2711	SUNBELT-AS – Rock Hill Telephone Company	3	141	8.38%
2846	SUNET-LU	1	2	43.30%
12015	SUNFLOWER-CABLEVISION – Sunflower Broadband	2	135	12.94%
6730	SUNRISE sunrise (TDC Switzerland AG)	5	388	10.72%
5719	SUNYSB – SUNY at Stony Brook	1	110	3.67%
26596	SUPERCABLE TELECOMUNICACIONES	1	362	16.66%
9085	SUPERMEDIA-ASN Super Media Sp. Z o.o.	1	28	15.10%
20172	SUREWEST-20172 – SureWest Broadband	2	98	17.68%
1103	SURFNET-NL SURFnet, The Netherlands	2	42	20.64%
3303	SWISSCOM Swisscom Solutions Ltd	13	2190	12.73%
6280	SYNAPSE – Babillard Synapse Inc.	3	496	19.87%
15305	SYRINGANETWORKS – Syringa Networks, LLC	1	23	39.57%
34779	T-2-AS AS set propagated by T-2, d.o.o.	1	989	12.11%
5391	T-HT T-Com Croatia Internet network	10	3387	11.38%
21928	T-MOBILE-AS21928 – T-Mobile USA	2	145	11.91%

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35648	T-MOBILE-HR-AS T-Mobile Hrvatska Autonomous Number	2	60	15.82%
10994	TAMPA2-TWC-5 – Road Runner HoldCo LLC	14	889	15.66%
3794	TAMU – Texas A&M University	2	244	4.17%
28840	TATTELECOM-AS Tatttelecom.ru/Tatttelecom Autonomous System	1	73	17.73%
32277	TBAYTEL – Thunder Bay Telephone	1	4	3.86%
15166	TCNJ – The College of New Jersey	1	80	16.84%
3292	TDC TDC Data Networks	31	3186	8.22%
6805	TDDE-ASN1 Telefonica Deutschland Autonomous System	93	5455	3.60%
4181	TDS-AS – TDS TELECOM	4	507	11.14%
20255	Tecnowind S.A.	1	2	9.35%
8452	TEDATA TEDATA	35	2634	15.33%
34304	TEENTELECOM Telecom	1	5	0.77%
5645	TEKSAVVY – TekSavvy Solutions, Inc.	51	7198	12.48%
6306	Telcel, C.A	1	10	42.17%
19169	Telconet S.A	1	603	14.39%
1257	TELE2	61	4178	12.16%
12946	TELECABLE TELECABLE Autonomous System	1	137	12.27%
27747	Telecentro S.A.	3	213	15.89%
7303	Telecom Argentina S.A.	12	1043	19.98%
20459	TELECOM-NAMIBIA-AS	1	210	5.75%
5639	Telecommunication Services of Trinidad and Tobago	1	10	11.17%
27775	Telecommunicationcompany Suriname – TeleSur	1	62	8.33%
6320	TELECOMPLETE-AS Telecomplete Ltd, UK	1	46	7.55%
7738	Telecomunicacoes da Bahia S.A.	38	3166	10.84%
27699	TELECOMUNICACOES DE SAO PAULO S/A – TELESP	25	773	11.11%
41451	TELEDIS-AS TELEDIS AS	3	158	0.46%
22927	Telefonica de Argentina	11	978	13.43%
6147	Telefonica del Peru S.A.A.	4	107	10.61%
14117	Telefonica del Sur S.A.	1	89	3.45%
15311	Telefonica Empresas	1	95	8.50%
10429	Telefonica Empresas SA	3	529	20.39%
12127	Telefonica Moviles El Salvador S.A. de C.V.	1	1	0.14%
3352	TELEFONICA-DATA-ESPANA Internet Access Network of TDE	122	12860	9.78%
6332	Telefonos del Noroeste S.A. de C.V.	4	249	10.45%
8400	TELEKOM-AS TELEKOM SRBIJA a.d.	20	1715	11.00%
8447	TELEKOM-AT Telekom Austria AutonomousSystem	21	1429	5.70%
7137	TELEMATIX/ ENITEL	1	22	20.93%
21220	TELEMOBIL Telemobil S.A.	1	180	1.36%
6848	TELENET-AS Telenet Operaties N.V.	18	1454	6.42%
8786	TELENOR-MOBIL NO-TELENOR-MOBIL Autonomous System	3	101	6.39%

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8434	TELENOR-SE Telenor Sweden	2	129	16.99%
35776	TELEOS Teleos GmbH & Co.KG	1	6	20.31%
3243	TELEPAC PT.Com - Comunicacoes Interactivas, S.A.	24	1532	9.07%
5385	TELEPORT TELEPORT Consulting und Systemmanagement GmbH	1	2	9.73%
8167	TELESC - Telecomunicacoes de Santa Catarina SA	61	3892	17.43%
34244	TELESERVICE Teleservice Bredband Skane AB	1	10	13.44%
26599	Telesp Celular S.A.	2	384	4.63%
22085	Telet S.A.	1	35	16.76%
39887	TELEVIDEOCOM-AS TELEVIDEOCOM	1	266	4.15%
11888	Television Internacional S.A. de C.V.	3	389	19.98%
39301	TELEVORK-AS Televorgu AS	2	45	13.95%
8821	TELEZUG WWZ Telekom AG	1	16	1.23%
6458	Telgua	1	71	51.29%
3308	TELIANET-DENMARK TeliaNet Denmark	6	1124	7.41%
3301	TELIANET-SWEDEN TeliaNet Sweden	34	3413	9.63%
17974	TELKOMNET-AS2-AP PT Telekomunikasi Indonesia	7	361	22.18%
14080	Telmex Colombia S.A.	1	7	3.43%
34383	TELOISE-AS TELOISE	2	555	8.49%
12970	TENARIA Retena and Reterioja AS	5	379	9.76%
8764	TEOLTAB TEO LT AB Autonomous System	3	74	0.21%
7418	Terra Networks Chile S.A.	18	895	12.29%
39010	TERRANET-AS TerraNet sal	1	8	3.66%
5532	TERRANETMALTA Terranet Communications Limited	1	203	10.64%
24828	TESMEDIA-AS Karneval Media - non-transit network	1	40	4.75%
11457	TEXLINK - Tex-Link Communications, Inc.	1	158	19.11%
9924	TFN-TW Taiwan Fixed Network, Telco and Network Service Provider.	1	3	1.62%
36290	THECABLE-STKITTS-01 - The Cable of St. Kitts	1	2	20.41%
21844	THEPLANET-AS - THE PLANET	1	1	15.87%
12714	TI-AS NetByNet Holding	1	126	8.72%
12620	TICINOCOM Ticinocom SA	1	6	2.22%
7657	TIG-US-PAS-AP The Internet Group Limited	5	1845	15.15%
3302	TIPNET-ITALY Infracom Network Application S.p.A.	1	44	13.81%
3257	TISCALI-BACKBONE Tiscali Intl Network BV	3	517	14.77%
8612	TISCALI-IT Tiscali Italia SpA.	24	1453	10.71%
9105	TISCALI-UK Tiscali UK	54	6307	14.89%
5615	TISNL-BACKBONE Green ISP B.V.	23	2201	8.59%
30975	TKK Telewizja Kablowa Koszalin	1	5	1.43%
38951	TKT-AS JSC TKT	2	33	33.64%
20960	TKTELEKOM-AS Telekomunikacja Kolejowa is an ISP operating in Pol	5	317	5.41%

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39857	TKY-AS The Student Union of Helsinki University of Technology	1	45	10.93%
32571	TLSNET-A - tls.net	1	425	10.47%
8412	TMA T-Mobile Austria GmbH	2	35	9.25%
31405	TMD AS for T-Mobile Deutschland, GPRS/UMTS access and content pr	2	110	13.83%
5513	TMH T-Mobile Hungary Co. Ltd.	1	12	14.94%
4788	TMNET-AS-AP TM Net, Internet Service Provider	34	3295	16.80%
2609	TN-BB-AS Tunisia BackBone AS	8	1687	4.10%
13101	TNG-AS TNG - THE NET GENERATION AG	1	18	13.72%
41364	TOPIX-PDI-AS TOriNO Piemonte Internet eXchange	1	25	7.75%
42943	TOPNET TOPNET Internet Services	1	54	1.00%
12423	TORMAN Torun Regional Computer Network	1	51	3.79%
9737	TOTNET-TH-AS-AP Telephone Organization of Thailand	6	323	7.19%
26230	TOTTAWA - Telecom Ottawa Limited	1	1	33.71%
16342	Toya ,TV cable company located in PL( town Lodz).	2	270	15.24%
7545	TPG-INTERNET-AP TPG Internet Pty Ltd	25	3016	9.98%
5617	TPNET Polish Telecom_s commercial IP network	69	5288	5.86%
7718	TRANSACT-SDN-AS TransACT IP Service Provider	1	180	18.06%
21947	TRANSARIA - TransAria, Inc.	1	2	28.67%
27765	TRANSNEXA S.A. E.M.A.	1	7	14.88%
20485	TRANSTELECOM JSC Company TransTeleCom	1	144	6.85%
20161	TRGO - TeraGo Networks Inc.	1	3	4.43%
43998	TRKMETRO TRK Metro Ltd.	1	25	6.02%
36950	Tropcon	1	52	12.71%
5515	TS-FINLAND-DATANET-OLD TS Finland DataNet	17	2349	12.60%
18221	TSN-AP TSN Internet.com.au	1	108	3.23%
33765	TTCLDATA	1	213	7.87%
31094	TTKNET JSC _Uralsviazinform_, Tyumen branch	1	154	8.24%
9121	TTNET TTnet Autonomous System	4	262	2.22%
9930	TTNET-MY TIMEdotNet Berhad	3	151	21.92%
24326	TTT-AS-AP Maxnet, Internet Service Provider, Bangkok	4	1177	21.50%
10421	TTUNET - Texas Tech University	1	2	21.43%
1128	TUDELFT-NL DTO TUDELFT, The Netherlands - AS	1	49	11.74%
10620	TV Cable S.A.	9	238	6.81%
12542	TVCABO Autonomous System	16	994	16.62%
27262	TVCONNECT-AS - Thames Valley Communications, Inc.	1	108	9.06%
39349	TVKDIANA-AS Telewizja Kablowa Diana s.j.	2	223	0.69%
30923	TVKTORUN-AS CaTV Torun Network, Poland	1	61	47.27%
31513	TVTEL TVTEL - Grande Porto Comunicacoes SA	3	120	4.76%
38193	TWA-AS-AP Transworld (Pvt.) Ltd.	2	396	8.65%

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4323	TWTC – Time Warner Telecom, Inc.	5	117	10.93%
16110	UA-TRANSINFORM-AS ISP Centre Transinform AS	1	7	0.00%
25	UCB – University of California at Berkeley	1	60	12.84%
6192	UCDAVIS-CORE – University of California at Davis	1	1	8.32%
7377	UCSD – University of California at San Diego	1	254	2.17%
38	UIUC – University of Illinois	2	7	90.69%
13213	UK2NET-AS UK-2 Ltd Autonomous System	1	294	3.78%
6849	UKRTELNET JSC UKRTELECOM,	10	2376	8.55%
10437	UKY – University of Kentucky, Communication Services	1	9	18.49%
17001	UMANITOBA – University of Manitoba	2	21	14.23%
21497	UMC-AS UMC Autonomous System	2	54	2.47%
27	UMDNET – University of Maryland at College Park	2	334	17.99%
41435	UNDERNET-AS Private enterpriser Panchuk Evgeniy Viktorovich	1	7	31.40%
29396	UNET Unet Network, The Netherlands	1	74	6.80%
22594	UNI-NET-ASN – University of Northern Iowa	1	8	10.78%
12479	UNI2-AS Uni2 Autonomous System	27	2828	8.46%
8151	Uninet S.A. de C.V.	45	3712	12.60%
2586	UNINET-AS AS Uninet	2	615	10.15%
224	UNINETT UNINETT, The Norwegian University & Research Network	2	358	12.84%
32984	UNISERVE-INTER-NET – Uniserve On Line	2	83	12.10%
1706	UNIV-ARIZ – University of Arizona	2	36	1.03%
28571	Universidade de Sao Paulo – USP	1	1	5.31%
36786	UNIVERSITE-LAVAL – Universite Laval	1	36	14.64%
6360	UNIVHAWAII – University of Hawaii Data & Video Networks	1	3	2.58%
31323	UNNET-AS United Networks Co. Ltd. AS	1	381	22.34%
16284	UNSPECIFIED	1	3	19.24%
15804	UNSPECIFIED	3	158	2.28%
703	UNSPECIFIED UUNET	2	67	14.61%
589	UNT-CAMPUS-AS – University of North Texas	2	292	9.62%
31886	UOQUELPH – University of Guelph	1	2	18.38%
6830	UPC UPC Broadband	86	8654	11.15%
5786	UPRENET – University of Puerto Rico	1	164	14.89%
20	UR – University of Rochester	2	430	14.29%
25086	URALTC-AS UTC AUTONOMUS SYSTEM EKATERINBURG, RUSSIA	1	1	13.59%
10242	USINTERNET – US Internet Corp	1	305	21.61%
8437	UTA-AS UTA.AT Backbone	2	183	18.85%
17055	UTAH – University of Utah	1	21	23.53%
18	UTEXAS – University of Texas at Austin	1	5	18.24%
239	UTORONTO-AS – University of Toronto	3	108	8.15%
2873	UTVI-ASN UTV Internet Limited	3	368	31.84%

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701	UUNET – MCI Communications Services, Inc. d/b/a Verizon Business	3	119	34.65%
12093	UWATERLOO – University of Waterloo	2	22	19.06%
33999	VALIDIO-AS Validio Ukraine Autonomous System	1	359	7.08%
2519	VECTANT Global Solution K.K.	2	1279	41.19%
29314	VECTRANET-AS Vectra Technologie S.A. Autonomous System	5	284	38.00%
30407	VELCOM – Rcp.net	3	81	2.40%
23081	VENTURE-NOC – Venture Technologies	1	4	4.04%
13127	VERSATEL AS for the Trans-European Versatel IP Transport backbon	20	2225	11.63%
8881	VERSATEL Versatel Deutschland	39	4741	7.66%
39505	VESTITEL-AS Vestitel Trile Play Project AS	1	17	9.10%
18291	VFAU-NET-AS Vodafone Australia Public Autonomous System Number	1	1	14.16%
33874	VFM-AS Vodafone Malta AS	1	367	4.32%
5690	VIANET-NO – Via Computer and Communications (ViaNet)	3	409	7.62%
5769	VIDEOTRON – Videotron Telecom Ltee	35	3705	10.29%
7552	VIETEL-AS-AP Vietel Corporation	1	77	5.05%
24852	VINITA VINITA Internet Services	1	171	12.57%
8015	VISI-AS – Vector Internet Services, Inc.	1	267	5.60%
10835	VISIONARY – Visionary Communications, Inc.	1	130	19.56%
21284	VIVODI-AS Vivodi Telecommunications S.A	7	1902	16.18%
15527	VLP-VLT Autonomous System	5	1330	5.70%
29405	VNET-AS VNET ISP Bratislava, Slovakia, SK	1	34	9.13%
7643	VNN-AS-AP Vietnam Posts and Telecommunications (VNPT)	6	503	27.51%
29975	VODACOM-ZA	3	15	1.95%
12969	VODAFONE_ICELAND Backbone Autonomous System	3	263	10.84%
25135	VODAFONE_UK_ASN Vodafone UK Packet Backbone Network	2	68	10.62%
30722	VODAFONE-IT-ASN Vodafone N.V.	4	171	3.28%
12353	VODAFONE-PT Vodafone Portugal	3	124	14.27%
25169	VODAFONE-SE-AS Vodafone Sverige, mobile company located in Swede	2	26	0.62%
25229	VOLIA-AS Volia Autonomous System	3	83	10.08%
31333	VOLLMAR-AS vollmar.net – Nick Vollmar	1	5	2.22%
35908	VPLSNET – VPLS Inc. d/b/a Krypt Technologies	1	1	37.07%
10719	VRIS-10719-10720 – Verizon Internet Services Inc.	1	2	9.96%
8112	VRIS-8112-8115 – Verizon Internet Services Inc.	1	117	21.09%
8113	VRIS-8112-8115 – Verizon Internet Services Inc.	2	337	12.95%
13663	VRIS-AS-BLOCK-13661-13675 – Verizon Internet Services Inc.	1	23	17.47%



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21017	VSI-AS VSI AS	1	41	5.73%
4755	VSNL-AS Videsh Sanchar Nigam Ltd. Autonomous System	14	609	12.69%
22047	VTR BANDA ANCHA S.A.	48	2739	14.44%
12350	VTX-NETWORK VTX Services SA	5	1263	10.30%
19262	VZGNI-TRANSIT - Verizon Internet Services Inc.	216	26227	11.90%
29357	WATANIYATELECOM-AS WATANIYA TELECOM	2	432	1.88%
32107	WAVE-CABLE - Wave Broadband, LLC	2	90	33.46%
14654	WAYPORT - Wayport	2	59	18.55%
40306	WB - Wildblue Communications, Inc.	1	8	20.69%
40310	WB - Wildblue Communications, Inc.	1	205	19.07%
40307	WB - Wildblue Communications, Inc.	3	33	0.00%
33762	WBSMOBILE	1	46	24.97%
19016	WCG-AS - Westman Communications Group	1	164	30.96%
18104	WCG-AS-AP Wholesale Communications Group	1	784	5.66%
10352	WCTC - Solarus	1	401	4.86%
14275	WEATHERNET - Freese-Notis Weather	1	10	0.85%
6690	WEBPLUS-AS WEBplus Ltd.	1	22	0.00%
8559	WELLCOM BNET Datahighway	1	13	0.43%
10947	WERCS-NET - CORE BUSINESS SOLUTIONS	1	21	31.39%
12407	WESTEND-AS WESTEND GmbH, Aachen	1	413	11.26%
9543	WESTNET-AS-AP Westnet Internet Services	6	1170	13.86%
14387	WHIP - SwitchWorks Technologies Inc.	1	9	58.94%
21430	WIA-AS WIA spol. s r.o., Prague, Czech Republic	1	1675	9.40%
29974	WIGHT-AS - Wightman Telecom	2	141	10.57%
33544	WILINE - WiLine Networks Inc.	45	7173	2.78%
35107	WIMAX-AS WiMAX Telecom	1	3	15.09%
3505	WINDSTREAM - Windstream Communications Inc	1	12	31.06%
7029	WINDSTREAM - Windstream Communications Inc	14	1360	11.53%
20468	WINDSTREAM-COMMUNICATIONS - Windstream Communications Inc	2	231	10.43%
20271	WINDWIRELESS - Dogear/Packet Partners	1	278	14.74%
11114	WINTEK-CORP - Wintek Corporation	1	2	14.76%
59	WISC-MADISON-AS - University of Wisconsin Madison	1	65	13.18%
2381	WISCNET1-AS - University of Wisconsin-Madison	2	64	5.41%
32737	WISPERTEL - Wisper Telecommunications, Inc.	1	279	10.33%
34384	WLANNET-AS WLANnet Finland Oy	1	34	11.16%
2900	WN-AZ-AS - Arizona Tri University Network	1	2	89.33%
9136	WOBCOM WOBCOM GmbH - www.wobcom.de	2	967	6.62%
38710	WORLDCALL-AS-LHR Worldcall Broadband Limited	1	614	14.26%
29737	WOW-INTERNET - WideOpenWest LLC	11	1741	10.21%
29780	WOW-INTERNET-CLV - WideOpenWest LLC	1	421	4.56%
29895	WOW-INTERNET-COL - WideOpenWest LLC	1	2	14.15%
29859	WOW-INTERNET-ILL - WideOpenWest LLC	1	120	11.42%

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10326	WPI - Worcester Polytechnic Institute	1	4	10.81%
15943	WTNET-AS wilhelm.tel GmbH Norderstedt	2	59	19.87%
35736	WUK-AS Wanadoo UK	11	467	20.70%
17435	WXC-AS-NZ WorldxChange	4	148	22.49%
29597	X-NETWORK-AS X.net AS	1	20	6.38%
34502	XLINK-AS Xklink	1	70	22.70%
2828	XO-AS15 - XO Communications	10	883	13.01%
3265	XS4ALL-NL XS4ALL	8	778	9.32%
20484	YallaOnline	1	2	49.25%
12486	YEMENNET YT - YEMEN NET Autonomous Number	1	2	30.12%
20838	YIF-AS YIF Autonomous System	23	3569	9.60%
6517	YIPESCOM - Yipes Communications, Inc.	1	46	3.99%
8771	YUNET-AS YUnet International	3	25	21.48%
29255	ZAJIL-AS ZAJIL Autonomous Number in Saudi Arabia	2	415	8.11%
15542	ZEELANDNET ZeelandNet BV	1	15	0.04%
13037	ZEN-AS Zen Internet	4	418	17.34%
43373	ZNET-AS Zajoul Net	1	51	35.00%
41733	ZTELECOM-AS JSC _Z-Telecom_	1	1	0.45%
6621		8	895	1.99%
28330		1	7	10.63%
28323		1	16	4.91%
4725		1	60	1.17%