|  |
| --- |
| 3GPP TR 38.836 V0.0.0 (2020-09) |
| Technical Report |
| 3rd Generation Partnership Project;  Technical Specification Group Radio Access Network;  Study on NR sidelink relay;  (Release 17) |
|  |

|  |  |
| --- | --- |
| *5G-logo_175px* | 3GPP-logo_web |
|  | |
| The present document has been developed within the 3rd Generation Partnership Project (3GPP TM) and may be further elaborated for the purposes of 3GPP. The present document has not been subject to any approval process by the 3GPPOrganizational Partners and shall not be implemented. This Specification is provided for future development work within 3GPPonly. The Organizational Partners accept no liability for any use of this Specification. Specifications and Reports for implementation of the 3GPP TM system should be obtained via the 3GPP Organizational Partners' Publications Offices. | |

|  |
| --- |
|  |
| ***3GPP***  Postal address  3GPP support office address  650 Route des Lucioles - Sophia Antipolis  Valbonne - FRANCE  Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16  Internet  http://www.3gpp.org |
| ***Copyright Notification***  No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.  © 2019, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).  All rights reserved.  UMTS™ is a Trade Mark of ETSI registered for the benefit of its members  3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners LTE™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners  GSM® and the GSM logo are registered and owned by the GSM Association |

Contents

Foreword 4

1 Scope 5

2 References 5

3 Definitions of terms, symbols and abbreviations 5

3.1 Terms 5

3.2 Symbols 5

3.3 Abbreviations 6

4 Sidelink-based UE-to-network Relay 6

4.1 Layer-2 Relay 6

4.1.1 Scenario 6

4.1.2 Architecture and Protocol Stack 6

4.1.2 Relay (re-)selection criterion and procedure 6

4.1.3 Relay/Remote UE authorization 6

4.1.4 QoS 6

4.1.5 Security 6

4.1.6 Control Plane Procedure 6

4.2 Layer-3 Relay 6

4.2.1 Scenario 6

4.2.2 Architecture and Protocol Stack 6

4.2.2 Relay (re-)selection criterion and procedure 6

4.2.3 Relay/Remote UE authorization 6

4.2.4 QoS 6

4.2.5 Security 6

4.2.6 Control Plane Procedure 6

5 Sidelink-based UE-to-UE Relay 7

5.1 Layer-2 Relay 7

5.1.1 Scenario 7

5.1.2 Architecture and Protocol Stack 7

5.1.2 Relay (re-)selection criterion and procedure 7

5.1.3 Relay/Remote UE authorization 7

5.1.4 QoS 7

5.1.5 Security 7

5.1.6 Control Plane Procedure 7

5.2 Layer-3 Relay 7

5.2.1 Scenario 7

5.2.2 Architecture and Protocol Stack 7

5.2.2 Relay (re-)selection criterion and procedure 7

5.2.3 Relay/Remote UE authorization 7

5.2.4 QoS 7

5.2.5 Security 7

5.2.6 Control Plane Procedure 7

6 Discovery for Sidelink Relay 7

7 Comparison 7

7.1 Comparison of UE-to-Network Relay 7

7.2 Comparison of UE-to-UE Relay 7

8 Conclusion 8

Annex A: Change history 9

# Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

# 1 Scope

The present document is related to Study on NR Sidelink Relay with a scope as defined in [2].

The document describes NR enhancements to sidelink relay, which were analyzed as part of the study such as sidelink-based UE-to-network and UE-to-UE relay, and discovery model/procedure for sidelink relaying.

# 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 RP-193253 "New SID: Study on NR sidelink relay".

…

[x] <doctype> <#>[ ([up to and including]{yyyy[-mm]|V<a[.b[.c]]>}[onwards])]: "<Title>".

# 3 Definitions of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the terms given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

Definition format (Normal)

**<defined term>:** <definition>.

**example:** text used to clarify abstract rules by applying them literally.

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

Symbol format (EW)

<symbol> <Explanation>

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

Abbreviation format (EW)

<ABBREVIATION> <Expansion>

# 4 Sidelink-based UE-to-network Relay

## 4.1 Scenario

## 4.2 Relay (re-)selection criterion and procedure

## 4.3 Relay/Remote UE authorization

## 4.4 Layer-2 Relay

### 4.4.1 Architecture and Protocol Stack

### 4.4.2 QoS

### 4.4.3 Security

### 4.4.4 Service Continuity

### 4.4.5 Control Plane Procedure

## 4.5 Layer-3 Relay

### 4.5.1 Architecture and Protocol Stack

### 4.5.2 QoS

### 4.5.3 Security

### 4.5.4 Service Continuity

### 4.5.5 Control Plane Procedure

# 5 Sidelink-based UE-to-UE Relay

## 5.1 Scenario

## 5.2 Relay (re-)selection criterion and procedure

## 5.3 Relay/Remote UE authorization

## 5.4 Layer-2 Relay

### 5.4.1 Architecture and Protocol Stack

### 5.4.2 QoS

### 5.4.3 Security

### 5.4.4 Control Plane Procedure

## 5.5 Layer-3 Relay

### 5.5.1 Architecture and Protocol Stack

### 5.5.2 QoS

### 5.5.3 Security

### 5.5.4 Control Plane Procedure

# 6 Discovery for Sidelink Relay

# 7 Analysis of Solution

## 7.1 UE-to-Network Relay

## 7.2 UE-to-UE Relay

# 8 Conclusion

Annex A: Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2020-08 | RAN2#110 | R2-2006602 |  |  |  | Skeleton TR | 0.0.0 |