

# MicroTap Segment

<https://www.ietf.org/archive/id/draft-zzhang-spring-microtap-segment-03.txt>

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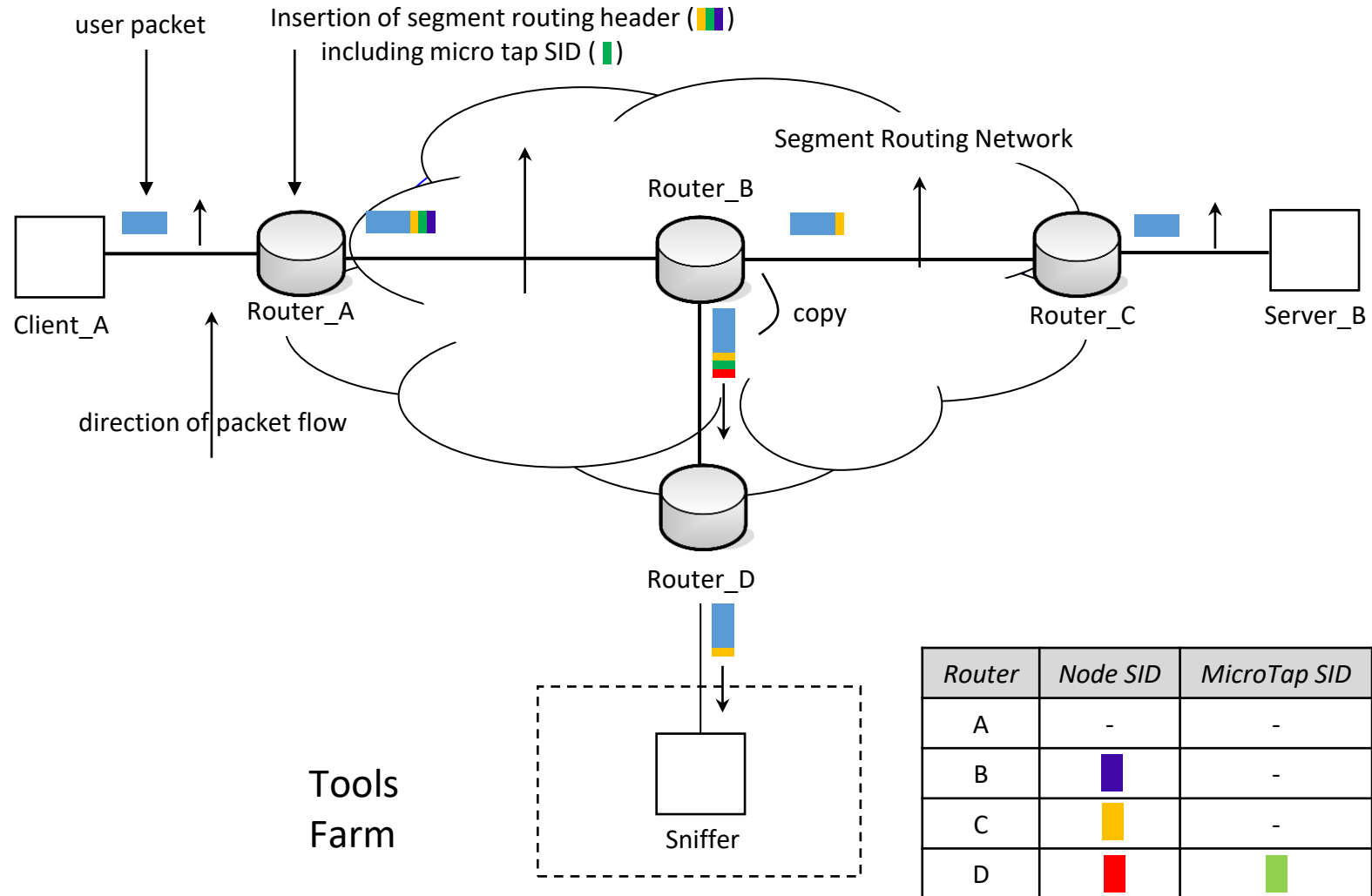
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# Background Refresh

- A MicroTap SID instructs a node to make a copy of a packet & send the copy to a particular destination for packet analysis
  - The original packet continues to the destination
- Strategic placement of one or more microTap SIDs within a SID-list results in traffic tapping at targeted points within the network
  - W/o the need for configuring/unconfiguring firewalls on tapping nodes to start/stop the tapping of certain packets
  - Word “micro” means “micro control” - unrelated to SRv6 “Micro SID”

# Example: Traffic tapping at router B

- The traffic path is from client A to server B through Router A, B & C
- The goal is to capture the traffic at router B for packet analysis
- On Router A, microTap SID is placed after the Node SID for router B in the SID-list
- Router A classifies the traffic of interest and pushes the SID-list to the packets
- When microTap SID becomes active on Router B, it replicates the packet and sends the copy to the remote monitor by imposing router D's Node SID
- Router B also pops the microTap SID off the original packet and continues forwarding to router C
- When microTap SID becomes active on Router D, it sends the packet to monitor



# Changes in Revision -03

- SRv6 Optimization
- Support for tapping by a monitor node

# Allocation from Global ID Block

- The SRv6 C-SID specification says:

In order to efficiently manage the C-SID numbering space, a deployment may divide it into two non-overlapping sub-spaces: a Global Identifiers Block (GIB) and a Local Identifiers Block (LIB).

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A global C-SID identifies a segment defined at the Locator-Block level. The tuple (Locator-Block, C-SID) identifies the same segment across all nodes of the SR domain. A typical example is a prefix segment bound to the End behavior.

- We extend this GIB/LIB concept to uncompressed/full SIDs as well
- A monitor node allocates an ID from the GIB and advertises it
  - With the semantics “micro-tapping to the advertising monitor node”
  - Referred to as Tapping ID (TID)
  - Used as a C-SID or FUNC bits of a full SID

# Signaling & Operation 1/2

- The monitor node advertises an End SID with the End.TAP behavior
  - With the LB:LN:FUNC:ARG structure where the FUNC bits encode the TID
  - It installs a corresponding LB:LN:FUNC:: IPv6 route to send received tapped traffic to its monitor
    - A tapping node sends the tapped traffic using LB:LN:FUNC::/
    - E.g., LB:00D0:1000::/ where 00D0 identifies D and 1000 is the GIB TID for “tapping to D”
- A tapping-capable node sets a new T-flag bit in its Locator TLV
  - Indicating that it is capable of tapping packets received with this locator
  - For each locator that it advertises with the T-flag and a TID received from a monitor node, it installs a route for tapping to that monitor node
    - E.g., Node B installs LB:00B0:1000::/ route to tap LB:00B0:1000:: packets to Node D

# Signaling & Operation

- When an ingress receives D's LB:00D0:1000:: End SID and B's LB:00B0:: Locator that has the T-flag set,
- It knows B is capable of tapping and it can use LB:00B0:1000:: to instruct B to tap to node D
- This is optimized for both full SID and NEXT-C-SID Flavor C-SID
  - Because of the LPM match on the combined LB:00B0:1000:: route
  - In the C-SID case, 00B0 and 1000 are all C-SIDs

# Tapping by A Monitor Node

- A monitor node may be on the normal forwarding path and may need to tap a packet to its monitor
- The previously described GIB TID is not enough for this
  - The LB:LN:GIB-TID:: route on the monitor is to send the received tapped packet to its monitor, not to tap a received packet
- A separate LIB TID is allocated and advertised for tapping locally
  - In an End.TAP.X End SID
  - A LB:LN:LIB-TID:: route is installed to tap to a local monitor
  - An ingress uses the received SID to instruct the monitor node to tap locally
    - E.g., LB:00D0:9999::



# Summary

- Extend C-SID's GIB/LIB concepts to the FUNC space of full SIDs
- A monitor node advertises a GIB Tapping ID for “tapping to me”
  - As FUNC part of an End.TAP End SID
  - A local forwarding route is installed to send tapped packets to its monitor
- A tapping node combines the received GIB TID with its own locator
  - Installed as a local forwarding route to do tapping
- An ingress node combines a tapping node's locator and the GIB TID
  - Used a full SID in the SID list, or
  - The TID is used as a C-SID after the tapping node's node C-SID
- A monitor node advertises a LIB Tapping ID for “ask me to tap locally”
  - As part of an End.TAP.X End SID

# Next Steps

- Continue to seek WG comments and suggestions
- Continue to finish/polish the draft
- Seek adoption afterwards