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CONTRIBUTION

Source:	Austria, the Czech Republic, Denmark, Estonia, ETNO, European Union (Belgium), Finland, France, Germany, Greece, GSMA, Italy, Latvia, Lithuania, Malta, the Netherlands, Norway, RIPE NCC, Romania, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom
Title:	New IP, Future Vertical Communication Networks or similar proposals
Purpose:	Discussion
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Abstract: The case has not been made for Study Questions on "new IP"/ "Future Vertical Communications Networks" or similar proposals in the next ITU-T study period. We have significant concerns about (i) the technical merits of the proposals (ii) the duplication of existing work (iii) the lack of multi-stakeholder engagement and (iv) the broader economic risks. We propose that the discussion on the text of the proposed questions should now be discontinued and that the text of the proposed questions should not go forward for adoption.

Introduction

The case has not been made for Study Questions on "new IP"/ "Future Vertical Communication Networks" or similar proposals in the next ITU-T study period. There are still significant concerns about (i) the technical merits of the proposals (ii) the duplication of existing work (iii) the lack of multi-stakeholder engagement and (iv) the broader economic risks. Our vision is for the continued development of the Internet through open, inclusive and multi-stakeholder processes, led by the IETF, protecting an unfragmented internet, with a single naming and addressing system. The critical priorities for the ITU in this area should be to achieve affordable connectivity for half the world's population that is still unconnected and to promote the deployment of IPv6.

(i) Technical merits of the proposal

There is no evidence to show that current networks cannot continue to evolve to meet the requirements for future communication services. In our view, the proposals for new study questions and work items should be based on a detailed gap analysis, problem statements and use cases. These have not been provided with regard to "new IP" / "Future Vertical Communication Networks". The terms used in the proposals and the statements made in the proposals for new questions lack evidence to support them.

The proposals that have been made seem to mean that "new IP" / "Future Vertical Communication Networks" would be less resilient than the current Internet protocol. They appear to impose a hierarchical structure with centralised management of particular points in the Internet's architecture. This would introduce single points of failure, so it would be less able to cope in the event of physical damage or cyber attack.

The proposals to allow for flexible length in the address space risks fragmenting the Internet. It would result in disjointed addressing systems requiring independent routing and translation to achieve interchange among the different domains. This would add complexity as well as increased capital and recurrent costs, for no obvious benefit. The technical and business arguments for taking such steps are not at all clear.

No evidence has been produced that any kind of semantic addressing concept would improve network performance. Replacing the current IP addressing with an identifier system, would create a hierarchical system rather than a distributed system. Relying on a one-to-one relationship between an identifier and an object (such as a phone or a server) is insecure and cumbersome. There would be no dynamic host configuration protocol ability allowing for resilience and no ability to re-use IP addresses or cut devices off in the case of security threats. The current distributed Internet architecture has survived massive attacks. Replacing it with a new architecture or migrating to a new architecture would create new risks.

Changing the name to "Future Vertical Communications Networks" does not end these concerns. The proposals are still clearly about addressing, routing and the transport layer.

(ii) Duplication of existing work

We are concerned that duplicating work at the ITU would lead to higher costs and in the long term it could undermine interoperability. The IETF is already addressing issues such as security, ultra-high throughput, heterogeneous networks and deterministic forwarding. For example:

- MPTCP is a protocol that addresses the need for communication over different, independent networks.
- The Delay/Disruption Tolerant Networking working group is working on cases where there is intermittent connectivity.
- The Deterministic Networking working group is addressing the issue of deterministic networking.
- Quick UDP Internet Connections is a new encrypted-by-default transport protocol that accelerates web traffic and makes it more secure.
- Real-time Protocol is supporting low-latency applications such as multimedia.

In addition to these new developments, the Internet Research Task Force (IRTF), the IETF's sister organisation, is focusing on long-term research issues related to the future Internet.

We are concerned that efforts to liaise formally with IETF and other relevant Standards Development Organisations (SDOs) have not been completed.

(iii) Multi-stakeholder engagement

Internet technologies should be developed in an open and inclusive way, taking into account the perspectives of relevant stakeholders, including industry, civil society and academia. Work on Internet Protocol should be led by the IETF. It should be recognised that the Internet has evolved successfully over the years and the multi-stakeholder approach has allowed it to flourish and grow.

The supporters of "New IP" / "Future Vertical Communication Networks" argue that the ITU should now redesign the Internet in a top-down fashion. Only ITU members would be able to participate, with decisions ultimately negotiated between governments. This would be a departure from long-standing effective approaches, with serious consequences for the development of the Internet. We believe it is not appropriate for the ITU - as an inter-governmental agency - to lead this work.

(iv) Broader economic risks

There has been very significant investment in current IP networks and they are woven into the infrastructure, business, government and regulatory eco-systems of countries around the globe. We remain concerned that discussion of a "new IP" (or "Future Vertical Communication Networks") will create a factor of uncertainty that could affect investments in both internet capacity and access technologies such as 5G.

Replacing the current Internet would involve enormous deployment costs for governments, businesses and consumers and waste previous investment. Many developing countries are overcoming challenges to build their infrastructure and capacity in IP networks. Moving to a new Internet architecture would place an unrealistic economic burden on them and require vastly increased capacity and development aid.

With the scarcity of IPv4 addresses increasing, we need urgently to accelerate the deployment of IPv6. Developing a new Internet protocol or architecture would undermine that and jeopardise private sector investment.

Conclusion

We believe that the Internet must continue to evolve and develop in order to meet the needs of new technologies, applications and services. That evolution should be developed in a way which is open, inclusive and multi-stakeholder and is supported by the broad range of technical, industry and other stakeholders.

The Internet is a distributed network of networks which is not controlled by any centralised body. This has allowed it to grow and develop successfully and it underpins the Internet's resilience and security. We should aim to protect this distributed architecture and protect an unfragmented internet, with a single naming and addressing system.

Developments should build on existing protocols and technologies, with a clear understanding of the impact on the Internet ecosystem. Developments in networking technologies should support fundamental principles of the Internet such as best effort and underpin one global and interoperable network, supporting permission-less innovation, privacy and users' empowerment.

The primary body responsible for the Internet and for developing Internet protocols should continue to be the IETF. We want the Internet to continue to develop based on the organisations and structures that have allowed it to flourish so successfully. We agree we need to continue to address the well-known challenges identified in the "new IP" proposal, such as latency and security. The best way to do that is to collaborate with the full range of technical and other stakeholders.

Covid-19 has demonstrated that affordable connectivity should be the ITU's highest priority, with half the world's population still unconnected. We should also continue important work to deploy IPv6, rather than develop a new IP.

Proposal

Changing the title and amending the proposed study questions associated with "new IP" or "Future Vertical Communication Networks" has not changed the fundamental issues, set out above. We note that in November 2020 modifications were proposed for each of Questions F/13, G/13, O/11 and P/11 to add a note seeking to deny that the Question would interfere with the current Internet Protocol or its potential evolutions. However, the impact of what is proposed under these FVCN Questions, which are clearly a re-naming of "new IP", will indeed have that effect.

The draft study questions have been discussed over many meetings in the last year and it is clear that there is no consensus for them. We propose that the discussion on the text of the proposed questions should now be discontinued and that the text of the proposed questions should not go forward for adoption.

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