PON for IMT2020/5G Transport – An Operator Perspective IMT 2020 Workshop, Geneva

Kent McCammon AT&T October 16, 2017

© 2017 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.



Title	Date	Objective	Location	Presenter
PON for IMT2020/5G Transport – An Operator Perspective	Oct 16, 2017	Informing the ITU 5G Transport and Architecture community of PON systems for 5G transport early in the requirements development initiative in IMT2020.	Geneva	Kent McCammon, AT&T Access Architectures

#### Agenda

- Why Passive Optical Networks (PON) for IMT2020/5G Networks
- How is ITU-T SG15/Q2 supporting PON for IMT2020/5G

#### Abstract:

2

The PON architecture is well-known for providing fiber efficiency, operational scalability to high volumes of endpoints, and low-cost fiber access architecture. The ITU-T SG15/Q2 group produced a series of PON Standards from B-PON, G-PON, XGS-PON, and NGPON2 which have been successfully deployed for consumer and small business services globally. Work projects in SG15/Q2 are now shifting to develop PON systems for wireless, e.g. the G.sup.5GP work in progress. IMT2020/5G Deployments will drive fiber further toward the edge and increasing the number of endpoints. Leveraging existing fiber cable strands is made possible when using PON in 'fiber lean' areas, a deployment alternative to the use of Point to Point (P2P) fiber connections.



# Why use PON Connections for IMT2020/5G

- 5G Mobility nodes can be expected to be placed in PON neighborhoods serving residential and business customers
   Convergence provides Operational savings for Operators
- Activating a 5G node on a PON fiber connection is a 'one-sided' operation compared to connecting both ends of a P2P fiber
  Scalability in turning up many new wireless nodes
- PON is 'fiber lean' using a single (1) strand of fiber per Node
  Fiber counts are reduced further with the PON splitter
  Higher Density of connections in the Central Office/C-RAN node



3

# ITU-T SG15/Q2 - Optical Access Systems for IMT2020/5G Approved ITU PON Standards offer early 5G connections over PON

- XGSPON(G.9807) with line rates of 10 Gb/s targeting FTTH
- NGPON2(G.989) uses 4 or 8 wavelengths provides higher capacity than XGSPON

### ITU PON standards under development over a PON infrastructure

- G.sup.HSP (Higher speed) linerate > 10 Gb/s is active project in Q2
  - A 25 Gb/s system under development in IEEE with expected collaboration between ITU and IEEE
  - Emerging 50 Gb/s and greater PON system with advanced modulation (Duobinary, PAM4, OFDMA)
- Wavelength-routed-WDM PON solution using P2P logical connections over a PON infrastructure in discussion in Q2
- G.sup.5GP Project is studying the functional split options emerging from 3GPP to identify the latency, capacity requirements to map to a passive optical system



4



© 2017 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.