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Short Communication

# IPv6-based New Internet empowering Super IoT, Next Generation Wireless,SAT and Aerospace

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## Abstract

The IANA central IPv4 address space has been fully depleted back in February 2011 making the deploying of new large-scale IoT networks especially IoT networks not scalable and not what IoT really stands for. Hence the new IP protocol IPv6 has been designed to cater for this already back in the 90s and waiting for its killer apps to take off. 4G was the first one to adopt IPv6 in larger scale.The IPv6 Deployment worldwide is becoming a reality now with some countries achieving more than 50% user penetration, with Belgium (58%) at the top ranking) and reaching double digits v6 coverage on Google IPv6 stats. Many Autonomous Networks (ASN) reach more than 50% with v6 preferred or v6 capable penetration: Over 500 Million users are accessing the Internet over IPv6 and probably not even knowing it.The US was by far the biggest adopter of IPv6 with some 100 Million users, but India has surpassed the US with over 250 M IPv6 users, followed by Germany, Japan and China with some 20 + M users. Worldwide IPv6 deployment has passed the 20 % Google usage bar doubling every 12 months If this trend continues, we should achieve 50% by 2020 which would be the inflection point when the full roll-out of IPv6 becomes a strategic plumbing decision of the networks, a topic that is avoided so far due to many strategic and resources issues (lack of top management decision-making, lack of v6 skilled engineers and v6 deployment best practices, very limited ISP v6 access deployment. The deployment of Carrier-grade NAT is in full swing making networking and user experience more brittle. IPv6 will kick in big time for IoT and 5G to take them to the next level which are "Things-to-Things" beyond the current network of things under the non-IP IoT umbrella as Kevin Ashton coined the term IoT for RFID back in 1990 before even RFID supported the IP stack and still today don't. This is another technology myth or fake news. IoT will suffer immensely under lack of built-in security which together cyber security issues are like always brushed over at this stage due mainly to lack of IPv6 security skills.

**Keywords**

Internet of Things, Any Paradigm, Smart Objects, Security Issues,IPv6, Cloud Services

## Back Ground

Kevin Ashton, cofounder and executive director of MIT Auto-ID Centre, first introduced the term "Internet of Things" in 1999. It is an emerging concept where smart objects are equipped with sensors or actuators, tiny microprocessor, communication interface, and power resource. As per Libelium report , it is estimated that more than 50 billion devices will be accessing the Internet by the year 2020. The tremendous increase in demand makes mapping of resource constrained sensor nodes and Internet a big challenge. The term „Thing used in "Internet of Things" can be defined as physical or digital or virtual entity that is capable of being identified  to integrate heterogeneous data, semantics, and objects. IoT combines several techniques such as RFID,Zigbee,Wi-Fi,3G/4G,embedded devices, sensing devices

To ensure sensing data availability at any time, at any place, effective processing of large amounts of collected sensing data is necessary in the application areas such as environmental monitoring, weather forecasting, transportation, business, healthcare, military application etc. Combining wireless sensor networks with cloud makes it easy to share and analyze real time sensor data on-the-fly. The issues of storage capacity may be overcome by low-cost cloud computing technique. For security and easy access of data, it is widely used in distributed and mobile environment. The objective of the integrated sensor-cloud framework is to facilitate the shifting of high volume of sensing data from sensor networks to the cloud computing environment; so that scientifically and economically feasible data can be fully utilized to visualize the concept of next generation Internet i.e. Internet of Things. Figure 1 represents "any" paradigm in the context of IoT. In order to provide anytime, anywhere services, a number of smart sensing objects attached to Internet have to communicate with each other through uniquely assigned identity. This is where128 bits IPv6 steps in. So that, it can support 2128 addresses, which is approximately 340 undecillion or 3.4  1038 addresses.

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