|  |  |  |
| --- | --- | --- |
| Title: ITU logo | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATION STANDARDIZATION SECTOR**STUDY PERIOD 2022-2024 | TSAG-TD635 |
| TSAG |
| **Original: English** |
| **Question(s):** | N/A | Geneva, 29 July - 2 August 2024 |
| **TD(Ref.:** [SG15-LS128](http://handle.itu.int/11.1002/ls/sp17-sg15-oLS-00128.docx)**)** |
| **Source:** | ITU-T Study Group 15 |
| **Title:** | LS/r on initiation of new work item ITU-T Q.FGNS "Signalling requirements for fine-grained network slicing orchestration and management in bearer networks" (reply to SG11-LS176) [from ITU-T SG15] |
| **LIAISON STATEMENT** |
| **For action to:** | ITU-T SG11 |
| **For information to:** | TSAG |
| **Approval:** | ITU-T SG15 meeting (Montreal,12 July 2024) |
| **Deadline:** | 30 November 2024 |
| **Contact:** | Stephen ShewRapporteur Q12/15 | Tel: +1-613-791-3726 E-mail: sshew@ciena.com  |
| **Contact:** | Haomian ZhengAssociate Rapporteur Q12/15 | Tel: +86-13066975206 E-mail: zhenghaomian@huawei.com  |

This liaison statement answers [SG11-LS176](https://www.itu.int/ifa/t/2022/ls/sg11/sp17-sg11-oLS-00176.zip).

A new liaison statement has been received from SG15.

This liaison statement follows and the original file can be downloaded from the ITU ftp server at <http://handle.itu.int/11.1002/ls/sp17-sg15-oLS-00128.docx>.

|  |  |  |
| --- | --- | --- |
|  | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2022-2024 | **SG15-LS128** |
| **STUDY GROUP 15** |
| **Original: English** |
| **Question(s):** | 12/15 | Montreal, 1 - 12 July 2024 |
| **LS** |
| **Source:** | ITU-T Study Group 15 |
| **Title:** | LS/r on initiation of new work item ITU-T Q.FGNS "Signalling requirements for fine-grained network slicing orchestration and management in bearer networks" (reply to SG11-LS176) |
| **LIAISON STATEMENT** |
| **For action to:** | SG11 |
| **For information to:** | TSAG |
| **Approval:** | ITU-T SG15 meeting (Montreal,12 July 2024) |
| **Deadline:** | 30 November 2024 |
| **Contact:** | Stephen ShewRapporteur Q12/15 | Tel: +1-613-791-3726E-mail: sshew@ciena.com |
| **Contact:** | Haomian ZhengAssociate Rapporteur Q12/15 | Tel: +86-13066975206E-mail: zhenghaomian@huawei.com |

|  |  |
| --- | --- |
| **Abstract:** | This is a reply to the SG11 liaison on Q.FGNS. |

Thank you for your liaison statements SG11-LS176 “LS on initiation of new work item ITU-T Q.FGNS “Signalling requirements for fine-grained network slicing orchestration and management in bearer networks” [to OIF, ITU-T SG13, SG15, SG17]”.

SG15 has approved a set of Recommendations that document the support of fine grain services with a granularity of 10Mb/s. These are, fine grained MTN (fgMTN), that can be carried over a MTN transport network and fine grained OTN (fgOTN), that can be carried over an OTN transport network. These Recommendations include:

* G.8310 (2020) Amd.1 “*Architecture of the metro transport network”*
* G.8312 (2020) Amd.2 “*Interfaces for metro transport networks*”
* G.8312.20 (2024) “*Overview of fine grain MTN*”
* G.8321 (2022) “*Characteristics of metro transport network equipment functional blocks*”
* G.8331 (2022) “*Metro transport network (MTN) linear protection*”
* G.8350 (2021) “*Management and control for metro transport network*”
* G.872 (2024) “*Architecture of the optical transport network*”
* G.709/Y.1331 Amd.3 “*Interfaces for the optical transport network*”
* G.709.20 (2024) “*Overview of fine grain OTN*”

An additional Recommendation on synchronization is under development.

A transport network connection (that support for example a network slice or a private line) is required to provide OAM for connection verification and performance monitoring which must be configured when a service is established or modified.

*Draft new Recommendation ITU-T Q.FGNS*” includes the following text:

Clause 6.1 states:

“Network slicing is designed to handle specific service requirements, meet differentiated service level agreements (SLAs), and build isolated network instances on demand. Isolation is considered as one of key security capabilities for network slice. As an interface technology for service isolation and network slicing in the bearer network, FlexE（Flexible Ethernet） implements flexible allocation of interface resources and solves the need for pipe isolation for some services.”

*Comment:* *The FlexE protocol only supports a single hop (i.e., it is not a networking technology), for this reason SG15 developed MTN which augments FlexE with the required network OAM.*

Clause 6.3 states:

“Fine-grained network slicing mechanism introduces the FGSI in data plane, guiding each forwarding node to use specific bandwidth and forwarding resources for packet forwarding processing, thereby achieving end-to-end resource isolation and guarantee.”

Both fgMTN and fgOTN provide 10Mb/s granularity, full resource isolation and OAM. These fg client connections can be carried across the existing transport network infrastructure. Therefore, we suggest that you reuse one of these already defined protocols instead of defining a new data-plane protocol that would require the deployment of new equipment in the transport network.

SG15 has developed Recommendations describing the common aspects management/control (G.7701 “*Common control aspects*”), the application of SDN to transport networks (G.7702 “*Architecture for SDN control of transport networks*”) and the application of ASON to transport networks (G.7703 “Architecture for the automatically switched optical network”). GSTR-TN5G “*Transport network support of IMT-2020/5G*” which includes a description of the interaction between an IMT-2020/5G network and the transport network management.

The transport network does not support service signalling so we suggest that it would better to interconnect from the service signalling network to the existing transport network management/control systems described in the G.770x series of Recommendations. This will allow fine grained connections (including the required OAM) to be established across the existing transport network infrastructure.

We also draw your attention to some work in the IETF may be of intertest to you. For example, RFC 9543 “*A Framework for Network Slices in Networks Built from IETF Technologies*” and the TEAS Working Group draft-ietf-teas-nrp-scalability-04 “*Scalability Considerations for Network Resource Partition*”.

A companion liaison statement (*SG15-LS129*) proposes some modifications to the proposed new Question text for Question D/11.

We look forward to working with you to enable the flexible, on demand, configuration of transport network connections to support fine grained, fully isolated network slices.

Q12/15 will be holding an interregnum meeting 2-6 December 2024 and SG15 will meet 17-28 March 2025.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_