

# Attachment Circuits: Updates & Next Steps

[draft-boro-opsawg-teas-common-ac](#)  
[draft-boro-opsawg-teas-attachment-circuit](#)  
[draft-boro-opsawg-ntw-attachment-circuit](#)  
draft-boro-opsawg-ac-lxsm-lxnm-glue (*new*)

IETF#117  
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# (Reminder) Scope

- Specify an AC library with reusable types, identities, and groupings: **ac-common**
- Specify a model for managing AC-as-a-Service: **ac-svc**
  - Does ***not make any assumption about the internal structure*** or even the nature or the services that will be delivered over an AC
  - Accommodates both ***integrated and separate provisioning models***
    - Includes ***reusable groupings*** for use by other service models
    - Exposes AC/bearer ***references*** that can be used in other service placement requests
  - Favor the approach of completely relying upon the AC service model ***instead of duplicating data nodes into specific modules*** of advanced services that are delivered over an AC
- Specify a network model for the AC management: **ac-ntw**
  - Augments the SAP model with required AC data nodes
  - Network-view of ACs
- Specify how to glue LxNMs and LxSMs with AC matters managed via ac-svc/ac-ntw: **ac-glue**

# Updates Since IETF#116

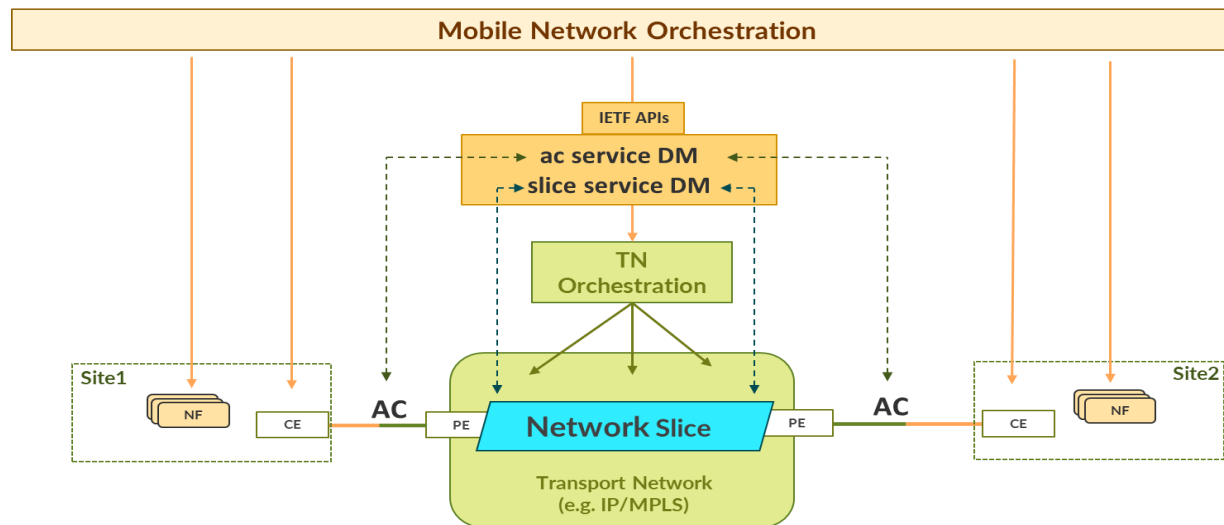
- Released new versions to fix various issues (diversity, bearers' location, simplify profiles, MTU, bandwidth, record ACs that are bound to a bearer, explain how the provisioning of specific identifiers (e.g., VLAN-ID) can be coordinated, etc.)
- Bi-weekly meetings to review the issues and discuss how to address them

The screenshot shows a Kanban board titled "Attachment Circuits Data Models". At the top, there are navigation options: "Dashboard" and "+ New View". Below that is a search bar labeled "Filter by keyword or by field" and a "Discard" button. The board is divided into four columns:

- In Progress (6 items):** This column is for items actively being worked on. The first item, "attachment-circuit-model #60", is highlighted with a blue border and contains the text: "should we add a constraint on bearer to identify the SP POP to which the bearer is attached?". Other items include "attachment-circuit-model #52" (Review Sections 1-3), "attachment-circuit-model #54" (Ease mapping between the AC and underlying device), "attachment-circuit-model #84" (oper-status), and "attachment-circuit-model #78" (Bearer Life Cycle Management).
- More Dig Is Needed (7 items):** This column contains items that require further investigation or discussion. Items include "attachment-circuit-model #59" (Change | +--rw bearer-reference? from string to list), "attachment-circuit-model #14" (bundling ACs (from Richard)), "attachment-circuit-model #17" (discuss the case of multiple CE reachable over a same AC), "network-attachment-circuits #6" (Bearer: add LAG parameters), "attachment-circuit-model #46" (discuss VRRP), and "network-attachment-circuits #3".
- Candidate Features (5 items):** This column lists potential new features. Items include "attachment-circuit-model #67" (Use case for MPLS/SRv6 as an AC), "network-attachment-circuits #7" (Bearer: add provider parameters), "network-attachment-circuits #5" (Bearer: add to model physical information of the connectivity), "network-attachment-circuits #4" (Bearer: missing customer port in "customer point" section), and "network-attachment-circuits #1" (Attach (in/out) BGP policies).
- Done (56 items):** This column contains completed tasks. Items include "attachment-circuit-model #62" (Have a read-only leaf-list in the bearer-svc to report the ACes on the same bearer), "attachment-circuit-model #47" (Review bearer Section), "attachment-circuit-model #51" (Review the examples (appendix)), "attachment-circuit-model #49" (Review Section 3 (Use Cases)), "attachment-circuit-model #48" (Review Introduction), and "attachment-circuit-model #65".

# Updates Since IETF#116

- Received an LS from O-RAN
  - O-RAN-WG9-LS-2023-003-IETF on Transport Network Slicing Enhancement ([doc](#))



- No reply was sent so far by OPSAWG (?)

# Updates Since IETF#116

- A Change Request was accepted by the 3GPP ([S5-234742](#)) to enhance TS 28.541 (*Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3*) with the required information to manage connections with transport domains:

An NRM touchpoint is needed containing sufficient information to resolve the associated connection point towards the transport domain. This includes well-defined, unambiguous identifier(s) which can be used to resolve, and associate, the appropriate model instance(s) in TN domain.

Excerpt from [TS 28.541](#) (June 30, 2023)

6.3.41 `ConnectionPointInfo` <<datatype>>

6.3.41.1 **Definition**

This datatype contains information required to identify a connection point outside of scope of 3GPP MIB (e.g. transport domain), for more details see RFC 8345 [89] and YANG Data Models for 'Attachment Circuits'-as-a-Service (ACaaS) [90].

# Updates Since IETF#116

- TEAS WG Specifications
  - [draft-ietf-teas-5g-network-slice-application-01](#) discusses now how to map 3GPP NRM objects to ietf-ac-svc and ietf-bearer-svc data nodes
    - Gaps will be reported back to the 3GPP
  - [draft-ietf-teas-ietf-network-slice-nbi-yang-06](#) includes now the following data node
    - "ac-svc-name": Indicates the names of AC services, for association purposes, to refer to the ACs that have been created.
      - Using the references exposed in the ACaaS would be a clean design but the use of string is OK
      - Used to avoid normative dependency on the AC models
    - The spec also includes a discussion about how ACaaS and ac-common can be used

# Next Steps

- The scope and content are *more stable*
  - Build on OPSAWG RFCs 9181, 9182, 9291, and 9408
- The attachment circuit effort is being *leveraged* within the IETF and also in other SDOs
- We request the WG to *consider adoption of the AC I-D set*

# Appendix

# Sample Usage: Cloud

```
{
  "ietf-ac-svc:attachment-circuits": {
    "ac": [
      {
        "name": "ac--BXT-DC-customer-VPC-foo",
        "description": "Connection to Cloud Provider",
        "requested-start": "2023-12-12T05:00:00.00Z",
        "l2-connection": {
          "bearer-reference": "1243-56789"
        },
        "ip-connection": {
          "ipv4": {
            "local-address": "192.0.2.1",
            "prefix-length": 24,
            "address": [
              {
                "address-id": "1",
                "customer-address": "192.0.2.2"
              }
            ]
          }
        },
        "routing-protocols": {
          "routing-protocol": [
            {
              "id": "1",
              "type": "ietf-vpn-common:bgp-routing",
              "bgp": {
                "neighbor": [
                  {
                    "id": "1",
                    "peer-as": 65536,
                    "authentication": {
                      "keying-material": {
                        "md5-keychain": "nyxNER_c5sdn608fFQ13331d"
                      }
                    }
                  }
                ]
              }
            }
          ]
        }
      }
    ]
  }
}
```

