ITU activities on IPv6

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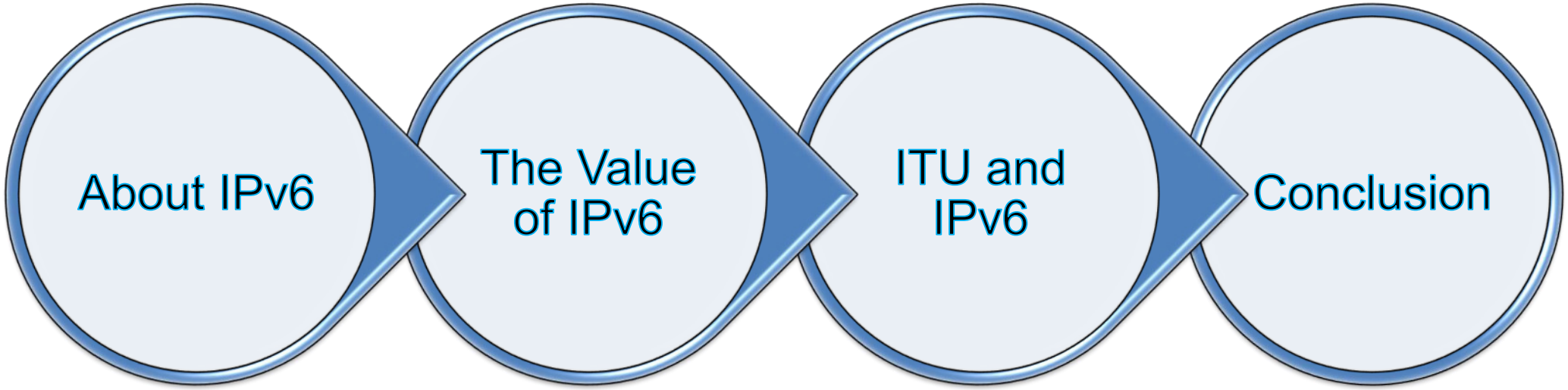
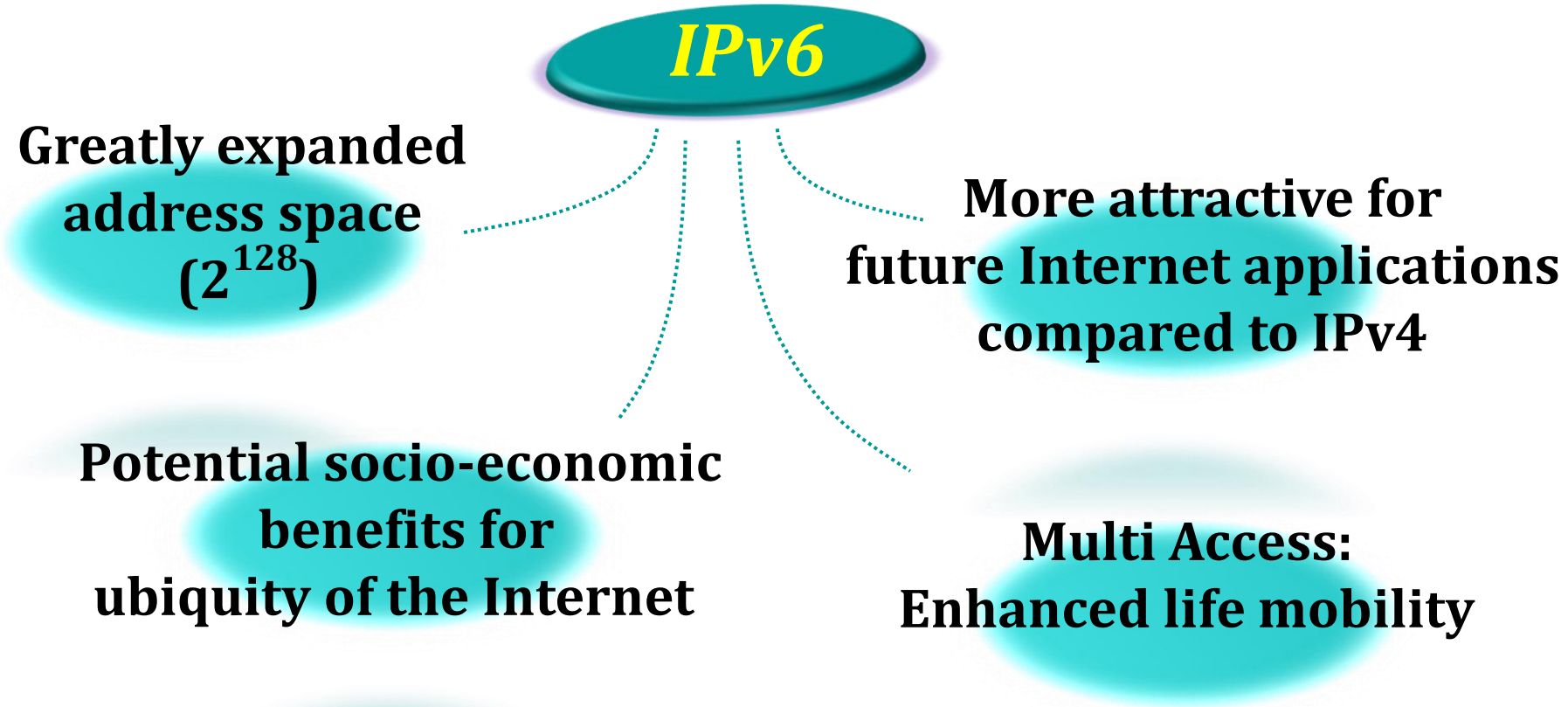
Presentation Outline



About IPv6


IPv6
Greatly expanded address space (2^{128})
More attractive for future Internet applications compared to IPv4
Potential socio-economic benefits for ubiquity of the Internet
Multi Access: Enhanced life mobility

IPv6 Deployment: Vital to Bridging the Digital Divide

Internet is now a critical global infrastructure for socio-economic development and growing faster in developing countries :

It is necessary to take account of the needs of developing countries and leased developing countries

Developing Countries have shown significant improvement in ICT but still lag behind in Internet access

Mobile/Wireless growing at a much faster rate than fixed networks

Relatively greater availability of mobile/wireless networks in many developing and emerging economies

Internet access using mobile networks: Lower Cost, Higher speed of deployment than fixed networks

Digital Divide may be reduced by having meaningful connectivity

Global Shortage of IP addresses

Continued rapid growth of the Internet,
IP addresses have **greater demand**

Despite **Network Address Translation**, IPv4 addresses expected to
run out in the next few years

Need a fair and equitable policy for **allocation of the remaining IPv4 address space**

Now, deployment of IPv6 has become an urgent global issue

Public policy concern on IPv6 is

"The smooth migration from IPv4 to IPv6"

The Value of IPv6

IPv6 expands the number of network address bits from 32 bits (in IPv4) to 128 bits, which provides more than enough globally unique IP addresses for every networked device on the planet.

However, it's not just about addressing. It's about business continuity and innovation.

The unlimited address space provided by IPv6 will allow to deliver more and newer applications and services with reliability, improved user experience and increased security. These might include:

- Multiple internet-enabled mobile devices for every person on the planet
- Billions of embedded sensors using technologies such as RFID, IEEE 802.15.4, and Personal Area Networks
- Home and industrial appliances
- Smart grids…

ITU's Role

Regarding international public policy issues pertaining to the Internet and the management of critical Internet resources ITU is mandated by the following Resolutions:

- Plenipotentiary (**PP**) Resolutions 101, 102, 130, 133, 140, 174, and 180 on facilitating the transition from IPv4 to IPv6
- **ITU Council Resolutions** 1282 (Rev. 2008), 1305 (2009), 1336 (Modified 2015), 1344 (Modified 2015)
- World Telecommunication Standardization Assembly (**WTSA**) Resolutions 47, 48,50, 59, 64, 69
- World Telecommunication Development Conference (**WTDC**) Resolutions 20, 23, 30, 43, 63, 85 on IP address allocation and encouraging the deployment of IPv6 in the developing countries

ITU is contributing actively in areas such as:

- Promotion, capacity building and technical assistance for developing countries
- Cooperation and contribution to the work of relevant organizations (e.g. RIRs)
- Technical and standardization issues as appropriate

ITU is working together with other organizations including **IETF**, Regional Internet Registries or **RIRs** and/or the Number Resource Organization (**NRO**) and **ICANN** in driving IPv6 deployment.

ITU' World Telecommunication Policy Forum (5th WTPF) OPINIONs

OPINION 3: Supporting Capacity Building for the deployment of IPv6

invites

a) Member States to consider policies and incentives to promote, facilitate and support the fastest possible adoption and migration to IPv6 within their jurisdictions;

b) Sector Members with web and Internet business to offer their services via IPv6 as quickly as possible.

OPINION 4: In support of IPv6 adoption and transition from IPv4 to IPv6

Invites

a) Member States to take appropriate measures to encourage, facilitate and support the fastest possible adoption and migration to IPv6;

b) Membership to promote affordable IPv6 compliant products and services as quickly as possible;

In deploying IPv6, consider the questions of providing trust and security in the use of IPv6

@ITU Global IPv6-IoT Project

BDT and **Malaysia University of Science and Technology** Project on:

Establishment of an ITU IPv6-IoT Expertise Centre for supporting Member States in their transition from IPv4 to IPv6.

Activities implemented included but not limited to:

- Trainings/courses are being organized on all forms of IoT connectivity, including "*Certified IoT Security Professional*". Due to COVID-19, several other online training courses were also organised on Certified IPv6 Fundamentals and Certified Industry 4.0 in English and Arabic.
- BDT is also providing technical assistance on IPv6 to Montenegro, working closely with the Ministry of Economy, the Ministry of Public Administration and the University of Montenegro.
- Many workshops on IoT Ecosystems and/or IPv6 over 5G Networks including IPv6 to support Industry 4.0 were delivered for Argentina, Morocco, Senegal, Sri Lanka, Thailand, Malaysia and Vietnam etc.
- BDT is also working on the creation of an Information and Training Center on IP Telephony (technical, policy, economic and capacity building aspect) for the CIS region.

@Africa Region

BDT continues to provide assistance to countries on the implementation of IPv6 policies and IPv6 test bed as requested by Member States

4 sub-regional testbed for IPv4 to IPv6 migration established in the Africa region as follows:

- Côte d'Ivoire for Western
- Uganda for Eastern Africa,
- Zimbabwe for Southern Africa
- Cameroon for Central Africa

- BDT is also focusing on a special program to train the trainers on "IPv6 Over 5G Networks" in order to assist developing countries to implement their 5G mobile and/or fixed networks.

@Arab Region

During 2016-2017, a Project on human capacity building on IPv6 for Arab LDCs was implemented under the framework cooperation between the UAE's Telecommunications Regulatory Authority (TRA) and ITU.

Results were achieved are:

- 31 Professionals in IPv6 from Arab LDCs trained;
- 20 Professionals in IPv6 from Arab LDCs become certified in IPv6 fundamental and advanced

Regional ITU IPv6 and IoT Expertise Centre for Arab region

Networks and digital infrastructure

Objective

This project aims at assisting ITU Member States in the Arab region in transitioning from IPv4 (Internet Protocol version 4) to IPv6 (Internet Protocol version 6) for Internet of Things (IoT).

Focus Areas

- Centre Establishment
- Assist selected Arab countries in developing national strategies for transition from IPv4 to IPv6, IoT, IPv6-IoT based networks in the Arab Region
- Creation of national task forces for IPv6
- Capacity development in areas of IPv6 and IoT [Professional trainings, Workshops and Hackathons]

Countries

Arab countries

Current Partners

TPRA-Sudan

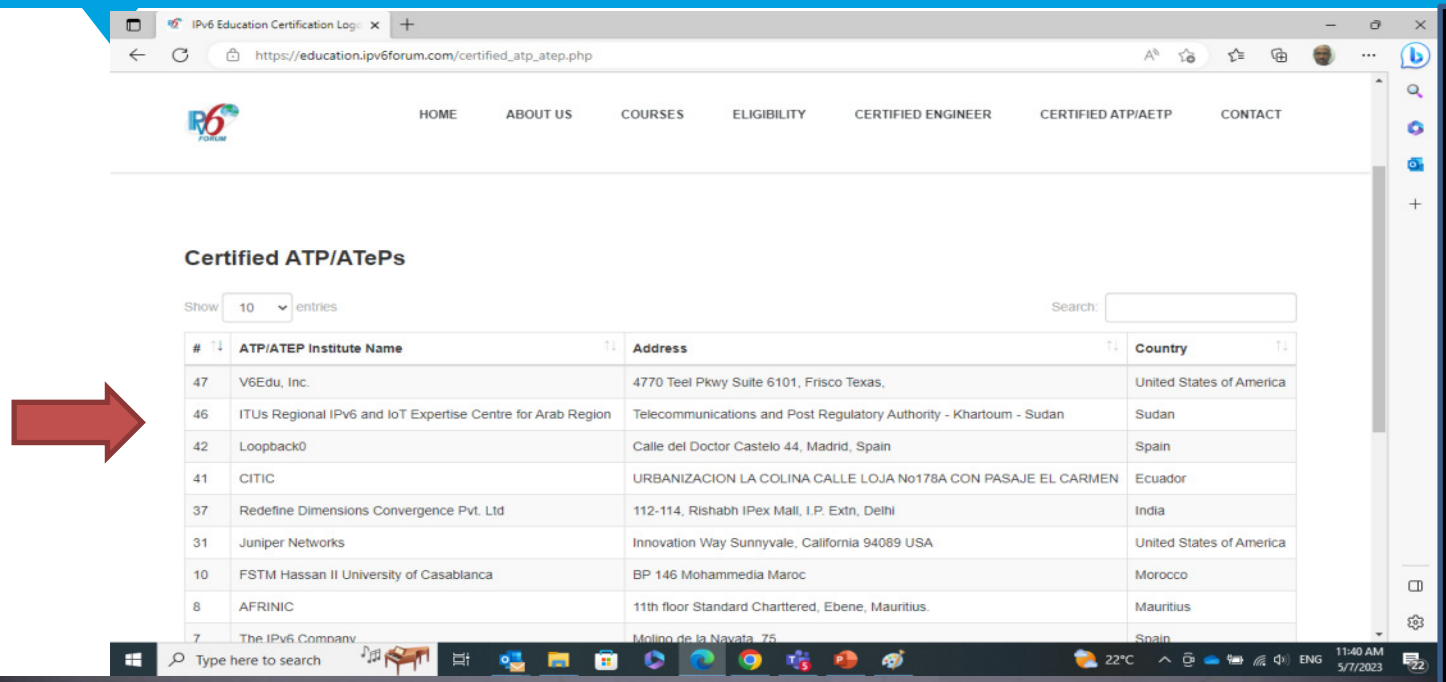
جهاز تنظيم الاتصالات والبريد
TELECOMMUNICATIONS AND POST REGULATORY AUTHORITY

Status of Implementation

1. More than 7 training courses have been delivered since March 2022.
2. 1 Regional IPv6 and IoT Challenge,
3. 1 TTT (7 trainers)
4. 4 countries have been assisted on developing their national IPv6 transition strategies and creation of national IPv6 task forces, namely, Iraq, State of Palestine, Somalia, and Sudan.
5. The center is now IPv6 Forum's ATP

More info on this project, please visit: Regional ITU IPv6 and IoT Expertise Centre for Arab region

ITU’s IPv6 Center is now Certified/Authorized Training Provider (ATP)



Conclusion

- IPv6 has been developed as an evolution of IPv4 to enable IPv6 to provide many new features while building on the foundational concepts that made IPv4 so successful.
- IPv6 Deployment: Many options are possible!
- Guidelines and best practices would be useful for IPv6 deployment both in Mobile and Fixed Networks taking into consideration, the Security and QoS issues.
- IPv6 security can be improved compared to IPv4 by the mandatory implementation of IPsec, adding the security measures at the IP layer.
- As IPv6 security is actively discussed and new issues appear, it is necessary to keep your information updated
- There is a high demand from developing countries and LDCs for capacity development, policy and strategy transition support- Collaboration between key players in the field is needed !