Instantiation of IETF Network Slices in service providers networks

draft-barguil-teas-network-slices-instantation-02

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IETF#111, Online meeting, July 2021
Scope of the work

• Motivation
  “This document describes the architecture, communication process, models, used between the Network Slice Controller and a network controller for a IETF network slice creation”.

• Intention of the work
  • How to use existing IETF “machinery” to operate IETF Network Slices in Service Provider Networks
  • Evaluate existing Yang models (RFCs, WGs, individual drafts), identify where they apply in the network slicing architecture and find gaps vs the IETF network slice requirements.

• NOT our Intention
  • Defining new YANG models
  • Redefining architecture, terminology, or adding new requirements

• Reference documents:
  • Requirements: Even there is not a formal IETF requirements document, the requirements are being obtained from framework and NBI drafts (draft-ietf-teas-ietf-network-slices and contreras-teas-slice-nbi ).
  • The Network Slice Architecture is being worked in [draft-ietf-teas-ietf-network-slices-03] Framework for IETF Network Slices
  • The slice attributes and functionalities expected from use cases are being documented in [draft-contreras-teas-slice-nbi-05] IETF Network Slice Use Cases and Attributes for Northbound Interface of IETF Network Slice Controllers
  • The IETF has produced several YANG data models to support the Network Automation:
    • Service Models: Capture the customer requirements (i.e. LXSM, ...)
    • Network Models: Capture the Network requirements to deliver a service. (i.e. LXNM)
    • TE Models and Service Mapping: Maps the TE data models and the service/network models.
    • ACLs and Routing Policies
  • Existing architectures and frameworks for Network Automation and SDN:
    • [RFC 8969] A Framework for Automating Service and Network Management with YANG
    • [RFC 8453] Framework for Abstraction and Control of TE Networks (ACTN)
Updates from -00 version

- Editorial Updates:
  - Updated structure of the document including new sections, naming alignment and ordering to increase readability and consistency:

- Sections renamed:
  - IETF Network Slice Requirements and Data Models
  - Section renamed: IETF Network Slice Procedure
  - Network Controller Operation
  - Operational considerations.
  - Network Slice Procedure

- New section: Reference Architecture and Components
  - Explains how IETF Network Slice Controller (NSC) can be implemented in operator's network based on [I-D.ietf-teas-ietf-network-slice-definition].
Updates from -00 version

Update in the IETF Network Slice Requirements and Data Models including additional operational requirements:

<table>
<thead>
<tr>
<th>NFV-based services</th>
<th>Network sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming and outgoing bandwidth</td>
<td>Maximum and Guaranteed Bit Rate</td>
</tr>
<tr>
<td>QoS metrics</td>
<td>Bounded latency</td>
</tr>
<tr>
<td>Directionality</td>
<td>Packet loss rate</td>
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<tr>
<td>MTU</td>
<td>L2/L3 reachability</td>
</tr>
<tr>
<td>Protection scheme</td>
<td>Recovery time</td>
</tr>
<tr>
<td>Connectivity mode</td>
<td>Secure connection</td>
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</tbody>
</table>

- **New section**: Operational Considerations
  - Outlines the compliance and operational aspects of Network Controller models with IETF Network slice requirements.
    - Availability
    - Downlink throughput / Uplink throughput.
    - Protection scheme
    - Delay
    - Packet loss rate
Next Steps

• Continue to work on implementation options and, security and operational considerations.
• Collect additional deployment requirements for the gap analysis.
• Provide feedback to architecture and solution works.
• Collect feedback / comments from the WG to enhance the document.

• **Question for WG**
  • Is this an I-D that is useful activity for the WG, and should we continue?