Why Next Generation Protocols?

The TCP/IP protocol suite has undoubtedly enabled the evolution of connected computing and many other developments since its invention. And now our increasingly connected world needs to support modern mobility behaviour, connections with/among the machines and a transport to bridge together user experiences across virtual, augmented and the physical world. Within the telecommunications and networking community it is now necessary to fundamentally review the future direction of TCP/IP and ask ourselves how information communications protocols should evolve to meet the needs of the 21st Century.

ETSI NGP ISG takes a holistic approach of assimilating the requirements from various sectors to formulate the next generation information communications protocols and where appropriate, network architectures. With many years of cumulative experience NGP members have gathered wide range of requirements from the current communication infrastructure overheads, network operation issues, new technology areas such as 5G Mobile connectivity, Internet of Things and Ultra-high resolution content distribution, and finally from the digital trends in ecommerce and industry automation.

"The driving vision of ISG NGP is a considerably more efficient and gradually evolving Internet that is far more attentive to user demands"

Essential scenarios for the Next Generation Protocols

Mobility is a basic requirement. Mobile traffic grew 4000-times in the past decade. Looking ahead the way we exchange information must not discriminate whether the communication endpoint is stationary or mobile, yet there exist barriers to survivability of a session due to the inherent structure of the device addresses. Furthermore, streaming video drives maximum Internet traffic. A new transport functionality capable of high-throughput and higher-resolution over IP is required.

The Internet of Things (IoT) connected objects are not conventional communication end points, NGP recognizes that an architecture to support large number of interconnected, complex event-driven IoT systems is important to achieve for universal IoT device communication (IP or non-IP). In contrast, eCommerce sector needs lower latency, security, reliability and transactional integrity.

Increased network complexity is a direct effect of how inline network functions such as security and traffic profiling are implemented due to inherent gaps in TCP/IP protocol suite. It adds cost to the network in terms of hardware processing requirements, increased energy requirements and increasing the overall complexity of the network. In addition, communications for IoT, V2X, mobile ecommerce demands newer security models. It is more important than ever to bring intelligence to operations, provide embedded security and context awareness to minimise in-network packet processing overheads.

An opportunity for network operators

Mobile network operators require the ability to optimize their network infrastructure to align with existing and new services. They need to be able to offer new services based on technological innovations to end users as soon as they become commercially viable. The existing LTE protocol architecture presents many challenges in terms of bearer channel management with respect to mobility and security. Operators care about protocols that will help them optimize the use of radio spectrum resources through efficiency in transport protocols to maximize radio interface performance and throughput.

Network operators always value solutions that can rapidly reconfigure their networks in line with evolving usage over time. ETSI Next Generation Protocols ISG is an opportunity for Fixed and Mobile operators to not only express the technical challenges and requirements for their network infrastructures for tomorrow but also influence the protocols and specifications in the manner that gives them best opportunities to provide services to end users.
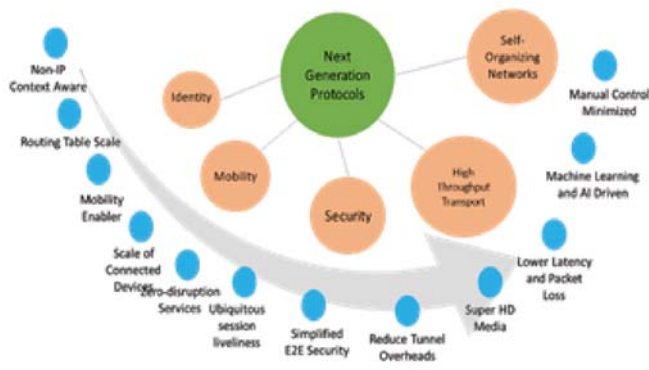
Early steps at NGP

As a first step, NGP ISG has assimilated the following topics that are seen to offer limited functionally in the current communications Protocols

- Addressing in the Internet Architecture
- Mobility based scenarios in mobile networks
- Pervasive security, privacy and reliable critical infrastructure
- Transport for efficiency in IoT, for high bandwidth and low latency

These are discussed in great detail in our white paper, available from the ETSI website.

> "Achieving ISG NGP's goals requires buy-in from a significant majority of the industry, especially through the collaboration with established SDOs… It is not the intention of this ISG to undertake this mission alone."

ISG NGP vision and focus

NGP aligns its goals to make the end to end Internet more efficient, taking into consideration the requirements of different technology sectors. Achieving ISG NGP's vision requires buy-in from a significant majority of the industry, especially through the collaboration with established SDOs.

NGP will formulate a series of ETSI Group Specifications covering a summary of relevant technologies, architectures and protocols as well as an assessment of their practicality for start of implementation in the 2020 timeframe.

We invite all – equipment vendors, network operators, network designers and engineers to join ISG NGP and take advantage of this group; to contribute, collaborate and make an impact to the Internet of the modern era.

Please visit:

www.etsi.org/ngp