## IPv4 goes away in 2024

Zurich, June 24, 2015. At this year's IPv6 Business Conference Martin Gysi from Swisscom showed how Swisscom will have almost entirely IPv6-only networks according to his estimate until the year 2024. The 300 major Internet hubs making up the core of the Internet are IPv6-ready. One out of five Swiss Internet users uses IPv6 already.
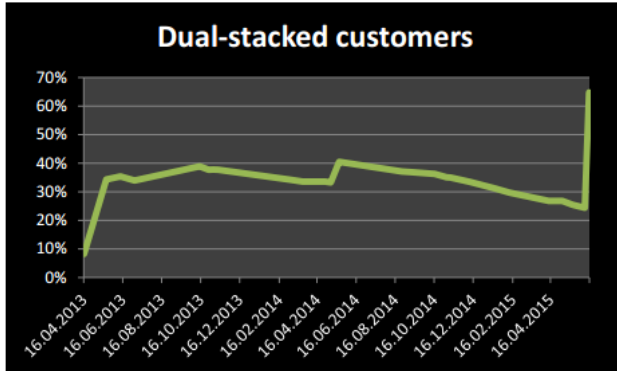
„My assessment is a look into the crystal ball, "said Martin Gysi, Technical Cluster Leader for IP Network Engineering at Swisscom. He put the increase of Internet traffic in relation with the distribution of IPv6 to IPv4 and made a projection. "As early as 2018 the models show more IPv6 traffic than IPv4 traffic. In 2024 IPv4 will probably only play a marginal role at Swisscom and the main network will be IPv6-only."
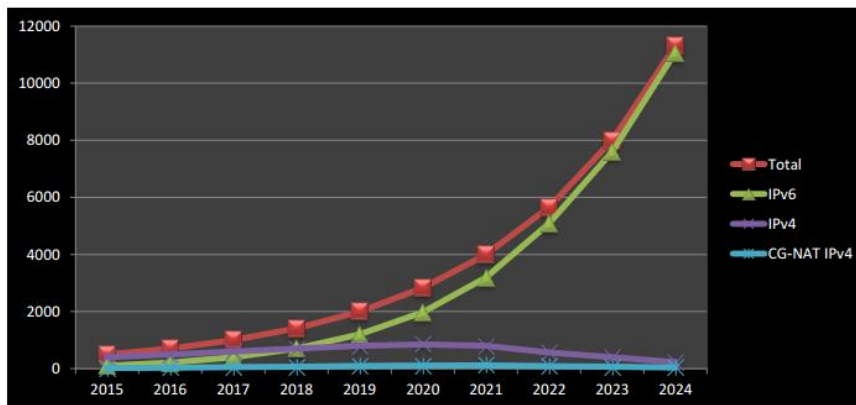
- IPv4 traffic will peak in 2020
- CG-NAT traffic will peak in 2021
- No more IPv4 traffic after 2024

Swisscom has activated another wave of IPv6 capable users in early June: more than two thirds of Swisscom users are now surfing dual stack. Dual-stack means that IPv6 will be used to any website, that is available over IPv6. 31% of the traffic

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of the dual-stack users now are IPv6 requests.

The Internet is IPv6-ready

Alain Fiocco, SR Director Cisco IPv6 HIP, presented the IPv6 distribution from a different perspective: "Unweighted figures are deceptive. For example, "only" 73 of the 500 Swiss Top Alexa Websites are IPv6-enabled. But these sites are responsible for more than 50% of all requests."
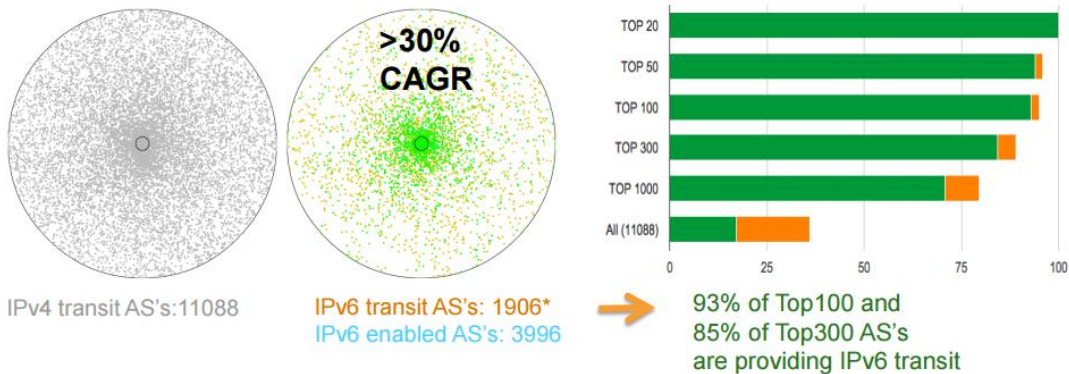
The same applies to the overall view of the AS-transit systems on the Internet. The top 30 most important hubs are 100% IPv6-capable. These 30 hubs currently run about 80% of all Internet traffic. 85% of the top 300 Internet hubs with 95% the volume of Internet traffic are IPv6-ready. "The question in the Internet backbone is really no longer IPv4 or IPv6, but dual-stack or IPv6-only", according to Fiocco. Also Swisscom has launched the first IPv6-only product for mobile users with

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Voice over LTE (VoLTE) in June 2015. Martin Gysi's assessment is: "IPv6 has left the laboratories and has arrived on the market."

Good reasons for IPv6

According to studies by Facebook mobile user with IPv6 can access content on Facebook on average 35% faster than over IPv4. The reasons is that IPv6 usually makes direct connections. Due to the address scarcity IPv4 must often flow through several so-called NATs (network address translation) that might affect the performance. For IPv6, the user can directly be connected with his target server.
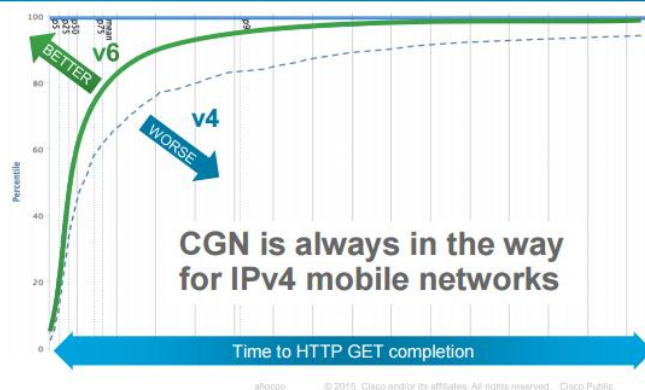

Marcus Keane, Principal Network Architect Microsoft IT, accompanies the internal IPv6-only pilots in Seattle. The goal: A building in Redmond with about 200 employees runs IPv6-only. The pilot was launched early 2015 with 10 users and is expected to provide insights into operational issues and scalability of IPv6-only networks. The next step is the extension to the whole building and all users. "99% of all services work fine. But why laptops after waking up from hibernation don't join the IPv6 network anymore still poses riddles, "said Marcus Keane. However, the findings also provide important information for optimizing their own products

for IPv6. "Our vision is IPv6-only wherever possible. We plan to run IPv4 as a service, isolated in islands and connected to our IPv6 network via NAT."

The main reason to go IPv6-only as soon as possible, according to Marcus Keane, is the reduced complexity, focus on the future and sustainable Internet technology, less troubleshooting and simpler to build expertise in the team: "the operation of a dual stack network is very costly since all engineers must be educated for both protocols in detail and the effects in in running them in parallel are sometimes unpredictable.

Barriers and Obstacles

According to Keane the IPv4-only legacy applications are a major challenge: "It's not that we cannot integrate these applications, but the application owners don't want to spend budget to migrate them. The legacy applications work, and the responsible parties have a mandate to reduce the cost in their area. Of course new applications are developed with focus on IPv6 readiness. An overall switch to IPv6 across the enterprise, however, involves significant costs. Here, management needs to define a clear IPv6 strategy."

„We learn every day, says Keane about his challenges in scalability of IPv6-only networks. "How to integrate the remaining sites and the remaining 120,000 people in our IPv6-only vision, we don't know yet."

@Home as Driver for IPv6-only

Nathalie Künneke Trenaman, IPv6 program manager RIPE and enthusiastic IPv6@home user, explained how she manages her home over IPv6 today: webcam, thermostat, LED and even a snack-robot for her cat. "Cisco estimates that in the year 2020 around 50 billion devices will be connected with a human in some way. The dimension of networking is already huge, as for example the Web page thingful.NET shows" says Künneke Trenaman. "IPv6 is the appropriate protocol to do so. The need for networking is a driver for IPv6-only networks."
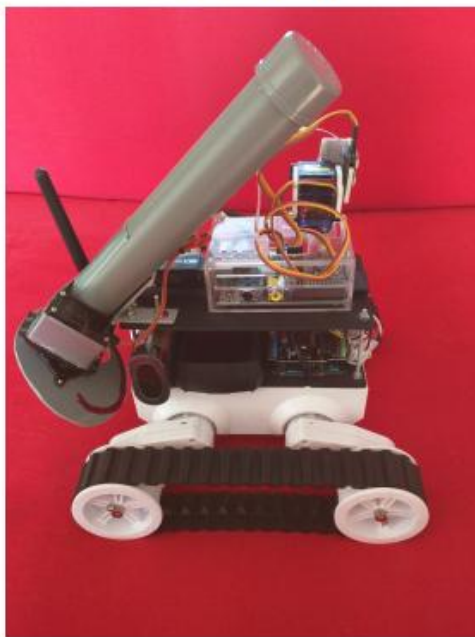
Currently it is not clear yet, how the Internet of Things (IoT) will develop. "The interesting thing about this market are not only equipment and service sales, but above all data. That's why manufacturers build their own proprietary systems with their own protocols to collect information about user behavior, to evaluate and to resell. The potential of information about customers justifies the price that Google paid for Nest". Künneke Trenaman wants more control about her own data, which

is certainly doable with OpenSource and IPv6 in the future. Talk convenience and usability for integrated solutions from vendors, even if there is the risk of a lock-in effect.

Long-time coexistence of IPv4 and IPv6

At the IPv6 Business Conference with 130 participants and 20 international experts, most people agreed: IPv6 has reached the Tipping Point and is now mainstream. Martin Gysi from Swisscom clarified: "We are very good at creating new bundles of services. But we will not take services away from the market. Our customers can therefore expect IPv4 services for a very long time at Swisscom."

Georg Kirchmair, Senior System Engineer at Swarovski, whose company has just recently switched their Internet provider in the US due to lack of IPv6 support, participated in the final panel discussion and represented the position on the situation of SMEs: "For our company in the manufacturing- area the coexistence of IPv4 with IPv6 will continue for many years. We still run production machines with embedded systems that are running legacy operating systems. And these machines have a life cycle of 15 years. So for that time we will certainly have IPv4 still running."

The Swiss IPv6 Council as the organizer of the IPv6 Business Conference looks forward to the next few years with interest, the development runs rapidly. We close with the words of Martin Gysi concerning IPv6-only in 2024: "I'm going out on a limb with my projection. But fact is, the future needs a look into the crystal ball. "

About the Swiss IPv6 Council

The Swiss IPv6 Council is the Swiss chapter of the Internationalen IPv6 Forum and was founded under the lead of Silvia Hagen in January 2010. The goal is to support interested groups and people, organisations and institutions with the integration of IPv6 in Switzerland by creating information platforms and networking events.

With its sponsors and members the Swiss IPv6 Council leads various projects and events with national and international scope. The IPv6 Council strives to grow the base of members and sponsors in the area of Swiss economy, research, education and public administration to attract and promote access to state-of-the-art projects and technologies.

Following the success of major events in 2012 for the World IPv6 Launch Day, as well as successful business conferences in June 2013, 2014 and 2015, the Swiss IPv6 Council will again tackle new projects and events in 2016. Regular member events and the IPv6 Business Conference in June 2016 are already being planned. Membership in the IPv6 Council is free, IPv6 Experts benefit from a paid membership. Registrations can be made on the Swiss IPv6 Council website online: http://www.swissipv6council.ch/de/mitglieder/registrierung

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