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| **Council Working Group on International Internet Related Public Policy issues (CWG-Internet) Twelfth meeting – Geneva, 1 February 2019** |  |
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| Report by the Secretary-General  ITU INTERNET ACTIVITIES: RESOLUTIONS 101, 102, 133 & 180 | |

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| Summary  This report summarizes ITU’s activities related to Plenipotentiary Conference (PP) Resolution 101 (Rev. Dubai, 2018), “Internet Protocol-based networks”; Resolution 102 (Rev. Dubai, 2018), “ITU’s role with regard to international public policy issues pertaining to the Internet and the management of Internet resources, including domain names and addresses”; Resolution 133 (Rev. Dubai, 2018), “Roles of administrations of Member States in the management of Internationalized (multilingual) domain names”; and Resolution 180 (Rev. Dubai, 2018), “Facilitating the transition from IPv4 to IPv6”.  References  *Plenipotentiary Resolutions* [*101*](http://www.itu.int/en/action/internet/Documents/Resolution_101_pp14.pdf)*,* [*102*](http://www.itu.int/en/action/internet/Documents/Resolution_102_pp14.pdf)*,* [*133*](http://www.itu.int/en/action/internet/Documents/Resolution_133_pp14.pdf)*,* [*180*](http://www.itu.int/en/action/internet/Documents/Resolution_180_pp14.pdf) *(Rev. Dubai, 2014); Council Resolutions* [*1305*](http://www.itu.int/md/S09-CL-C-0105) *(2009),* [*1336*](http://www.itu.int/md/S15-CL-C-0113/en) *(mod 2015),* [*1344*](http://www.itu.int/md/S15-CL-C-0112/en) *(mod 2015); WTSA Resolutions* [*47*](https://www.itu.int/pub/T-RES-T.47-2016)*,* [*48*](https://www.itu.int/pub/T-RES-T.48-2016) *(Rev. Dubai, 2012)* [*49*](https://www.itu.int/pub/publications.aspx?lang=en&parent=T-RES-T.49-2016)*,* [*50*](https://www.itu.int/pub/T-RES-T.50-2016)*,* [*52*](https://www.itu.int/pub/T-RES-T.52-2016) *(Rev. Hammamet, 2016),* [*58*](https://www.itu.int/pub/T-RES-T.58-2016)*,* [*60*](https://www.itu.int/pub/T-RES-T.60-2016) *(Rev. Dubai, 2012),* [*64*](https://www.itu.int/pub/T-RES-T.64-2016)*,* [*69*](https://www.itu.int/pub/T-RES-T.69-2016)*,* [*75*](https://www.itu.int/pub/T-RES-T.75-2016) *(Rev. Hammamet, 2016),* [*98*](https://www.itu.int/pub/T-RES-T.98-2016) *(Hammamet, 2016);* [*WTDC-17/Buenos Aires Action Plan Objective 3/Output 3.3*](https://www.itu.int/md/D14-WTDC17-C-0115/en) *, WTDC Resolutions* [*20, 30 , 63 (Rev. Buenos Aires, 2017*](https://www.itu.int/md/D14-WTDC17-C-0115/en)*), and* [*45*](http://www.itu.int/en/action/internet/Documents/Resolution_45_wtdc14.pdf)  *(Rev. Dubai, 2014); Council Documents* [*C14/40*](http://www.itu.int/md/S14-CL-C-0040/en)*,* [*C15/33*](http://www.itu.int/md/S15-CL-C-0033/en)*,* [*C16/33*](http://www.itu.int/md/S16-CL-C-0033/en)*,* [*C17/33*](https://www.itu.int/md/S17-CL-C-0033/en)*,* [*C18/33*](https://www.itu.int/md/S18-CL-C-0033/en)*.* |

# 1. Introduction

This report describes ITU’s activities related to the Plenipotentiary Conference Resolutions 101, 102, 133, and 180 for the reporting period from Council 2018 till date.

1.1 The 2018 ITU Plenipotentiary Conference, held recently from 29 October – 16 November 2018 in Dubai, UAE, revised its Resolutions 101, 102, 133 and 180. The effort included more than 80 hours of discussions in the Internet adhoc group and plenary sessions, not counting the numerous informal discussions.

# 2. Activities related to Internet Protocol (IP) networks, the development of next-generation networks (NGN) and future Internet, including policy and regulatory challenges

2.1 All ITU-T study groups continue their work in different areas of Internet, IPv4/IPv6-based networks, Internet-of-things, Internet naming and addressing, NGNs and their evolution, future network (FN), cloud computing, QoS, IPTV, and IP-based applications, uncertainty of origin, and international connectivity.

Till date, more than 323 new/revised ITU-T Recommendations and other texts have been approved (1 Feb - 31 Dec 2018) since the last reporting period. Relevant recommendations can be found under the different ITU-T Study Groups (see [detailed list](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=3925&isn_status=-1,2&adf=2018-02-01&adt=2018-12-31&pg_size=100&details=0&field=acdefghijo)).

2.2 An estimated 95 per cent of international traffic runs over optical transport networks built in conformance with ITU standards. New ITU standards were approved for transport, access and home address radio over fibre, multi-vendor interoperable 100G coherent DWDM (dense wavelength division multiplexing) line interfaces, fibre-optic cable installation in remote areas, software-defined networking, visible light communications, and synchronization for IMT-2020/5G.

* [Progress update on ITU standardization for transport, access and home](https://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/exec-sum-201810.aspx)

2.3 Video will account for over 80 per cent of all Internet traffic by 2020. This collaborative video work of IEC, ISO and ITU has been honoured with two Primetime Emmy Awards, the first in 2008 in recognition of ITU H.264 'Advanced Video Coding' and the second in 2017 in recognition of ITU H.265 'High Efficiency Video Coding'. The new Versatile Video Coding projects are reporting strong progress.

* [Beyond HEVC: Versatile Video Coding project starts strongly](https://news.itu.int/versatile-video-coding-project-starts-strongly/)

2.4 High priority has been assigned to ITU-T standardization work on the non-radio elements of IMT-2020 (5G) systems. Software-driven network management and orchestration continues to transform telecom operations. ITU-T’s 5G work is supporting this transformation with the development of new standards for networking innovation, the evolution of the transport network, and environmental sustainability.

* [ITU-T Study Group 15 accelerates work on 5G transport](https://www.itu.int/en/mediacentre/Pages/2018-CM05.aspx)

2.5 ITU-T standardization work for the Internet of Things (IoT) and smart cities aims to support interoperability and efficient data processing and management. The standardization of IoT test specifications is accelerating, supported by the increasing collaboration of ITU-T and oneM2M. More than 50 cities worldwide are measuring their progress using ‘Key Performance Indicators for Smart Sustainable Cities’ based on ITU standards, indicators promoted by the ‘United for Smart Sustainable Cities (U4SSC) initiative’.

* [New ITU case study maps the Moscow ‘smart city’ journey](https://www.itu.int/en/mediacentre/Pages/2018-PR34.aspx)

2.6 The ITU-T Focus Group on Artificial Intelligence for Health (FG AI4H), driven in close collaboration by ITU and the World Health Organization (WHO), is working towards the establishment of a framework and associated process for the performance benchmarking of ‘AI for Health’ algorithms. Iterative *Calls for Proposals* will guide the Focus Group’s development of evaluation methods to assess the degree to which ‘AI for Health’ use cases have achieved Proof of Concept.

* [Artificial Intelligence for Health: ITU and WHO call for proposals](https://news.itu.int/artificial-intelligence-health-call-proposals/)

2.7 A new ITU standard offers guidelines for the safe listening of music players in support of the WHO ‘Make Listening Safe’ initiative. The new standard highlights the motivations behind its development: “Hearing loss can occur as a consequence of listening to high levels of sound over prolonged periods of time. The unsafe use of personal audio devices poses a threat to the hearing of millions.”

* [Listen responsibly: New ITU standard to prevent audio devices from causing hearing loss](https://news.itu.int/safe-listening-standard/)

2.8 New and updated conformance testing specifications for the ITU-T H.810 Continua Design Guidelines (CDG) in the ITU-T H.810-series of Recommendations reflect updates contained in 4th edition ("Keratin", CDG 2017), with 6 new and 7 revised draft texts under approval. The updates cover testing for new device specializations for power status monitoring and updated glucose monitors, and updates the PCD-1 observation upload capability. ITU-T H.820 contains an overall conformity assessment test plan for testing conformance for H.810 systems.

* [Progress update on ITU standardization for e-health](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/results-1807.aspx)

2.9 ITU-T work on performance, quality of service (QoS) and quality of experience (QoE) continues to evolve rapidly, in tune with the advances of the ICT industry. New ITU standards address the quality of video gaming, video-telephony applications, communications involving vehicles, adaptive bitrate video streaming, and ICT services at major sporting and entertainment events. ITU-T work to provide technical guidance to regulators promoting QoS is gaining a progressively larger share of the ITU standardization work programme.

* [ITU workshop on Quality of Service regulation](https://news.itu.int/workshop-on-quality-of-service-regulation/)

2.10 ITU-T offers a neutral platform for the international community to strengthen the ties between technical innovation, business needs and economic and policy requirements. New ITU standards under approval address the relationship between network operators and providers of over-the-top (OTT) services competition in mobile financial services, and principles for a unified format of price/tariffs/rates-lists used for exchanging telephone traffic.

* [Progress update on ITU standardization for economic and policy issues](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Documents/Executive%20Summary%20of%20ITU-T%20Study%20Group%203%20Meeting%20(Geneva,%209%E2%80%9318%20April%202018).pdf)

2.11 A new ITU standard under approval provides a framework for solution to combat counterfeit ICT devices. This area of work continues to accelerate and has expanded to combat counterfeiting as well as the theft of mobile devices. Renewed emphasis has been placed on the need to concerns surrounding the tampering with or cloning of ICT device identifiers.

* [Combating counterfeit and stolen ICT devices: ITU workshop renews international commitment](https://news.itu.int/renewed-international-commitment-to-combat-counterfeiting/)

2.12 The span of ITU-T work on VoLTE/ViLTE includes the deployment of signalling protocols for VoLTE interconnection, relevant numbering issues, QoS considerations, and emergency calls on VoLTE-based networks. New ITU standards address the interconnection of VoLTE/ViLTE-based networks and VoLTE/ViLTE interconnection testing for interworking and roaming scenarios.

* [Progress update on ITU standardization for VoLTE/ViLTE](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/exec-sum-201807.aspx)

2.13 The growth in the number of contributions and new work items in ITU-T SG17 (“Security”) is significant (30% increase from September 2018 vs March 2018; 150 work items in ITU-T SG17 out of 800 work items of all study groups). Two new international standards were submitted by the FIDO Alliance (‘Fast Identity Online’) to overcome the security limitations of passwords, addressing biometric authentication on mobile devices and the use of external authenticators, such as mobile devices, to authenticate Web users: FIDO UAF 1.1 (Universal Authenticator Framework 1.1) – standardized as ITU X.1277 – supports advanced biometric authentication on mobile devices; and CTAP (Client-to-Authenticator Protocol) – standardized as ITU X.1278 – enables the use of external authenticators such as FIDO security keys and mobile devices to authenticate Web users over USB (Universal Serial Bus), NFC (Near-field communication) and BLE (Bluetooth® Low Energy).

Quantum safe communications and quantum key distribution are new study areas being tackled by ITU Study Group 13 and ITU-T Study Group 17, where also new members have joined ITU-T.

2.14 TSB has not received feedback concerning any reported incidents with regard to [WTSA Resolution 69](https://www.itu.int/net/ITU-T/res69/Default.aspx) on “Non discriminatory access and use of Internet resources” (so far there have been 37 incidents since 2009, see all related [reports](https://www.itu.int/net/ITU-T/res69/secured/notifications.aspx)).

2.15 ITU-D SG 1 and SG 2 concluded their [2014-2017 study period](http://www.itu.int/itu-d/study-groups) and released a number of Internet-related reports and guidelines, particularly on Questions 1/1, 2/1, 3/1, 4/1, 5/1 and 1/2 (See [ITU-D SG1](https://www.itu.int/pub/D-STG-SG01) and [ITU-D SG2](https://www.itu.int/pub/D-STG-SG02) reports). Following WTDC-17, work will continue on IP-related issues such as NGN interconnection, VoIP, cloud services, and strategies, policies, and technologies for the deployment of broadband. The groups will explore the transition from narrowband to high-speed, high-quality broadband networks (including transition to IMT-2020 networks), taking into account interconnection and interoperability features. New Q1/1 will work on “Strategies and policies for the deployment of broadband in developing countries” (merging former Q1/1 and Q2/1). New Q3/1 will work on “Emerging technologies, including cloud computing, m-services and OTTs: Challenges and opportunities, economic and policy impact for developing countries” (merging former Q1/1 and Q3/1). Questions 4/1, 5/1 and 1/2 will continue their work from the previous study period with emphasis on the need to employ ICTs for sustainable social and economic development.

2.16 ITU-D continues implementing Internet broadband wireless connectivity and developing ICT applications to provide free or low cost digital access for schools and hospitals, and for underserved populations in rural and remote areas in selected countries (Burundi, Burkina Faso, Djibouti, Lesotho, Mali, Rwanda, Eswatini, Antigua & Barbuda and St. Kitts & Nevis etc.).

The Publication on “Setting the scene for 5G: Opportunities & Challenges” was published to assist developing countries with Broadband tools for their plans and Infrastructure developments.

2.17 ITU-R approved Recommendation ITU-R M.2083-0 “IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond”, Resolutions ITU-R 65 “Principles for the process of future development of IMT for 2020 and beyond” and ITU-R 66 “Studies related to wireless systems and applications for the development of the Internet of Things”, and Report ITU-R M.2440-0 “The use of the terrestrial component of International Mobile Telecommunications for narrowband and broadband machine-type communications”.

2.18 ITU continues its cooperation with the Corporation for National Research Initiatives (CNRI) and the DONA Foundation on the use of the Digital Object Architecture (DOA) – an advanced architecture for information management – in the use of its advanced digital object management features in ITU and interested UN agencies.

2.19 Several trainings were provided through [ITU Academy](https://academy.itu.int/) and the [ITU Centers of Excellence](https://academy.itu.int/index.php?option=com_content&view=article&id=154&Itemid=588&lang=en) network, covering topics such as “Training on IPv6 deployment”, “Strategic Aspects for Internet Governance and Innovations”, “ICT Infrastructure and IoT”, “Technologies of Fiber Optics accesses and Next Generation Networks”, “Technologies of fourth Generation: LTE and LTE Advanced”, “The future of Interface towards 5G”, “The role of ICTs on Smart Sustainable Cities”, etc.

2.20 ITU is also supporting the Costa Rican Institute of Electricity (ICE) strengthen its capacity building, including on NGN Networks, through a project called “Desarrollo del conocimiento en tecnologías, para especialistas del ICE”.

**3. IPv6**

3.1 ITU-T SG3 continues to study the methodology and work items needed for the implementation of the relevant parts of WTSA Res. 64. ITU-T SG11 and SG20 are also working on draft ITU-T Recommendations on IPv6.

3.2 BDT and MUST (Malaysia University of Science and Technology) continue working towards the establishment of an ITU IPV6/IoT Expertise Centre for supporting Member States in their transition from IPv4 to IPv6 for IoTs.

3.3 Work continues on the ITU IPTV IPv6 Global Testbed ([I3GT](http://www.itu.int/en/ITU-T/C-I/interop/I3GT/Pages/default.aspx)) project among ITU members with the support of the ITU secretariat to test various aspects of ITU-T’s IPTV standards, train academia on up-to-date IPTV technologies, showcase standardized IPTV to stakeholders, and also to promote IPv6 capability deployment in developing countries. ITU-T SG16 is working on the draft ITU-T Technical Paper [HSTP.IPTV-Guide.2](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14423) on “IPTV service parameters for new IPTV service providers”.

3.4 BDT continues to provide assistance to countries on the implementation of IPv6 policies and IPv6 test bed as requested by Member States, e.g.: In the Africa region, assistance was provided in setting up of an Internet protocol version 6 (IPv6) testbed in Côte d’Ivoire and Uganda, to be used as subregional test beds for IPv4 to IPv6 migration in Western and Eastern Africa, respectively; in Zimbabwe to be used as a subregional testbed for IPv4 to IPv6 migration in Southern Africa; and in Cameroon, to be used as a subregional testbed for IPv4 to IPv6 migration in Central Africa. An IPv6 test bed installation is planned for the 1st quarter of 2019 in Sierra Leone. A Feasibility study has been conducted on IPv6 test beds improvement and a master plan is under development to facilitate African countries to adopt IPv6.

3.5 In partnership with APNIC and Australia, on 4-8 December 2017 a training on “Internet and IPv6 Infrastructure Security Program” was held in Tonga for the Pacific region and in 2018 IPv6 Roadmap was developed for Mongolia and Brunei.

3.6 Through the ITU Academy, a training course on Internet and IPv6 Infrastructure Security in the Asia-Pacific region was delivered from 1-5 May 2018 by the Centre of Excellence ALTTC, in Ghaziabad, India in partnership with MDES (Thailand) and APNIC.

In the Arab region, a project on human capacity building in relation to IPv6 was implemented under the framework cooperation agreement signed between the United Arab Emirates’ Telecommunications Regulatory Authority (TRA) and ITU.

3.7 The [final report](https://www.itu.int/pub/D-STG-SG01.01.1-2017) in response to ITU-D SG1 [Question 1/1](https://www.itu.int/net4/ITU-D/CDS/sg/rgqlist.asp?lg=1&sp=2014&rgq=D14-SG01-RGQ01.1&stg=1) explored through case studies the experiences of countries in transitioning from IPv4 to IPv6 to enable IoT, M2M, Internet of Everything (IoE), and other future technologies.

# 4. Internet-related public policy issues including the management of domain names and addresses

4.1 The [Council Working Group on international Internet-related public policy issues (CWG-Internet)](https://www.itu.int/en/council/cwg-internet/Pages/default.aspx) will hold its twelfth meeting, on 1 February 2018. As this is the first meeting of the Group after PP-18, no open consultation have been conducted for this cycle.

4.2ITU participated in the 13th IGF meeting, held from 12 to 14 November 2018 in Paris, France. Due to an overlap with the ITU Plenipotentiary conference, ITU participation at the IGF was not at the same level as previous years. ITU co-organized an Open Forum on Implementation of WSIS Action Lines for SDGs and WSIS Forum 2019 (co-organized by the WSIS Action Line Facilitators), and co-organized a workshop on capacity building in Internet governance.

4.3 ITU continues to follow the issue of protecting intergovernmental organization (IGO) names and acronyms in any new gTLDs, as part of the IGO coalition composed of approximately 35 IGOs including OECD, UN, UPU, WHO, WIPO, and the World Bank.

4.4 ITU-T SG2 continues to follow the issue of possible perceived mapping of the ITU-T E.164 numbering plan into the DNS, with regard to the provision of all-numeric domain names by TELNIC, the domain name registry operator for .tel gTLD. ITU-T SG2 is awaiting contributions from ITU-T membership after a call for contributions was made on this topic in its January 2016 meeting.

4.5 BDT continues to develop capacities in the field of Internet governance for the ITU membership. Several training and capacity building activities were implemented in 2018. Through the ITU Centre of Excellence network and the ITU Academy, several training courses were delivered in the field of Internet governance. A regional workshop on Internet governance was organized for the Africa region in Abuja, Nigeria, on 27-28 August 2018, in partnership with Diplo Foundation. The workshop attracted more than 100 participants. ITU also contributed to capacity building events during the WSIS Forum 2018 and the IGF 2018, in partnership with ICANN and Diplo Foundation.

**5. ENUM**

[Updated Information on ENUM](http://www.itu.int/ITU-T/inr/enum/) is being maintained by ITU-T. This includes information on approved ENUM Delegations and on ENUM trials.

# 6. International Internet Connectivity (IIC)/Internet Exchange Points (IXPs)

6.1 BDT continues to provide assistance to countries in the creation of national IXPs, and on achieving efficient and cost-effective regional Internet connectivity by, e.g. developing model interconnection as a basis for formulating National and Regional IXPs, as in the case of Guatemala; supporting strengthening capabilities of the national IXPs (Montenegro) and the National Internet Exchange in Timor Leste; developing a new publication on “Internet Exchanges” including Renewable Energies for Rural Communications etc. Another sub-regional IXP is under consideration with Djibouti Telecom using their New Data Center and optical cables such as SEAMEWE 3, EUROPE INDIA GATEWAY, SEACOM, ADEN-DJIBOUTI, EAST AFRICA SUBMARINE SYSTEM, AAE1, SEAMEWE 5 AWE ETC. .

6.2 ITU-T SG3 continues to work on IIC, including framework for competitive IIC provision, IP peering, regional traffic exchange points, cost models, and cost of provision of services.

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