NLRI AppMetaData Path Attribute for 5G Edge Computing Service

draft-dunbar-idr-5g-edge-compute-app-meta-data-03

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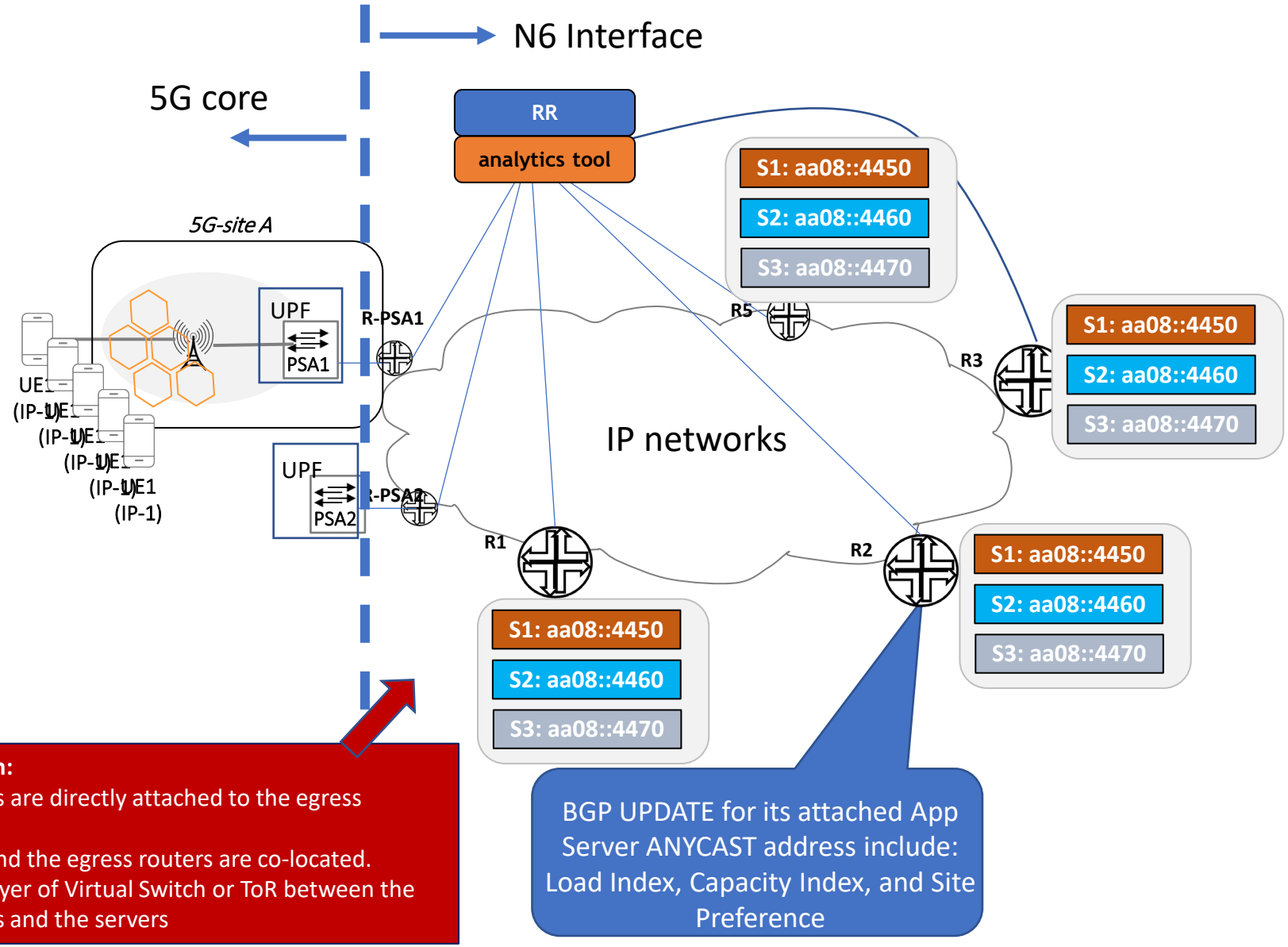
IETF109 Recap: a new BGP NLRI Path Attribute: AppMetaData

NLRI BGP UPDATE:

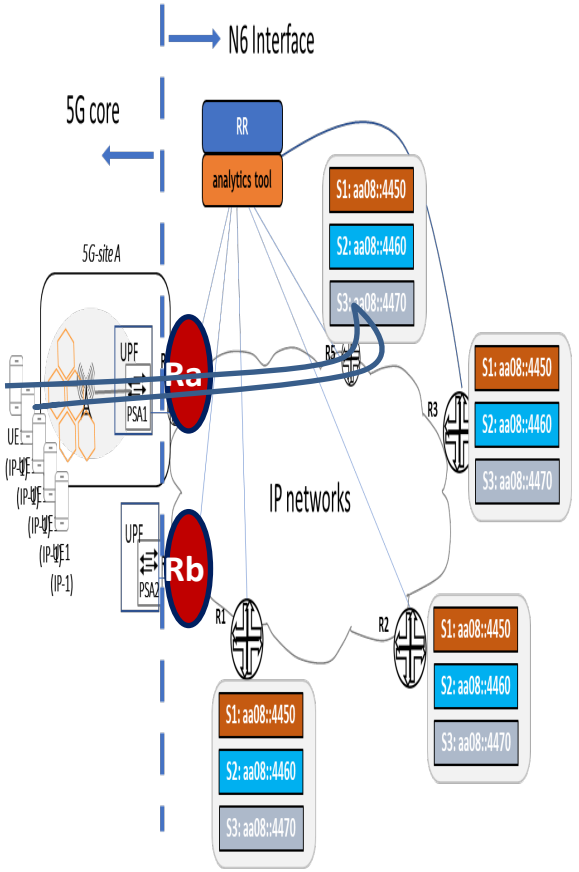
Client route= S1: aa08::4450

AppMetaData TLV

- Load Measurement subTLV
- Capacity Index subTLV
- Site Preference subTLV



Issues Raised from IETF109 and IDR Mailing List



1) When a new flow comes to an ingress node (Ra), how to select the optimal egress router to reach an ANYCAST server,
2) How Ingress node keeps the packets from one flow to the same ANYCAST server,
3) When a UE moves to a new Cell Tower, method to stick the flow to the same ANYCAST server, which is required by 5G Edge Computing: 3GPP TR 23.748.
   - ❖ Out of scope for this draft. Covered by[5g-Sticky-Service] (**https://datatracker.ietf.org/doc/draft-dunbar-6man-5g-edge-compute-sticky-service/**)

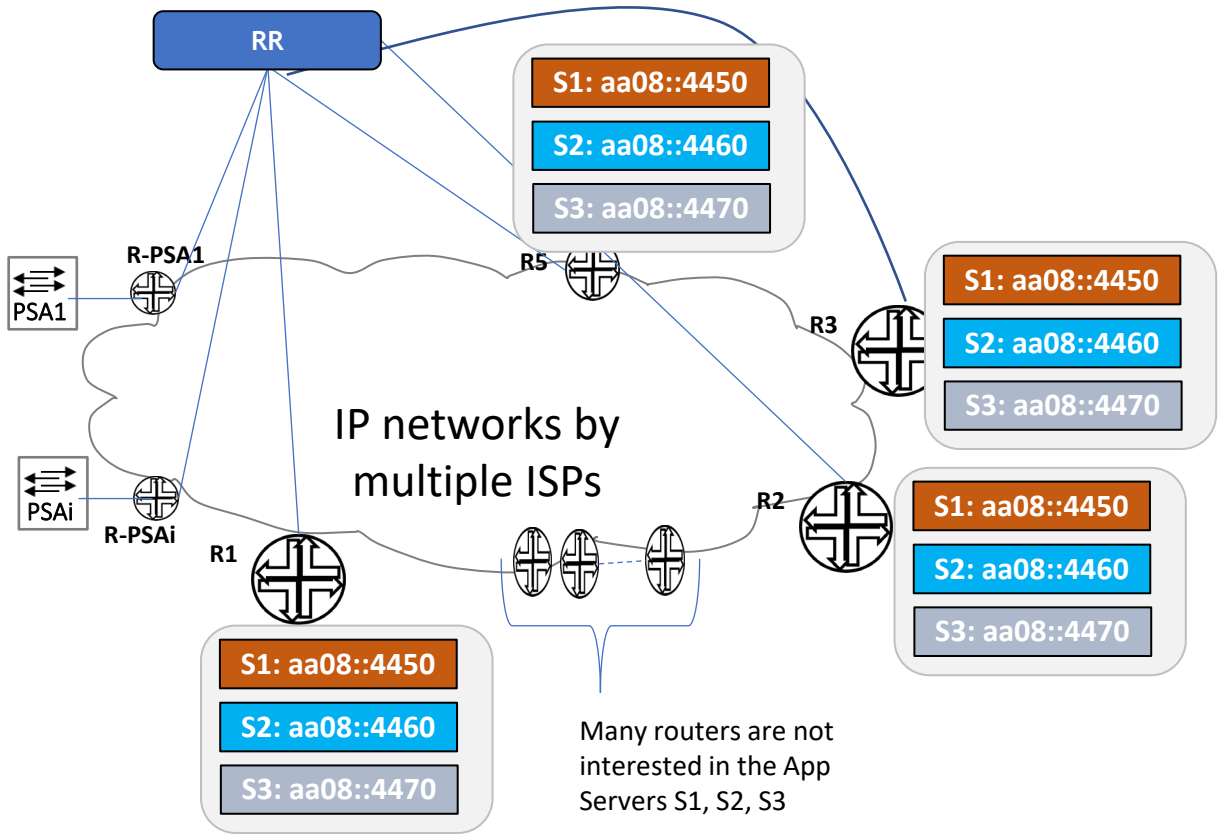
Path Selection Behavior

- **Assumptions:**
  - ✓ Only the registered Edge Computing services.
  - ✓ Ingress routers are configured with the ACLs.
  - ✓ The ingress routers' local BGP path compute algorithm can compute the path to the optimal Next Hop (egress router) based on the BGP AppMetaData value.
- **AppMetaData Influenced BGP Path Selection**
  - ✓ Destination Address is resolved to multiple NextHop: R1, R2, R3.
  - ✓ Higher weight is inserted for the path towards R1 if the local BGP compute finds R1 is the best.
- **Forwarding Behavior**
  - ✓ Using the existing Flow Affinity feature: supported by many commercial routers.
- **Forwarding Behavior after a UE moves to a new 5G Site**
  - ✓ When a UE moves to a new 5G Site, [5G-Edge-Sticky] in 6MAN

AppMetaData Propagation Scope

- BGP RT constrained distribution (RFC4684)
  - there are much more App Servers than the number of routers
- Create a AppServer-Bound-Group
  - Based on the Edge Computing service ACL configured to each Ingress router

AppServer ID	Interested Routers	Time To Live	Other attributes
S1: aa08::4450	R-PSA1, R-PSA2		
S2: aa08::4460	R-PSA1,		



Explained in IETF 109

The NLRI Path Attribute for App Meta Data

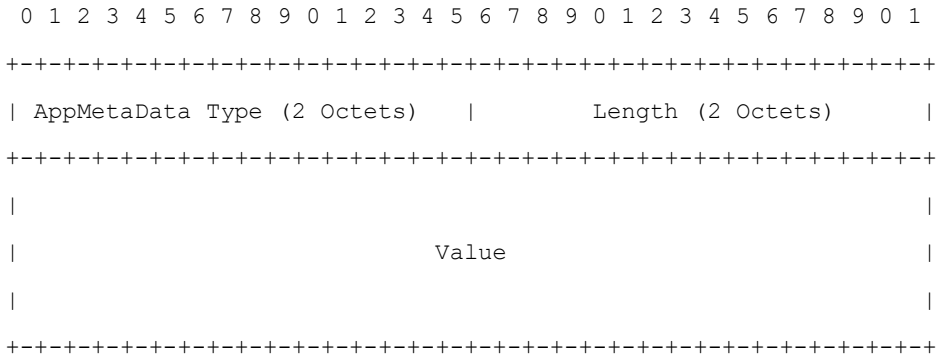


Figure 2: App Meta Data TLV Value Field

Raw Load Measurement sub-TLV:

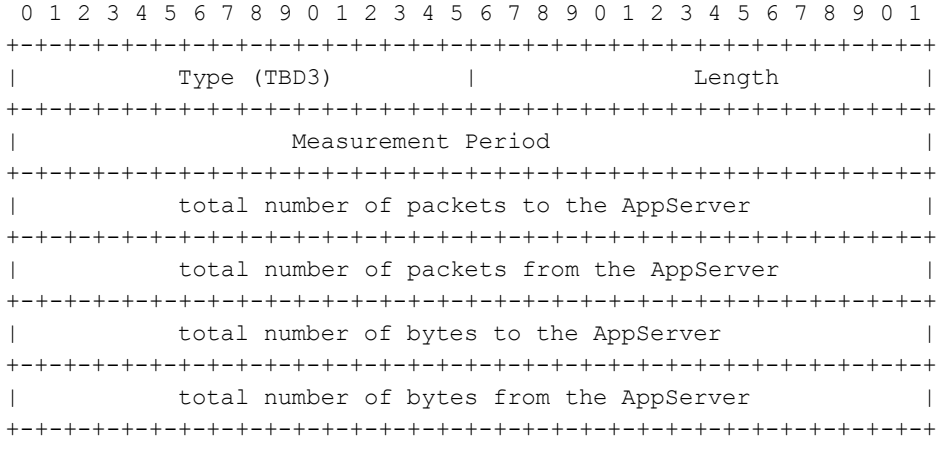


Figure 5: Raw Load Measurement Sub-TLV

Load Measurement sub-TLV

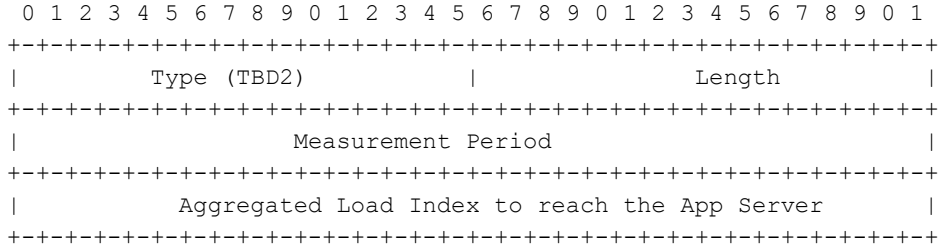
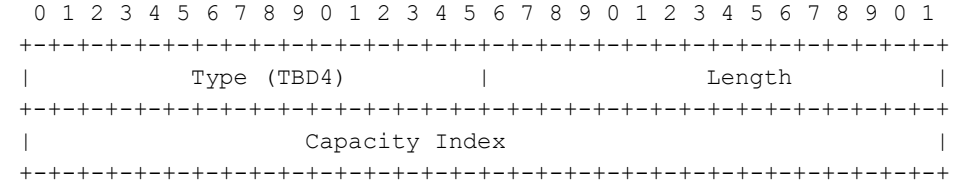
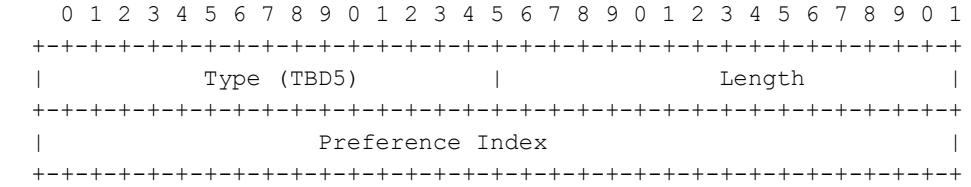


Figure 4: Aggregated Load Index Sub-TLV

The Capacity Index sub-TLV has the following format:



The Preference Index sub-TLV has the following format:



Asking for WG Adoption

Backup slides

6MAN: Sticky Service

Case 1: without any assistance from 5G Core