**3GPP TSG-CT WG1 Meeting #132-eC1-21xxxx**

**E-meeting, 11-15 October 2021 (was C1-215706)**

|  |  |  |  |  |  |  |  |  |
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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.008** | **CR** | **3284** | **rev** | **1** | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Enabling extended idle mode DRX for NR connected to 5GC | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ARCH\_NR\_REDCAP | | | | |  | ***Date:*** | | | 2021-10-13 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **C** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) ... Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In CR 3209 to TS 23.501 (S2-2106977), SA2 agreed to support extended idle mode DRX for NR connected to 5GC, with the extended idle mode DRX value range consisting of values starting from 2.56s (i.e. 2.56s, 5.12s, 10.24s, 20.48s, etc.) up to a maximum of 10485.76s.  The stage 3 needs to be updated accordingly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The extended DRX parameters IE was updated to support extended idle mode DRX values ranging from 2.56s to 10485.76s for NR connected to 5GC.  Since all 16 code points for the eDRX value field are already used, to signal an eDRX value of 2.56s it is proposed to re-use code point 0000 associated with a Paging Time Window field set to 1111 (for NR, as per TS 38.304 the Paging Time Window only applies for eDRX values which are greater than 10.24s). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Extended idle mode DRX will not be supported for NR connected to 5GC. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 1.2, 10.5.5.32 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\* 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] Void.

[2] Void.

[2a] 3GPP TR 21.905 "Vocabulary for 3GPP Specifications"

[3] 3GPP TS 22.002: "Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)".

[4] 3GPP TS 22.003: "Teleservices supported by a Public Land Mobile Network (PLMN)".

[5] 3GPP TS 42.009, Release 4: "Security aspects".

[5a] 3GPP TS 33.102: "3G security; Security architecture".

[6] Void.

[7] 3GPP TS 42.017, Release 4: "Subscriber Identity Modules (SIM); Functional characteristics".

[8] 3GPP TS 22.101: "Service aspects; Service principles".

[8a] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".

[8b] 3GPP TS 23.038: "Alphabets and language-specific information".

[9] Void.

[9a] 3GPP TS 23.108: "Mobile radio interface layer 3 specification core network protocols; Stage 2 (structured procedures)".

[10] 3GPP TS 23.003: "Numbering, addressing and identification".

[11] Void.

[12] 3GPP TS 23.014: "Support of Dual Tone Multi-Frequency (DTMF) signalling".

[12a] ETSI ES 201 235-2, v1.2.1: "Specification of Dual Tone Multi-Frequency (DTMF); Transmitters and Receivers; Part 2: Transmitters".

[13] 3GPP TS 43.020: "Security-related network functions".

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

[15] 3GPP TS 24.002: "GSM-UMTS Public Land Mobile Network (PLMN) access reference configuration".

[16] 3GPP TS 44.003: "Mobile Station - Base Station System (MS - BSS) interface; Channel structures and access capabilities".

[17] Void.

[18] 3GPP TS 44.005: "Data Link (DL) layer; General aspects".

[19] 3GPP TS 44.006: "Mobile Station - Base Station System (MS - BSS) interface; Data Link (DL) layer specification".

[19a] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[19b] 3GPP TS 25.322: "Radio Link Control (RLC) protocol specification".

[19c] 3GPP TS 25.413: "UTRAN Iu interface Radio Access Network Application Part (RANAP) signalling".

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

[21] 3GPP TS 24.010: "Mobile radio interface layer 3; Supplementary services specification; General aspects".

[22] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[23] 3GPP TS 24.012: "Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface".

[23a] 3GPP TS 44.071: "Location Services (LCS); Mobile radio interface layer 3 specification."

[23b] 3GPP TS 44.031 "Location Services LCS); Mobile Station (MS) - Serving Mobile Location Centre (SMLC); Radio Resource LCS Protocol (RRLP)".

[23c] 3GPP TS 25.331: "Radio Resource Control (RRC) protocol specification"

[24] 3GPP TS 24.080: "Mobile radio Layer 3 supplementary service specification; Formats and coding".

[25] 3GPP TS 24.081: "Line identification supplementary services; Stage 3".

[26] Void.

[27] 3GPP TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3".

[28] 3GPP TS 24.084: "MultiParty (MPTY) supplementary services; Stage 3".

[29] Void.

[30] Void.

[31] Void.

[32] 3GPP TS 45.002: "Multiplexing and multiple access on the radio path".

[33] 3GPP TS 45.005: "Radio transmission and reception".

[34] 3GPP TS 45.008: "Radio subsystem link control".

[35] Void.

[36] 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[36a] 3GPP TS 27.060: "Mobile Station (MS) supporting Packet Switched Services ".

[37] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[38] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[39] 3GPP TS 51.010: "Mobile Station (MS) conformance specification".

[40] Void.

[41] ISO/IEC 646 (1991): "Information technology - ISO 7-bit coded character set for information interchange".

[42] ISO/IEC 6429: "Information technology - Control functions for coded character sets".

[43] ISO 8348 (1987): "Information technology -- Open Systems Interconnection -- Network Service Definition".

[44] ITU-T Recommendation E.163: "Numbering plan for the international telephone service".

[45] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

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

[47] ITU-T Recommendation F.69 (1993): "The international telex service - Service and operational provisions of telex destination codes and telex network identification codes".

[48] ITU-T Recommendation I.330: "ISDN numbering and addressing principles".

[49] ITU-T Recommendation Q.920 (1993): "ISDN user-network interface data link layer - General aspects".

[50] ITU-T Recommendation Q.930 (1993): "ISDN user-network interface layer 3 - General aspects".

[51] ITU-T Recommendation I.500 (1993): "General structure of the ISDN interworking recommendations".

[52] ITU-T Recommendation T.50: "International Reference Alphabet (IRA) (Formerly International Alphabet No. 5 or IA5) - Information technology - 7-bit coded character set for information interchange".

[53] ITU Recommendation Q.931: "ISDN user-network interface layer 3 specification for basic control".

[54] ITU-T Recommendation V.21: "300 bits per second duplex modem standardized for use in the general switched telephone network".

[55] ITU-T Recommendation V.22: "1200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[56] ITU-T Recommendation V.22bis: "2400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[57] Void.

[58] ITU-T Recommendation V.26ter: "2400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[59] ITU-T Recommendation V.32: "A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone-type circuits".

[60] ITU-T Recommendation V.110: "Support by an ISDN of data terminal equipments with V-Series type interfaces".

[61] ITU-T Recommendation V.120: "Support by an ISDN of data terminal equipment with V-Series type interfaces with provision for statistical multiplexing".

[62] ITU-T Recommendation X.21: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for synchronous operation on public data networks".

[63] Void.

[64] Void.

[65] ITU-T Recommendation X.30: "Support of X.21, X.21 bis and X.20 bis based Data Terminal Equipments (DTEs) by an Integrated Services Digital Network (ISDN)".

[66] ITU-T Recommendation X.31: "Support of packet mode terminal equipment by an ISDN".

[67] Void.

[68] Void.

[69] ITU-T Recommendation X.121: "International numbering plan for public data networks".

[70] ETSI ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

[71] Void.

[72] ISO/IEC 10646: "Information technology -- Universal Multiple-Octet Coded Character Set (UCS)".

[73] 3GPP TS 22.060: "General Packet Radio Service (GPRS); Service Description; Stage 1".

[74] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service Description; Stage 2".

[75] Void.

[75a] 3GPP TS 43.318: "Generic Access Network (GAN); Stage 2".

[76] 3GPP TS 44.060: "General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control/Medium Access Control (RLC/MAC) protocol".

[76b] 3GPP TS 44.318: "Generic Access Network (GAN); Mobile GAN interface layer 3 specification; Stage 3".

[77] Void.

[78] 3GPP TS 44.065: "Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)".

[78a] 3GPP TS 44.064: "Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) Layer Specification".

[79] ITU Recommendation I.460: "Multiplexing, rate adaption and support of existing interfaces".

[80] 3GPP TS 26.111: "Codec for Circuit Switched Multimedia Telephony Service; Modifications to H.324".

[81] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

[82] 3GPP TS 43.022: "Functions related to Mobile Station (MS) in idle mode and group receive mode".

[83] 3GPP TS 26.103: "Speech Codec List for GSM and UMTS".

[84] 3GPP TS 44.018: "Mobile radio interface layer 3 specification, Radio Resource Control Protocol".

[85] 3GPP TS 48.008: "Mobile-services Switching Centre – Base Station System (MSC – BSS) interface; layer 3 specification".

[86] 3GPP TS 48.018: "General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN); BSS GPRS Protocol (BSSGP)".

[87] 3GPP TS 43.055: "Dual Transfer Mode (DTM); Stage 2".

[88] 3GPP TS 23.067: "enhanced Multi-Level Precedence and Pre-emption service (eMLPP); Stage 2".

[88a] 3GPP TS 23.093: "Technical realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[89] 3GPP TS 22.042: "Network Identity and Time Zone (NITZ), Stage 1".

[90] 3GPP TS 23.040: "Technical realization of Short Message Service (SMS)".

[91] 3GPP TS 44.056: "GSM Cordless Telephony System (CTS), (Phase 1) CTS Radio Interface Layer 3 Specification".

[92] 3GPP TS 23.226: "Global Text Telephony; Stage 2"

[93] 3GPP TS 26.226: "Cellular Text Telephone Modem (CTM), General Description"

[94] 3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes"

[95] 3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP"

[96] 3GPP TS 23.205: "Bearer-independent circuit-switched core network; Stage 2".

[97] 3GPP TS 23.172: "UDI/RDI Fallback and Service Modification; Stage 2".

[98] 3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode"

[99] IETF RFC 4291 (February 2006): "Internet Protocol Version 6 (IPv6) Addressing Architecture".

[100] 3GPP TS 29.207, Release 6: "Policy control over Go interface".

[101] 3GPP TS 21.111: "USIM and IC card requirements".

[102] IETF RFC 1661 (July 1994): "The Point-to-Point Protocol (PPP)".

[103] IETF RFC 3232 (January 2002): "Assigned Numbers: RFC 1700 is Replaced by an On-line Database".

[179][180][181][104] 3GPP TS 23.034: "High Speed Circuit Switched Data (HSCSD) – Stage 2".

[105] 3GPP TS 23.271: "Functional stage 2 description of Location Services (LCS)".

[106] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and Functional Description".

[107] IETF RFC 3376 (October 2002): "Internet Group Management Protocol, Version 3".

[108] IETF RFC 2710 (October 1999): "Multicast Listener Discovery (MLD) for IPv6".

[109] 3GPP TS 23.251: "Network Sharing; Architecture and Functional Description".

[110] 3GPP TS 25.346: "Introduction of the Multimedia Broadcast Multicast Service (MBMS) in the Radio Access Network"

[111] 3GPP TS 44.118, Release 11: "Radio Resource Control (RRC) protocol; Iu mode".

[112] 3GPP TS 31.102: "Characteristics of the USIM Application".

[113] 3GPP TS 43.129: "Packet-switched handover for GERAN A/Gb mode; Stage 2".

[114] 3GPP TS 23.009: "Handover procedures".

[115] 3GPP TR 23.903: "Redial solution for voice-video switching".

[116] 3GPP TS 24.279: "Combining Circuit Switched (CS) and IP Multimedia Subsystem (IMS) services, stage 3"

[117] ITU-T Recommendation H.324 Amendment 1: "New Annex K "Media Oriented Negotiation Acceleration Procedure" and associated changes to Annex".

[118] ITU-T Recommendation H.324 Amendment 2: "New Annex L on text conversation and associated changes; corrections and clarifications to Annex K".

[119] ITU-T Recommendation H.245: "Control protocol for multimedia communication"

[120] 3GPP TS 24.301: "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3".

[121] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode".

[122] 3GPP TS 23.401: "GPRS enhancements for E-UTRAN access".

[123] 3GPP TS 33.401: "3GPP System Architecture Evolution; Security architecture".

[124] 3GPP TS 24.303: "Mobility management based on Dual-Stack Mobile IPv6; Stage 3".

[125] 3GPP TS 24.327: "Mobility between 3GPP WLAN Interworking and 3GPP systems; GPRS and 3GPP I-WLAN aspects; Stage 3".

[126] 3GPP TS 23.216: "Single Radio Voice Call Continuity (SRVCC); Stage 2".

[127] 3GPP TS 23.002: "Network architecture".

[128] 3GPP TS 25.301: "Radio interface protocol architecture".

[129] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

[130] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)".

[131] 3GPP TS 23.221: "Architectural requirements".

[132] 3GPP TS 23.090: "Unstructured Supplementary Service Data (USSD); Stage 2".

[133] 3GPP TS 23.272: "Circuit Switched Fallback in Evolved Packet System; Stage 2".

[133A] 3GPP TS 23.682: "Architecture enhancements to facilitate communications with packet data networks and applications".

[134] 3GPP TS 24.167: "3GPP IMS Management Object (MO); Stage 3".

[135] 3GPP TS 24.368: "Non-Access Stratum (NAS) configuration Management Object (MO)".

[136] 3GPP TS 24.237: "IP Multimedia Subsystem (IMS) Service Continuity; Stage 3".

[137] IETF RFC 3261 (June 2002): "SIP: Session Initiation Protocol".

[138] 3GPP TS 22.011: "Service accessibility".

[139] IETF RFC 3633 (December 2003): "IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6".

[140] 3GPP TS 23.012: "Location management procedures".

[141] 3GPP TS 24.022: "Radio Link Protocol (RLP) for circuit switched bearer and teleservices".

[142] ITU-T Recommendation X.1: "International user classes of service in, and categories of access to, public data networks and Integrated Services Digital Networks (ISDNs)".

[143] ITU-T Recommendation X.25: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[144] ITU-T Recommendation X.213: "Information technology – Open Systems Interconnection – Network service definition".

[145] ITU-T Recommendation I.334: "Principles relating ISDN numbers/sub-addresses to the OSI reference model network layer addresses".

[146] ITU-T Recommendation H.223: "Multiplexing protocol for low bit rate multimedia communication".

[147] ITU-T Recommendation V.34: "A modem operating at data signalling rates of up to 33 600 bit/s for use on the general switched telephone network and on leased point-to-point 2-wire telephone-type circuits".

[148] IETF RFC 3810 (June 2004): "Multicast Listener Discovery Version 2 (MLDv2) for IPv6".

[149] 3GPP TS 29.018: "General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification".

[150] 3GPP TS 29.272: "Evolved Packet System (EPS); Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol".

[151] 3GPP TS 45.008: "Radio subsystem link control".

[152] 3GPP TS 29.010: "Information element mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MSC); Signalling Procedures and the Mobile Application Part (MAP)".

[153] 3GPP TS 36.306: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities".

[154] 3GPP TS 24.105: "Application specific Congestion control for Data Communication (ACDC) Management Object (MO)".

[155] 3GPP TS 23.161: "Network-Based IP Flow Mobility (NBIFOM); Stage 2".

[156] 3GPP TS 24.302: "Access to the 3GPP Evolved Packet Core (EPC) via non-3GPP access networks; Stage 3".

[157] 3GPP TS 45.001: "Physical layer on the radio path; General description".

[158] 3GPP TS 24.161: " Network-Based IP Flow Mobility (NBIFOM); Stage 3".

[159] 3GPP TS 43.064: "Overall description of the GPRS Radio Interface; Stage 2".

[160] 3GPP TS 23.167: "IP Multimedia Subsystem (IMS) emergency sessions".

[161] 3GPP TS 26.267: "eCall Data Transfer; In-band modem solution; General description".

[162] 3GPP TS 24.250: "Protocol for Reliable Data Service; Stage 3".

[163] 3GPP TS 24.292: "IP Multimedia (IM) Core Network (CN) subsystem; Centralized Services (ICS); Stage 3".

[164] 3GPP TS 29.292: "Interworking between the IP Multimedia (IM) Core Network (CN) Subsystem (IMS) and MSC Server for IMS Centralized Services (ICS)".

[165] 3GPP TS 49.031: "Location Services (LCS); Base Station System Application Part LCS Extension (BSSAP-LE)".

[166] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[167] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[168] IETF RFC 3629 (November 2003): "UTF-8, a transformation format of ISO 10646".

[169] IETF RFC 5905 (June 2010): "Network Time Protocol Version 4: Protocol and Algorithms Specification".

[170] 3GPP TS 33.501: "Security architecture and procedures for 5G System".

[171] 3GPP TS 24.193: "Access Traffic Steering, Switching and Splitting; Stage 3".

[172] IETF RFC 7858 (May 2016): "Specification for DNS over Transport Layer Security (TLS)".

[173] IETF RFC 8094 (February 2017): "DNS over Datagram Transport Layer Security (DTLS)".

[174] IET RFC 6056 (January 2011): "Recommendations for Transport-Protocol Port Randomization".

[175] IETF RFC 1035 (November 1987):"DOMAIN NAMES - IMPLEMENTATION AND SPECIFICATION".

[176] IETF RFC 7469 (April 2015):"Public Key Pinning Extension for HTTP".

[177] ITU-T Recommendation X.690 (2002) | ISO/IEC 8825-1:2002,  
Information technology - ASN.1 encoding rules:  
Specification of Basic Encoding Rules (BER), Canonical  
Encoding Rules (CER) and Distinguished Encoding Rules  
(DER).

[178] 3GPP TS 24.502: "Access to the 3GPP 5G System (5GS) via non-3GPP access networks; Stage 3".

[179] IETF RFC 1334 (October 1992): "PPP Authentication Protocols".

[180] IETF RFC 1994 (August 1996): "PPP Challenge Handshake Authentication Protocol (CHAP)".

[181] IETF RFC 1332 (May 1992): "The PPP Internet Protocol Control Protocol (IPCP)".

[182] 3GPP TS 23.548: "5G System Enhancements for Edge Computing; Stage 2".

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

\*\*\* Next change \*\*\*

#### 10.5.5.32 Extended DRX parameters

The purpose of the *Extended DRX parameters* information element is to indicate that the MS wants to use eDRX and for the network to indicate the Paging Time Window length value and the extended DRX cycle value to be used for eDRX.

The *Extended DRX parameters* is a type 4 information element with a length of 3 octets.

The *Extended DRX parameters* information element is coded as shown in figure 10.5.5.32/3GPP TS 24.008 and table 10.5.5.32/3GPP TS 24.008.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | | 4 | 3 | 2 | 1 |  |
| Extended DRX parameters IEI | | | | | | | | | octet 1 |
| Length of Extended DRX parameters | | | | | | | | | octet 2 |
| Paging Time Window | | | | eDRX value | | | | | octet 3 |

Figure 10.5.5.32/3GPP TS 24.008: Extended DRX parameters information element

Table 10.5.5.32/3GPP TS 24.008: Extended DRX parameters information element

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Paging Time Window (PTW), octet 3 (bit 8 to 5) | | | | | | | |
| The field contains a PTW value. The PTW value can be applied for Iu mode, WB-S1 mode, NB-S1 mode and N1 mode as specified below. | | | | | | | |
| Iu mode  The field contains the PTW value in seconds for Iu mode. The PTW value is used as specified in 3GPP TS 23.682 [133a]. The PTW value is derived as follows: | | | | | | | |
|  | | | | |  | | |
| bit | | | | | | | |
| 8 | 7 | 6 | 5 | Paging Time Window length | | | |
| 0 | 0 | 0 | 0 | 0 seconds (PTW not used) | | | |
| 0 | 0 | 0 | 1 | 1 second | | | |
| 0 | 0 | 1 | 0 | 2 seconds | | | |
| 0 | 0 | 1 | 1 | 3 seconds | | | |
| 0 | 1 | 0 | 0 | 4 seconds | | | |
| 0 | 1 | 0 | 1 | 5 seconds | | | |
| 0 | 1 | 1 | 0 | 6 seconds | | | |
| 0 | 1 | 1 | 1 | 7 seconds | | | |
| 1 | 0 | 0 | 0 | 8 seconds | | | |
| 1 | 0 | 0 | 1 | 9 seconds | | | |
| 1 | 0 | 1 | 0 | 10 seconds | | | |
| 1 | 0 | 1 | 1 | 12 seconds | | | |
| 1 | 1 | 0 | 0 | 14 seconds | | | |
| 1 | 1 | 0 | 1 | 16 seconds | | | |
| 1 | 1 | 1 | 0 | 18 seconds | | | |
| 1 | 1 | 1 | 1 | 20 seconds | | | |
| WB-S1 mode and WB-N1 mode  The field contains the PTW value in seconds for WB-S1 mode and WB-N1 mode. The PTW value is used as specified in 3GPP TS 23.682 [133a] and 3GPP TS 23.501 [166]. The PTW value is derived as follows:  bit | | | | | | | |
| 8 | 7 | 6 | 5 | Paging Time Window length | | | |
| 0 | 0 | 0 | 0 | 1,28 seconds | | | |
| 0 | 0 | 0 | 1 | 2,56 seconds | | | |
| 0 | 0 | 1 | 0 | 3,84 seconds | | | |
| 0 | 0 | 1 | 1 | 5,12 seconds | | | |
| 0 | 1 | 0 | 0 | 6,4 seconds | | | |
| 0 | 1 | 0 | 1 | 7,68 seconds | | | |
| 0 | 1 | 1 | 0 | 8,96 seconds | | | |
| 0 | 1 | 1 | 1 | 10,24 seconds | | | |
| 1 | 0 | 0 | 0 | 11,52 seconds | | | |
| 1 | 0 | 0 | 1 | 12,8 seconds | | | |
| 1 | 0 | 1 | 0 | 14,08 seconds | | | |
| 1 | 0 | 1 | 1 | 15,36 seconds | | | |
| 1 | 1 | 0 | 0 | 16,64 seconds | | | |
| 1 | 1 | 0 | 1 | 17,92 seconds | | | |
| 1 | 1 | 1 | 0 | 19,20 seconds | | | |
| 1 | 1 | 1 | 1 | 20,48 seconds | | | |
| NB-S1 mode and NB-N1 mode  The field contains the PTW value in seconds for NB-S1 mode and NB-N1 mode.The PTW value is used as specified in 3GPP TS 23.682 [133a] and 3GPP TS 23.501 [166]. The PTW value is derived as follows:  bit | | | | | | | |
| 8 | 7 | 6 | 5 | Paging Time Window length | | | |
| 0 | 0 | 0 | 0 | 2,56 seconds | | | |
| 0 | 0 | 0 | 1 | 5,12 seconds | | | |
| 0 | 0 | 1 | 0 | 7,68 seconds | | | |
| 0 | 0 | 1 | 1 | 10,24 seconds | | | |
| 0 | 1 | 0 | 0 | 12,8 seconds | | | |
| 0 | 1 | 0 | 1 | 15,36 seconds | | | |
| 0 | 1 | 1 | 0 | 17,92 seconds | | | |
| 0 | 1 | 1 | 1 | 20,48 seconds | | | |
| 1 | 0 | 0 | 0 | 23,04 seconds | | | |
| 1 | 0 | 0 | 1 | 25,6 seconds | | | |
| 1 | 0 | 1 | 0 | 28,16 seconds | | | |
| 1 | 0 | 1 | 1 | 30,72 seconds | | | |
| 1 | 1 | 0 | 0 | 33,28 seconds | | | |
| 1 | 1 | 0 | 1 | 35,84 seconds | | | |
| 1 | 1 | 1 | 0 | 38,4 seconds | | | |
| 1 | 1 | 1 | 1 | 40,96 seconds | | | |
|  | | | | | | | |
| eDRX value, octet 3 (bit 4 to 1) | | | | | | | |
| The octet contains the eDRX value field. The parameter values are applied for A/Gb mode, Iu mode, S1 mode and N1 mode according to the tables below.  A/Gb mode  The field contains the eDRX value for A/Gb mode. The GERAN eDRX cycle length duration and Number of 51-MF per GERAN eDRX cycle values are derived from the eDRX value as follows: | | | | | | | |
| bit | | | | | | | |
| 4 | 3 | 2 | 1 | GERAN eDRX cycle length duration | | Number of 51-MF per GERAN eDRX cycle | |
| 0 | 0 | 0 | 0 | ~1,88 seconds (NOTE 1, NOTE 2) | | 8 | |
| 0 | 0 | 0 | 1 | ~3,76 seconds (NOTE 1, NOTE 2) | | 16 | |
| 0 | 0 | 1 | 0 | ~7,53 seconds (NOTE 1, NOTE 2) | | 32 | |
| 0 | 0 | 1 | 1 | 12,24 seconds (NOTE 2) | | 52 | |
| 0 | 1 | 0 | 0 | 24,48 seconds (NOTE 2) | | 104 | |
| 0 | 1 | 0 | 1 | 48,96 seconds (NOTE 2) | | 208 | |
| 0 | 1 | 1 | 0 | 97,92 seconds (NOTE 2) | | 416 | |
| 0 | 1 | 1 | 1 | 195,84 seconds (NOTE 2) | | 832 | |
| 1 | 0 | 0 | 0 | 391,68 seconds (NOTE 2) | | 1664 | |
| 1 | 0 | 0 | 1 | 783,36 seconds (NOTE 2) | | 3328 | |
| 1 | 0 | 1 | 0 | 1566,72 seconds (NOTE 2) | | 6656 | |
| 1 | 0 | 1 | 1 | 3133,44 seconds (NOTE 2) | | 13312 | |
|  | | | | | | | |
| All other values shall be interpreted as 0000 by this version of the protocol. | | | | | | | |
|  | | | | | | | |
| NOTE 1: The listed values are rounded.  NOTE 2: The value in seconds can be calculated with the formula ((3,06 / 13) \* (Number of 51-MF)). See 3GPP TS 45.001 [157], subclause 5.1. | | | | | | | |
|  | | | | | | | |
| Iu mode | | | | | | | |
| The field contains the eDRX value for Iu mode. The UTRAN eDRX cycle length duration value is derived from the eDRX value as follows: | | | | | | | |
| bit | | | | | | | |
| 4 | 3 | 2 | 1 | UTRAN eDRX cycle length duration | | | |
| 0 | 0 | 0 | 0 | 10,24 seconds | | | |
| 0 | 0 | 0 | 1 | 20,48 seconds | | | |
| 0 | 0 | 1 | 0 | 40,96 seconds | | | |
| 0 | 0 | 1 | 1 | 81,92 seconds | | | |
| 0 | 1 | 0 | 0 | 163,84 seconds | | | |
| 0 | 1 | 0 | 1 | 327,68 seconds | | | |
| 0 | 1 | 1 | 0 | 655,36 seconds | | | |
| 0 | 1 | 1 | 1 | 1310,72 seconds | | | |
| 1 | 0 | 0 | 0 | 1966,08 seconds | | | |
| 1 | 0 | 0 | 1 | 2621,44 seconds | | | |
|  | | | | | | | |
| All other values shall be interpreted as 0000 by this version of the protocol. | | | | | | | |
|  | | | | | | | |
| S1 mode, NB-N1 mode, and WB-N1 mode  The field contains the eDRX value for S1 mode, NB-N1 mode, and WB-N1 mode. The eDRX cycle length duration value and the eDRX cycle parameter 'TeDRX' as defined in 3GPP TS 36.304 [121] are derived from the eDRX value as follows: | | | | | | | |
| bit | | | | | | | |
| 4 | 3 | 2 | 1 | eDRX cycle length duration | | | eDRX cycle parameter 'TeDRX' |
| 0 | 0 | 0 | 0 | 2,56 seconds or 5,12 seconds (NOTE 4, NOTE x) | | | NOTE 3, NOTE y |
| 0 | 0 | 0 | 1 | 10,24 seconds (NOTE 4) | | | 20 |
| 0 | 0 | 1 | 0 | 20,48 seconds | | | 21 |
| 0 | 0 | 1 | 1 | 40,96 seconds | | | 22 |
| 0 | 1 | 0 | 0 | 61,44 seconds (NOTE 5) | | | 6 |
| 0 | 1 | 0 | 1 | 81,92 seconds | | | 23 |
| 0 | 1 | 1 | 0 | 102,4 seconds (NOTE 5) | | | 10 |
| 0 | 1 | 1 | 1 | 122,88 seconds (NOTE 5) | | | 12 |
| 1 | 0 | 0 | 0 | 143,36 seconds (NOTE 5) | | | 14 |
| 1 | 0 | 0 | 1 | 163,84 seconds | | | 24 |
| 1 | 0 | 1 | 0 | 327,68 seconds | | | 25 |
| 1 | 0 | 1 | 1 | 655,36 seconds | | | 26 |
| 1 | 1 | 0 | 0 | 1310,72 seconds | | | 27 |
| 1 | 1 | 0 | 1 | 2621,44 seconds | | | 28 |
| 1 | 1 | 1 | 0 | 5242,88 seconds (NOTE 6) | | | 29 |
| 1 | 1 | 1 | 1 | 10485,76 seconds (NOTE 6) | | | 210 |
|  | | | | | | | |
| All other values shall be interpreted as 0000 by this version of the protocol.  NOTE 3: For E-UTRAN, and for E-UTRA connected to 5GCN, eDRX cycle length duration of 5,12 seconds the eDRX cycle parameter 'TeDRX' is not used as a different algorithm compared to the other values is applied. See 3GPP TS 36.304 [121] for details. | | | | | | | |
| NOTE 4: The value is applicable only in WB-S1 mode and in WB-N1 mode. If received in NB-S1 mode or in NB-N1 mode it is interpreted as if the Extended DRX parameters IE were not included in the message by this version of the protocol. | | | | | | | |
| NOTE 5: The value is applicable only in WB-S1 mode and in WB-N1 mode. If received in NB-S1 mode or in NB-N1 mode it is interpreted as 0010 by this version of the protocol.  NOTE 6: The value is applicable only in NB-S1 mode, in NB-N1 mode and in NR connected to 5GCN. If received in WB-S1 mode or in E-UTRA connected to 5GCNit is interpreted as 1101 by this version of the protocol.  NOTE x: If received in WB-S1 mode or in E-UTRA connected to 5GCN, the eDRX cycle length duration of 5,12 seconds shall be used. If received in NR connected to 5GCN with a Paging Time Window field set to 1111, eDRX cycle length duration of 2,56 seconds shall be used. If received in NR connected to 5GCN with a Paging Time Window field set to any value other than 1111, eDRX cycle length duration of 5,12 seconds shall be used.  NOTE y: For NR connected to 5GCN, eDRX cycle length duration of 2,56 seconds the eDRX cycle parameter 'TeDRX' is not used as a different algorithm compared to the other values is applied. See 3GPP TS 38.304 [xxx] for details. | | | | | | | |

\*\*\* End of changes \*\*\*