

Analyzing of various Internet metrics over the time in GCC countries and Yemen



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RIPE NCC - MENOG 17 - RACI

Muscat - Oman

19-20 April 2017

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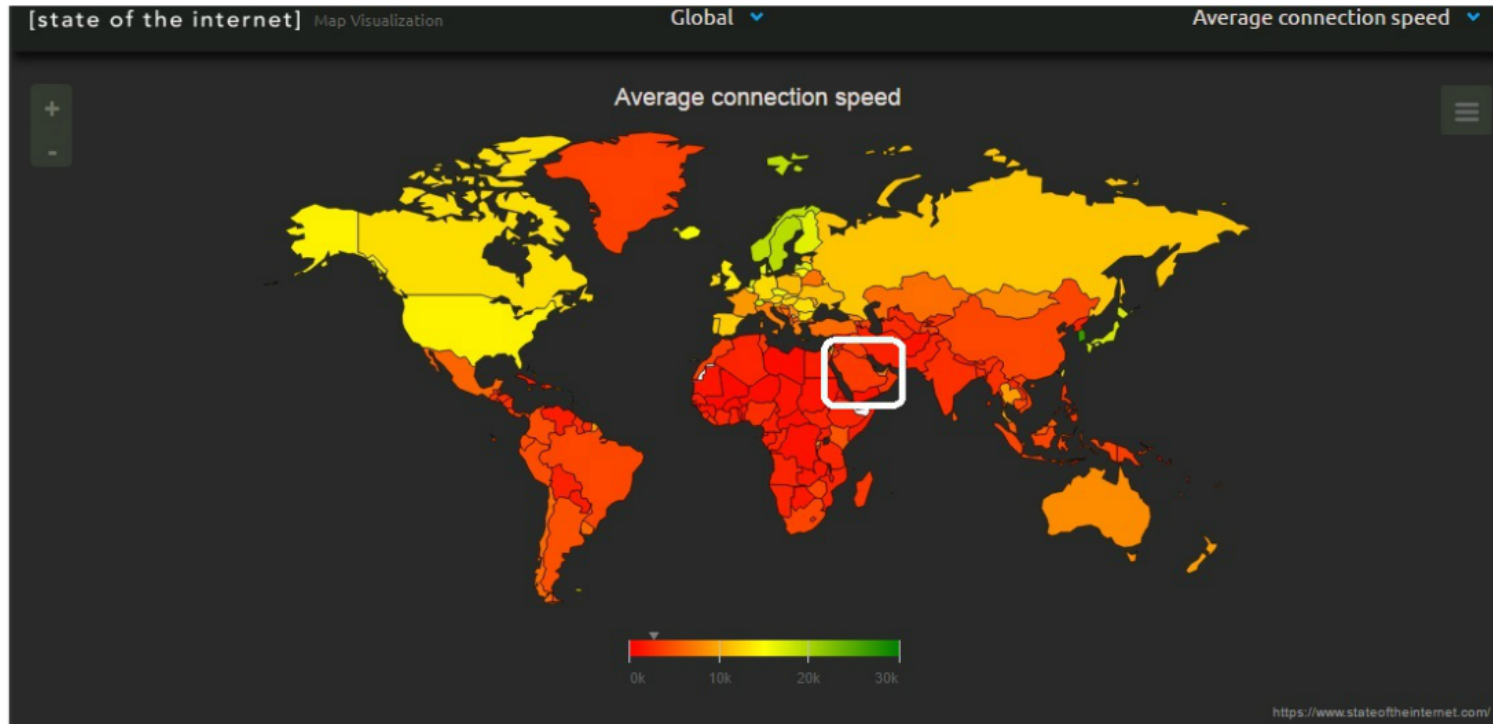
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Agenda

- Introduction
 - IPv6 Readiness
 - Internet network status: Average connection speed
 - Challenges and obstacles
 - Analysis and discussion
 - Recommendations
 - Conclusions
-

Introduction – Internet state in 2016



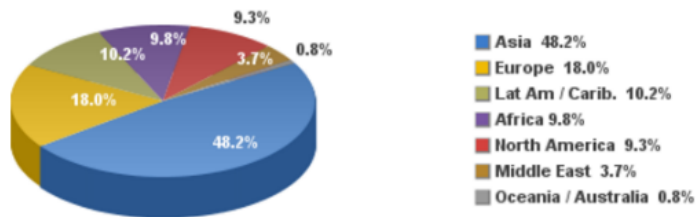
Source: <https://www.stateoftheinternet.com/>

Introduction: Importance of this study

- Measure and analyze some internet metrics and introduce solutions.
- Share the knowledge between ISPs, engineers, researchers.
- Cooperate between Internet technical community in the region.
- Compare the achievement between related countries in Internet sector.
- Provide solutions for troubled countries.

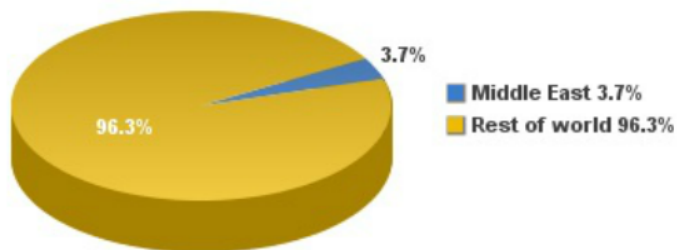
Introduction: Internet Usage in the ME, Nov. 30, 2016

**Internet Users in the World by Regions
November 2015**



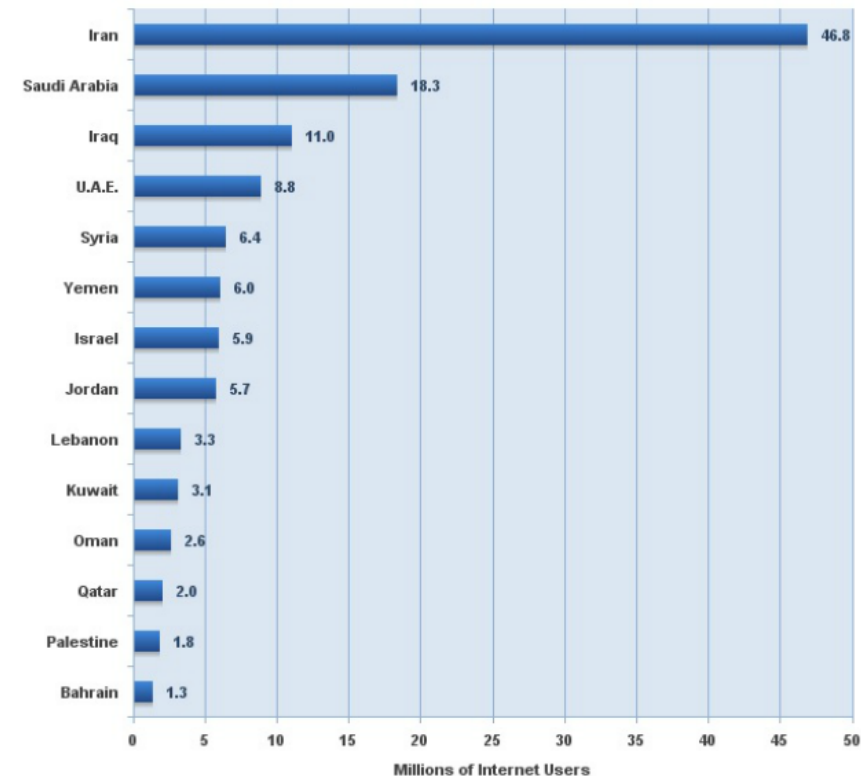
Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 3,366,261,156 Internet users on November 30, 2015
Copyright © 2015, Miniwatts Marketing Group

**Internet Users in the Middle East
November - 2015**



Source: Internet World Stats - www.internetworldstats.com
123,172,132 estimated Internet Users for November 2015
Copyright © 2015, Miniwatts Marketing Group

Source: <http://www.internetworldstats.com/stats.htm>



In GCC + Yemen = 46 Millions of Internet Users/ ~ 76 Millions habitants

Introduction: ME, GCC countries and Yemen Statistics

GCC = Saudi Arabia, UAE, Oman, Kuwait, Qatar, and Bahrain

Middle East Internet Users, Population and Facebook Statistics 2016						
MIDDLE EAST	Population (2016 Est.)	Users, in Dec/2000	Internet Usage 30-Jun-2016	% Population (Penetration)	Internet % users	Facebook 30-Jun-2016
Bahrain	1,378,904	40,000	1,278,752	92.7 %	0.9 %	800,000
Iran	82,801,633	250,000	56,700,000	68.5 %	40.1 %	17,200,000
Iraq	37,547,686	12,500	14,000,000	37.3 %	9.9 %	14,000,000
Israel	8,174,527	1,270,000	5,941,174	72.7 %	4.2 %	4,900,000
Jordan	7,747,800	127,300	5,700,000	73.6 %	4.0 %	4,800,000
Kuwait	4,007,145	150,000	3,202,110	79.9 %	2.3 %	2,300,000
Lebanon	5,988,153	300,000	4,545,007	75.9 %	3.2 %	3,100,000
Oman	4,654,471	90,000	3,310,260	71.1 %	2.3 %	1,500,000
Palestine (West Bk.)	2,839,777	35,000	3,007,869	63.2 %	2.1 %	1,700,000
Qatar	2,258,283	30,000	2,200,000	97.4 %	1.6 %	2,200,000
Saudi Arabia	32,157,974	200,000	20,813,695	64.7 %	14.7 %	14,000,000
Syria	18,563,595	30,000	5,502,250	29.6 %	3.9 %	n/a
United Arab Emirates	9,266,971	735,000	8,515,420	91.9 %	6.0 %	7,700,000
Yemen	27,392,779	15,000	6,773,228	24.7 %	4.8 %	1,800,000
Gaza Strip	1,921,202	see Palestina	see Palestina	n/a	n/a	see Palestina
TOTAL Middle East	246,700,900	3,284,800	141,489,765	57.4 %	100.0 %	76,000,000

NOTES: (1) The Middle East Statistics were updated for June 30, 2016. (2) Facebook subscribers data are also for June 30, 2016. (3) CLICK on each country name to see detailed data for individual countries and regions. (4) The population estimates are based mainly on data from the [US Census Bureau](#) and local sources. (5) Internet usage numbers come from various sources and are compiled here, see the [site surfing guide](#) for methodology. (6) The most recent usage information comes mainly from the data published by [Nielsen Online](#), [ITU](#), [Facebook](#), and other trustworthy sources. (7) For Internet growth comparison purposes, the Middle East usage data published by [ITU](#) for the year 2.000 is provided. (7) Data may be cited, giving the due credit and establishing an active link back to [Internet World Stats](#). Copyright © 2016, Miniwatts Marketing Group. All rights reserved worldwide.

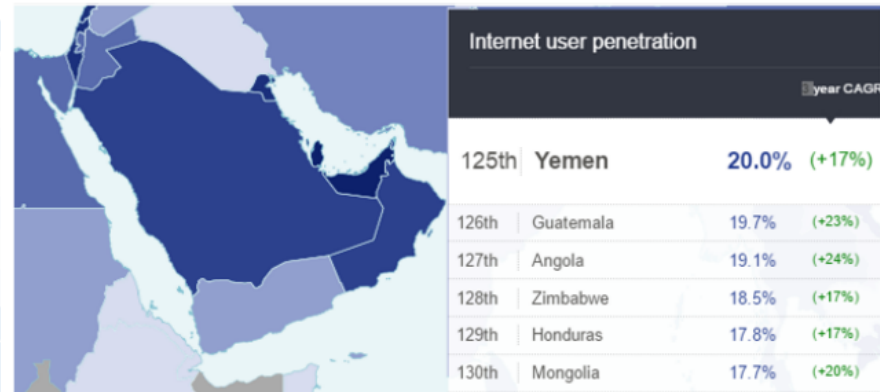
Introduction: Internet Penetration in GCC countries and Yemen

Global Internet penetration (%)

Rank	Country Name	Penetration	Year CAGR*
10th	Bahrain	90%	(+18)
12th	United Arab Emirates	88%	(+9)
16th	Qatar	85.3%	(+7)
29th	Kuwait	75.5%	(+7)
47th	Oman	66.5%	(+16)
59th	Saudi Arabia	60.5%	(+14)
125th	Yemen	20%	(+17)

*Compound Annual Growth Rate (CAGR)

Source: <http://www.internetsociety.org/map/global-internet-report/?gclid=CJX210-c8MsCFdUy0wodAqwFzQ#global-internet-penetration>

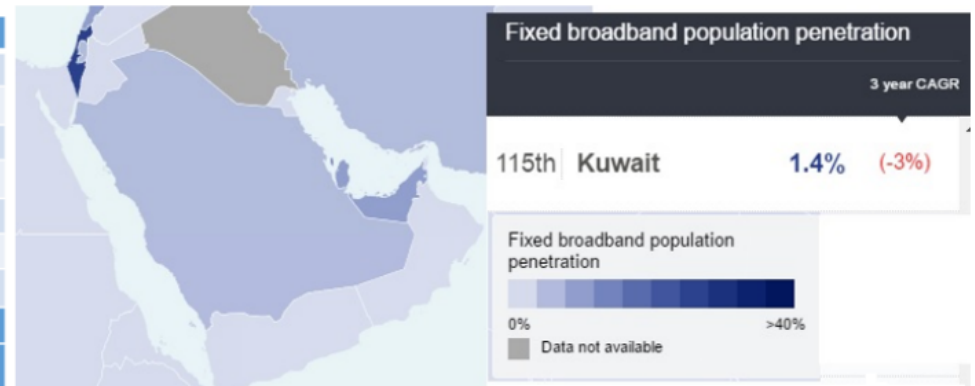


Fixed broadband population penetration

Rank	Country Name	Penetration	Year CAGR*
64th	Bahrain	13.2%	(+35%)
72th	United Arab Emirates	11.1%	(+6%)
77th	Qatar	9.9%	(+6%)
86th	Saudi Arabia	7.4%	(+10%)
105th	Oman	2.6%	(+13%)
115th	Kuwait	1.4%	(-3%)
118th	Yemen	1.1%	(+42%)

*Compound Annual Growth Rate (CAGR)

Source: <http://www.internetsociety.org/map/global-internet-report/?gclid=CJX210-c8MsCFdUy0wodAqwFzQ#global-internet-penetration>



Rank	Country/Economy	Score	2018 rank (out of 194)	Score Level*	Group
71	United Arab Emirates	5.3	55	III	ME/EGP
137	Yemen	1.2	27	II	ME/EGP

Networked Readiness

The Networked Readiness Index 2016:

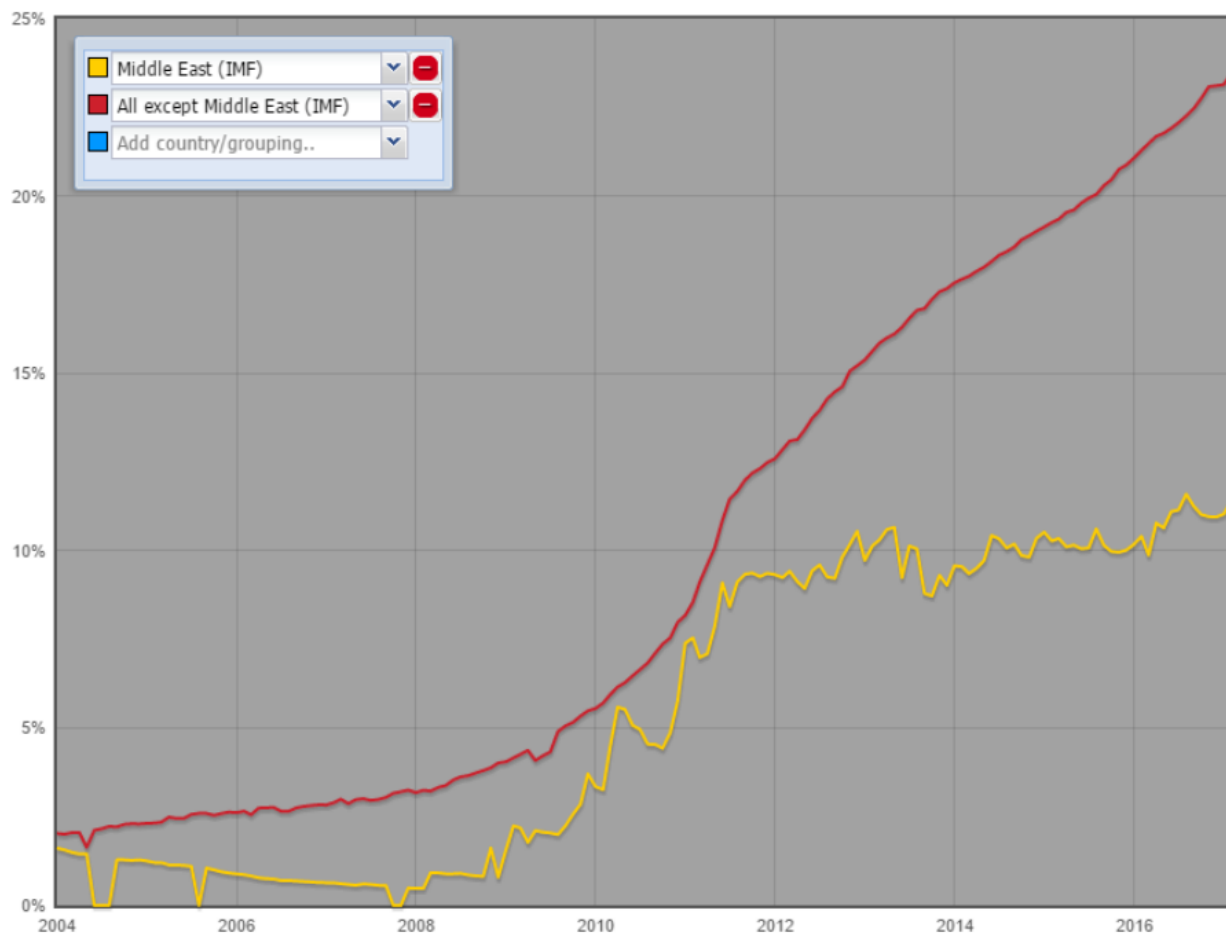
Rank	Country/Economy	Value	2016 rank (out of 143)	Income level*	Group
23	United Arab Emirates	5.3	23	HI	MENAP
27	Qatar	5.2	27	HI	MENAP
30	Bahrain	5.1	30	HI	MENAP
35	Saudi Arabia	4.8	35	HI	MENAP
42	Oman	4.3	42	HI	MENAP
72	Kuwait	4.2	72	HI	MENAP
136	Yemen data: (2014)	2.7	140	LM	MENAP

* Income groups, HI = high-income economies that are not members of the OECD; HI-OECD = high-income OECD members; MENAP = Middle East, North Africa, and Pakistan; LM = lower-middle-income,

Source: The Global Information Technology Report 2016, ICTs for Inclusive Growth, Insight Report

ME Networked Readiness: IPv6 Enabled Networks

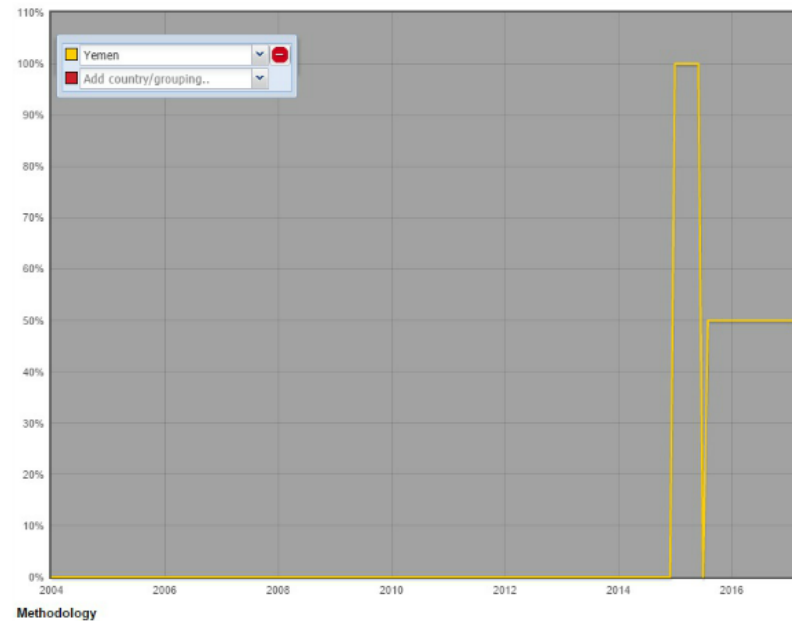
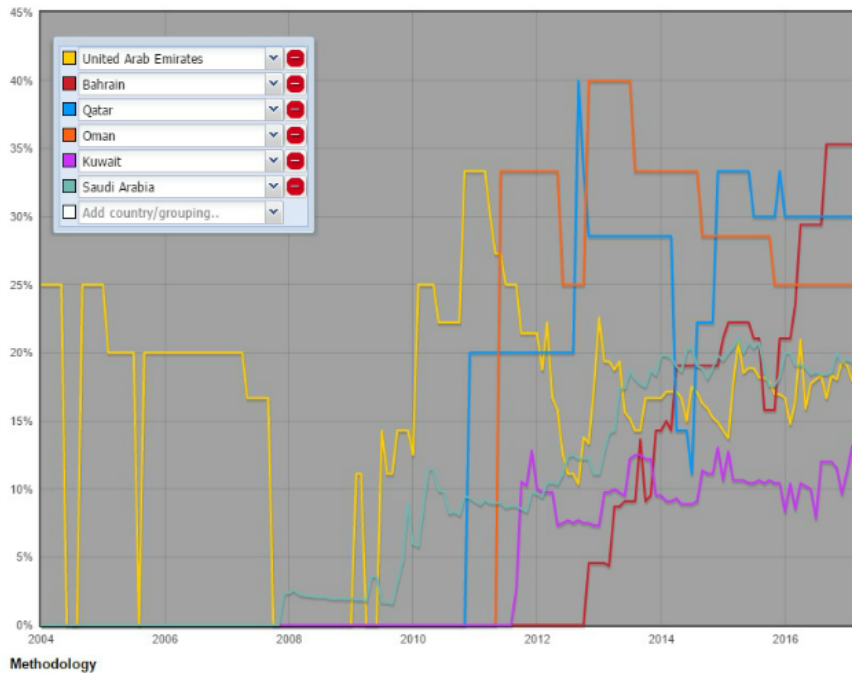
04 April 2017



This graph shows the percentage of networks (ASes) that announce an IPv6 prefix for a specified list of countries or groups of countries

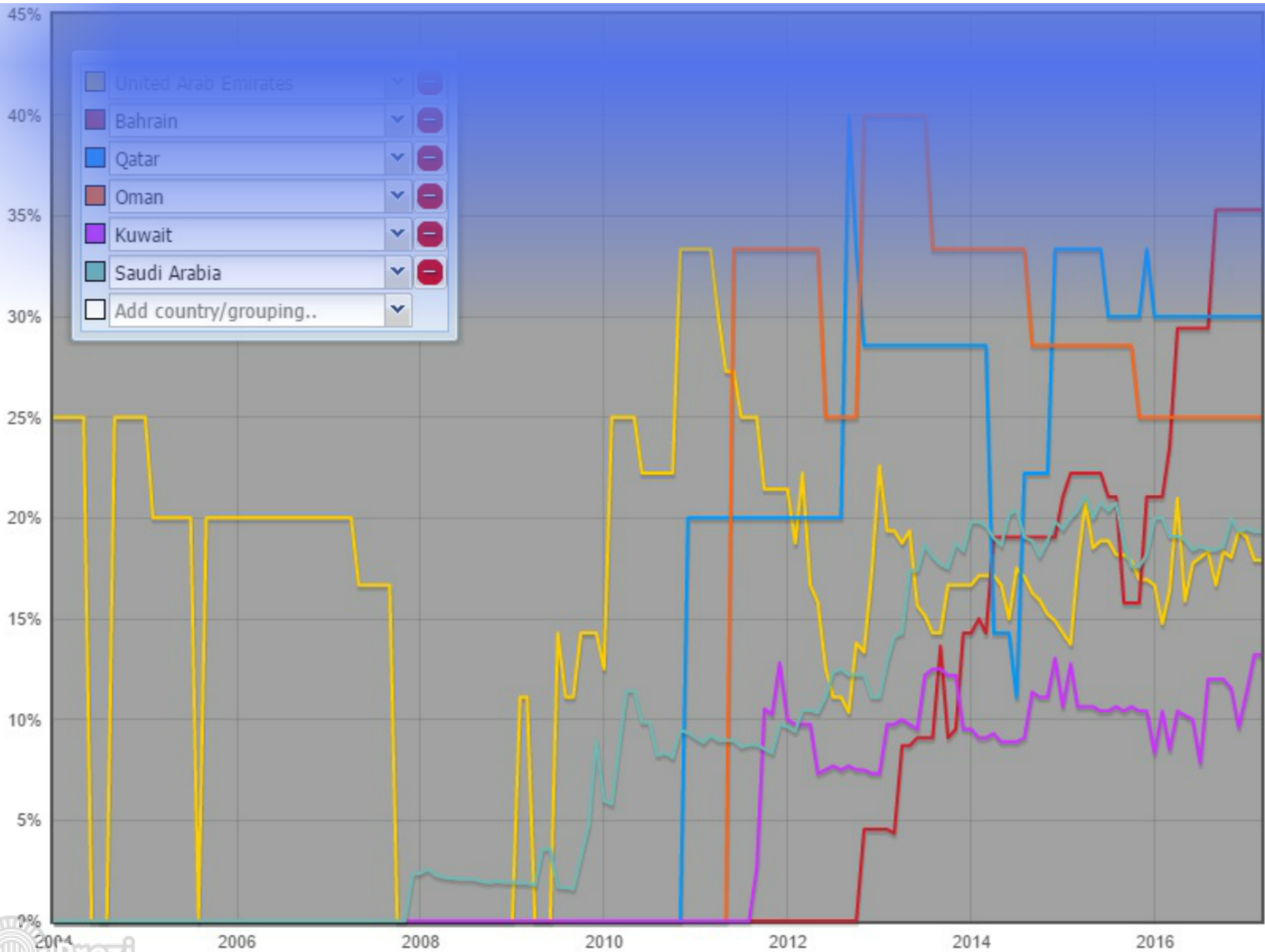
Source: <http://v6asns.ripe.net/v/6>

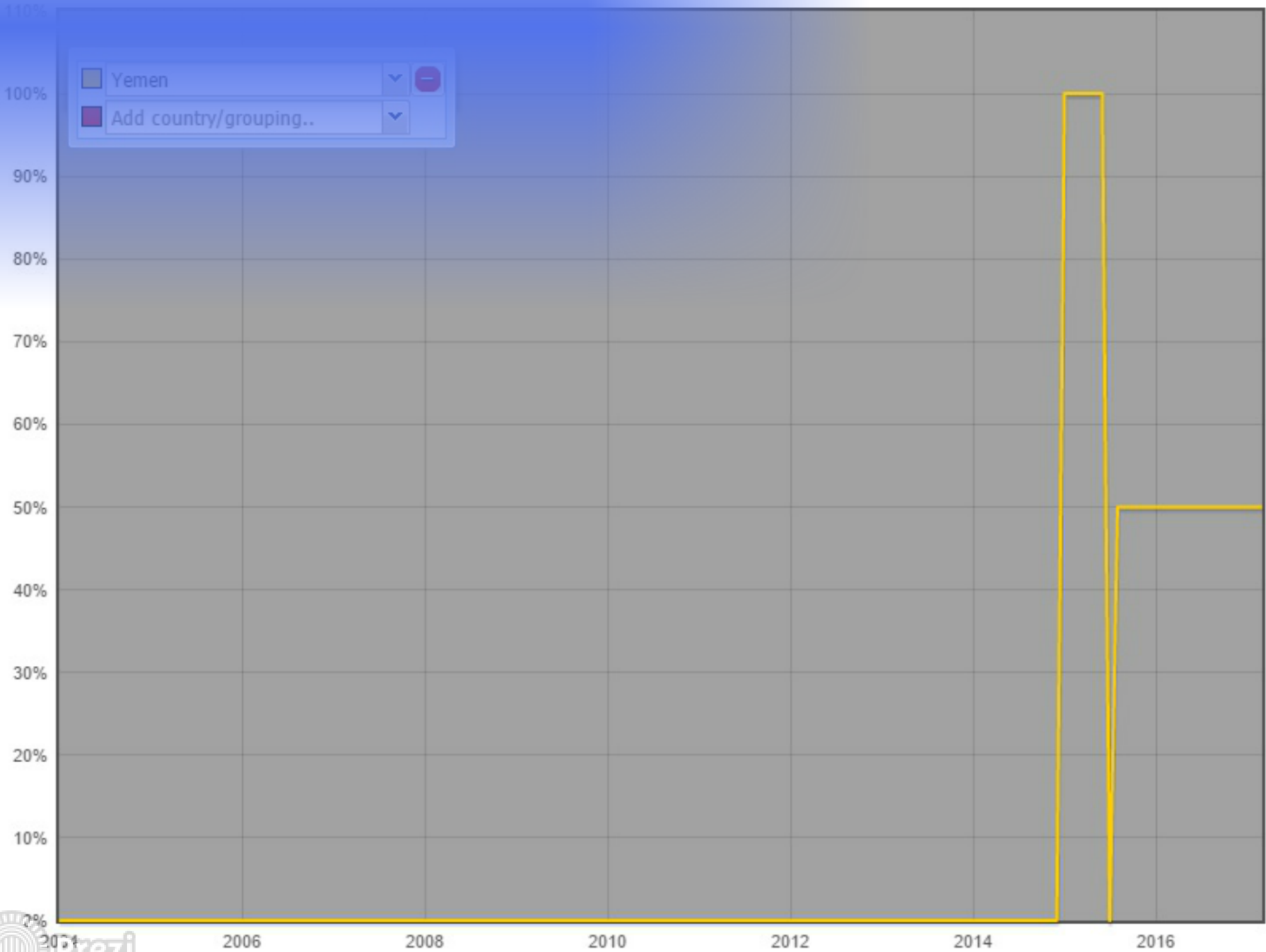
Networked Readiness: IPv6 Enabled Networks 04 April 2017



This graph shows the percentage of networks (ASes) that announce an IPv6 prefix for a specified list of countries or groups of countries

Source: <http://v6asns.ripe.net/v/6?s=ALL;s=YE;s=SA;s=AE;s=OM;s=BH>

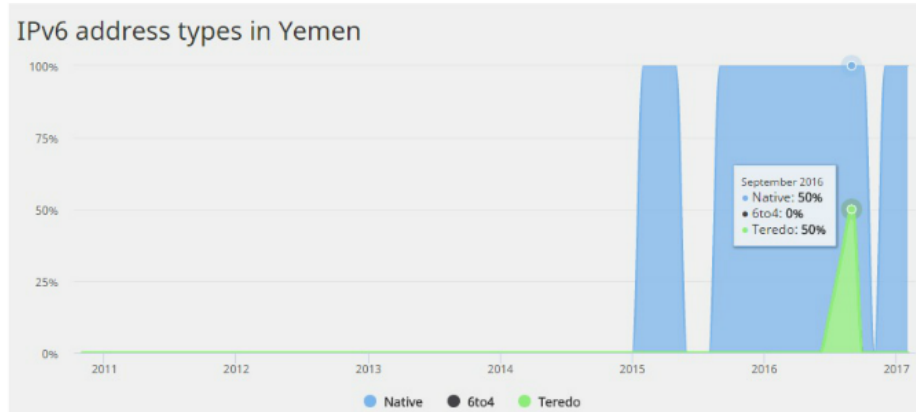




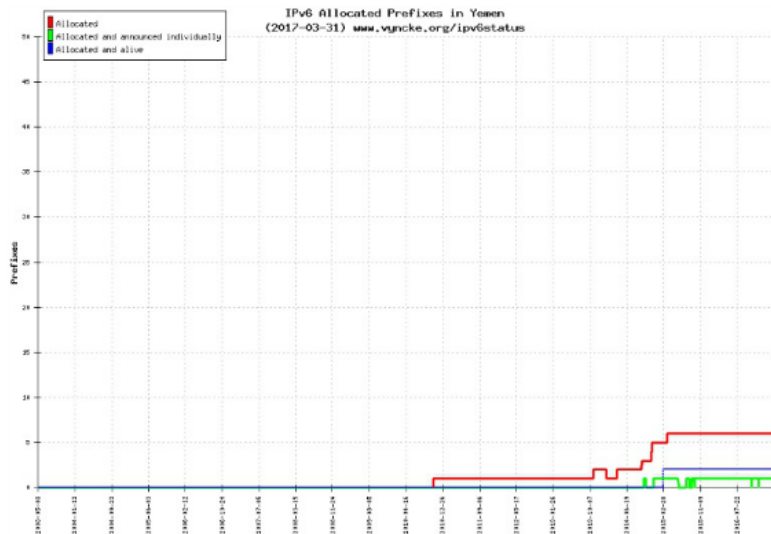
Legend:

- Yemen
- Add country/grouping..

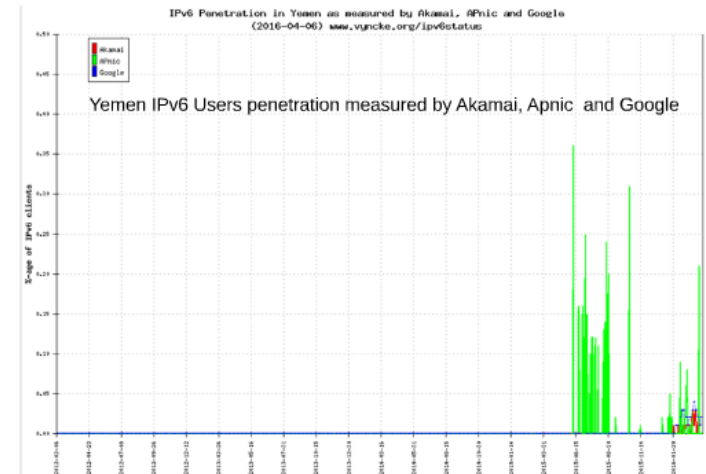
IPv6 Readiness: Case of Yemen



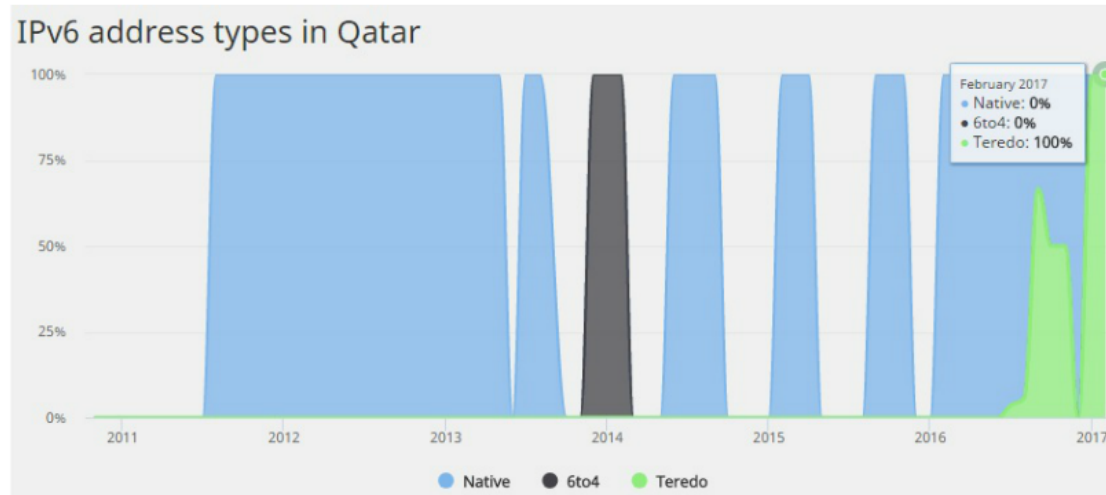
IPv6 allocated prefixes in Yemen



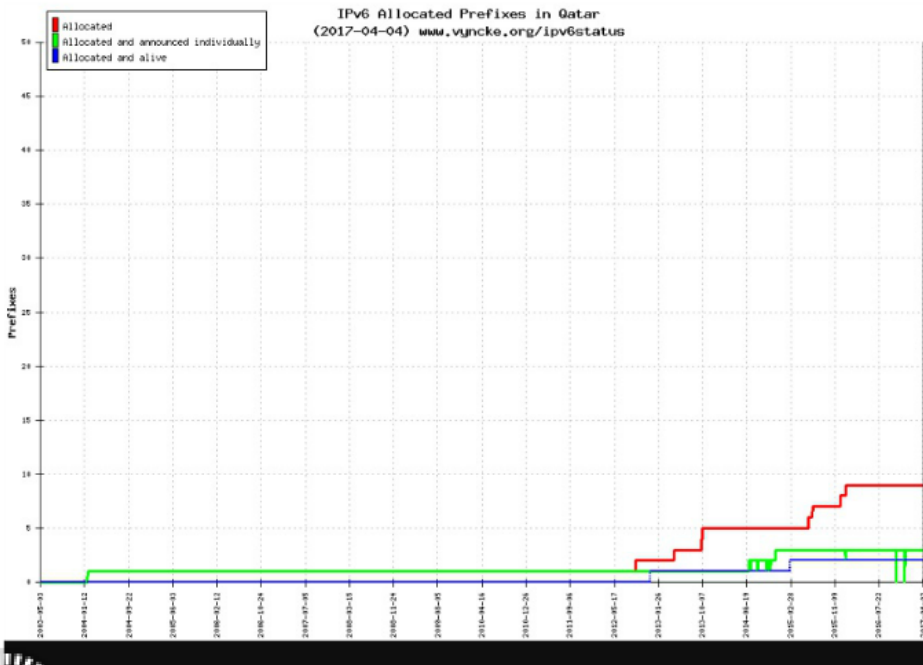
IPv6 Growth over Time Yemen



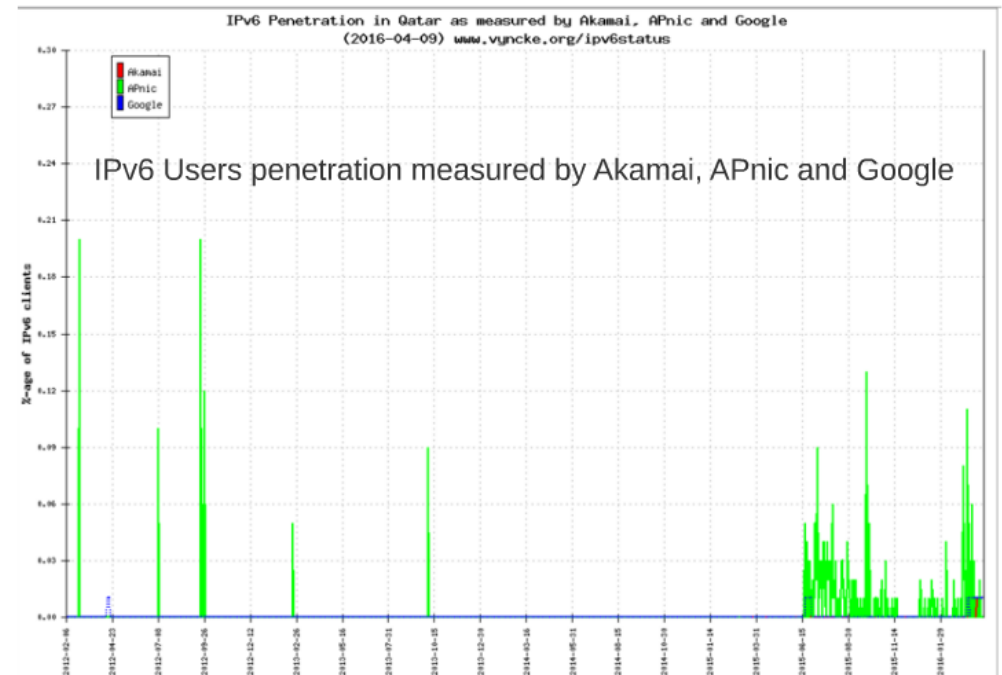
IPv6 Readiness: Case of Qatar



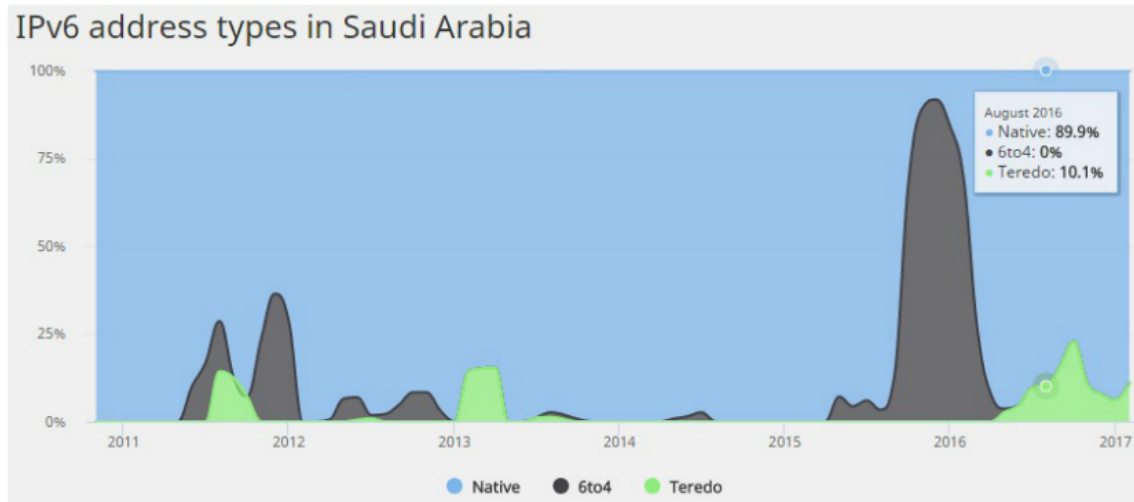
IPv6 allocated prefixes in Qatar



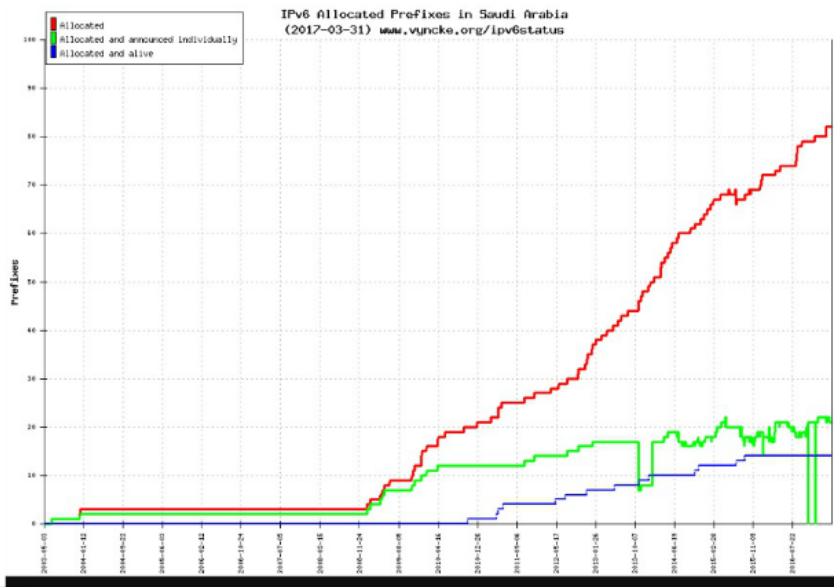
IPv6 Growth over Time in Qatar



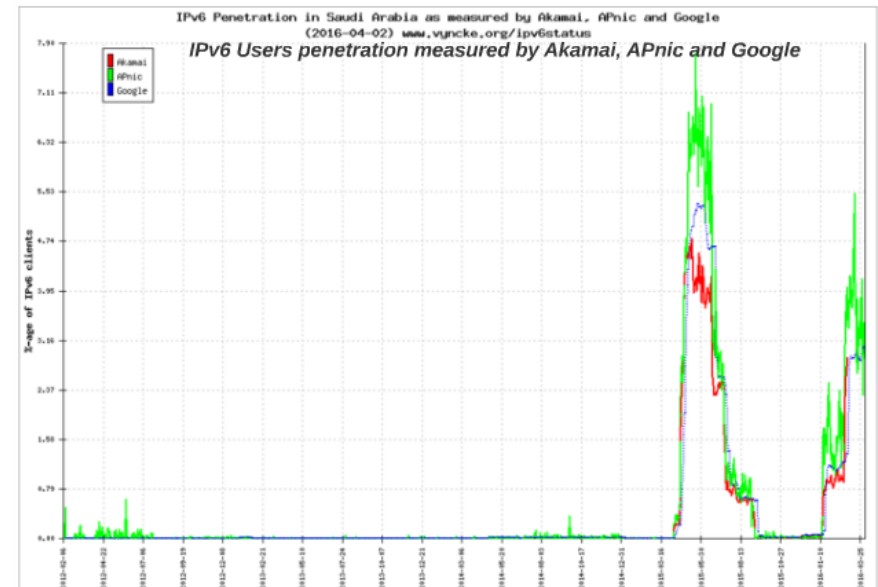
IPv6 Readiness: Case of Saudi Arabia



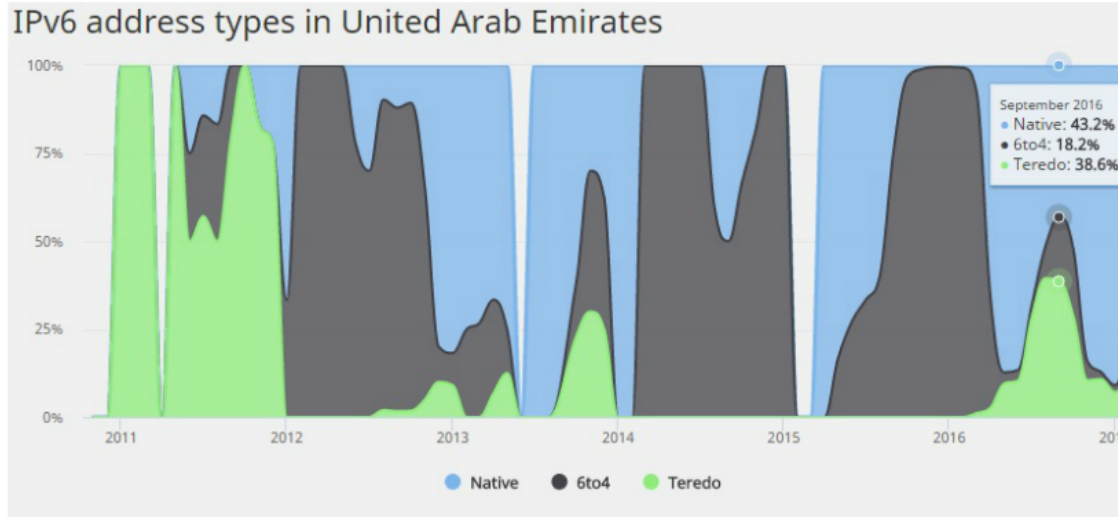
IPv6 allocated prefixes in KSA



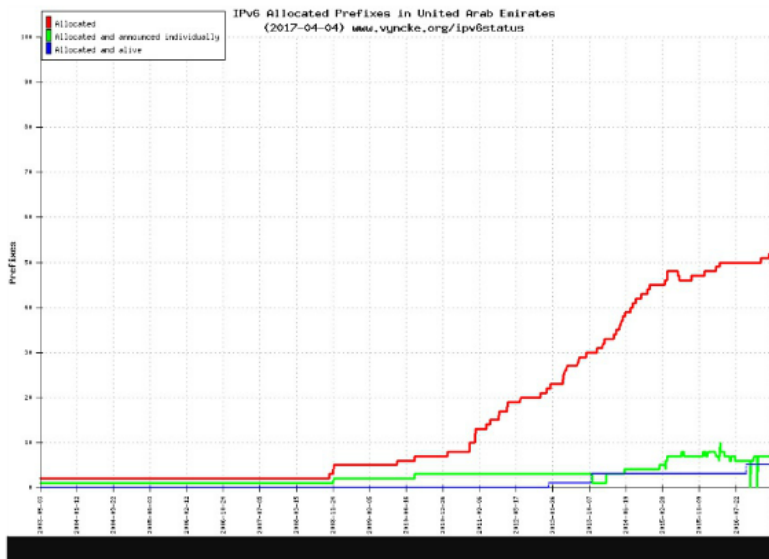
IPv6 Growth over Time in KSA



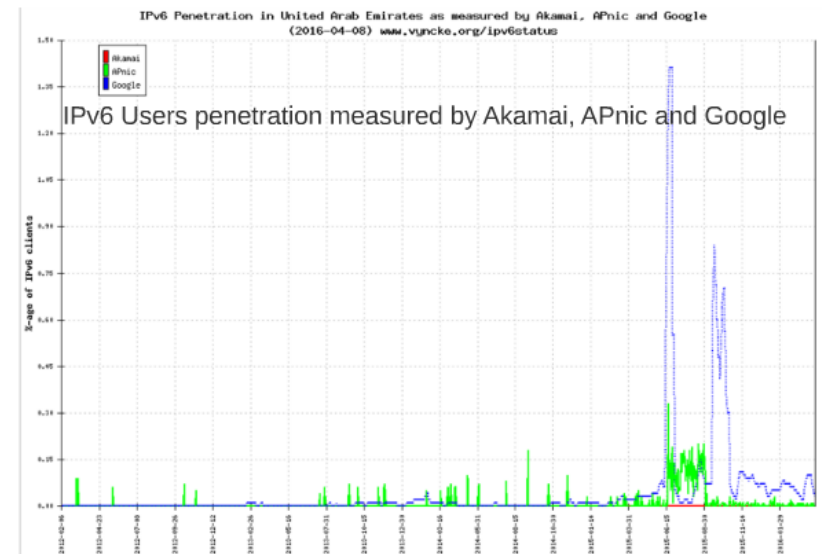
IPv6 Readiness: Case of UAE



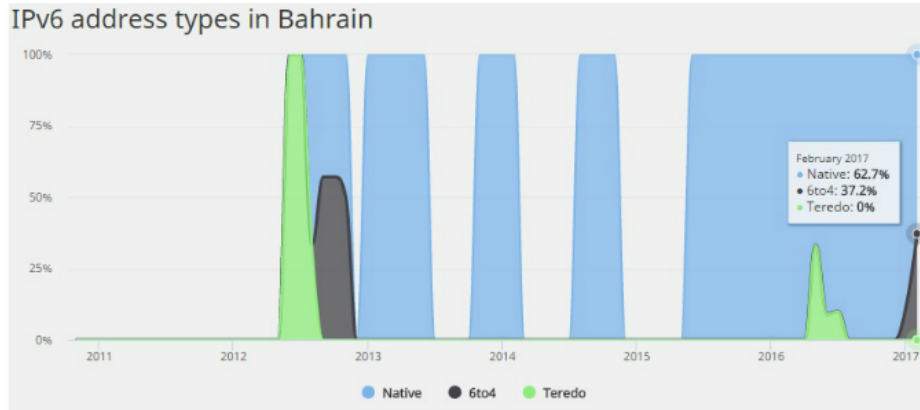
IPv6 allocated prefixes in UAE



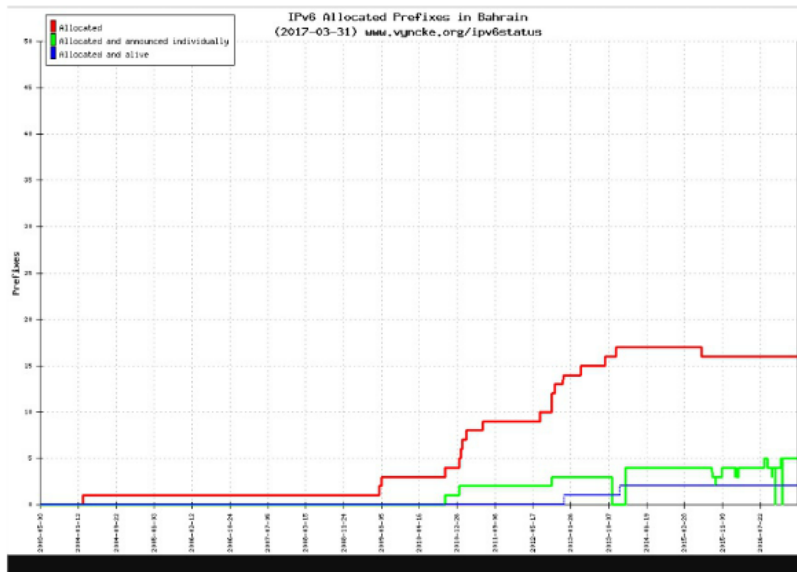
IPv6 Growth over Time in UAE



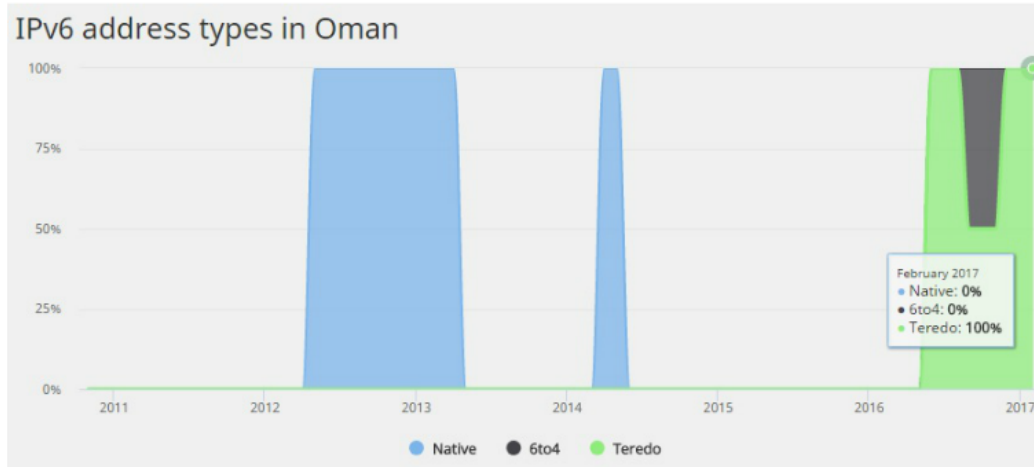
IPv6 Readiness: Case of Bahrain



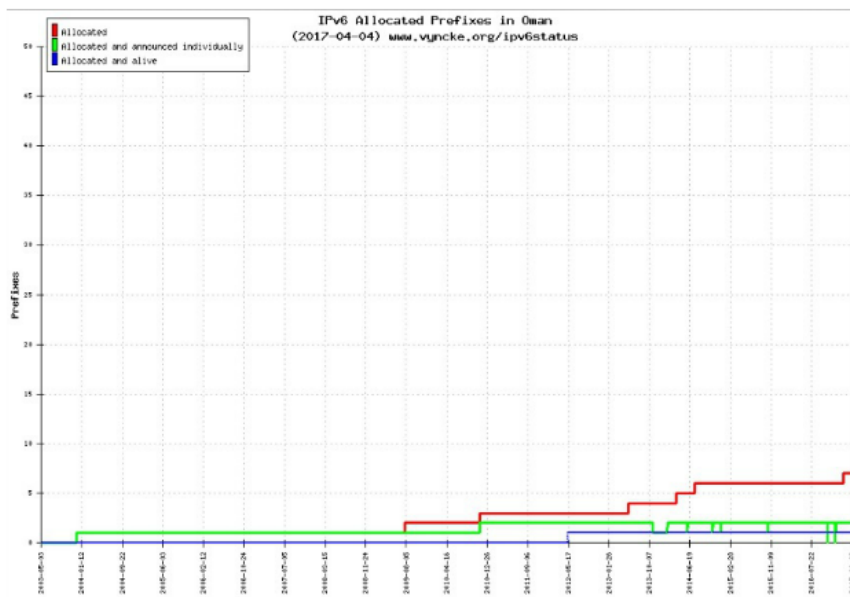
IPv6 allocated prefixes in Bahrain



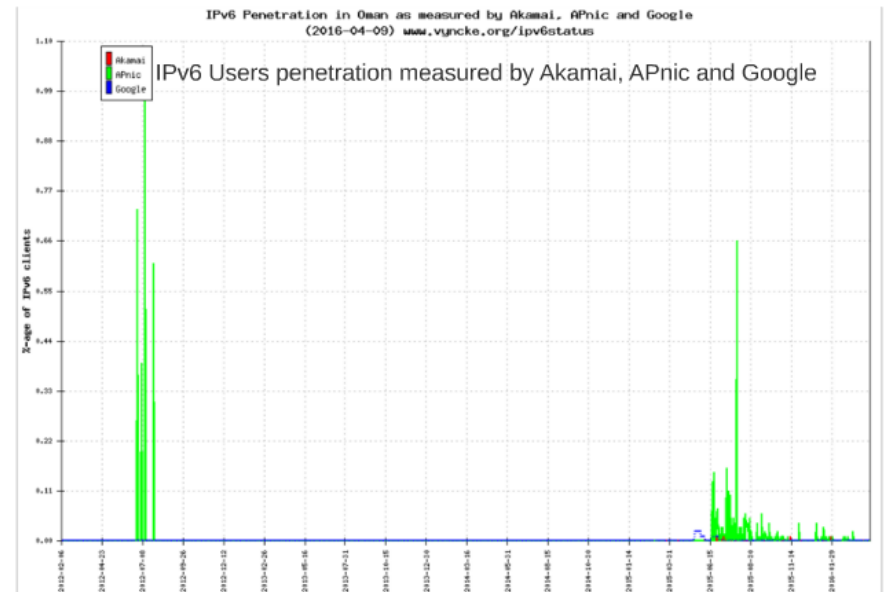
IPv6 Readiness: Case of Oman



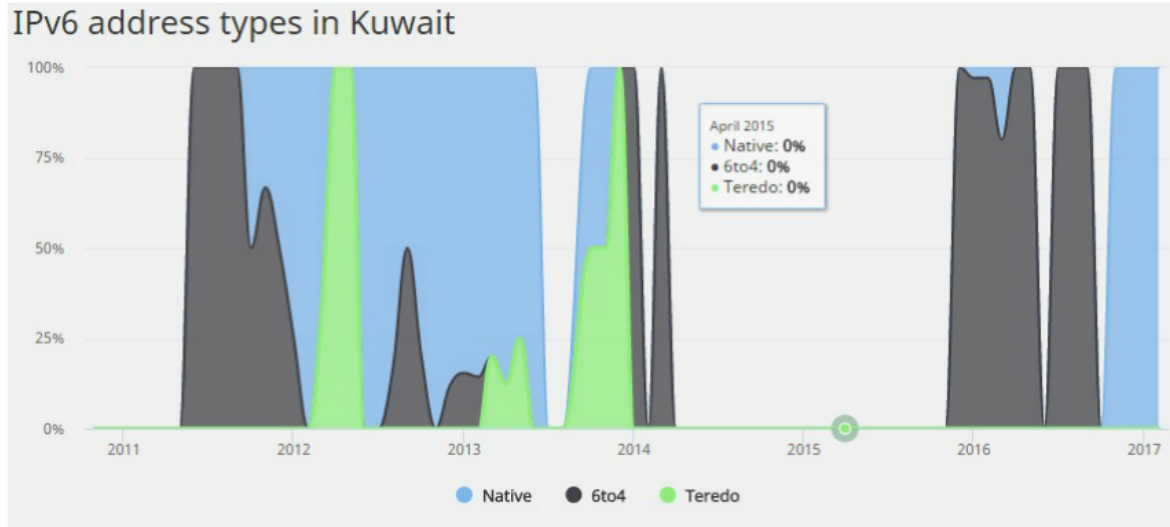
IPv6 allocated prefixes in Oman



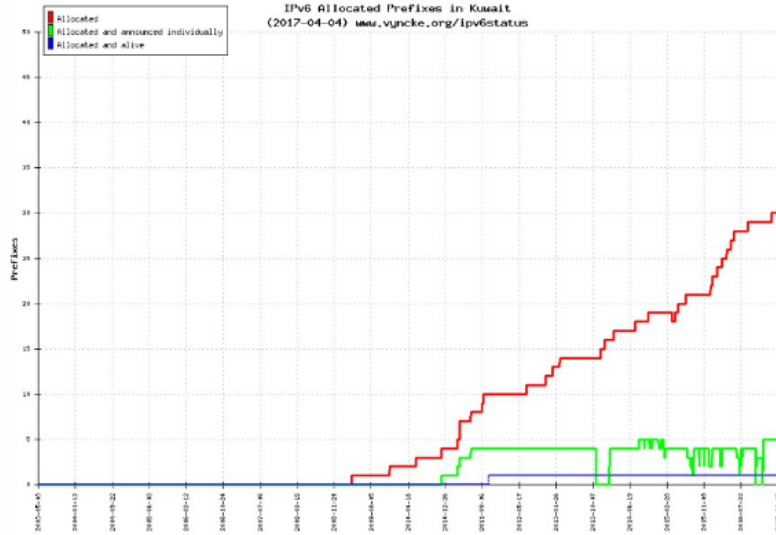
IPv6 Growth over Time in Oman



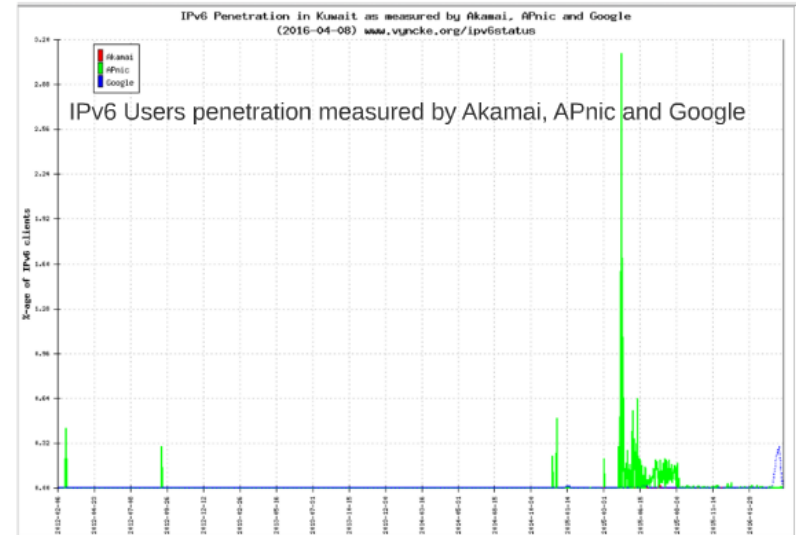
IPv6 Readiness: Case of Kuwait



IPv6 allocated prefixes in Kuwait



IPv6 Growth over Time in Kuwait



Internet network status: Average connection speed

Description/Country	Yemen	KSA	Qatar	Bahrain	Oman	UAE	Kuwait
Average Download Speed*	575 Kbps (72 kB/s)	12.1 Mbps (1.5 MB/s)	3.1 Mbps (392 kB/s)	5.4 Mbps (680 kB/s)	5.4 Mbps (676 kB/s)	6.1 Mbps (759 kB/s)	3.9 Mbps (482 kB/s)
Current Download Speed Index	22.4 Mbps (2.8 MB/s)	20.4 Mbps (2.6 MB/s)	20.4 Mbps (2.6 MB/s)	19.7 Mbps (2.5 MB/s)	19.8 Mbps (2.5 MB/s)	19.9 Mbps (2.5 MB/s)	20.1 Mbps (2.5 MB/s)
Upload Speed**:	291 Kbps (36 kB/s)	2.5 Mbps (312 kB/s)	3.9 Mbps (492 kB/s)	2.3 Mbps (287 kB/s)	1.2 Mbps (155 kB/s)	3.5 Mbps (443 kB/s)	4.2 Mbps (521 kB/s)
Current Upload Speed Index:	6.2 Mbps (777 kB/s)	6.2 Mbps (774 kB/s)	6 Mbps (749 kB/s)	6.1 Mbps (767 kB/s)	6.1 Mbps (764 kB/s)	6.2 Mbps (781 kB/s)	6.3 Mbps (793 kB/s)

* Download speed refers to the rate that digital data is transferred from the Internet to your computer.

** Upload speed is the rate that online data is transferred from your computer to the Internet.

Source: <https://www.xfinity.com/resources/internet-speed.html>

Source: <http://testmy.net/country/ye/Tested> on 24 January, 7:20 PM (GMT)

Internet network status: in Scandinavian countries

To Compare Internet Speed with GCC countries:

Description/Country	Denmark	Finland	Sweden	Norway	Iceland <small>Norway</small>
Average Download Speed	34.6 Mbps (4.3 MB/s)	9.3 Mbps (1.2 MB/s)	18.6 Mbps (2.3 MB/s)	11.6 Mbps (1.5 MB/s)	36.4 Mbps (4.5 MB/s))
Current Download Speed Index	19.8 Mbps (2.5 MB/s)	25.2 Mbps (3.2 MB/s)	26.6 Mbps (3.3 MB/s)	26 Mbps (3.2 MB/s)	26.2 Mbps (3.3 MB/s)
Upload Speed:	7.9 Mbps (983 kB/s)	6 Mbps (749 kB/s))	22.4 Mbps (2.8 MB/s)	1.2 Mbps (154 kB/s)	16.6 Mbps (2.1 MB/s)
Current Upload Speed Index:	5.8 Mbps (720 kB/s)	5.4 Mbps (678 kB/s)	5.2 Mbps (648 kB/s))	5.4 Mbps (677 kB/s)	5.2 Mbps (653 kB/s)
Source: http://testmy.net/country/ye/Tested on 24 January, 7:50 PM (GMT)					

o Compare Internet Speed with GCC countries:

Description/Country	Denmark	Finland	Sweden	Norway	Iceland Norway
Average Download Speed	34.6 Mbps (4.3 MB/s)	9.3 Mbps (1.2 MB/s)	18.6 Mbps (2.3 MB/s)	11.6 Mbps (1.5 MB/s)	36.4 Mbps (4.5 MB/s))
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Source: <http://testmy.net/country/ye/Tested> on 24 January, 7:50 PM (GMT)

Challenges and obstacles

The study reached the following: Case of Yemen

- Political instability.
- Lack of a Regulatory Authority.
- Low economic development.
- Bad infrastructure.
- Fixed-lines services unreachable for majority of people.

The study reached the following: General case

- The spread of illiteracy in the region.
- Not to make the most of the Internet in the education sector in some countries.

Analysis and discussion (1)

Internet sector in Yemen rank is 136 in international level according to (CAGR) compared to GCC countries have an advanced rank. Therefore, study proposes the following:

- Evaluate the Internet sector in Yemen and proposed solutions.
 - Encourage the cooperation between Yemeni internet sector with RIPE NCC and GCC countries.
 - Encourage stakeholders to develop own network based on IPv6 addresses.
 - Convince the decision-makers that developing Internet sector in Yemen main a lot of things economically and in terms of information.
 - Participate of academic establishments to increase the knowledge level of students.
 - Help Yemen to widely use e-learning in education sector.
 - Reserve IPv6 addresses for education sector.
-

Analysis and discussion (2)

- Exchange of experience between internet operators in the region.
- Cooperate between academic establishments with and Internet operators and RIPE NCC, etc.
- Encourage positive competition in the field of Information Technology.
- Benefit from the expertise of the leading countries in this field.
- Grant an annual incentive awards to companies and leading establishments in this field in the region.
- Encourage the organization of many events in universities for the new generation of internet technology.

Analysis and discussion (3)

We note that:

- Internet speed in Scandinavian countries is so high compared to the GCC countries.

For the following reason:

- Widespread use of Internet in the field of e-commerce.
 - Increased the education level in Scandinavia.
 - Existence of e-governments in all the countries.
 - Increasing number of digital TV services being delivered over a Broadband Internet.
-

Analysis and discuss (4)

Propositions to improve the internet sector in related countries:

- Accelerating high-speed Internet access.
 - Improving the existing internet infrastructure.
 - Expanding of e-commerce marketing.
 - Improving the quality of internet services (QoS).
 - Finally, Freedom of the press.
-

Analysis and discussion (5)

Special propositions to improve internet sector in Yemen:

- Installing new generation of cellular networks as 4G or 5G.
 - Developing internet market.
 - Expanding of internet access in terms of international and regional connectivity.
 - Upgrading national internet backbone.
 - Improving access networks for (fixed and mobile environments).
 - Increasing the average internet speeds.
 - Encouraging the competition between ISPs.
 - Launching of a new IP Points.
 - Decreasing the price of the internet services.
-

Recommendations to RIPE NCC and MENOG to help Internet sector in Yemen*:

1. Identifying the strengths and weaknesses of the Internet sector in Yemen.
2. Developing a plan according to a timetable to improve the internet sector of this country.
3. Urging mobile operators to interact positively with the IPv6.
4. Delivering a clear message to decision makers in Yemen to further develop the Internet sector.
5. Creating several internet's training centers.
6. Spreading the culture of the IPv6 in educational institutions (for example organize: seminars, workshops, and distribution the latest e-books, related websites, etc.
7. Raising awareness for community the importance of the services provided by IPv6.
8. Supply RIPE NCC all information needed to update Yemeni Internet.
9. Setting the agenda and designing a future Yemeni e-Governance.
10. Explaining of negative implications of un-development Internet sector in Yemen.
11. Concentrating on the Internet and sustainable development.
12. Concentrating on sustainable development of the internet sector.
13. Encouraging stakeholders to go ahead toward IPv6 implementing.

* Several sponsars can be support and enhance Internet sector in Yemen.

Thank you: Questions???



Socatra Island, Yemen

Source: <http://reversehomesickness.com/asia/socotra-the-most-alien-place-on-earth/>