

akamai's [state of the internet]

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Akamai's globally distributed Intelligent Platform™ allows us to gather massive amounts of data on many metrics, including connection speeds, attack traffic, network connectivity/availability issues, and IPv6 adoption progress, as well as traffic patterns across the leading Web properties and digital media providers. Each quarter, Akamai publishes the *State of the Internet* Report.

This quarter's report includes data gathered from across the Akamai Intelligent Platform during the fourth quarter of 2014, covering attack traffic, Internet connection speeds, and broadband adoption across both fixed and mobile networks, as well as trends seen in this data over time. In addition, this quarter's report includes insight into several high-profile security vulnerabilities, attacks, and toolkits; the state of IPv4 exhaustion and IPv6 adoption; Internet disruptions that occurred during the quarter; and observations from Akamai partner Ericsson regarding data and voice traffic growth on mobile networks.

**SECURITY** / During the fourth quarter of 2014, Akamai observed attack traffic originating from source IP addresses in 199 unique countries/regions. Note that our methodology captures the source IP address of an observed attack, and cannot determine attribution of an attacker. China once again remained the top attack source, though its percentage declined to 41% in the fourth quarter from 49% in the previous quarter. Second place United States also saw a decline to 13% of total observed attack traffic. Likewise, the overall concentration of observed attack traffic decreased, with the top 10 countries/regions originating 75% of observed attacks in the fourth quarter. For the third consecutive quarter, Port 23 was the most targeted port for attacks, and the percentage of attack traffic targeting Port 23 saw a large jump to 32% — more than 2.5x previous levels. During the fourth quarter, Akamai customers reported being targeted by 327 DDoS attacks, or 57 more than in the third quarter. Slightly more than half of the attacks were reported by customers in the Americas region, while nearly twice as many were reported by customers in the Asia Pacific region than those in EMEA. With the exception of the Enterprise segment, all industries saw increases in the number of attacks as compared with the third quarter, with Public Sector targets seeing the greatest growth. In addition to the increased frequency of DDoS attacks, a number of notable attack methods came to the forefront in the fourth quarter, including Poodle, which targets a severe SSLv3 vulnerability; Yummba Webinject tools, aimed at committing banking fraud; and DDoS amplification methods using Universal Plug and Play (UPnP) devices and DNS flooder mechanisms.

**INTERNET AND BROADBAND ADOPTION** / In the fourth quarter, Akamai observed a 1.5% quarterly increase in the number of unique IPv4 addresses connecting to the Akamai Intelligent Platform, growing to nearly 803 million — about 12 million more than were seen in the third quarter of 2014. Belgium remained the global leader in IPv6 adoption, with 32% of its connections to Akamai in the fourth quarter occurring over IPv6. Looking at connection speeds, the global average connection speed remained at 4.5 Mbps, virtually unchanged from the third quarter, while the global average peak connection speed grew 8.4% to 26.9 Mbps.

At a country/region level, South Korea continued to have the highest average connection speed, despite a 12% decline from the third quarter to 22.2 Mbps, and Hong Kong again had the highest average peak connection speed, growing slightly to 87.7 Mbps. Globally, high broadband (>10 Mbps) adoption grew by 2.9% quarterly to 24%, and South Korea remained the country with the highest level of high broadband adoption at 79%. In the fourth quarter, global broadband (>4 Mbps) adoption declined very slightly quarter over quarter to 59%, with Bulgaria overtaking South Korea as the country with the highest broadband adoption rate at 96%. “4K-ready” (>15 Mbps) connections grew minimally to 12% on a global basis, and South Korea, with a 61% readiness rate, was once again the global leader

**MOBILE CONNECTIVITY** / Average mobile connection speeds (aggregated at a country/region level) ranged from a high of 16.0 Mbps in the United Kingdom to a low of 1.0 Mbps in New Caledonia in the fourth quarter of 2014. Average peak mobile connection speeds were up significantly from the third quarter, ranging from 157.3 Mbps in Singapore to 7.5 Mbps in Argentina. Four countries — Venezuela, Denmark, Saudi Arabia, and Sweden — had 97% of unique IP addresses from mobile providers connect to Akamai at speeds above the 4 Mbps “broadband” threshold, while two countries — New Caledonia and Bolivia — had 1% or fewer at those speeds. Based on traffic data collected by Ericsson, the volume of mobile data traffic grew by 11% between the third and fourth quarters of 2014, similar to the growth pattern seen between the previous two quarters.

Analysis of Akamai IO data collected during the fourth quarter from a sample of requests to the Akamai Intelligent Platform indicates that for traffic from mobile devices on cellular networks, Apple Mobile Safari accounted for nearly 36% of requests in the fourth quarter, while Android Webkit and Chrome for mobile (the two primary Android browser bases) accounted for 25% and 13%, respectively. For traffic from mobile devices across all networks, Apple Mobile Safari was responsible for close to 48% of requests, down from 50% last quarter, while Android Webkit and Chrome Mobile made up just over 27% and 12% of requests, respectively.

#### WHERE DO WE FIND THE HIGHEST LEVELS OF IPV6 ADOPTION?

/ In the fourth quarter of 2014, the countries with the highest levels of IPv6 adoption as observed by Akamai remained largely clustered in Europe. Interestingly, there were no Asia Pacific countries within the top 10 — which is surprising, given that the region is closest to exhausting its available IPv4 address space pool. Outside of Europe, the United States and Peru also had some of the highest IPv6 adoption rates. Have you taken steps to adopt IPv6? Are your key Web sites and applications available to users over IPv6?

	Country/Region	Q4 '14 IPv6 Traffic %	QoQ Change
1	Belgium	32%	18%
2	Germany	14%	32%
3	United States	12%	29%
4	Luxembourg	12%	32%
5	Peru	11%	25%
6	Switzerland	9.5%	4.6%
7	Norway	8.2%	88%
8	Czech Republic	7.0%	21%
9	Romania	6.7%	-5.5%
10	Greece	6.4%	38%

To read the full *4<sup>th</sup> Quarter, 2014 State of the Internet Report* on broadband adoption, connection speeds, Internet penetration, mobile usage, attack traffic, and more, or to use the associated data visualization tools, go to [www.stateoftheinternet.com](http://www.stateoftheinternet.com)

#### WHERE DO WE FIND THE HIGHEST LEVELS OF BROADBAND ADOPTION?

/ With the United States FCC recently moving to redefine “broadband” to 25 Mbps downstream, the existing 4 Mbps definition may soon fall by the wayside. However, in the meantime, the countries/regions with the highest levels of unique IP addresses with average connection speeds above 4 Mbps can be found in Europe and the Asia Pacific region. How does your country/region measure up? How are your sites, applications, and content taking advantage of improved broadband connectivity?

	Country/Region	% Above 4 Mbps	QoQ Change	YoY Change
-	Global	59%	-0.7%	7.8%
1	Bulgaria	96%	0.4%	17%
2	South Korea	95%	-0.1%	2.0%
3	Switzerland	93%	0.2%	2.5%
4	Denmark	92%	3.5%	11%
5	Israel	92%	0.9%	12%
6	Netherlands	91%	0.9%	4.7%
7	Hong Kong	91%	2.5%	13%
8	Romania	89%	0.6%	16%
9	Isle Of Man	89%	-1.2%	2.0%
10	Japan	88%	1.1%	4.8%

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