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Future networks

Enhanced SDN Data Plane for IMT-2020

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Draft Recommendation ITU-T Y.3155 (formerly Y.IMT2020-ESDP)

Enhanced SDN Data Plane for IMT-2020

Summary

This Recommendation provides the requirements and high-level architecture of enhanced SDN data plane (ESDP) for IMT-2020 which is aiming to provide improved support for relevant requirements of the network. Based on the high-level architecture, it specifies functional blocks, reference points, and work flow of ESDP.

Keywords

IMT-2020; Enhanced SDN Data Plane; autonomous functions; network programmability

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Enhanced SDN Data Plane for IMT-2020

1. Scope

This Recommendation describes requirements and architecture of an enhanced SDN data plane (ESDP) for IMT-2020 which is aiming to provide improved support for relevant requirements of the network.

2. References

The following ITU-T Recommendations and other references contain provisions, which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

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|------------------|---|
| [ITU-T Y.3101] | Recommendation ITU-T Y.3101 (2018), <i>Requirements of the IMT-2020 network</i> . |
| [ITU-T Y.3104] | Recommendation ITU-T Y.3104 (2018), <i>Architecture of the IMT-2020 network</i> . |
| [ITU-T Y.3152] | Recommendation ITU-T Y.3152 (2019), <i>Advanced data plane programmability for IMT-2020</i> . |
| [ITU-T Y.3300] | Recommendation ITU-T Y.3300 (2014), <i>Framework of software-defined networking</i> . |
| [ITU-T Y.3302] | Recommendation ITU-T Y.3302 (2017), <i>Functional architecture of software-defined networking</i> . |
| [ITU-R M.2083-0] | Recommendation ITU-R M.2083-0 (2015), <i>IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond</i> . |

3. Definitions

3.1. Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1. control plane** [b-ITU-T Y.2011]: The set of functions that controls the operation of entities in the stratum or layer under consideration, plus the functions required to support this control.
- 3.1.2. data plane** [b-ITU-T Y.2011]: The set of functions used to transfer data in the stratum or layer under consideration.
- 3.1.3. IMT-2020** [b-ITU-T Y.3100]: Systems, system components, and related technologies that provide far more enhanced capabilities than those described in [b-ITU-R M.1645].

- 3.1.4. network function** [b-ITU-T Y.3100]: In the context of IMT-2020, a processing function in a network.
- 3.1.5. network slice** [b-ITU-T Y.3100]: A logical network that provides specific network capabilities and network characteristics.
- 3.1.6. protocol independent instruction set** [ITU-T Y.3152]: A set of protocol-independent instructions supported by data plane elements required for implementing a wide range of network functionalities.
- 3.1.7. software-defined networking (SDN)** [ITU-T Y.3300]: A set of techniques that enables to directly program, orchestrate, control and manage network resources, which facilitates the design, delivery and operation of network services in a dynamic and scalable manner
- 3.1.8. user plane** [b-ITU-T Y.2011]: A synonym for data plane.

3.2. Terms defined in this Recommendation

None

4. Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

App	Application
AF	Application Function
API	Application Programming Interface
ASF	Authentication Server Function
CEF	Capability Exposure Function
CP	Control Plane
E2E	End to End
ESDP	Enhanced SDN Data Plane
ID	Identifier
IMT-2020	International Mobile Telecommunication 2020
IPv4/6	Internet Protocol version 4/6
MAT	Match+Action Table
mMTC	massive Machine Type Communications
NACF	Network Access Control Function
NF	Network Function
NFR	Network Function Repository
NSSF	Network Slice Selection Function
PCF	Policy Control Function
PDU	Protocol Data Unit
QoS	Quality of Service
RAN	Radio Access Network
RP	Reference Point
SDN	Software-Defined Networking