**3GPP TSG-CT WG1 Meeting #133-eC1-21XXXX**

**E-meeting, 11-19 November 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.301** | **CR** | **3635** | **rev** | **-** | **Current version:** | **17.4.1** |  |
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| *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:***  | Correcting format |
|  |  |
| ***Source to WG:*** | Lenovo, Motorola Mobility |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | TEI17 |  | ***Date:*** | 2021-11-11 |
|  |  |  |  |  |
| ***Category:*** | **D** |  | ***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 canbe 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:*** | Format of a part of a paragraph in subclause 5.5.1.2.2 is "Editor's Note" and must be corrected to "Normal".Some formats for definitions of the bits in Table 9.9.3.12A.1 is a variant of "Editor's Note" and must be corrected to "TAL".  |
|  |  |
| ***Summary of change:*** | The described format errors in "Reason for change" have been corrected. |
|  |  |
| ***Consequences if not approved:*** | Format is not correct in the TS. |
|  |  |
| ***Clauses affected:*** | 5.5.1.2.2, 9.9.3.12A |
|  |  |
|  | **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:*** |  |

>>>>>>>>>> Next change <<<<<<<<<<

##### 5.5.1.2.2 Attach procedure initiation

In state EMM-DEREGISTERED, the UE initiates the attach procedure by sending an ATTACH REQUEST message to the MME, starting timer T3410 and entering state EMM-REGISTERED-INITIATED (see example in figure 5.5.1.2.2.1). If timer T3402 is currently running, the UE shall stop timer T3402. If timer T3411 is currently running, the UE shall stop timer T3411.

The UE shall include the IMSI in the EPS mobile identity IE in the ATTACH REQUEST message if the selected PLMN is neither the registered PLMN nor in the list of equivalent PLMNs and:

a) the UE is configured for "AttachWithIMSI" as specified in 3GPP TS 24.368 [15A] or 3GPP TS 31.102 [17]; or

b) the UE is in NB-S1 mode.

For all other cases, the UE shall handle the EPS mobile identity IE in the ATTACH REQUEST message as follows:

a) if the UE operating in the single-registration mode is performing an inter-system change from N1 mode to S1 mode or the UE was previously registered in N1 mode before entering state 5GMM-DEREGISTERED and:

1) the UE has received the interworking without N26 interface indicator set to "interworking without N26 interface supported" from the network and:

i) if the UE holds a valid GUTI, the UE shall include the valid GUTI into the EPS mobile identity IE, include Old GUTI type IE with GUTI type set to "native GUTI" and include the UE status IE with a 5GMM registration status set to:

- "UE is in 5GMM-REGISTERED state" if the UE is in 5GMM-REGISTERED state; or

- "UE is in 5GMM-DEREGISTERED state" if the UE is in 5GMM-DEREGISTERED state; or

ii) if the UE does not hold a valid GUTI, the UE shall include the IMSI in the EPS mobile identity IE; or

2) the UE has received the interworking without N26 interface indicator set to "interworking without N26 interface not supported" from the network and:

i) if the UE holds a valid 5G-GUTI, the UE shall include a GUTI, mapped from 5G-GUTI into the EPS mobile identity IE, include Old GUTI type IE with GUTI type set to "native GUTI" and include the UE status IE with a 5GMM registration status set to "UE is in 5GMM-DEREGISTERED state";

ii) if the UE holds a valid GUTI and does not hold a valid 5G-GUTI, the UE shall indicate the GUTI in the EPS mobile identity IE and include Old GUTI type IE with GUTI type set to "native GUTI"; or

iii) if the UE holds neither a valid GUTI nor a valid 5G-GUTI, the UE shall include the IMSI in the EPS mobile identity IE; or

NOTE 1: The value of the EMM registration status included by the UE in the UE status IE is not used by the MME.

b) otherwise:

1) if the UE supports neither A/Gb mode nor Iu mode, the UE shall include in the ATTACH REQUEST message a valid GUTI together with the last visited registered TAI, if available. In addition, the UE shall include Old GUTI type IE with GUTI type set to "native GUTI". If there is no valid GUTI available, the UE shall include the IMSI in the ATTACH REQUEST message; or

2) If the UE supports A/Gb mode or Iu mode or both and:

i) if the TIN indicates "P-TMSI" and the UE holds a valid P-TMSI and RAI, the UE shall map the P-TMSI and RAI into the EPS mobile identity IE, and include Old GUTI type IE with GUTI type set to "mapped GUTI". If a P-TMSI signature is associated with the P-TMSI, the UE shall include it in the Old P-TMSI signature IE. Additionally, if the UE holds a valid GUTI, the UE shall indicate the GUTI in the Additional GUTI IE;

NOTE 2: The mapping of the P-TMSI and the RAI to the GUTI is specified in 3GPP TS 23.003 [2].

ii) if the TIN indicates "GUTI" or "RAT-related TMSI" and the UE holds a valid GUTI, the UE shall indicate the GUTI in the EPS mobile identity IE, and include Old GUTI type IE with GUTI type set to "native GUTI";

iii) if the TIN is deleted and:

- the UE holds a valid GUTI, the UE shall indicate the GUTI in the EPS mobile identity IE, and include Old GUTI type IE with GUTI type set to "native GUTI";

- the UE does not hold a valid GUTI but holds a valid P-TMSI and RAI, the UE shall map the P-TMSI and RAI into the EPS mobile identity IE, and include Old GUTI type IE with GUTI type set to "mapped GUTI". If a P-TMSI signature is associated with the P-TMSI, the UE shall include it in the Old P-TMSI signature IE; or

- the UE does not hold a valid GUTI, P-TMSI or RAI, the UE shall include the IMSI in the EPS mobile identity IE; or

iv) otherwise the UE shall include the IMSI in the EPS mobile identity IE.

If the UE is operating in the dual-registration mode and it is in 5GMM state 5GMM-REGISTERED, the UE shall include the UE status IE with the 5GMM registration status set to "UE is in 5GMM-REGISTERED state".

NOTE 3: The value of the EMM registration status included by the UE in the UE status IE is not used by the MME.

If the UE is attaching for emergency bearer services and does not hold a valid GUTI, P-TMSI or IMSI as described above, the IMEI shall be included in the EPS mobile identity IE.

If the UE in limited service state is attaching for access to RLOS and does not hold a valid GUTI, P-TMSI or IMSI as described above, the IMEI shall be included in the EPS mobile identity IE.

If the UE supports A/Gb mode or Iu mode or if the UE needs to indicate its UE specific DRX parameter to the network, the UE shall include the UE specific DRX parameter in the DRX parameter IE in the ATTACH REQUEST message. If the UE in NB-S1 mode needs to indicate the UE specific DRX parameter in NB-S1 mode to the network, it shall include the UE specific DRX parameter in NB-S1 mode in the DRX parameter in NB-S1 mode IE in the ATTACH REQUEST message.

If the UE supports eDRX and requests the use of eDRX, the UE shall include the extended DRX parameters IE in the ATTACH REQUEST message.

If the UE supports WUS assistance, then the UE shall set the WUSA bit to "WUS assistance supported" in the UE network capability IE, and if the UE is not attaching for emergency bearer services, the UE may include its UE paging probability information in the Requested WUS assistance information IE of the ATTACH REQUEST message.

If the UE supports SRVCC to GERAN/UTRAN, the UE shall set the SRVCC to GERAN/UTRAN capability bit to "SRVCC from UTRAN HSPA or E-UTRAN to GERAN/UTRAN supported".

If the UE supports vSRVCC from S1 mode to Iu mode, then the UE shall set the H.245 after handover capability bit to "H.245 after SRVCC handover capability supported" and additionally set the SRVCC to GERAN/UTRAN capability bit to "SRVCC from UTRAN HSPA or E-UTRAN to GERAN/UTRAN supported" in the ATTACH REQUEST message.

If the UE supports PSM and requests the use of PSM, then the UE shall include the T3324 value IE with a requested timer value in the ATTACH REQUEST message. When the UE includes the T3324 value IE and the UE indicates support for extended periodic timer value in the MS network feature support IE, it may also include the T3412 extended value IE to request a particular T3412 value to be allocated.

If the UE supports ProSe direct discovery, then the UE shall set the ProSe bit to "ProSe supported" and set the ProSe direct discovery bit to "ProSe direct discovery supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports ProSe direct communication, then the UE shall set the ProSe bit to "ProSe supported" and set the ProSe direct communication bit to "ProSe direct communication supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports acting as a ProSe UE-to-network relay, then the UE shall set the ProSe bit to "ProSe supported" and set the ProSe UE-to-network relay bit to "acting as a ProSe UE-to-network relay supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports NB-S1 mode, Non-IP or Ethernet PDN type, N1 mode, or if the UE supports DNS over (D)TLS (see 3GPP TS 33.501 [24]), then the UE shall support the extended protocol configuration options IE.

NOTE 4: Support of DNS over (D)TLS is based on the informative requirements as specified in 3GPP TS 33.501 [24].

If the UE supports the extended protocol configuration options IE, then the UE shall set the ePCO bit to "extended protocol configuration options supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports the restriction on use of enhanced coverage, then the UE shall set the RestrictEC bit to "Restriction on use of enhanced coverage supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports the control plane data back-off timer T3448, the UE shall set the CP backoff bit to "back-off timer for transport of user data via the control plane supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE is in NB-S1 mode, then the UE shall set the Control plane CIoT EPS optimization bit to "Control plane CIoT EPS optimization supported" in the UE network capability IE of the ATTACH REQUEST message. If the UE is capable of NB-N1 mode, then the UE shall set the Control plane CIoT 5GS optimization bit to "Control plane CIoT 5GS optimization supported" in the N1 UE network capability IE of the ATTACH REQUEST message.

If the UE is in NB-S1 mode, supports NB-S1 mode only, and requests to attach for EPS services and "SMS only", the UE shall indicate the SMS only requested bit to "SMS only" in the additional update type IE and shall set the EPS attach type IE to "EPS attach" in the ATTACH REQUEST message.

If the UE supports CIoT EPS optimizations, it shall indicate in the UE network capability IE of the ATTACH REQUEST message whether it supports EMM-REGISTERED without PDN connection.

If the UE supports S1-U data transfer and multiple user plane radio bearers (see 3GPP TS 36.306 [44], 3GPP TS 36.331 [22]) in NB-S1 mode, then the UE shall set the Multiple DRB support bit to "Multiple DRB supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports control plane MT-EDT, then the UE shall set the CP-MT-EDT bit to "Control plane Mobile Terminated-Early Data Transmission supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports user plane MT-EDT, then the UE shall set the UP-MT-EDT bit to "User plane Mobile Terminated-Early Data Transmission supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports V2X communication over E-UTRA-PC5, then the UE shall set the V2X PC5 bit to "V2X communication over E-UTRA-PC5 supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports V2X communication over NR-PC5, then the UE shall set the V2X NR-PC5 bit to "V2X communication over NR-PC5 supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports service gap control, then the UE shall set the SGC bit to "service gap control supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports dual connectivity with New Radio (NR), then the UE shall set the DCNR bit to "dual connectivity with NR supported" in the UE network capability IE of the ATTACH REQUEST message and shall include the UE additional security capability IE in the ATTACH REQUEST message.

If the UE supports N1 mode for 3GPP access, the UE shall set the N1mode bit to "N1 mode for 3GPP access supported" in the UE network capability IE of the ATTACH REQUEST message and shall include the UE additional security capability IE in the ATTACH REQUEST message.

If the UE supports signalling for a maximum number of 15 EPS bearer contexts, then the UE shall set the 15 bearers bit to "Signalling for a maximum number of 15 EPS bearer contexts supported" in the UE network capability IE of the ATTACH REQUEST message.

If the UE supports ciphered broadcast assistance data and needs to obtain new ciphering keys, the UE shall include the Additional information requested IE with the CipherKey bit set to "ciphering keys for ciphered broadcast assistance data requested" in the ATTACH REQUEST message.

For MUSIM capable UE if the UE needs to indicate an IMSI offset value to the network, the UE shall include the IMSI offset value in the Requested IMSI offset IE in the ATTACH REQUEST message.

If EMM-REGISTERED without PDN connection is not supported by the UE or the MME, or if the UE wants to request PDN connection with the attach procedure, the UE shall send the ATTACH REQUEST message together with a PDN CONNECTIVITY REQUEST message contained in the ESM message container IE.

If EMM-REGISTERED without PDN connection is supported by the UE and the MME, and the UE does not want to request PDN connection with the attach procedure, the UE shall send the ATTACH REQUEST message together with an ESM DUMMY MESSAGE contained in the ESM message container information element.

In WB-S1 mode, if the UE supports RACS, the UE shall:

a) set the RACS bit to "RACS supported" in the UE network capability IE of the ATTACH REQUEST message; and

b) if the UE has an applicable UE radio capability ID for the current UE radio configuration in the selected PLMN, set the URCIDA bit to "UE radio capability ID available" in the UE radio capability ID availability IE of the ATTACH REQUEST message.

If the attach procedure is initiated following an inter-system change from N1 mode to S1 mode in EMM-IDLE mode or the UE which was previously registered in N1 mode before entering state 5GMM-DEREGISTERED initiates the attach procedure:

a) if the UE has received an "interworking without N26 interface not supported" indication from the network and a valid 5G NAS security context exists in the UE, the UE shall integrity protect the ATTACH REQUEST message combined with the message included in the ESM message container IE using the 5G NAS security context;

b) otherwise:

1) if a valid EPS security context exists, the UE shall integrity protect the ATTACH REQUEST message combined with the message included in the ESM message container IE using the EPS security context; or

2) if the UE does not have a valid EPS security context, the ATTACH REQUEST message combined with the message included in the ESM message container IE is not integrity protected.



Figure 5.5.1.2.2.1: Attach procedure and combined attach procedure

>>>>>>>>>> Next change <<<<<<<<<<

#### 9.9.3.12A EPS network feature support

The purpose of the EPS network feature support information element is to indicate whether certain features are supported by the network.

The EPS network feature support information element is coded as shown in figure 9.9.3.12A.1 and table 9.9.3.12A.1.

The EPS network feature support is a type 4 information element with a minimum length of 3 octets and a maximum length of 5 octets.

If the network does not include octet 4 or octet 5 as defined below in the present version of the protocol, then the UE shall interpret this as a receipt of an information element with all bits of octet 4 and 5 coded as zero.

Editor's note: Whether MUSIM paging timing collision control shall be an indicator is FFS.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| EPS network feature support IEI | octet 1 |
| Length of EPS network feature support contents | octet 2 |
| CP CIoT | ERw/oPDN | ESRPS | CS-LCS | EPC-LCS | EMC BS | IMS VoPS | octet 3 |
| 15 bearers | IWKN26 | RestrictDCNR | RestrictEC | ePCO | HC-CP CIoT | S1-U data | UP CIoT | octet 4\* |
| 0Spare | 0Spare | 0Spare | 0Spare | PR | RPR | PIV | NCR | octet 5\* |

Figure 9.9.3.12A.1: EPS network feature support information element

Table 9.9.3.12A.1: EPS network feature support information element

|  |
| --- |
| IMS voice over PS session indicator (IMS VoPS) (octet 3, bit 1) |
|  |
| Bit |
| 1 |  |  |  |  |
| 0 |  |  |  | IMS voice over PS session in S1 mode not supported |
| 1 |  |  |  | IMS voice over PS session in S1 mode supported |
|  |
| Emergency bearer services indicator (EMC BS) (octet 3, bit 2) |
|  |
| Bit |
| 2 |  |  |  |  |
| 0 |  |  |  | emergency bearer services in S1 mode not supported |
| 1 |  |  |  | emergency bearer services in S1 mode supported |
|  |
| Location services indicator in EPC (EPC-LCS) (octet 3, bit 3) |
|  |
| Bit |
| 3 |  |  |  |  |
| 0 |  |  |  | location services via EPC not supported |
| 1 |  |  |  | location services via EPC supported |
|  |
| Location services indicator in CS (CS-LCS) (octet 3, bit 4 to 5) |
|  |
| Bit |
| 5 | 4 |  |  |  |
| 0 | 0 |  |  | no information about support of location services via CS domain is available |
| 0 | 1 |  |  | location services via CS domain supported |
| 1 | 0 |  |  | location services via CS domain not supported |
| 1 | 1 |  |  | Reserved |
|  |
| Support of EXTENDED SERVICE REQUEST for packet services (ESRPS)(octet 3, bit 6) |
|  |
| Bit |
| 6 |  |  |  |  |
| 0 |  |  |  | network does not support use of EXTENDED SERVICE REQUEST to request for packet services |
| 1 |  |  |  | network supports use of EXTENDED SERVICE REQUEST to request for packet services |
|  |
| EMM REGISTERED without PDN connectivity (ERw/oPDN)(octet 3, bit 7) |
| This bit indicates the capability for EMM-REGISTERED without PDN connection |
| Bit |
| 7 |  |  |  |  |
| 0 |  |  |  | EMM-REGISTERED without PDN connection not supported |
| 1 |  |  |  | EMM-REGISTERED without PDN connection supported |
|  |
| Control plane CIoT EPS optimization (CP CIoT)(octet 3, bit 8) |
| This bit indicates the capability for control plane CIoT EPS optimization |
| Bit |
| **8** |
| 0 |  |  |  | Control plane CIoT EPS optimization not supported |
| 1 |  |  |  | Control plane CIoT EPS optimization supported |
|  |
| User plane CIoT EPS optimization (UP CIoT)(octet 4, bit 1) |
| This bit indicates the capability for user plane CIoT EPS optimization |
| Bit |
| **1** |
| 0 |  |  |  | User plane CIoT EPS optimization not supported |
| 1 |  |  |  | User plane CIoT EPS optimization supported |
|  |
| S1-u data transfer (S1-U data)(octet 4, bit 2) |
| This bit indicates the capability for S1-u data transfer. This bit shall be considered only if the Control plane CIoT EPS optimization (CP CIoT) bit (octet 3, bit 8) is set to 1. If the Control plane CIoT EPS optimization (CP CIoT) bit (octet 3, bit 8) is set to 0, the UE shall assume S1-u data transfer is supported. |
| Bit |
| **2** |
| 0 |  |  |  | S1-u data transfer not supported |
| 1 |  |  |  | S1-u data transfer supported |
|  |
| Header compression for control plane CIoT EPS optimization (HC-CP CIoT)(octet 4, bit 3) |
| This bit indicates the capability for header compression for control plane CIoT EPS optimization |
| Bit |
| **3** |
| 0 |  |  |  | Header compression for control plane CIoT EPS optimization not supported |
| 1 |  |  |  | Header compression for control plane CIoT EPS optimization supported |
|  |
| Extended protocol configuration options (ePCO) (octet 4, bit 4)This bit indicates the support of the extended protocol configuration options IE. |
| Bit |
| **4** |
| 0 |  |  |  | Extended protocol configuration options IE not supported |
| 1 |  |  |  | Extended protocol configuration options IE supported |
|  |
| Restriction on enhanced coverage (RestrictEC) (octet 4, bit 5)This bit indicates if the use of enhanced coverage is restricted or not. |
| Bit |
| **5** |
| 0 |  |  |  | Use of enhanced coverage is not restricted |
| 1 |  |  |  | Use of enhanced coverage is restricted |
|  |  |  |  |  |
|  |  |  |  |  |
| Restriction on the use of dual connectivity with NR (RestrictDCNR) (octet 4, bit 6)This bit indicates if the use of dual connectivity with NR is restricted or not. |
| Bit |
| **6** |
| 0 |  |  |  | Use of dual connectivity with NR is not restricted |
| 1 |  |  |  | Use of dual connectivity with NR is restricted |
|  |  |  |  |  |
|  |  |  |  |  |
| Interworking without N26 interface indicator (IWK N26) (octet 4, bit 7)This bit indicates whether interworking without N26 interface is supported. |
| Bit |
| **7** |
| 0 |  |  |  | Interworking without N26 interface not supported |
| 1 |  |  |  | Interworking without N26 interface supported |
|  |  |  |  |  |
|  |  |  |  |  |
| Signalling for a maximum number of 15 EPS bearer contexts (15 bearers) (octet 4, bit 8)This bit indicates the support of signalling for a maximum number of 15 EPS bearer contexts. |
| Bit |
| **8** |
| 0 |  |  |  | Signalling for a maximum number of 15 EPS bearer contexts not supported |
| 1 |  |  |  | Signalling for a maximum number of 15 EPS bearer contexts supported |
|  |  |  |  |  |
|  |  |  |  |  |
|  |
| NAS signalling connection release (NCR) (octet 5, bit 1) |
| This bit indicates the support of NAS signalling connection release. |
| Bit |
| **1** |
| 0 |  |  |  | NAS signalling connection release not supported |
| 1 |  |  |  | NAS signalling connection release supported |
|  |  |  |  |  |
|  |  |  |  |  |
|  |
| Paging indication for voice services (PIV) (octet 5, bit 2) |
| This bit indicates the support of paging indication for voice services. |
| Bit |
| **2** |
| 0 |  |  |  | paging indication for voice services not supported |
| 1 |  |  |  | paging indication for voice services supported |
|  |  |  |  |  |
|  |  |  |  |  |
|  |
| Reject paging request (RPR) (octet 5, bit 3) |
| This bit indicates the support of reject paging request. |
| Bit |
| **3** |
| 0 |  |  |  | reject paging request not supported |
| 1 |  |  |  | reject paging request supported |
|  |  |  |  |  |
|  |  |  |  |  |
|  |
| Paging restriction (PR) (octet 5, bit 4) |
| This bit indicates the support of paging restriction. |
| Bit |
| **4** |
| 0 |  |  |  | paging restriction not supported |
| 1 |  |  |  | paging restriction supported |
|  |  |  |  |  |
|  |  |  |  |  |
|  |
| Bits 5 to 8 in octet 5 are spare and shall be coded as zero if included. |
|  |

>>>>>>>>>> End of changes <<<<<<<<<<