Why IPv6?

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The Internet Protocol (IP)

Overview

¬ The *Internet Protocol* (IP) is the main component of *all* network communications taking place within $CORP.

– Office communications

– Production IT

– Enterprise Resource Planning (SAP)

¬ Currently, there's two versions of it:

– IPv4 ("Legacy IP")

– IPv6

Internet Protocol

Version 4 / "Legacy IP"

¬ Development took place in the 70s
  – Main specification finally released 1981.

¬ At the time it was mostly developed for interconnecting "computers".
  – In universities & research labs (the "ARPANET").

¬ The ARPANET became the *Internet* later on, connecting millions of systems and, amongst others, serving as backbone for core business services of $CORP.

¬ Apparently, IPv4 still works quite well.

IPv4 Does the Job Well, Doesn't It?

¬ Indeed, it seemingly does so.

¬ Still, it has some shortcomings which become increasingly important, not least for business services of $CORP.

IPv4 – Shortcomings (I)

¬ The number of identifiers for individual entities is limited.
  – For the time being, a way has been found around this limitation.
  – It has a name (NAT) but that's not important for us right now.

¬ Unfortunately, this workaround has its own set of problems.
  – It makes network access & some communication acts more difficult.
  – It creates costs for certain actors, namely the Internet and telecommunication providers.
    – Please do not take a relaxed "that's not us, right?" attitude here, as this has influence on their strategy, in a way that might hit back to $CORP.

It Should Be Clear

¬ Anything that limits (Internet) access and hinders communication might a have an impact on customers & growth.

¬ [Place pictures of products here]

IPv4 – Shortcomings (II)
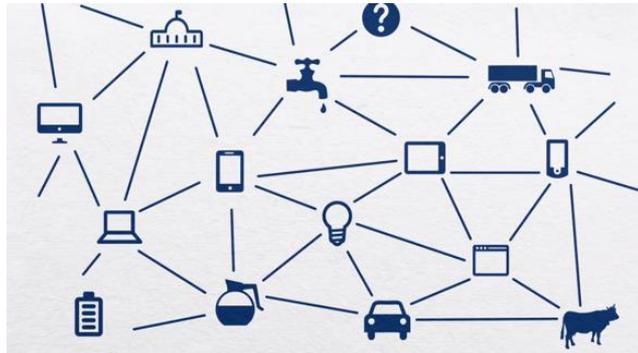
¬ As stated above, legacy IP was mainly developed for "computers".

¬ For several technical reasons it's not well suited for other, future types of networked devices which will be part of $CORP's network soon.

  – Sensors & production control systems.
  – Embedded devices performing all sorts of building automation, alarm, time tracking functions etc.
  – "The Internet of Things" (IoT)

Internet Protocol v6

Overview

¬ Developed in the mid 90s.

¬ Mostly mature today, albeit with some teething problems.

¬ Solves the above shortcomings of legacy IP.

   – Doesn't need NAT.

   – Was designed with *IoT* in mind (which wasn't called like that at time though).

What's the Current Deployment State of IPv6?

¬ As of July 2014 about ~9% of German Internet users have IPv6 (together with legacy IP).
  – Deutsche Telekom and Kabel Deutschland deliver every new contract with IPv6.

¬ Globally it's ~ 4%.
  – This number doubles ~ every 9 months.

¬ Per default configuration, systems prefer IPv6 over IPv4.
  – They will try to use IPv6 before using IPv4.
  – Read: "in case an IPv6 connection fails they will – hopefully – fall back to IPv4."

Current State of Deployment (II)

¬ A number of major websites can be reached over IPv6, namely Google, Facebook and YouTube.

¬ At the same time Internet & telecommunication providers face increasing costs providing legacy IP to their subscribers.

Now Think About It

From the perspective of a broadband Internet provider

Time

■ Adoption of IPv6   ■ Willingness to invest in legacy technology
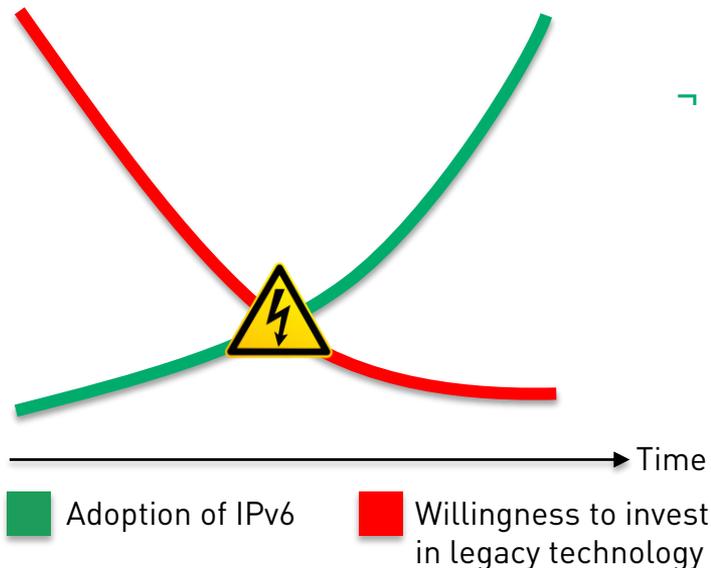
¬ **If you were an executive of an organization**
- which has to maintain an increasingly outdated technology, at growing costs.
- whose customers can increasingly use their desired service without that legacy technology.

¬ **What would you do?**
- Right, at some point of time you'd get rid of the outdated technology.
- Maybe at first just for some groups of customers, e.g. "smartphone users, aged 16–25, accessing mainly Facebook & YouTube".
  - You can offer them a "Next Generation Internet Data Rate" at half of the price.

We Don't Know When This Will Happen

¬ But it will happen for sure.

¬ As it makes perfect sense from a commercial perspective.
  - It's all about cost savings.

¬ Then Internet services running legacy IP will potentially exhibit declined user experience to their users.
  - Who happen to be *your* consumers.
  - Wanting to participate in your latest web based marketing campaign right then.
  - Or wanting to submit their résumé to your E-Recruiting platform.

Talking about Customers and How to Reach Them

¬ Just recently (Jun 19th 2014) Facebook was unavailable for some hours (#facebookdown).

  – More precisely: they were unavailable over IPv4.

  – IPv6 was ok for some of the outage period.

¬ Btw, Facebook plan to have 100% IPv6 only in their datacenters until Dec 2014!

It's not only about Customers

There's production, too.
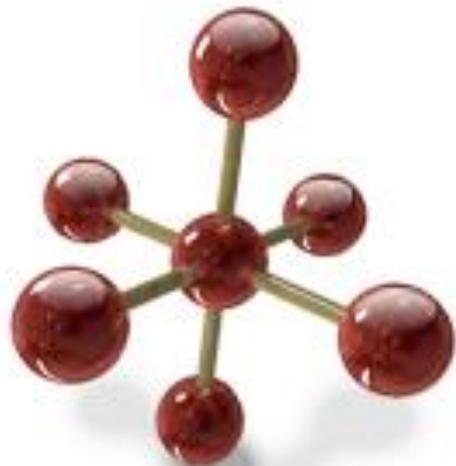
- ¬ In about 3–5 years, there will be a significant number of non-office systems within $CORP's network.
  - – Sensors in production networks.
  - – All types of embedded systems performing production related tasks.

- ¬ All these will come with IPv6 and some of them will probably only provide full functionality with it.

What Does All this Mean?

¬ In a world highly dependent on the Internet, enabling IPv6 ensures

– Growth of customers.

– Good user experience for customers and suppliers using $CORP's web based services.

– Efficient supply chains and production lines employing networked, embedded devices.

What Are Our Peers Doing?

¬ We know first-hand that the following companies are in the middle of their IPv6 projects and planning to have their network infrastructure ready until end of 2015 latest.

– [SAMPLES]

¬ All these organizations are highly dependent on resilient and scalable IT networks, while their products are (mostly) Non-IT goods.

Conclusions

¬ Starting soon and sensible planning will help to avoid tangible inter-ruptions of core network services.

¬ The migration path won't be easy and will require significant resources.

- Think: changing the wheels of a car while in full motion.

¬ Enabling IPv6 is the only way to provide a future-proof, resilient network at $CORP.