3GPP TSG CT3 Meeting #127e *C3-231098*

E-meeting, 17th – 21st April, 2023 (revision of CP-223206)

**Source: Ericsson**

**Title: Revised WID on Extensions to the TSC Framework to support DetNet**

**Document for: Approval**

**Agenda Item: 18.1.2**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

# Title: Extensions to the TSC Framework to support DetNet

## Acronym: DetNet

## Unique identifier: 980034

Potential target Release: Rel-18

## 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** |  |  |  | X |  |
| **No** | X | X | X |  | X |
| **Don't know** |  |  |  |  |  |

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

|  |  |
| --- | --- |
|  | Feature |
| X | Building Block |
|  | *Work Task* |
|  | Study Item |

### 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| DetNet | SA2 | 970011 | Extensions to the TSC Framework to support DetNet |

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### 2.3 Other related Work Items and dependencies

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| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
|  |  |  |
|  |  |  |

**Dependency on non-3GPP (draft) specification:**

RFC 8655, draft-ietf-detnet-yang

## 3 Justification

Deterministic Networking (DetNet), as standardized in the IETF, operates at the IP and Multiprotocol Label Switching (MPLS) layers and provides time-sensitive features that guarantee almost zero packet loss rates and bounded latency. DetNet is targeted for networks that are under a single administrative control or within a closed group of administrative control, so it is not intended for large groups of domains such as the Internet. There is close cooperation between the IETF DetNet WG and the IEEE Time-Sensitive Networking (TSN) TG. DetNet functions are very similar to the TSN ones.

DetNet can be applicable to many use cases in Industrial Automation verticals, for industrial machine-to-machine communication, smart grid. DetNet is able to provide deterministic QoS when UDP/IP is the transport selected for deterministic field-level communication.

SA2 has been studying the integration of 5GS with DetNet networks in the study *Study on Extensions to the TSC Framework to support DetNet* (FS\_DetNet). SA plenary approved the work item "*Extensions to the TSC Framework to support DetNet*".

Considering the above, impacts on protocols and interfaces under CT WG’s responsibilities are foreseen and the related work should be carried out within Rel-18.

This WID will be updated based on the progress of SA2.

## 4 Objective

The objective of this work item is to specify the stage-3 requirements in specifications under remit of CT WGs for the stage-2 requirements agreed in the stage-2 WID DetNet.

The work in stage-3 will start only when normative stage-2 requirements are available.

The following areas of work are expected to be covered (non-exhaustive, depends on the progress of normative work in SA2)

CT1:

1. 5GS DetNet node reporting:

a. PMIC/UMIC updates to cover the report of NW-TT interface port information

CT3:

1. 5GS DetNet node reporting:

a. Updates in N7 and N5 interfaces to collect and report PDU session (device side) information (e.g., MTU size, the report of extra UE addresses).

b. Updates of the PCC procedures and/or API impacts to cover the report of 5GS DetNet node information (procedure and parameters).

2. Provisioning of DetNet configuration from the DetNet controller to 5GS:

a. Potential extension of the flow description (PCF) to include the IPv6 flow label and IPsec SPI.

b. Updates of the PCC procedures to describe the provisioning of DetNet configuration into 5GS.

c. 3GPP extensions to the IETF draft-ietf-detnet-yang to define:

i. The maximum latency and the maximum loss requirements the 5GS system needs to apply.

ii. 5GS specific status code information on the result of the configuration requested by the DetNet controller.

ii. 5GS node identification.

CT4:

1. 5GS DetNet node reporting

a. Update to provide node and interface information by the UPF.

## 5 Expected Output and Time scale

|  |
| --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
|  | 29.xyz | 3GPP Extensions for DetNet integration in 5GS | CT#101(September 2023) | CT#103 (March 2024) | Fuencisla García |

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 24.539 | New parameters to be provided by NW-TT | CT#103 (March 2024) | CT1 |
| 29.244 | Update to provide node and interface information by the UPF. | CT#103 (March 2024) | CT4 |
| 29.513 | Updates in service procedures to cover the report of 5GS DetNode interfaces and the provisioning of DetNet configuration from the DetNet controller to 5GS. | CT#103 (March 2024) | CT3 |
| 29.512 | Updates to collect and report DetNet device side interface information. | CT#103 (March 2024) | CT3 |
| 29.514 | Potential updates to include within the flow information the IPv6 flow label information and the IPsec SPI.Updates to report DetNet device side interface information. | CT#103 (March 2024) | CT3 |
| 29.565 | Updates to include the 3GPP extensions to IETF draft-ietf-detnet-yang | CT#103 (March 2024) | CT3 |

## 6 Work item Rapporteur(s)

Fuencisla García, Ericsson, fuencisla.garcia@ericsson.com

## 7 Work item leadership

CT3

## 8 Aspects that involve other WGs

None

## 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Ericsson |
| Nokia |
| Nokia Shanghai Bell |
| China Mobile |
| AT&T |
| Intel |
| ZTE |
| Vivo |
| China Telecom |
| NTT DOCOMO |
| Verizon |
| Qualcomm |
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