



State of The Internet Report – Q2 2011

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Introduction

Each quarter, Akamai publishes a “State of the Internet” report. This report includes data gathered from across Akamai’s global server network about:

- attack traffic
- broadband adoption
- mobile connectivity

as well as trends seen in this data over time.

The report also aggregates publicly available news and information about notable events throughout the quarter including:

- Denial of Service attacks
- Web site hacks
- network events - including outages and new connections

The Akamai System 2010

The world's largest on-demand, distributed computing platform delivers all forms of Web content and applications for over 3,400 customers and 20,000 domains

The Akamai EdgePlatform:

73,000+
Servers

1700+
POPs

950+
Networks

660+
Cities

71+
Countries

Resulting in traffic of:

4.6 Tbps peak traffic

31 petabytes / day

690+ billion hits / day

411+ million unique clients IPs / day



The Akamai System 2011

The world's largest on-demand, distributed computing platform delivers all forms of Web content and applications.

The Akamai EdgePlatform:

101,900+
Servers

1,928
POPs

1060+
Networks

660+
Cities

83
Countries

Resulting in traffic of:

8.7 Tbps peak traffic

49 petabytes / day

1100+ billion hits / day

471+ million unique clients IPs / day



Internet Penetration



- In Q2 2011, over 604 million unique IP addresses, from 238 countries/regions, connected to the Akamai network
 - 3.4% more IP addresses than in the first quarter of 2011
 - 21% more than in the same quarter a year ago
- Although Akamai sees approximately 604 million unique IP addresses, we believe that this actually represents well over one billion Web users.
- Why?
 - It's common to have multiple users hidden behind a firewall or proxy server.
 - Individual users can have multiple IP addresses (handheld, personal/home system, business laptop, etc.)

Internet Penetration



- The USA and China accounted for around 36% of the observed IP addresses in comparison to 40% the year before.
- The top 10 countries accounted for approximately 68% of the observed IP addresses.
- Looking at the long tail, there were:
 - 186 countries with fewer than one million unique IP addresses
 - 134 with fewer than 100,000 unique IP addresses
 - 33 with fewer than 1,000 unique IP addresses

Internet Penetration



Country/Region	Q2 '11 Unique IP Addresses	QoQ Change	YoY Change
– Global	604,578,592	3.4%	21%
1 United States	143,487,908	0.6%	9.2%
2 China	76,441,611	3.9%	27%
3 Japan	44,816,252	8.7%	29%
4 Germany	34,785,032	0.4%	12%
5 France	24,312,469	1.3%	6.9%
6 South Korea	23,104,975	3.5%	15%
7 United Kingdom	22,843,333	1.4%	36%
8 Brazil	15,427,943	9.0%	29%
9 Italy	14,370,098	5.4%	32%
10 Spain	13,136,538	1.7%	15%

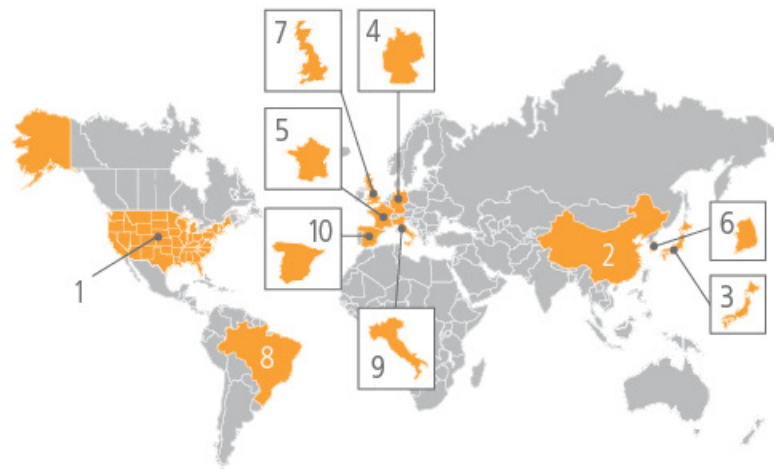


Figure 5: Unique IPv4 Addresses Seen By Akamai

Broadband Definitions:



- The data within this section includes all countries/regions with more than 25,000 unique IP addresses and cities with more than 50,000 unique IP addresses on average per month making requests to the Akamai network.
- Speed definitions:
 - “broadband” - connections greater than 2 Mbps
 - “narrowband” - connections slower than 256 Kbps.
- The “average maximum connection speed” metric represents an average of the maximum measured connection speeds across all of the unique IP addresses in a region / city.

Global Average Peak Connection Speeds

Country view



- Clear overall winner is Hong Kong with a speed of 40Mbps
- South Korea and Romania were second and third, taking the first three slots in the top 10 list.
- Globally:
 - 12 countries exceed 20 Mbps.
 - 46 others exceed 10 Mbps.

Global Average Peak Connection Speeds

Country view



Country/Region	Q2 '11 Peak Mbps	QoQ Change	YoY Change
– Global	11.4	7.4%	67%
1 Hong Kong	44.4	12%	40%
2 South Korea	35.7	-1.5%	-6.0%
3 Romania	33.7	2.9%	25%
4 Japan	31.6	5.5%	13%
5 Latvia	29.4	21%	47%
6 United Arab Emirates	26.8	3.5%	265%
7 Belgium	26.8	8.5%	41%
8 Portugal	26.2	5.2%	55%
9 Netherlands	25.3	15%	58%
10 Hungary	24.4	14%	72%
...			
16 United States	22.1	4.3%	35%

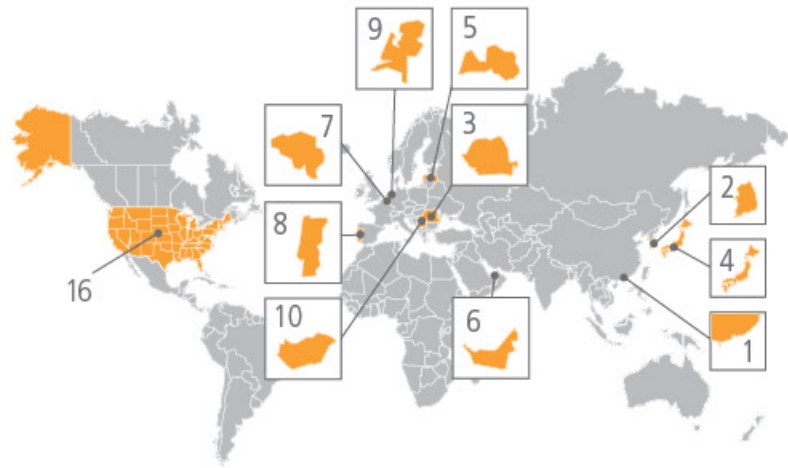


Figure 11: Average Peak Connection Speed by Country/Region

Global Average Peak Connection Speeds

City view



- Place 1: Taejon – South Korea with 55.3 Mbps
- 5 cities had an average max connection speed in excess of 50 Mbps
- 19 more exceeded 40 Mbps
- 50 more exceeded 30 Mbps
- The remaining 26 cities in the top 100 all had a speed above 20 Mbps
- 900 cities qualified (min 25k IP Addresses)
- There is no German city in the top 100

Global Broadband Connectivity Speed Distribution

Country/Region	% Above 2 Mbps	QoQ Change	YoY Change
– Global	65%	4.0%	10%
1 Bulgaria	97%	2.0%	6.3%
2 Czech Republic	95%	1.9%	8.2%
3 Romania	95%	2.4%	12%
4 Switzerland	95%	1.8%	3.9%
5 Netherlands	95%	4.1%	7.9%
6 Hungary	94%	3.3%	13%
7 Hong Kong	94%	1.8%	1.8%
8 Germany	94%	2.7%	11%
9 Latvia	92%	4.4%	3.0%
10 Luxembourg	92%	-0.9%	11%
...			
35 United States	80%	4.1%	11%



Figure 14: Broadband Connectivity, Fast Countries/Regions

Global Narrowband Connectivity Speeds below 256kbps

Country/Region	% Below 256 kbps	QoQ Change	YoY Change
– Global	2.9%	-14%	-37%
1 Lebanon	56%	-7.5%	-19%
2 Bolivia	46%	-10%	-30%
3 Uzbekistan	44%	-18%	-46%
4 Nigeria	40%	-0.7%	-30%
5 Nepal	35%	-3.8%	-42%
6 India	31%	-12%	3.2%
7 Indonesia	31%	-18%	-13%
8 Iran	30%	-23%	-35%
9 Syria	19%	-1.7%	-30%
10 Kazakhstan	19%	-4.6%	137%
...			
27 United States	1.8%	-7.8%	-33%

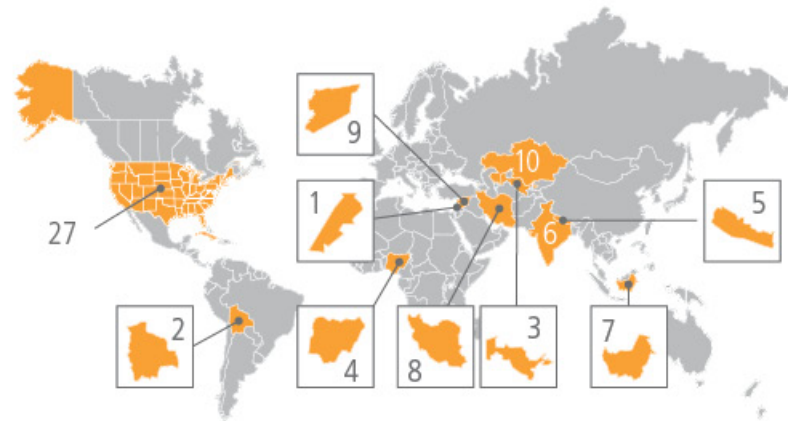


Figure 15: Narrowband Connectivity, Slowest Countries/Regions

Mobile - Definitions



- A minimum of 1,000 unique IP addresses connecting to Akamai was required for inclusion in the list.
- In countries where we had data for multiple network providers, only the top three are listed, based on unique IP address count.
- The names of specific mobile network providers have been anonymized, and providers will be identified by a unique ID.
- Data is only included for networks where we believe that the entire Autonomous System (AS) is mobile.
- Akamai's EdgeScape database was used for the geographical assignments.

Mobile Average peak connection Speeds



- The average peak connection speeds on mobile networks around the world were fairly strong:
 - All but one provider in SA had peaks over 2 Mbit.
 - 47 speeds greater than the 5 Mbps high broadband threshold
 - 27 achieving speeds greater than 10 Mbps.
 - 3 achieving speeds greater than 20 Mbps.
 - Fastest mobile provider with 23.4 Mbps peak is in Austria

Mobile Average Max. Connection Speeds



- It should be noted that a number of mobile network providers make heavy use of mobile gateways and proxies. This result in higher average and higher maximum speeds being calculated by Akamai.
- As more providers launch HSPA+, HSDPA, LTE or WIMAX, we can expect that these average speeds will increase in the future.

Security

Attack Traffic, Top Originating Countries

- Attack traffic originated from 192 countries in Q2 2011.
- Number one this year is Taiwan which replaced Russia.
- The United States are falling from place 2 to 3.
- Myanmar is now for the second quarter in the top 2.
- Aggregating the attack traffic at a continental level, Asia is leading with 47% before 30% from Europe and 20% from the Americas. The rest 3% are coming from Africa.

Security

Attack Traffic, Top Originating Countries



Country/Region	Q2 '11 % Traffic	Q1 '11 %
1 Taiwan	10%	9.1%
2 Myanmar	9.1%	13%
3 United States	8.3%	10%
4 China	7.8%	6.4%
5 Russia	7.5%	7.7%
6 Indonesia	7.4%	2.2%
7 Brazil	5.6%	5.5%
8 India	2.7%	3.8%
9 Egypt	2.7%	1.3%
10 Romania	2.7%	2.5%
– Other	36%	36%

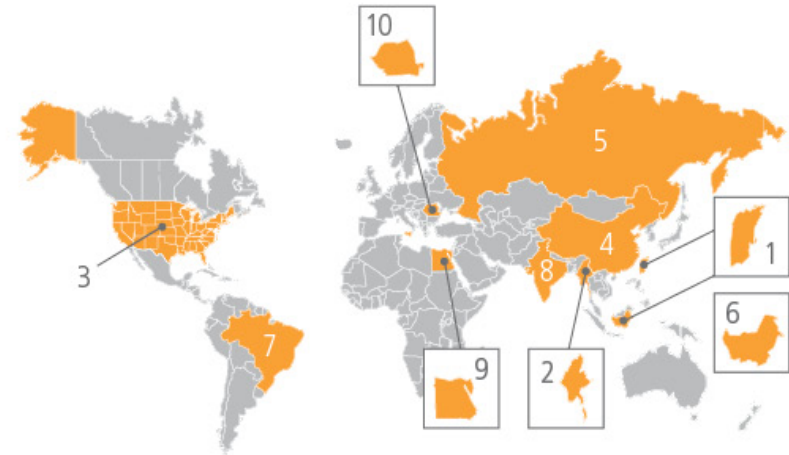


Figure 1: Attack Traffic, Top Originating Countries/Regions

Security - Attack Traffic, Top Ports



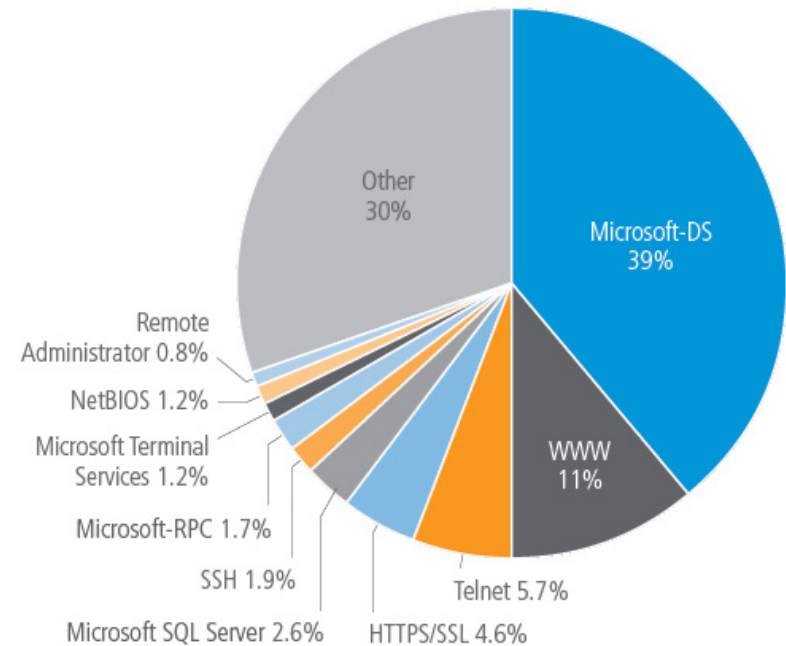
- The attacks among the top 10 targeted ports are responsible for approximately 70% of the observed attacks.
- The attacks targeting port 25 (smtp) and port 21 (ftp) declined enough to drop them from the top 10 list.
- Local flavors:
 - Port 445 is the most targeted port, with 39% of observed attacks, but this is just half of last years figure.
 - Nearly half of the observed attacks targeting port 80 globally are came from Myanmar.
 - Port 1433 (Microsoft SQL server) nearly 70% of the attacks are coming from China.

Security - Attack Traffic, Top Ports



Port	Port Use	Q2 '11 % Traffic	Q1 '11 %
445	Microsoft-DS	39%	34%
80	WWW (HTTP)	11%	11%
23	Telnet	5.7%	4.1%
443	HTTPS/SSL	4.6%	4.7%
1433	Microsoft SQL Server	2.6%	1.7%
22	SSH	1.9%	3.3%
135	Microsoft-RPC	1.7%	1.5%
3389	Microsoft Terminal Services	1.2%	0.9%
139	NetBIOS	1.2%	1.0%
4899	Remote Administrator	0.8%	0.7%
Various	Other	30%	-

Figure 2: Attack Traffic, Top Ports



IPv6 World Day



- Akamai had over 20 customers participating with over 50 properties
- Served over 8 million requests over IPv6 during the course of the day to 280,000 unique IPv6 addresses
 - 50% of the end-uses came via 6rd
 - 40% via native IPv6 connections
 - 10% split across 6to41 (~9%) and Teredo11 (~1%).
- IPv6-preferring end-users is still very small ranging from 0.2% to 0.5% of users

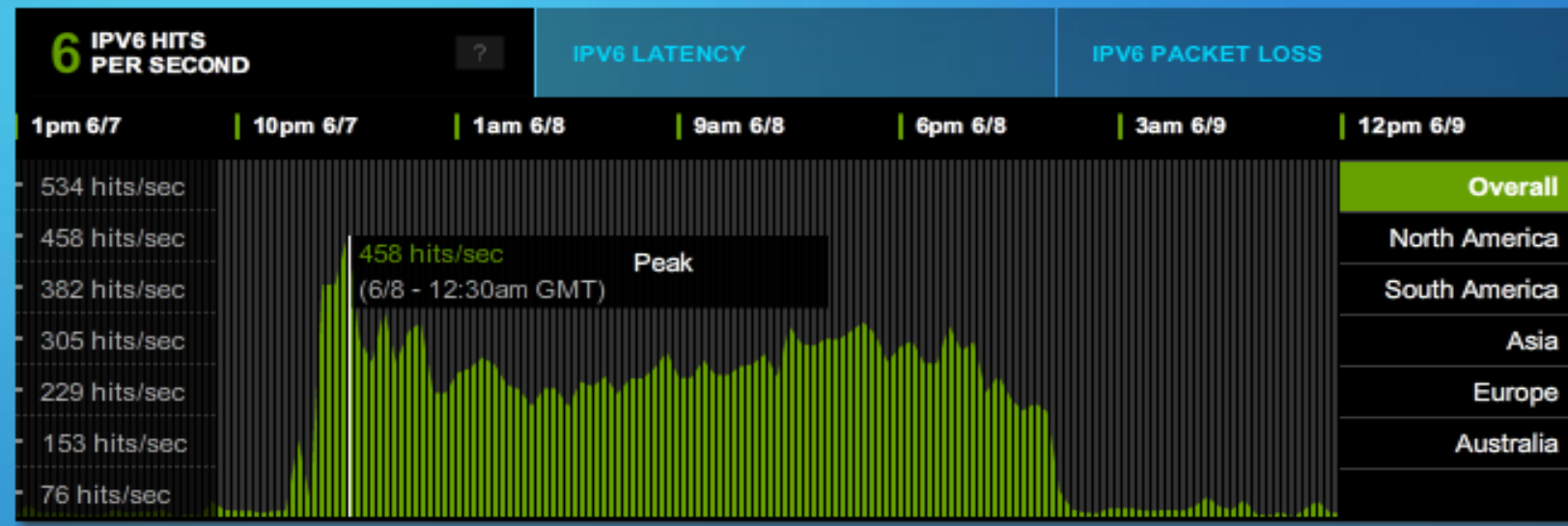
IPv6 World Day



IPv6



Akamai IPv6 Statistics



- Credits: David Belson
- URL: <http://www.akamai.com/stateoftheinternet/>
- Questions: ck@akamai.com