JULY 2015

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Iranian Internet Infrastructure and Policy Report

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A Small Media monthly report bringing you all the latest news on internet policy and online censorship direct from Iran.

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Introduction

Iran's pervasive internet filtering system makes circumvention tools necessary for many run-of-the-mill online activities, such as posting a status update on Facebook or uploading a picture to Instagram. This requirement can make using the internet in Iran a persistent and frustrating challenge. Luckily for Iranian netizens, there are resources available to help them gain access to blocked sites. In what follows, we'll examine one such resource.

This month's report looks at Filtershekanha, a mailing list which sends its subscribers biweekly updates on the latest circumvention tools and provides instructions about how to download the required software. Through a combination of an interview with the list's founder Nariman Gharib and a presentation and discussion of circumvention tool download statistics, we'll unpack what Filtershekanha is, how it functions, and what it might tell us about internet filtering in Iran more generally.

Filtershekanha is almost certainly not the only source of information about circumvention tools in Iran, and the data we analyse is not intended to be representative of Iran's internet-using population. Yet with nearly 100,000 subscribers, we think Filtershekanha can serve as a compelling case study that will allow us to probe questions about how Iranians access information about circumvention tools.

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Filtershekanha and Iranian VPN Usage
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BACKGROUND

Filtershekanha, which roughly translates to "Filter Breakers" in English, has been sending out regular newsletters since late February 2014. The project began with internet researcher Nariman Gharib asking people on Twitter for the email addresses so that he could send them Lantern, a new circumvention tool. An Iranian journalist suggested that Gharib could streamline the process by setting up a mailing list to distribute Latern. Gharib took this idea and ran with it, creating a mailing list that offers many circumvention tools alongside Lantern.

The benefit of using a mailing list - as opposed to, say, a Twitter account - to distribute circumvention tools is that a mailing list is extremely difficult for the government to block. This accessibility has allowed for rapid growth: Filtershekanha's first newsletter reached 11,546 people. Today, the mailing list has over 100,000 subscribers. Whatever the reason for Filtershekanha's surge of subscribers, it illustrates the high demand for information about circumvention tools in Iran today.

In addition to providing updates about new versions of circumvention tools, Filtershekanha hosts a server from which Iranian users can download the circumvention tools themselves. In what follows, we'll present some of the analytics data from that server, and discuss both download trends over time this year, as well as which circumvention tools are most popular.

FILTERSHEKANHA ANALYTICS

Section One: Trends in 2015

The graph below illustrates the download statistics for circumvention tools from Filtershekanha's servers for 2015 thus far (January to July). We examined the trend over time, and picked out periods when there was a spike in download requests. Due to technical issues, data for certain time periods remains unavailable, so we defined a spike as any day with over 100,000 requests, as the average requests per day hovers at around 50,000.[1] After making a list of all the periods of increased activity, we cross-referenced the list with a taimeline of documented instances of content filtering or access disruptions.[2]

The purpose of this exercise is not to make causal claims, but rather to see if any correlation between documented filtering actions and circumvention tool downloads can be observed. Here's what we found.

Trends in VPN Downloads

January 2-3

The first spike we observed occurred on January 3-2, which coincided with reports of large scale disruptions on Instagram, rumoured to have been caused by the intelligent filtering system. Subsequent statements by the ICT ministry about applying the intelligent filtering system to Instagram provide evidence that these rumours might be correct.[3]

January 7

A few days later, on January 7th, there was a larger spike in Filtershekanha download requests. On the same day, several news outlets reported that the government was about to block Tango, WhatsApp and Line due to a court order. This large spike illustrates the popularity of mobile communication apps.

April 3-4

About a month later, we observed an increase in requests on April 4-3. While we couldn't connect this to a filtering event, it's worth pointing out that this spike began the day after the preliminary framework for the nuclear agreement between Iran and the P1+5 countries was announced. It is possible than Iranians wanted to consult (blocked) media sources such as BBC Persian to learn about the framework of the agreement, indicating that Iranians may not trust state-affiliated media to cover important global events impartially.
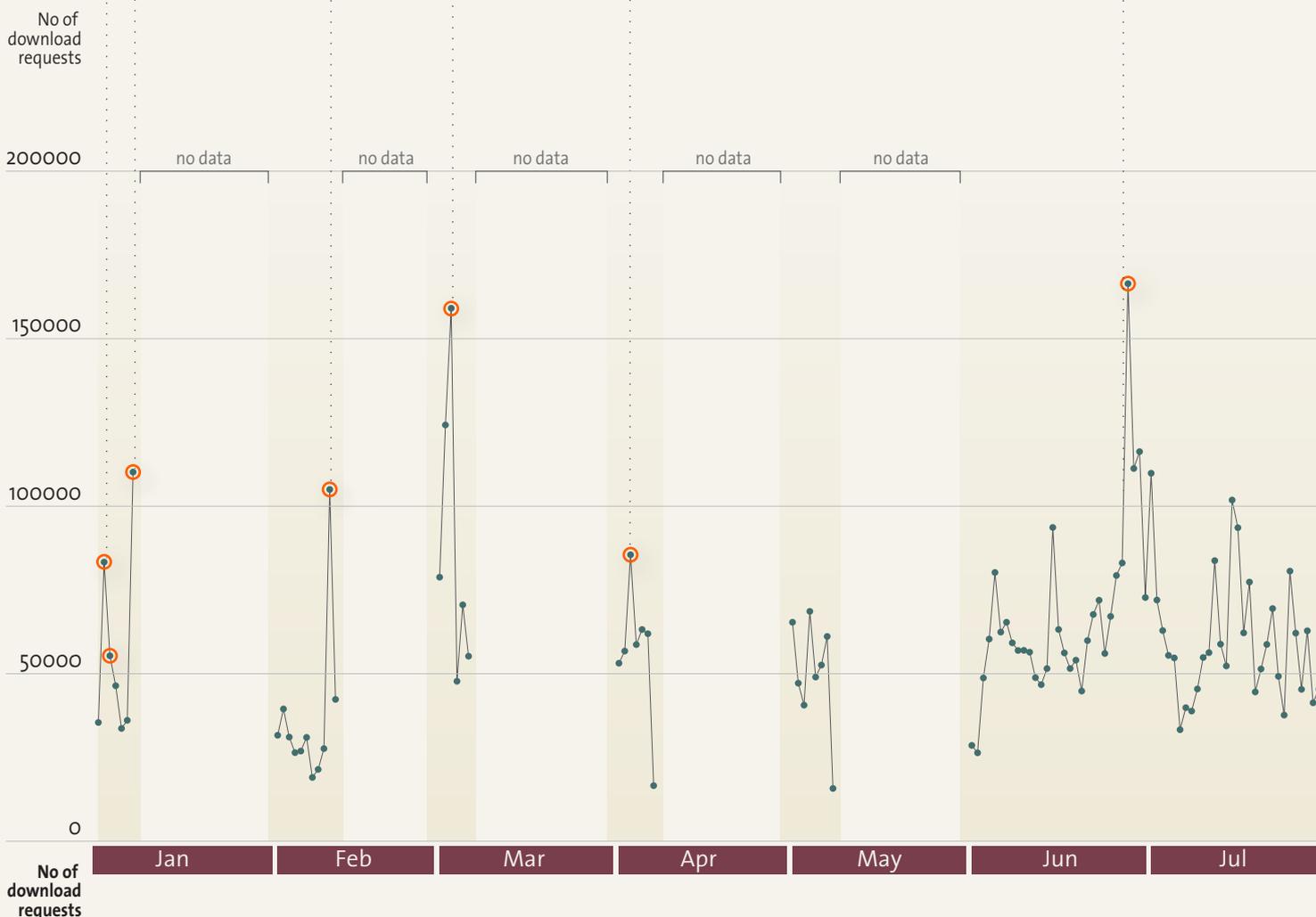
February 10-11

The next spike took place just over a month later, on February 11-10. Yet we couldn't find any reports of contemporaneous filtering incidents, so it remains unclear why an uptick in Filtershekanha download requests took place during this time.

June 29

On June 29, Mehr News Agency reported on attempts to find new mobile communication apps due to considerable service disruptions that recently affected Viber and Telegram. On the same day, we observed a vertiginous increase in Filtershekanha download requests.

March 2

On March 2, reports by Fars News Agency of issues with Instagram coincided with a precipitous increase in download requests, which lasted until March 4.

No of
download
requests

200000

no data   no data   no data   no data   no data

150000

100000

50000

0

No of
download
requests

Jan   Feb   Mar   Apr   May   Jun   Jul

Section Two: Popular VPN Providers

As the chart below illustrates, Filtershekanha's three most popular circumvention tool providers in 2015 thus far have been Hotspot Shield, Psiphon, and F-secure. It is interesting to note that Hola also received a good number of download requests, suggesting that Iranian users are either unaware of - or untroubled by - recent news that the platform might not be the safest choice. The relative popularity of Hola furnishes further evidence that Iranians tend to be more concerned about access than security, a hypothesis we've put forward before.[4]

Among the top 20 circumvention tools downloaded from Filtershekanha's servers in 2015, 14 are tools for mobile phones, while only 6 are intended for desktop (or laptop) computers. This finding comports with our prediction earlier this year that censorship battles will increasingly be fought on mobile devices.[5]
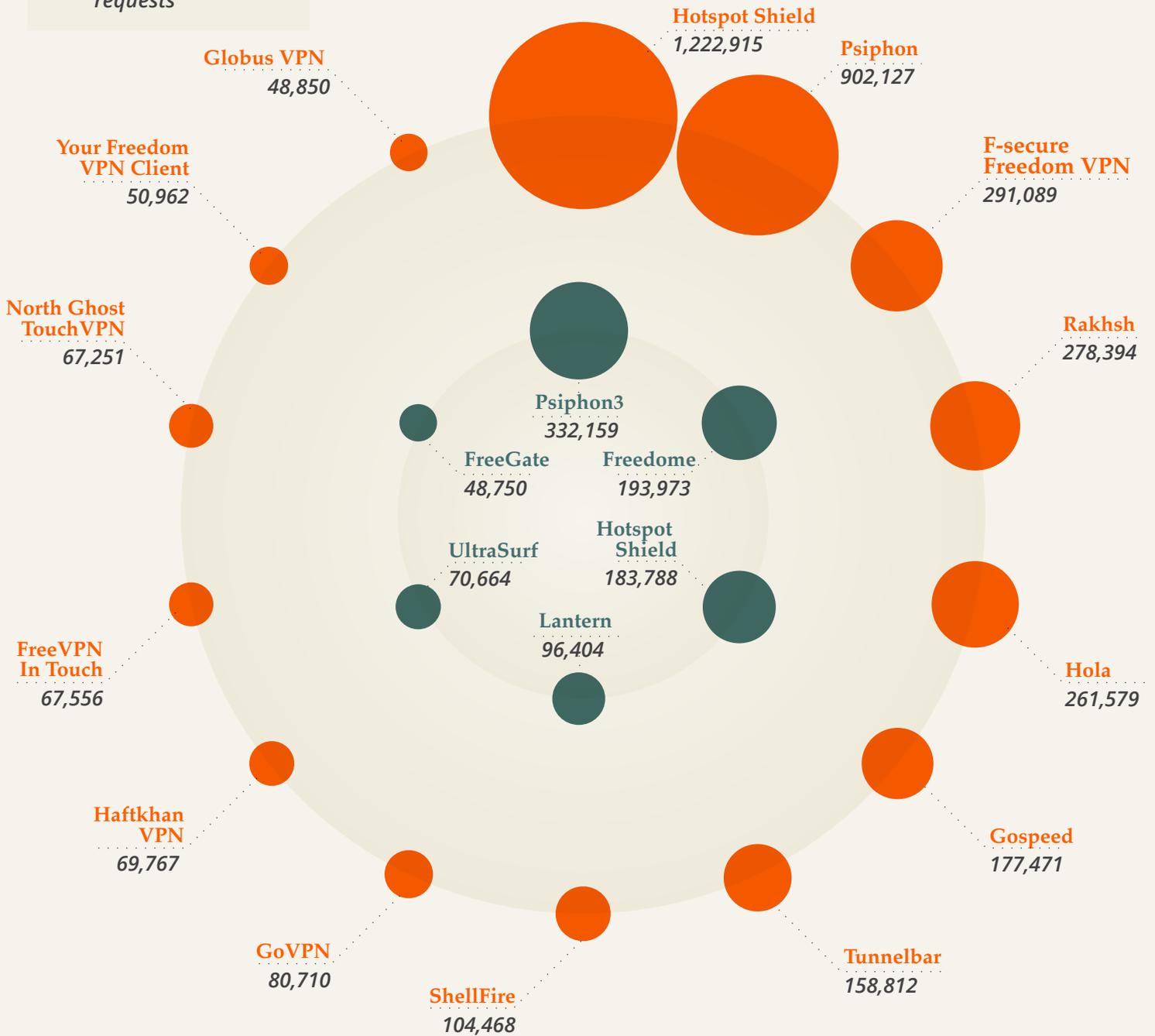
Top 20 Circumvention Tools

Hotspot Shield
1,222,915

Psiphon
902,127

Globus VPN
48,850

Your Freedom VPN Client
50,962

F-secure Freedom VPN
291,089

North Ghost TouchVPN
67,251

Rakhsh
278,394

Psiphon3
332,159

FreeGate
48,750

Freedome
193,973

Hotspot Shield
183,788

UltraSurf
70,664

Lantern
96,404

FreeVPN In Touch
67,556

Hola
261,579

Haftkhan VPN
69,767

Gospeed
177,471

GoVPN
80,710

Tunnelbar
158,812

ShellFire
104,468

CONCLUSION

While it is difficult to prove a causal connection, Small Media's research suggests that reports of filtering activity tend to correlate with increases in download requests for Filtershekanha's circumvention tools. Indeed, some of the sharpest increases in download requests occurred during periods where there was either considerable service disruption on social networking apps, or when reports of such disruption were discussed in Iranian media.

In terms of specific tools, it is notable that TOR - which offers some of the strongest privacy and anonymity protections of any circumvention tool - did not make the top 20 tools downloaded this year. This suggests that Filtershekanha's subscribers care more about gaining access to blocked content than ensuring the security of their online activity.

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Network Analysis
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The following section presents data from Dyn Research, a global internet monitoring firm, on the foreign providers that connect Iran to the global web, and the most prominent ISPs that offer connectivity to domestic customers.

The Telecommunications Infrastructure Company of Iran (TIC), which is the exclusive provider of internet bandwidth and connectivity in the Islamic Republic,[6] operates two primary autonomous systems,[7] AS12880 and AS48159. Together, these two Autonomous Systems (AS) count nearly 100% of Iran's globally routed networks as on-net customers, controlling the flow of information to the more than 300 domestic autonomous systems that make up Iran's Internet.

INTERNATIONAL CONNECTIONS

Today, the TIC maintains international connections through eleven global providers: Omantel, Vodafone (Cable & Wireless), Telecom Italia, TeliaSonera, GTT, Caucasus Online, Delta Telecom, Global Cloud Exchange (Flag/Reliance), PCCW, Bharti Airtel, and Tellcom (Superonline Turkey).

DOMESTIC PROVIDERS

After getting their global connections from the providers mentioned above, the two Autonomous systems sell bandwidth to a number of domestic ISPs. The top ten ISPs for each Autonomous system are listed below.

A. AS12880

This autonomous system counts 96 domestic autonomous systems as direct customers, and transits traffic for 3,344 IPv4 routed networks. AS12880's top ten autonomous system customers are:

1. Aria Shatel Company Ltd: AS31549

2. AsiaTech Inc.: AS43754

3. Afranet: AS25184

4. Pars Online PJS: AS16322

5. Respina Networks & Beyond PJSC: AS42337

6. Mobin Net Communication Company (Private Joint Stock): AS50810

7. Gostaresh Ertebatat Mabna: AS51074

8. Neda Gostar Saba: AS39501

9. Dadeh Gostar Asr Novin P.J.S. Co.: AS56402

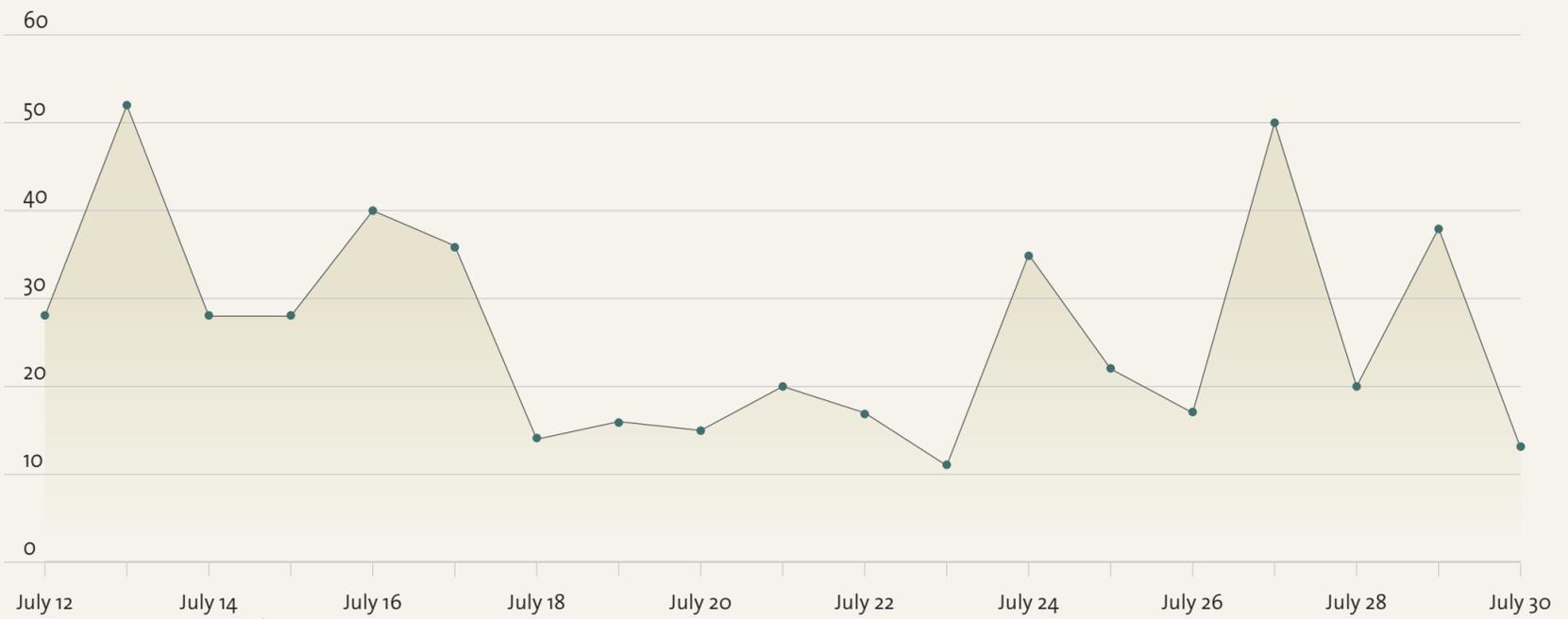10. PJSC Fars Telecommunication Company: AS59587

B. AS48159

This autonomous system counts 50 domestic autonomous systems as direct customers, and transits traffic for 742 IPv4 routed networks. AS48159's top ten autonomous system customers are:

1. Iran Cell Service and Communication Company: AS44244

2. Mobile Communication Company of Iran PLC: AS3.599

3. Rightel Communication Service Company PJS: AS57218

4. Mobin Net Communication Company PJS: AS50810

5. Dadeh Gostar Asr Novin PJS: AS56402

6. Esfahan Telecommunication Company PJS: AS58085

7. ANDISHE SABZ KHAZAR CO. PJS: AS39308

8. Hamara System Tabriz Engineering Company: AS47262

9. Aria Shatel Company Ltd: AS31549

10. Pars Online PJS: AS16322

#Filterwatch
July 2015

No. of Filternet Tweets in July 2015

[Line chart showing number of Filternet tweets from July 12 to July 30. Y-axis ranges from 0 to 60. Values start at ~27 on July 12, peak at ~51 on July 13, dip to ~27, rise to ~39 around July 16, decline to ~12 by July 18, fluctuate between 10 and 19 through July 23, rise to ~34 on July 24, drop to ~16 on July 26, peak at ~49 on July 27, drop to ~19, rise to ~37 on July 29, then fall to ~12 on July 30.]

Top Tweets

1 @getlantern: — Links to download the latest version of #VPNlantern for Windows, Mac, and Linux.
12 Retweets

2 @khodnevis — Saint or Bastard: The Adventures of Imam Naghi and Abu Alashi Sadiq. #Cartoon of the #filternet series. You can do it too!   TRANSLATION OF THE CARTOON: If I go abroad and I sleep with a foreign women and I have a son from her, what is the verdict on this child? - He is a bastard! And what if it's you who makes it? - It's a holy action!
8 Retweets

3 @Shahr2ad — ICT Minister do your job and fix #filternet internet quality... Don't worry about the #IranDeal!
7 Retweets

4 @BehrouzIX — Those who need #internet for their job in #Iran should get VIP access to Heaven, as they've been suffering from torture in this world! #Filternet
6 Retweets

5 @Getlantern — Set up an internet download manager with #lantern. #Filternet
6 Retweets

Top Tweeters

User	Count
@naizmudin	294
@Filternetoons	25
@khodnevis_org	25
@Toonistans	24
@JustAnIranian	9

Most Mentioned Users

User	Count
@naizmudin	24
@getlantern	18
@khodnevis_org	10
@shaheedsr	7
@BehrouzIX	6

SMALL MEDIA

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Statements from Ministries and Politicians
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- **July 5:** Alireza Seyedi, Head of Telecommunication Company of Tehran (TCT), said the amount owed to the company in unpaid bills totals 400 billion IRR (13 Million USD).. Seyedi added that most of this debt is owed by government organizations, meaning that the TCT will not be able to disconnect their service even if they don't pay. (Source)
- **July 5:** According to Mehr News Agency, the Supreme Council of Cyberspace (SCC) has not had any meetings since March 2015. The members of the SCC are supposed to meet every three weeks but it has recently become very disorganized. Small Media published a comprehensive report about the SCC last year. (Source)
- **July 5:** According to Tasnim News Agency, Telegram users in Tehran reported disruptions on the mobile app; neither Internet Service Providers (ISPs) nor the Telecommunication Company of Tehran (TCT) took responsibility for the issue. In addition, Seyedi said that for technical reasons, the TCT cannot disrupt Telegram. In the meantime, users with VPNs have been still able to access Telegram. (Source)
- **July 7:** Mahmood Vaezi, Minister of Information and Communications Technology ICT) announced that his ministry will aim to feature more Islamic and religious content on the National Information Network (SHOMA). It is not clear how the ICT Ministry plans to promote Islamic material on SHOMA. (Source)
- **July 9:** Heshmatollah Asadi, Director of the Telecommunication Company of Iran in Ilam (TCI) announced that the available Internet bandwidth in Ilam is more than what users need. In addition, Asadi pointed out that the total Internet bandwidth in Ilam has increased from 2.5% to 6% of the total nationally. He did not mention the time period of this increase. (Source)
- **July 10:** The National Internet Development Management Center (MATMA) announced that it has been shut down since January 2015. The center was launched by former ICT Minister Mohammad Soleimani to help improve SHOMA in 2009 and to manage and develop the Iranian Internet, as well as the ccTLD .ir. (Source)

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- **July 10:** Barat Ghanbari, a Deputy in the ICT Ministry announced the launch of Tavana, Iran's Main Domestic National Network between Tehran and Esfahan. According to Ghanbari, this phase relies exclusively on Iranian equipment. This is the first time Iranian authorities have mentioned Tavana, and it is not clear how it differs from SHOMA. (Source)

- **July 11:** Mahmood Khosravi, Director of the Telecommunication Infrastructure Company (TIC) announced that SHOMA's bandwidth will increase by up to 20 times the current levels. He added that this bandwidth will increase to 4 TBps by the end of this Iranian year (March 2016) and 10 TBps by the end of next year (March 2017). According to Khosravi, SHOMA will have 20 Tbps by the end of the current government. (Source)

- **July 12:** The Telecommunication Company of Iran (TCI) has stopped selling broadband to new customers in six provinces due to poor service and customer complaints. These six provinces are: East Azerbaijan, Isfahan, Khorasan Razavi, Kerman, Markazi, and Hamadan. (Source)

- **July 12:** Alireza Yari, Secretary of the Strategic Council of National Search Engines announced that they have begun development on a national search engine. He hoped that by mid September they could launch an updated version of the Parsijoo search engine. Parsijoo was originally launched in February this year. (Source)

- **July 13:** Seyed Majid Sadri, Director of RighTel Communications, announced in the interview with Mehr News agency the launch of 4G and Public WiFi in Tehran. Sadri said they are interested in customers who are more interested in data than making calls, which he claims sets RighTel apart from other operators. Sadri said numbers of cities where they currently offer coverage increased to from 128 to 300. He added that they sold over 5.4 million sim cards and currently have 4.2 million active users. RighTel is the third largest mobile network operator in Iran. (Source)

- **July 13:** Hamed Reza Esmaili, Head of Public Relations and International Affairs for the TIC said there is no problem with providing bandwidth to the Telecommunications Company of Iran (TCI). Esmaeili added that TCI's debt to the Telecommunication Infrastructure Company (TIC) is nearly 3.5 trillion IRR (117 million USD). Esmaili responded to the news regarding suspension of Internet connection in six provinces of Iran. (Source)

- **July 13:** Ghanbari announced that the ICT Ministry will provide "ground signaling" to Islamic Republic of Iran Broadcasting (IRIB), Iran's state broadcaster, in an effort to reduce Iran's dependency on foreign satellites. The project will cost near 2.91 trillion IRR (97 billion USD). (Source)

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- **July 14:** Mohammad Reza Farnaghizad, Head of Public Relation and Communication in the ICT Ministry said there is no conflict between the ministry and the Telecommunications company of Tehran over with the TIC relating to the suspension of selling Internet in six province of Iran or the TCI's debt to the (government controlled) TIC. The crux of the issue concerns the question of who is responsible for the poor internet service that led the TIC to suspend the sale of bandwidth to six provinces. The TIC, which is run by the ICT Ministry and has a monopoly on bandwidth in the Islamic Republic, claims that the Telecommunications Company of Iran (TCI) is responsible for the poor service. The TCI counters that the TIC did not provide it with enough bandwidth to offer quality connections to the provinces. Since Rouhani took office, there has been something of an ongoing feud between the ICT Ministry and the Telecommunication Company of Iran (TCI), which is owned by the Revolutionary Guards. (Source)
- **July 15:** Reza Hassan Beigi, Head of communication and information technology in Ilam province said Internet disruptions in some areas of the city were caused by technical issues that have yet to be resolved. (Source)
- **July 15:** Ali Asghar Ansari, Deputy of Information Technology of Iran announced over 130 government organizations will share information with SHOMA by end of the Fifth Five-Year Plan (2011-2016). Ansari added that within the second year of the Fifth Five-Year Plan, 150,000 government organisations be connected to SHOMA.(Source)
- **July 21:** Gholamreza Khaksar, Director of the Development and Monitoring of Public Services at the ICT Ministry announced that 25,000 new villages will be connected to the Internet by the end of March 2016. In the first phase, villages with at least 30 households will be connected to the Internet and in the next phase, villages with over twenty households will be connected. The first two phases will connect 37,000 villages. He added that the minimum Internet speed will be 512 Kbps. (Source)
- **July 23:** Vaezi announced new plans for the creation of a National Satellite. He added that Internet bandwidth has increased to 2400 Gbps since Rouhani became President. Vaezi also explained that Iran has already invested 1.3 trillion IRR (43.7 million USD), and will invest an additional 1.8 trillion IRR (60 million USD) in the current year in network security. Finally, he claimed that around 20 million people have used 3G in the past 8 months. (Source)

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- **July 23:** Mehdi Karimi Neisiyani, Deputy of Planning and Development of New Technologies at the ICT Ministry announced that there are 56,500 km of fiber optic (E1) cables in Iran, up from 51,000 km. Karimi added that the bandwidth capacity of the domestic IP network increased from 620 Gbps to 2400 Gbps and it will reach 4000 Gbps in 2016. He went on to note that domestic traffic's share of total Iranian Internet traffic had increased to 40%, and expressed hope that by the end of the current government the total would increase to 80%. In recent years, Iran has attempted to extend greater control over domestic internet traffic.(Source)
- **July 24:** Vaezi announced the successful completion of the first phase of the Intelligent Filtering (IF) system. He added that the IF project is really complicated but it has been successful and the second phase has just started. Previously the Ministry of ICT tried to use Intelligent Filtering on Instagram but it was not successful. (Source)
- **July 25:** Ghalambor Dezfouli, Director of MTN Irancell, said his company has the lowest tariffs for data in Iran. According to Dezfouli, there has been a 6 fold 3 increase in the use of 3G in Iran, and browsing speeds have gotten 100 times faster. Dezfouli added that his company offers 3G coverage to 248 cities and 148 villages, while 87 cities enjoy 4G coverage. According to Dezfouli, Iran has invested 3.2 trillion IRR (107 billion USD) in data which help Iranians have a better online experience. With 22 million data users nationwide, Irancell is the biggest data provider in Iran. (Source)
- **July 25:** Morteza Barari, the Legal Deputy of Government and Parliamentary Affairs of ICT said the income of Iranian Telecommunication Operators is one-third of the global norm for the profession. (Source)
- **July 25:** Sadegh Abbasi Shahkouh, Deputy of the Communications Regulatory Authority of Iran (CRA), said new ISPs will be able to enter the market from September 2015. (Source)
- **July 25:** Vaezi said Telegram will not be blocked, but the option to make insulting stickers will be blocked. In addition, Vaezi claimed that officials from Telegram have been in touch with his ministry to apologise for the offending stickers and agreed to deactivate the sticker feature for users in Iran. Telegram has not responded to this claim.(Source)
- **July 26:** The Planning Council in charge of the Sixth Five-Year Plan (2017-2021) in the ICT Ministry announced that Iran will make computer equipment, desktops, and mobile phones. The Sixth Five-Year Plan also includes plans for developing online content, social network localisation, the development of SHOMA, and working on digital security. (Source)

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- **July 27:** Zohreh Hosseini, Project Manager of Hamsan Gozini, the first legal online dating website, said 110 marriages have been registered since February/ March 2015. Hosseini added that 15,500 users have been registered on the website and most of them have postgraduate degrees. Hosseini also said that most of the members were born in the 1980's. He added that 94% of members have never been married, while 8% were divorced or had lost their partner. It is not clear how he came up with these figures, as they total 102%. Hosseini said the project of online dating is in the pilot phase in the cities of Mashhad, Isfahan and Tehran. (Source)
- **July 27:** Abdolsamad Khoramabadi, Secretary of the Commission to Determine the Instances of Criminal Content (CDICC), said the CDICC will take action against websites which use unrelated keywords and tags on their website to fool visitors and increase their traffic. According to Khoramabadi, clickjacking is a criminal act. (Source)
- **July 28:** Deputy ICT Minister Nasrollah Jahangard announced that SHOMA is ready and will soon be able to provide better Internet to people. Jahangard added that the ICT Ministry is managing all domestic traffic in Iran, and aims to connect 60% of households and 100% of government organizations to the national internet (SHOMA). Additionally he said seven to eight local search engines are active in Iran and he hoped that improving Yooz and Parsijoo will provide users with better service. Jahangard also mentioned that they don't compare local search engine with Google and Yahoo. (Source)
- **July 28:** Members of the Supreme Council of Cyberspace (SCC) are not happy with what they perceive to be the body's disorganisation, citing the failure of the SCC to hold meetings in recent months. One member of the council,Hojjat al-Eslam Ahmad Salak Kashani, said the SCC's work is very important and several members aren't happy with the body's recent conduct. He added that the last meeting was four months ago and if delays over meetings are not resolved soon, they will take it up with President Rouhani. (Source)
- **July 29:** Sadri announced that the number of Rightel customers increased to 4,300,000. Sadri also said mobile internet usage increased from 500MB to more than 10 GB. Rightel is Iran's third largest mobile operator, covering 330 cities in Iran. Sadri noted that they aim to increase their coverage to 450 cities by the end of March 2016. (Source)

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- **July 29:** Mojtaba Khosrotaj, Deputy Minister of Industries and Business, said there is no official representation for Apple in Iran. He added that last year they received three requests for Apple representation but they were not from the any official representative of the American tech giant. Since Iran's nuclear deal with P5+1, there has been a lot of discussion about Apple entering Iran's market. (Source)

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Notes

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1   There are two spikes we've included that don't fit the above definition. The first occurred on January 2-3. While the number of downloads peaked at 83,317 over this period, that figure represents a more than 100% increase on the previous day's total. The other spike took place on April 2-4. While peak number of downloads during that period (85,517) represented a more modest increase (51%) than the uptick in January, we've included it because it was an important moment politically: the day the framework for the nuclear agreement was announced.

2   These documented instances of filtering were drawn from our previous IIIP reports, available here: http://smallmedia.org.uk/term/1/47

3   Small Media, *Iranian Internet Infrastructure and Policy Report, April 2015,* p. 9. available at: http://smallmedia.org.uk/sites/default/files/u8/IIIP_April2015_v2.pdf.

4   Small Media, *Iranian Internet Infrastructure and Policy Report, April 2015,* p. 9. available from: http://smallmedia.org.uk/sites/default/files/u8/IIIP_Feb15.pdf.

5   ibid., 8.

6   Submarine Telecoms Forum, "Telecommunication Infrastructure Company of I.R.Iran (TIC) and Gulf Bridge International Agree to land GBI's submarine cable in Iran," April 27, 2010. Available from: http://subtelforum.com/articles/telecommunication-infrastructure-company-of-i-r-iran-tic-and-gulf-bridge-international-agree-to-land-gbis-submarine-cable-in-iran/

7   According to the Internet Engineering Task Force (IETF), an autonomous system is a collection of internet protocol (IP) routing prefixes run by one or more network operators which has a single and clearly defined routing policy. Hawkinson and Bates, Guidelines for creation, selection, and registration of an Autonomous System (AS)," March 1996, p. 2. Available from: https://tools.ietf.org/html/rfc1930