**3GPP TSG-CT WG1 Meeting #134-eC1-22xxxx**

**E-Meeting, 17th – 25th February 2022was C1-221159**

**Source: ZTE**

**Title: IP address allocation for broadcast and groupcast modes of 5G ProSe direct communication**

**Spec: 3GPP TS 24.554 v1.1.0**

**Agenda item: 17.2.18**

**Document for: Agreement**

**1. Introduction**

As specified in clause 5.5.1.2 of TS 23.304, IP address allocation is performed as follows:

"*for broadcast and groupcast modes of 5G ProSe direct communication, the following source IP address management applies:*

*a) the UE configures a link local IPv4 address to be used as the source IP address, as defined in clause 4.5.3 of TS 23.303 [3]. If it is not configured with an address, it uses Dynamic Configuration of IPv4 Link-Local Addresses RFC 3927 [18].*

*b) the UE configures a link local IPv6 address to be used as the source IP address, as defined in clause 4.5.3 of TS 23.303 [3]. The UE may use this IP address for direct communication without sending Neighbour Solicitation and Neighbour Advertisement message for Duplicate Address Detection.*

*NOTE: The destination IP address management for broadcast and groupcast modes of ProSe direct communication is left to UE implementation.*

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**2. Reason for Change**

IP address allocation for broadcast and groupcast modes of 5G ProSe direct communication needs to be specified in stage 3 accordingly.

**3. Conclusions**

<Conclusion part (optional)>

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 24.554 v1.1.0.

\* \* \* First Change \* \* \* \*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.304: "Proximity based Services (ProSe) in the 5G System (5GS); Stage 2".

[3] IETF RFC 7230: "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing".

[4] IETF RFC 7231: "Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content".

[5] 3GPP TS 24.526: "UE policies for 5G System (5GS); Stage 3".

[6] OMA-WAP-TS-PushOTA-V2\_1-20110405-A: "Push Over the Air".

[7] OMA-AD-Push-V2\_2-20110809-A: "Push Architecture".

[8] WAP-168-ServiceLoad-20010731-a: "Service Loading".

[9] 3GPP TS 29.555: "Inter-5G Direct Discovery Name Management Function (DDNMF) signalling aspects; Stage 3".

[10] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[11] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[12] 3GPP TS 23.003: "Numbering, addressing and identification".

[13] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol Specification".

[14] 3GPP TS 23.122: "Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode".

[15] 3GPP TS 38.304: "User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[16] 3GPP TS 38.323: "NR; Packet Data Convergence Protocol (PDCP) specification".

[17] 3GPP TS 24.555: "Proximity-services (ProSe) in 5G System (5GS); User Equipment (UE) policies; Stage 3".

[18] 3GPP TS 24.587: "Vehicle-to-Everything (V2X) services in 5G System (5GS); Protocol aspects; Stage 3".

[19] 3GPP TS 29.557: "5G System; Application Function ProSe Service; Stage 3".

[20] 3GPP TS 24.007: "Mobile radio interface signalling layer-3; General aspects".

[21] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

[22] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[23] IETF RFC 2131: "Dynamic Host Configuration Protocol".

[24] IETF RFC 4039: "Rapid Commit Option for the Dynamic Host Configuration Protocol version 4 (DHCPv4)".

[25] IETF RFC 4862: "IPv6 Stateless Address Autoconfiguration".

[26] 3GPP TS 24.502: "Access to the 5G System (5GS) via non-3GPP access networks; Stage 3".

[27] ITU-T Recommendation E.212: "The international identification plan for mobile terminals and mobile users".

[28] ISO/IEC 10118-3:2018: "IT Security techniques – Hash-functions – Part 3: Dedicated hash-functions".

[29] W3C REC-xmlschema-2-20041028: "XML Schema Part 2: Datatypes".

[30] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[31] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".

[32] IETF RFC 826: "An Ethernet Address Resolution Protocol".

[33] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[34] 3GPP TS 33.503: "Security Aspects of Proximity based Services (ProSe) in the 5G System (5GS)".

[35] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".

[36] 3GPP TS 33.303: "Proximity-based Services (ProSe); Security aspects".

[37] 3GPP TS 33.536: "Security aspects of 3GPP support for advanced Vehicle-to-Everything (V2X) services".

[xx] IETF RFC 3927: "Dynamic Configuration of IPv4 Link-Local Addresses".

\* \* \* Next Change \* \* \* \*

#### 7.3.2.2 Transmission

The UE shall include the data unit(s) in a protocol data unit with the following parameters:

a) a layer-3 protocol data unit type (see 3GPP TS 38.323 [16]) set to:

1) IP packet, if the data unit(s) contains IP data; or

2) non-IP packet, if the data unit(s) contains Ethernet, Address Resolution Protocol, or Unstructured data;

b) the source layer-2 ID set to the layer-2 ID self-assigned by the UE for 5G ProSe communication over PC5;

c) the destination layer-2 ID set to:

1) the destination layer-2 ID associated with the ProSe identifier of the ProSe application in this list of ProSe applications authorized for 5G ProSe communication over PC5 as specified in clause 5.2.4, if the ProSe identifier of the ProSe application is included in the list of ProSe applications authorized for 5G ProSe communication over PC5 as specified in clause 5.2.4; or

2) the default destination layer-2 ID configured to the UE for 5G ProSe communication over PC5 as specified in clause 5.2.4, if the ProSe identifier of the ProSe application is not included in the list of ProSe applications authorized for 5G ProSe communication over PC5 and the UE is configured with a default destination layer-2 ID for 5G ProSe communication over PC5;

d) if the data unit(s) contains IP data, the source IP address set to the source IP address allocated to the UE as specified in clause 7.3.x; and

NOTE: How to set the destination IP address is left to UE implementation.

e) the PQFI set to the value corresponding to the PC5 QoS rules as specified in clause 7.3.2.1,

Editor’s note: Details of whether specific parameters need to be set for the non-IP packet handling are FFS.

then UE shall request radio resources for 5G ProSe communication over PC5 as specified in 3GPP TS 38.300 [21], and pass the data unit(s) on the PC5 QoS Flow identified by the PQFI to lower layers for transmission. The PC5 QoS Rules corresponding to the PQFIs map the data unit(s) with the same ProSe identifier and with the same PC5 QoS parameters to the same PC5 QoS Flow, and apply PQFI to the data unit(s);

If the UE is camped on a serving cell indicating that 5G ProSe communication over PC5 is supported by the network, but not broadcasting any carrier frequencies and radio resources for 5G ProSe communication over PC5 as specified in 3GPP TS 38.331 [13], the UE shall request radio resources for 5G ProSe communication over PC5 as specified in 3GPP TS 24.501 [11].

### 7.3.x IP address allocation for broadcast mode 5G ProSe communication over PC5

When the UE needs to perform 5G ProSe communication over PC5 reference point in broadcast mode operation and the type of data in the data unit is IP, the UE:

a) for IPv4,

1) shall use the pre-configured link local IPv4 address as source address; or

2) shall use dynamic configuration of IPv4 link-local addresses as specified in IETF RFC 3927 [xx] if there is no pre-configured link local IPv4 address; and

b) for IPv6,

1) shall auto-configure a link local IPv6 address following procedures defined in IETF RFC 4862 [25]; and

2) may use this IP address for direct communication without sending Neighbour Solicitation and Neighbour Advertisement message for Duplicate Address Detection.

\* \* \* Next Change \* \* \* \*

### 7.4.x IP address allocation for groupcast mode 5G ProSe communication over PC5

When the UE needs to perform 5G ProSe communication over PC5 reference point in groupcast mode operation and the type of data in the data unit is IP, the UE uses the same IP address allocation mechanism as specified in clause 7.3.x.

\* \* \* End of Changes \* \* \* \*